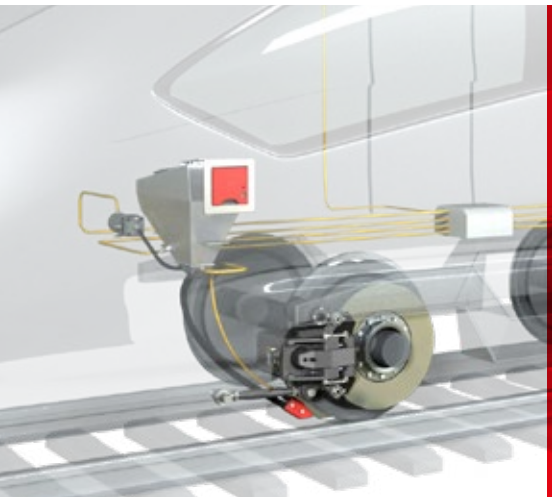

GripMaster®

Sanding System
for Greater Safety on the Rail

HANNING & KAHL

GripMaster®

Sanding System for Greater Safety on the Rail

In rail vehicles, sanding systems are safety-relevant systems which ensure safe braking and acceleration. They increase the contraction between wheel and rail in order to improve the friction ratio. Working closely together with manufacturers and operators, we develop innovative and reliable sanding systems with modular structure and customized design. From project planning to design engineering, development to manufacture and sales, users get everything from one source.

The absence of moving components in contact with abrasive sand is a major technical advantage. Compact design and low LCC costs are decisive arguments for users.

The characteristics of the system bring operators many advantages

The dosage of the amount of sand can be set both mechanically and variably	300 g/min to 1,200 g/min Reduced sand consumption
The oil-free rotary vane compressor ensures rapid pressure build-up.	Shorter reaction time
Pneumatic cleaning procedure after every use of the system.	Increased operational reliability
No contact between movable parts and abrasive sand.	Less wear and maintenance
Self-regulating heating cartridges prevent ice forming on the sand nozzles.	Greater system availability
Level switches monitor and signal fill level.	Improved sand management
The system does not depend on pressure-tight sand boxes.	No need for leak tests

The following options can be selected

- Continuous measurement of the remaining sand volume by a level sensor in the sand box
- Valve/pressure reducer unit for centralised air supply by the rail vehicle
- Variable control of the sand quantity depending on the vehicle speed by proportional valve in the dispensing units*
- Diagnosis and communication per CAN, MVB or Ethernet bus.*

** in conjunction with the HANNING & KAHL control unit SCU*

Safety on the Rail

GripMaster®, HANNING & KAHL's sanding system is the outcome of a successful symbiosis of efficient series production and individual design, leading to technically-targeted and reliable solutions, and rapid returns for operators.

You, too, will be convinced by the outstanding merits of our sanding systems:

- Extensive product range for all requirements
- Specifications according to BOStrab, EBA (German Railway Authority) Supplementary Regulation B011 and all railway standards are met
- Detailed quality control and documentation

Technical Data Sanding System	
Sand quantity can be mechanically fixed and variably adjusted	300 g/min to 1,200 g/min Variant with up to 6,000 g/min
Reaction time with a meter conveying distance	< 500 ms
Deployment temperature range	-30 to +50 °C
Sand box volume	Customer-specific

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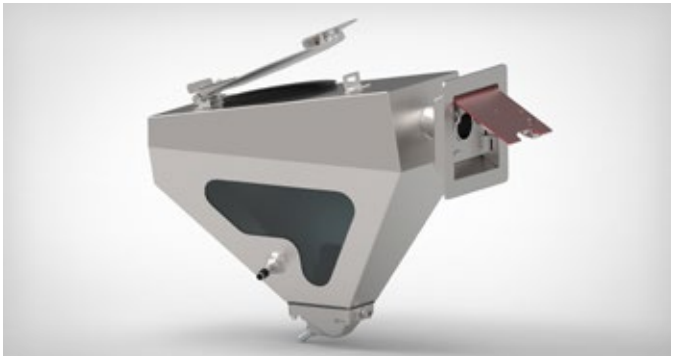
GripMaster®-Components

1. Sand box

As a system supplier, HANNING & KAHL supplies sand boxes in compliance with customer specifications and dimensional parameters. The sand boxes are welded high-grade, steel or cast aluminium constructions. Vehicles can be filled from the outside through filler flaps and also from the inside. The filler flaps are freely selectable to allow filling by hand or sand gun. Level switches signal sand-fill level. A drying function can also be installed.



