



## Motion systems

for challenging **Idle Air Control Valve**  
applications



**SONCEBOZ**  
from mind to motion

# Challenges in Idle Air Control Valve

On internal combustion engines, idle air control is achieved by regulating the air intake from the ECU according to the engines charge variations. Precise control requires linear actuators to move a pintle valve that regulates the bypass canal for the main butterfly valve. For example during a cold start, idle air control substantially reduces fuel consumption and CO<sub>2</sub> emissions.

The need to implement the latest standards represents a great opportunity for Tier I suppliers who can supply standardized products, such as mechanical throttle bodies that have been installed in many types of vehicles for several years.

Lightweight, efficient and extremely reliable, the Sonceboz linear actuator uses permanent magnet stepper motor technology to satisfy the requirements of various engine types around the world. In house component production (plastic parts, coil winding, metallic screw) is realized on full automatic processes. The actuators are then produced on automatic assembly lines that perform continuous tests to ensure that the final product reaches quality near to 0 PPM level.

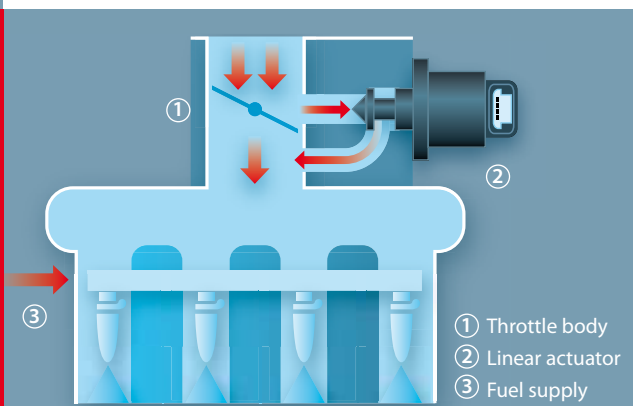
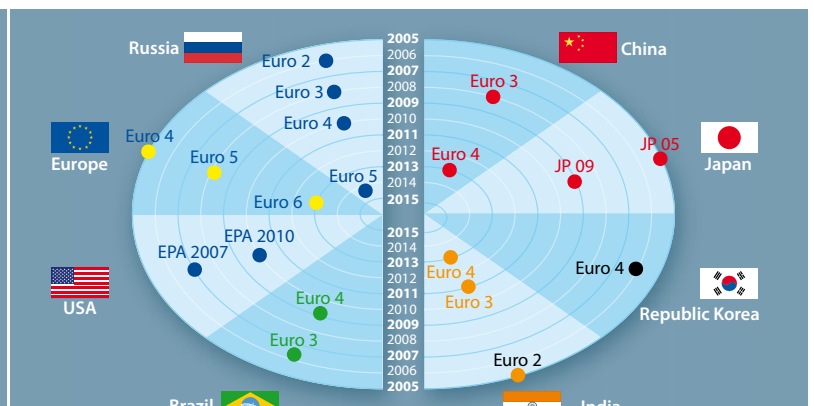


Diagram of air intake system



On-road exhausts emissions roadmap



## • Passenger Cars

IACVs were first installed in passenger cars approximately 30 years ago. Today a large number of models, especially those featured with smaller displacement engines, are equipped with this technology.

## • Motorcycles

With the introduction of EURO 3 standard, many carburetor models were updated with throttle bodies incorporating a bypass function. This made it possible to achieve fine idle air flow's adjustment for various small engines.

## • JetSkis

The latest automobile technology, combined with dedicated protection systems for marine applications, enable Sonceboz linear actuators to be installed in conditions where perfect salt water tightness is required.

## • ATVs (All Terrain Vehicles)

Reduced weight in addition to simple and robust design allow the 7217 linear actuator to be installed in specific applications like ATVs. Resistance to high vibration levels and the ability to function in harsh environments have made our product a preferred solution for this type of application.

# Our solutions

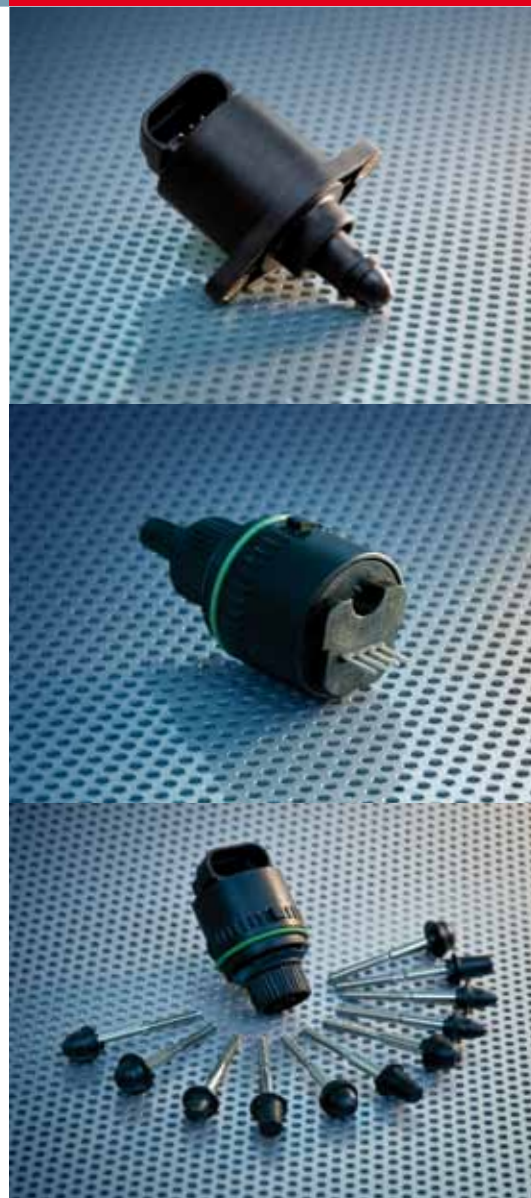
Sonceboz has been recognized for years as an expert in advanced mechatronics drive systems. This allows us to gather an in-depth understanding of customer expectations. Our outstanding track record and successful performance, emphasized by the competency and flexibility of our engineering team, create a win-win partnership with our customers.

Our solution is a Digital Linear Actuator (DLA), which is a solid and award winning permanent magnet stepper motor technology. Sonceboz DLAs are the most reliable and cost-effective idle air control solution for small engines:

- lightweight: 70 g
- force up to 40 N
- speed up to 40 mm/s
- vibrations up to 40 G from 20 to 2000 Hz
- temperature range from -40°C up to +125°C
- IP67 watertight

The 7217 Series linear actuator can be tailored to specific configurations by adapting the shape of the pintle and the housing. Production and assembly lines are fully automatized. Some components are moulded which allows a greater resistance to vibrations.

This 3rd generation of DLAs Series is continuously improved with the emphasis on a 0-PPM process. Due to the simple and rugged design, Sonceboz DLAs are now installed in millions vehicles worldwide.



...a state-of-the-art expertise proven in many combustion engines worldwide:



## Your benefits

- *High reliability thanks to a fully automated assembly line*
- *High linear force margin: no lost step*
- *50% lighter than standard solution*
- *Designed for space reduction leading to easy integration*
- *Excellent service life in harsh environments*



## SONCEBOZ Motion systems

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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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