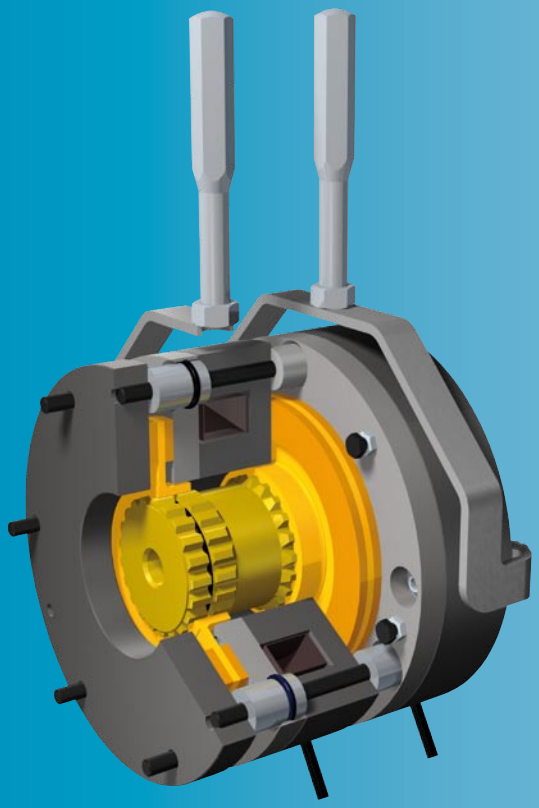
ROBA-stop®-silenzio®

Stage and Elevator Brakes



Reliable dual circuit brake in accordance with BGV C 1 and EN 81

- ***Also available as a single circuit brake***
- ***Long-lasting low-noise operation***
- ***Very short construction length***

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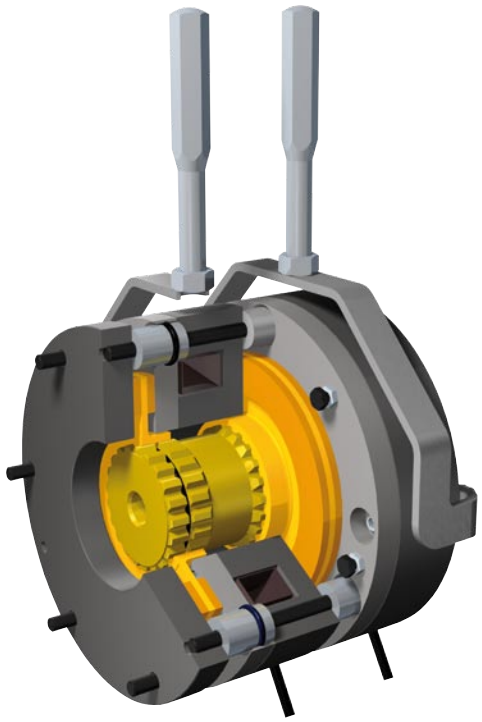
K.896.V09.GB

mayr®

your reliable partner

ROBA-stop®-silenzio®

The perfect safety brake for elevator and stage drives



Characteristics

- ***Dual circuit brake as redundant brake system with a very short construction length***
- ***Microswitch can be mounted for function monitoring***
- ***Simplest possible installation***
- ***No air gap adjustment necessary***
- ***Continuously low noise levels for several hundred thousand switchings***

The quietest safety brake

Due to a newly developed sound damping system, the ROBA-stop®-silenzio® is the quietest safety brake on the market, even in its standard version, basic variant (pages 4 to 7). In new condition, the noise level is < 50 dB (A) (noise pressure level measurement). This value lies well below the sound level of the mounted drive elements such as e.g. motor and gearbox. Further noise reduction is possible with a certain amount of extra work. Speak to us! We can accord with your request as far as noise levels are concerned, and guarantee our performance with a legally binding inspection certificate.

Long-lasting low-noise operation

Many safety brakes become louder after longer operation due to wear and scoring of the damping systems. Long-term tests have proved that the noise emissions from the ROBA-stop®-silenzio® maintain the very low level produced in new condition even after over 300.000 switchings.

Safe choice due to large type and size variety

12 construction sizes in different designs fulfil the demands for elevator and stage drives with a braking torque range of 2 x 3 Nm to 2 x 2150 Nm and therefore cover all required operation areas.

Optimised construction space

Due to new construction and removal of the complicated intermediate flange plate, we have been able to create a unique short construction length.

High operational safety

The ROBA-stop®-silenzio® is available as a single circuit brake or as a dual circuit brake. On the dual circuit brake, two independently operating brake bodies ensure high operational safety. It fulfils the demands according to BGV C1 (previously (VBG 70), DIN 56925 and DIN 56921-11.

Simple installation

The compact design as well as the single-part toothed hub ensures simple handling and installation. The working air gap is preset and needs no re-adjustment. This means that malfunctions due to operating and adjusting mistakes can be ruled out.

Function monitoring

On request, we are able to fit the ROBA-stop®-silenzio® with a release monitoring for function checks on both brakes, ensuring the highest possible system and personal safety.

Maintenance-free

The ROBA-stop®-silenzio® is mainly maintenance-free. The maintenance work is limited to an inspection of the friction linings. These friction linings, however, are extremely wear-resistant, and have a very long lifetime.

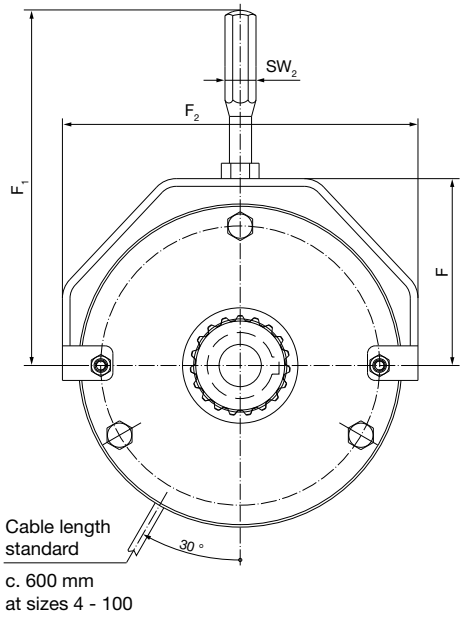
Please Observe:

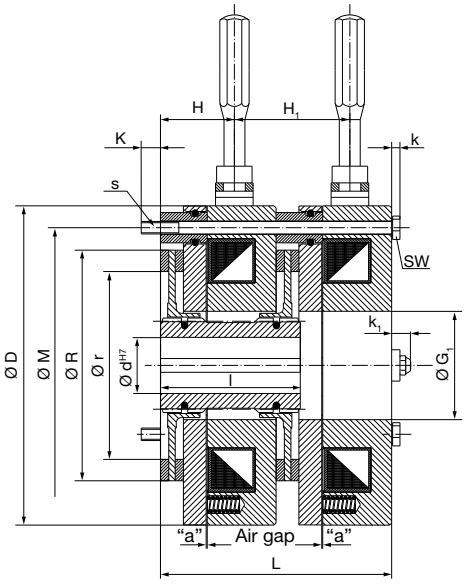
According to German notation, decimal points in this catalogue are represented with a comma (e.g. 0,5 instead of 0.5).

We reserve the right to make dimensional and constructional alterations.

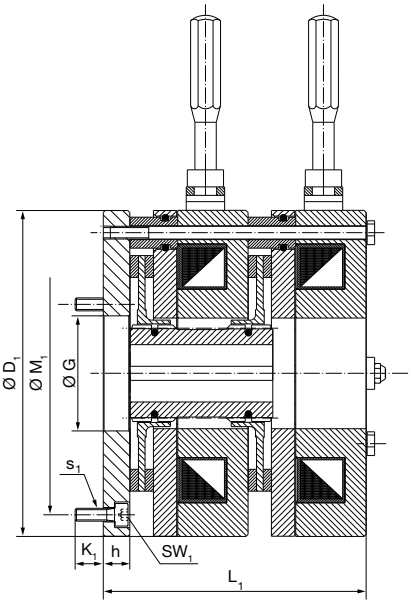
ROBA-stop®-silenzio® Type 896.$^{0}_{1}$ _ _.3_ – Sizes 4 to 100

Noises < 50 dB(A) (Noise pressure level measurement) at nominal braking torque





Type 896.001.30
(Dual circuit brake)

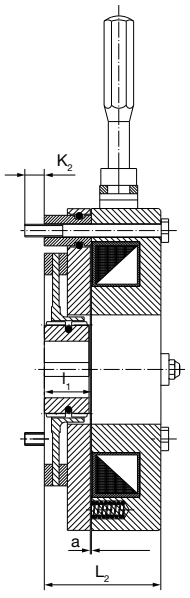


Type 896.005.30
(Dual circuit brake)

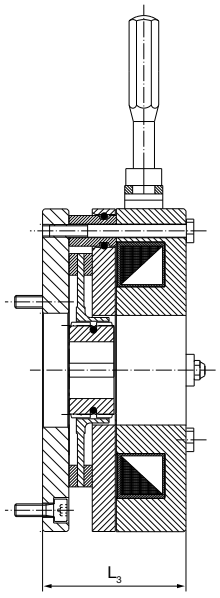
Technical Data				Size					
				4	8	16	32	64	100
Nominal braking torque 1)	Type 896.00_.3 _	M_{nom}	[Nm]	2 x 4	2 x 8	2 x 16	2 x 32	2 x 64	2 x 100
	Type 896.10_.3 _	M_{nom}	[Nm]	4	8	16	32	64	100
Input power	Type 896.00_.3 _	P_{20}	[W]	2 x 23	2 x 31	2 x 33	2 x 45	2 x 55	2 x 63
	Type 896.10_.3 _	P_{20}	[W]	23	31	33	45	55	63
Weight (pilot bored)	Type 896.00_.3 _		[kg]	3	5,6	7	11	15,5	22
	Type 896.10_.3 _		[kg]	1,4	2,8	3,5	5,5	7,8	11
Max. speed		n_{max}	[rpm]	4500	3500	2900	2500	2200	2000
Nominal air gap (tolerance ± 0,07)		a	[mm]	0,4	0,5	0,5	0,5	0,5	0,5

1) Minimum nominal braking torque, braking torque tolerance + 60 %. For other braking torque adjustments: see Table below.

