

Spring-applied multiple-disc brake

Ready for fitting or for mounting
for D.C. operation
with sintered discs for dry running

This spring-applied brake is an electromagnetic device intended for dry running, where the dynamic effect of an electromagnetic field is exploited to compensate the braking effect produced by the spring. The brake grips in absence of current and releases under current. It is principally possible to operate the brake in vertical position.

If necessary, it is possible to eliminate the braking effect mechanically by means of an additional hand release.

CE

The brake complies to the regulations for low tension 73/23/EWG. The observance of the EMV regulation 89/336/EWG is to be ensured by the user through corresponding switching devices and/or controls. When using the recommended BINDER fittings, refer to the corresponding Technical Information Sheet for the observance of the respective EMV regulations.

The products have been manufactured and tested to DIN VDE 0580 October 1994.

When using the brakes, please observe the "General Technical Information" (please refer to current BINDER catalogue regarding Drive Engineering) and the "Operating Instructions 77 100..A00".

Standard nominal voltages:

24 V-, 102 V-, 178 V -

Brake with silicon rectifier:

230 or 400 V 1 ~ 40 ... 60 Hz

Protection IP 54

(IP 55 if mounted under fan cowl; in case of through shaft, adjustment ring must be sealed).

Increased protection against corrosion possible.

Insulation Class: F

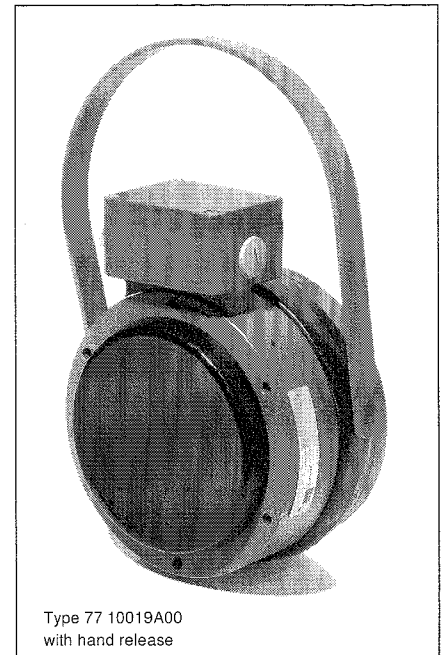
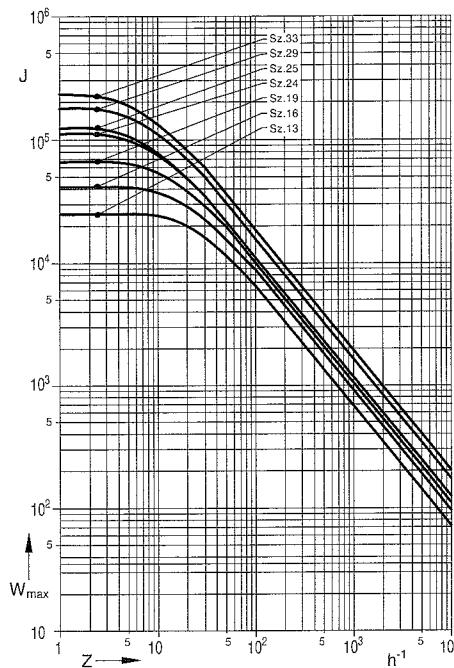
Connections:

Litz wires

Adapter box for rectifier

One-way rectifier

Maximum switching effort per switching operation W_{max} in relation to the switching number per hour Z (values valid for $n = 1500 \text{ min}^{-1}$)



Type 77 10019A00
with hand release

Bridge rectifier

Over-excitation rectifier

Explanations regarding connections:

With silicon rectifier

The excitation winding is rated, depending whether the operating current is 230 or 400V A.C., at 102 or 178 V D.C.

With silicon rectifier with over-excitation

The excitation winding is rated, depending whether the operating current is 230 or 400 V A.C., at 102 or 178 V D.C. The over-excitation, that is limited in time (double nominal tension of the brake), will cause a reduction of the disconnection time t_2 to about 40 %.

Microswitch:

Protective lid for microswitch starting size 16 ... 25.

Explanations regarding microswitch:

The attached microswitch is rated at 250 V1~/15 A or at 24 V-/6A. In the control line of the motor contactor it will prevent the motor from starting if the brake is not released.

Centering shoulder:

for attachment of pilot generator (standard for size 13 to 25)

Accessories:

Hand release

Fixing bolts

Subject to design modifications.

Please observe ordering data.

Technical Data

The response times are valid for D.C. switching under operating temperature, nominal tension, and nominal air gap. The values indicated are average values, underlying straying. In case of A.C. switching, the coupling time t_1 will increase its value approx. by 6.

