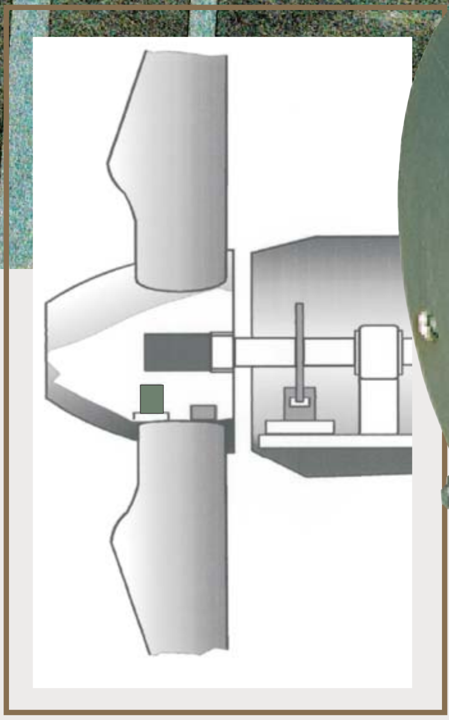
Stromag Dessau

safety in motion

BZFM V7



Applications

Brake series for mounting to standard electric motors as general industrial brake.

Standard Features

Coil Body with coil	thermal class 155 (F), special surface protection
Friction lining carrier	Rigidly fixed on motor shaft via fitting key, zinc coated
Friction Lining	Axially flexible friction pads in the friction lining carrier allow a high tolerance when fixing friction lining carrier on the shaft thus simplifying the mounting on brake assembly
Adjusting Ring	a simple reduction of the brake torque up to a value of 55 % is possible
Adjusting screws	several possible screw – type wear re-adjustment
Armature Plate	Special protection: nitrocarburated
Brake disc	Special protection: nitrocarburated
Fixings screws	included in delivery, zinc coated
Flying Leads	0,5 metre long

Optional Extra’s

- Hand release lever
- Micro switch to monitor switching states (from size 6,3)
- Micro switch for wear monitoring (from size 6,3)

Switching modules

- Half wave
- Full wave
- Quick switching units

Advantages

☑ Torque range 2,7 -380 Nm.

☑ Simple assembly to motor, no dismantling of brake required.

☑ Completely pre-mounted and adjusted.

☑ All surfaces are corrosion resistant.

☑ Compact, simple construction with high heat capacity.

☑ The fitted friction pads form an interrupted friction face thus resulting in good air circulation and heat dissipation.

☑ Less wear due to high stability of the friction material.

☑ Delivered in run-in and torque tested condition.

☑ Simple torque adjustment with adjusting ring.

☑ As a standard, prepared for hand lever mounting – retrofit possible without any problems.

☑ Free from axial loads when braking and running.

☑ Suitable for vertical mounting, please consult Stromag Dessau GmbH.