Braking Torque Adjustment [Nm]						
	Size					
	4	8	16	32	64	100
Dual circuit brake Type 896.0 _ _ .3 _						
100 %	2 x 4	2 x 8	2 x 16	2 x 32	2 x 64	2 x 100
120 %	2 x 5	2 x 10	2 x 19	2 x 40	2 x 77	2 x 120
75 %	2 x 3	2 x 6	2 x 12	2 x 26	2 x 43	2 x 80
Single circuit brake Type 896.1 _ _ .3 _						
100 %	4	8	16	32	64	100
120 %	5	10	19	40	77	120
75 %	3	6	12	26	43	80



Type 896.101.30
(Single circuit brake)



Type 896.105.30
(Single circuit brake)

Type 896.$^{0}_{1}$ _ _.3_ – Sizes 4 to 100

Dimensions		Size					
		4	8	16	32	64	100
Ø d H7 2)	Min	8	9	14	18	18	24
	Max	15 3)	20 4)	24 5)	30	35 6)	46 7)
Ø D		88	108	130	153	168	195
Ø D_1		88	108	130	153	168	195
F		50,5	64	79	88,5	97	111
F_1		112,5	123	166,5	175,6	235	249
F_2		105	128	158	175	190	222
Ø G		26	45	45	52	60	77
Ø G_1		29	36	45	52	60	77
H		29	27	33	37	42	36
H_1		43	45,5	49	55	64	67
h		9	10	13	12	15	17
K		8,3	9	11,6	9,6	11,4	14,6
K_1		8	7,5	10,8	10,8	14	14
K_2		6,7	9,5	10,8	9	9,9	11,5
k		2,8	3,5	4	4	5,3	5,3
k_1		7,2	10,5	10,1	10,2	14,5	19,6
L		87	91	99	109	127	134
L_1		96	101	112	121	142	151
L_2		43,5	45,5	49	54,5	63,5	67
L_3		52,5	55,5	62	66,5	78,5	84
l		50	52	58	67	75	79
		Please observe the load on the shaft or key.					
l_1		18	20	20	25	30	30
		Please observe the load on the shaft or key.					
Ø M		72	90	112	132	145	170
Ø M_1		72	90	112	132	145	170
Ø R		60	75	93	110,5	124	139
Ø r		50	65	77	90	94	100
s		3 x M4	3 x M5	3 x M6	3 x M6	3 x M8	3 x M8
s_1		3 x M4	3 x M5	3 x M6	3 x M6	3 x M8	6 x M8
SW		7	8	10	10	13	13
SW_1		3	4	5	5	6	6
SW_2		Ø 20 8)	11	14	14	17	17

2) Other bore diameters available on request.
3) Over Ø 13 keyway acc. DIN 6885/3.
4) Over Ø 18 keyway acc. DIN 6885/3.
5) Over Ø 22 keyway acc. DIN 6885/3.
6) Over Ø 32 keyway acc. DIN 6885/3.
7) Over Ø 44 keyway acc. DIN 6885/3.
8) Hand release lever, round.

We reserve the right to make dimensional and constructional alterations.

Order Number

Without additional parts	0
Hand release	1
Release monitoring	2
Hand release/release monitoring	3
Flange plate	4
Flange plate/hand release	5
Flange plate/hand release/release monitoring	6
Flange plate/release monitoring	7

Connection cable

0	Without additional parts
1	With cover

__ / 8 9 6 . __ __ __ . 3 __ / __ / __ / __

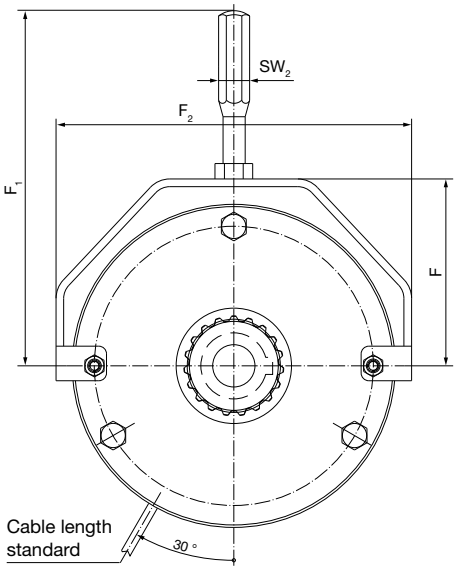
Sizes 4 to 100	Dual circuit brake / Single circuit brake	0 / 1	0 Nominal braking torque 100 % 1 Braking torque adjustment 120 % 2 Braking torque adjustment 75 %	Coil voltage 9) 24, 104, 180, 207 [VDC]	Hub bore Ø d H7 (Dimensions page 5)	Keyway acc. DIN 6885/1 or 6885/3

Example: 100 / 896.001.3 / 24 / 40 / 6885/1

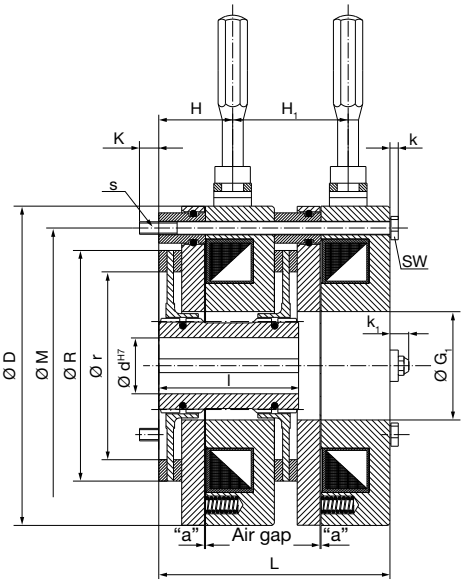
9) We recommend connection via smoothed DC voltage or a *mayr*®-bridge rectifier.

ROBA-stop®-silenzio® Type 896.$^{0}_{1}$ _ _.3_ – Sizes 200 to 1800

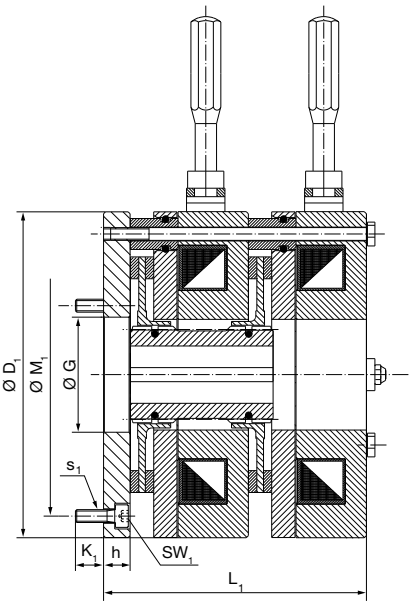
Noises < 50 dB(A) (Noise pressure level measurement) at nominal braking torque



c. 600 mm
at size 200 and
c. 1000 mm at sizes 300 - 1800



Type 896.001.30
(Dual circuit brake)



Type 896.005.30
(Dual circuit brake)

Technical Data				Size					
				200	300	500	800	1300	1800
Nominal braking torque 1)	Type 896.00_.3 _	M_{nom}	[Nm]	2 x 200	2 x 300	2 x 500	2 x 800	2 x 1300	2 x 1800
	Type 896.10_.3 _	M_{nom}	[Nm]	200	300	500	800	1300	1800
Input power	Type 896.00_.3 _	P_{20}	[W]	2 x 78	2 x 86	2 x 90	2 x 107	2 x 130	2 x 150
	Type 896.10_.3 _	P_{20}	[W]	78	86	90	107	130	150
Weight (pilot bored)	Type 896.00_.3 _		[kg]	34	49	60	92	126	158
	Type 896.10_.3 _		[kg]	17	24	30	46	63	79
Max. speed		n_{max}	[rpm]	1700	1500	1200	900	750	700
Nominal air gap (tolerance ± 0,07)		a	[mm]	0,5	0,5	0,5	0,5	0,5	0,5

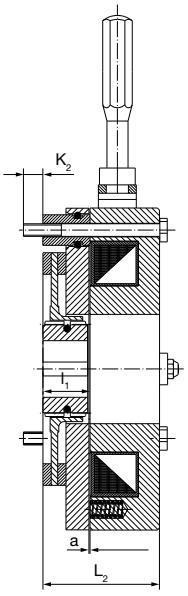
1) Minimum nominal braking torque, braking torque tolerance + 60 %. For other braking torque adjustments: see Table below.

Braking Torque Adjustment [Nm]						
	Size					
	200	300	500	800	1300	1800
Dual circuit brake Type 896.0 _ _ .3 _						
100 %	2 x 200	2 x 300	2 x 500	2 x 800	2 x 1300	2 x 1800
120 %	2 x 240	2 x 360	2 x 600	2 x 1000	2 x 1560	2 x 2150
75 %	2 x 150	2 x 225	2 x 380	2 x 600	2 x 980	2 x 1350
Single circuit brake Type 896.1 _ _ .3 _						
100 %	200	300	500	800	1300	1800
120 %	240	360	600	1000	1560	2150
75 %	150	225	380	600	980	1350

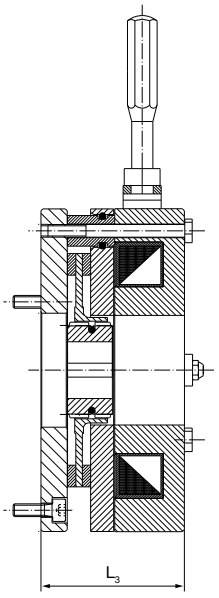
TÜV (German Technical Inspectorate) License:

The sizes 200 to 1800 with **a microswitch for release monitoring** have been prototype-inspected by the South German TÜV as brake systems having an effect on the drive sheave shaft and as part of a protective system for the upwards-moving elevator cage against excessive speed.

License number: **Dual circuit brake** **ABV 760/1**
Single circuit brake **ABV 761/1**



Type 896.101.30
(Single circuit brake)



Type 896.105.30
(Single circuit brake)

Type 896.$^{0}_{1}$ _ _.3_ – Sizes 200 to 1800

Dimensions		Size					
		200	300	500	800	1300	1800
Ø d H7 2)	Min	35	41	51	65	75	90
	Max	48	60 3)	65	75	90	95
Ø D		223	261	285	329	370	415
Ø D_1		223	264	288	332	373	418
F		126,5	148	166,5	On request	On request	On request
F_1		325,5	487,5	516,5	On request	On request	On request
F_2		256	296	310	On request	On request	On request
Ø G		84	96	114	135	146	160
Ø G_1		84	96	114	135	146	160
H		48	50,5	28,5	On request	On request	On request
H_1		76	79,5	86	On request	On request	On request
h		18	21	28	31	30	36
K		15,9	18,7	25,5	28	28	32
K_1		18	18	19	22	27	26
K_2		11,7	18,1	21,5	22,5	27,5	24,5
k		8,9	10	10	13	13	13
k_1		18	21	19	On request	On request	On request
L		152	159	172	189	199	205
L_1		170	180	200	220	229	241
L_2		76	79,5	86	94,5	99,5	102,5
L_3		94	100,5	114	125,5	129,5	138,5
l		88	93	102	122	142	152
		Please observe the load on the shaft or key.					
l_1		35	50	50	60	70	75
		Please observe the load on the shaft or key.					
Ø M		196	230	250	290	330	370
Ø M_1		196	230	250	290	330	370
Ø R		170	188	213	243	283,5	320
Ø r		122	135	150	180	208	230
s	Type 896.0_ _.3_	3 x M10	3 x M12	6 x M12	6 x M16	8 x M16	8 x M16
	Type 896.1_ _.3_	3 x M10	3 x M12	3 x M12	3 x M16	4 x M16	4 x M16
s_1		6 x M10	6 x M12	6 x M16	6 x M16	8 x M16	8 x M20
SW		16	18	18	24	24	24
SW_1		8	10	14	14	14	17
SW_2		14	17	Ø 25 4)	On request	On request	On request

2) Other bore diameters available on request.
3) Over Ø 56 keyway acc. DIN 6885/3.
4) Hand release lever, round.

