Electromagnetic brake systems for industrial trucks

INTORQ

setting the standard

Electromagnetic brake systems for industrial trucks

Our product have been setting standards for years and meet the most demanding requirements. Our knowledge of our customers' requirements during development, our expertise in choosing materials and our production skills are all reflected in our products. The success of these products shows that we are right. Our brakes and clutches speak for themselves: they stand for quality, sophisticated technology and innovation.

In the field of stacker drives, INTORQ brakes have already proven their worth a thousand times over in DC-driven electric vehicles.

And for new vehicles developed using AC technology, we are able to supply brake systems that are tailored to the new requirements. As a result, our customers benefit from standard solutions based on the expertise we have built up over years and from our skills in devising project solutions.

The latest development is an inductive speed measurement system that is integrated into the brake space. This solution creates conditions that are ideal for using compact brake systems.

SPRING-APPLIED BRAKE
INTORQ BFK458
E AND N VERSIONS

SPRING-APPLIED BRAKE
INTORQ BFK457
BASIC AND COMPACT VERSIONS

2-STAGE SPRING-APPLIED BRAKE
INTORQ BFK442

INTORQ BFK457-12 SPRING-APPLIED BRAKE
WITH HYDRAULIC CONTROL

LOAD WHEEL BRAKE
INTORQ 14.115

BRAKE CONTROL
INTORQ CONTROL

INTORQ

INTORQ brakes are used in these types of vehicle

- Electric fork-lift pallet truck with and without driver's platform
- Electric standing/seated fork-lift truck
- Electric pallet stacker with wheel support
- Electric side-seat stacker with wheel support
- Electric reach fork lift truck
- Horizontal picking truck
- Vertical picking truck
- High-bay stacker

INDUSTRIAL TRUCKS STOP ACCURATELY WITH INTORQ BRAKES

Long maintenance intervals and high holding torques

Our brakes may be combined with different friction linings to suit the application (noise-reduced versions also available).

MAIN DRIVES IN FORK-LIFT TRUCKS

INTORQ

The right brake for every application

INTORQ spring-applied brakes from the series listed below are suitable for use specifically as parking brakes and as emergency stop and operating brakes. For dynamic deceleration, defined control of the braking torque is also possible. In this way, the vehicle decelerates in the ideal way for the conditions of use.

The versatile modular system INTORQ BFK458

Our modular system forms the basis for a product range that offers versions tailored for almost any task. The BFK458 spring-applied brake, as a standard product, can be used anywhere, but its modular structure also meets the requirements of specific industries. Its strength lies in its versatility.

Characteristics

- Braking torques: 2– 600 Nm
- 9 sizes in CSA-CUS version
- DC voltages: 12, 20, 24, 42, 70, 103, 180, 205 V
- Thermal class F (155 °C)
- Preset air gap
- Braking torque can be reduced (model E)
- Long, low-wear rotor/hub guide
- Manual release devices for all sizes
- Optional air gap and wear monitoring

Applications

Brake motors, cranes, warehouse equipment, woodworking machinery, industrial trucks, stage machinery, vehicles for disabled persons and escalators

Compact and easily fitted
INTORQ BFK457

Often, the brake is only required to perform its basic function. The BFK457 is ideal for these situations. The speed of fitting with integral fixing screws and fixed air gap make this spring-applied brake even more attractive.

Characteristics

- Braking torques: 0.12–125 Nm
- 9 sizes
- DC voltages: 20, 24, 42, 70, 205 V
- Thermal class F (155 °C)
- Compact construction with rotor and flange
- Integral fixing screws for quick and easy assembly
- Fixed air gap
- Double spring-applied brake version is noise-reduced <50 dB(A)

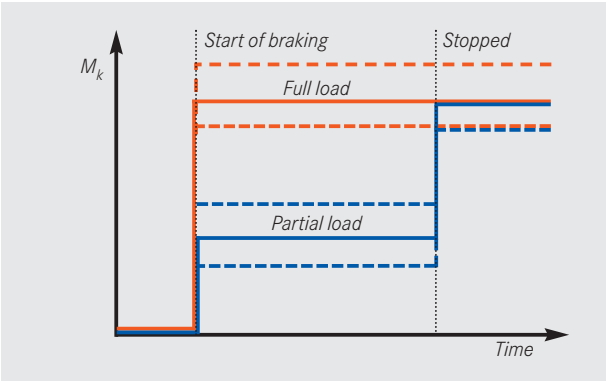
Applications

Small motors, vehicles for disabled persons, woodworking machinery, automation systems and general engineering

INTORQ BFK442
Acts as a load-dependent
2-stage spring-applied brake

Characteristics

- Sizes 12 – 18
- Braking torques 25 – 150 Nm
- DC voltages: 20, 42 and 70 V
- For partial loads, only the outer armature plate is applied; the inner armature plate is activated when stationary for partial load operation
- For full loads, both brake stages work synchronously
- Both stages are released at the same time
- The two braking torque stages can be set individually
- The inner armature plate is guaranteed to hold safely, regardless of the temperature
- Long service life due to wear-resistant linings
- Brake can be adjusted several times if worn

