Electromagnetic *brake systems* for lifts

Lenze moditorque – Safe standstill
For many years, our products have set standards and met the highest requirements. Our products reflect our consideration of customer requirements during design and development, our expertise in selecting the right materials and our manufacturing skills. Our success speaks for itself, Lenze brakes and clutches stand for something: quality, cutting edge technology and innovation.

In lift technology, the different designs of Lenze brakes have proven themselves. Furthermore, specifically adjusted brake systems are required since direct drives are replacing conventional lift drives. The newly developed kidney-shaped disk brake with caliper BFK466 with several coils provides the high braking torque required in direct drives. It has been optimised with regard to motor contours and can reach up to 9000 Nm when using several calipers. If the required redundancy is taken into consideration, the high requirements to passenger lifts can be met.

For goods lifts ...

Spring-operated brake BFK458
Spring-operated brake BFK457
For passenger lifts ...

Double spring-operated brake BFK458

Twin-circuit spring-operated brake BFK454 (TÜV-tested)

Multi-pole spring-operated brake BFK466
Lenze spring-operated brakes of the model series BFK457 and BFK458 are suitable for the specific application in goods lifts without special safety requirements. Please see our catalogues for further technical features.

**Spring-operated brake BFK457**

**The basic solution**

**Features:**

- 9 sizes from 0.5 ... 125 Nm
- Adjusted braking torques can be supplied
- Standard voltages
  - 24 V/205 V (further voltages on demand)
- Thermal class F (155 °C)
- Protection class according to IP55
- Completely pre-assembled with integrated fixing screws
- With or without anti-friction plate (flange), if required
- Air gap exactly set
- Supplied with screws for emergency manual release and transport safety device
- High wear resistance of the linings
- Optimum corrosion protection
- Designed for 100% operating time
Spring-operated brake BFK458
The versatile modular system

Features:
- 9 sizes from 2 Nm ... 600 Nm
- Braking torque can be individually adjusted
- CSA-CUS-approved
- Pre-set air gap
- Standard voltages
  - 24 V, 103 V, 170 V, 180 V, 190 V, 205 V (further voltages on demand)
- Thermal class F (155 °C)
- Protection class according to IP55
- In the case of wear, the brake can be readjusted several times
- Manual release, emergency manual release, silenced versions, optional: micro switches to monitor the air gap or wear
- High wear resistance of the friction linings
- Designed for 100 % operating time
- Long guide splines between rotor and drive
**Products**
The ideal brake for each application

**Double spring-operated brake BFK458**

Lenze spring-operated brakes of the model series BFK458 are suitable for passenger lifts. The required redundant brake system consists of the modular components of the BFK458.

**Noise-reduced designs**

The required silencing for lift technology and other application examples can be met by two optional measures:

1. **Impact noise-reduced armature plate**
   The operating noise of the brake can be minimised by O-rings which act as limit stop dampers between magnet housing and armature plate.

2. **Noise-reduced aluminium rotor**
   Rattling noises occurring e.g. during alternating loads in the joint between rotor and hub can be reduced if a rotor with a plastic sleeve is used.
<table>
<thead>
<tr>
<th>Size</th>
<th>$M_k$</th>
<th>$d_{1}\text{ max.}$</th>
<th>$d_1$</th>
<th>$d_2$</th>
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<th>$d_{4\text{ max.}}$</th>
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\textsuperscript{1)} Cable length
\textsuperscript{2)} Keyway according to DIN 6885/3-P9

Optional: manual release

$M_k$: Rated braking torque in Nm based on $\Delta n = 100 \text{ min}^{-1}$

(Other rated torques on demand)
Twin-circuit spring-operated brake BFK454

The Lenze twin-circuit spring-operated brakes for lift systems are TÜV-tested and meet the requirements of the TRA 200 or EN 81 for lift systems.

The twin-circuit system of the brakes is created by dividing the armature plate; the spring force that provides the braking torque acts:

- to 80% directly on the front armature plate and
- to 20% indirectly on the rear armature plate (values given for the standard setting).

<table>
<thead>
<tr>
<th>Size</th>
<th>Mₙ</th>
<th>P₂₀</th>
<th>b</th>
<th>d₁/₄</th>
<th>d₁/₈</th>
<th>d₄</th>
<th>d₅</th>
<th>d₆</th>
<th>d₇</th>
<th>d₈</th>
<th>d₉</th>
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<td>152</td>
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<td>155</td>
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<td>85</td>
<td>120</td>
<td>16</td>
<td>24</td>
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</table>

Standard voltage 205 V (other voltages on demand)
Mₙ: Rated braking torque in Nm based on Δn = 100 min⁻¹
(other rated torques on demand)
P₂₀: Coil power at 20°C in watts
l₁: Cable length
m: Mass in kg

Standard featherkey way according to DIN 6885/1-P9
Manual release angle tolerance +3°
Modifications reserved!
All dimensions in mm!
The front armature plate is axially guided by the rear armature plate. Due to this design, at least the spring force acting directly on the front armature plate can be maintained in the case of a failure.

