Safety Brake for

Cranes and Hoists
Machines and Systems
Power Transmission
Material Handling Equipment

ROBA-stop®

Electromagnetic Safety Brake

- ***Easy central wear adjustment***
- ***Sensitive braking torque adjustment***
- ***Optimised for emergency OFF operation***
- ***Robust, high-performance construction***

www.mayr®.de

K.800.V03.GB

mayr®

your reliable partner

Your Advantages When Using ROBA-stop®

ROBA-stop® brakes attract customers because of their decided advantages in relation to operational safety and ease of maintenance.

For most applications, the enclosed structural shape can provide high functional brake safety without requiring additional protective measures. The product's high reliability further improves the functional safety as well as increasing the efficiency of the entire machine or plant in which it is used.

The sensitive braking torque adjustment shows its value when exact positioning is required or when drives are to be adapted to changing production procedures. It simplifies production procedure optimization immensely, increases production, maximises flexibility and improves product quality.

A further, outstanding characteristic of the ROBA-stop® brake is the central wear adjustment. This minimises the danger of adjustment errors, simplifies maintenance, saves time and maintenance costs and therefore also reduces machine downtimes.

Wide Variety of Application Possibilities for ROBA-stop® Safety Brakes

ROBA-stop® safety brakes offer a complete range of the many and various designs needed for different applications. Nearly 30 years of experience with spring applied safety brakes and detailed knowledge of the multiple demands on electrical power transmission technology support our program. Our tried and tested technology and our continual advances with regard to user-specific optimization of our palette of structural shapes guarantee the perfect brake for each individual application.

ROBA-stop®-positioning brakes provide high positioning and repetitive accuracy even at high switching frequencies. Sensitive adjustment of the braking torque is possible. This structural shape can be adapted to many different applications using different armature disks.

ROBA-stop®-holding brakes can reach very high braking torques. They are suitable for holding large masses or loads without friction work, although braking at low speeds with low friction work in suitable application conditions is also permitted.

ROBA-stop®-tacho brakes have a centering recess and a tapped hole on their rear face, so that they can be mounted onto a tachogenerator. This brake also allows exact positioning with high repetitive accuracy using its sensitive braking torque adjustment.

ROBA-stop®-peak load tacho brakes have the same basic functions as the tacho brake. They are, however, additionally equipped with an extremely strong armature disk which permits high friction work.

ROBA-stop®-peak load brakes come in two further variations. These are both equipped with an extremely strong armature disk for high friction work. The design with an open distance ring dissipates brake heat very quickly into the surrounding area. The design with an enclosed distance ring is used when high friction work must be absorbed and when higher protection against outer influences is required.

ROBA-stop®-sealed brakes and
ROBA-stop®-S brakes comply with Protection IP 67.
They are fully enclosed, sealed and protected against corrosion.

Low-noise

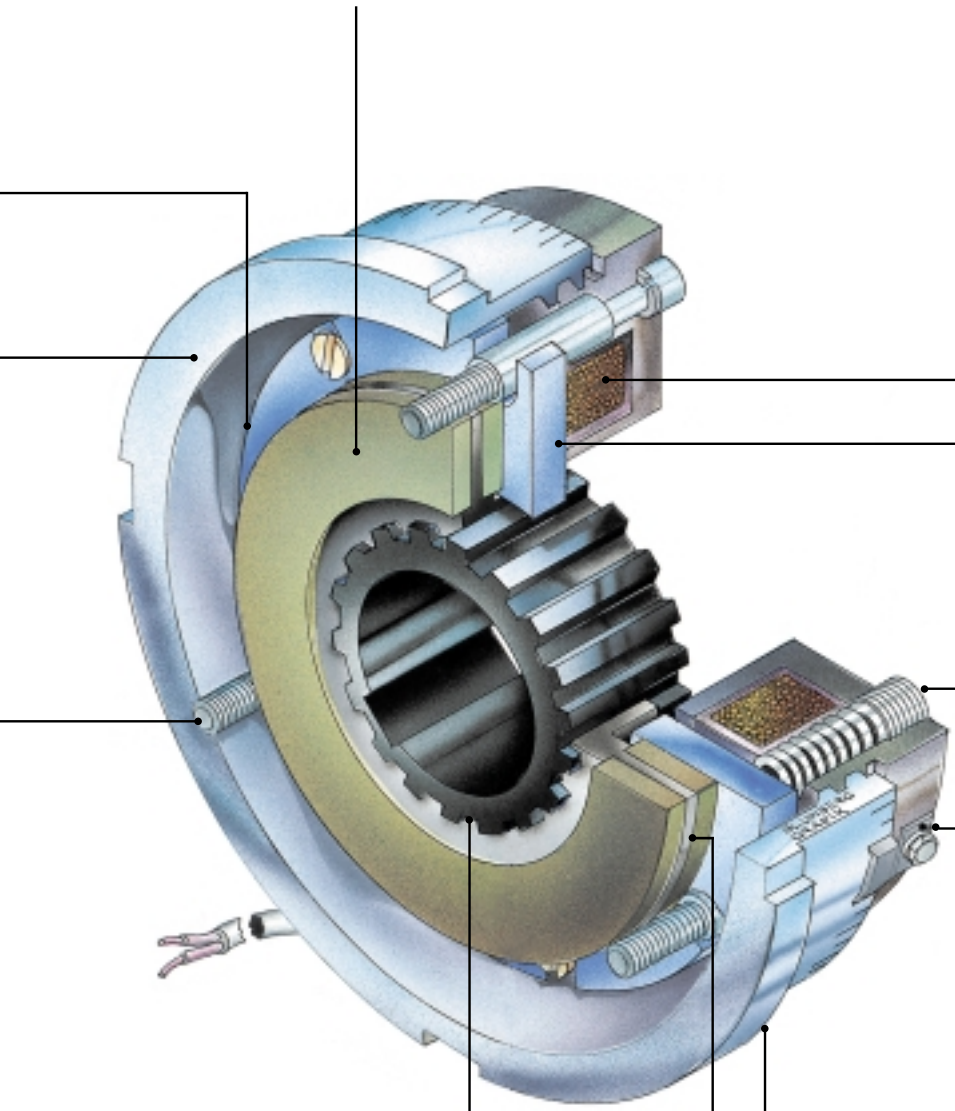
Small structural dimensions with high braking torques.

Simple and problem-free brake installation. Mounting possible without time-consuming adjustments.

Your Customized Solution - Our Universal Brake

Regular Braking Times

Friction linings with a large surface area for high wear reserves and a long service life.



Replaceable magnetic coil, insulation class F.

Different armature disks to meet different friction work demands and switching time requirements.

Sensitive adjustment of the braking torque via set screws make customized adaptations for different applications possible.

No self-twisting and therefore no inadvertent alteration of the air gap, meaning constant positioning accuracy.

Fast wear adjustment

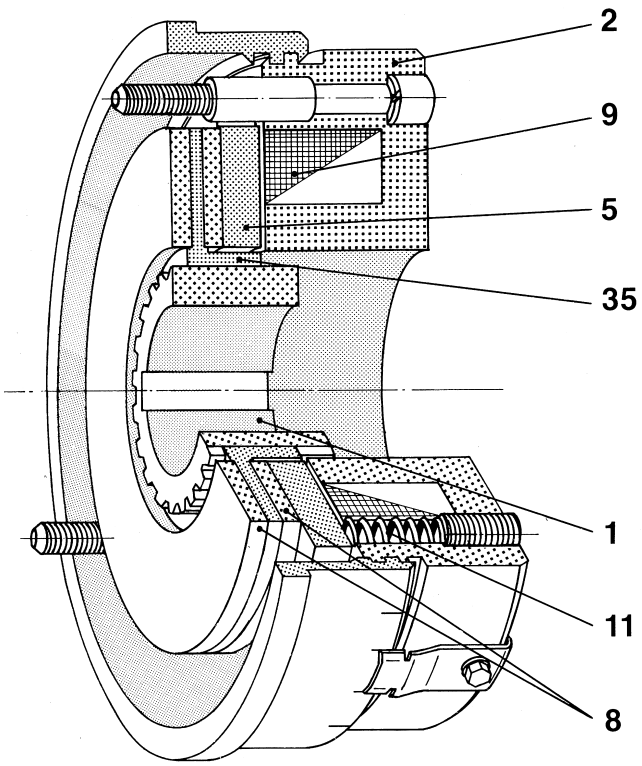
Fast, easily readable central wear adjustment.
Completely enclosed design.
Protection IP 54

Minimal backlash between hub and rotor resulting from a precise tooth form.

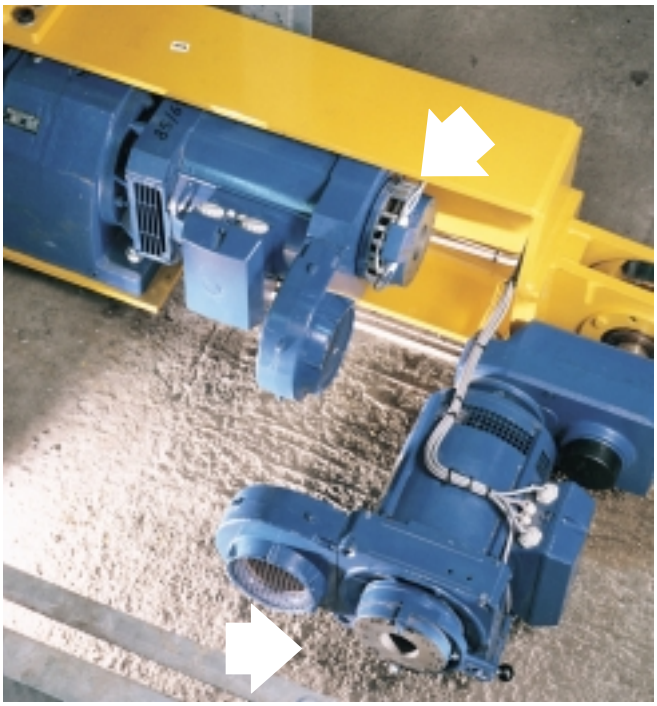
Safe braking torque transmission via a metal rotor with a very low mass moment of inertia.