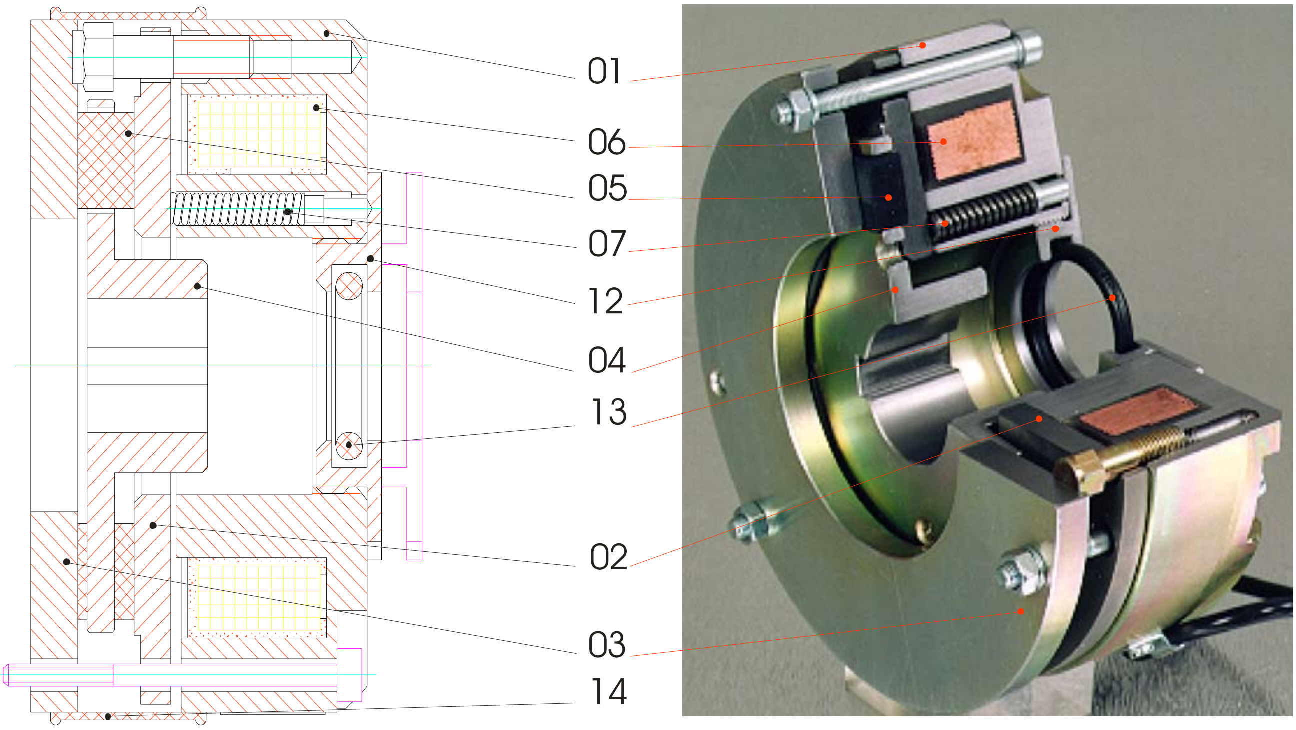
☑ Proven reliable design.

☑ Protection IP 44 by rubber collar and seal ring on through-going shaft

Voltages available

Standard 24 V DC, 103 V DC, 190 V DC and 207 V DC, 240 V DC
Other voltages on request.
Coils available to suit: AC – supplies with Half and Full wave rectification.
We suggest the following alternative - Customer to take standard voltage with rectifier which Stromag Dessau can provide.

Designation of individual components



01	Coil body
02	Armature disc
03	Brake disc (counter friction face)
04	Friction lining carrier
05	Friction lining
06	Coil
07	Spring
12	Adjusting ring
13	Seal ring
14	Rubber collar

Brake operation

The brake **BZFM V7** is a spring loaded electromagnetic double-face brake which brakes without current and is released electromagnetically.

The coil body (01) contains a coil (06) which is potted with an synthetic resin compound in accordance with thermal class 155**,** (max. limit of temperature 155°C).

If the coil (06) is not excited, the springs (07) which are situated in the internal and external pole, press the armature disc (02) against the floating formatted friction lining carrier (04). Thus is firmly clamped between the torsion-protected armature disc (02) and the brake disc (03) and thus prevented from rotating. The braking effect is transmitted from the friction lining via the carrier with friction lining (04) and a feather key to the shaft.

If the coil (06) is connected to a direct voltage as specified on the identification plate or about a Stromag rectifier set to a alternating voltage, the magnetic force will draw the armature disc (02) to the coil body (01) against the spring pressure (07). The friction lining is released, the braking is cancelled and the brake is released.

☑ **Micro Switch**
standard option available from size 6,3 up to 25, Inboard Proving Switch, one common contact, one normally open contact and one normally closed contact.

This can be interlocked with motor contactor for parking brake duty, i.e. brake release before starting motor.

☑ **Brake termination**
Flyaway leads, usually 0,5 meter long.
Please note that when the brake is electrically connected to an AC motor and switched on the AC side, care must be taken so that the load does not drive back into the motor and generate a voltage that may hold the brake off, i.e. in hoist and lift applications. If in doubt please contact the Stromag Dessau GmbH.

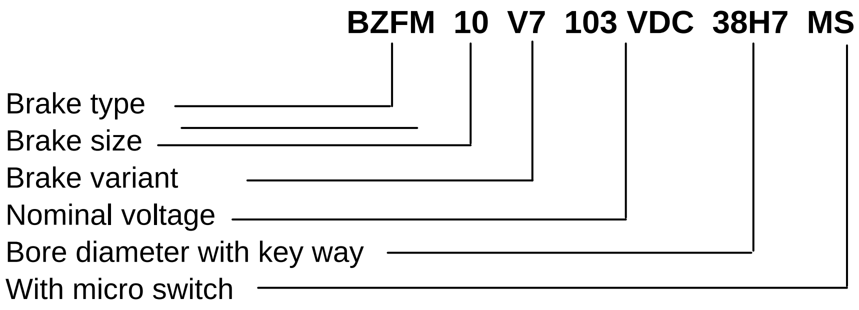
☑ **Emergency release by means of hand lever release**
Optionally the brake can be equipped with a hand release lever allowing the manual release by means of a hand lever. The brake is prepared for hand lever mounting – retrofit is possible without any problems.

