

KAAF

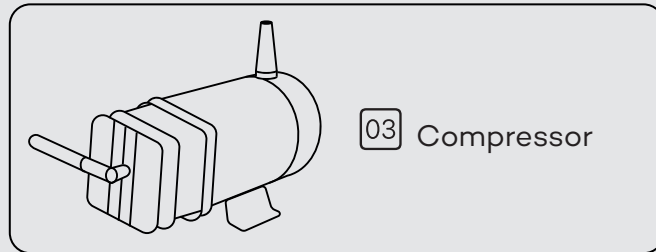
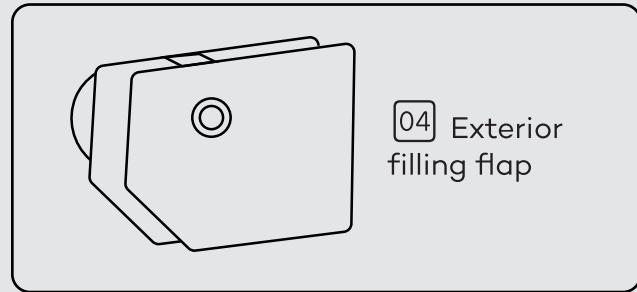
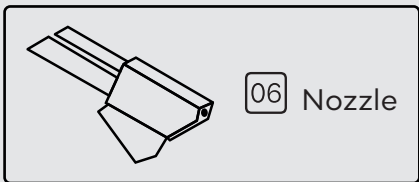
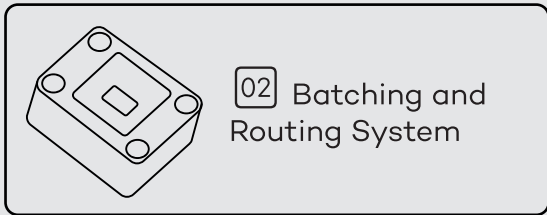
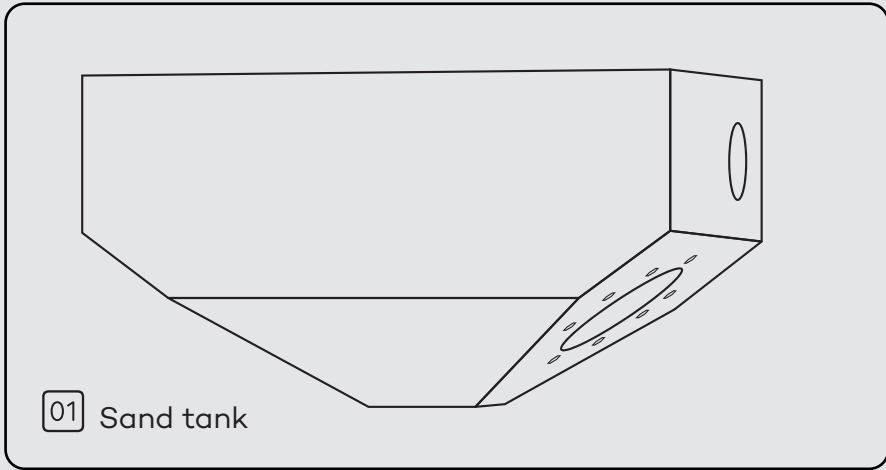
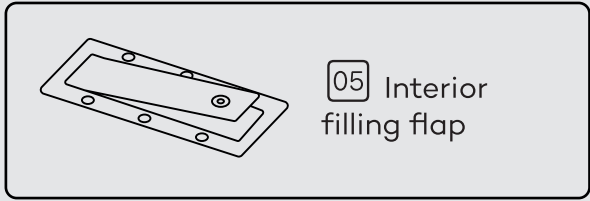
Product solutions for rolling stock

