

MBS[®] Modular Brake Control System



APPLICATIONS

Locomotives | Special Vehicles

KNORR-BREMSE



MODULAR BRAKE CONTROL SYSTEM MBS®



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THE BRAKE CONTROL SYSTEM THAT IS CAPABLE OF OPERATION THROUGHOUT EUROPE. Its modular design facilitates repair operations and makes it adaptable to a wide range of requirements.

MODULAR DESIGN

The MBS® architecture combines hundreds of components into 17 functional modules. If defects should occur, time-consuming error diagnosis by highly-trained service personal is not necessary:

A technician uses an internal diagnostics application to identify the defective module, which is then replaced, so the MBS® is immediately ready for operation again. The modular design allows the production of largely standardized components. Customers not only enjoy cost savings but also time savings across the whole process chain from planning to production. At the same time, the modular design permits a system that exactly fits operational conditions.

ADVANTAGES

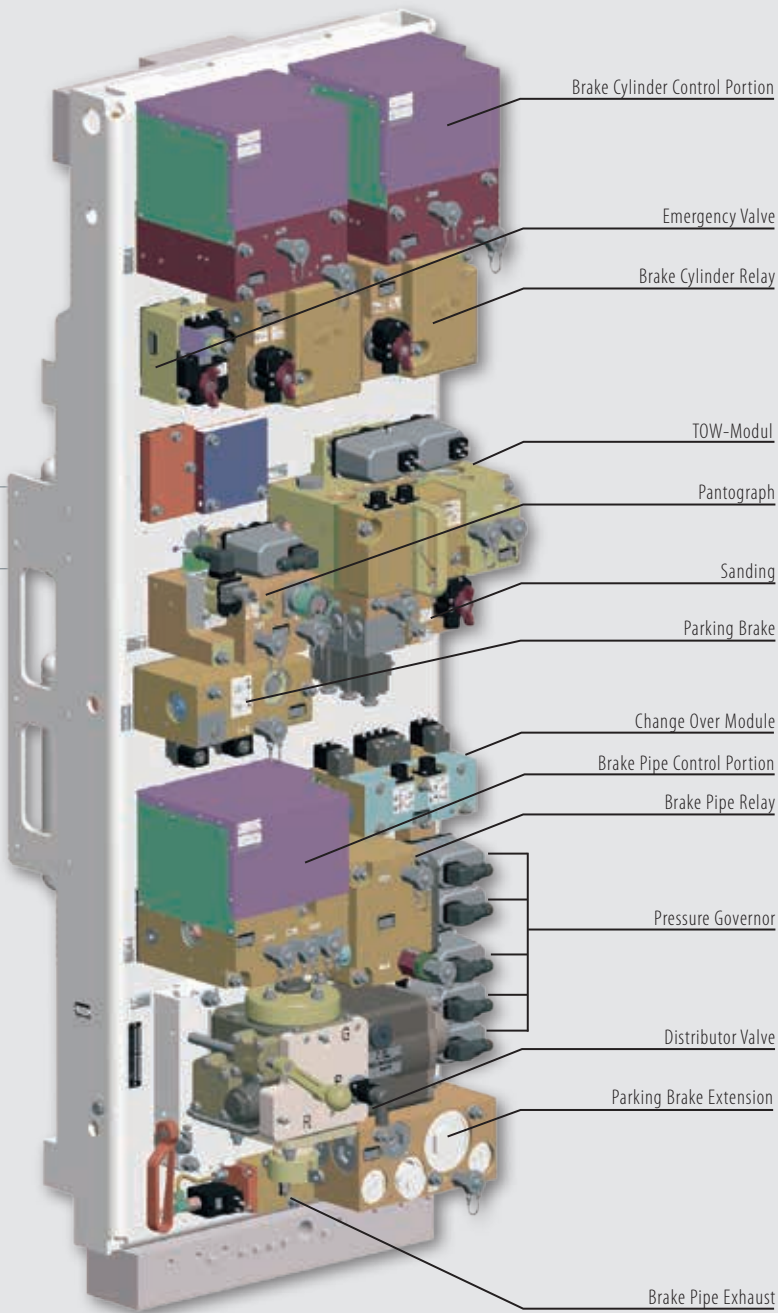
- Lightweight and compact modules
- Easy to maintain and highly available
- Easy plug and play installation
- Simplified interfaces
- 50% less internal cabling due to CAN-bus based communication
- New functions via software update
- Economical, thanks to standardization
- Every failure immediately localized, the defective module is simply exchanged



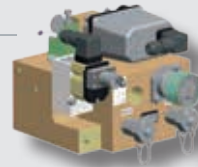
MBS®-TECHNOLOGY FOR GREATER SAFETY, FLEXIBILITY AND AVAILABILITY

This unique solution from Knorr-Bremse is the result of continuous development work built on a base of technologies that have been proven over many years. All components are UIC-compatible and conform to EN standards. Vehicle builders and operators benefit equally from the advantages of this decentralized control system across a broad range of diesel and electric locomotives.

