

SANDING SYSTEMS RAIL VEHICLE SYSTEMS



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Sanding Systems

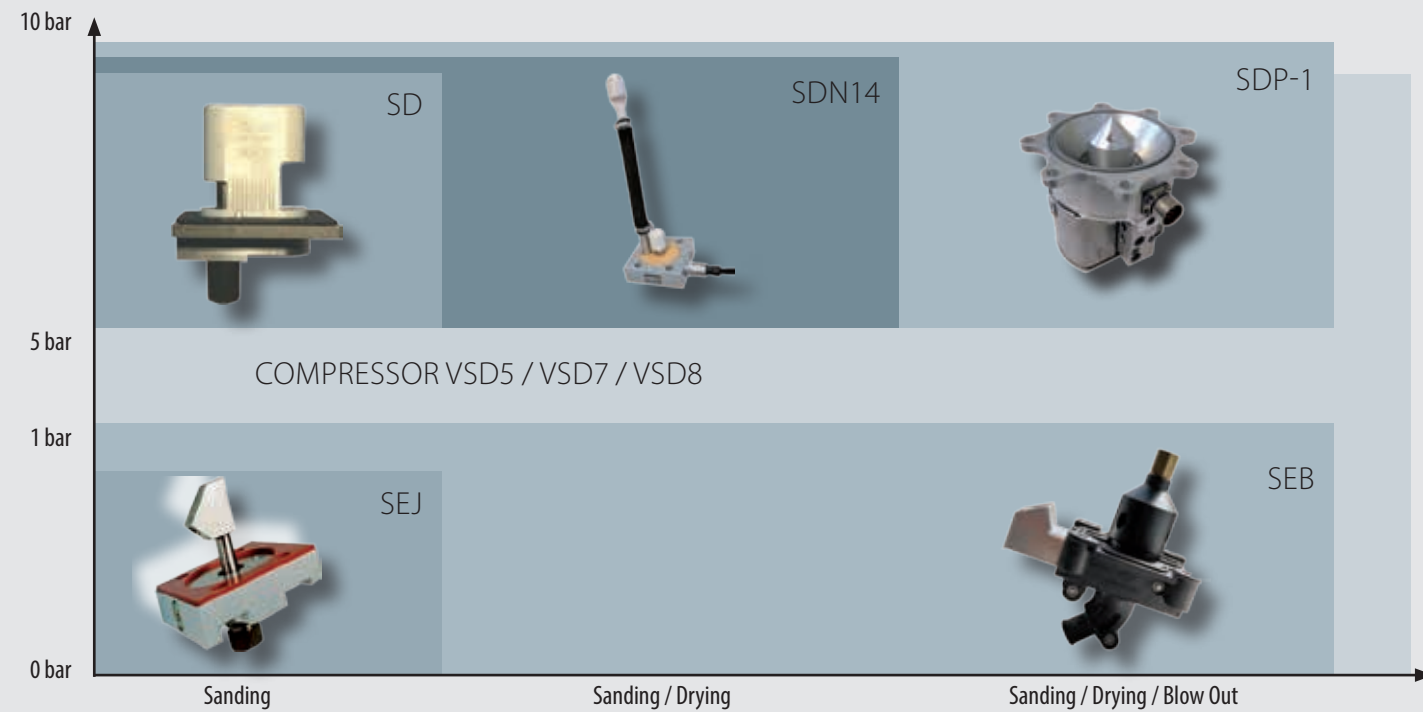
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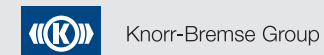
SANDING SYSTEMS TYPES



APPLICATIONS

High-Speed Trains | Light Rail Vehicles | Locomotives | Metros |
Regional and Commuter Trains | Special Vehicles

- KNORR-BREMSE**
- Innovations For Entrance Systems**
- merak**
- SIGMA**
- Microelettrica Scientifica**
- POWERTECH**
- WESTINGHOUSE**
platform screen doors
- NEW YORK AIR BRAKE**
- ZELSKO**
- SYDAC**
- RAILSERVICES**
Always at track



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SANDING SYSTEMS



DELIVERING FULL ADHESION UNDER ALL TRACK CONDITIONS.

Controlled and safe stopping distances in the busy rail environment of today are essential. Difficult operating conditions such as moisture, foliage or even ice on the track can affect service performance and dealing with these issues requires a real understanding of the wheel and rail interface dynamic. Knorr-Bremse understands this dynamic and can offer solutions which efficiently and economically improve the friction between wheel and rail.

