

# Exporting vehicle gearboxes and gearbox parts to Europe

Gearboxes are becoming more efficient, increasing attention is paid to energy and fuel saving, and the production of gearboxes is becoming more cost effective. This market shows high potential for developing-country suppliers, because European imports of gearboxes and their parts are increasing. The market is also changing rapidly, mainly due to technological and regulatory developments. This report explains the potential and most relevant trends and requirements for the European market on gearboxes.

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## 1. Product description

This document provides information about gearboxes for all kinds of motor vehicles, such as tractors (agricultural), motor vehicles for the transport of any number of persons, motor vehicles for the transport of goods and special purpose motor vehicles.

Gearboxes and their parts are grouped under “Gearboxes and parts thereof” (Harmonised System (HS) codes 87084020, 87084050, 87084091 and 87084099). For more information on these HS codes we refer to [the integrated Tariff of the European Union](#) (TARIC). This Product Factsheet analyses the market for gearboxes and their parts as used in all kinds of vehicles.

### Tip:

Read our [study on exporting gears and gearing systems](#) for machinery to Europe.

## Quality requirements

The quality, reliability and expected durability of gearboxes used in vehicles in Europe is very high.

The quality of materials used in the production of spare parts must be high to ensure their durability and safety and the supplied parts have to be carefully produced and inspected, as defective parts may be returned. European producers will require very high standards of gears, should they outsource. (Dimension) tolerances will be tight and the aesthetics will be important. For gearboxes, attention will focus not only on the quality of the internal gears, but also on the quality of the bearings and seals. The quality of the casting will also be scrutinized.

## Materials and components

Gearboxes are typically made of steel or cast iron and may be housed in an iron unit. The quality of materials used in the production of gearboxes needs to be high to ensure their durability and safety. The main components of gearboxes are typically:

- Planetary gear sets: the sun, ring and planetary gears are constructed of aluminium, stainless steel or brass. The material used varies depending on the manufacturer.
- Hydraulic system: sends transmission fluid under pressure to all parts of the transmission. Newer systems are more complex and are combined with computerized electrical components.
- Seals and gaskets: a seal is made of rubber. Common gasket materials are paper, cork, rubber, silicone and soft metal.
- Torque converter in automatic gearboxes or a clutch in manuals.
- Governor and modulator.

### Tip:

Make a detailed offer that pays attention to all the buyer's specifications. In most cases, a European buyer will provide a document with very detailed specifications: quality, materials, deviations, quantity, delivery date, and more. It is strongly advisable to compose your offer according to these requirements.

## Geographic scope

The geographic scope of this study is the European Union (EU) area. Based on total import values and import values from developing countries there is a focus on a selected group of countries: Germany, United Kingdom, Spain, France, Italy and the Czech Republic. These countries are large importers of gearboxes and offer good opportunities to exporters from developing countries. The term 'focus countries' refers to these six selected countries, unless stated otherwise.

## 2. Which European markets offer opportunities for exporters of gearboxes to the European Union?

Growing at a Compound Annual Growth Rate (CAGR) of 5.8% from 2016 to 2021, the global market is projected to reach € 21,3 billion by 2021. While most growth will be in gear motors and gearboxes produced for wind power installations, it is expected that the gearbox market for vehicles will grow as well. When we mention gearboxes in this chapter, we refer to the parts used for gearboxes as well.

The EU has a gearbox consumption of € 11.5 billion. The demand for gearboxes is met by production (€ 14.6 billion) and imports (€ 16.9 billion). With a total export value of € 20 billion, the EU is a net exporter.

### Macroeconomic statistics

The Gross Domestic Product (GDP) growth factor is an important economic indicator and therefore a predictor of both the production of and the demand for gearboxes. With a national GDP value of € 3 trillion, Germany has the largest economy in the European Union (EU). Germany and the Czech Republic are the most industrious economies. Their manufacturing bases (the part of the GDP added by the manufacturing of goods) amount to 23% and 27%, respectively. The manufacturing bases of the other focus countries range from 10% to 16%.

