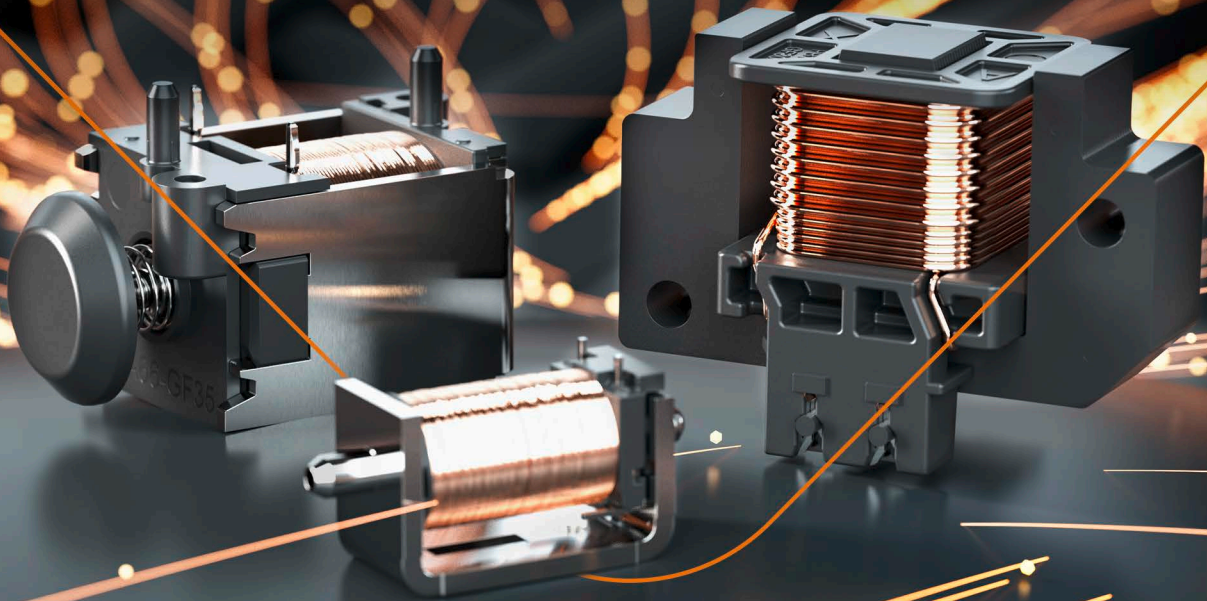


GRUNER SOLENOIDS

# INNOVATIVE SOLUTIONS, INDIVIDUAL DEVELOPMENTS



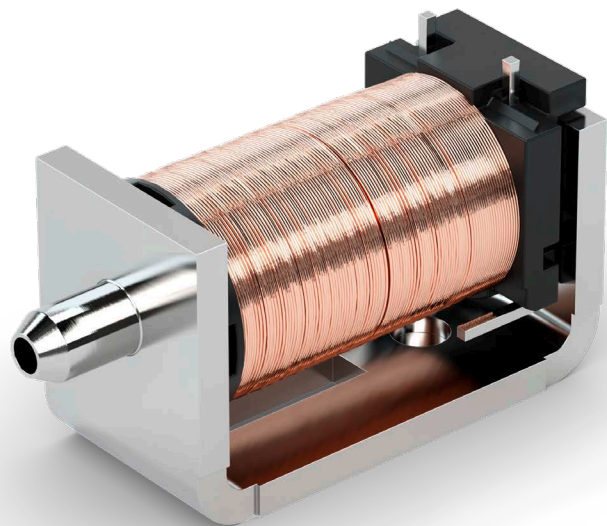


NOR DOES GRUNER KNOW WHAT WILL INSPIRE YOU IN FUTURE. **HOWEVER, OUR SOLENOIDS MAKE A GREAT SUCCESS OUT OF THE HAPTIC FEEDBACK OF YOUR SOLUTIONS.**