The system is not dependent on a pressure-tight sand box

2. Dosing unit

HANNING & KAHL's sanding system works on the ejector principle. In the dispensing unit underneath the sand box, sand is sucked out of the box and accelerated by the conveying stream. Air and sand come together and are guided via the conveying hose to their destination – the wheel-rail contact.

The downwardly inclined outlet direction of the dispensing unit offers a high degree of flexibility for individual routing of the conveying hoses.

Thanks to the dispensing units available, the system can be used in trams and urban railcars as well as in standard-gauge trains. There are three types of dispensing units with different conveying capacities and functionality:

GripMaster® Basic: With this dispensing unit, the sand quantity can be mechanically adjusted from 300 g/min to 1,200 g/min.

GripMaster® Plus: This is a speed-dependent dispensing unit with a sand quantity of 300 g/min to 1,200 g/min. The quantity of sand dispensed can also be mechanically adjusted.

GripMaster® Max: This dispensing unit has been specifically designed for standard-gauge applications and allows a variable quantity of sand (up to 6 kg/min) to be dispensed.

All dispensing units offer different functionalities – for example, speed-dependent regulation of the sand quantity by means of a 3/2-way valve, a cleaning function in the form of reblowing, a heat controller for the dispensing unit and sand nozzle, or a system for monitoring the unit.

GripMaster® Basic

GripMaster® Plus

GripMaster® Max

3. Air supply

The compressor was developed for application in sanding systems and works oil-free on the vane or rotary vane principle. Major advantages are faster pressure build-up and consistent volume flow. This means short reaction times and no additional pressure vessels. This saves space in the vehicle, and operators do not have to perform cost-intensive and time-consuming pressure-vessel maintenance.

If the vehicle has its own central compressed air supply, this can be used directly for the supply and pressurisation of compressed air for the GripMaster sanding system by connecting a valve/pressure reducer unit. There is then no need for the individual decentralised air compressors.

Compressor (rotary vane principle)

Valve/pressure reducer unit for vehicles with on-board air supply

4. Sanding nozzle

The height-adjustable sanding nozzle enables targeted and efficient sand dispensation. The compact aluminium construction protects against water ingress and ensures even distribution of the sand grains on the rail.

The sand-spreading nozzle is heated to enable use in extreme climate conditions. The self-regulating heating cartridges accelerate drying and prevent ice forming on the nozzle.

Standard sand nozzle, sand rate 300 to 1,200 g/min

Sand nozzle, sand rate up to 6,000 g/min

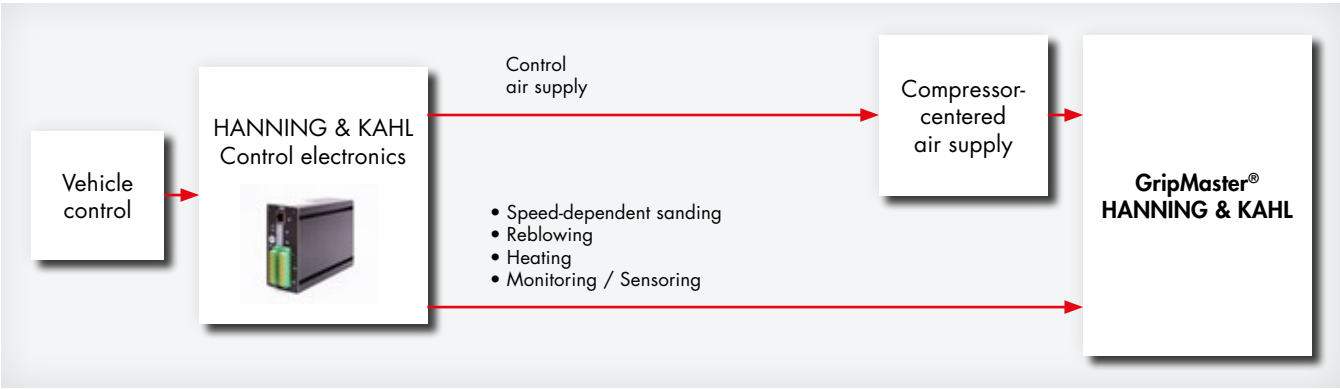
5. Sensor technology

The fill level of the sand in the sand box and the sand flow can be monitored via selected sensors.