### Imports

In 2015, the total value of vehicle gearboxes and their parts imported into the EU grew to a value of € 16.9 billion. This is an increase of 26% compared to 2014. Imports of gearboxes have increased at a compound annual growth rate (CAGR) of 2.0% between 2011 (€ 12.6 billion) and 2014 (€ 13.4 billion). The share of the imports from developing countries in 2015 was only 3.7% of total imports. Of total imports, 73% consists of full gearboxes, while 27% consists of parts. From developing countries, 53% of imports consists of full gearboxes while 47% consists of parts.

## Imports of the focus countries

Within the EU, Germany is the largest importer of vehicle gearboxes with imports valued at € 3.73 billion in 2015. Germany is followed by the United Kingdom (€ 2.51 billion), Spain (€ 1.77 billion) and France (€ 1.67 billion). The value of imported gearboxes to Italy and Spain grew the most with a CAGR of 25.7% and 21.3% between 2011 and 2015, respectively. The six focus countries account for almost 70% of the imports. Note that these countries had the largest increase in 2015. In 2012, 2013 and 2014 the value of imports only changed slightly. Several reasons for this growth can be pointed out. In the first place, EU exports of gearboxes increased. Second, due to a recovering economy, EU car production and plant capacities for gearbox production increased, creating a larger OEM and aftermarket.

Only 3.8% of the value of (parts of) gearboxes is imported from developing countries. The Czech Republic sources most from developing countries (9.0% of import value). Lithuania and Bulgaria only import around € 5 million, but they both show willingness to source from developing countries (9.3% and 8.8% of their total import value).

### Tip:

The focus countries are the biggest importers of gearboxes in the EU. Try to export your product to one of these countries.

The Czech Republic shows the most willingness to source from developing countries. Partnering with manufacturers in this country can be beneficial.

## Important suppliers from developing countries

The import of gearboxes from developing countries was dominated by parts from China (CAGR 9.2%). Over the last few years Mexico has started to export more gearboxes to Europe (CAGR 38.5%). Over the last five years, exports from Mexico to the EU have quadrupled. China and Mexico both have an export value of € 160 million. Argentina follows with € 102 million. Turkey and India are prominent players as well, with export values of € 56.6 million and € 53.5 million. It is noteworthy that Thailand is becoming an interesting player on the gearbox market as well. Whereas they only had € 0.5 million of export value to the EU in 2011, in 2015 this has grown to € 29 million.

### Tip:

Mexico, China, Argentina, Turkey and India export a fair amount to the EU. Seek partnerships in these countries, given their status as major trade hubs for access to the European market.

## Exports

In 2015, the total value of (parts of) gearboxes exported by the EU was € 20.1 billion. The EU thus has a positive trade balance (exports minus imports) of € 3.2 billion. The CAGR for gearboxes was 7.1% between 2011 and

2015. The majority (55.6%) of exports were to other EU countries, while 28% was exported to developing countries. Over the last five years, exports to developing countries (CAGR of 9.5%) grew more than exports to other EU countries (CAGR of 5.6%).

Germany, France and Italy exported the most gearboxes in 2015 (€ 11.2 billion, € 2.3 billion and € 1.1 billion). The export values of Germany and Italy grew by a CAGR of 10.7% and 12.6%, while France had a CAGR of -0.4% since 2011. Romania increased their export value immensely over the last five years with a CAGR of 51.9%. Daimler announced investments of € 300 million in Romania to open a new location for assembling gearboxes.

Most of the gearboxes exported to developing countries went to China (57.4%), Turkey (11.0%) and Mexico (8.0%).

### **Tip**

When your ambition is to increase your exports towards Europe, Germany, France and Italy are the most important markets with large Research and Development (R&D) activities in the field of gearboxes. Not only are they major importing countries, they also are interesting hubs to introduce your products into other countries.

## **Production**

Production of gearboxes and parts of gearboxes in the European Union has increased by 9.2% between 2014 and 2015 (and by a CAGR of 1.7% between 2011 and 2015). Production in the Czech Republic grew especially quickly (€ 259 million in 2013 compared to € 529 million in 2014). New gearbox assembly plants of Hyundai and Škoda in the Czech Republic may have contributed to this steep increase in production.

### **Tip:**

When supplying parts or raw materials for gearboxes, the Czech Republic shows great promise for the future.