The time from the switching on of the current up to the reduction of the torque to 10 % of the nominal torque M_2 represents the disconnection time t_2 . The coupling time t_1 is the time starting with the disconnection of the current up to

reaching the nominal torque M_2 .

The maximum switching energy P_{max} is the switching effort W that can be achieved by the brake within one hour. Please refer to the diagram for the values of the maximum switching effort per switching operation W_{max} . The values of P_{max} and W_{max} are reference values and are valid for the integration between the B-end shield and the motor fan or for mounting onto motors. All data are valid for mounting or attachment on horizontal shafts. In case of vertical operation,

reduce P_{max} and W_{max} down to 90 %.

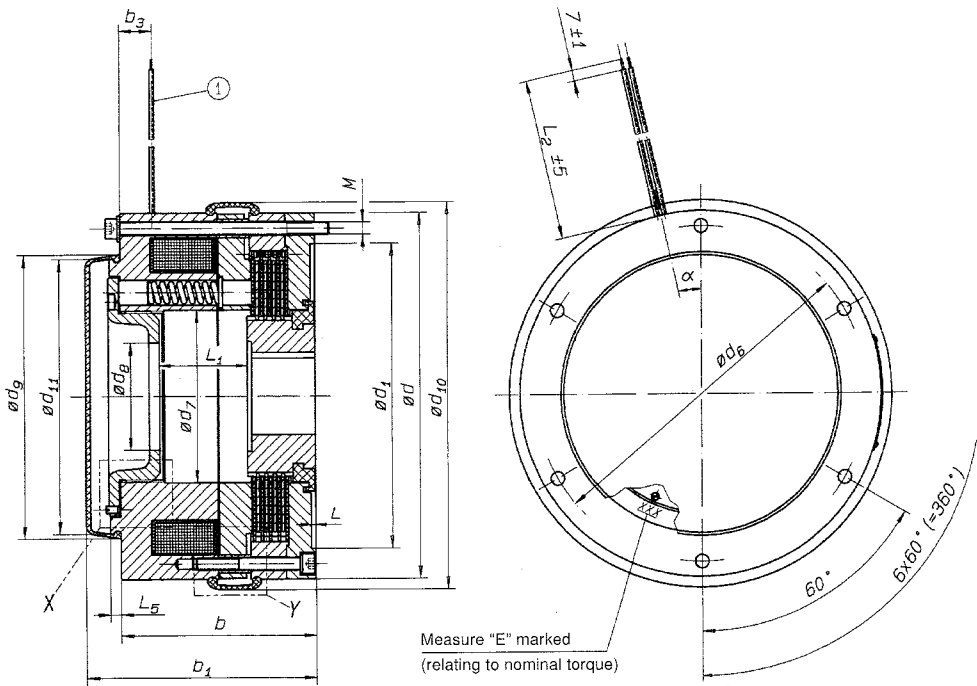
The torque can be modified via the adjustment ring on the back of the brake (please refer to diagram in Operating Instructions 77 100 .. A 00).

The values indicated for the nominal torque M_2 will be reached in a run-in state at operating temperature and during dry running. The values of the switching moment M_1 depend on the speed.

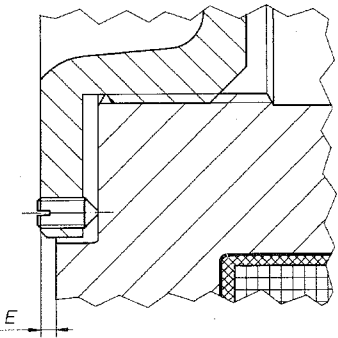
The torque will be reduced on oily or greasy friction surfaces.

Size	Nominal torque (Standard)		Lowest and highest possible nominal torque with largest (E_{max}) and smallest (E_{min}) clearance of adjustment ring	Residual torque	Max. Rotation	Max. switching energy		Nominal energy		Response times		Inertia torque	Service life (Reference value)	Weight
	M_2	n				Attachment	Mounting	P_N	P_S	Coupling time	Disconnection time			
	Nm	min ⁻¹	M_2 min - max Nm	M_5 Nm	n_{max} min ⁻¹	P_{max} kJ/h	P_{max} kJ/h	W	VA	t_1 ms	t_2 ms	J	W_{tot} MJ	Basic brake Type 77 100 .. m kg
13	25	250	17.5 - 27.5	0.05	4500	460	720	38	69	50	160	6.25	103	5.4
16	50	250	25 - 55	0.1	3800	570	930	60	96	80	200	20	347	10.2
19	100	250	50 - 110	0.2	3200	640	1090	75	120	100	270	40	463	14.8
24	200	100	100 - 220	0.5	2500	700	1190	109	195	200	330	95	852	31.1
25	300	80	150 - 330	0.7	2500	740	1210	109	195	250	350	135	700	32.6
29 ¹⁾	400	80	200 - 440	1	2100	1000	1700	185	320	300	480	250	1300	58.3
33 ¹⁾	800	80	400 - 880	2	1800	1300	1980	230	400	450	600	650	2500	93.4

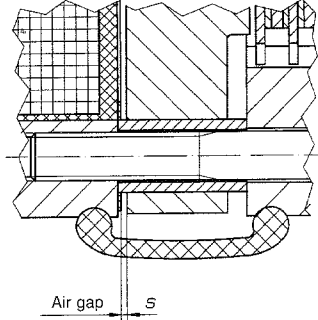
¹⁾ The brake sizes 29 and 33 are only available with over-excitation rectifier for A.C. connections.