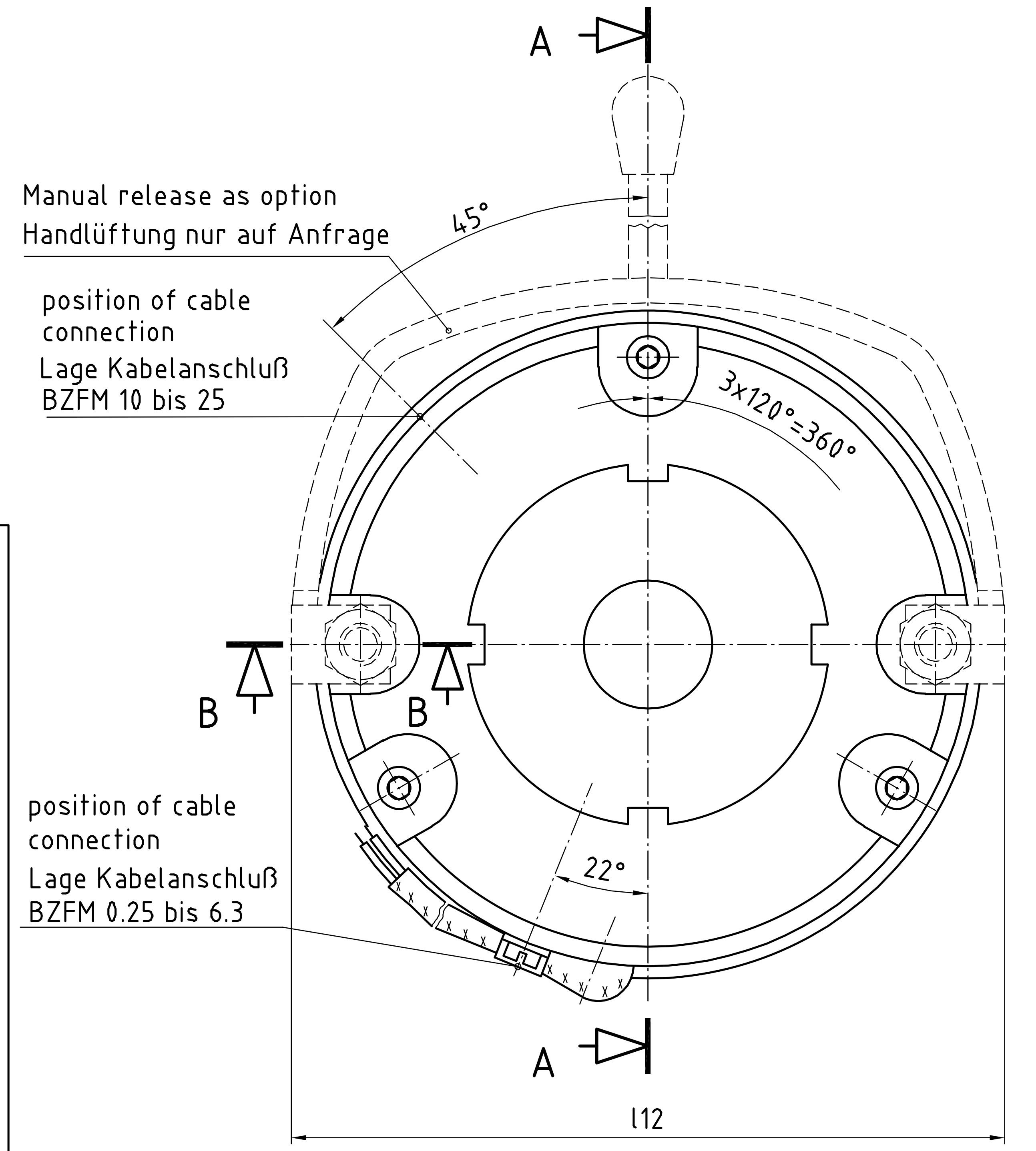
☑ **Brake flange**
Counter-friction face mounted to the motor on B-side.

