

# Drive solutions for the oil and gas industry.

**maxon Heavy Duty drives: Robust design for extreme operating conditions.**



**maxon motor**

driven by precision

# Founded in Switzerland. Available worldwide.

## **maxon – a strong global brand.**

maxon motor, with headquarters in Sachseln/Central Switzerland, has production sites in Switzerland, Germany, Hungary and South Korea, as well as sales companies in more than 30 countries. Our machines and product lines are developed in-house to guarantee cost-effective manufacturing of our products and enabling us to create custom solutions to fit your specific application needs.

## **Driven by precision.**

maxon motor is the worldwide leading provider of high-precision drives and systems up to 500 W. We develop and manufacture brushed and brushless DC motors with a unique ironless winding as well as motors with iron cores. The maxon modular system also includes planetary, spur and special gearheads, as well as encoders and control electronics.

You can find maxon's drive systems in industrial automation, medical technology, aerospace, and many other markets.

# When it's about Heavy Duty drives.



**Operating temperatures (-55...200°C)**



**Withstands high shock loads and vibrations:  
1000 g/25 grms**



**Highly reliable, even in harsh environments**

## **New materials and process technologies.**

The ironless core winding and high performance rotor is the "heart" of maxon heavy duty motors. Together with the powerful gearhead, maxon provides high torque drive solutions. Most parts of heavy duty drives are made of stainless steel. The connections by press fit and additional laser welding gives a reliable and very robust behavior to the drive system.

## **maxon's commitment.**

Whether you need a standard or custom product, we are here to direct you to the best solution for your application. Contact us: [contact.maxonmotor.com](https://contact.maxonmotor.com)



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Plugging  
Cutting  
Generator  
Completion  
Exploration  
Pulser  
MWD  
Packer  
Valve settings  
Wireline

# Down hole drilling

Rotary Steerable System (RSS)

## Inspection & Testing

Logging  
Tractor  
Fishing  
Drilling  
Intervention



## Measurement While Drilling.

Measurement While Drilling (MWD) uses a measurement module located behind the drill head in the string. The tool's control system measures variables such as angle, vibration, and drilling speed. The "pulsar" unit sends the collected information back to the surface, across several thousand meters, through pulses in the drill mud (MPT – Mud Pulse Telemetry).

The pulses are generated by the actuator system that is driven by maxon's Heavy Duty assembly. Providing reliable data information to the drilling technicians is critical so they can respond quickly and make corrections as needed.

## MWD – The maxon solution.

### EC 22 HD brushless DC motor with GP 22 HD planetary gearhead.

- Ultra compact (Ø22 mm), highly efficient (>75%) and powerful (240 W) drive solution.
- Fully welded stainless steel assembly along with encapsulated samarium-cobalt magnet.
- High temperature ironless core winding, proven to withstand temperatures up to 240°C.
- Gearhead designed for high torque (12 Nm overload torque).



# maxon Heavy Duty technology.

maxon drives set the world in motion.



## Versatile EC-4pole 32 HD, 480 Watt

Brushless DC motor with ironless rotor, Ø32 mm.  
For applications in air or oil. 220...480 Watt.

With Hall sensors or sensorless.



## Compact EC 22 HD, 240 Watt

Brushless DC motor with ironless rotor, Ø22 mm.  
For applications in air or oil. 80...240 Watt.