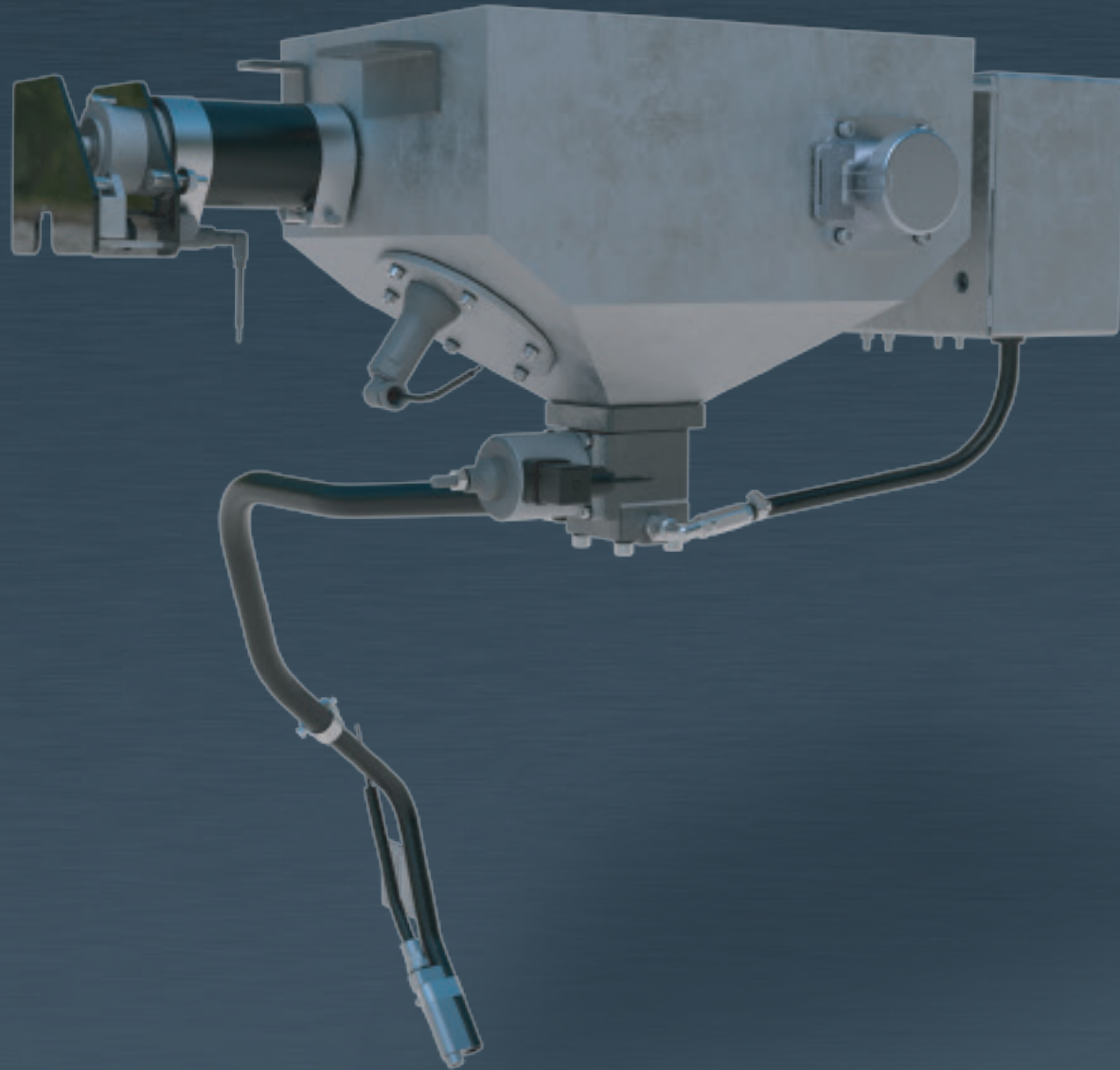
Sanding System

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KAAF MACHINE AND RAILWA SYSTEMS

Kaaf develops and manufactures subsystems used on rolling stock and maintenance machines. It has completely specialized in the railway vehicles sector and has developed many high-value-added products as a result of R&D studies since the day it was founded and commercialized all the products it developed. Every job done at Kaaf acts as a stepping stone for the next job, enabling continuous improvement and development. It continues its economic and technological development in a sustainable way with the products with high added value that it has introduced and will put forward. It aims to be a global pioneer and playmaker brand in its sector with its expert employees, who have gained experience in the fields of railway vehicle design, manufacture, and maintenance for many years.





