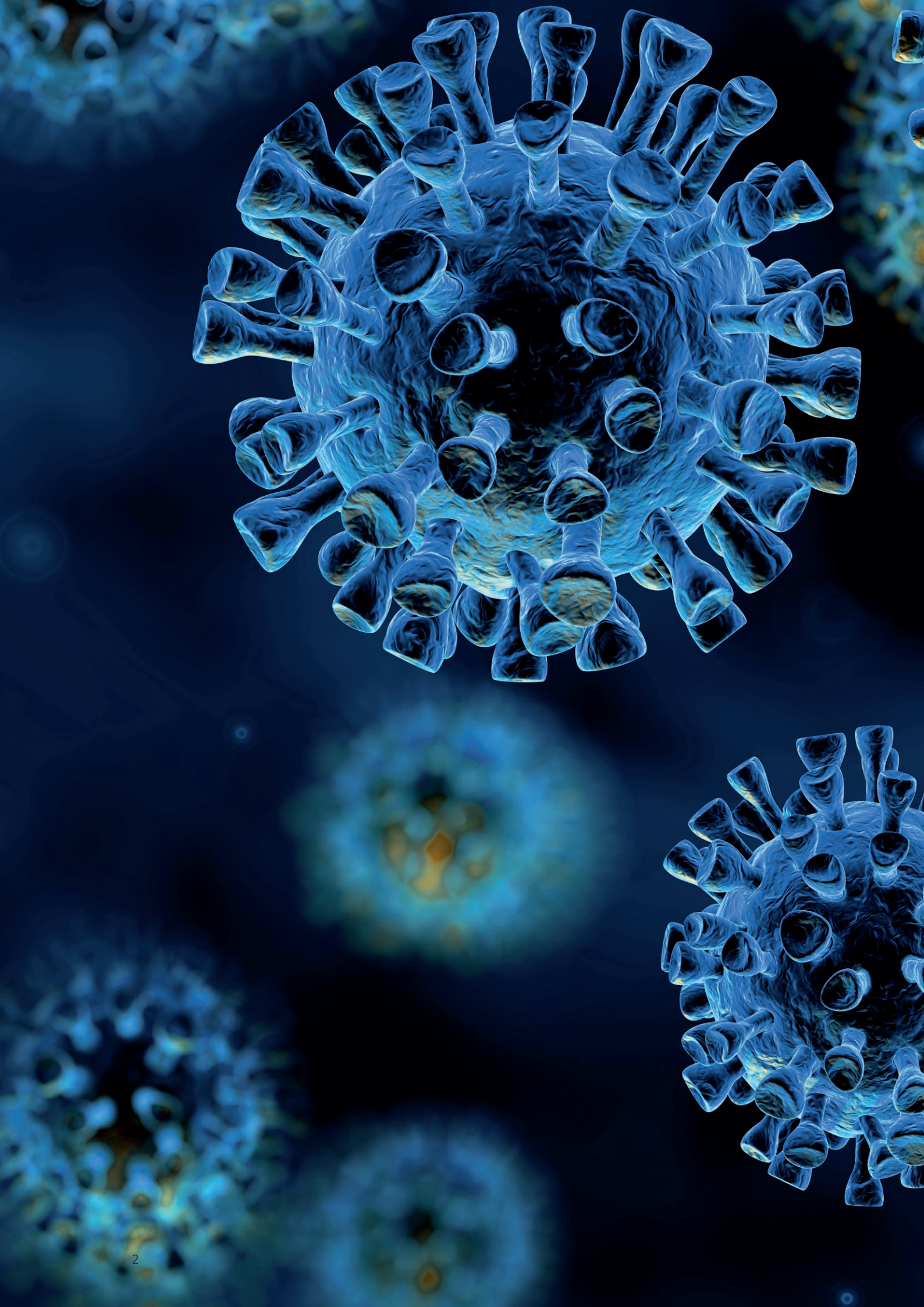


FOCUS COVID-19

FAULHABER Market solutions

Drive Systems for Healthcare, Medical & Laboratory Equipment

WE CREATE MOTION

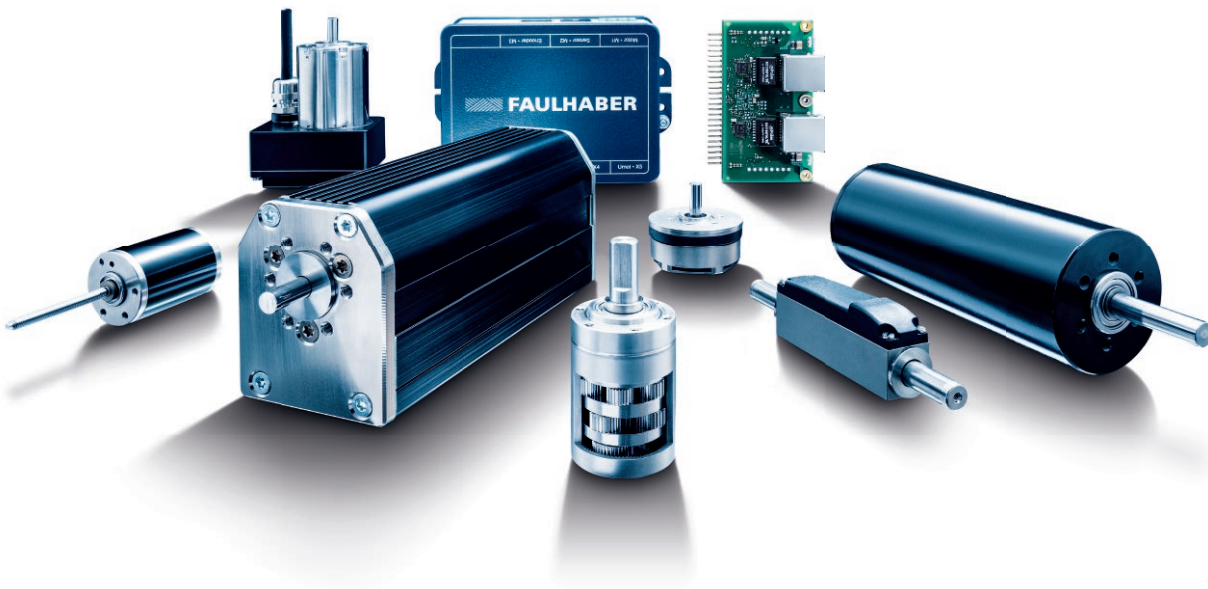


Rising to the challenge

The coronavirus and the disease it causes, COVID-19, have the world on edge. The number of people who have fallen ill and who have tested positive for the virus continues to rise. To slow the spread of the pandemic, measures – some of which are very drastic – are being taken around the world. At the same time, laboratory and diagnostic capacities are being created and expanded to allow tests to be analyzed faster and to perform research using antibodies and immunity data to help develop vaccines. But the protection of the people who are fighting for the lives of hospitalized patients must also be seamless and function as reliably as the ventilators for ill patients. For these important and in some cases life-sustaining systems, FAULHABER develops and delivers key components with its drive systems. In addition to the high standards of EN ISO 9001 and 14001, FAULHABER is also specially certified for medical products acc. to EN ISO 13485.

Active against corona

The health of employees has top priority! The FAULHABER GROUP has preemptively implemented the maximum possible health protection measures at all locations so the company can continue to supply all customers with drive systems for the currently so urgently needed devices and is thereby doing its part for the healthcare of the population and containment of the COVID-19 pandemic.





Ventilation systems

The need for ventilation systems around the world has increased rapidly in a just a very short time, with many countries currently stocking up and expanding their capacities. To ensure the supply with oxygen, so-called CPAP (continuous positive air pressure) machines are being used in non-invasive cases to support breathing. In intensive care, where the critically ill are generally sedated, ventilation is performed invasively by means of intubation. For manufacturers of ventilators, the controllability of the speed, the low-vibration and quiet running as well as the reliable and low-maintenance operation play a decisive role for the air flow control – properties that are an ideal match for the drives from FAULHABER.