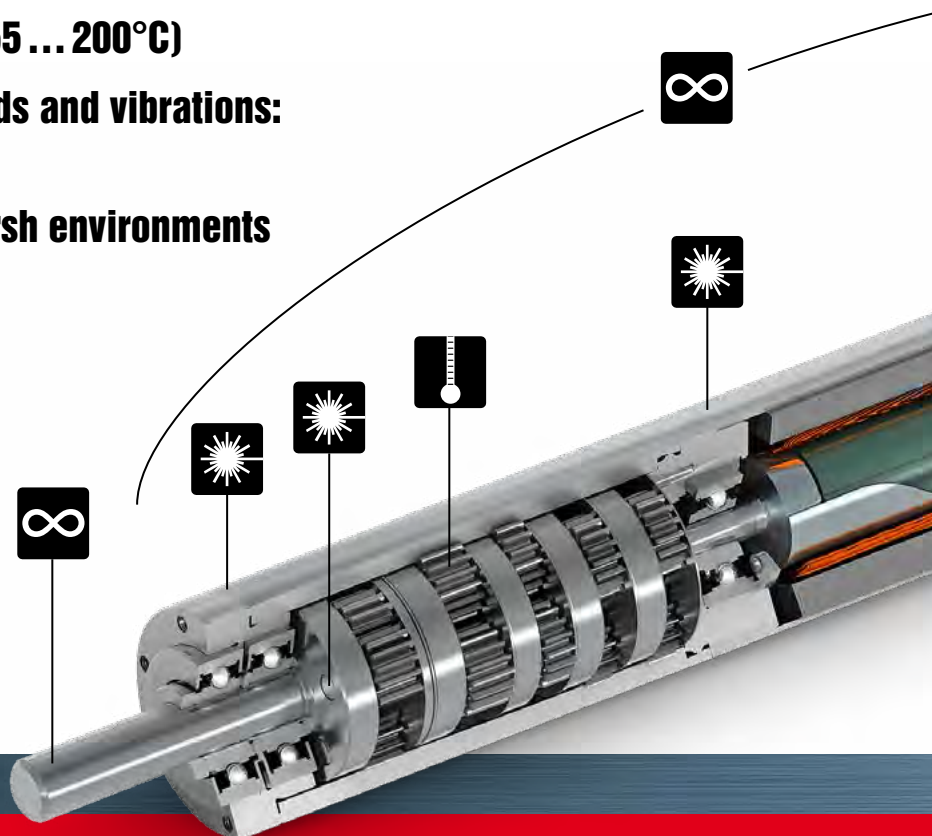
With Hall sensors or sensorless.



 **Operating temperatures (-55 ... 200°C)**

 **Withstands high shock loads and vibrations:  
1000 g/25 grms**

 **Highly reliable, even in harsh environments**



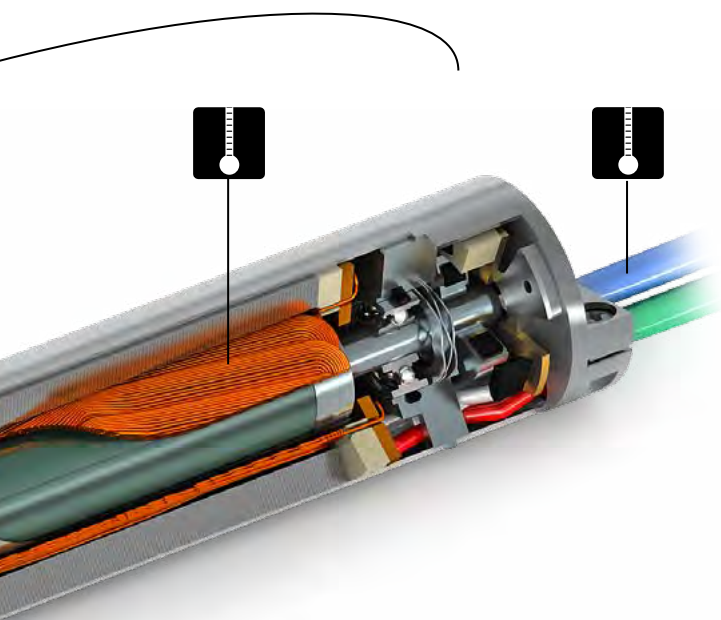


### **Gearheads and sensors maxon modular system**

- Extremely robust HD gearheads available in Ø22 mm, Ø32 mm and Ø42 mm diameters
- Also available with spindle drives, special gearheads or resolvers

### **Customized maxon special design**

- The perfect fit for your application
- Based on our standard solutions
- Benefit from our 50 years of experience in configuring drives for extreme applications