We reserve the right to make dimensional and constructional alterations.

Order Number

Without additional parts	**0**
Hand release	**1**
Release monitoring	**2**
Hand release/release monitoring	**3**
Flange plate	**4**
Flange plate/hand release	**5**
Flange plate/hand release/release monitoring	**6**
Flange plate/release monitoring	**7**

Connection cable

0	Without additional parts
1	With cover

__ / 8 9 6 . __ __ __ . 3 __ / __ / __ / __

Sizes 200 to 1800	Dual circuit brake	0
	Single circuit brake	1

0	Nominal braking torque 100 %
1	Braking torque adjustment 120 %
2	Braking torque adjustment 75 %

Coil voltage 5)
24, 104, 180, 207 [VDC]

Hub bore Ø d H7 (Dimensions page 7)

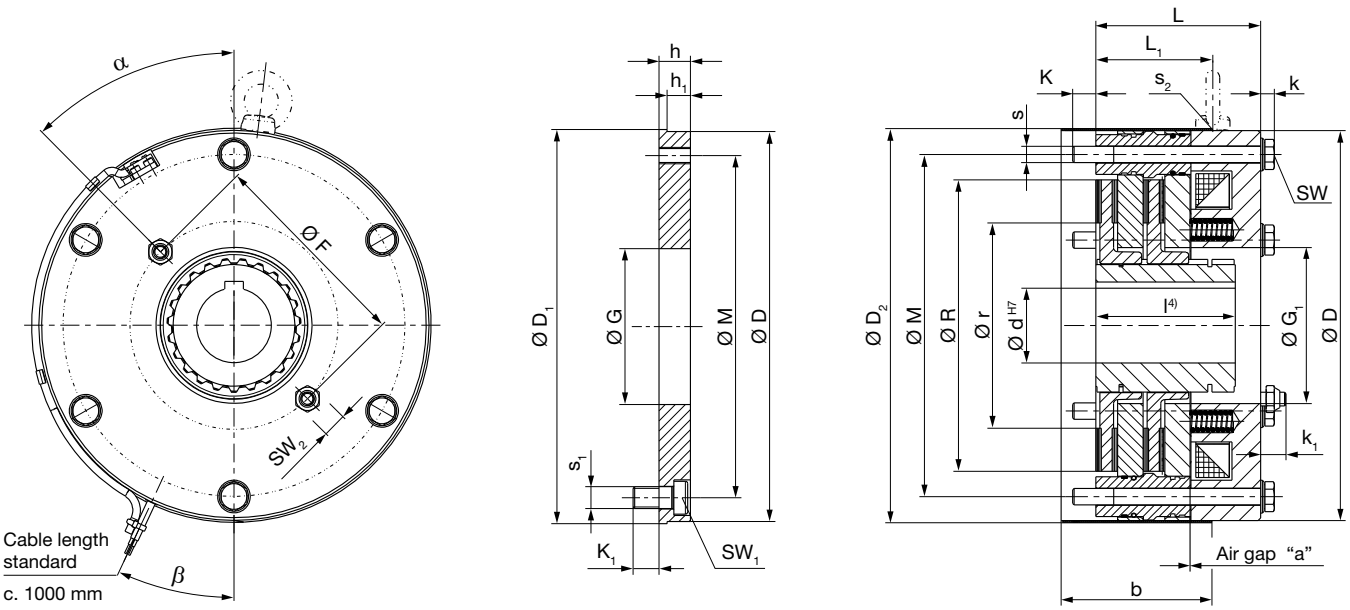
Keyway acc. DIN 6885/1 or 6885/3

Example: 200 / 896.001.3 / 24 / 40 / 6885/1

5) We recommend connection via smoothed DC voltage or a *mayr*®-bridge rectifier.

Double rotor design Type 896.2_ _.3_ – Sizes 300 to 1800

Noises < 65 dB(A) (Noise pressure level measurement) at nominal braking torque



Technical Data				Size				
				300	500	800	1300	1800
Nominal braking torque [1]	**Type 896.20_.3 _**	M_{nom}	[Nm]	600	1000	1600	2600	3600
Input power	**for overexcitation** [2]	P_{20}	[W]	348	352	412	500	552
	for nominal voltage	P_{20}	[W]	87	88	103	125	138
Weight	**without flange plate**		[kg]	33	44	67	93	121
	with flange plate		[kg]	40,5	53	80	113	153
Max. speed		n_{max}	[rpm]	300	300	300	250	250
Nominal air gap (tolerance $^{+0,15}_{-0,1}$)		a	[mm]	0,6	0,6	0,65	0,7	0,7

1) Minimum nominal braking torque, braking torque tolerance + 60 %. For other braking torque adjustments: see Table below.

Braking Torque Adjustment [Nm]					
	Size				
	300	500	800	1300	1800
100 %	600	1000	1600	2600	3600
120 % [7]	720	1200	2000	3120	4300
75 %	450	760	1200	1960	2700

TÜV (German Technical Inspectorate) License:

The sizes 300 to 1800 with a **microswitch for release monitoring** have been prototype-inspected by the South German TÜV as brake systems having an effect on the drive sheave shaft and as part of a protective system for the upwards-moving elevator cage against excessive speed.
These brakes are single circuit brakes. A service brake is additionally required in elevators.

License number: ABV 762/1

Type 896.2 _ _.3_ – Sizes 300 to 1800

Dimensions	Size				
	300	500	800	1300	1800
b	90	102	114	125	130
Ø d^{H7} Min [3]	44	50	65	75	85
Ø d^{H7} Max	55	65	75	85	95
Ø D	261	285	329	370	415
Ø D_1	264	288	332	373	418
Ø D_2	264	288	332	373	418
Ø F	209	152	181	197	225
Ø G	96	114	135	146	160
Ø G_1	96	114	135	146	160
h	21	28	31	30	36
h_1	15	17	19	23	23
k	10	10	13	13	13
k_1	21	19	25	25	24
K	18,1	16,9	23,3	23,3	28,3
K_1	18	19	22	27	26
l [4]	93	102	122	142	152
L	109,4	120,6	133,7	143,7	148,7
L_1	74,4	85,6	93,7	106,7	110,7
Ø M	230	250	290	330	370
Ø r	135	150	180	208	230
Ø R	188	213	246	283,5	320
s	3 x M12	6 x M12	6 x M16	8 x M16	8 x M16
s_1	6 x M12	6 x M16	6 x M16	8 x M16	8 x M20
s_2 [5]	M10	M10	M10	M12	M12
SW	18/19	18/19	24	24	24
SW_1	10	14	14	14	17
SW_2	16/17	16/17	18/19	24	24
α [°]	35	45	45	45	45
β [°]	31	25	25	25	25

2) When using a ROBA®-switch.
3) For smaller bores, please contact *mayr*® power transmission.
4) Please observe the load on the shaft or key.
5) Eyebolt (installation aid, not included in delivery).

We reserve the right to make dimensional and constructional alterations.

Order Number

Without additional parts	**0**
Emergency hand release	**1**
Release monitoring	**2**
Emergency hand release/release monitoring	**3**
Flange plate	**4**
Flange plate/emergency hand release	**5**
Flange plate/emergency hand release/release monitoring	**6**
Flange plate/release monitoring	**7**

0	Without additional parts
1	With cover

__ / 8 9 6 . 2 __ __ . 3 __ / __ / __ / __

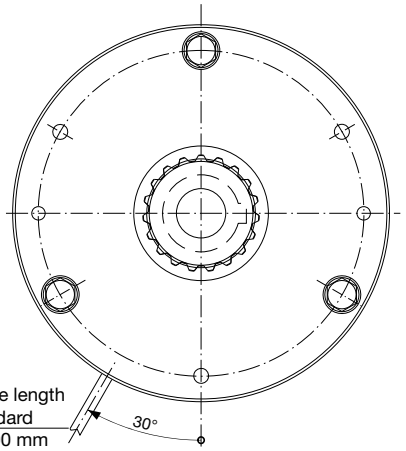
Sizes 300 to 1800			Connection cable	Coil voltage [6] [7] 24, 104, 180, 207 [VDC]	Hub bore Ø d^{H7} (Dimensions page 9)	Keyway acc. DIN 6885/1
	Nominal braking torque 100 %	**0**				
	Braking torque adjustment [7] 120 %	**1**				
	Braking torque adjustment 75 %	**2**				

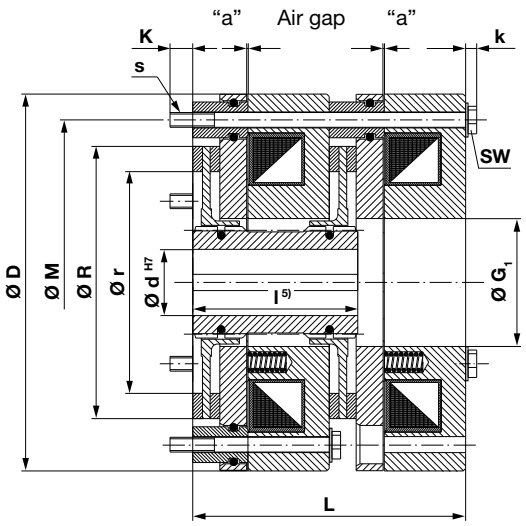
Example: 800 / 896.205.30 / 104 / 60 / 6885/1

6) We recommend connection via smoothed DC voltage or a *mayr*®-bridge rectifier.
7) At a braking torque adjustment of 120 %, overexcitation (1,5 to 2 x the nominal voltage) is required for safe and fast release, using our ROBA®-switch fast acting rectifier (please contact *mayr*® power transmission if necessary).