Function

ROBA-stop® brakes are spring applied, electro-magnetic safety brakes. If the brake is de-energised, it is closed, thereby complying with the relevant safety demands e.g. on power failure or on emergency OFF. If the brake is de-energised, helical springs (11) press against the armature disk (5). The rotor (35) friction linings (8), which are connected via a gear hub (1) with the drive shaft, are clamped between the armature disk (5) and the brake mounting surface. If the coil (9) is energised, a magnetic field is built up which attracts the armature disk (5) to the coil carrier (2), thereby releasing the rotor (35) with the friction linings (8). The brakes are released if voltage is applied.



ROBA-stop® Application in Palletised Warehousing



Lift drives and traction drives on narrow aisle material handling systems are equipped with ROBA-stop® brakes. The ROBA-stop® positioning brake at the rear of the drive motor brakes the drive at slow speeds exactly at the required position. The ROBA-stop®-peak load brake on the hoist motor usually provides the same functions during normal operation – braking at slow speeds and exact positioning. This brake is additionally able to brake safely at high speeds and with downward-moving loads. It is capable of absorbing extremely high friction work and of dissipating it quickly into the surrounding area.

Quality, Experience and Competence

Mayr®-power transmission technology has been providing innovative and technologically viable solutions of the highest standard for decades. The primary reasons for this success are highest product quality and the quality awareness of all our personnel. Our DIN ISO 9001 certification reinforces the high demands which we set upon ourselves. We are able to offer you, our customer, sophisticated quality management, our acknowledged standard of product quality and our long years of experience and accumulated ‘know-how’ in both mechanical and in electrical power transmission technology, earning your trust by proving our worth.

Manufacturer's Declaration

CE

ROBA-stop® brakes as well as rectifiers, phase demodulators, ROBA®-switch devices, spark quenching units and power supplies are intended for installation machine or system, based on the machine directive 98/37/EC.
It is forbidden to start use of the product until the machine or system into which it should be being built is operating in accordance with EC directives.

The products are developed and manufactured in conformance with the standard DIN VDE 0580 and according to the low voltage directive 73/23/EEC. The customer is responsible for compliance with the EMC directive 89/336/EEC.

Safety Regulations

Danger!

Danger of death! Do not touch voltage-carrying cables and components.
This warning applies if:

- the spring applied brake is used incorrectly.
- the spring applied brake is 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.
This spring applied brake has been developed in accordance with the latest technology regulations and is, at the point of delivery, operationally safe.
Without a conformity inspection, this product is not suitable for use in areas where there is a high danger of explosion. This statement is based on directive 94/9 EC (ATEX directive).

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.

These safety regulations are user hints only and may not be complete!

User-implemented Protective Measures

– Please cover moving parts to protect against injury through seizure.
– 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 1).
– Protect against highly inductive switch-off peaks by installing spark-quenching units.

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.

Standards and Regulations

ROBA-stop® brakes are developed and manufactured in conformance with the standard DIN VDE 0580 according to the low voltage regulation 73/23/EEC.

Regulations, Standards and Directives Used:

98/37/EC	Machine directive
73/23/EEC	Low voltage directive
89/336/EEC	EMC directive

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 IP 54	Dust-proof and protected against contact as well as against splashing water from all directions (DIN EN 60529).
Ambient Temperature	-20 ºC up to +40 ºC **Warning!** At temperatures of around or under freezing point, condensation can strongly reduce the torque. The user is responsible for taking appropriate counter measures.

Device Conditions

The catalogue standards are standards which can, in certain cases, vary. When dimensioning the brake, 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 connection dimensions must be adjusted according to the size of the brake at the place of installation.
– ROBA-stop® brakes are designed for a relative duty cycle of 100 %.
– ROBA-stop® disk brakes are only designed for dry running.

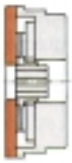
Warning!

The torque is lost if the friction surfaces come into contact with oil, grease, water or similar substances.

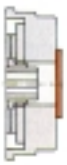
– The braking torque is dependent on the present run-in condition of the brake.
– **A protective damping system** against excessive voltages must be installed as highly inductive voltage peaks occur when the brake is switched off DC-side, resulting in damage to the coil insulation as well as in switching contact consumption in extreme cases.
– **Provide additional brake safety measures** against corrosion if they are used in extreme ambient conditions or are subject to direct ambient influences. Manufacturer-side corrosion protection of the metallic surface is provided.
– The connecting cables or leads have a silicone coating which has a limited resistance against chemical influences. Please check them for suitability in their intended application.

ROBA-stop® Summary of Components

Additional Components



Flange plate
If no suitable friction surface is available customer-side for the brake linings, our flange plate can be used.



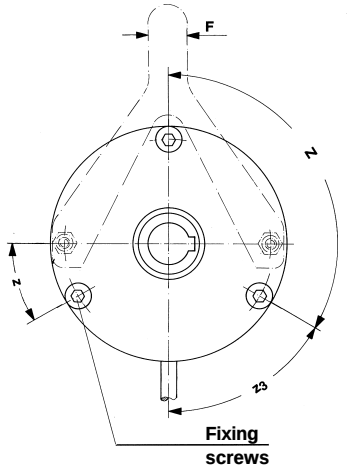
Cover plate
The brake is enclosed by the cover plate and complies with Protection IP 54. This function has been TÜV-(Technical Inspectorate) approved in several tests.

Hand release
This function is used for mechanical release of the ROBA-stop® brake when the magnetic coil is de-energised (e.g. on power failure).

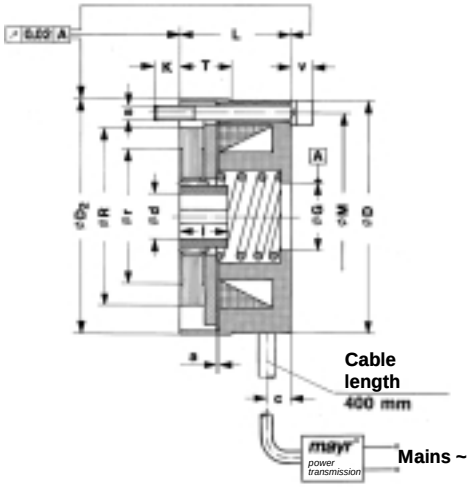
Terminal box
The terminal box serves as an interface for the supply cable and for housing the terminal, a spark quenching unit or a rectifier.

ROBA-stop®-positioning Brake

Standard **Size 2** **Type 800.45_.0**

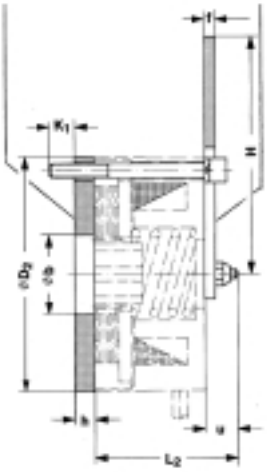


Type 800.450.0



Flange plate
Type 800.451.0

Hand release
Type 800.453.0



Type 800.451.0
800.453.0

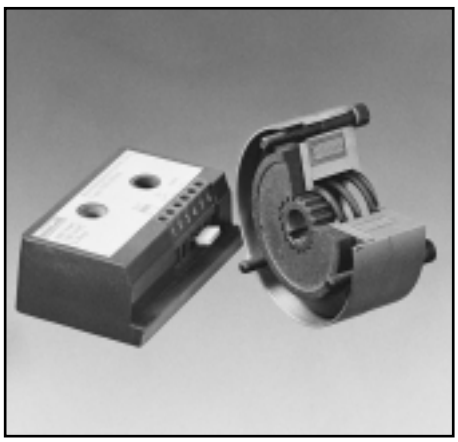
Technical Data and Dimensions

Size	Brake torque M[3] [Nm]	Max. speed[1] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	a	b	c	D	$D_{2\ h8}$	d_{min}	d_{max}[2]	Preferred bore H7
2	1.1	7000	12	4.48 x 10^{-6}	3	0.4	0.15	20	4.5	58	59	6	11	9.10

Size	F	f	G^{H8}	H	h	K	K_1	L	L_2	l	M	R	r	s	T	u	v	Z	z	z_3
2	10	2.5	17	60	5	6	6	28	35.2	12	52	44	29	3xM4	14	7.5	5.2	3x120°	30°	60°

[1] Higher speeds available on request
[2] Over Ø10 special keyway; width b = 4^{JS9}, depth t = $1.2^{+0.1}$
[3] Tolerance + 40%/ – 20%

Standard voltages 24, 104 V
Permitted voltage tolerances ± 10%; to IEC 60038
We reserve the right to make dimensional and design alterations.



The robust and simplified form of the ROBA-stop®-brake Size 2 guarantees problem-free installation and reliability in operation. To ensure compact overall dimensions, the wear adjustment and braking torque adjustment are not included in the design.
In contrast to the other ROBA-stop® brakes, the braking force is generated by a central spring.
The rotor and hub toothing guarantee reliable braking torque transmission and prevent all but minimal backlash between the hub and the rotor. If no suitable counter friction surface is available customer-side, our flange plate can be used.
The hand release is used for mechanical release of the brake.
The brake can easily be supplied with DC voltage using our comprehensive range of electrical equipment.
Design as tachogenerator brake available on request.