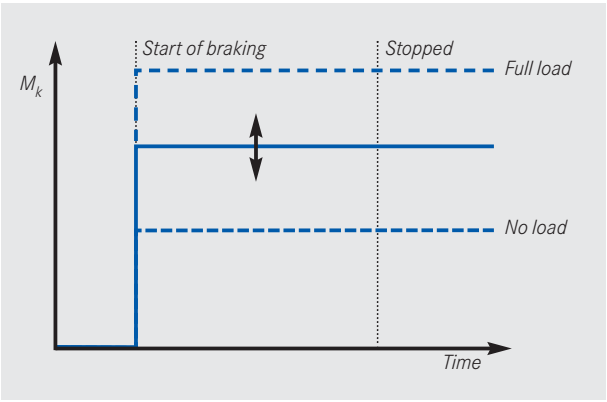


The right brake for every application

INTORQ BFK457
Brake with hydraulic support for load-dependent braking on fork-lift pallet trucks

Characteristics

- Normal is regenerative
- The electro-hydraulic control only takes over braking in an emergency
- INTORQ BFK457-12 with braking torques of 12 Nm – 45 Nm with hydraulic support
- The emergency stop function can be activated by moving the forks into the vertical position
- The specially-matched halves of the friction lining conform fully with the legally-required deceleration for no load, partial load and full load operation, regardless of the driving direction
- The basic torque is ensured because the spring force is factory-set with high precision. This also determines the emergency braking from the no load range
- An optimised magnetic circuit gives the brake a large working air gap
- A wear-resistant rotor can also be used to double the time before the air gap has to be adjusted



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Pyroban for explosion-proof areas

II 2 GD

Pyroban is the market leader in the production of explosion protection upgrade equipment for industrial trucks. Vehicles and INTORQ spring-applied brakes can be upgraded via Pyroban in the Netherlands. All the important advantages and characteristics of INTORQ spring-applied brakes will be retained.

INTORQ BFEX58
The explosion-proof spring-applied brake

Suitable for use in:

- Potentially explosive atmospheres in zones 1 and 2
- The petrochemical and pharmaceutical industries, for example for manufacturing paints, solvents, cosmetics, ammunition and explosives

Applications

- e.g. controlled drives in processing facilities and industrial trucks

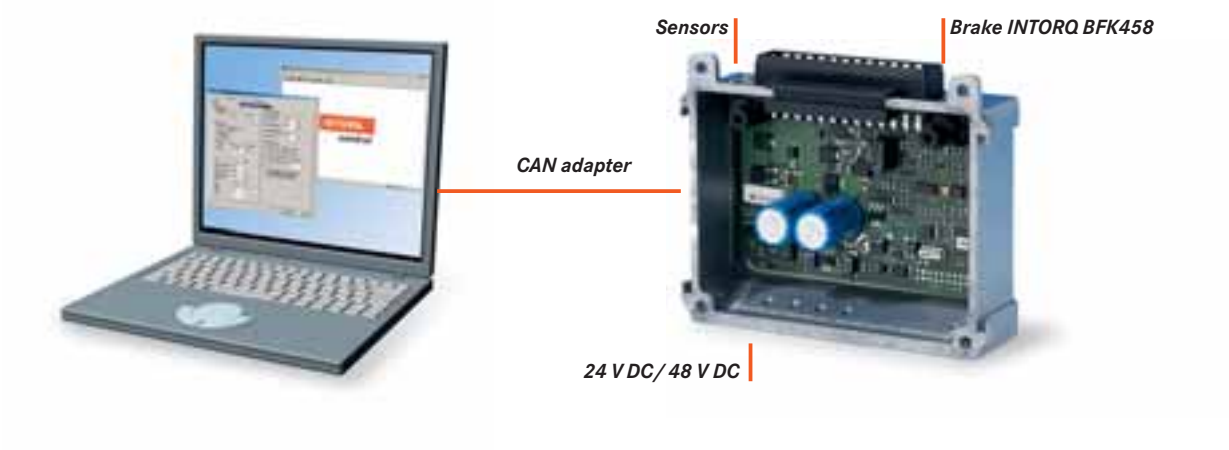
Other characteristics:

- Thermal sensor in both armature plate and flange
- Connecting cable with explosion-proof screwed connection
- Non-sparking brake pads with wear monitoring

Technical data:

- Tested in accordance with the EU Directive (ATEX) for explosion-proof equipment
- Certificate: KEMA 01 ATEX 2123X
- Type of protection: Increased safety EEx e II T4
- Degree of protection: IP65