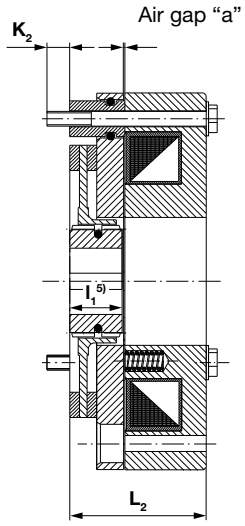
Design with higher braking torques for passenger elevators Type 896._3_.3_ Sizes 200 to 1800

Noises < 60 dB(A) (Noise pressure level measurement)





Type 896.03_.3 _
(Dual circuit brake)



Type 896.13_.3 _
(Single circuit brake)

Technical Data				Size					
				200	300	500	800	1300	1800
Nominal braking torque [1]	**Type 896.03_.3 _**	M_{nom}	[Nm]	2 x 300	2 x 500	2 x 800	2 x 1200	2 x 1800	2 x 2300
	Type 896.13_.3 _	M_{nom}	[Nm]	300	500	800	1200	1800	2300
Input power	**Type 896.03_.3 _** [2]	P_{20}	[W]	2 x 304	2 x 348	2 x 352	2 x 412	2 x 500	2 x 552
	Type 896.03_.3 _ [3]	P_{20}	[W]	2 x 76	2 x 87	2 x 88	2 x 103	2 x 125	2 x 138
	Type 896.13_.3 _	P_{20}	[W]	76	87	88	103	125	138
Weight (pilot bored)	**Type 896.03_.3 _**		[kg]	34	49	60	92	126	158
	Type 896.13_.3 _		[kg]	17	24	30	46	63	79
Max. speed		n_{max}	[rpm]	500	500	250	250	250	250
Nominal air gap (tolerance ± 0,07)		a	[mm]	0,5	0,5	0,5	0,5	0,5	0,5

For safe and fast brake release, overexcitation (1,5 to 2 x the nominal voltage) is required.

Preferred voltages in operation with ROBA®-switch:

Nominal voltage: 104 V => overexcitation voltage: 207 V on alternating voltage: 230 VAC

Nominal voltage: 180 V => overexcitation voltage: 360 V on alternating voltage: 400 VAC

Nominal voltage: 207 V => overexcitation voltage: 360 V on alternating voltage: 400 VAC

Nominal voltage: 24 V available on request

1) Minimum nominal braking torque / braking torque tolerance + 60 %.
2) Capacity for overexcitation when using a ROBA®-switch.
3) Capacity for nominal voltage.

TÜV (German Technical Inspectorate) License:

The sizes 200 to 1800 with a **microswitch for release monitoring** have been prototype-inspected by the South German TÜV as brake systems having an effect on the drive sheave shaft and as part of a protective system for the upwards-moving elevator cage against excessive speed.

License number: **Dual circuit brake** **ABV 760/1**
Single circuit brake **ABV 761/1**

Type 896._3_.3_ – Sizes 200 to 1800

Dimensions		Size					
		200	300	500	800	1300	1800
Ø d H7 4)		45	50	60	70	85	95
Ø D		223	261	285	329	370	415
Ø G_1		84	96	114	135	146	160
k		8,9	10	10	13	13	13
K		15,9	18,7	21,5	20,5	28	24,5
K_2		11,7	18,1	21,5	22,5	27,5	24,5
L		152	159	172	189	199	205
L_2		76	79,5	86	94,5	99,5	102,5
l 5)		88	93	102	122	142	152
l_1 5)		35	50	50	60	70	75
Ø M		196	230	250	290	330	370
Ø r		122	135	150	180	208	230
Ø R		170	188	213	246	283,5	320
s	Type 896.03_.3 _	6 x M10	6 x M12	6 x M12	6 x M16	8 x M16	8 x M16
	Type 896.13_.3 _	3 x M10	3 x M12	3 x M12	3 x M16	4 x M16	4 x M16
SW		16/17	18/19	18/19	24	24	24

4) Other diameters available on request.
5) Please observe the load on the shaft or the key.

We reserve the right to make dimensional and conctructional alterations.

Order Number

	Without additional parts	0	0	Without additional parts
	Release monitoring	2	1	With cover
	Flange plate	4		
	Flange plate/release monitoring	7		

__ / 8 9 6 . __ 3 __ . 3 __ / __ / __ / __

Sizes 200 to 1800	Dual circuit brake 0 Single circuit brake 1	Connection cable	Coil voltage 6) 24, 104, 180, 207 [VDC]	Hub bore Ø d H7 (Dimensions page 11)	Keyway acc. DIN 6885/1

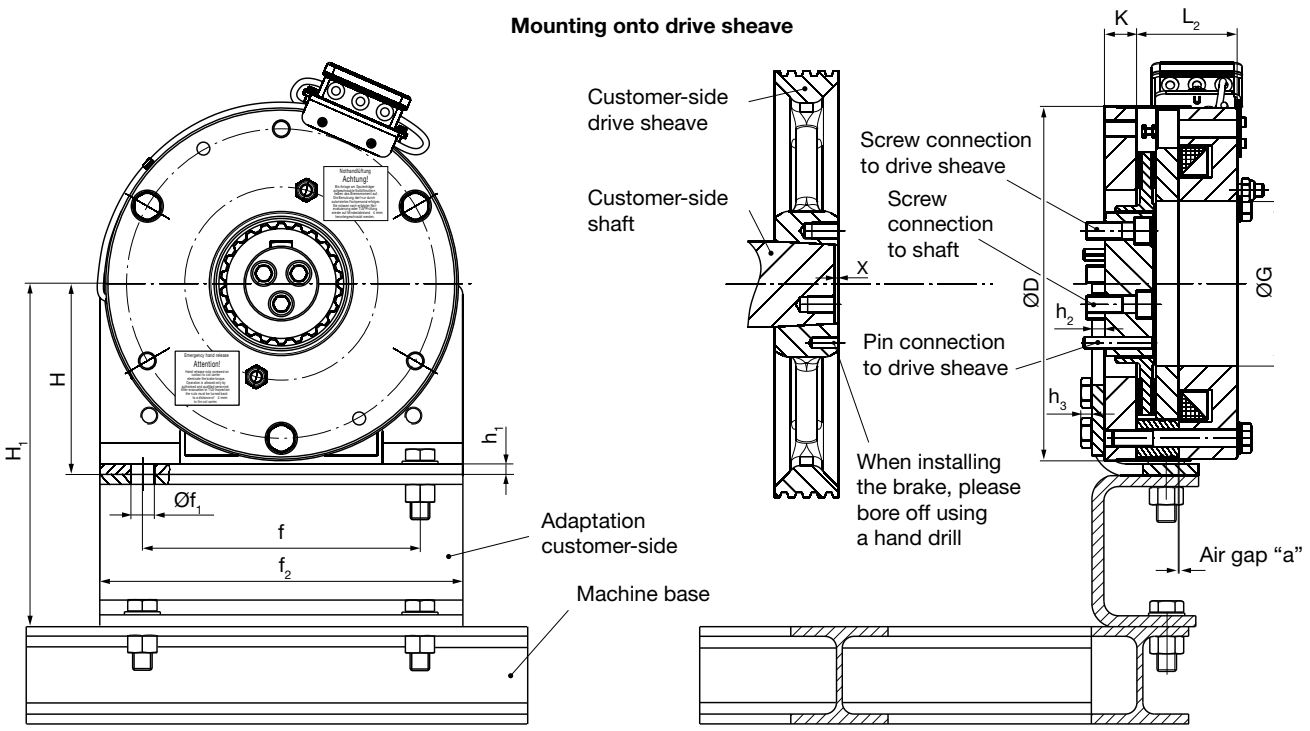
Example: 500 / 896.034.31 / 104 / 60 / 6885/1

Hand release or emergency hand release available on request.

6) Overexcitation (1,5 to 2 x the nominal voltage) is required for safe and fast brake release, using our ROBA®-switch fast acting rectifier (please contact *mayr*® power transmission if necessary).

ROBA®-sheavestop® Type 896.$^{7}_{8}$ _ _._ _ – Sizes 500 to 1800

Noises < 65 dB(A) (Noise pressure level measurement) at nominal braking torque



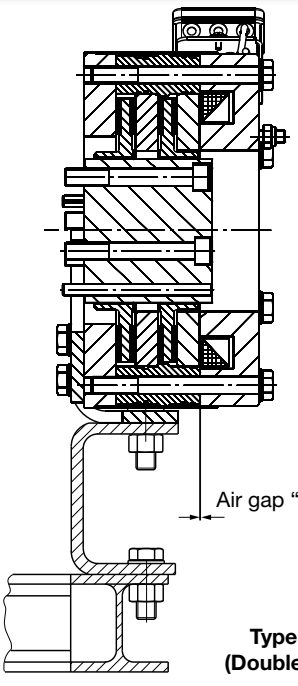
Type 896.7_ _.11 (Single rotor design)

Technical Data					Size [2]			
					500	800	1300	1800
Nominal braking torque [1]	Type 896.7_ _._ _		M_{nom}	[Nm]	500	800	1300	1800
	Type 896.8_ _._ _		M_{nom}	[Nm]	1000	1600	2600	3600
Input power			P_{20}	[W]	90	107	130	150
Nominal air gap	Type 896.7_ _._ _	(Tolerance ± 0,07)	a	[mm]	0,5	0,5	0,5	0,5
	Type 896.8_ _._ _	(Tolerance $^{+0,15}_{-0,1}$)	a	[mm]	0,6	0,65	0,7	0,7

1) Braking torque tolerance + 60 %. For other braking torque adjustments: see Table below.

Braking Torque Adjustment [Nm]				
	Size [2]			
	500	800	1300	1800
Single rotor design Type 896.7 _ _ ._ _				
100 %	500	800	1300	1800
120 %	600	1000	1560	2150
75 %	380	600	980	1350
Higher braking torque [3] [4]	800	1200	1800	2300
Double rotor design Type 896.8 _ _ ._ _				
100 %	1000	1600	2600	3600
120 % [4]	1200	2000	3120	4300
75 %	760	1200	1960	2700
Higher braking torque [3] [4]	1600	2400	3600	4600

2) Size 300 available on request.
3) Switching noises < 75 dB(A) (noise pressure level measurement).



Type 896.8_ _.11 (Double rotor design)

Type 896.$^{7}_{8}$ _ _._ _ – Sizes 500 to 1800

Dimensions		Size [2]			
		500	800	1300	1800
Ø D		288	332	373	418
f		220	260	300	345
Ø f_1		22	22	25	25
f_2		290	340	380	425
Ø G		114	135	146	160
L_2	Type 896.7_ _._ _	86	94,5	99,5	102,5
	Type 896.8_ _._ _	120,6	133,7	143,7	148,7
H		160	180	200	225
h_1		11	11	11	11
h_2		12	12	12	12
h_3	Type 896.7_ _._ _	7,5	10	12,5	12,5
	Type 896.8_ _._ _	10	13	16,5	16,5
K		28	30	30	36

We reserve the right to make dimensional and constructional alterations.