## OPENING AND CLOSING SAFELY – GRUNER VALVE SOLENOIDS

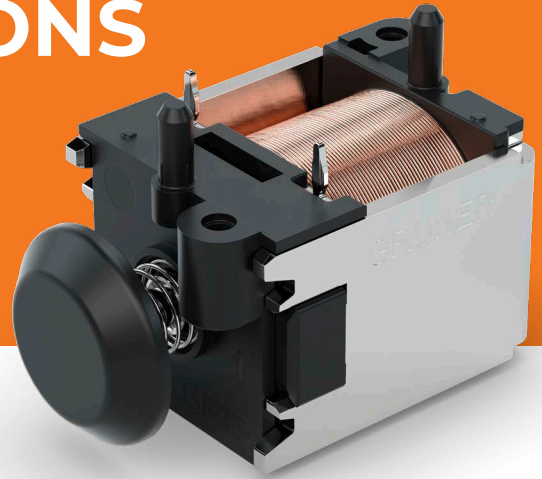
Gruner valve solenoids provide reliable functionality for many appliances. They are ideal for metering systems, as control valves for blood pressure gauges, for automotive applications, gas meters and all applications involving the control of a medium.

- › **Reliable function**
- › **High precision**
- › **Long service life**



# LINEAR SOLENOIDS AND E-CORE SOLENOIDS FOR HAPTIC APPLICATIONS

Gruner linear solenoids and Gruner e-core solenoids also provide just the right touch for medical technology and for automotive applications. All Gruner solenoid solutions – from simple plug & play linear solenoids to specially activated e-core solenoids – have long service life and great versatility in common.



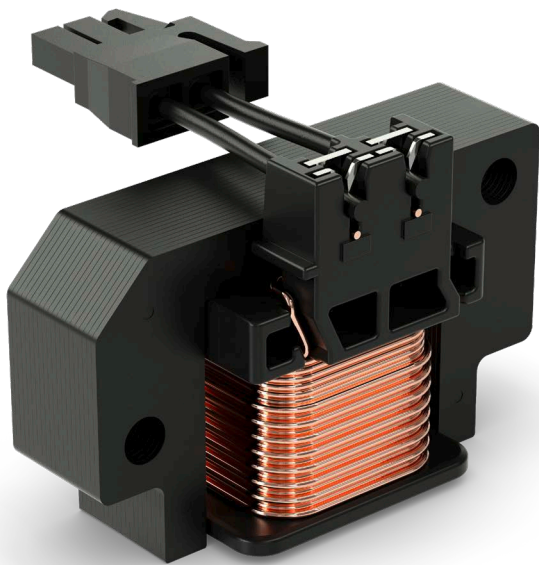
## CUSTOMER-SPECIFIC APPLICATIONS FOR AUTOMOTIVE

In the automotive sector, Gruner solenoids improve safety across an ambient temperature range of  $-40\text{ }^{\circ}\text{C}$  to  $+105\text{ }^{\circ}\text{C}$  with benefits for the environment, comfort and operability. In automotive interiors, Gruner solenoids perform quiet switching and movement of gear selector levers and in drive authorisation systems. Gruner solenoids provide a wide range of possible applications and are adapted specifically to suit individual customer requirements.