### **Key advantages of maxon HD motors.**

- **Wide temperature range (-50 ... 200°C)**  
Component tested up to 240°C
- **Robust design**  
Laser welded connections
- **High performance / volume ratio**  
Compact, low mass design
- **High quality / reliability**  
Production process control
- **Low energy consumption**  
High efficiency
- **Excellent control properties**  
Linear motor characteristics
- **Operation in air or in hydraulic oil**
- **Low magnetic interference**

# Quality tests.

## Reliable and efficient.

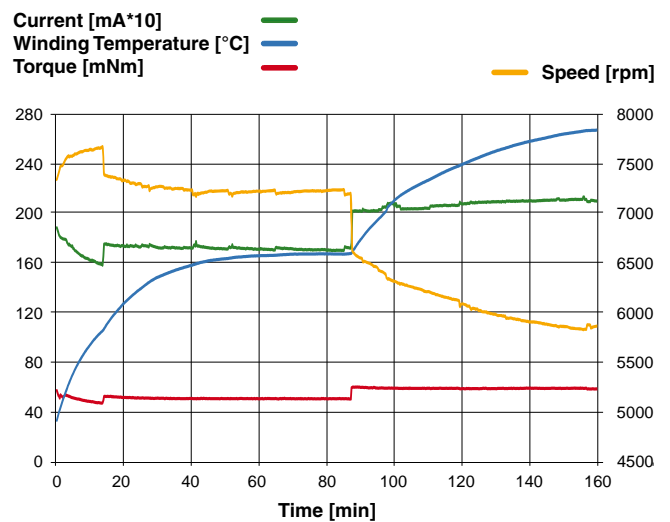
In the development phase, we push our drives to their limits. Our in-house laboratory provides us with the ability to simulate extreme conditions and perform standard maxon tests to ensure that the products we offer our customers are robust and reliable.



## Internal full load test.

We test the motors in hydraulic oil, at extreme temperatures, and under full load during continuous operation, heating the winding up to the specified maximum temperature. Continuous monitoring provides information on the drive's function.

### Load test EC 22 HT (50-60 mNm at 200°C in oil)







## Vibration and thermal stress test.

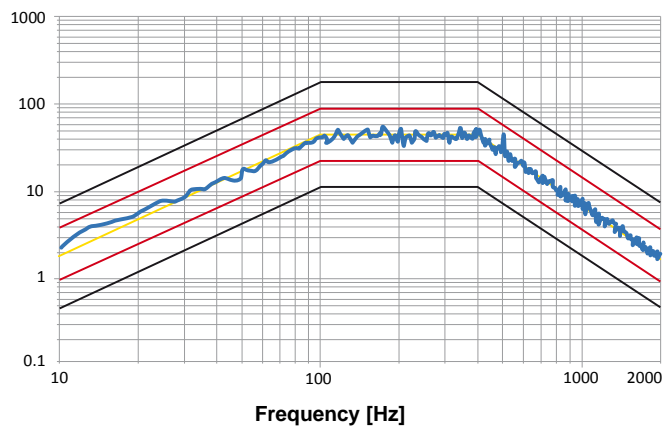
The drives are placed in a climate controlled cabinet and subjected to simulated high vibration. At high temperatures, the motors must withstand the vibration in all directions.

## Shock test.

The laboratory system realistically simulates a variety of shock loads of more than 1000 g. After the shock test, the drives must be fully functional.

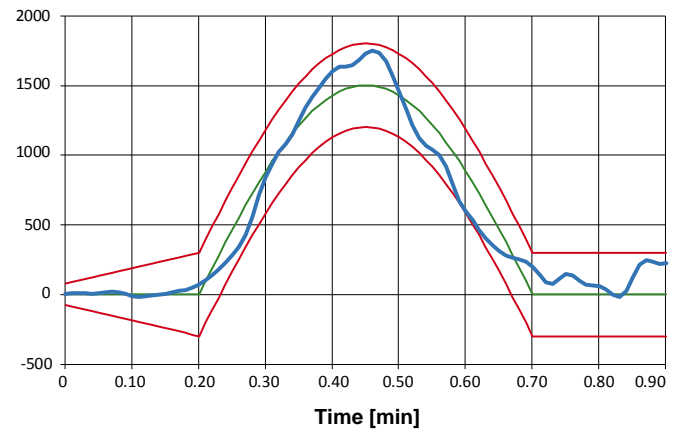
### Random vibration 17.4 grms

Acceleration Spectral Density [(m/s<sup>2</sup>)/Hz]