In order to adapt the brake system to your application – in order to produce a customer-specific adapter shaft – we require from you the following drive-specific information (see also Fig., page 12):

Threaded holes in shaft facing-side:

Threaded hole number .....
Threaded hole-Ø .....
Threaded hole depth [mm] .....
Pitch circle-Ø [mm] .....

Threaded holes in drive sheave:

Threaded hole number .....
Threaded hole-Ø .....
Threaded hole depth [mm] .....
Pitch circle-Ø [mm] .....

Dimensions and Technical Data:

Dimension X (Fig.) [mm] .....
Angular position of bore templates to each other [°] .....
Required braking torque on the drive sheave [Nm] .....
Axis height available on machine base H_1 [mm] .....

Order Number

Without additional parts	0
Emergency hand release	1
Release monitoring	2
Emergency hand release/release monitoring	3
Flange plate	4
Flange plate/emergency hand release	5
Flange plate/emergency hand release/release monitoring	6
Flange plate/release monitoring	7

1	Terminal box with terminal
3	Connection cable
4	Terminal box with half wave rectifier
5	Terminal box with bridge rectifier
6	Terminal box with spark quenching unit
7	Terminal box with ROBA®-switch

0	Without additional parts
1	With cover

__ / 8 9 6 . __ __ __ . __ __ / __

Sizes [2]				
500 to 1800	Single rotor design	7	0	Nominal braking torque 100 %
	Double rotor design	8	1	Braking torque adjustment [4] 120 %
			2	Braking torque adjustment 75 %
			3	Higher braking torque [4]

Coil voltage [4]
24, 104, 180, 207
[VDC]

Example: 500 / 896.701.31 / 104

4) At a braking torque adjustment of 120 % (on the double rotor design) and at a higher braking torque (on all designs), overexcitation (1,5 to 2 x the nominal voltage) is required for safe and fast release, using our ROBA®-switch fast acting rectifier (please contact *mayr*® power transmission if necessary).

TÜV (German Technical Inspectorate) License:

The sizes 500 to 1800 (size 300 available on request) with a **microswitch for release monitoring** have been prototype-inspected by the South German TÜV as brake systems having an effect on the drive sheave shaft and as part of a protective system for the upwards-moving elevator cage against excessive speed.
These brakes are single circuit brakes. A service brake is additionally required in elevators.

License number: **Single rotor design** **ABV 781**
Double rotor design **ABV 782**

Installation ROBA-stop®-silenzio®

Type 896.$^{0}_{1}$ _ _.3_

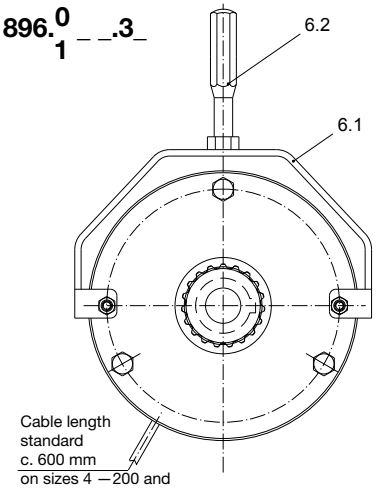


Fig. 1

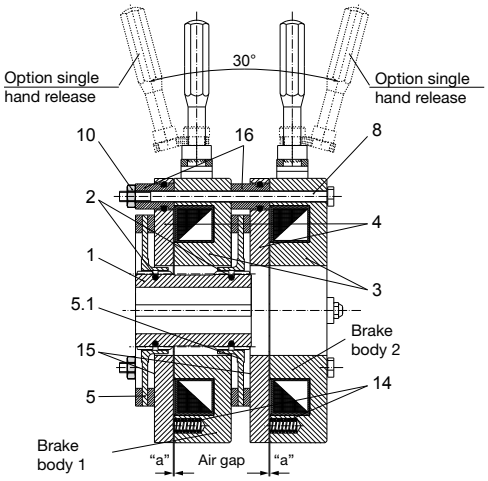


Fig. 2

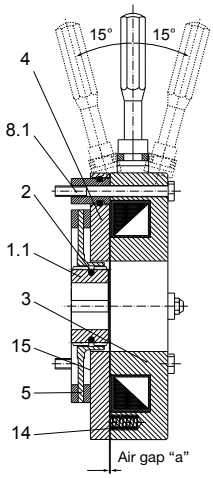


Fig. 3 (Single circuit brake)

Parts List (Only use *mayr*® original parts)

1 Hub assembly with 2 O-rings (2)
1.1 *Hub assembly with 1 O-ring (2)
2 O-ring
3 Coil carrier assemblies 1 and 2
4 Armature disks 1 and 2
5 Rotor 1
5.1 Rotor 2
6 Hand release assembly
6.1 Switching bracket
6.2 Hand release rod
8 Hexagon head screw
8.1 **Hexagon head screw
14 Thrust spring
15 Shoulder screw

* Only on single circuit brake design

** On sizes 4 to 300, only on single circuit brake design

Installation Conditions (Figs. 1, 2 and 3)

- The eccentricity of the shaft end in relation to the fixing hole must not exceed 0,2 mm.
- The position tolerance of the tapped holes for the hexagon head screws (8 and 8.1) must not exceed 0,2 mm.
- The axial run-out deviation of the screw-on surface to the shaft must not exceed the permitted axial run-out tolerance according to DIN 42955 R. The related diameter is the pitch circle diameter to the brake attachment. Larger deviations can lead to a drop in torque, to continuous slipping on the rotors and to over-heating.
- The tolerances of the hub (1) and the shaft are to be chosen so that the hub toothing (1) is not widened. Toothing widening leads to the rotors (5 and 5.1) clamping on the hub (1) and therefore to brake malfunctions (recommended hub – shaft tolerance H7/k6).
- Rotors (5 and 5.1) and brake surfaces must be oil and grease-free. A suitable counter friction surface (steel or cast iron) must be used. Sharp-edged interruptions on the friction surface are to be avoided. Recommended surface quality in the friction surface area: Ra = 1,6 µm.
  In particular customer-side attachment surfaces made of grey cast iron are to be rubbed down with fine sandpaper (grain ~ 400).

Short Description (Figs. 1, 2 and 3)

Please find detailed installation descriptions in the respective product Installation and Operational Instructions (also at www.mayr.de).

1. Mount the hub assembly with O-rings (1 and2) onto the shaft, observing the entire carrying length of the key, and secure it axially (e.g. with a locking ring).
2. Push rotor 1 (5) by hand using light pressure over the O-rings (2) on the hub (1) and bring it into the correct position (rotor collar should be facing away from the machine wall). Make sure that the toothing moves easily. Do not damage the O-rings (2).
3. Push the brake body 1 (3) over the hub (1) up to the shoulder on rotor 1 (5) and turn it into the correct position, aligned with the threaded bores on the machine wall.
4. Push the rotor 2 (5.1) by hand using light pressure over the O-ring (2) onto the hub (1) and bring it into the correct position (rotor collar should face the machine wall). Make sure that the toothing moves easily. Do not damage the O-rings (2).
5. Turn brake body 2 (3) with inserted fixing screws (8) to the correct position.
   Thread the fixing screws (8) into brake body 2 (3) and screw the entire brake onto the machine wall (observe the tightening torques acc. Table 1).
6. **Inspect air gap "a" according to Table 1.**
   The nominal air gap must be present.

Hand Release

A hand release (6) is installed manufacturer-side, dependent on size and Type (see Type key pages 5 and 7 and Table 1). From size 800, both circuits are released simultaneously with a lever.

Technical Data – Installation			Size										
			4	8	16	32	64	100	200	300	500	800	1300	1800
Nominal air gap	a	[mm]	0,4 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07	0,5 ± 0,07
Release force per lever / at nominal torque	F	[N]	35	35	110	100	130	110	200	250	300	ca. 300	ca. 320	ca. 350
Actuation angle Hand release	α	[°]	15	15	15	15	15	15	15	15	-	-	-	-
Tightening torque fixing screw Item 8	T_A	[Nm]	3	5	10	13	30	36	71	123	123	250	250	300

Table 1

Brake Dimensioning

Brake Size Selection

1. Brake selection

$$M_{req.} = \frac{9550 \times P}{n} \times K \leq M_2 \quad [Nm]$$

$$t_v = \frac{J \times n}{9{,}55 \times M_v} \quad [sec]$$

$$t_4 = t_v + t_1 \quad [sec]$$

$$M_v = M_2 + (-)^* M_L \quad [Nm]$$

2. Inspection of thermic load

$$Q_r = \frac{J \times n^2}{182{,}4} \times \frac{M_2}{M_v} \quad [J/\text{ braking}]$$

The permitted friction work $Q_{r\ perm.}$ per braking for the specified switching frequency can be taken from the friction-power diagrams (page 16).

If the friction work per braking is known, the max. switching frequency can also be taken from the friction-power diagrams (page 16).

Key:

J	[kgm²]	Mass moment of inertia
K	[-]	Safety factor (1 – 3 x acc. to conditions)
$M_{req.}$	[Nm]	Required braking torque
M_v	[Nm]	Delaying torque
M_L	[Nm]	Load torque on system * sign in brackets is valid if load is braked during downward
M_2	[Nm]	Nominal torque (Technical Data pages 4 – 12)
n	[rpm]	Speed
P	[kW]	Input power
t_v	[s]	Braking action
t_1	[s]	Connection time (Tables 4 and 5, page 17)
t_4	[s]	Total switch-on time
Q_r	[J/braking]	Friction work present per braking
$Q_{r\ 0,1}$	[J/0,1]	Friction work per 0,1 mm wear (Table 2)
$Q_{r\ tot.}$	[J]	Friction work up to rotor replacement (Table 2)

Please Observe!

Due to operating parameters such as slipping speed, pressing or temperature the **wear values** can only be considered **guideline values**.

