Freight Cars

REALIZING SYSTEM SYNERGIES

KNORR-BREMSE
Because we simply find the right answers to complex challenges
FOR DECADES FREIGHT CAR BUILDERS AND OPERATORS FROM ALL OVER THE WORLD have trusted braking systems designed, manufactured and supported by Knorr-Bremse. During this time, Knorr-Bremse has combined its experience and expertise in freight braking to develop new systems designed to offer customers even higher levels of performance, reliability and safety with offering lower life-cycle costs. Based on a modular concept, each of the individual freight braking applications designed by Knorr-Bremse ensures that parameters such as pressure settings, characteristic curves and braking calculations are tailored to exactly suit the customer’s specific operational requirements. In addition, Knorr-Bremse can assist the customer at the homologation and commissioning stages. Operator and customer audits worldwide regularly single out the consistent quality of our products and services for praise and this is confirmed by our International Railway Industry Standard (IRIS) certification.
KNORR-BREMSE EXPERTISE IN ITS FIELD HAS GONE INTO EVERY SINGLE COMPONENT AND SYSTEM. For freight applications Knorr-Bremse uses a synergistic approach to create complete systems which deliver high performance combined with low life-cycle costs. High-quality components operate in harmony to guarantee optimum functionality, high reliability and maximum safety. For each project, customers are closely consulted at each stage and Knorr-Bremse offers total support from the beginning of the planning process through commissioning and during the entire operational life cycle of the system.
THE PERFECT COMBINATION OF HIGH-QUALITY SYSTEMS AND SERVICES

» BOGIE EQUIPMENT | INNOVATIVE DESIGN MINIMIZES ASSEMBLY AND MAINTENANCE REQUIREMENTS
Knorr-Bremse offers a wide range of compact, lightweight bogie equipment including the CFCB bogie-mounted tread brake. This innovative unit could offer weight savings of more than 1,000 kg per freight car whilst operating more efficiently than a conventional brake.

» BRAKE CONTROL | EVERYTHING REQUIRED FOR TOTALLY COORDINATED BRAKING
Knorr-Bremse has an extensive portfolio of carefully matched components designed for the total coordination of the braking effort along the entire freight train. Load-dependent relay valves ensure multi-level, continuous braking with KE valves finely controlling the system. Various additional modules include the kink-curve valve which reduces wear, especially during long descents.

» RAIL SERVICES | A PARTNER FOR ALL REQUIREMENTS THROUGHOUT THE ENTIRE PRODUCT LIFE CYCLE
Knorr-Bremse offers a wide range of rail services ranging from individual consultancy and collaborative product development to homologation, commissioning, training, maintenance, repair, upgrading and overhaul of all components – as well as a reliable supply of genuine parts. Whether you opt for individual services or the full package, everything is provided locally, either on-site or in one of our service centers.

» TESTING | TEST BENCHES FOR ALL PRODUCTS – WORLDWIDE
Knorr-Bremse can supply test benches for all of the company’s products and systems. The test equipment can be customized and the necessary tools can be provided to exactly suit the customer’s specific test requirements. Hundreds of Knorr-Bremse test benches and test installations are in successful operational service with customers worldwide. Examples of the type of testing covered include: train brake systems, brake control products, compressors, air dryers, tread brakes, brake calipers and there are many more available.

Customized service packages ensure that all Knorr-Bremse systems function smoothly for up to 30 years – anywhere in the world. The secret is our combination of OEM expertise and a highly efficient service infrastructure.
CUTTING-EDGE TECHNOLOGIES FOR UIC STANDARDS

**KE CONTROL VALVE | TRIED AND TESTED, HIGHLY ADAPTABLE**
In production and being continuously improved over many years, there are now over 1.5 million KE valves in use throughout the world. The KE valve has established a reputation for delivering fast, controllable, even and safe operation of the braking system and its proven platform can have many additional features added to it. The modular design of the KE valve allows the customer cost benefits combined with the flexibility to customize features and solutions.

**KINK-CURVE VALVE | AVOIDS WEAR AND OVERLOAD**
The kink-curve valve is an additional valve for braking under load that is simply attached to the KE control valve. In freight trains consisting of cars with differing braking performance, it ensures even braking according to the load and braking requirements and can reduce surface temperatures significantly. The valve comes into its own during long descents, when it effectively protects against excess wear.