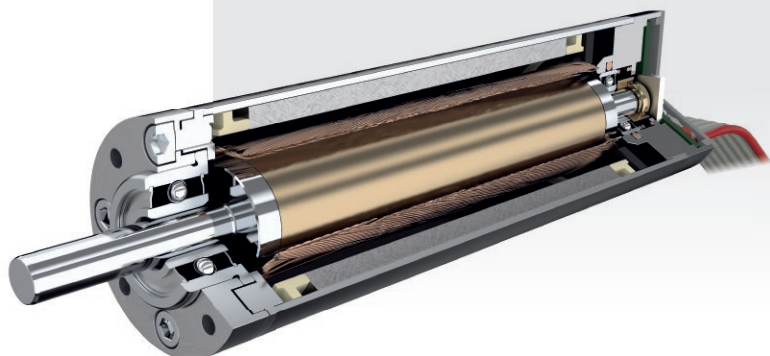
FAULHABER Drive Solution

Proven products

- Brushless DC-Servomotors – FAULHABER B, BHx, BXT
- DC-Micromotors with graphite commutation

Benefits

- Easy speed control
- Low-vibration, quiet operation
- Very high dynamics through low inertia
- Very high speeds are possible



Personal protective equipment (PAPR)

Respiratory protection is an especially important part of personal protective equipment. After all, the virus spreads through respiratory droplet transmission. Closed PAPR systems (powered air-purifying respirators) provide ideal protection for medical personnel. Closed PAPR systems (powered air-purifying respirators) provide ideal protection for medical personnel. Wearable ventilation systems provide filtered, contaminate-free air via a fan. This allows medical professionals and clinical personnel to be personally protected from exposure to the virus, while still being able to care for COVID-19-infected patients. A PAPR requires drives that are lightweight, compact, and powerful. Especially for current conditions, the PAPR motors must also be reliable and high efficiency, to keep up with the longer staff shifts and increased demand of essential medical staff. The FAULHABER portfolio includes precious-metal commutated DC-Micromotors as well as brushless DC-motors that are ideally suited for this application.



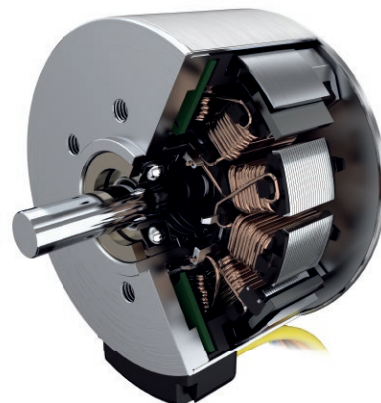
FAULHABER Drive Solution

Proven products

- DC-Micromotors with precious-metal commutation – FAULHABER SR
- Brushless DC-Servomotors with external rotor technology – FAULHABER BXT

Benefits

- Low power consumption and high efficiency in battery operation
- High power density in a compact design
- Both high operation reliability as well as long service life





FAULHABER drives also provide movement for transporting samples between individual analysis stations.

Laboratory automation

An expansion of testing capacities is considered an important part in the fight against COVID-19. The more tests that are performed, the more that is learned about the virus. For people experiencing potential symptoms of Covid-19, it's critical that these individuals have access to quick, accurate testing resources to confirm the suspected diagnosis, and also to identify an effective prognosis. Currently, the preferred test for detecting a corona infection is the polymerase chain reaction (PCR) test. Because this is very complex, there is no getting around automated laboratories with a high throughput. Small servo drives for lateral and rotational positioning are very often needed in the analysis devices. With these drives, high dynamics and precision are especially important. FAULHABER DC-Micromotors and bell-type armature motors with integrated encoders optimally satisfy the high demands during continuous use in medical test laboratories.