Friction Work				Size											
				4	8	16	32	64	100	200	300	500	800	1300	1800
per 0,1 mm wear	Type 896._ _ _-_ _	$Q_{r\ 0,1}$	[10^6 J/0,1]	22	28	56	73	116	155	227	269	215	249	357	447
up to rotor replacement	Type 896._ _ _-_ _	$Q_{r\ tot.}$	[10^6 J]	66	84	280	292	348	465	908	1076	1075	1245	1785	2235

Table 2

Mass Moment of Inertia Rotor + hub at d_{max}				Size											
				4	8	16	32	64	100	200	300	500	800	1300	1800
ROBA-stop®-silenzio®															
	Type 896.00_.3_	J_{R+H}	[10^{-4} kgm²]	0,467	0,810	2,45	6,39	12,0	23,7	57,9	91,5	222	405	801	1160
	Type 896.10_.3_	J_{R+H}	[10^{-4} kgm²]	0,267	0,405	1,23	3,20	6,01	11,8	28,9	45,8	111	203	401	580
Double rotor design															
	Type 896.20_.3_	J_{R+H}	[10^{-4} kgm²]	-	-	-	-	-	-	-	91,5	222	405	801	1160
Design with higher braking torques															
	Type 896.03_.3_	J_{R+H}	[10^{-4} kgm²]	-	-	-	-	-	-	57,9	91,5	222	405	801	1160
	Type 896.13_.3_	J_{R+H}	[10^{-4} kgm²]	-	-	-	-	-	-	28,9	45,8	111	203	401	580
ROBA®-sheavestop®															
	Type 896.70_._ _	J_{R+H}	[10^{-4} kgm²]	-	-	-	-	-	-	-	-	111	203	401	580
	Type 896.80_._ _	J_{R+H}	[10^{-4} kgm²]	-	-	-	-	-	-	-	-	222	405	801	1160

Table 3

Friction-Power Diagrams

ROBA-stop®-silenzio®
Type 896.10_.3_

n = 1500 rpm for sizes 4 to 300
n = 750 rpm for sizes 500 to 1300
n = 500 rpm for size 1800

ROBA-stop®-silenzio®
Double rotor design
Type 896.20_.3_

n = 300 rpm for sizes 300 to 800
n = 250 rpm for sizes 1300 to 1800

ROBA®-sheavestop®
Type 896.$^{7}_{8}$0_. _ _

n = 300 rpm for sizes 500 to 800
n = 250 rpm for sizes 1300 to 1800

Permitted friction powers at higher speeds on request.

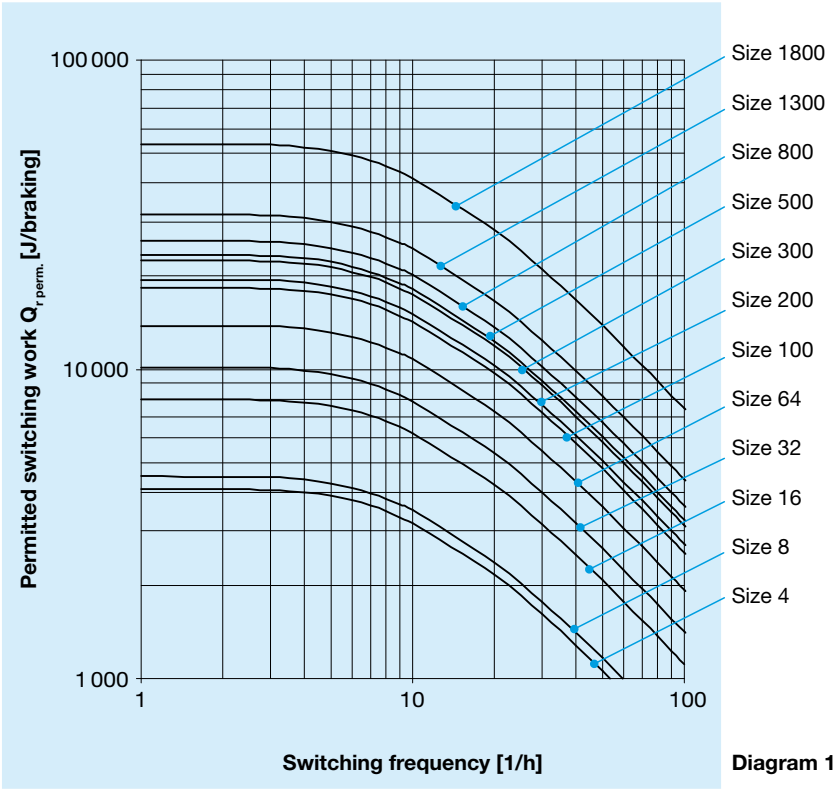


Diagram 1

ROBA-stop®-silenzio®
design with higher braking torques
Type 896. _3_. 3_

n = 250 rpm

Permitted friction powers at higher speeds on request.

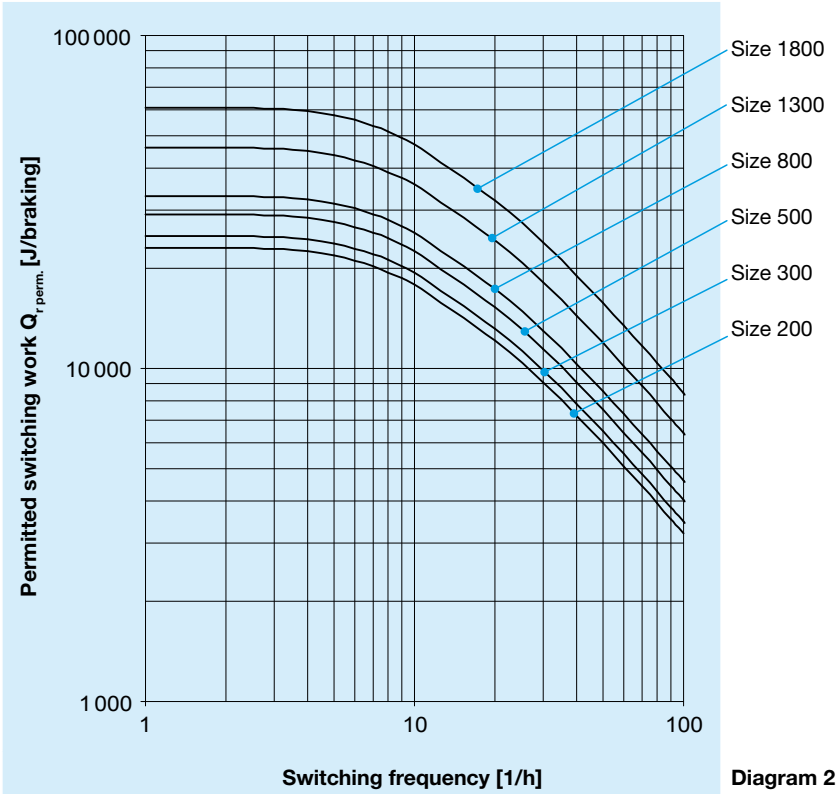


Diagram 2

Switching Times

According to directive VDI 2241, the switching times are measured with a sliding speed of 1 m/s with reference to a mean friction radius. The brake switching times are influenced by the temperature, by the air gap between the armature disk and the coil carrier, which depends on the wear status of the linings, and by the type of quenching circuit. The values stated in the Table are mean values which refer to the nominal air gap and the nominal torque on a warm brake.
Typical switching time tolerances are ± 20 %.

Please Observe: DC-side switching
When measuring the DC-side switching times (t_{11} – time), the inductive switch-off peaks are according to VDE 0580 limited to values smaller than 1200 volts. If other quenching circuits and constructional elements are installed, this switching time t_{11} and therefore also switching time t_1 increase.

Switching Times Type 896._0_ ._ _				Size										
				4	8	16	32	64	100	200	300	500	800	1300	1800
Nominal braking torque Type 896.10_._ _		M_2	[Nm]	4	8	16	32	64	100	200	300	500	800	1300	1800
Connection time	DC-side switching	t_1	[ms]	33	39	99	118	107	120	185	246	259	267	266	420
	AC-side switching	t_1	[ms]	135	196	398	518	447	488	968	1087	1023	1231	1464	1920
Response delay on connection	DC-side switching	t_{11}	[ms]	6	9	17	29	18	13	56	57	59	67	72	105
	AC-side switching	t_{11}	[ms]	52	79	145	229	164	154	412	429	518	531	588	800
Separation time		t_2	[ms]	52	70	94	120	174	234	270	308	444	581	589	850

Table 4: Switching times Type 896. _0 _ . _ _: ROBA-stop®-silenzio®, Double rotor design from size 300, ROBA®-sheavestop® from size 500

Switching Times Type 896._3_ ._ _				Size					
				200	300	500	800	1300	1800
Nominal braking torque Type 896.13_._ _		M_2	[Nm]	300	500	800	1200	1800	2300
Connection time	DC-side switching	t_1	[ms]	108	162	168	236	233	500
	AC-side switching	t_1	[ms]	590	600	953	1100	1300	1700
Response delay on connection	DC-side switching	t_{11}	[ms]	13	13	38	56	34	80
	AC-side switching	t_{11}	[ms]	165	153	136	395	302	570
Separation time (with overexcitation)		t_2	[ms]	155	193	255	272	787	945

Table 5: Switching times Type 896. _ 3 _ ._ _: ROBA-stop®-silenzio® design with higher braking torques

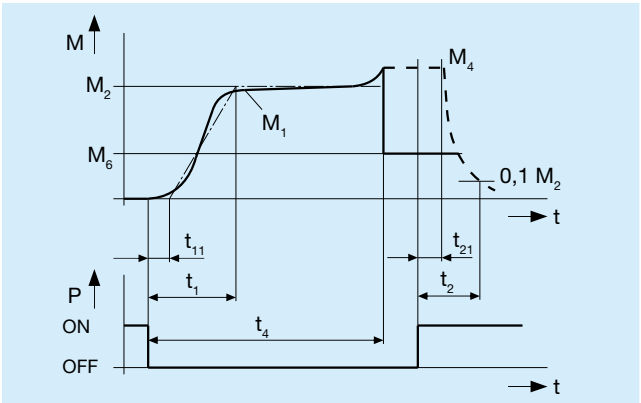


Diagram 3: Torque-Time

Key:

M_1 = Switching torque
M_2 = Nominal torque (characteristic torque)
M_4 = Transmittable torque
M_6 = Load torque
P = Input power
t_1 = Connection time
t_{11} = Response delay on connection
t_2 = Separation time
t_{21} = Response delay on separation
t_4 = Total switch-on time + t_{11}

Electrical Connection and Wiring

DC current is necessary for the operation of the brake. The coil voltage is indicated on the Type tag as well as on the brake body and is designed according to the DIN IEC 60038 (± 10 % tolerance). The device can be operated with AC voltage in connection with a rectifier as well as with other suitable DC voltage supplies. Dependent on the brake equipment, the connection possibilities can vary. Please follow the exact connections according to the wiring diagram. The manufacturer and the user must observe the applicable directives and standards (e. g. DIN EN 60204-1 and DIN VDE 0580). Their observance must be guaranteed and double-checked.

Supply voltage requirements when **operating noise-damped brakes.**

In order to minimise the **noise development on released brakes**, they may only be operated via DC voltage with low ripple content. Operation is possible with AC voltage using a **bridge rectifier** or another suitable DC supply. Supplies whose output voltage show a high ripple content (e.g. half-wave rectifiers, phase controlled modulators, …) are unsuitable for brake operation.

At variance with this, brakes specially dimensioned for over-excitation must be operated with the ROBA®-switch fast acting rectifier.

Earthing Connection

The brake is designed for Protection Class I. This protection covers not only the basis insulation but also the connection of all conductive parts to the PE conductor on the fixed installation. If the basis insulation fails, no contact voltage will remain. Please carry out a standardized inspection of the PE conductor connections to all contactable metal parts.