**COMPACT FREIGHT CAR BRAKE – CFCB | REDUCING WEIGHT AND OPERATING COSTS**
The CFCB compact bogie tread brake could reduce the weight of freight cars by more than 1,000 kg, making them considerably more economical to operate. Braking force is transferred directly via simple slack adjusters and the cylinder and transmission rod are fully insulated. All bearings are maintenance-free and the system automatically adjusts for block and wheel wear.

**DERAILMENT DETECTION SYSTEM – AUTOMATIC EMERGENCY STOP IN CASE OF DERAILMENT**
The EDT®101 consists of an emergency brake valve, a mounted spring-mass valve and an indicator device. In case of derailment, the increase in vertical acceleration is registered by the spring-mass valve. This immediately activates the emergency brake valve, which opens the main brake pipe and initiates an emergency brake application.
CUTTING-EDGE TECHNOLOGIES FOR AAR STANDARDS

**DB-60 II | WITH BRAKE CYLINDER MAINTAINING (BCM)**

DB-60 II with BCM feature is the “SAFEST” control valve available for the AAR markets as it makes up for the leakage in the brake cylinder circuit. It also improves operational efficiency of the Rail Roads and keeps the freight cars in service longer. It is constructed of the highest quality materials including cold temperature rubber compounds. Highly reliable poppet valves used in the valve deliver the longest life since they are free from friction and stiction, while DB-60 II meets all the requirements of AAR S-464. The DB-60 has proven its reliability in service and has been installed on over 500,000 cars are that in service today throughout North America.

**SLOPE SHEET EMPTY/LOAD**

The EL-60SS valve provides empty/load control for bulk commodity hopper car applications, using the proven EL-60 upstream proportioning technology in a slope sheet package. In addition to a lightweight all-aluminum design, the EL-60SS includes an innovative test feature, which makes single car testing easy.

**TMB-60 | DESIGNED TO LOWER LIFE-CYCLE COSTS**

The unique TMB-60 parallelogram design delivers optimum braking performance using extremely rugged but lightweight beams. TMB-60 is recognised for delivering the industry’s most uniform shoe and wheel wear. With no “through-bolster rods” the risk of equipment damage is significantly reduced. The integrated compression slack adjuster eliminates trigger failures found on competitors’ products. The assembly and set-up process is fast and during car maintenance brake heads can be removed and replaced without de-trucking, providing a major operational advantage. The field proven highly reliable, rugged and lightweight, TMB-60 offers several advantages over the competition.

**KLASING HAND BRAKE – THE MOST RELIABLE IN THE INDUSTRY**

The product line includes vertical wheel, geared hand brake designs (Groups N and O) which are AAR approved and qualified. The robust Klasing design provides improved hand brake survival, reducing rail car life-cycle costs. Quick release levers are available in a short or long handle version, which provides versatility for unobstructed access. The long handle requires less pulling force to activate complete release. Pinion gear and quick release mechanisms are hardened to provide improved wear resistance. A shelf-type winding drum protects the chain from bending, twisting or overlap. The unique winding drum design provides quick chain take-up and also provides smooth gradual release.
The TS 2 Tension Spring Park Brake is a pneumatically controlled automatic park brake. Utilising the wagon’s brake rigging, the park brake can be applied or released throughout the train, without individual manual operation, resulting in reduced operating time, consistent force application and eliminating dragging brakes caused by unreleased manual hand brakes.

The WF5 Triple Valve is the WF5 pneumatic control valve designed for operation on long freight trains. It provides long service life with minimum maintenance. It is made of lightweight but rugged aluminium components for reduced weight and minimised corrosion. It is highly reliable, and system compatible with railways of Australian specifications. It is inherently fail safe, and features outstanding performance response and controllability. It delivers high brake signal propagation rates resulting in reduced stopping distances, inter-train forces and shorter brake release response time.

The KFS Multi-Compartment Reservoir is the next generation reservoir allowing direct connection between pneumatic control valves and their control volumes for braking systems, resulting in improved access for user-friendly system maintenance.