### Half sine pulse (MIL-STD-202G Method 213B)

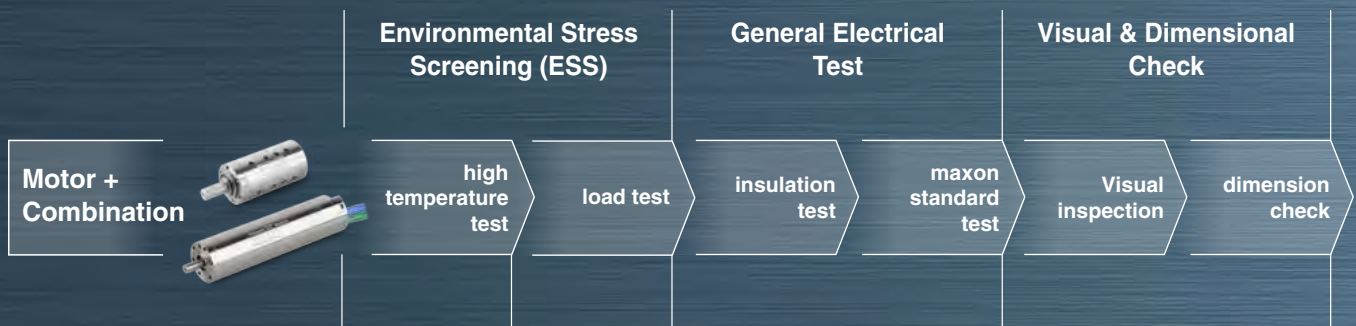
Acceleration [g]





## Standard test procedure.

Prior to delivery to the customer, all of maxon's HD drives have to pass our standard test procedure.



A world map with a dark blue background. Several white circles are overlaid on the map, highlighting specific regions. One large circle in the top left contains three dots representing Germany, Switzerland, and Hungary. Another large circle in the top right contains a dot representing South Korea. There are also several empty white circles of varying sizes scattered across the map, including one in the bottom left, one in the bottom right, and two in the middle right area.

Germany  
Switzerland Hungary

South Korea

# A global network.

Everywhere in the world, maxon motor's sales engineers collaborate with customers to develop tailor-made drive solutions.

- **maxon Manufacturing Companies**

Switzerland (headquarters), Germany, Hungary, South Korea.

- **maxon Sales Companies**

Australia, Belgium/Luxembourg, China, Denmark, Germany, Finland, France, Great Britain, India, Italy, Japan, South Korea, the Netherlands, Norway, Austria/Hungary/Slovenia/Romania, Sweden, Switzerland, Spain, Taiwan, Czech Republic/Slovakia/Poland, USA.

- **maxon Sales Agents**

Brazil, Hong Kong, Israel, Canada, Malaysia, Russia, Singapore, South Africa, Thailand, Turkey.

For detailed contact information please visit [contact.maxonmotor.com](https://www.maxonmotor.com)

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# maxon motor at a glance.

maxon motor is the worldwide leading provider of high-precision drives and systems up to 500 W. We develop and manufacture brushed and brushless DC motors with a unique ironless core winding as well as motors with iron cores. maxon motor's modular system includes planetary, spur and special gearheads, as well as encoders and control electronics. High-tech CIM and MIM components are manufactured in a specialized facility. maxon motor stands for top quality, innovation, competitive pricing, and a worldwide distribution network. What matters most, however, is the high quality of the customer-specific solution that we create with you and for you.



[www.maxonmotor.com](http://www.maxonmotor.com)

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