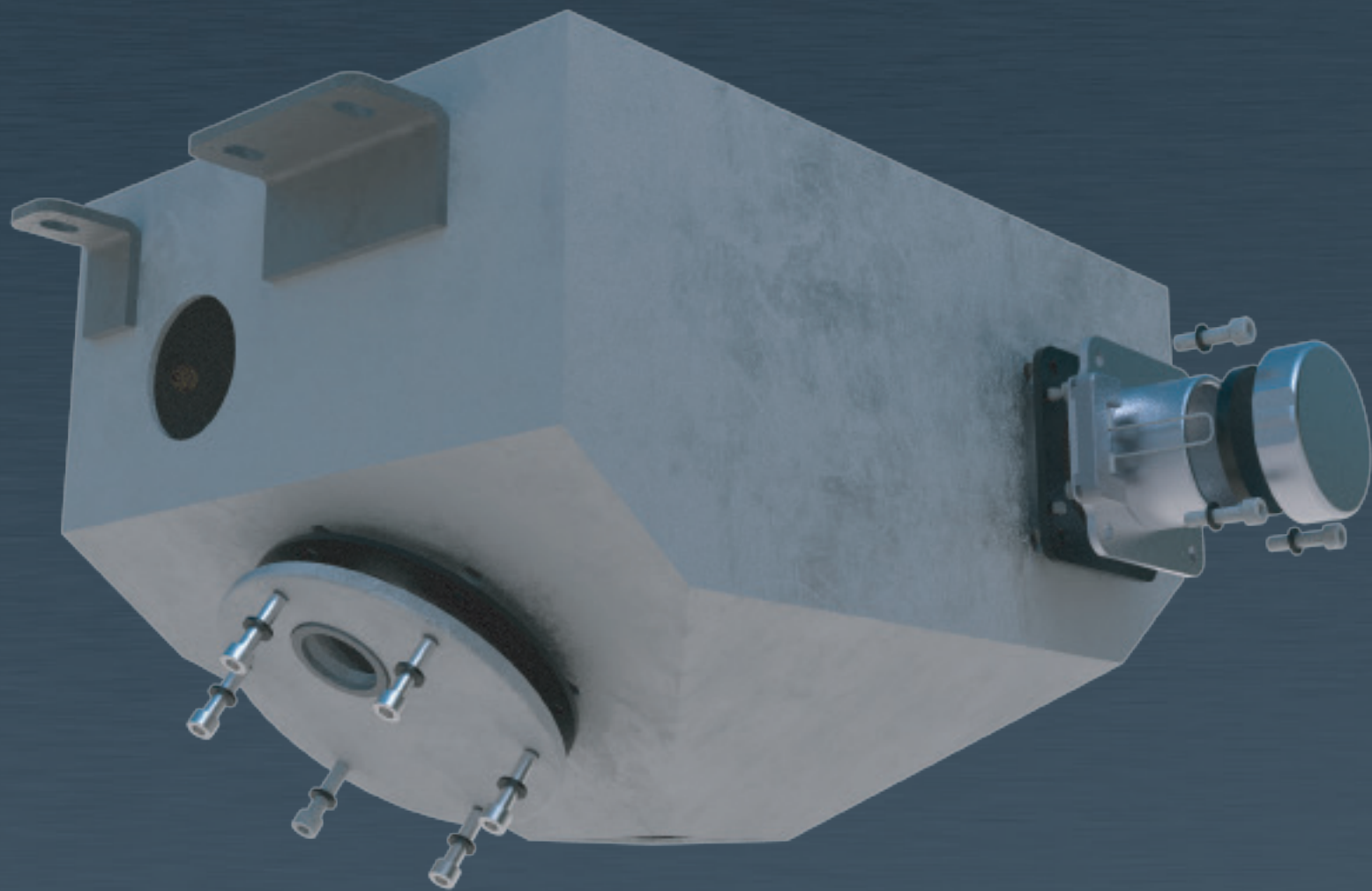
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SANDING SYSTEM

Sanding operation starts after the receiving blowcommand from the vehicle. There are two ways of sanding command; automatic command from the WSP system or manually pushing button command from the vehicle control panel. After receiving the sanding command, KKS-100 starts running with both compressor and solenoid.

At the routingunit, the pressured air exiting from the compressor come across with sand which flows from the sanding tank by the way of batching unit. The pressured air and sand mixture exits from the blasting unit pass the sanding hoses. Lastly, the mixture is being blownto rail and wheel intersection by the nozzle.