## **Consumption**

The first thing to notice is that compared to 2014, in 2015 the apparent consumption (production + imports - exports) of gearboxes in the EU grew by 43.5%. The apparent consumption in the EU dipped in 2012, then increased in value the following years. Germany has the largest automotive industry in Europe. In 2014 and 2015 Germany exported more gearboxes to other countries than it imported and produced, due to extended plant capacities. This is caused by the trade surplus that rose to record heights in 2014.

## **3. What trends offer opportunity on the European market for**

## gearboxes?

Traditionally, the gearbox industry has been driven by a search for more power, longer durability and higher reliability. Recently, efficiency, energy saving and cost reduction have gained importance. We highlight several trends regarding gearboxes.

### Environmental trends influence the production of gearboxes

Energy-saving concepts are becoming more important. The search for highly efficient gearboxes has led to lighter-weight materials, smaller gearboxes and higher operating temperatures. A good example is the 8-speed automatic transmissions which can reduce weight and improve efficiency. This leads to lower fuel consumption.

[EU legislation](#) sets emission standards for the automotive industry. These standards are getting stricter. There are several ways to reduce CO2 emissions, for example by producing a lighter vehicle or improving transmission to reduce fuel consumption. Eliminating 500 grams in gearbox weight will save as much as 0.4% fuel.

The increasingly strict requirements for cleaner engines have led to gears with higher power density. To make this possible, producers have applied new gear steels, which are cleaner than the steel used before. Newer technologies, such as indexable tooling (cutting tools with inserts), can help save the environment, improve the health of the workshop staff and save time and money.

#### Tips:

Ask your buyer for their Corporate Social Responsibility (CSR) policy and try to implement this. Provide evidence to back it up. Another possibility is to develop and implement your own CSR policy.

Communicate your efforts in the area of sustainability to the outside world (website and literature).

### The production of gearboxes changes rapidly

Manufacturers of gearboxes and parts of gearboxes have to become more flexible in their processes. The technologies change faster, batches become smaller and more varied in terms of specifications. Producers are looking at other gear-cutting methods, such as indexable tooling. The current hobbing machines can handle this new method, although older machines can be limited in spindle speed and table feed. Indexable tooling can offer 50–300% productivity gains compared to solid carbide tooling, because of the shorter tool setup time of this modular technology.

Modern engines often generate more heat than older engines; as a result, gearboxes and their parts need to deal with higher operating temperatures.

#### Tip

Keep your production technologies up to date, since newly developed methods can improve productivity and quality.

## **(Semi) automatic gearboxes offer opportunities in the long run**

Whereas in the United States 96.1% of new cars sold were built with automatic gearboxes, in Europe only 20% of new vehicles sold have automatic gearboxes. While in the past automatic gearboxes were outperformed by manuals on almost all aspects, most modern automatic gearboxes perform at least as well or even better. The popularity of automatic transmissions is growing slowly in Europe and is expected to continue to grow. However, manual gearboxes will remain the most popular in the near future. A reason for this is that manual gearboxes are cheaper to maintain and repair. There are opportunities in the production of the more expensive automatic gear boxes, since one in five new vehicles has an automatic gearbox.

## **Focus on reduction of production costs**

There is a clear trend toward lowering manufacturing costs among gearbox producers. One important improvement in production efficiency is the use of 5-axis machines, mill-turn machines, and other multifunctional machining centres to produce gears. As a rule of thumb, modern machines, tools, and processes increase productivity anywhere from 2–4 times over machines that are 10 to 20 years old.

For producers, more automation is not without risk. While a machine without automation does not offer consistency in terms of product quality and machining time, a completely automated gear machining tool misses the flexibility to deal with increasingly smaller batch sizes.

### **Tips**

Read the [CBI study on trends](#) in the automotive industry.

Talk with your buyers about their technological developments to know what will be expected from you in the coming years.

Make an effort to reduce costs.

## **4. What requirements should gearboxes comply with to be allowed on the European market?**

There are requirements for trading in the European Union and some non-regulatory requirements. These can be divided into: (1) 'musts', which you must meet in order to enter the market and (2) 'additional requirements', which consist of the relatively common requirements that most competitors have already implemented (in other words, requirements that should be met in order to stay abreast of the market).