The mechatronic brake system INTORQ Control

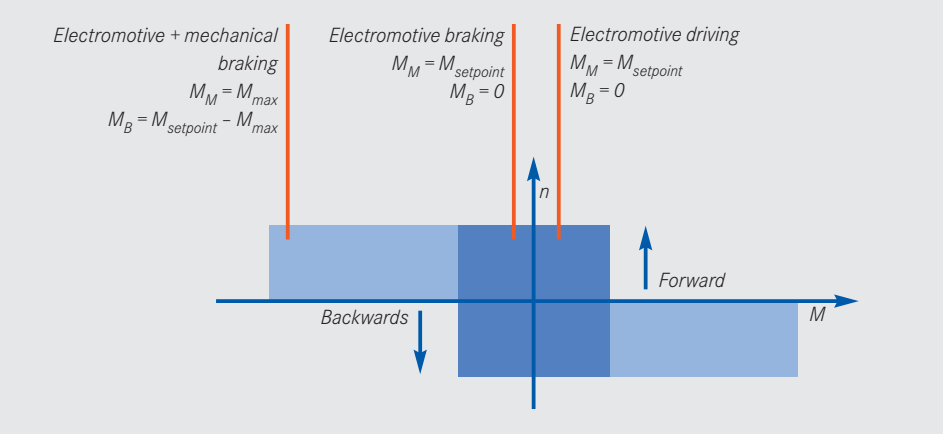


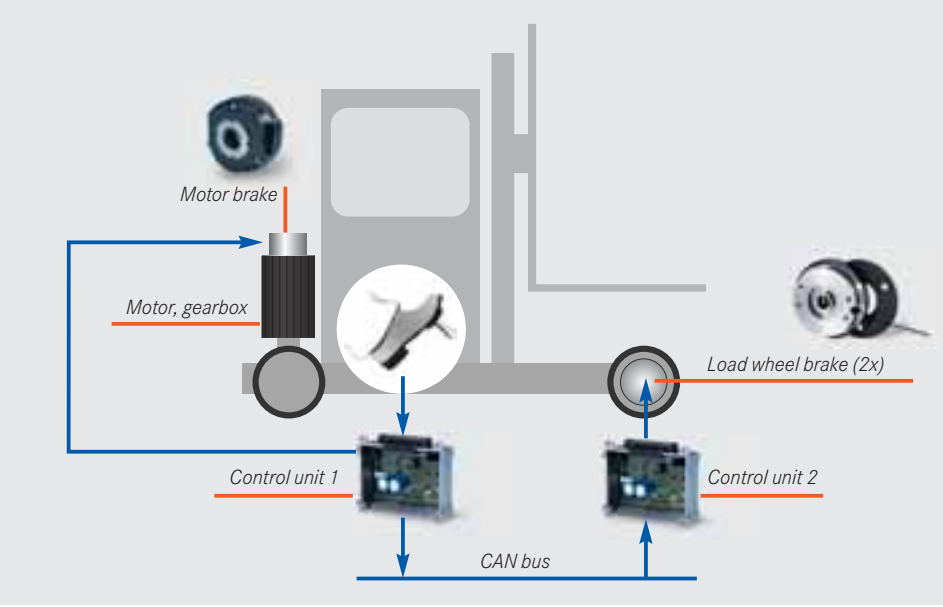
Characteristics

- Used for controlled braking of battery-driven vehicles for stacker applications
- The combination of spring-applied brake with an intelligent control optimises the load-dependent braking torque control (load-independent stopping distance)
- The control range is 20 % to 100 % of the characteristic torque
- The INTORQ Control parameters are set using the Windows user interface – although they can be supplied pre-programmed for your application
- The following operating modes are available:
  - Pedal-controlled braking
  - Ramp-controlled braking
  - Pedal ramp-controlled braking
  - Sensor-controlled braking
  - Speed-controlled braking
- INTORQ Control communicates with the vehicle controller via the integral CAN bus
- INTORQ Control boasts a range of integral safety prompts. For example:
  - wear, temperature and operating voltage are monitored and locking of the driving wheel is detected (quasi ABS function)
- The operating voltage ranges between 24 V and 48 V
- Required for operation:
  INTORQ Control drive, starter kit with software, connectors and contacts
- The INTORQ Control can be used for:
  - Spring-applied brakes INTORQ BFK458-N, sizes 08 –16
  - Electromagnetic brakes 14.115 sizes 06 – 20

Example of a brake concept for a reach fork lift truck

To be able to decelerate harder than accelerate, a supporting and dynamically-acting braking torque that can be metered (regulated) on all three wheels is needed. The interaction between the brakes and the regenerative braking effect of the motor requires the brake control to cooperate fully with the onboard drive concept.





Operating mode

- The motor control generally allows regenerative braking
- The INTORQ brake system consists of two working current load wheel brakes and one fail-safe spring-applied brake mounted on the traction drive
- The load wheel brakes are easy to control, so they can be used as working brakes
- The spring-applied brake acting on the drive motor is used as a parking brake with emergency stop function
- The ease of use can be further increased by using the INTORQ control circuit
- INTORQ Control allows the vehicle to be braked, regardless of the load and direction of travel – the driving wheel does not lock up (quasi ABS function)
- Even without INTORQ Control, the brake concept can be used as a partly controlled system (current control)

INTORQ – Service and Sales worldwide

Our customers can reach us at any time from anywhere in the world. We cooperate with Lenze's network of worldwide sales offices and service centres.
Our helpline (008000 24 46877) will provide you with expert advice, 24 hours a day, 365 days a year.

Information about our products, catalogues and Operating Instructions can be found at **www.intorq.de**

Contact the Lenze service centres and sales partners through the Lenze website **www.Lenze.com**.

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