- Pneumatic or electropneumatic backup systems for maintenance of basic functions, even in the case of total loss of the vehicle electronics
- The modules can be mounted decentrally or centrally on a brake panel with easy access to the operational controls and test points
- Electronic brake pipe and brake cylinder pressure control enables simple enhancement of functions via software updates
- Pre-tested, easy exchangeable cartridge valves supporting customer-specific maintenance
- Through parameter adjustment the key functions can be adapted to country-specific requirements
- The on-board diagnostic system enables defective modules to be detected
- Every module weighs less than 25 kg, so only one person is required for module replacement



MODULES



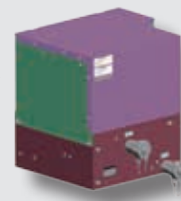
PANTOGRAPH

Monitoring and connection for the air support compressor, pressure supply for two collectors and the main circuit breaker



PRESSURE GOVERNOR / PRESSURE SENSOR

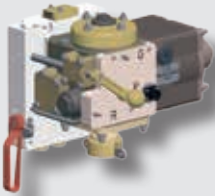
Autonomous adjustable manometric switch or pressure sensor for controlling and monitoring of brake cylinder, parking brake, reservoir pipe and prake pipe pressure amongst others



BRAKE CYLINDER CONTROL PORTION BCCP

Electronic brake cylinder pressure control for direct and indirect braking with blending. These are connected over a control valve on a pneumatic back-up. In case of an emergency brake the module sets a stable pressure level

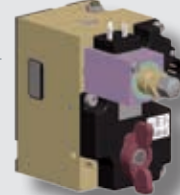
MBS® MODULAR BRAKE CONTROL SYSTEM



DISTRIBUTOR VALVE
Pneumatic back-up for indirect braking



BRAKE PIPE CONTROL PORTION BPCP
Electronic brake pipe control with connecting facilities for a pneumatic or electropneumatic back-up solution



EMERGENCY VALVE
Initiates an emergency braking activated by vehicle control



BRAKE CYLINDER RELAY BCR
Relay function for the brake cylinder pressure



BRAKE PIPE RELAY BPR
BP relay valve type RH. Options: disconnection from brake pipe and/or supply from reservoir pipe by cut-off



PARKING BRAKE BASIS
Electropneumatic activation of the parking brake with anti-compound function

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TOW-MODULE / BATTERY SWITCH
For the activation and cut-off of the brake; cut-off air pressure, release of a momentary forced brake, cut-off Sifa, electronic signals to control further functions. Automatic hauling function supplied by brake pipe while hauling without main reservoir pipe



CHANGE OVER MODULE
Choice of the driver's cab and cut-off of the pneumatic back up of the drivers brake valves



PARKING BRAKE EXTENSION
Brake pipe dependent control of the parking brake while towing