“EN 61373 SHOCK AND VIBRATION TEST CERTIFICATED.
MANUFACTURED ACCORDING TO EN 15085 WELDING MANUFACTURING STANDARD”



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SAND TANK

SAND TANK

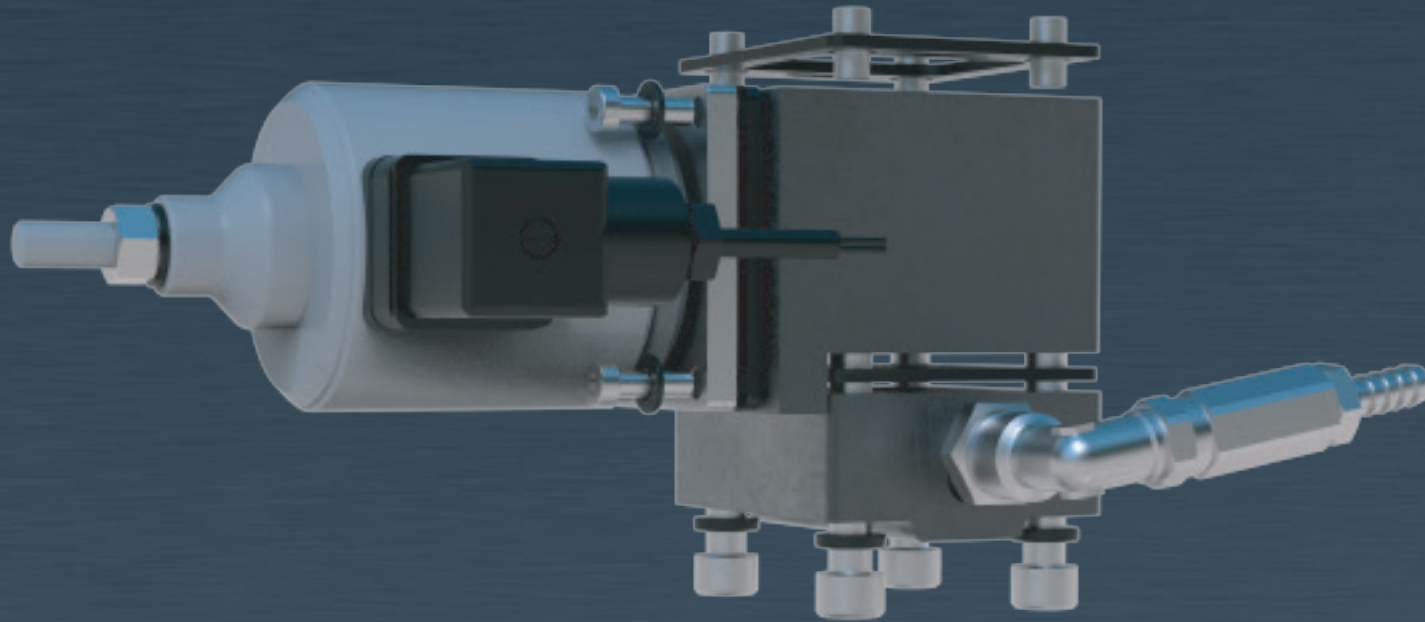
One of the most important issues in sanding systems is the design and production of storage volumes with the correct geometry and sealing level. Sand tanks uniquely designed at every project according to customers requirements. Materials are chosen highly wear-resistant against the sand-pressured air as aluminium alloy or stainless steel. All openings such as sand filling caps, batching opening, sensor connection, indicator glass, etc. are insulated against air and moisture. Thus, the sand is not allowed to become lumpy by moistening. Tank geometry is designed with various methods considering system limitations;

- There must be no geometries inside the tank which will cause the sand to remain stationary. For this reason, the most important point is that the tank has a defined slope.
- This slope cannot be under 36 degrees.

Parameter

Value

Material	Al5754 / Al6082 / AISI 304
Mounting Place	Under Frame
Mounting Type	Screw
Tank Volume	Optional (14... 30 liters)
Safety Class	IP65
Compatible Filling Types	Top Filling Flap / Lateral Filling Flap / Both
Güç	45W (S3)
Earthing Type	Screw Earthing