☑ **Adjusting ring**
A simple reduction of the brake torque up to a value of 55 % is possible.

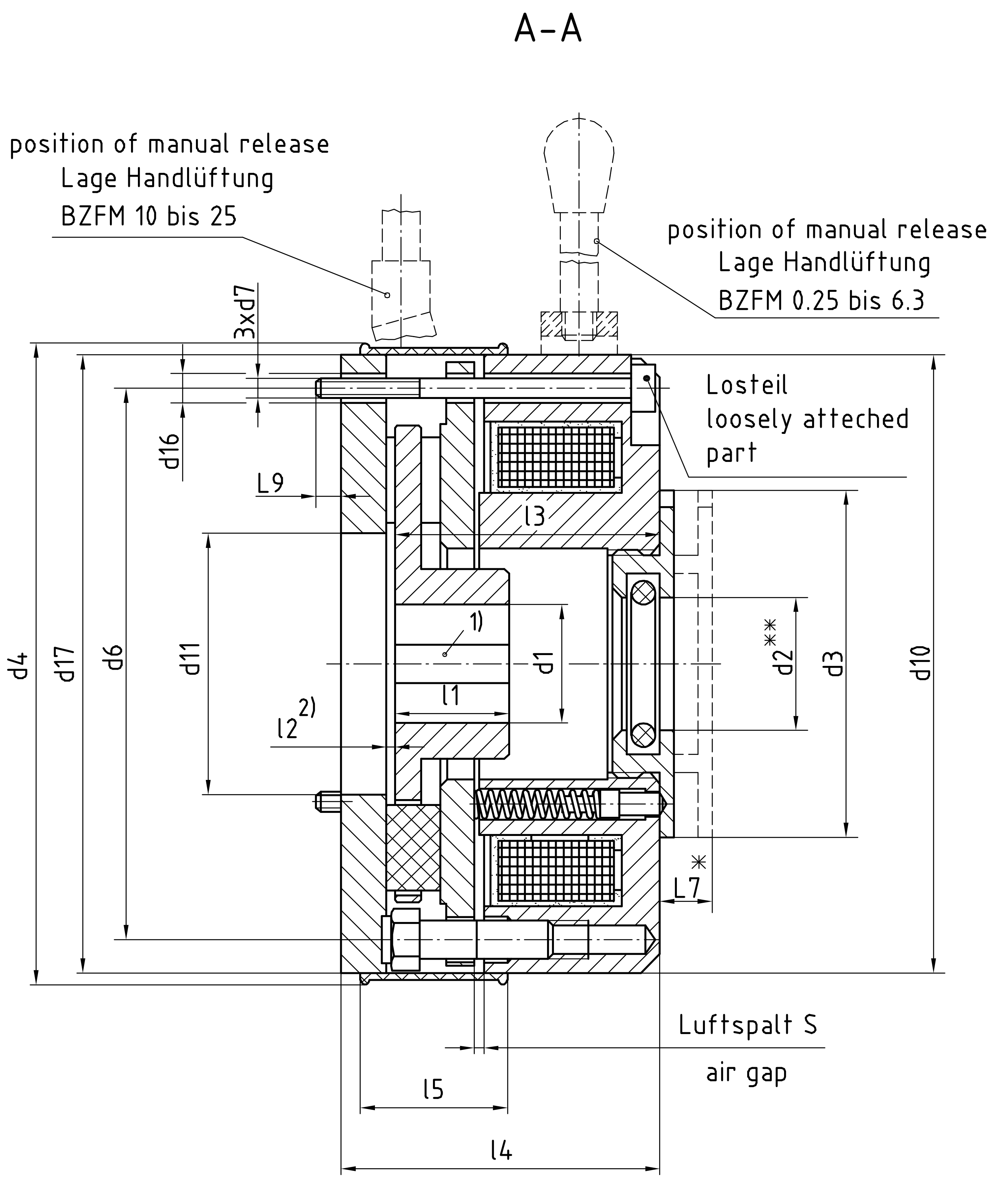
☑ **Adjusting screws**
The airgap of the brake can be re-adjusted several times until the lower wear limit of the friction lining is achieved.