### **Tips:**

Read our study on [buyer requirements](#) on the Market Intelligence Platform of the CBI for additional information on legal and non-legal requirements.

For more information on the legal requirements for your product, go to the [EU Export Helpdesk](#).

## Musts

### Gearboxes are tested by Whole Vehicle Type Approval

[Whole Vehicle Type Approval](#) (WVTA) is a certification for various types of motor vehicles and their components. The WVTA is valid in all EU member states, and it is required when selling any products within the EU. Consult Directive [2003/37/EG](#) for information on type approval of several kinds of motor vehicles. This directive states that various combinations of engines, gearboxes, and powered and steered axles must be [EC type-approved](#), which means that it meets certain technical, safety and regulatory requirements. Many automotive components are not approved until the final assembly, in which case certification of individual components is not necessary.

### Gearboxes and their parts need to be coded

Once the vehicle is finished, the [End of Live Vehicles](#) (ELV) Directive aims to avoid environmental pollution during the scrapping process by reducing the hazardous materials used in vehicle production. Vehicles must be designed to facilitate proper dismantling and recycling by coding the parts. For gearboxes, this means that the oils must be removed when the gearbox stops functioning.

Provide the requested information when exporting oils or other chemicals

Consult the [REACH regulations](#) (Directive 1907/2006/EC) when exporting chemicals, such as the oil used in gearboxes. In practice this means that the producer must provide information on the chemicals used in the product. The protective and anti-corrosion oils used in packaging are such chemicals.

### Buyers demand quality management systems

In order to apply for type approval, production processes need to meet quality management criteria. [ISO TS/16949](#) has a focus on the design, development and production of automotive-related products and [ISO 9001](#) is a more general quality system. Both are accepted as standard requirements and EU buyers and manufacturers often insist on them. Mind that ISO/TS 16949 will be replaced in early 2017.

Customers often refer to ISO standards. The standards referring to gears are [ISO 21.200](#) and [TC 60](#). There is a range of standards for each type of gear, addressing matters such as the calculation of load capacity, inspection methods, design and accuracy requirements.

#### Tips:

Implement [ISO 9001](#) or [ISO TS/16949](#), as it is a standard requirement of EU buyers.

Check with your buyer, or with [the approval authority of the country you want to export to](#), what the specific standards are for the parts you are manufacturing.

### Packaging and labelling need to meet several requirements

In general, packaging is determined by the buyer. In the automotive industry, this is either the Original Equipment Manufacturer (OEM) or the retailer or wholesaler in the aftermarket. In most cases, OEM suppliers use returnable packaging, in order to reduce costs and improve efficiency. Returnable packaging is recycled by the OEM or by a designated packaging operator. In the aftermarket sector, packaging is typically disposable.

Usually, gears and gearing systems are coated with a rust preventative (the shelf life must be at least two years) before being packed and shipped. Packaging consists of an inner package and an outer package. The inner package is oilpaper or a plastic envelope, to avoid dispersion of the protective oil, or sometimes hermetically vacuum-sealed synthetic pouches. The outer package is usually a carton lined with plastic sheeting. The package for ocean transportation is a wooden, steel or plastic pallet, wrapped in plastic sheeting and packed with metal strips. The sizes of the boxes depend on the weight per box and handling possibilities.

In addition, packaging should always be labelled. The outer package should include the brand name and type number. This is not only for the purposes of identification during transport, but also to indicate the quantity, weight, the products themselves and the producer's name.

Note that in order to export to the EU, product packaging must comply with EU standards and legislation. This means that the packaging is restricted to maximum levels of heavy metals ([Directive 94/62/EC](#)).

### **Tips:**

Identify the buyer's requirements and specifications for the product, the materials and packaging.

For additional information on requirements for packaging and packaging waste, refer to the [European Commission](#). Additional requirements apply to [wood packaging](#).

## **Additional requirements**

### **Producers may need to sign a non-disclosure agreement**

When quoting for gears or gearboxes with reference to drawings, the buyer may require you to sign a non-disclosure agreement (NDA). This confirms that you will not disclose details of the drawings, as they are confidential to the client. Failure to comply with the NDA could lead to legal proceedings against your company. After submitting a quotation, exporters from developing countries are almost always asked to provide samples prior to any order being granted.