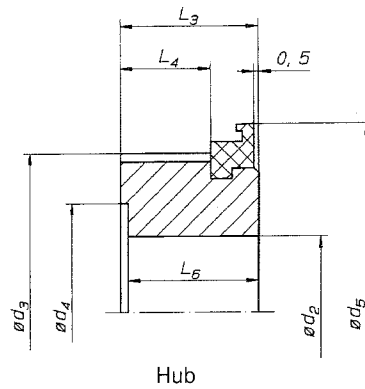
Cutout "X"



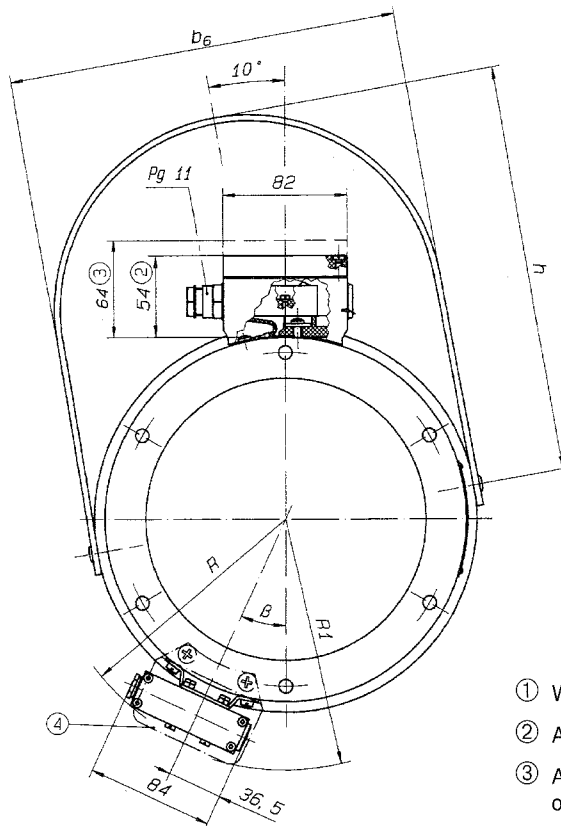
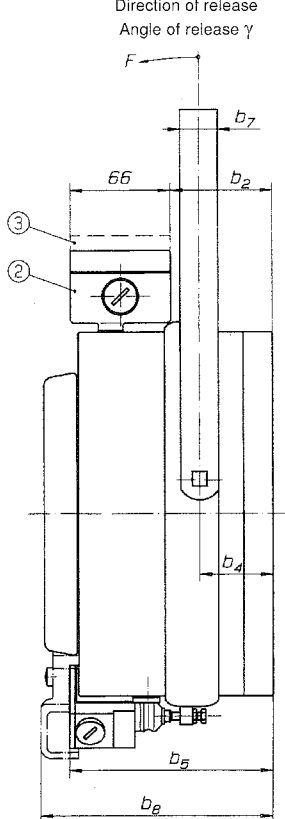
Cutout "Y"



Hub



Direction of release
Angle of release γ



- ① With litz wires
- ② Adapter box with low lid (standard)
- ③ Adapter box with high lid only with over-excitation rectifier
- ④ Protective lid

Dimensions (mm):

Sz.	d	d1 (H9)	d2 (H7) min / max	d3	d4	d5	d6	d7	d8	d9 ca.	d10 ca.	d11 (j7) Centr.-∅	b	b1 ca.	b2	b3	b4	b5	b6
13	135	110	12 / 35	65	48	76	120	65.8	54	99	146	93	73.5	90	23.5	9	27.5	106	155
16	165	140	20 / 45	75	60	88	150	79.2	67	129	178	125	90	108	40	9	32	111	187
19	190	160	25 / 55	90	72	107	170	92.2	79	152	204	148	102	120	52	9.5	35.5	115.5	216
24	240	200	30 / 75	105	—	124.5	220	113	90	176	258	170	120	143	59	21	39.5	129	266
25	240	200	30 / 75	105	—	124.5	220	113	90	176	258	170	128	151	67	21	48	137	266
29	290	240	35 / 85	125	—	145.5	267	136	100	238	315	210 ¹⁾	154	177	89	26	53	144	316
33	330	275	40 / 95	140	—	161.5	300	152	115	238	356	225 ¹⁾	179	202	112	28	60.5	154.5	358