## Advantages

- Small dimensions
- Low moment of inertia
- Fast reduction of braking torque, depending on the operating conditions
- Easy maintenance and checking of the twin-circuit function
- Friction surfaces not divided

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### Table

| d17 | di  | da | h  | h1 min | h1 max | h2 | h3 | h4 | h5 | h6 | h7 | h8 | h9 | h10 | l  | l1 | r  | Sω | x  | α | β | m | Gr |
|-----|-----|----|----|--------|--------|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|---|---|---|---|---|
| 60  | 66  | 95 | 52,5| 56,5  | 60,1  | 2  | 9  | 31,4| 134 | 73,8| 23 | 46,4| 77,8| 1,5 | 20 | 400| –  | 0,3| –  | 25 | 9° | 2,6| 10 |
| 68  | 70  | 115| 58,9| 63    | 68,5  | 2  | 9  | 33,4| 163,5| 85  | 23 | 51,4| 88,5| 1,5 | 25 | 400| 80,5| 0,3| 13 | 25°| 10°| 4,3| 12 |
| 85  | 80  | 124| 68,5| 73,5  | 79,5  | 2  | 11 | 36  | 195,5| 98  | 32 | 53 | 101,5| 1,5 | 30 | 400| 88,5| 0,3| 11,5| 25°| 9° | 6  | 14 |
| 98  | 104 | 149| 77,5| 82,5  | 87,5  | 2,25| 11 | 42,5| 240  | 113 | 32 | 58,5| 116 | 1,5 | 30 | 600| 99 | 0,3| 11 | 25°| 10°| 9,2| 16 |
| –   | 129 | 174| 88,1| 94    | 103   | 2,75| 11 | 46,1| 347  | 124 | 32 | 64,1| 128,5| –  | 35 | 600| 112,5| 0,4| 7  | 25°| 9° | 14 | 18 |
| –   | 148 | 206| 102,6|109   | 119   | 3,5 | 11 | 52,6| 418  | 146 | 32 | 73,6| 149,5| –  | 40 | 600| 112,5| 0,4| 3) | 25°| 10°| 21,9| 20 |
| –   | 199 | 254| 111,7|120  | 130   | 4,5 | 12,5| 63,7| 504  | 170 | 32 | 94,7| 175,5| –  | 50 | 600| 155 | 0,5 | 3) | 25°| 10°| 32,5| 25 |

1) Pilot bore without featherkey way
2) Bore holes offset by 30° to the center axis of the manual release lever
3) No excess end
Multi-pole spring-operated brake BFK466
For braking torques up to 9000Nm

- **Disk brake**, spring-operated, built-in redundancy, modular and extensible design
- **Powerful**: High braking torque and wide air gap
- **Silent operation**: Brake release free of residual torque and quiet switching
- **Compact**: Optimum adaptation to the motor design
- **High energy density**: High magnetic forces due to overcurrents
- **Low energy consumption**: „Cold brake“ due to low holding current
- **Safe**: Release and wear monitoring by micro switches

Products | The ideal brake for each application
<table>
<thead>
<tr>
<th>Design</th>
<th>$M_b$ (Nm)</th>
<th>$P_{SW}$ (W)</th>
<th>b1</th>
<th>b2 (ca.)</th>
<th>da</th>
<th>di</th>
<th>d1</th>
<th>d2</th>
<th>d3</th>
<th>h1</th>
<th>h2</th>
<th>h3</th>
<th>h4</th>
<th>h5 (appr)</th>
<th>h6 (appr)</th>
<th>r1</th>
<th>r2</th>
<th>$S_{UL}$</th>
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* Rated braking torque per caliper based on the relative speed $\Delta n = 100 \text{ min}^{-1}$
For us, service is more than just supporting the use of our drives. The Lenze system approach begins with your enquiry. Next you get technical information and advice from a network of sales outlets staffed by knowledgeable engineers. If you want, we follow up with training, commissioning, maintenance and repair. Our service is always at your disposal.

With passion
The Lenze team does not just offer the necessary manpower and technical know-how – we are passionate and meticulous about what we do. We will only be happy once you are entirely satisfied with our work. Our team of professionals provides assistance over the telephone or on site, ensures the express delivery of spare parts and carries out repairs with incredible urgency. We’re fast and reliable.

Someone to talk to
Expert advice is available for all your technical queries via our helpline. In cases of urgent need, call 008000 24 hours (008000 24 46877), Lenze’s worldwide expert helpline – 24 hours a day, 365 days a year. For more direct assistance, you can of course contact your local Lenze service support centre. We can tell you where it is – or you can find out for yourself by visiting us on the Internet at www.Lenze.com.

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