Device Fuses

To protect against damage from short circuits, please add suitable device fuses to the mains cable.

Schaltverhalten

The operational behaviour of a brake is to a large extent dependent on the switching mode used. Furthermore, the switching times are influenced by the temperature and the air gap between the armature disk and the coil carrier (dependent on the wear condition of the linings).

Magnetic Field Build-up

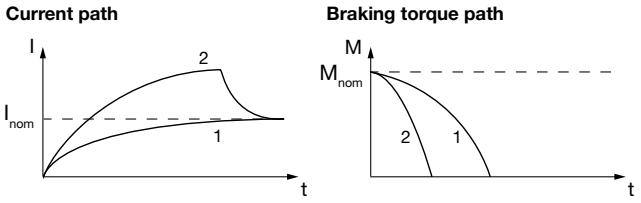
When the voltage is switched on, a magnetic field is built up in the brake coil, which attracts the armature disk to the coil carrier and releases the brake.

• Field Build-up with Normal Excitation

If we energise the magnetic coil with nominal voltage the coil voltage does not immediately reach its nominal value. The coil inductivity causes the current to rise slowly as an exponential function. Accordingly, the build-up of the magnetic field happens more slowly and the braking torque drop (curve 1, above) is also delayed.

• Field Build-up with Overexcitation

A quicker drop in braking torque is achieved if the coil is temporarily placed under a higher voltage than the nominal voltage, as the current then increases more quickly. Once the brake is released, switch to the nominal voltage (curve 2, above). The relationship between overexcitation and separation time t_2 is approximately indirectly proportional. This means that, using doubled nominal voltage, it is possible to halve the separation time t_2 in order to release the brake. The ROBA®-switch fast acting rectifier works on this principle.



Operation with overexcitation requires testing of:
- the necessary overexcitation time *
- as well as of the RMS coil capacity ** for a cycle frequency higher than 1 cycle per minute.

*** Overexcitation time t_{over}**

Increased wear and therefore an enlarged air gap as well as coil heat-up lengthen the separation time t_2 of the brake. Therefore, as overexcitation time t_{over}, please select at least double the separation time t_2 with nominal power on each brake size.
The spring forces also influence the brake separation time t_2: Higher spring forces increase the separation time t_2 and lower spring forces reduce the separation time t_2.

- Spring force (braking torque adjustment) = 100 %:

The overexcitation time t_{over} is double the separation time t_2 on each brake size.

- Spring force (braking torque adjustment) > 100 %:

The overexcitation time t_{over} is higher than double the separation time t_2 on each brake size.

**** RMS coil capacity P_{RMS}**

$P_{RMS} \leq P_{nom}$

The coil capacity P_{RMS} may not be larger than P_{nom}. Otherwise, the coil may fail due to thermic overload.

Calculations:

P_{RMS}	[W]	RMS coil capacity, dependent on switching frequency, overexcitation, power reduction and switch-on time duration

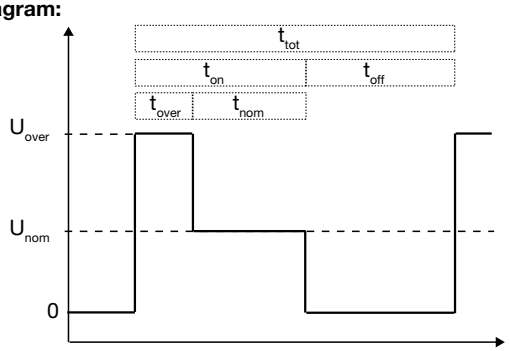
$$P_{RMS} = \frac{P_{over} \times t_{over} + P_{nom} \times t_{nom}}{t_{tot}}$$

P_{nom}	[W]	Coil nominal capacity (Catalogue value, Type tag)
P_{over}	[W]	Coil capacity on overexcitation

$$P_{over} = \left(\frac{U_{over}}{U_{nom}}\right)^2 \times P_{nom}$$

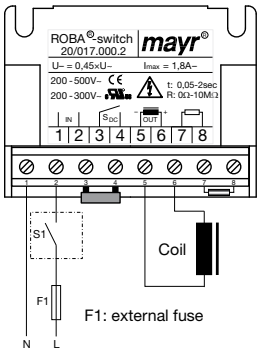
t_{over}	[s]	Time of operation with power reduction
t_{nom}	[s]	Time of operation with coil nominal voltage
t_{off}	[s]	Time without voltage
t_{tot}	[s]	Total time ($t_{over} + t_{nom} + t_{off}$)
U_{over}	[V]	Overexcitation voltage (bridge voltage)
U_{nom}	[V]	Coil nominal voltage

Time Diagram:



Magnetic Field Removal

• AC-side Switching

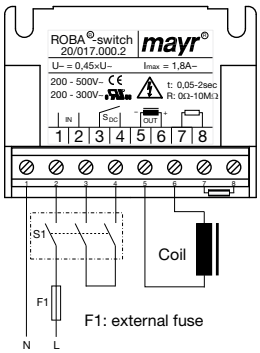


The power circuit is interrupted before the rectifier. The magnetic field slowly reduces. This delays the rise in braking torque.

When switching times are not important, please switch AC-side, as no protective measures are necessary for coil and switching contacts.

AC-side switching means **low-noise switching**; however, the brake engagement time is longer (c. 6 – 10 times longer than with DC-side switch-off). Use for non-critical braking times.

• DC-side Switching



The power circuit is interrupted between the rectifier and the coil as well as mains-side. The magnetic field is removed very quickly, resulting in a rapid rise in braking torque.

When switching DC-side, high voltage peaks are produced in the coil, which lead to wear on the contacts from sparks and to destruction of the insulation.

DC-side switching means **short brake engagement time (e.g. for EMERGENCY STOP operation)**. However, this produces louder switching noises.

• Protective Circuit

When using DC-side switching, the coil must be protected by a suitable protective circuit according to VDE 0580, which is integrated in *mayr*® rectifiers. To protect the switching contact from consumption when using DC-side switching, additional protective measures may be necessary (e.g. series connection of switching contacts). The switching contacts used should have a minimum contact opening of 3 mm and should be suitable for inductive load switching. Please make sure on selection that the rated voltage and the rated operation current are sufficient. Depending on the application, the switching contact can also be protected by other protective circuits (e.g. *mayr*® spark quencher), although this may of course then alter the switching time.

Application

Reduces spark production on the switching contacts occurring during VDC inductive load switching.

- Voltage limitation according to VDE0580 2000-07, Item 4.6.
- Reduction of EMC-disturbance by voltage rise limitation, suppression of switching sparks.
- Reduction of brake engagement times by a factor of 2-4 compared to free-wheeling diodes.

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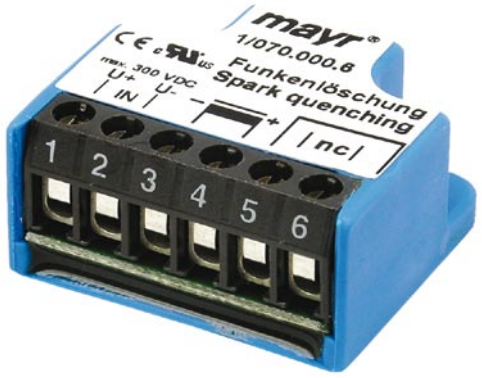


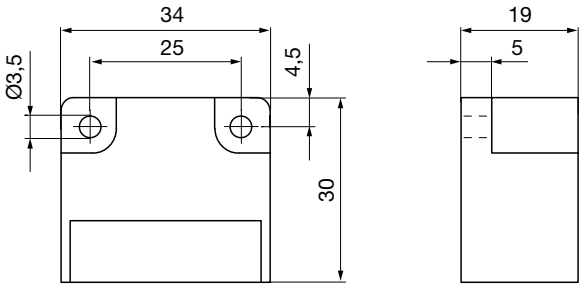
Function

The spark quenching unit will absorb voltage peaks resulting from inductive load switching, which can cause damage to insulation and contacts. It limits these to 70 V and reduces the contact load. Switching products with a contact opening distance of > 3 mm are suitable for this purpose.

Electrical Connection (Terminals)

1 (+) Input voltage
2 (–) Input voltage
3 (–) Coil
4 (+) Coil
5 Free nc terminal
6 Free nc terminal

Dimensions (mm)



Technical Data

Input voltage	max. 300 VDC, max. 615 V_{peak} (rectified voltage 400 VAC, 50/60 Hz)
Switch-off energy	max. 9 J/2 ms
Power dissipation	max. 0,1 Watt
Max. voltage nc terminals	250 V
Protection	IP65 / IP20 terminals
Ambient temperature	-25 °C up to +85 °C
Storage temperature	-25 °C up to +105 °C
Max. conductor connection diameter	2,5 mm^2 / AWG 26-12
Max. terminal tightening torque	0,5 Nm

Accessories

Mounting bracket set for 35 mm rail acc. to EN50022
Article-No. 1803201

Order Number

__ / 0 7 0 . 0 0 0 . 6
△
Size
1

Bridge Rectifiers Type 025.000.6

Application

Rectifiers are used to connect DC units to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA-quick®, ROBATIC®), electromagnets, electrovalves, contactors, switch-on safe DC motors, etc.

c UL us E189728 CE

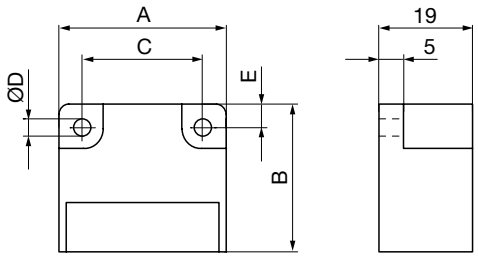
Function

The AC input voltage (VAC) is rectified (VDC) in order to operate DC voltage units. Also, voltage peaks, which occur when switching off inductive loads and which may cause damage to insulation and contacts, are limited and the contact load reduced.