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BATCHING AND ROUTING SYSTEM

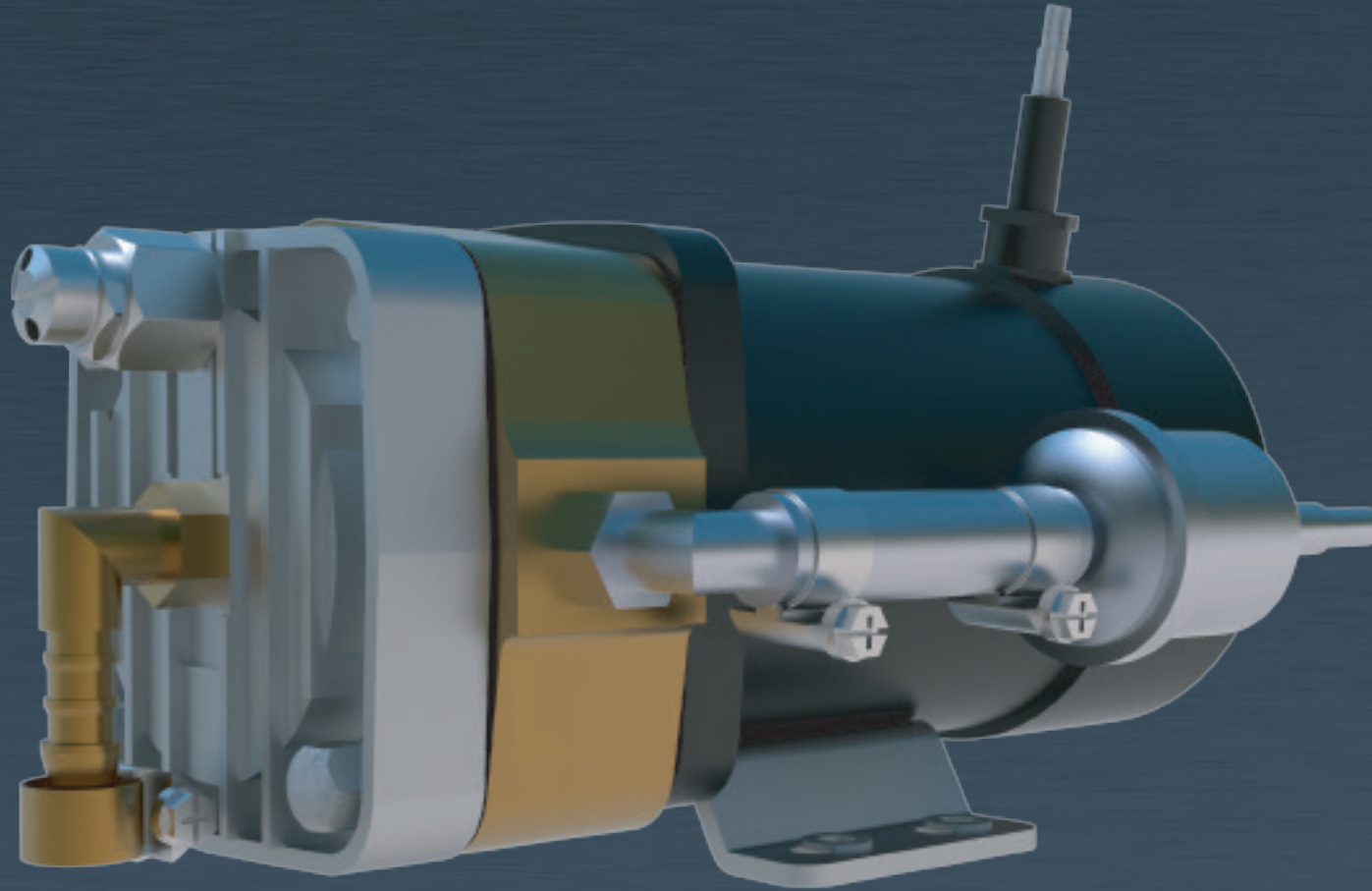
BATCHING AND ROUTING SYSTEM

The batching and routing system consists of 3 subcomponents.

1. Batching Unit,
2. Solenoid,
3. Routing Unit,

The batching system which is directly connected with the sand tank, allows the desired amount of sand to reach the routing unit while the sand passing the batching. The amount of sand to be blown can be adjusted as 400 - 1200 gr/min by means of the adjustable solenoid. Sand arrives in the routing system after pouring out from the batching unit. The sand coming from the batching unit and the compressed air from the compressor are combined and transmitted to the nozzle through the distribution hoses.