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:	**2**	800.45_.0			6885/1

Without supplementary parts 0
Flange plate 1
Hand release 3
Flange plate / Hand release 5

From Ø 6 to Ø 11
24; 104 V-coil

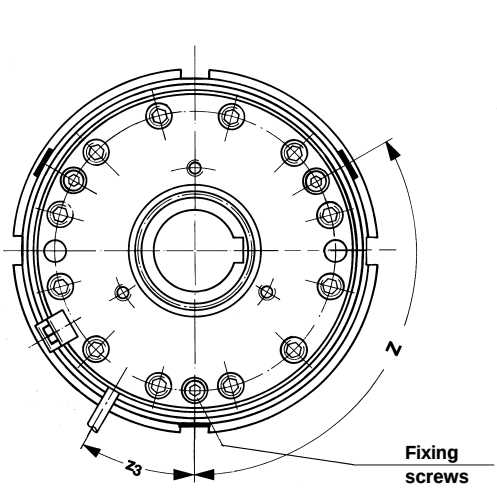
Example: Order number 2 / 800.451.0 / 104 / 10 / 6885/1

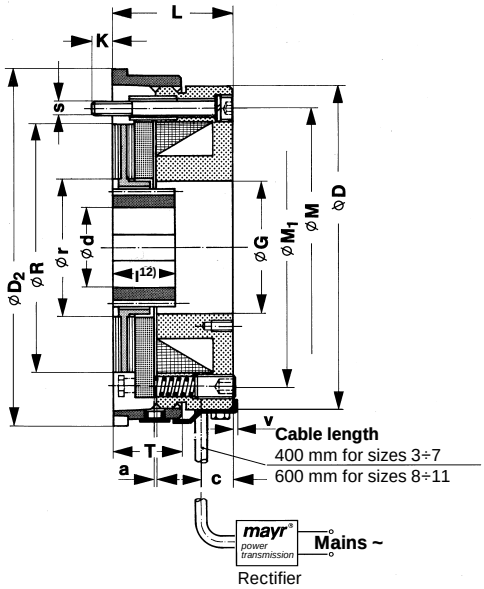
Sizes 3 – 11 Standard

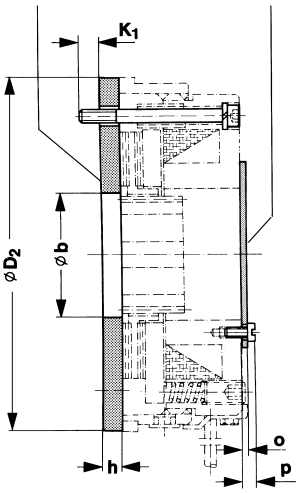
Type 80_.41_._

Flange plate
Type 802.411.3

Cover plate
Type 802.412.3

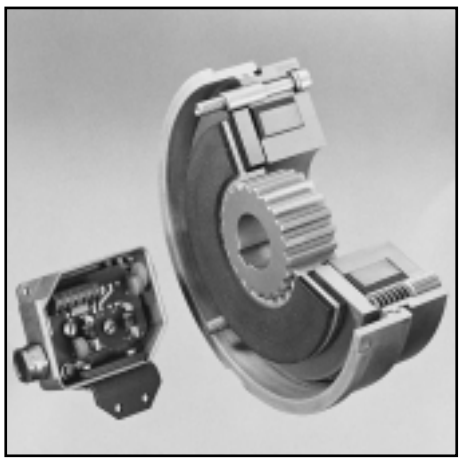






Sizes 3 - 11 Type 80_._ _

Sizes 3 - 11 Type 802.411.3
Type 802.412.3



This brake is an electromagnetic safety brake for braking and exact positioning. A high repetitive accuracy is guaranteed, even at high switching frequencies. Two different armature disks are available to cope with different demands on friction work and on brake switching times.

Standard Armature Disk

Short attraction time (brake release), longer drop-out time from power switch-off to the point at which the braking torque comes into effect. Solid structural shape allows high friction work absorption.

Fast Acting Armature Disk

This disk has the same characteristics as the standard armature disk; however, it has a slightly longer attraction time but a much shorter drop-out time.

The electrical switching and the type of power supply have a large influence on the switching times. Our wide range of electrical equipment allows a simple DC voltage brake supply connection.

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		80_.41_._			

3 - 11

Standard armature 0
Fast acting armature 2

Without supplementary parts 0
Flange plate 1
Cover plate 2
Hand release 3
Flange plate/Cover plate 4
Flange plate/Hand release 5
Cover plate/Hand release 6
Flange plate/Cover plate/
Hand release 7

6885/1
6885/3

according to size

24; 104; 180; 207 V-coil

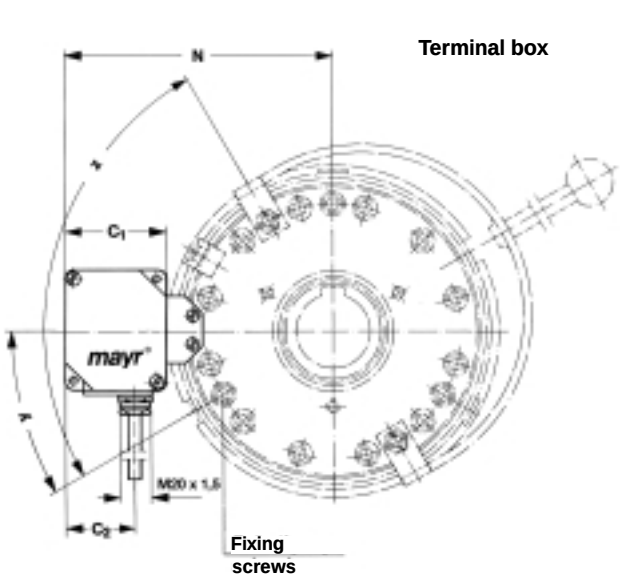
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge unit rectifier
6 Terminal box spark quenching

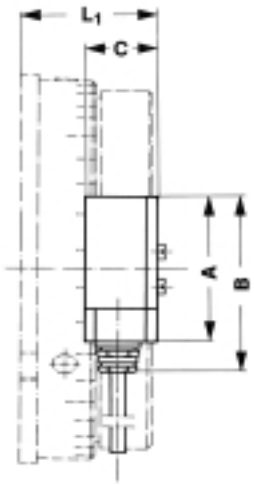
Example: Order number 6 / 800.411.3 / 104 / 20 / 6885/1

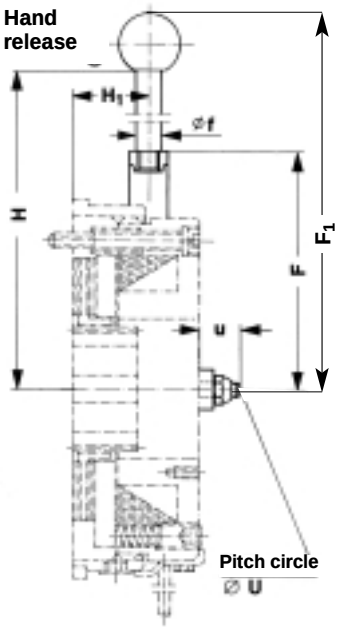
ROBA-stop®-positioning Brake

Sizes 3 – 11

Type 80_.41_._







Sizes 3 - 11 — Terminal box with
Type 80_._ _.1 Terminal
.4 Half wave rectifier
.5 Bridge rectifier
.6 Spark quenching unit

Sizes 3 - 10 Type 802.413.3
(Size 11 available on request)

Technical Data and Dimensions

Size	Braking torque M[13] [Nm]	Max. speed[1] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	A	a	B	b	C	C_1	C_2	c
3	3	6000	17	0.077	3	0.6	64	0.2	77	22	36	58	29	8
4	6	5000	24	0.23	3	0.95	64	0.2	77	26	36	58	29	8
5	12	4800	33	0.68	6	1.8	64	0.25	77	35	36	58	29	9
6	26	4000	50	1.99	8	3.1	64	0.25	77	40	36	58	29	10.5
7	50	3800	70	4.02	8	5.4	79.5	0.35	92.5	48	37	66.5	45.5	16.5
8	100	3400	87	13.2	10	9.4	79.5	0.35	92.5	68	37	66.5	45.5	18
9	200	3000	102	24.2	10	15.5	79.5	0.4	92.5	75	37	66.5	45.5	18
10	400	3000	134	56.4	10	30	79.5	0.4	92.5	90	37	66.5	45.5	25
11	800	3000	196	242	40	55	79.5	0.5	92.5	120	37	66.5	45.5	30

Size	D	D_2	d_{min}[12]	d_{max}	Preferred bore H7	F	F_1	f	G^{H7}	H	H_1	h	K	K_1	L	L_1	l[12]
3	72	79	8	12[2]	10, 11, 12	48.3	104.3	6	21.9	86.3	19	6	6	5	30.2[10]	38.2	15
4	86	98	10	15[3]	12, 15	55.8	111.8	6	26.9	93.8	21	7	5	8	32.2[11]	40.2	20
5	104.5	114	10	20[4]	15, 20	68.2	133.2	8	30.9	115.2	22.5	8	6	8	39.3	47.3	20
6	131.5	142	15	25[5]	20, 25	84.6	158.6	10	38.9	136.1	27.5	8	8	10	43.2	51.2	25
7	146	165	20	32[6]	25, 30	96.8	191.8	12	50.9	169.3	38	8	8	10	58.2	61.2	30
8	183	199	25	45	30, 40	117.8	210.3	14	73.9	181.3	38	10	12	12	66.7	69.7	35
9	201	220	25	50[7]	40, 45	125.6	245.6	15	80.4	208.6	50	12	9	12	74.3	77.2	35
10	255	275	25	60[8]	45, 50	158	427	15	90	390	65	14	12	18	96.3	99.3	50
11	330	360	30	80[9]	60, 70	--	--	--	129	--	--	16	24	18	116.3	119.3	60

Size	M	M_1	N	o	p	R	r	s	T	U	u	v	y	Z	z	z_3
3	58	58	102	1.5	3.5	50	25	3xM4	17	60.5	6.5	1	33°	3x120°	98°	33°
4	72	72	109	2.5	5.1	62.5	32	3xM4	19	75	7	1	32°	3x120°	98°	32°
5	90	89	118.5	2.5	5.1	79.5	40	3xM5	25	91	9	1	32°	3x120°	105°	33°
6	112	112	132	3.5	6.1	99	45	3xM6	27	115.5	11.5	1.5	32°	3x120°	90°	33°
7	124	124	151.5	3.5	6.8	110.5	60	3xM6	36	129	13.5	1.5	30°	3x120°	90°	30°
8	156	156	170	2	5.3	139	77	3xM8	38	181	19	1.5	30°	3x120°	90°	30°
9	175	175	179	2	5.9	158	83	6xM8	47	175	21.5	2	30°	6x60°	90°	30°
10	215	215	206	2	5.9	188	94	6xM8	56	215	29	2	30°	6x60°	90°	30°
11	280	280	243.5	2	7	253	128	6xM12	74	--	--	2	22.5°	6x60°	90°	22.5°