Example of designation

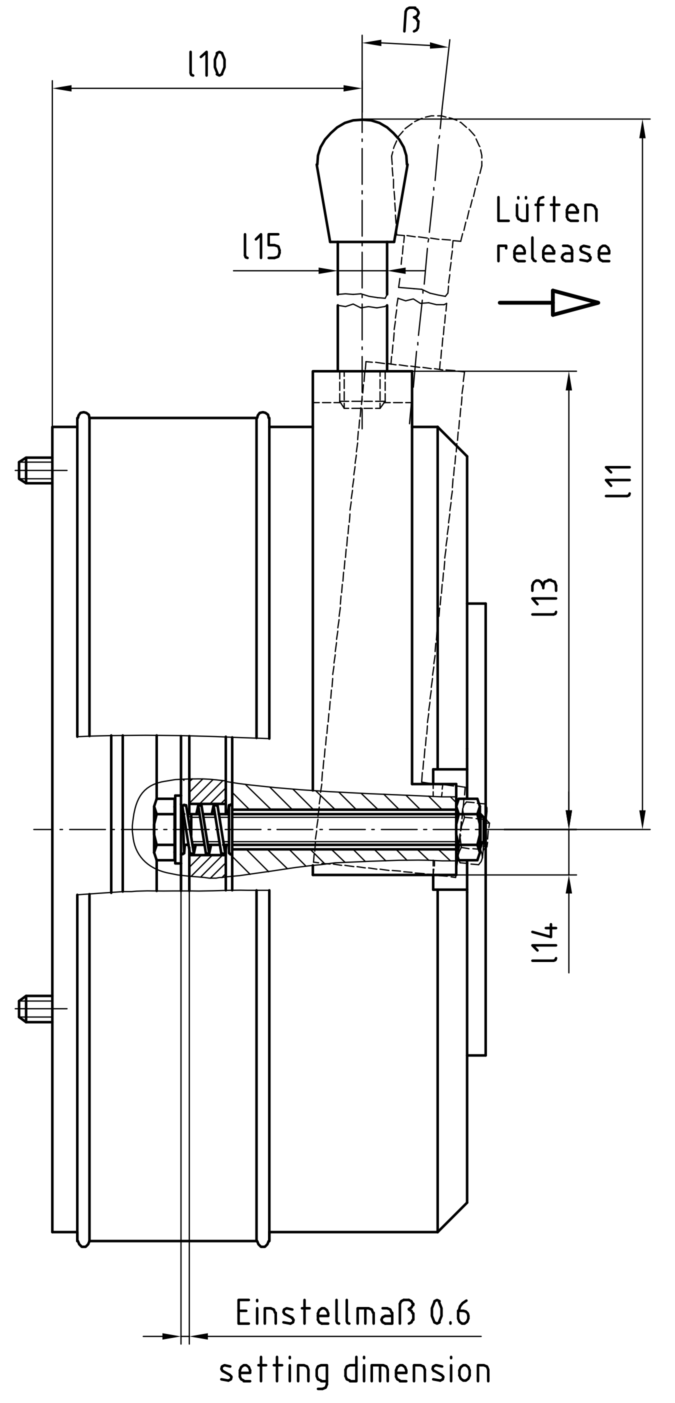




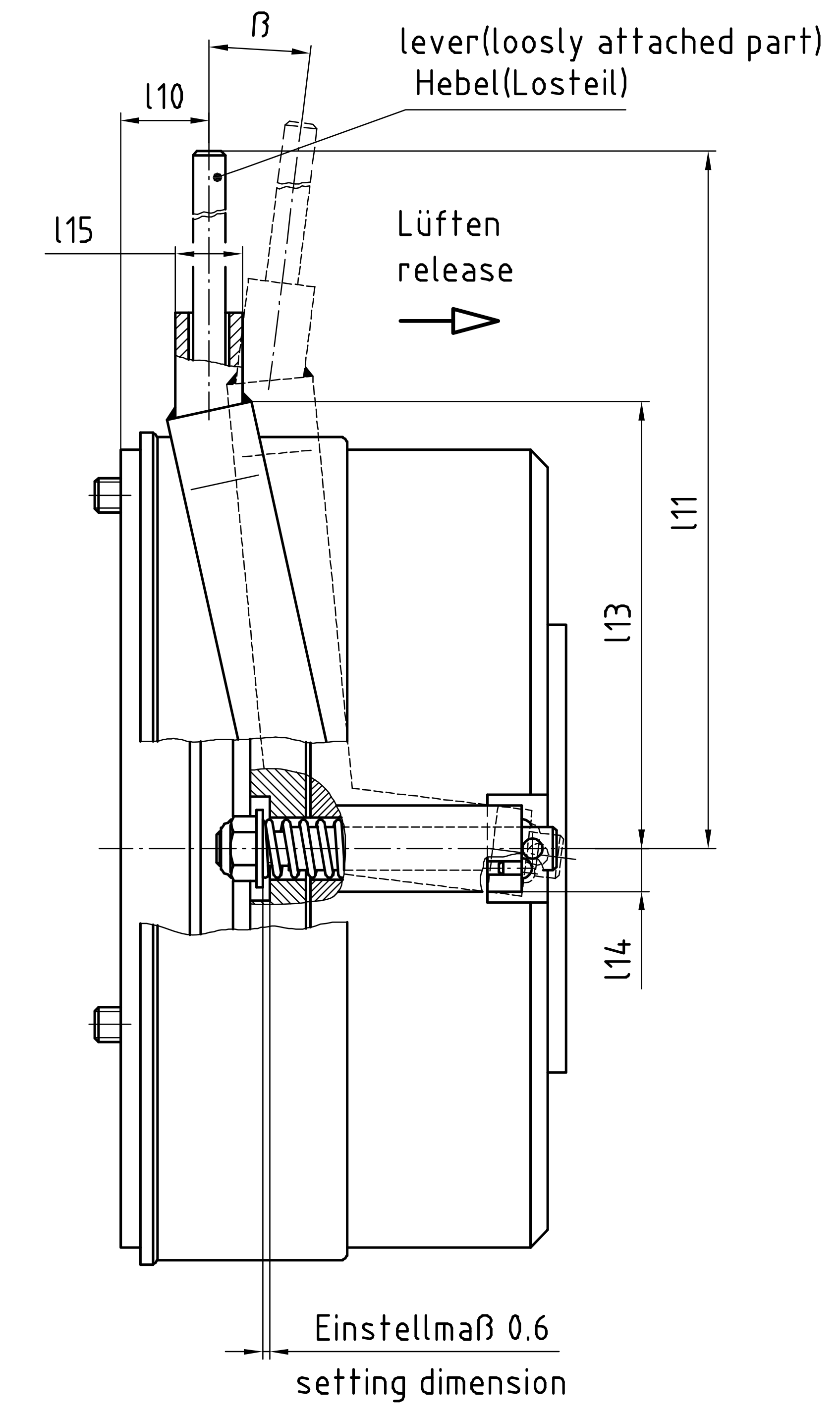
A-A



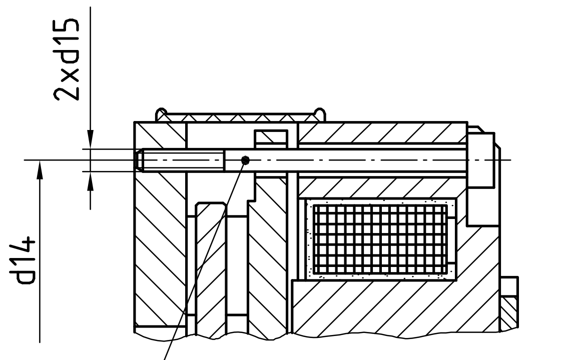
Handlüftung BZFM 0.25 bis 6.3
manual release BZFM 0.25 up to 6.3



Handlüftung BZFM 10 bis 25
manual release BZFM 10 up to 25



B-B



Montagehilfsschrauben!
Nach Anbau der Bremse
an den Motor, müssen
diese Schrauben 2x180°
entfernt werden