Parameter	Value
Sand Flow	600-1000 g / 30san ± 7% adjustable in range and tolerance
Operating pressure	1bar
Batching Method	Batching with solenoid (Electro-mechanical adjustment)+[@Parameter]
Safety Class	IP65
Useable Max Speed	160km/h
Operating voltage	24V DC (36, 72 and 110V DC options are also available)
Power	45W
STANDARDS	
Sand Quality and Size	BN 918224
Compressed Air Quality	ISO 8573 Particle class: 7, Density <= 10mg / m, Humidity: 2
Operating temperature	EN 50155
Socket Type	EN 175301-803



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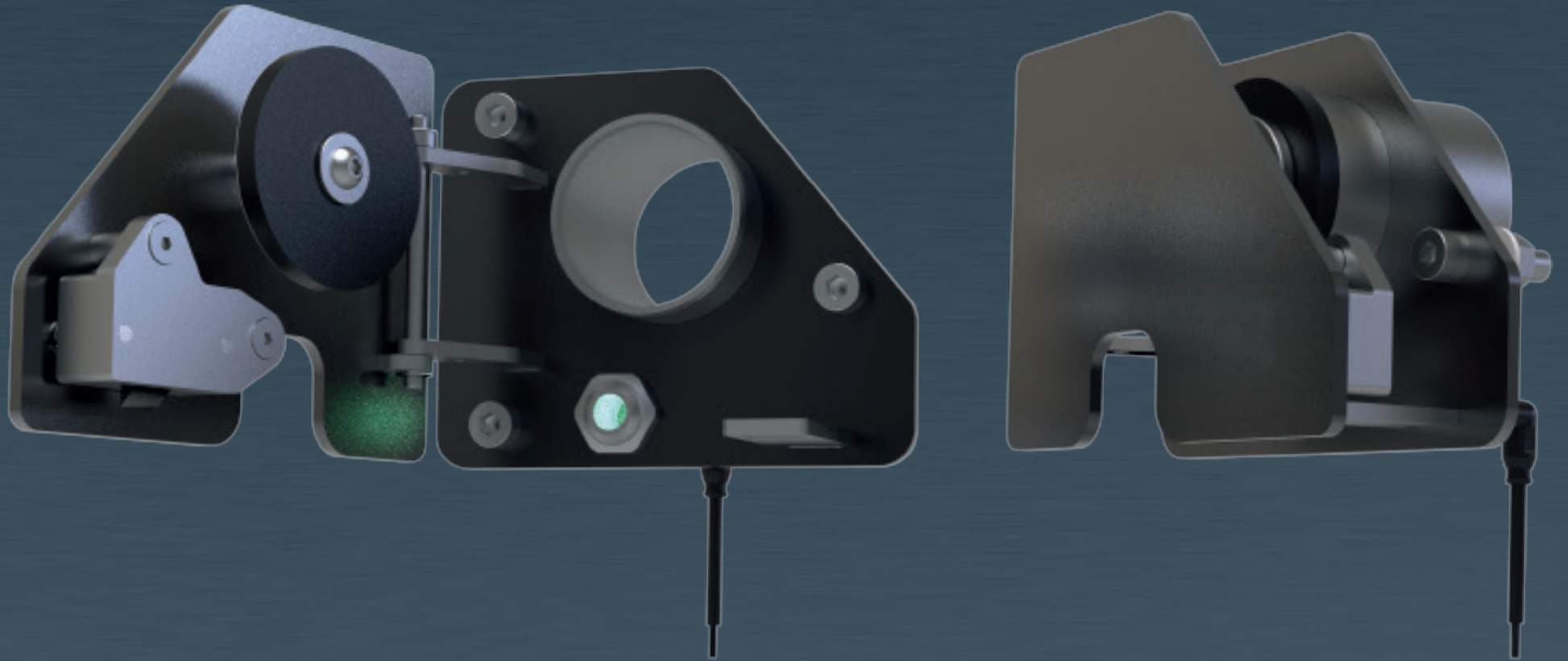
COMPRESSOR

COMPRESSOR

Oil-free compressors have big advantages on lifetime and mechanical properties. The required pressurised air is supplied by the oil-free compressor which was proven and used at dozens of railway projects at sanding systems. It provides continuous service with its innovative technology with almost no maintenance requirements.

The compact oil-free compressor's values are shared below;

Parameter	Value
Type of fluid	Air
Flow	80 l / min
Max. Operating pressur	1500 mbar
Operating pressure	1000 mbar
Motor	DC
Nominal Voltage	24V DC
Safety Class	IP56
Power	250W
Weight	3,8kg
STANDARDS	EN 175301-803
Compressed Air Quality	ISO 8573 Particle class: 7, Density <= 10mg / m, Humidity: 2