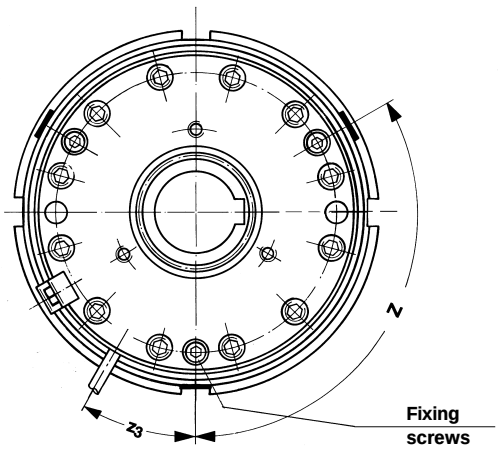
1) Higher speeds available on request
2) Over Ø11 keyway to DIN 6885/2 (width b = 4 JS9; depth t = 1.2 +0.1)
3) Over Ø 13 keyway to DIN 6885/3
4) Over Ø 18 keyway to DIN 6885/3
5) Over Ø 23 keyway to DIN 6885/3
6) Over Ø 30 keyway to DIN 6885/3
7) Over Ø 47 keyway to DIN 6885/3
8) Over Ø 57 keyway to DIN 6885/3
9) Over Ø 76 keyway to DIN 6885/3
10) Fixing screws protruding 3.2 mm
10) Fixing screws protruding 2.2 mm
12) Observe load on shaft or keyway
13) Tolerance + 40% / – 20%
Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ±10%; to IEC 60038
We reserve the right to make dimensional and design alterations.

Sizes 3 – 11 Standard

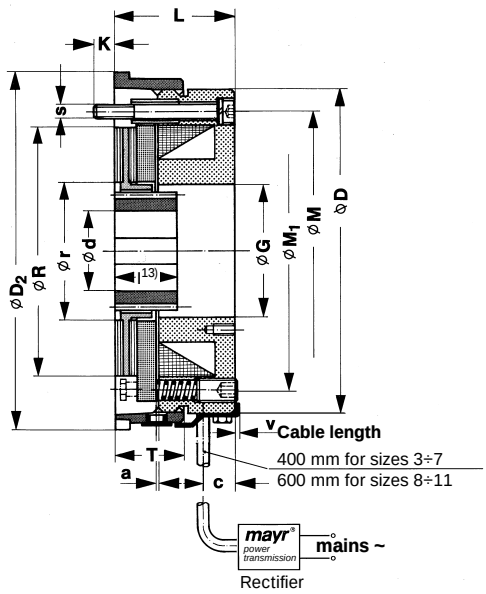
Type 820.61_._

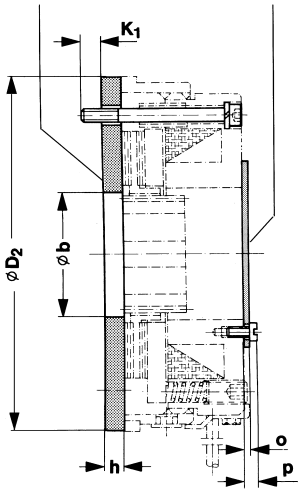
Flange plate
Type 820.611.3

Cover plate
Type 820.612.3

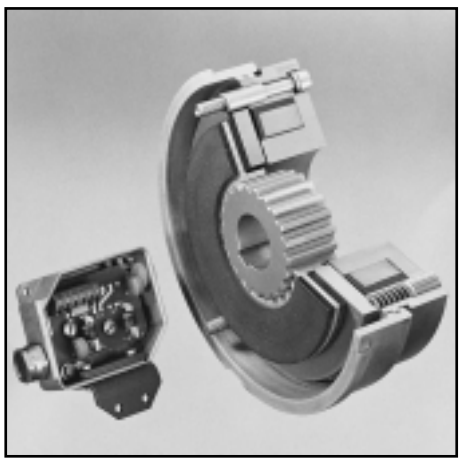


Sizes 3 - 11 Type 820.610.3





Sizes 3 - 11 Type 820.611.3
820.612.3



The holding brake is designed to hold large masses or loads without friction work. Braking at low speeds with low friction work can be made possible, but if this is required, the application conditions should first be discussed with the manufacturer. A higher brake torque is achieved by placing more pre-tension on the brake springs located at the external pole of the magnetic part or by adding brake springs located at the internal pole of the coil carrier, according to the brake size.
A standard hand release for sizes 9 – 11 cannot be supplied due to the high spring forces. Special hand release available on request.
The brake can easily be connected to a DC voltage supply via our comprehensive range of electrical accessories (see page 30).

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		820.61_._			

3 - 11
Without supplementary parts 0
Flange plate 1
Cover plate 2
*Hand release 3
Flange plate/Cover plate 4
*Flange plate/Hand release 5
*Cover plate/Hand release 6
*Flange plate/Cover plate/
Hand release 7

6885/1
6885/3

According to size

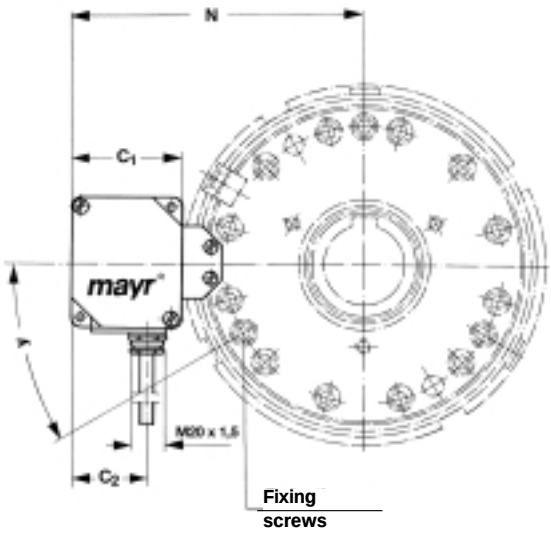
24; 104; 180; 207 V-coil

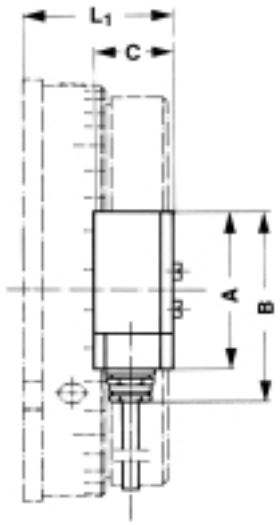
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge rectifier
6 Terminal box with spark quenching unit

Example: Order number 6 / 820.611.3 / 104 / 22 / 6885/1

*Standard hand release for sizes 9-11 not possible.
Dimensions + Technical Data see Positioning brake, page 9

Terminal box





Sizes 3 - 11

Terminal box with
Type 820.61_.1 Terminal
.4 Half wave rectifier
.5 Bridge rectifier
.6 Spark quenching

Technical Data and Dimensions

Size	Braking torque M[14] [Nm]	Max. speed[2] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	A	a	B	b	C	C_1	C_2	c
3	5	6000	17	0.077	3	0.6	64	0.2	77	22	36	58	29	8
4	10	5000	24	0.23	3	0.95	64	0.2	77	26	36	58	29	8
5	22	4800	33	0.68	6	1.8	64	0.25	77	35	36	58	29	9
6	48	4000	50	1.99	8	3.1	64	0.25	77	40	36	58	29	10.5
7	90	3800	70	4.02	8	5.4	77	0.35	90	48	37	63	43.5	16.5
8	180	3400	87	13.2	10	9.4	77	0.35	90	68	37	63	43.5	18
9	360	3000	102	24.2	10	15.5	77	0.4	90	75	37	63	43.5	18
10	620	3000	134	56.4	10	30	77	0.4	90	90	37	63	43.5	25
11	1250	3000	196	242	40	55	77	0.5	90	120	37	63	43.5	30

