



## Pneumatic Solutions For Pantograph Controls

### Pneumatic Solutions For The Railway Industry

Switching and regulating – pneumatics is the first choice for rail vehicles.





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### We know what matters in the railway industry

Having to move a lot every day means you need partners and a technology you can rely on. That's where pneumatics comes in – a robust and intelligent technology. Having to move a lot every day means you need partners and a technology you can rely on. That's where pneumatics comes in, a robust and intelligent technology, provided by Emerson – your innovative and experienced partner. Our product range is optimized for the special requirements of the railway industry.

Safety comes first, both for people and functions. Maximum reliability in all areas is essential. Our pneumatic components have been tried and tested, they meet the highest levels of the relevant standards and fulfill all expectations. They feature low-maintenance, economical continuous operation, and low life cycle costs thanks to their longevity.

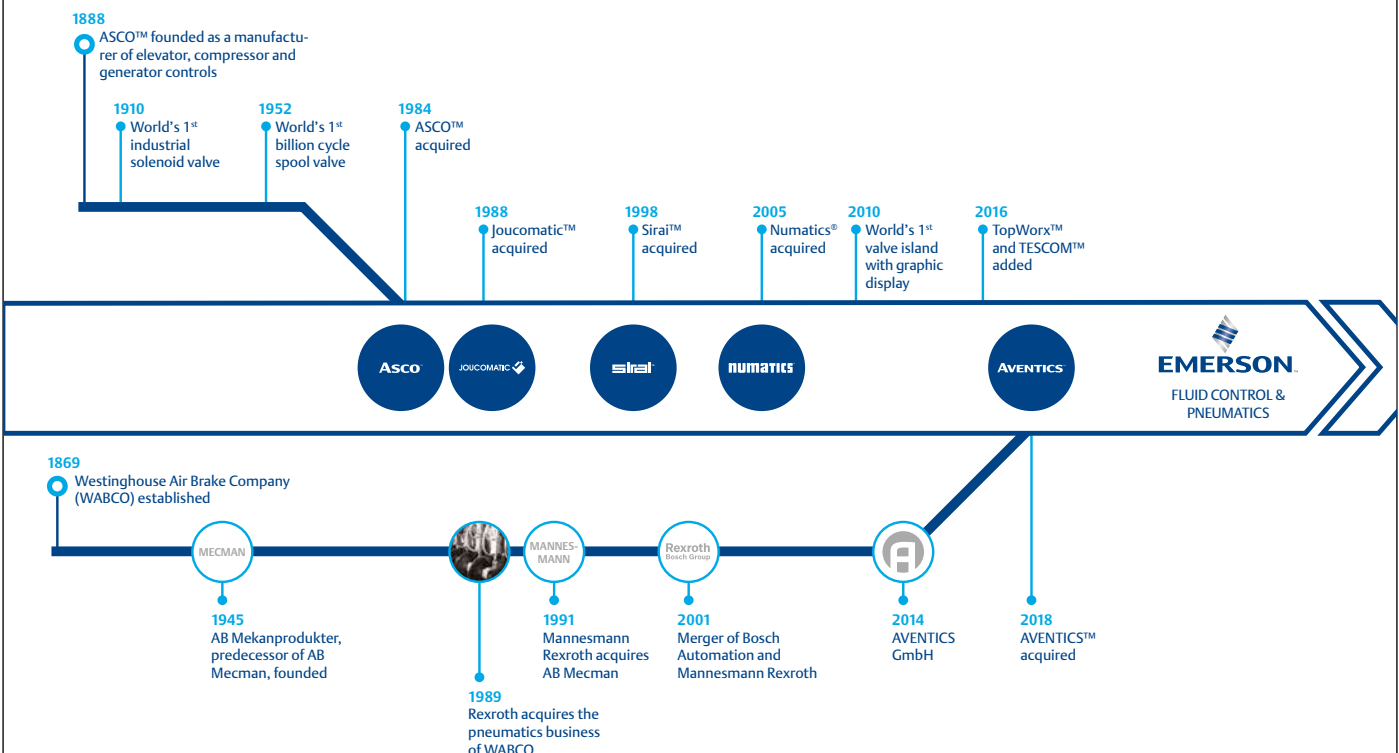
- Designed for extreme temperature ranges
- Reliable function even under extremely difficult ambient conditions
- Resistant to shock and vibration

## Railway-specific standards



- ✓ Requirements for electronic and mechanical components acc. to **EN 50155**
- ✓ Electromagnetic compatibility acc. to **EN 50121-3-2**
- ✓ Cold-resistant to -40°C acc. to **EN 60068-2-1**
- ✓ Heat-resistant to +85°C acc. to **EN 60068-2-2**
- ✓ Fire protection standards and requirements for rail vehicles acc. to **EN 45545** and **NFPA 130**
- ✓ Special requirements for shock and vibration acc. to **EN 61373** and **MIL-STD-810G**
- ✓ Corrosion resistance for > 500 hours acc. to **ISO 9227**
- ✓ Voltage tolerances +25% / -30%
- ✓ Protection class IP65 or higher
- ✓ Resistant to high humidity

## Emerson – A Respected Heritage of Fluid Control & Pneumatics Solutions



## With our experience, you are on the safe side

### Quality and reliability – our tradition

The history of our company goes back to the invention of the pneumatic brake for trains, one of the first industrial applications for pneumatics. Today, we offer an extensive range of products that not only set standards for quality and functionality in railway technology, but also offer cost-effectiveness.