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EXTERIOR FILLING FLAP

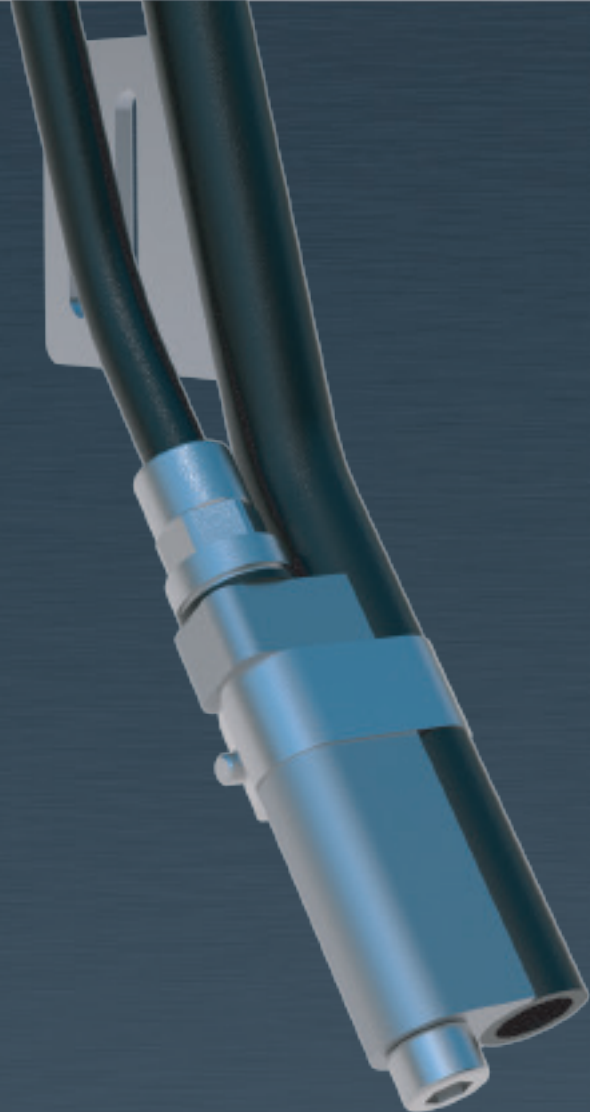
EXTERIOR FILLING FLAP

Exterior filling flap located on the vehicle sidewall gives the opportunity to quick and practical sand filling during maintenance. The sealing elements placed on the filling flap and in the sand passage pipe prevent relation between environment and the stored sand. The air intake is prevented by a spring pressed system on the sand filling pipe mouth. By providing insulation, it eliminates the possibility of sand clumping.

The flap has an open-take-out system with a square-head spring-loaded lock which allows closing without the need of key for closing flap after unlocking.

A led signal lamp located on the filling flap lights when the sand level drops under to 35%. The lamp can be seen and detected easily from the outside without the need to reach the tank or the driver panel.

Parameter	Value
Material	Al6082
Filling Method	Refilling with pistol
Mounting Type	Screw
Lock Type	Spring Lock
Lock Head	8mm square head
Filling Inlet Protection	Spring forced and Rubber
Level Indicator Lamp	Green / Red / White Led lamp
Safety Class	IP 66