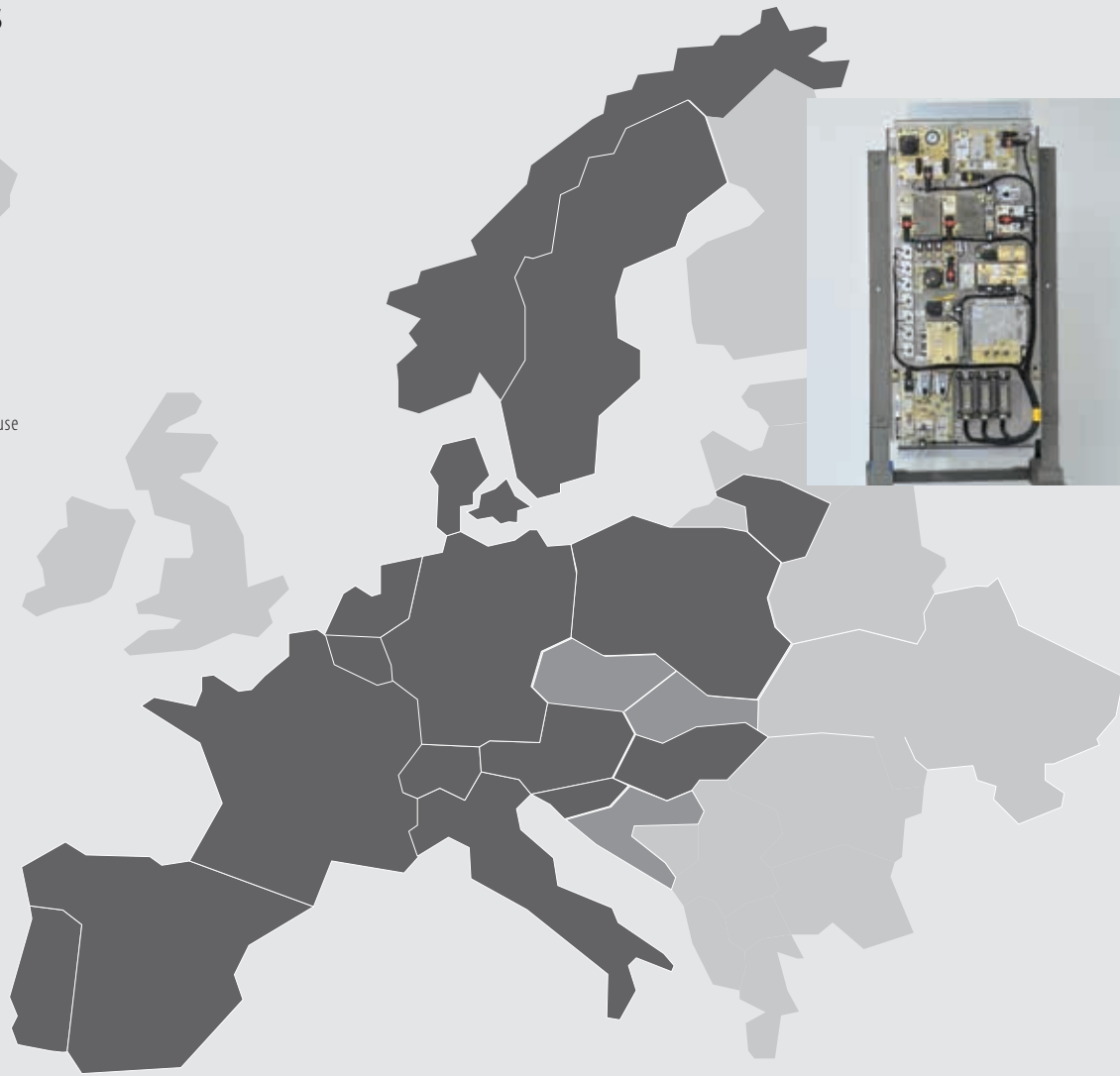


BRAKE PIPE EXHAUST BPEX
Initiates an emergency braking activated by brake control unit



SANDING
Forward and reverse sanding and sand drying

APPLICATIONS



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MBS®

In the United States the most popular brake control system is the AAR (Association of American Railroads) version of MBS®. In Europe MBS® has been developed based on the existing modular design and can meet all of the requirements of passenger and freight transportation in this market place. MBS® is also suited to the full range of different speeds, including the high-speed sector. This means it fully meets the requirements of large and small operators alike.

EXISTING PROJECTS USING MBS®

- LE4700/ES46B1-A (Siemens AG)
- ER20CF LG-Lithuania (Siemens AG)
- Euro3000/4000 (Vossloh Valencia)
- TRAXX Locomotive MBS® Europe (Bombardier Transportation)
- E-Locomotive ES64U4 VA-C (Siemens AG)
- BR 185.2 (Bombardier Transportation)
- Locomotive for FESUR (CAF)
- PRIMA II (Alstom)

MBS® MODULAR BRAKE CONTROL SYSTEM

RAIL
VEHICLE
SYSTEMS



RAMS AND LIFE-CYCLE COSTS

- Secure and reliable
- Over 100 years of experience in brake systems
- Continuous development of proven components consistent with latest engineering standards
- Low maintenance costs
- Comprehensive on-board diagnosis system
- "Pit Stop Maintenance"
- Clear operational and service concept
- Easy access to all operational elements and checkpoints
- High availability
- Appropriation of local brake control architecture
- Compatible with UIC brake systems
- Electropneumatic back-up

OPERATING AND ENVIRONMENTAL CONDITIONS

- EN 50155
- -40 °C up to +70 °C
- Vibration and shock-tested according to EN 61373
- Degree of protection up to IP54
- EMC according to EN 50121-3-2

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