- We know the special requirements and standards.
- We have industrial expertise and speak our customers' language.
- We offer established application support.

To us, close collaboration with our customers and partners is one of the key factors for global success.



*“Our deep knowledge and expertise allows us to serve all modern railway applications.”*

Frank Gevers – Business Development Director Rail – at Emerson

# Pantographs

## No room for compromise – pantographs have to work: at any speed, in all conditions

The complex control electronics in rail vehicles require a continuous power supply. The challenge lies in reliably maintaining the contact between the carbon strip of the pantograph and the catenary. But not pushing against the catenary line too hard to prevent wear or even ripping – a task perfectly solved by pneumatics with accurate pressure control. With smart and robust components tailored to railway and customer specific requirements.

- Customized products and system solutions
- Pre-tested components ready for bolt-on delivery
- Products and solutions tested to customer and rail standards
- Compliance with safety standards

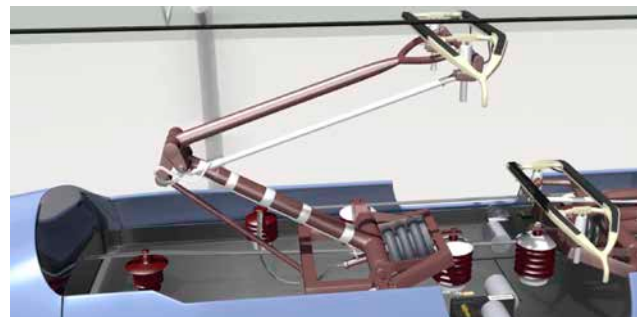
The pneumatic solution with electropneumatic valves, precision regulators, bellow actuators, and air preparation pushes the carbon strip against the catenary with the right pressure. Tailored to a wide range of pantograph applications. At all speeds and curves or at different voltages and pantograph



widths in various countries – the pneumatic components are designed to meet all needs. They are not only extremely reliable and robust, they are also virtually wear-free compared to electromechanical actuation.

## Only the best components for your products and systems

Precision regulators, bellows actuators, special valves, and matching accessories – Emerson supplies all pneumatic products and assemblies needed to control pantographs. The ED05 Rail electro pneumatic proportional valve is one core component, along with BCE series bellow actuators in different sizes. Precision pressure regulators PR1-RGP, solenoid valves, quick lowering valves and air preparation with secure tubing connections according to EN45545 complete the offer – pre-assembled, tested, and ready for use.



BCC



CD07 LT



ED05 Rail



353



PR1-RGP



Control panel, complete with flanged components.



## ED05 Rail electro pneumatic pressure regulator

Based on the direct control principle with a proportional solenoid, the valve offers great dynamics at high flows. The robust poppet valve technology and other design features make the valve extremely durable and highly resistant. AVENTICS™ ED05 Rail combines dynamics, precision and repeatability with high robustness. This is why the valve performs crucial tasks not only for pantographs, but also for brake control and suspension leveling.

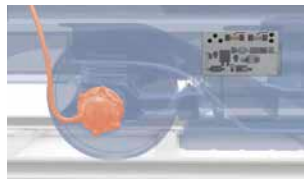
## Our expertise is your benefit

Extreme temperatures, high voltage tolerances, demanding railway standards, bolted-on products, or the trend towards condition-based monitoring – as a specialist for pneumatics and railway technology, Emerson is familiar with all challenges. We cover everything that can be sensibly controlled, regulated, and safely moved in trains with the help of pneumatics. From consultation to delivery of ready-to-use solutions – talk to us about your applications!

- Standard products tailored to specific trains
- Solutions precisely tailored to the application
- Bolted-on components and products for pipe mounting

### Brake control:

Cost efficient control panels for direct and blended EP-brake.



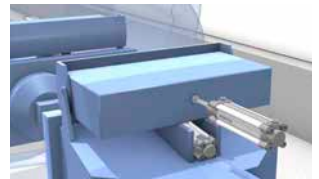
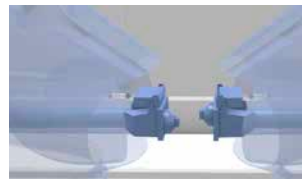
### Door control and drive:

Special cylinders for safe opening, closing, and locking of doors.



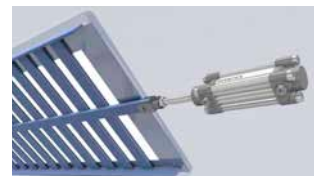
### Train coupling control and drive:

Cylinder controls to open and close the front ends, as well as actuate and lock the coupling mechanism.



### Ventilation flap control and drive:

Sensor-controlled cylinders for automatic opening and closing of the ventilation flaps for air conditioning and ventilation systems.



### Electronic control of pneumatic suspension:





Active platform height and suspension control for easy access.



**Pneumatics is the top choice in rail vehicles.  
With our experience, you are on the safe side**



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