Sz.	b7	b8	h	L	L1	L2 Standard	L3	L4	L5	L6	M	R	R1	E _{max}	E _{min}	s	α	β	γ ^{±°}	F [N]
13	20	—	161	2.5	32.5	100	25	16	5	24	6 × M 5	111	—	4.6	3.0	0.5 ^{+0.2}	15°	15°	16°	15
16	20	115	203	2.5	40.5	100	28	19	5	26.5	6 × M 6	125	130	4.6	2.4	0.6 ^{+0.2}	15°	26.5°	15°	40
19	20	127	224	3	49.5	100	31	21.5	5	30	6 × M 6	137	142	5.6	3.8	0.6 ^{+0.3}	15°	25°	16°	50
24	25	145	269	3	48	100	45	30	7	—	6 × M 8	161	165	5.2	2.8	0.7 ^{+0.3}	7°	25°	20°	55
25	25	153	269	3	56	100	45	30	7	—	6 × M 8	161	165	5.0	3.1	0.9 ^{+0.3}	7°	25°	20°	55
29	30	—	328	5	75	100	52	34	8	—	6 × M 10	186	—	3.4	1.4	1.1 ^{+0.3}	6.5°	134.5°	21°	90
33	30	—	377	5	94	100	58	38	8	—	6 × M 12	205	—	4.1	1.9	1.1 ^{+0.3}	7°	135°	22°	180

The hub bore d2_{min} is mated - for reasons of sturdiness - to the torque and to the use of shaft material having a tenacity

of 500 N/mm². The hub can be delivered with smaller bore for special applications.

Normal keyway according to DIN 6885, Sheet 1, tolerance field JS 9.

¹⁾ Centering shoulder not in series

Ordering Example

Spring-applied multiple-disc brake
77 100 [..] A00 / [..] V / [..] / [..] / [..] Nm / [..] mm

Size according to chart

Standard supply voltage

DC: 24, 102, 178 V

AC: 230, 400 V (only possible for connections item 4 and 5)

Connections

1 = with litz wire, length 100 mm (standard)

2 = with litz wire, length 750 mm

3 = Adapter box with clamp

4 = Adapter box with rectifier

5 = Adapter box with over-excitation rectifier, with high lid

0 = Without microswitch

1 = With microswitch

2 = With microswitch and protective lid (for sizes 16 to 25)

Range of nominal torque [Nm]

Standard [Nm]

Sz.13: M₂ = 17.5 - 27.5

25

Sz.16: M₂ = 25 - 55

50

Sz.19: M₂ = 50 - 110

100

Sz.24: M₂ = 100 - 220

200

Sz.25: M₂ = 150 - 330

300

Sz.29: M₂ = 200 - 440

400

Sz.33: M₂ = 400 - 880

800

Smaller bore of adjustment ring as d8 (in mm steps)

Centering shoulder for tachometer attachment for size 29 or size 33

Any values other than "standard" at extra cost.

Ordering example

Hub
71 101 [..] C1900 [..] / [..] H7 / [..]

Size according to chart

0 = with seal

1 = without seal

Bore diameter d2 in mm (standard)

Sz. 13: ∅ 20, ∅ 24, ∅ 25, ∅ 28, ∅ 30

Sz. 16: ∅ 24, ∅ 25, ∅ 28, ∅ 30, ∅ 40

Sz. 19: ∅ 30, ∅ 38, ∅ 40, ∅ 42, ∅ 45

Sz. 24: ∅ 40, ∅ 42, ∅ 45, ∅ 48, ∅ 50¹⁾

Sz. 25: ∅ 40, ∅ 42, ∅ 45, ∅ 48, ∅ 50¹⁾

Sz. 29: ∅ 45, ∅ 50, ∅ 55, ∅ 60

Sz. 33: ∅ 45, ∅ 50, ∅ 55, ∅ 60

Groove DIN 6885, Sheet1, JS9

or primary bore = GB

¹⁾ Size 24 and 25 identical, please order size 24.

Accessories

Sz.	Hand release	Fixing bolts Screw size	Order no. Number	
13	71 101 13E00940	DIN 912 - M 5 × 85 - 8.8	304 035	6
16	71 101 16E00940	DIN 912 - M 6 × 100 - 8.8	304 060	6
19	71 101 19E00940	DIN 912 - M 6 × 120 - 8.8	304 062	6
24	71 101 24E00940	DIN 912 - M 8 × 130 - 8.8	304 088	6
25	71 101 24E00940	DIN 912 - M 8 × 140 - 8.8	304 090	6
29	71 101 29E00940	DIN 912 - M 10 × 170 - 8.8	304 123	6
33	71 101 33E00940	DIN 912 - M 12 × 200 - 8.8	304 150	6