Electrical Connection (Terminals)

1 + 2 Input voltage
3 + 4 Connection for an external switch for DC-side switching
5 + 6 Coil
7 - 10 Free nc terminals (only for size 2)

Dimensions (mm)



Size	A	B	C	ØD	E
1	34	30	25	3,5	4,5
2	54	30	44	4,5	5,0

Accessories: Mounting bracket set for 35 mm rail acc. to EN 50022: Article-No. 1803201

Order Number

__ / 0 2 5 . 0 0 0 . 6

△

Size
1
2

Technical Data

	Bridge rectifier	
Calculation output voltage	VDC = VAC x 0,9	
Type	**1/025**	**2/025**
Max. input voltage	230 VAC	230 VAC
Max. output voltage	207 VDC	207 VDC
Output current at ≤ 50°C	2,5 A	2,5 A
Output current at max. 85 °C	1,7 A	1,7 A
Max. coil capacity at 115 VAC ≤ 50 °C	260 W	260 W
Max. coil capacity at 115 VAC up to 85 °C	177 W	177 W
Max. coil capacity at 230 VAC ≤ 50 °C	517 W	517 W
Max. coil capacity at 230 VAC up to 85 °C	352 W	352 W
Max. coil capacity at 400 VAC ≤ 50 °C	-	-
Max. coil capacity at 400 VAC up to 85 °C	-	-
Max. coil capacity at 500 VAC ≤ 50 °C	-	-
Max. coil capacity at 500 VAC up to 85 °C	-	-
Max. coil capacity at 600 VAC ≤ 50 °C	-	-
Max. coil capacity at 600 VAC up to 85 °C	-	-
Peak reverse voltage	1600 V	1600 V
Rated insulation voltage	250 V_{RMS}	320 V_{RMS}
Pollution degree (insulation coordination)	2	2
Protection fuse	To be included in the input voltage line.	
Recommended microfuse switching capacity H The microfuse corresponds to the max. possible connection capacity. If fuses are used corresponding to the actual capacities, the permitted limit integral I^2t must be observed on selection.	FF 3,15A	FF 3,15A
Permitted limit integral I^2t	40 A^2s	40 A^2s
Protection	IP65 components, encapsulated / IP20 terminals	
Terminals	Cross-section 0,14 - 1,5 mm^2 (AWG 26-14)	
Ambient temperature	- 25 °C up to + 85 °C	
Storage temperature	- 25 °C up to + 105 °C	
Conformity markings	UL, CE	UL, CE
Installation conditions	The installation position can be user-defined. Please ensure sufficient heat dissipation and air convection! Do not install near to sources of intense heat!	

Application

ROBA®-switch fast acting rectifiers are used to connect DC consumers to alternating voltage supplies, for example electromagnetic brakes and couplings (ROBA-stop®, ROBA®-quick, ROBATIC®) as well as electromagnets and electrovalves etc.

Fast acting rectifier ROBA®-switch 017._00.2

- Consumer operation with overexcitation or power reduction
- Input voltage: 100 - 500 VAC
- Maximum output power: 3 A at 250 VAC
- UL-approved

Function

The ROBA®-switch units are used for operation at an input voltage of between 100 and 500 VAC, dependent on size. They can switch internally from bridge rectification output voltage to half-wave rectification output voltage. The bridge rectification time can be modified from 0,05 to 2 seconds by exchanging the external resistor.

Electrical Connection (Terminals)

1 + 2 Input voltage (fitted protective varistor)
3 + 4 Connection for external contact for DC-side switch-off
5 + 6 Output voltage (fitted protective varistor)
7 + 8 R_{ext} for bridge rectifier timing adjustment

Technical Data

Input voltage	see Table 1
Output voltage	see Table 1
Protection	IP65 components, IP20 terminals, IP10 R_{ext}
Terminal nom. cross-section	1,5 mm², (AWG 22-14)
Ambient temperature	-25 °C up to +70 °C
Storage temperature	-40 °C up to +105 °C

ROBA®-switch Sizes, Table 1

	Size			
	Type 017.000.2		Type 017.100.2	
	10	20	10	20
Input voltage VAC ± 10 %	100 - 250	200 - 500	100 - 250	200 - 500
Output voltage VDC, U_{bridge}	90 - 225	180 - 450	90 - 225	180 - 450
Output voltage VDC, $U_{half\text{-}wave}$	45 - 113	90 - 225	45 - 113	90 - 225
Output current I_{RMS} at ≤ 45 °C, (A)	2,0	1,8	3,0	2,0
Output current I_{RMS} at max. 70 °C, (A)	1,0	0,9	1,5	1,0
Comformity markings	cULus CE	cULus up to 300 V CE	cULus CE	cULus CE

Order Number

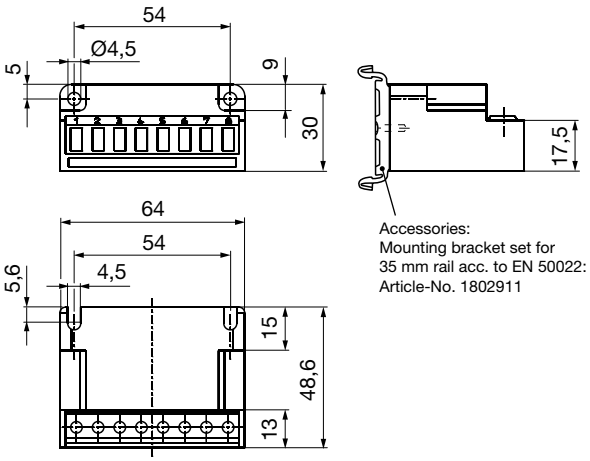
__ / 0 1 7 . __ 0 0 . 2

Size		UL-approved	
10		0	to 300 V
20		1	to 500 V

cULus E189728 CE

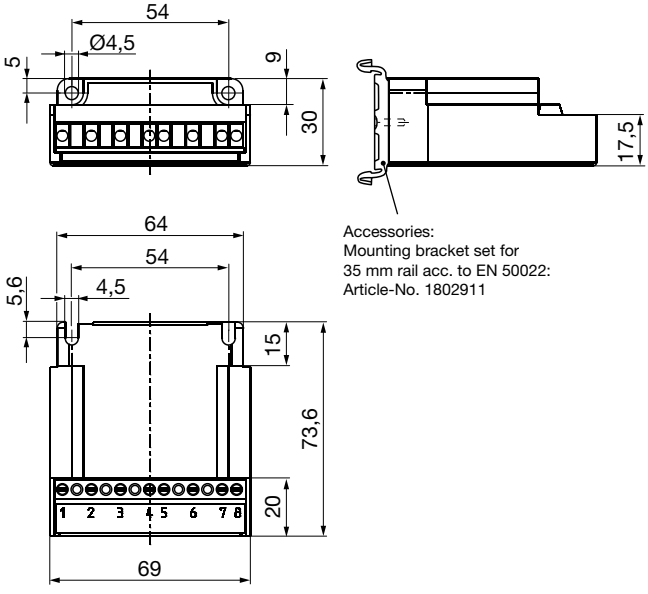
Dimensions (mm)

Type 017.000.2



Accessories:
Mounting bracket set for
35 mm rail acc. to EN 50022:
Article-No. 1802911

Type 017.100.2



Accessories:
Mounting bracket set for
35 mm rail acc. to EN 50022:
Article-No. 1802911

Declaration of Conformity

A conformity evaluation for the applicable EU directives has been carried out for this product. The conformity evaluation is set out in writing in a separate document and can be requested if required. It is forbidden to start use of the product until the machine or system into which it should be built is operating in accordance with all applicable EU directives.

Without a conformity evaluation, this product is not suitable for use in areas where there is a high danger of explosion. This statement is based on the ATEX directive.

Safety Regulations

Danger!
Danger of death! Do not touch voltage-carrying cables and components.

This warning applies if:

- the safety brakes are used incorrectly.
- the safety brakes are modified.
- the relevant standards for safety and/or installation conditions are ignored.

To prevent injury or damage, only professionals and specialists should work on the devices.

Warning!

Before product installation and initial operation, please read the Installation and Operational Instructions carefully and observe the Safety Regulations. Incorrect operation can cause injury or damage.
The safety brakes have been developed in accordance with the latest technology regulations and are, at the point of delivery, operationally safe.
Safety brakes are not suitable for use in areas where there is a high danger of explosion or aggressive atmospheres.

Please Observe!

- Only specialists who are trained in the transport, installation, operation, maintenance and general operation of these devices and who are aware of the relevant standards should be allowed to carry out this work.
- Technical data and specifications (Type tags and documentation) must be followed.
- The correct connection voltage must be connected according to the Type tag.
- Never loosen electrical connections or carry out installations, maintenance or repairs while the voltage connection is energised!
- Cable connections must not be placed under mechanical strain.
- Check electrical components for signs of damage before putting them into operation. Never bring them into contact with water or other fluids.
- The braking torque is lost if the friction lining and/or the friction surface come into contact with oil or grease.

User-implemented Protective Measures:

- Please cover moving parts to protect against injury through seizure and catapulted objects.
- Place a cover on the magnetic part to protect against injury through high temperatures.
- Protect against electric shocks by installing a conductive connection between the magnetic component and the PE conductor on the permanent installation (Protection Class I).

Guidelines for Electromagnetic Compatibility (EMC)

In accordance with the EMC directives 89/336/EEC, the individual components produce no emissions.
However, functional components e.g. rectifiers, phase demodulators, ROBA®-switch devices or similar controls for mains-side energisation of the brakes can produce disturbance which lies above the allowed limit values.
For this reason it is important to read the Installation and Operational Instructions very carefully and to keep to the EMC directives.

Protection Class I
This protection can only be guaranteed if the basic insulation is intact and if all conductive parts are connected to the PE conductor. Should the basic insulation fail, the contact voltage cannot remain (VDE 0580).

Protection (Mechanical) IP10
Protected against large body surfaces and against large foreign bodies > 50 mm diameter. Not waterproof.

Protection (Elecrical) IP54
Dust-proof and protected against contact as well as against splashing water from all directions.

Ambient Temperature -20 °C up to +40 °C

Warning!
At temperatures of around or under freezing point, condensation can strongly reduce the torque, or the rotors can freeze up.
The user is responsible for taking appropriate countermeasures.
At temperatures lower than 0 °C, noise levels may rise.

Device Conditions

The catalogue values are standards which can, in certain cases, vary. When dimensioning the brakes, please remember that installation situations, braking torque fluctuations, permitted friction work, run-in behaviour and wear as well as general ambient conditions can all affect the given values. These factors should therefore be carefully assessed, and alignments made accordingly.

Please Observe!
Mounting dimensions and connecting dimensions must be adjusted according to the size of the brake at the place of installation.

- The brakes are designed for a relative duty cycle of 100 %.
- The brakes are only designed for dry running.

Please Observe!

- The braking torque is lost if the friction surfaces come into contact with oil, grease, water or similar substances.
- The braking torque is dependent on the present run-in condition of the brakes.
- Please provide a protection circuit for damping overvoltages, as on DC-side brake switch-off, very high inductive voltage peaks can occur, which can in extreme cases lead to damage to the coil insulation or to switch contact consumption.
- Please provide additional protective measures against brake corrosion if they are used in extreme ambient conditions or in open-air conditions unprotected from the weather. The metal surface of the brake is corrosion-protected manufacturer-side.

Application

As holding brake with EMERGENCY STOP braking

- **in closed buildings (in tropical climates, at high humidity with long down times and sea climates only with special measures)**
- **in dry running**
- **installation position horizontal or vertical in clean ambient conditions (coarse dust or liquids of any kind affect the braking function => provide a cover).**

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