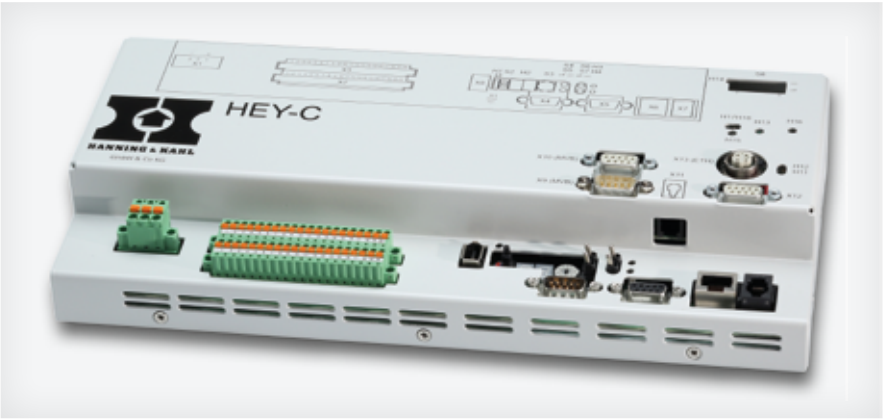
6. Electrical control

While the GripMaster® Basic dispenses the sand immediately when the air compressor starts up or through the direct provision of air from the vehicle's central pressure supply, the two other dispensing units allow for speed-dependent sanding.

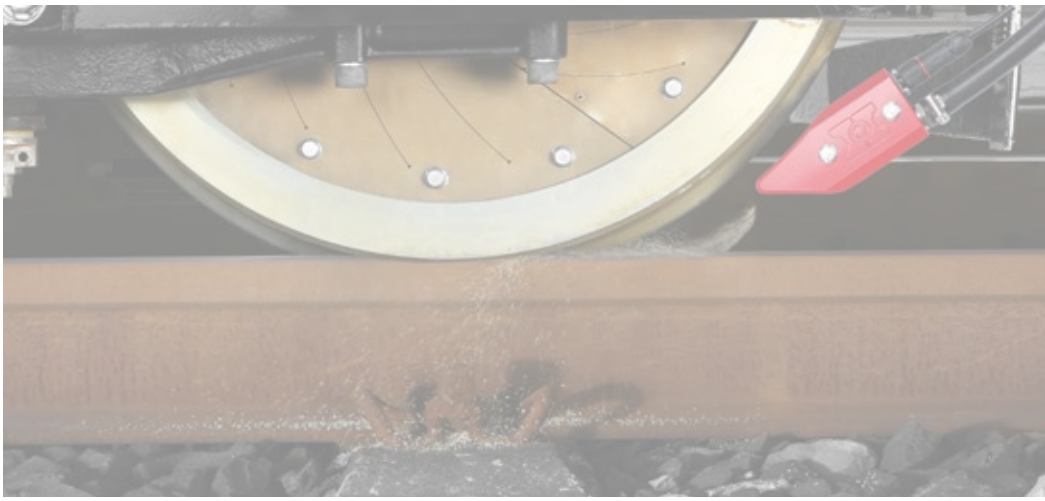
In this case, a 3/2-way valve is activated by means of PWM current so that a varying quantity of sand can be proportionally dispensed. HANNING & KAHL offers two control units for this.



HANNING & KAHL Sand Control Unit NSE
Ethernet for diagnostics



HANNING & KAHL Sand Control Unit HEY-C
BUS communication and diagnostics via CAN, MVB or Ethernet



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HANNING & KAHL GmbH & Co. KG
Rudolf-Diesel-Straße 6 | 33813 Oerlinghausen | Germany
Phone +49 5202 707-600 | Fax +49 5202 707-629
info@hanning-kahl.com | www.hanning-kahl.de

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