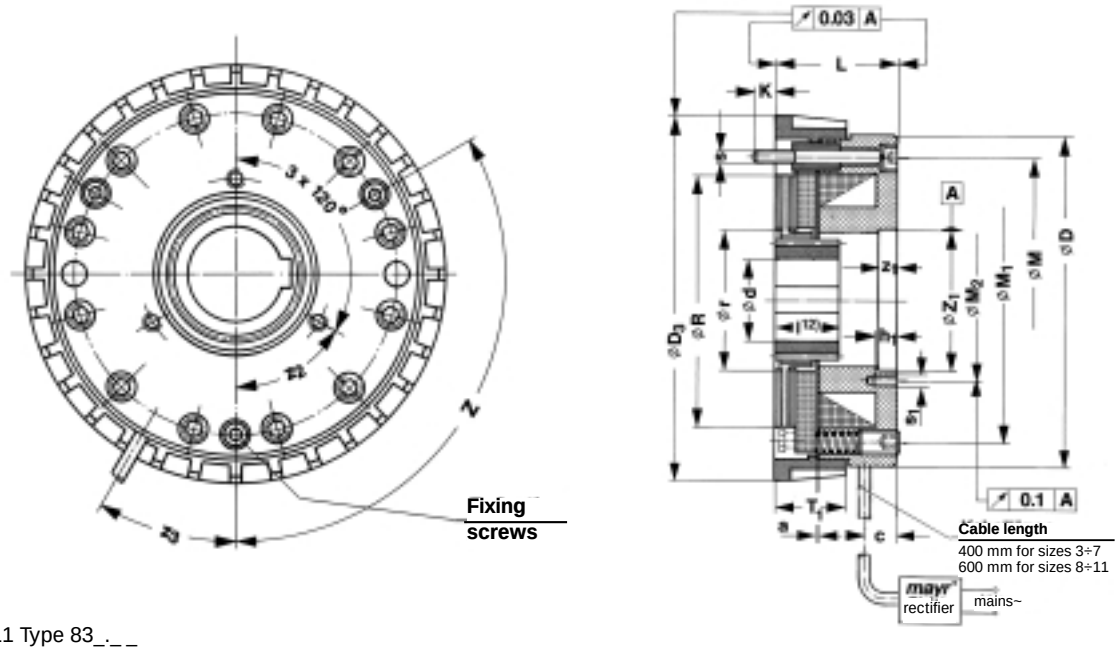
Size	D	D_2	d_{min}[13]	d_{max}	Preferred bore H7	G^{H7}	h	K	K_1	L	L_1	l[13]
3	72	79	8	12[3]	10, 11, 12	21.9	6	6	5	30.2[11]	38.2	15
4	86	98	10	15[4]	12, 15	26.9	7	5	8	32.2[12]	40.2	20
5	104.5	114	10	20[5]	15, 20	30.9	8	6	8	39.3	47.3	20
6	131.5	142	15	25[6]	20, 25	38.9	8	8	10	43.2	51.2	25
7	146	165	20	32[7]	25, 30	50.9	8	8	10	58.2	61.2	30
8	183	199	25	45	30, 40	73.9	10	12	12	66.7	69.7	35
9	201	220	25	50[8]	40, 45	80.4	12	9	12	74.3	77.2	35
10	255	275	25	60[9]	45, 50	90	14	12	18	96.3	99.3	50
11	330	360	30	80[10]	60, 70	129	16	24	18	116.3	119.3	60

Size	M	M_1	N	o	p	R	r	s	T	v	y	Z	z	z_3
3	58	58	102	1.5	3.5	50	25	3xM4	17	1	33°	3x120°	98°	33°
4	72	72	109	2.5	5.1	62.5	32	3xM4	19	1	32°	3x120°	98°	32°
5	90	89	118.5	2.5	5.1	79.5	40	3xM5	25	1	32°	3x120°	105°	33°
6	112	112	132	3.5	6.1	99	45	3xM6	27	1.5	32°	3x120°	90°	33°
7	124	124	151.5	3.5	6.8	110.5	60	3xM6	36	1.5	30°	3x120°	90°	30°
8	156	156	170	2	5.3	139	77	3xM8	38	1.5	30°	3x120°	90°	30°
9	175	175	179	2	5.9	158	83	6xM8	47	2	30°	6x60°	90°	30°
10	215	215	206	2	5.9	188	94	6xM8	56	2	30°	6x60°	90°	30°
11	280	280	243.5	2	7	253	128	6xM12	74	2	22.5°	6x60°	90°	22.5°

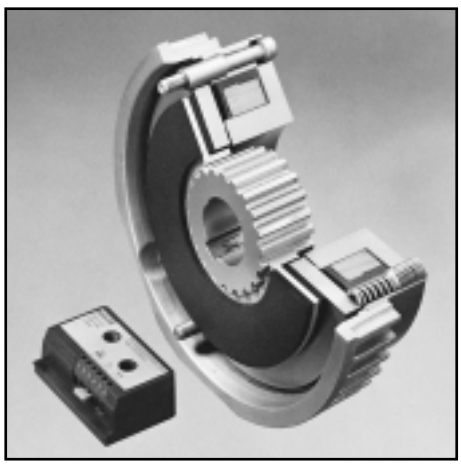
2) Higher speeds available on request
3) Over Ø 11 keyway to DIN 6885/2 (width b = 4^{JS9}; depth t = $1.2^{+0.1}$)
4) Over Ø 13 keyway to DIN 6885/3
5) Over Ø 18 keyway to DIN 6885/3
6) Over Ø 23 keyway to DIN 6885/3
7) Over Ø 30 keyway to DIN 6885/3
8) Over Ø 47 keyway to DIN 6885/3
9) Over Ø 57 keyway to DIN 6885/3
10) Over Ø 76 keyway to DIN 6885/3
11) Fixing screws protruding 3.2 mm
12) Fixing screws protruding 2.2 mm
13) Observe load on shaft or keyway
14) Tolerance + 40% / – 20%
Standard voltages 24, 104, 180, 207V
Permitted voltage tolerance ±10%; to IEC 60038
We reserve the right to make dimensional and design alterations.

Sizes 3-11

Type 83_.41_._



Sizes 3 - 11 Type 83_._ _



The tacho brake has a fixed distance ring as well as a centering recess and three tapped holes on the rear side of the coil carrier. The centering recess is centrical to the outer diameter distance ring.

The tachogenerator can be mounted via an intermediate flange, which must be manufactured according to the brake connection dimensions and the tacho-generator flange dimensions.

The generator is selected customer-side. Among other things, the operating speed, the generator thermic limiting current and the electrical data from the connected evaluation and control units are to be taken into account on selection.

The brake can easily be connected to a DC voltage supply via our comprehensive range of electrical accessories (see page 30).

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		83_.41_._			

3 - 11

Standard armature disk 0
Fast acting armature disk 2

Without supplementary parts 0
Hand release 3

6885/1
6885/3

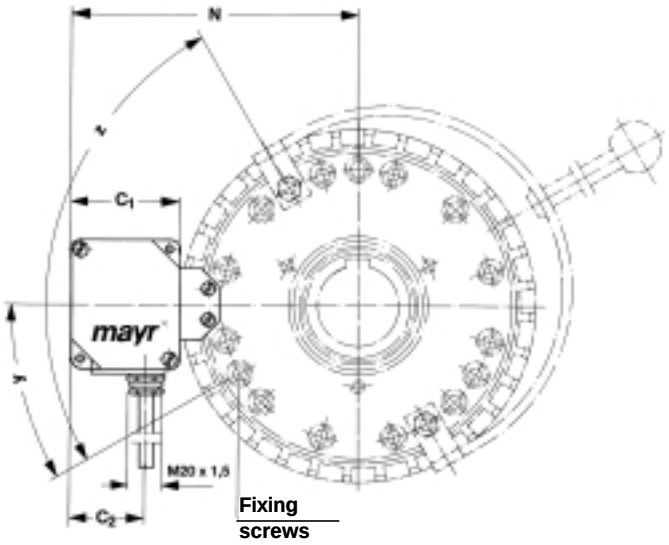
According to size

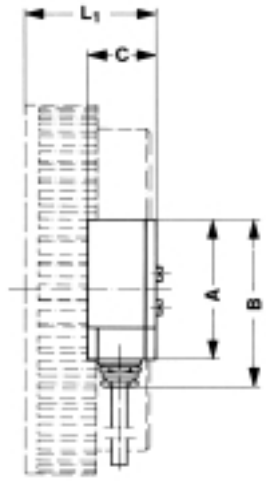
24; 104; 180; 207 V-coil

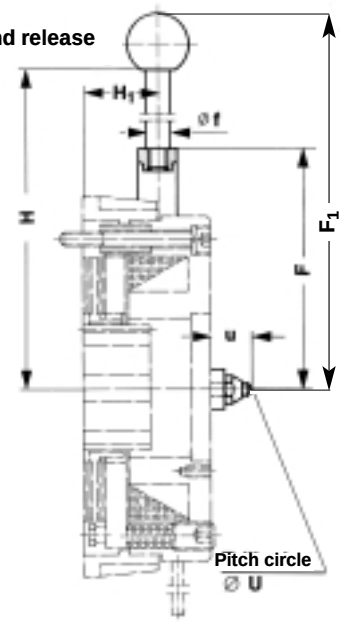
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge rectifier
6 Terminal box spark quenching unit

Example: Order number 6 / 830.410.3 / 104 / 20 / 6885/1

ROBA-stop®-tacho Brake







Sizes 3 - 11

Type 83_._ _ .1 Terminal box with
.4 Half wave rectifier
.5 Bridge rectifier
.6 Spark quenching unit

Sizes 3 - 10 Type 830.413.3
(Size 11 available on request)

Technical Data and Dimensions

Size	Braking torque M[13] [Nm]	Max. speed[1] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	A	a	B	C	C_1	C_2	c
3	3	6000	17	0.077	3	0.6	64	0.2	77	36	58	29	8
4	6	5000	24	0.23	3	0.95	64	0.2	77	36	58	29	8
5	12	4800	33	0.68	6	1.8	64	0.25	77	36	58	29	9
6	26	4000	50	1.99	8	3.1	64	0.25	77	36	58	29	10.5
7	50	3800	70	4.02	8	5.4	79.5	0.35	92.5	37	66.5	45.5	16.5
8	100	3400	87	13.2	10	9.4	79.5	0.35	92.5	37	66.5	45.5	18
9	200	3000	102	24.2	10	15.5	79.5	0.4	92.5	37	66.5	45.5	18
10	400	3000	134	56.4	10	30	79.5	0.4	92.5	37	66.5	45.5	25
11	800	3000	196	242	40	55	79.5	0.5	92.5	37	66.5	45.5	30

Size	D	$D_{3\ g7}$	d_{min}[12]	d_{max}	Preferred bore H7	F	F_1	f	H	H_1	h_1	K	L	L_1	l[12]
3	72	78.5	8	12[2]	10, 11, 12	48.3	104.3	6	86.3	19	6	6	30.2[10]	38.2	15
4	86	97.5	10	15[3]	12, 15	55.8	111.8	6	95.5	21	10	5	32.2[11]	40.2	20
5	104.5	113.5	10	20[4]	15, 20	68.2	133.2	8	115.2	22.5	10	6	39.4	47.3	20
6	131.5	141.5	15	25[5]	20, 25	84.6	158.6	10	136.1	27.5	10	8	43.2	51.2	25
7	146	164.5	20	32[6]	25, 30	96.8	191.8	12	169.3	38	10	8	58.3	61.2	30
8	183	198	25	45	30, 40	117.8	210.3	14	181.3	38	10	12	66.8	69.7	35
9	201	219	25	50[7]	40, 45	125.6	245.6	15	208.6	50	10	9	74.4	77.2	35
10	255	274	25	60[8]	45, 50	158	427	15	390	65	10	12	96.4	99.3	50
11	330	358	30	80[9]	60,70	--	--	--	--	--	13	24	116.4	119.3	60