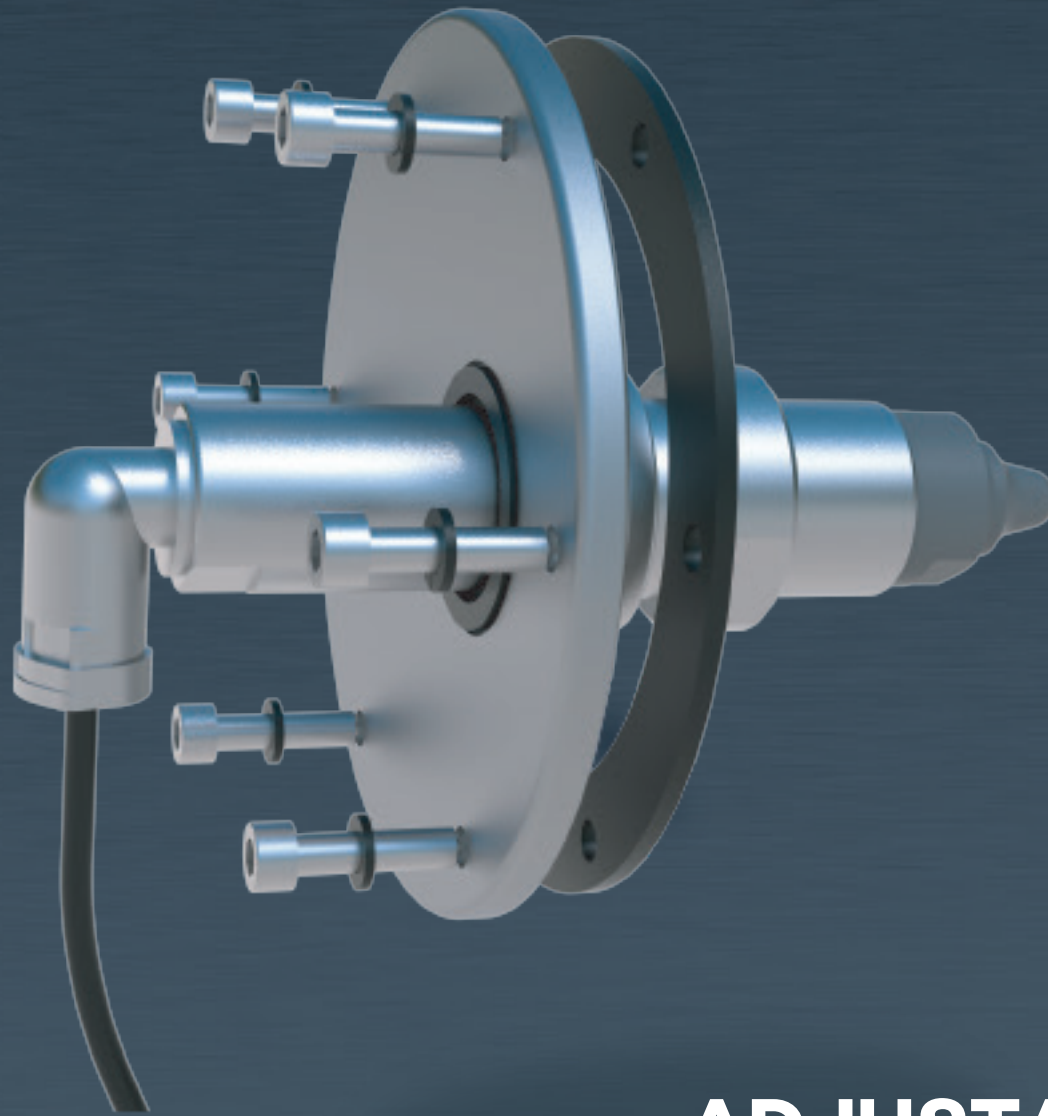
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SANDING NOZZLE

SANDING NOZZLE

Sanding via the nozzle increases the amount of sand passing between the wheel and the rail by 70% compared to sanding using only the hose. Nozzles produced with a blowing outlet diameter of 19-25mm are most effective sand transporting method between the wheel and the rail. One of the most important aspects of the system is to apply the compressed air-sand mixture between the wheel and rail with the right angle. The nozzle is positioned at a 15° angle to the intersection of the wheel and rail. Sand with appropriate flow rate keeps the friction coefficient at the required level by staying between the rail and the wheel. Special brackets which designed in each project provide both positional stability and easy maintenance. Through the heating system added to the nozzle, uninterrupted service is provided in all climate and environmental conditions. The heater keeps sections of the nozzle at the desired temperature with the heat it emits through the sanding opening.

Parameter	Value
Material	Al6082 / AISI304
Hose Type and Diameter	Sanding Hose
Hose Diameter	19mm
Heater Type	Cartridge resistance
Heater Power	50-100watt
Operating voltage	24V DC (36, 72 and 110V DC options are also available)
Safety Class	IP67
STANDARDS	
Hose Fire Protection	EN 45545
Electronic Hardware	EN 50155



**ADJUSTABLE LEVEL
MEASUREMENT SENSOR**

ADJUSTABLE LEVEL MEASUREMENT SENSOR

The sanding system has two different digital sand level indicator at the exterior filling flap and in front of the driver. Both indicators take sand level information from the capacitive level measurement sensor in the tank. Sensor warns in the case of the sand level decreasing under the critical level which specified according to customer choice. Changeable positioning option of the sensor gives the opportunity of measuring the sand level from different levels.

Parameter	Value
Sensor Type	Capacitive level sensor
Operating Voltage Range	10V... 30V DC (36, 72 and 110V DC options are also available)
Standard	IEC 60947-5-2
Safety Class	IP67
Operating Temperature Range	-25... 85 ° C
Sensor Dimensions	Ø 30 x 65.5 mm
Sensor Housing Material	Al5754 / Al6082
Positioning	3 different positioning

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