# THESE ARE A SOUND CHOICE – GRUNER E-CORE SOLENOIDS

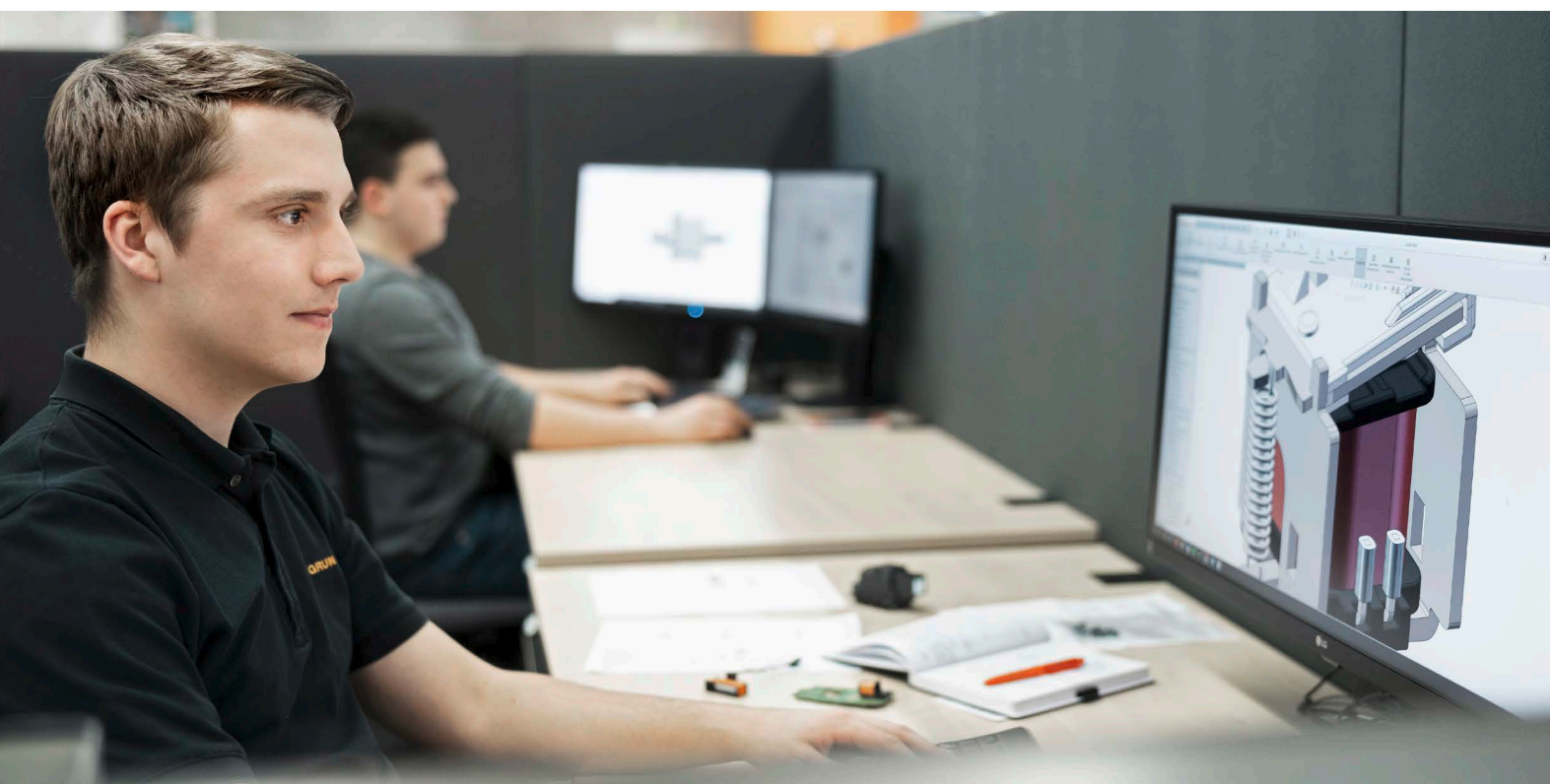
An ever greater number of solenoids with an ever greater number of functions are being required to occupy ever less space, and to weigh progressively less. We have committed to meeting these challenges, posed by the rising number of consumers and growth in the proportional share occupied by electromechanical components.



## YOUR ADVANTAGES WITH GRUNER SOLENOIDS

- > Safety
- > Reliability
- > Size
- > Weight
- > Lifetime quality
- > Time-to-market
- > Flexible quantities
- > Availability

High quality through solder-free connection of enamelled copper wire and the litz wires associated with insulation displacement connector technology



# QUALITY, FROM DEVELOPMENT TO VOLUME PRODUCTION



Gruner develops and produces solenoids that deliver innovative solutions and customer-specific benefits: examples being great safety, compact dimensions for installation and long service life. Since they have a simple design, solenoids are inexpensive actuators to suit a vast array of applications. Gruner focuses on the development and production of DC, linear and holding solenoids and has unequaled international expertise in this sector.

The high level of development expertise at Gruner enables new developments and further developments to progress very rapidly. This enables us to meet tight time-to-market schedules reliably. Ultra-modern CAD workstations, simulations, our own generously equipped test laboratory with endurance test equipment and the 100% inspection facilities for completed solenoids ensure that Gruner achieves its aspirational quality standard.

## CUSTOMER-SPECIFIC SOLUTIONS:

Gruner has been developing and producing solenoids for more than 50 years. Since the requirements of our customers – in the automotive, industrial and medical technology sectors – differ in terms of detail, our development work focuses on customer-specific solutions. The range extends across some sharply contrasting fields of technology, such as engine management and transmission control, hot water and industrial water control, access authorisation and card-reading systems, metering technology as well as solenoid solutions for applications with haptic feedback.

GRUNER AG, headquartered in Wehingen with around 1,500 employees, based in Germany, Tunisia, Serbia and India, is an exceptional manufacturer of actuators, relays and solenoids. Our system solutions for building management, the automotive industry and metering industry are in demand around the world, featuring compelling innovation and quality.

**GRUNER AG**

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