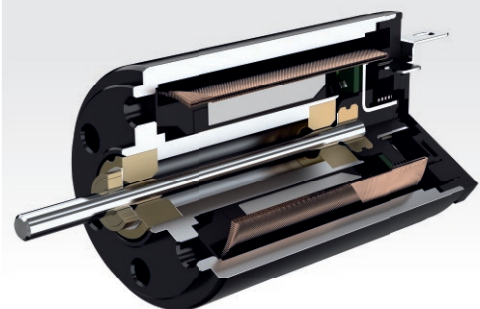
FAULHABER Drive Solution

Proven products

- DC-Micromotors with precious metal or graphite commutation
- Brushless DC-servo and flat motors
- Stepper motors
- Linear DC-Servomotors

Benefits

- Complete solutions consisting of motor, gearhead, encoder and controller
- Compact design and light weight for highly dynamic movements in the machines
- Wide range of rotary and linear motors





Point-of-care (PoC) analysis

If results need to be available promptly so that decisions can be quickly made in, e.g., intensive care units, outpatient departments or doctors' practices on the basis of laboratory values, so-called point-of-care test are called for. These are used to detect parameters such as heart enzymes and blood values on-site or can be used with PCR tests to quickly verify the presence of pathogens like SARS-CoV-2 on swabs. Analysis devices for use in PoC tests are nearly fully automated and, through the use of test strips, require only very few actions by the user. Drives for these applications must therefore be as compact as possible yet still be reliable and fast. FAULHABER DC-Micromotors with graphite or precious-metal commutation or stepper motors are a good choice.

FAULHABER Drive Solution

Proven products

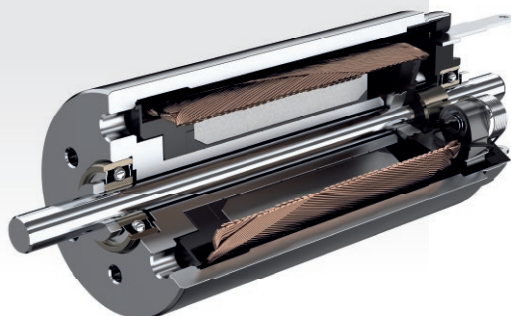
- DC-Micromotors with precious metal or graphite commutation
- Stepper motors

Benefits

- Compact design
- High power/volume ratio
- Long service life and reliability
- Low maintenance requirements

Options

- Drive systems with lead screws
- Output shaft with customer-specific pinion
- UL-compatible cable with connector
- Encoder with line driver





Infrared thermometry

Shown in simplified form, a lens in an infrared thermometer focuses the thermal energy of an object, e.g., a building, a person or an animal, onto a detector. The associated thermal radiation is converted into electrical signals and ultimately into an image or a numerical value. Thus the operator of the device can quickly identify the temperature in a room, or in the case of Covid-19, the detector can indicate an elevated temperature or fever of an infected individual. This technology is therefore used worldwide at control points, such as border crossings. Compared to other measurement methods, infrared thermometers have an advantage that they can be used to detect and measure temperature without requiring direct contact, and results are recorded with portable instruments. FAULHABER stepper motors have a compact design, are powerful, low-vibration, quiet and energy efficient. These drives are predestined to provide support in infrared cameras during swivel and tilt adjustment, zoom, focus or shutter control for calibration.

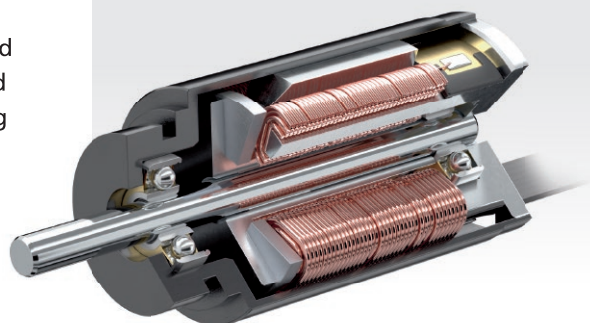
FAULHABER Drive Solution

Proven products

- FAULHABER stepper motors

Benefits

- Cost effective positioning drive without encoder
- Extremely fast change of direction possible for fast focusing

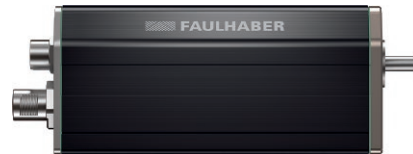


FAULHABER Drive Systems at a glance



DC-Motors

Outer diameter	6 ... 38 mm
No-load speed	up to 20 200 min ⁻¹
Cont. output torque	0.17 ... 224 mNm



