Our **Core Markets**

Automotive

In a constantly changing world in which OEMs require long-lasting and reliable products, actuators have to be able to cope with more intense vibration conditions and temperatures. That is why our ISO TS 16949 certification, which is proof of our industrial excellence in the design, industrial production and manufacture of millions of units, is so important.

- Temperature -40 /+135°C
- Vibration up to 40G
- PPM rate <10

Building Automation & Security

The new standards that apply require top quality manufactured products, which will last a long time and therefore help reducing maintenance costs. All technical development must also reflect what is key to the customer, such as high ease of use and low noise.

- Lifetime 15 years
- Noise level <30dBA
- Design integration

Motorcycles & Recreational Vehicles

Linear actuators can be used for various functions, such as idle air adjustment, suspension or for limiting sound emissions and have to operate in extreme environmental conditions. They therefore have to be highly reliable.

- Temperature -40 /+135°C
- Vibration up to 40G
- Extreme conditions: snow, rain, dust, water

Medical Equipment

Precision, reliability and lifetime are still the most decisive criteria in this segment. Products are used for instrumentation applications and patient treatment, and must last for several years. Risk management being an important factor, our process has thus been certified to ISO 13485 which guarantees the reliability of our systems.

- Precision < 0.02mm
- 10,000 hours of operation
- Low noise

Agriculture & Construction

Our drive systems, for spraying systems for example, operate in difficult climate conditions and therefore must offer robustness and accuracy. They also have to be able to fit into spaces which are often very small and hard to reach. They feature adapted mechanical interfaces so that they can be integrated into the complete system.

- Temperature -40 /+100°C
- Vibration up to 30G
- 20,000 hours of operation

SONCEBOZ
Motion systems

Our core competencies consist of design, development and production of **mechatronic drive systems** and **electric motors** that operate in **harsh environments**. We are committed to improving safety, decreasing energy consumption and minimizing the impact on the environment. Our focus on **innovation**, **best in class quality** and **exceptional service** is our key to success for worldwide OEM customers and their suppliers.

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SONCEBOZ

Motion systems
for challenging applications

SONCEBOZ
from mind to motion

Case **Studies**

Antenna position adjustment

Task: to adjust the transmitter/receiver beam of an antenna.

Challenge: to be maintenance free, as the system is installed outdoors at a great height and exposed to adverse weather.

Solution: a custom mechatronic system, which features a gear train motor, a screw-nut system, control electronics and an absolute position sensor, all in a watertight case. The system provides a force of up to 120N, and guarantees a positioning accuracy of ±0.2mm. This actuator also presents an irreversibility which can resist a force of 200N.

Adaptive lighting

Task: to adapt the light beam of the headlamp in order to avoid any glare to the oncoming or crossing traffic, keeping an optimal illumination of the road (glare free high beam).

Challenge: to be compact and provide accuracy while operating in harsh conditions: extreme duty cycles, large temperature range (-40°C to + 125°C) and vibrations up to 10G.

Solution: a linear actuator with a stroke of 25mm and a force of 35N. A position sensor is integrated so that a referencing function is possible. The design with few moving pieces makes the actuator more reliable. It also includes a special coupling which optimally transmits the force.

Idle air control

Task: to adjust the airflow entering the engine of a scooter or motorcycle.

Challenge: to be integrated in a mechanical butterfly valve which has to cope with strong vibrations and high temperatures.

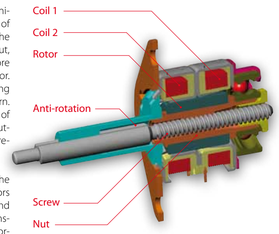
Solution: a linear actuator featuring a force of 40 N, a speed of up to 40 mm/s, and with visible connectors (lugs) so that it can be directly inserted onto the PCB. A full automatic assembly line guarantees the emphasis on a zero default process.

Linear **actuators**

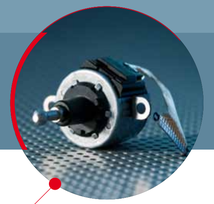
Technology overview

The linear actuator has a stepper motor and a mechanical module for converting movement. It is made up of a screw-nut system and sometimes a gear train. In the basic version, the female thread, which serves as a nut, is directly integrated in the rotor. The screw therefore goes through the rotor and allows small size actuator. An "incremental" magnetic field, generated by applying current alternately to each coil, causes the rotor to turn. This drives the screw linearly by the combined action of the thread and the anti-rotation mechanism. The output movement is a forward "step by step" linear incremental feed.

The integration of control electronics or a sensor in the actuator permits advanced functions. Linear actuators are digitally controlled, and their performances depend on the electronic driver. The signal of the driver transmits the number of steps and the speed to be performed by the rotor. The linear speed is a function of the control frequency, expressed in steps per second, and of the pitch of the screw-nut element.



Cross-section of a linear actuator with integrated rotor nut



With flexible PCB

With integrated return to 0

With special connector technology

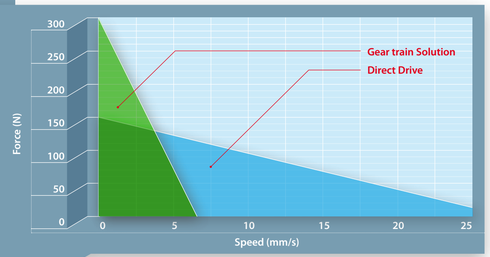
Watertight stepper motor with integrated electronics

Linear mechatronic system with position sensor

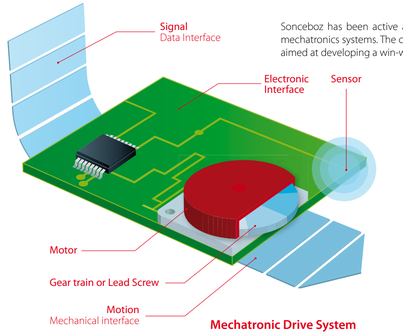
Advanced mechatronic system with CAN electronics

Performances

The range of the Sonceboz linear actuators extends up to 1 W mechanical power.
The performance is depending of the operating environment and the driving mode.



Custom solutions



Mechatronic Drive System

Sonceboz has been active and recognized for years as an expert in advanced mechatronics systems. The competency and flexibility of our Engineering team is aimed at developing a win-win partnership with our customers.

The foundation of our solutions is a solid and award winning tin-can motor already produced in million of pieces. Depending of the requirements of the application, additional features can be integrated without altering the whole compactness and precision of the system:

- Gear train
- Fail-safe
- Embedded drive electronics
- Sensor
- Customized interfaces

The choice of basic motor (technology, performance), screw and gear train allows an optimization of many parameters according to customer's specifications, like force, speed, stroke, resolution or reversibility. Linear actuators therefore constitute a simple, reliable and cost-effective solution for all positioning and flow regulating functions.

Available standard products

Some of our linear actuators are available as standard products and are designed to exceed your expectations. They offer great precision and high reliability, which allow performing under extreme conditions

Type	**increment** (mm)	**max. force** (N)	**diameter** (mm) **size** (mm)	**max travel** (mm)	**weight** (g)
7211	0.021	50	25.4	18 / 80	55
7214	0.042	35	25.4	18 / 80	50
7217	0.042	50	33	10	55
7220	0.0254	35	39.5 x 39.5	22.2 / 63.5	135
7230	0.0254/0.0508	106 / 142	63 x 63	76.2	450

Please refer to motor datasheets on **www.sonceboz.com**

From **mind** to **motion**

Development & industrialization

Product design

Process & tool design

Validation

Manufacturing process

Winding

Stator assembly

Final control