Size	M	M_1	M_2	N	R	r	s	s_1	T_1	U	u	y	Z	Z_1^{H7}	z	z_1	z_2	z_3
3	58	58	29	102	50	25	3xM4	3xM3	15	60.5	6.5	33°	3x120°	23.5	98°	8	22°	33°
4	72	72	35	109	62.5	32	3xM4	3xM4	16	75	7	32°	3x120°	28.5	98°	8	22.5°	32°
5	90	89	41	118.5	79.5	40	3xM5	3xM4	20	91	9	32°	3x120°	32.5	105°	8	15°	33°
6	112	112	52	132	99	45	3xM6	3xM4	23	115.5	11.5	32°	3x120°	40.5	90°	9	30°	33°
7	124	124	61	151.5	110.5	60	3xM6	3xM5	34	129	13.5	30°	3x120°	52.5	90°	9	45°	30°
8	156	156	88	170	139	77	3xM8	3xM5	38	161	19	30°	3x120°	75.5	90°	10	60°	30°
9	175	175	100	179	158	83	6xM8	3xM6	40	175	21.5	30°	6x60°	82.5	90°	15	0°	30°
10	215	215	112	206	188	94	6xM8	3xM6	52	215	29	30°	6x60°	92	90°	15	0°	30°
11	280	280	145	243.5	253	128	6xM12	3xM8	77.5	--	--	22.5°	6x60°	131	90°	15	0°	22.5°

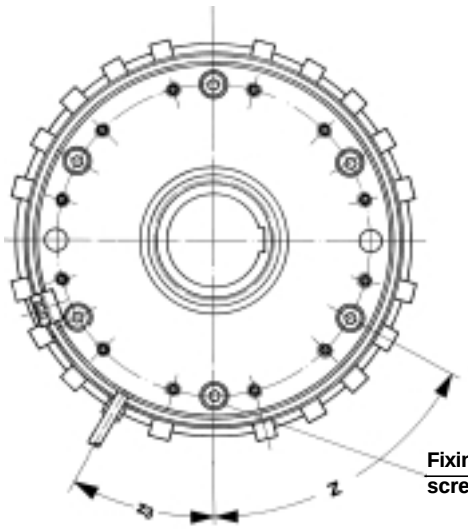
1) Higher speeds available on request
2) Over Ø 11 keyway to DIN 6885/2 (width b = 4 JS9; depth t = 1.2 +0.1)
3) Over Ø 13 keyway to DIN 6885/3
4) Over Ø 18 keyway to DIN 6885/3
5) Over Ø 23 keyway to DIN 6885/3
6) Over Ø 30 keyway to DIN 6885/3
7) Over Ø 47 keyway to DIN 6885/3
8) Over Ø 57 keyway to DIN 6885/3
9) Over Ø 76 keyway to DIN 6885/3
10) Fixing screws protruding 3.2 mm
11) Fixing screws protruding 2.2 mm
12) Observe load on shaft or keyway
13) Tolerance + 40% / – 20%
Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ±10%; to IEC 60038
We reserve the right to make dimensional and design alterations.

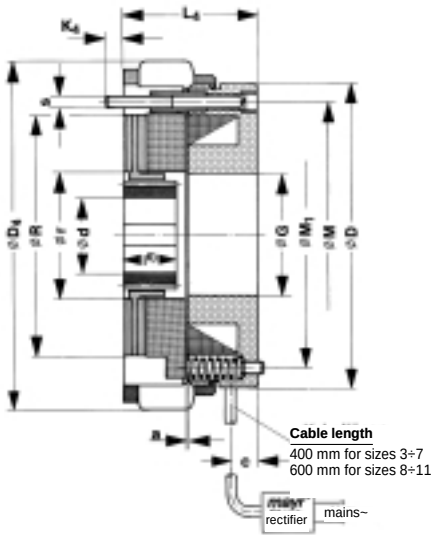
Sizes 7 – 11 Standard

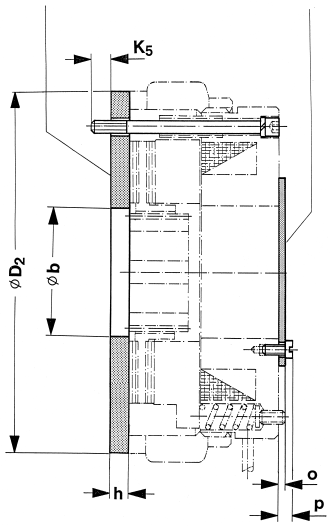
Type 863.41_._

Flange plate Type 863.411.3

Cover plate Type 863.412.3

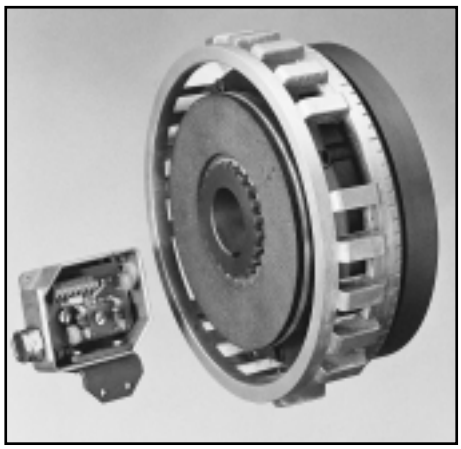






Sizes 7 - 11 Type 863.410.3

Sizes 7 - 11 Type 863.413.3
863.412.3



The Peak Load Brake can be used in normal switching operation for braking and exact positioning. Additionally, it is designed to absorb extremely high friction work which may occur, for example, during emergency OFF.

Occurring several peak loads in short succession can be dealt with problem-free by the brake.

The brake can easily be connected to a DC voltage supply via our comprehensive range of electrical accessories (see page 30).

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		863.41_._			

7 - 11

Without supplementary parts 0
Flange plate 1
Cover plate 2
Hand release 3
Flange plate/Cover plate 4
Flange plate/Hand release 5
Cover plate/Hand release 6
Flange plate/Cover plate/
Hand release 7

6885/1
6885/3

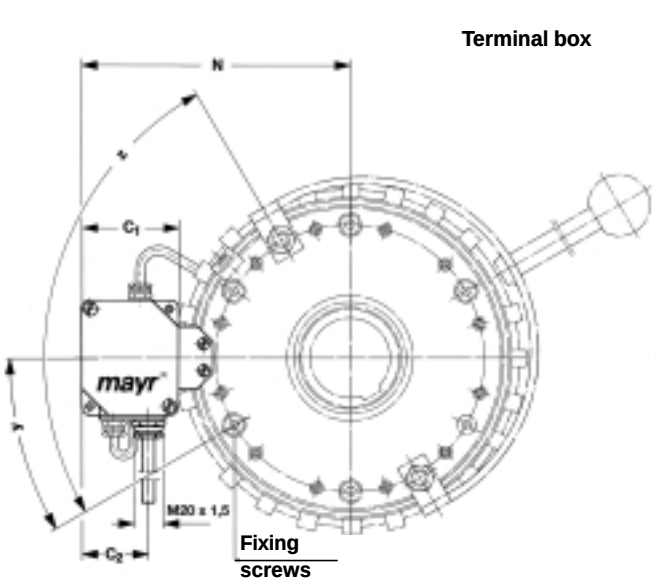
According to size

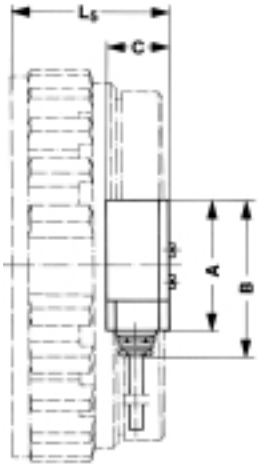
24; 104; 180; 207 V-coil

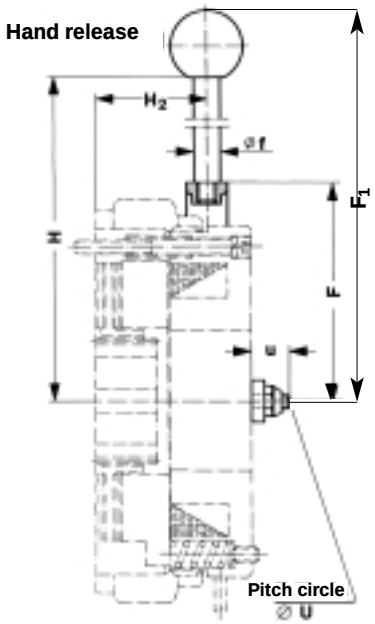
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge rectifier
6 Terminal box spark quenching unit

Example: Order number 8 / 863.411.3 / 104 / 45 / 6885/1

ROBA-stop®-peak load Brake







Sizes 7 - 11 Type 863.41_ Terminal box with
.1 Terminal
.4 Half wave rectifier
.5 Bridge rectifier
.6 Spark quenching unit

Sizes 7 - 10 Type 863.413.3
(Size 11 available on request)

Technical Data and Dimensions

Size	Braking torque M[7] [Nm]	Max. speed[1] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm^2]	Tightening torque mounting screws [Nm]	Weight [kg]	A	a	B	b	C	C_1	C_2	c
7	50	3800	70	4.02	8	6	79.5	0.35	92.5	48	37	66.5	45.5	16.5
8	100	3400	87	13.2	10	10.4	79.5	0.35	92.5	68	37	66.5	45.5	18
9	200	3000	102	24.2	10	17	79.5	0.4	92.5	75	37	66.5	45.5	18
10	400	3000	134	56.4	10	33	79.5	0.4	92.5	90	37	66.5	45.5	25
11	800	3000	196	242	40	61	79.5	0.5	92.5	120	37	66.5	45.5	30