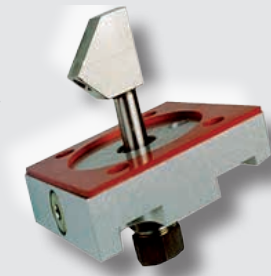
CONTINUOUS DEVELOPMENT

Knorr-Bremse has combined experience with continuous investment in research and development to deliver sanding systems that can address any requirements. Care for the environment has been a key consideration in the development of the latest generation of sanding systems. Issues such as the need for sand reduction whilst delivering higher systems availability and features such as function monitoring has led to some exciting new developments in this area. Systems are designed and developed for individual customers by using a modular concept. Today at its facility in Moedling, Austria, Knorr-Bremse is producing a wide range of solutions for a huge variety of different applications. These systems are all subject to the highest quality standards, from initial concept right through to delivery to the customer.

FEATURES AND BENEFITS

- Speed and situation dependent optimized sand-flow rates - grit consumption can be reduced by up to 50% and particle emissions can also be minimized
- Drying, heating and loosening of the grit - readily available for operation
- Heating of sand pipe nozzle - combats freezing temperatures and ice
- Blow-out function - avoids grit remaining in the delivery hose
- Manual or semi-automatic pistol filling
- Electrical and pneumatic control of condition of sanding systems
- Grit level monitoring functions in the sand-box
- Grit delivery monitoring function in the sand pipe
- Lighter weight and smaller installation space - savings in operational costs
- Modular design - delivers a wide range of system options
- Designed to deliver optimal performance - including life-cycle costs
- Continuous innovation – building on-long term experience with all vehicle types

Typical representatives of sanding systems for **Light Rail Vehicles** (street cars, tramways) without central air supply are the types SEJ and SEB. A dedicated air supply compressor with up to 1 bar pressure is required to perform the listed functions. Normally used types are rotary vane-types VSD5, VSD7 or VSD8.



SEJ

This sanding system is based on an ejector principle for dosing and conveying the grit. Additional functionalities and benefits are:

- Sanding rates from 150 to 700 g/30s
- Drying of grit by heating the lower area of sand box (optional)
- Uni or bi-directional sanding
- Time controlled amount of sand
- Speed controlled sand delivery rate with defined volume per meter of track
- Reduction of sand consumption by up to 50%
- Reduction of refilling cycles
- Reduction of fine dust pollution, especially in urban areas
- Reduction of track pollution
- Reduction of the risk of interference with signalling and train detection systems (sand quantity should be less than 8 g/meter of track)



SEB

Very similar to the SEJ sanding system, but with additional functionalities:

- Sanding rates from 150 to 700 g/30s
- Drying of the grit in the sand box
- Heating for warming up the air flow between compressor and dosing device (option)
- Blow-out function to clean the sand hose after sanding to avoid blocking in harsh environmental conditions
- Uni-directional sanding system
- Minimized installation size by integrated sand hose socket and variable sanding input socket
- Minimized weight
- Time controlled amount of sand or
- Speed controlled sand delivery rate with defined volume per meter of track

All types of sanding units can be upgraded with optional sand level sensors (including monitoring devices), heated sand nozzles, sand flow sensors, etc. Sand boxes are available standardized as well as tailor-made. Knorr-Bremse recommends the use of dust-free silica sand of 0.7 to 1.2 mm grit size. Local sand qualities are supported but require an adjustment of the system during the course of the system integration test.

Typical representatives of sanding systems for Rail Vehicles with central air supply are the following types: SD, SDN14, SDP-1. Pressure shall exceed at least 5 bars for small sized grit, a supply pressure of 7 to 10 bars opens the full range of adjustment for a wide range of sand qualities.



SD

This conventional sanding dosing system has an optimal cost performance with the basic functionality. It is based on an underpressure principle with a tailor-made ejector as main dosing device.

- Sanding rates from 300 to 1,000 g/30s
- Sand box with defined leakage
- Uni-directional sanding system



SDN14

This best selling type of sand dosing device is based on an overpressure principle using a tailor-made injector. Dependent on the type of pneumatic control, one or two steps or a continuous flow rate can be adjusted within a defined range. A lot of functionalities can fulfil most of the customer's requirements.

- Sanding rates from 200 to 1,600 g/30s
- Drying of grit in the entire sand box as well as the delivery hose
- Heating for warming up the drying air flow and the sand
- Tight sand box
- Uni-directional sanding system
- Time controlled amount of sand or
- Speed controlled sand delivery rate with defined volume per meter of track



SDP-1

This unit is able to offer the entire range of functionalities, even for very difficult routings of the sand delivery hose. The main advantage of this system is its separation of the dosing and conveying functions. The output sand quantity is independent of the sand flow velocity and can be set very precisely. The core functionalities are:

- Maximum accuracy
- Sanding rates from 200 to 2,400 g/30s
- Two different air supply connections for dosing and conveying
- Drying of grit in entire sand box (optional)
- Heating of drying air flow and sand (optional)
- Blow-out function to clean delivery hose after sanding avoids blockages under harsh environmental conditions