mounting srews!
After mounting of the brake
the srews 2x180° must
be removed

Bremsentyp BZFM	M_N Nm	d1 min H7	Vorzugsbohrung d1 H7	d1 max H7	d3	d4	d6	d7	d10	d11 H9	d14	d15	d16	d17	L1	L2	L3	L4	L5	L7* ca.	L8	L9	L10	L11	L12	L13	L14	L15	ß ca.	Luftspalt S min/max	Länge Anschlußkabel ca.	Masse kg
0.25	3	10	11/12	12	48	91	74.5	M4	85	28	73	M4	4.3	85	20	1.5	36.4	44.8	24	6	7	6	31	113.5	95	48.5	6	8	6°	0.25/0.4	400	1.5
0.63	6.3	10	12/15	15	55	106	89	M4	100	40	87.5			100	20	1.5	37.9	46.4	24	5.9	7	6.3	33	120.5	109.5	55.5	6	8	7°	0.3/0.5	425	2.1
1.6	13.5	15	16/20	22	64	118	100	M4	112	50	100			112	20	1.5	44.9	53.4	24	7.2	7	6.8	39	126	122	61	6	8	7°	0.3/0.5	480	3
2.5	27	15	20/22	25	73	136	116	M5	130	55	116	M6	5.4	130	25	1.8	53.8	64.4	30	8.2	9	6.6	46.5	154	144	74	8	10	5°	0.3/0.5	550	5
4.0	37	20	22/25	28	80	152	130	M6	146	65	130		6.4	146	30	1.8	56.5	68.3	30	8.2	10	12	49.5	162	162	82	8	10	5.5°	0.3/0.5	585	6.3
6.3	65	25	30/32	35	86	166	144	M6	160	80	144			160	30	1.8	62.8	74.6	30	9.6	10	9.6	54.7	169	176	89	8	10	6°	0.4/0.7	615	9.3
10	125	32	35/38/40	45	98	193	164	M10	185	65	162	M10	10.25	185	35	2.0	82.5	96	48	8.4	11.5	14	14.5	420	210	100	10	14	7.4°	0.4/0.7	560	14.8
16	250	40	45/48	50	115	224	194	M10	216	95	196			216	40	2.0	90.5	106	48	8.4	13.5	13.3	10.5	440	247	122.5	12.5	14	6°	0.4/0.7	650	22
25	380	40	45/50/55	60	134	262	228	M12	254	130	228	M12	12.2	254	50	2.0	92.6	109.1	48	7.3	14.5	14.8	11.5	460	294	147.5	12.5	14	6.4°	0.5/0.8	790	31.6

Bei Abweichung von der skizzierten Form ist das Maßblatt sinngemäß anzuwenden!
At deviation from drawing it is apply synonymously!

1) Paßfedernut nach DIN 6885 Blatt 1 — Keyways to DIN 6885 page 1 , Js9

2) L2 unter Berücksichtigung des axialen Spieles der Motorwelle — L2 with consideration of the axial interplay of the motor shaft

* Bei Reduzierung des Nennmomentes um 45% — With reduction of nominal torque of 45%

** d2 = d1 + ca. 1.5 mm

Alle nicht bemaßten Kanten 0.3x45° gebrochen
Halbzeug/Werkstoff
Modell-Nr.
Form- und Lagetoleranzen DIN ISO 1101
zul. Abw. für Maße ohne Toleranzang. DIN ISO 2768-m
AZ | Mitteilung | Datum | Name
Datum | Name
Bearb. 28.10.03 Wl
Konst.
Technol.
Stand.
Benennung
Anbaubremse Maßblatt
BZFM 0.25 bis 25 V7
Maßstab o.M.
Bl.Anz. Bl.Nr.
Masse s. Tabelle!
Zeichnungs-Nr.
M8-331(2)
MBL025V71.dwg
Ers. für
Ers. durch
Stromag
Dessau GmbH

CAD- Zeichnung

Calculations

Full Load Torque = FLT
Load torque = Nm
Torque = Nm
Power = kW
Constant = 9550
Speed = rpm

Initial Torque, size of brake = FLT x Factor (25% - 200%)

Calculating Maximum Stops per Hour using Braking Tables

Example:

Motor = 4 kW; 3000 rpm
J = Total inertia of Load + motor = 0,0245 kgm^2
M_L = Load Torque = 20 Nm
M_{SN} = Brake Torque = 100% FLT

Motor FLT $= \dfrac{kW \times 9550}{rpm} = \dfrac{4 \times 9550}{3000} = \underline{\underline{12.7}}$ Nm

Brake selection = BZFM 10 V7 (113 Nm)

KJ per switching

$$= \frac{J \times n^2}{182000} \times \frac{M_{SN}}{M_{SN} \pm M_L}$$

$$= \frac{0{,}0245 \times 3000^2}{182000} \times \frac{113}{113 + 20}$$

$$= 1{,}21 \times \frac{113}{133} \quad \underline{2{,}06 \text{ kJ per switching}}$$

From BZFM V7 Table “Permissible heat capacity”,
at 3000 rpm
BZFM V7 Brake will stop approx. 350 times per hour.