Size	D	D_2	D_4	d_{min}[6]	d_{max}	Preferred bore H7	F	F_1	f	G^{H7}	H	H_2	h	K_4	K_5
7	146	165	166	20	32[2]	25. 30	96.8	191.8	12	50.9	169.3	48	8	8.2	10.2
8	183	199	199	25	45	30. 40	117.8	210.3	14	73.9	181.3	49	10	10.8	10.8
9	201	220	220	25	50[3]	40. 45	125.6	245.6	15	80.4	208.6	63	12	11.3	19.3
10	255	275	276	25	60[4]	45. 50	158	427	15	90	390	85	14	12.2	18
11	330	360	360	30	80[5]	60. 70	--	--	--	129	--	--	16	22.2	26.2

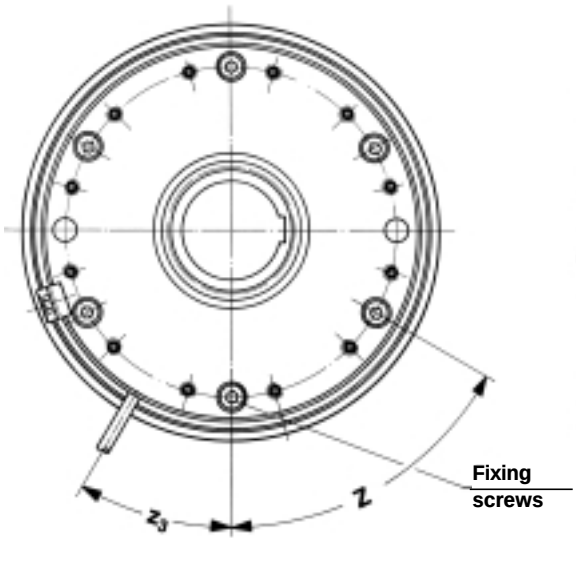
Size	L_4	L_5	I[6]	M	M_1	N	o	p	R	r	s	U	u	y	Z	z	z_3
7	68.2	71.2	30	124	124	151.5	3.5	6.8	110.5	60	3xM6	129	13.5	30°	3x120°	90°	30°
8	77.7	80.7	35	156	156	170	2	5.3	139	77	3xM8	161	19	30°	3x120°	90°	30°
9	87.3	90.2	35	175	175	179	2	5.9	158	83	6xM8	175	21.5	30°	6x60°	90°	30°
10	116.3	119.3	50	215	215	206	2	5.9	188	94	6xM8	215	29	30°	6x60°	90°	30°
11	138.3	141.3	60	280	280	243.5	2	7	253	128	6xM12	--	--	22.5°	6x60°	90°	22.5°

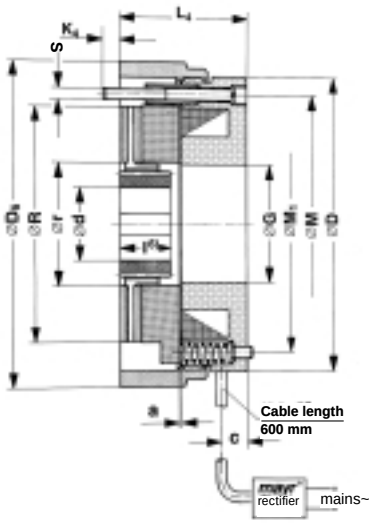
1) Higher speeds available on request
2) Over Ø 30 keyway to DIN 6885/3
3) Over Ø 47 keyway to DIN 6885/3
4) Over Ø 57 keyway to DIN 6885/3
5) Over Ø 76 keyway to DIN 6885/3
6) Observe load on shaft or keyway
7) Tolerance + 40 % / – 20 %

Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ±10%; to IEC 60038
We reserve the right to make dimensional and design alterations.

Sizes 7-11 Distance ring enclosed

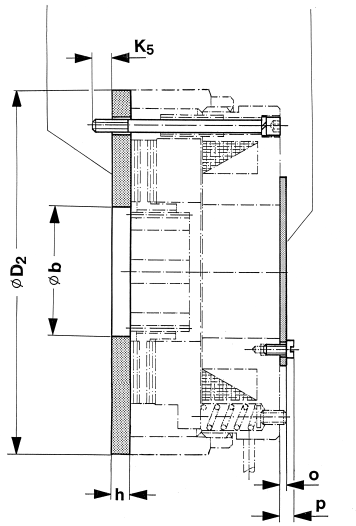
Type 866.41_._





Flange plate
Type 866.411.3

Cover plate
Type 866.412.3



Sizes 7 - 11 Type 866.410.3

Sizes 7 - 11 Type 866.411.3
866.412.3

The peak load brake can be used in normal switching operation for braking and exact positioning. Additionally, it is designed to absorb extremely high friction work which may occur, for example, during an emergency OFF. Peak loads occuring in short succession can be dealt with problem-free by the brake.

The Peak Load Brake is protected by the enclosed distance and adjusting ring against dust and dirt. The brake in connection with the cover plate corresponds to Protection IP 54.

The brake can easily be connected to a DC voltage supply via our comprehensive range of electrical accessories (see page 30).

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		866.41_._			

7 - 11
Without supplementary parts 0
Flange plate 1
Cover plate 2
Hand release 3
Flange plate/Cover plate 4
Flange plate/Hand release 5
Cover plate/Hand release 6
Flange plate/Cover plate/
Hand release 7

6885/1
6885/3

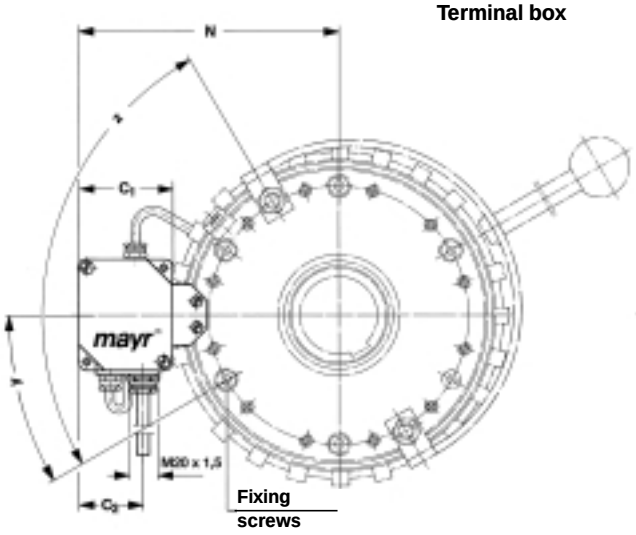
According to size

24; 104; 180; 207 V-coil

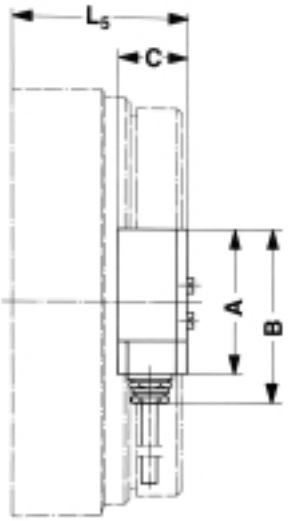
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge rectifier
6 Terminal box spark quenching unit

Example: Order number 8 / 866.411.3 / 104 / 45 / 6885/1

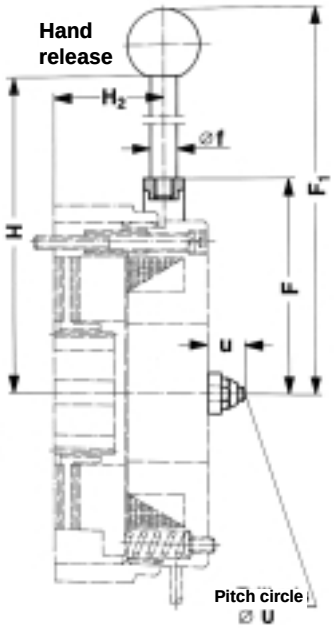
ROBA-stop®-peak load Brake



Sizes 7 - 11



Terminal box with
Type 866.41_ .1 Terminal
.4 Half wave rectifier
.5 Bridge rectifier
.6 Spark quenching unit



Sizes 7 - 10 Type 866.413.3
(Size 11 on available request)

Technical Data and Dimensions

Size	Braking torque M[7] [Nm]	Max. speed[1] n [rpm]	Input power P_{20} [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	A	a	B	b	C	C_1	C_2	c
7	50	3800	70	4.02	8	6	79.5	0.35	92.5	48	37	66.5	45.5	16.5
8	100	3400	87	13.2	10	10.4	79.5	0.35	92.5	68	37	66.5	45.5	18
9	200	3000	102	24.2	10	17	79.5	0.4	92.5	75	37	66.5	45.5	18
10	400	3000	134	56.4	10	33	79.5	0.4	92.5	90	37	66.5	45.5	25
11	800	3000	196	242	40	61	79.5	0.5	92.5	120	37	66.5	45.5	30

Size	D	D_2	D_6	d_{min}[6]	d_{max}	Preferred bore H7	F	F_1	f	G^{H7}	H	H_2	h	K_4	K_5
7	146	165	166	20	32[2]	25, 30	96.8	191.8	12	50.9	169.3	48	8	8.2	10.2
8	183	199	199	25	45	30, 40	117.8	210.3	14	73.9	181.3	49	10	10.8	10.8
9	201	220	220	25	50[3]	40, 45	125.6	245.6	15	80.4	208.6	63	12	11.3	19.3
10	255	275	276	25	60[4]	45, 50	158	427	15	90	390	85	14	12.2	18
11	330	360	360	30	80[5]	60, 70	--	--	--	129	--	--	16	22.2	26.2

