**APPLICATIONS**

- High-Speed Trains
- Light Rail Vehicles
- Locomotives
- Metros
- Monorails
- People Movers
- Regional and Commuter Trains
- Special Vehicles
The Demands on windscreen wiper and wash systems vary ENORMOUSLY according to the application involved, irrespective whether for mass transit applications or very high-speed trains, operating in moderate or extreme climatic conditions. Knorr-Bremse is always to offer the optimal solution.

**VARIETY**

Early electric windscreen wiper and wash systems for trains were based on components originally developed for the automotive industry. When it became clear that these modified systems were no longer sufficient to meet the specific customer demands, Knorr-Bremse started to develop specialized systems tailored to the needs of the rail sector based on a modular system. Today, at its site in Mödling, Austria, Knorr-Bremse is producing a wide range of solutions for a huge variety of different applications. All systems are subject to the highest quality standards all the way from the design to the final assembled and tested product.

**CUSTOMER BENEFITS**

- Optimal life-cycle cost performance
- Wide variety of functionalities and options, e.g. Rain sensor
- Integrated wiper fluid supply
- High system availability
- Long-life components
- Long-term commitment to achieving high system availability through original parts supply guaranteed for lifetime of at least 3,000 operating hours
- Lifetime at least of 10,000 operating hours
- Emergency operating unit (redundant)
- Adjustable interval times
- Lifetime of at least 10,000 operating hours
- Comparable wiper drives more than 40 years of revenue service operation

**ELECTRIC SYSTEMS**

**EBS**

The wiping movements and wiping angles are realised with levers and rotary encoders. These low-cost plug and play options offer the following features:

- Parking function
- Two wiping speeds
- Interval wiping
- Lifetime of at least 1,000 operating hours
- Wash function with slow wiping mode and delay wiping
- Segment and parallel wiping fields

**EADS**

This very reliable and durable electrical system was specifically developed for the rail vehicle industry by Knorr-Bremse. It is comparable to the EBS systems but offers enhanced features:

- Two enhanced wiping speeds
- Interval wiping with different pause times
- Lifetime of at least 5,000 operating hours
- Emergency operating unit
- Lifetime of at least 10,000 operating hours
- Screen wiper fluid supply integrated into drive unit (optional)
- Rain sensor signal to automatic operation (optional)
- Emergency control diagnosis interface

**ELECTROPNEUMATIC SYSTEMS**

**EPBS**

These electropneumatic systems combine the simplicity of pneumatic driver with the advantage of electronic control. A large number of variants and functionalities are available, including:

- Nominal wiping angle 90° to 180°
- Parking position
- Maintenance position without air pressure
- Control by means of standard operating elements (electrically and electronically)
- Emergency control unit
- Continuous wiping (adjustable 2-30 sec.)
- Lifetime of at least 10,000 operating hours
- Comparable wiper drives more than 40 years of revenue service operation

**EPH**

This pneumatic system can be adjusted to the vehicle type.

- Ultimate low-cost all-in-one system
- Long-term commitment to achieving high system availability through original parts supply guaranteed for lifetime of at least 10,000 operating hours
- Emergency operating unit (redundant)
- Adjustable interval times
- Lifetime of at least 10,000 operating hours
- Comparable lifetime in all vehicle types
- Emergency control (optional)

**PBS**

The classic pneumatic windscreen wiper system PBS has been successfully used for decades in mass and locomotives in various regions. The key features are:

- Lifetime of at least 10,000 operating hours
- Segment and parallel wiping fields possible
- Wiping angle in steps of 10° between 45° and 120°
- Intermittent wiping
- Continuous wiping

A CLEAR VIEW UNDER ALL WEATHER CONDITIONS