### **Additional social and environmental issues**

European buyers often expect a certain level of social and environmental responsibility from their suppliers, including for suppliers of gearboxes. More information about these requirements can be found in our [study on Buyer Requirements](#) in the automotive industry.

### **Tips**

Most major car brands publish their CSR policies and supplier codes of conduct on their websites. An internet search for these codes of conduct is likely to yield valuable insights with which to assess your company's performance by comparison.

Implement an environmental management system (like [ISO 14001](#)), as European buyers require it more and more frequently.

For more information on non-legal requirements generally accepted in Europe, we refer to the [International Trade Centre's Standard Map](#).



Determine whether your buyer uses the [International Material Data System \(IMDS\)](#). This is a collective, computer-based data system developed by automotive OEMs to manage environmentally relevant aspects of the different parts used in vehicles. It has been adopted as the global standard for reporting on material content in the automotive industry.

## 5. What competition do I face in the European Union?

There is huge competition on the market for gearboxes and their parts, since there are a large number of companies that manufacture these. Key players in the European gearbox market are [Eaton Corporation](#), [Continental AG](#), [ZF Friedrichshafen](#), [Volkswagen](#) and [GKN PLC](#) among others.

### Tips:

Additional sector-level information is provided in the [CBI study on competition](#) within the automotive industry.

Read the [CBI Tips for doing business with European buyers](#) in the automotive industry.

Implement effective quality control (deliver only high-quality products). The ability to produce products according to the exact specifications that OEMs provide can be an advantage. Delivering consistent quality is desirable.

Build successful industrial relationships with downstream firms by providing after-sales service and repairs.

Create an extensive distribution network (sales channels). Supplying products through a wide retail distribution network can decrease costs and increase competitiveness.

Undertake technical research and development. Advances in technology and the skills of employees in using the newest technologies can help to maintain competitive advantage. These skills can help in producing cost-effective and high-quality products.

## 6. What do the trade channels and interesting market segments for gearboxes look like in Europe?

A general overview of the European market channels and segments for automotive parts and components is available on the CBI Market Intelligence Platform. The market channels and segments for gearboxes do not differ significantly from those for the sector in general, since gearboxes are distributed via both OEM Distribution Networks and Independent Distribution Networks.

### Tip

Read the [CBI study on Channels and Segments](#) in the automotive industry

Exhibit at leading trade fairs in Europe, in particular [Motion, Drive & Automation](#) (MDA) at the Hannover Messe (held in Germany every other (odd) year) or [Motek](#) (annually held in Germany).

## 7. What are the end-market prices for gearboxes?

In order to source from a developing country/overseas, European buyers require a 30% price difference with gearboxes or parts of gearboxes from European origin. This is to cover all costs involved in global sourcing, such as inspection costs, transport costs, costs of maintaining overseas relations including visits, higher stock levels because of longer delivery times, import duties and extra quality assurance costs.

A new manual gearbox ranges in price between € 1,600 and € 3,100 on average. New automatic gearboxes are pricier and range between € 2,000 and € 3,800. Reworking a gearbox with only some parts costs between € 500 and € 2,000. The price varies widely depending on the make and model of the gearbox.

### Tips

In order to better ascertain prices of specific products and models, you should talk directly to wholesalers and local experts. The only way to gain information about products or materials within specific markets is with inside information.

Aim to charge the price that the market will bear, and keep in mind the quality-price ratio of your products. This ratio should be in line with competitors' prices.

Pricing requires a combination of knowing your domestic costs and calculating costs that you will incur in delivering and supporting your activities in a foreign market.

Bear in mind that it is not easy to increase prices once you have agreed to deliver at a certain price. The negotiated price should never be below your cost price (except for the first order; in this context you may accept a loss if larger quantities – and thus lower costs – are expected for the following orders). No European buyer will accept an unreasonable/unexpected price increase after the first order.

Include currency risk in the contract.

Use contracts with variable material costs. It is important to set the reference index for the fluctuations in agreement with the buyer. Use, for example, the steel index of the London Metal Exchange.

Because Tier 1 suppliers are trying to decrease the number of partners and because their margins are under pressure, you should increase your production volume. This could be achieved through strategic mergers.