Motors with integrated electronics

Outer diameter	15 ... 40 x 54 mm
No-load speed	up to 16 300 min ⁻¹
Cont. output torque	1.8 ... 160 mNm



Brushless DC-Motors

Outer diameter	3 ... 44 mm
No-load speed	up to 61 000 min ⁻¹
Cont. output torque	0.01 ... 217 mNm



Stepper Motors

Outer diameter	6 ... 52 mm
Steps per revolution	up to 24*
Cont. output torque	0.25 ... 450 mNm

* Full step per revolution



Linear DC-Servomotors

Stroke length	15 ... 220 mm
Speed	1.8 ... 3.2 m/s
Continuous force	1.03 ... 9.2 N



Precision Gearheads

Outer diameter	3.4 ... 44 mm
Reduction ratio	from 4:1 to 983 447 : 1
Cont. output torque	0,88 mNm ... 16 Nm



Encoders

Principle	optical, magnetic
Channels	2 ... 3 / absolute
Lines per revolution	16 ... 10 000 / 4 096 absolute



Drive Electronics

Power supply	4 ... 50 V
Cont. output current	up to 10 A
Interfaces	RS232, CANopen, EtherCAT

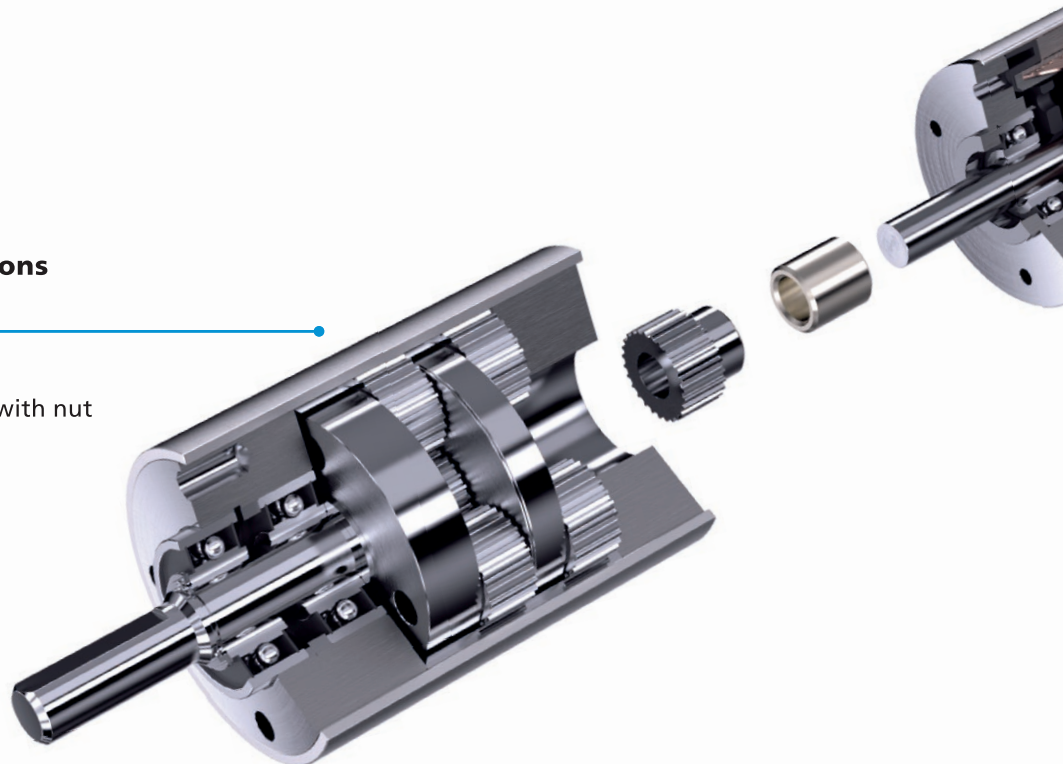
From Standard to Custom Solution

The FAULHABER standard range can be combined in more than 25 million different ways to create the optimum drive system for a particular application. At the same time, this technological „construction kit“ is the basis for modifications which allow us to configure special versions to meet the specific needs of customers.