The QB-13 Narrow Gauge Bogie Mounted Slack Adjusted Brake System with Automated Parkloc Parking Brake offers many additional enhancements for operators running on Australia’s narrow gauge railways. With the introduction of a fully automated slack adjuster, a patented ParklocTM automatic parking brake solution and replaceable brake heads, the QB-13 bogie mounted brake system is the industry’s leading design for freight cars. Features include: proven brake beam design, single brake cylinder with integrated ParklocTM automatic park brake, automatic slack adjustment of up to 13” wheel/block combination wear, removable brake heads.
CUTTING-EDGE TECHNOLOGIES FOR MARKETS WITH 1520 MM GAUGE OF THE TRACK

KAB60-01 | KAB60-06 DISTRIBUTOR VALVE
DEVELOPED ESPECIALLY FOR CHALLENGING REQUIREMENTS

Knorr-Bremse distributor valves have enjoyed global success over many decades. Following this success there was a demand for a valve to address the special needs of the Russian market with its 1520 gauge track and extremely low operating temperatures. Freight trains in Russia are also particularly long and travel at relatively high speeds. This means that they need distributor valves that guarantee quick and smooth propagation of brake application and release, right down to the final car in the train. They must also be capable of functioning at temperatures ranging between -60 °C and +80 °C. They must be extremely durable, reliable, safe and compatible with existing braking systems. The development of the KAB60 answered all of these challenges as a result of close co-operation between Knorr-Bremse and Russian specialists and the development of state-of-the-art testing facilities and procedures to prove final performance levels.

PISTON SYSTEMS

- Stress-optimized membranes with special materials for temperatures between -60 °C and +80 °C
- Low-wear, maintenance-free sleeve bearings
- Designed to withstand shock and vibration
- High-quality materials ensure long life
- Sealing and guide surfaces in stainless steel
- Wear-free stainless steel valve seats
- Durable, stainless pressure springs

KAB60-05 DISTRIBUTOR VALVE

- Vertical positioning of the piston systems makes for more reliable functioning in the case of shocks or jolts in the trainset
- Integrated load-dependent adjustment in main portion for precise brake cylinder pressures
- Highly effective air filtering at all compressed air ports
- Easy exterior access
- Reduced stress on car mounting
- Compatible with existing distributor valves
BRAKE BLOCKS FOR UIC STANDARDS

**UIC** The product portfolio of Icer Rail includes organic friction materials developed and manufactured to fulfill the UIC standards and installed in freight trains as well as in other applications.

The product portfolio of Icer Rail includes all types of organic UIC brake blocks.

- **Type LL (IB116* UIC homologation):**
  - Low friction, for direct substitution of cast iron blocks on freight cars
- **Type K (UIC dimensions):**
  - High friction, for new freight cars

**ICER RAIL IS ONE OF THE MANUFACTURER OF THE NEW LL BLOCKS**

The LL-brake blocks can replace the grey cast iron blocks in the existing freight wagon fleet. The new organic LL-blocks improve the surface of the wheels. This advantage generates a big benefit for the environment by a severe reduction of the noise emission.

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BRAKE BLOCKS FOR AAR STANDARDS

**AAR** Anchor Brake Shoe has been manufacturing a full range of AAR compliant composition and semi-metallic freight car brake shoes for over 35 years. Highest quality is combined with "real world" experience to deliver superior performance and value in all applications and service environments.
THE HIGH LOADS AND EXTREME OPERATING CONDITIONS TO WHICH MODERN FREIGHT TRAINS ARE SUBJECT DEMAND TECHNOLOGICALLY ADVANCED, RELIABLE AND SAFE BRAKING SYSTEMS Knorr-Bremse designs every braking system to address the specific operating conditions of the freight train and to deliver performance, reliability and safety. Wearing parts are minimized to deliver high levels of economy and vehicle availability. As a manufacturer of braking systems with more than 100 years’ experience, Knorr-Bremse has the necessary expertise to achieve this. High levels of research and development investment ensure that our systems remain cutting-edge. With RailServices Knorr-Bremse offers a high-quality portfolio of maintenance and aftermarket services ranging from original spare parts and maintenance agreements right down to responsibility for complete systems during the entire life cycle. Customers also benefit from a comprehensive network of service centers for all freight braking and on-board systems.