To Calculate Stopping Time

$$\text{Stopping Time} = \frac{J \times rpm}{9.55 \times (M_{SN} \pm M_L)}$$

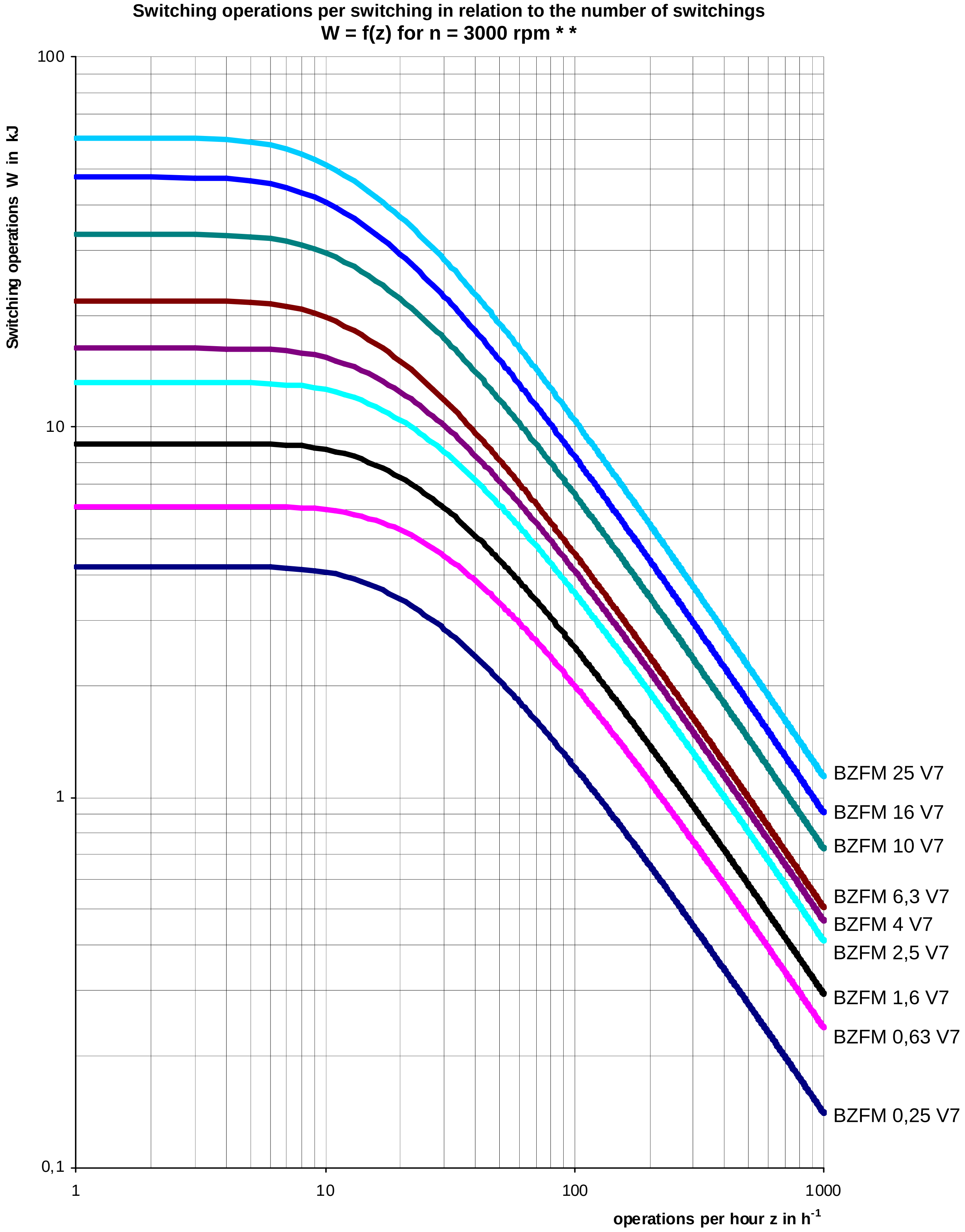
Example:

Brake = BZFM 10 V7 (113 Nm)
Motor = 4 kW; 3000 rpm
J = Total inertia of load + motor = 0.0245 kgm^2
T_L = Load Torque = 20 Nm

$$\text{Stopping Time} = \frac{0.0245 \times 3000}{9.55 \times (113+20)}$$

Stopping Time = 58 ms + Brake response time

Permissible Heat Capacity



* * permissible switching operations per switching at other speed ratings on request

Our Address

Stromag Dessau GmbH
Dessauer Str. 10
D-06844 Dessau-Roßlau

Tel.: +49 (340) 2190-203
Fax: +49 (340) 2190-201
E-Mail: vertrieb.dessau@stromag.com
Internet: http://www.stromag-dessau.de