High-performance engineering and extensive application expertise also make us a valued partner for the development and production of customer-specific drive solutions. The solutions range from special components specifically or custom-designed for the application to system partnership with automated production for complex mechatronic assemblies.

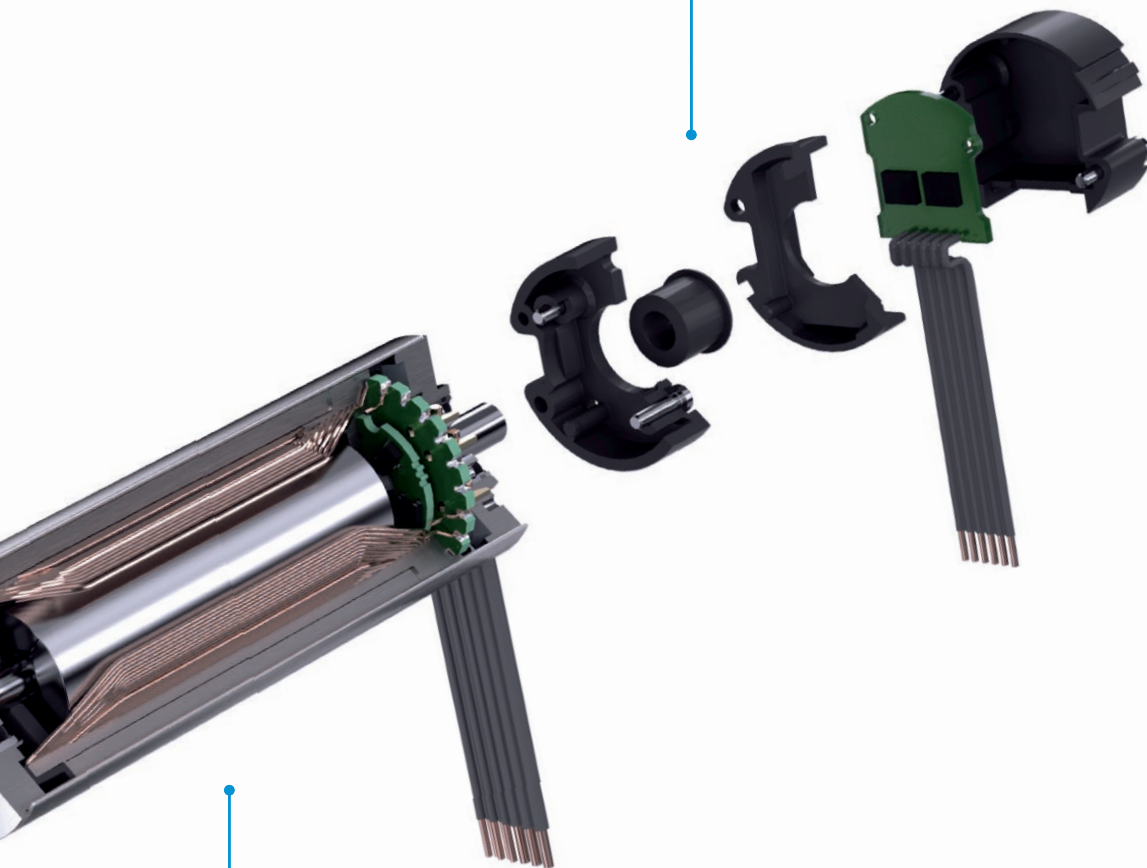
Gearhead modifications

- Special output shaft
- Special ball bearing
- Customized lead screw with nut
- Customized pinion
- Zero-backlash version



Encoder modifications

- Encoder cable
- Line driver
- Customized firmware
- Alignment between encoder and motor/gearbox flange



Motor modifications

- Customized housing design
- Bio-compatible lubricant and adhesive
- Autoclavable
- Optimized magnet and sheets
- Special winding
- Finely-balanced rotor

MORE INFORMATION

www.faulhaber.com/products

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Your local contact