BONA*E-LOCK*®*M* | product specification

The proven BONATRANS boltless design of the resilient wheel **BONA***E-LOCK*®*M* with the patented lock for easy exchange of the tyre and medium stiffness of is intended for trams, metro trainsets and LRV.

E-LOCK key benefits reduce LCC and carbon footprint:

E = easy lock / easy disassembly and assembly of the wheel / easy tyre replacement;

E = economic, longer service life due to innovative **BONA***STAR*® steel grades;

E = environmental, damping of noise and vibrations, thanks to rubber elements between wheel center and tyre, and optional **BONA***SILENCE*® noise damper.

Due to E-LOCK M = **medium stiffness** of the resilient wheel, which is achieved thanks to whole design of the resilient wheel and rubber segments, **BONA***E-LOCK*®*M* offers higher suspension comfort than resilient wheels with bolt-fastened design.

Key features

- High damping of rolling and squealing noise
- High mileage and low LCC due to innovative steel grades
- Unbeatably shortest tyre exchange time and fewer spare part items for the tyre replacement reduce maintenance costs
- Low carbon footprint due to long service life and selection of materials
- BONATRANS ECO-design

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Pioneers of wheelset solutions

Application

Thanks to the possibility of adapting the wheel dimensions and the wheel centre shape to any axle type or even to direct assembly on the drive, the possibilities of **BONA***E-LOCK®M* applications are virtually unlimited. The standardized design of rubber elements makes ordering of replacement parts (kits) by the operators easy, even if several types of vehicles are operated.

The properties of **BONA***E-LOCK®M* resilient wheels rank them among wheels with medium radial stiffness, with all their positives. At the same time, they outperform other resilient wheels in the area of maintenance costs, thanks to their design.

Typical applications of **BONA***E-LOCK®M* resilient wheels are low-floor trams, metro trainsets and LRV.

Rolling stock manufacturers have successfully used wheels of this unique concept since 1997. **BONA***E-LOCK®M* helps dozens of operators around the world to reduce costs thanks to the long serve life and unrivalled ease of maintenance. It reliably serves in subtropical, mild as well as subarctic climates.

Simple tyre replacement reduces costs

Due to the **BONA***E-LOCK®M* concept and the patented assurance of the wheel compactness, the tyre replacement is unbeatably simple and quick, with lower costs of spare parts and lower labour cost. The replacement itself, including preparatory work, takes one worker approximately 25 minutes, which is several times shorter time than the case of resilient wheels with bolt-fastened design.

In many tram types, it is possible to replace the tyre directly in the vehicle and even out of the maintenance workshop, without the need of wheelset disassembly from the vehicle.

Safety

The wheel is designed for safe transfer of torque from the tyre to the wheel body in both brake and traction modes. The design that takes into account extreme driving and braking effects at the adhesion limit enables overloading of the wheel with a very high torque.

BONA*E-LOCK®M* wheels are equipped with current bridges of BONATRANS design, ensuring safe conducting of the grounding current. Reliability is enhanced by the use of the stainless steel plate and connecting cable.

BONATRANS ECO-design

Our aim during development of **BONA***E-LOCK®M* was to reduce and simplify maintenance as much as possible, reduce maintenance costs and Life-Cycle Costs. Due to the design solution and the selected materials (100% recyclable), **BONA***E-LOCK®M* is an ideal solution for silent, environmentally friendly and safe public transport in both modern and historic cities.

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Noise reduction in cities

For even more efficient noise reduction, we supply the wheels with the **BONA***SILENCE®* damping system.

BONA*SILENCE®* noise dampers achieve reduction of the wheel rolling noise by up to 8 dB(A). Moreover, the most unpleasant squealing noise is up to 30 dB(A) lower for wheels equipped with **BONA***SILENCE®* noise dampers than for wheels without noise dampers, especially in significant frequency bands.

Long service life and low Life-Cycle Costs

We manufacture the tyres for resilient wheels from innovative steel grades **BONA***STAR®B6* or **BONA***STAR®B7*, that achieve almost 30% higher mileage compared to common steel grades, according to experience of transport companies.

High tyre service life and lower number of replaced parts, compared to wheels with bolt-fastened design, considerably reduce Life-Cycle Costs.

BONA*SILENCE®* noise dampers are designed for repeated use during the tyre replacement. Their damping effect does not decrease during their service life, which also contributes to reduction of the Life-Cycle Costs.

Service

We offer to operators of rail vehicles with **BONA***E-LOCK®M* wheels the possibility of providing turnkey service of resilient wheels by our experienced service team.

Technical specification

Wheel dia (new):	610 – 850 mm
Max. wheel load:	40 – 75 kN
Radial wheel stiffness:	80 kN/mm
Maximum speed:	up to 120 km/h

BONA*E-LOCK®M* design