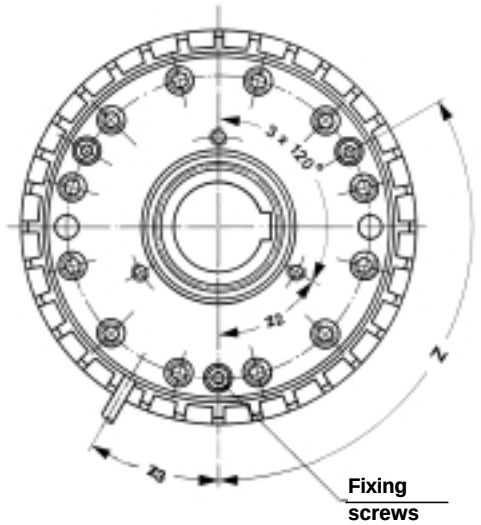
Size	L_4	L_5	l[6]	M	M_1	N	o	p	R	r	s	U	u	y	Z	z	z_3
7	68.2	71.2	30	124	124	151.5	3.5	6.8	110.5	60	3xM6	129	13.5	30°	3x120°	90°	30°
8	77.7	80.7	35	156	156	170	2	5.3	139	77	3xM8	161	19	30°	3x120°	90°	30°
9	87.3	90.2	35	175	175	179	2	5.9	158	83	6xM8	175	21.5	30°	6x60°	90°	30°
10	116.3	119.3	50	215	215	206	2	5.9	188	94	6xM8	215	29	30°	6x60°	90°	30°
11	138.3	141.3	60	280	280	243.5	2	7	253	128	6xM12	--	--	22.5°	6x60°	90°	22.5°

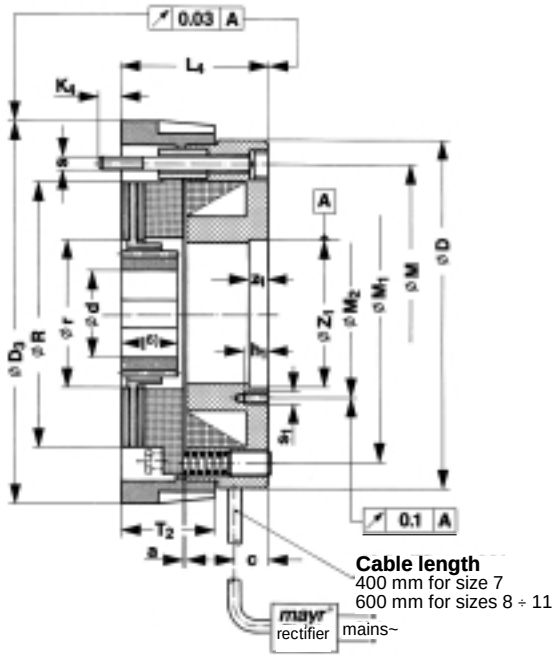
1) Higher speeds available on request
2) Over Ø 30 keyway to DIN 6885/3
3) Over Ø 47 keyway to DIN 6885/3
4) Over Ø 57 keyway to DIN 6885/3
5) Over Ø 76 keyway to DIN 6885/3
6) Observe load on shaft or keyway
7) Tolerance + 40 % / – 20 %

Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ±10%; to IEC 60038
We reserve the right to make dimensional and design alterations.

Sizes 7-11

Type 883.410._





Technical Data and Dimensions

Size	Braking torque M7) [Nm]	Max. speed1) n [rpm]	Input power P20 [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Weight [kg]	a	c	D	$D_{3\ g7}$	d_{min} 6)	d_{max}	Preferred bore H7
7	50	3800	70	4.02	8	6	0.4	16.5	146	164.5	20	32 2)	25, 30
8	100	3400	87	13.2	10	10.5	0.4	18	183	198	25	45	30, 40
9	200	3000	102	24.2	10	17.2	0.45	18	201	219	30	50 3)	40, 45
10	400	3000	134	56.4	10	33.8	0.45	25	255	274	30	60 4)	45, 50
11	800	3000	196	242	40	62.7	0.55	30	330	358	30	80 5)	60, 70

Size	h_1	K_4	L_4	I 6)	M	M_1	M_2	R	r	s	s_1	T_2	Z	Z_1 H7	z_1	z_2	z_3
7	10	8.2	68.3	30	124	124	61	110.5	60	3xM6	3xM5	44	3x120°	52.5	9	45°	30°
8	10	10.8	77.8	35	156	156	88	139	77	3xM8	3xM5	49	3x120°	75.5	10	60°	30°
9	10	11.3	87.4	35	175	175	100	158	83	6xM8	3xM6	53	6x60°	82.5	15	0°	30°
10	10	12.2	116.4	50	215	215	112	188	94	6xM8	3xM6	72	6x60°	92	15	0°	30°
11	13	22.2	138.4	60	280	280	145	253	128	6xM12	3xM8	99.5	6x60°	131	15	0°	22.5°

1) Higher speeds available on request
2) Over Ø 30 keyway to DIN 6885/3
3) Over Ø 47 keyway to DIN 6885/3
4) Over Ø 57 keyway to DIN 6885/3
5) Over Ø 76 keyway to DIN 6885/3
6) Observe load on shaft or keyway
7) Tolerance + 40 % / – 20 %

Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ± 10 % to IEC 60038
We reserve the right to make dimensional alterations

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		883.41_._			

7 - 11

Without supplementary parts 0
Hand release 3*

* Only sizes 7 ÷ 9

6885/1
6885/3

According to size

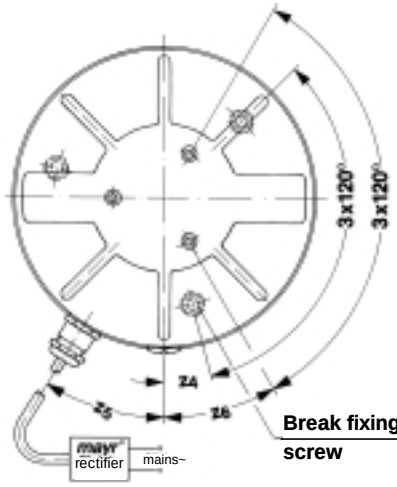
24; 104; 180; 207 V-coil

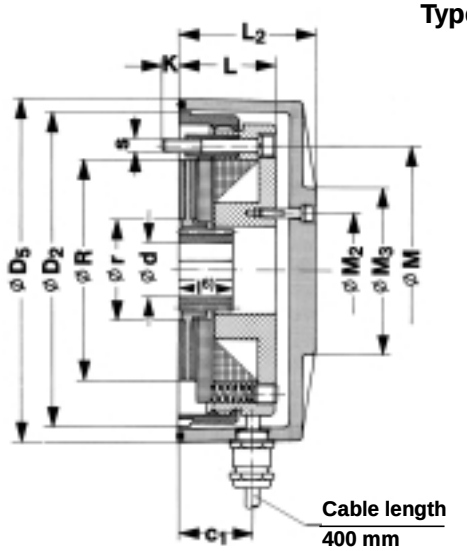
1 Terminal box with terminal
3 Cable
4 Terminal box half-wave rectifier
5 Terminal box bridge rectifier
6 Terminal box spark quenching unit

Example: Order number 7 / 883.410.3 / 104 / 25 / 6885/1

Sizes 3-6

Type 80_.418.3





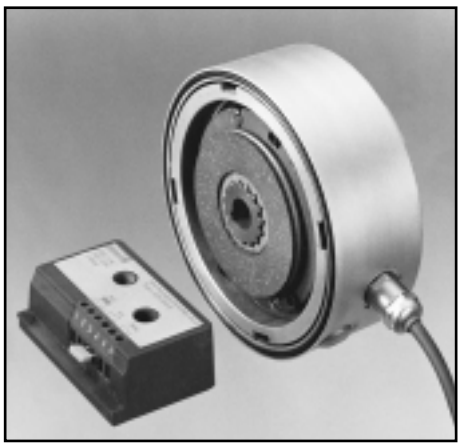
Technical Data and Dimensions

Size	Braking torque M[7] [Nm]	Max. speed[1] n [rpm]	Input power P20 [W]	Moment of inertia rotor and hub with bore d_{max} I [10^{-4} kgm²]	C_1	D_2	D_5	d_{min}[6]	d_{max}	Preferred bore H7
3	3	6000	17	0.077	24	79	91	8	12[2]	10,11,12
4	6	5000	24	0.23	25	98	110	10	15[3]	12,15
5	12	4800	33	0.68	30	114	125	10	20[4]	15,20
6	26	4000	50	1.99	33	142	155	15	25[5]	20,25

Size	K	L	L_2	I[6]	M	M_2	M_3	R	r	s	z_4	z_5	z_6
3	6	30.2	45	15	58	29	48	50	25	3xM4	8°	25°	30°
4	5	32.2	50	20	72	35	55	62.5	32	3xM4	8°	24°	30.5°
5	6	39.3	58	20	90	41	60	79.5	40	3xM5	15°	17°	30°
6	8	43.2	62	25	112	52	75	99	45	3xM6	0°	32°	30°

1) Higher speeds available on request
2) Over Ø 11 keyway to DIN 6885/2 (width b = 4^{JS9}; depth t = $1.2^{+0.1}$)
3) Over Ø 13 keyway to DIN 6885/3
4) Over Ø 18 keyway to DIN 6885/3
5) Over Ø 23 keyway to DIN 6885/3
6) Observe load on shaft or keyway
7) Tolerance + 40% / – 20%

Standard voltages 24, 104, 180, 207 V
Permitted voltage tolerance ± 10%; to IEC 60038
We reserve the right to make dimensional and design alterations.



This positioning brake design is completely enclosed and corresponds to Protection IP 67 (TÜV- (Technical Inspectorate) approved)

Installation of the aluminium sealing cover is simple. An aluminium cover is screwed onto the pre-installed standard positioning brake.
The cable outlet is protected by a completely watertight screw connector.
The brake can easily be connected to a DC voltage supply via our comprehensive range of electrical accessories (see page 30).

A special variation of this sealed brake suitable for a continuous shaft can be designed and produced on request.

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway DIN
Order number:		80_.418.3			

3 - 6

Standard armature disk 0
Fast acting armature disk 2

6885/1
6885/3

According to size

24; 104; 180; 207 V-coil

Example: Order number 5 / 802.418.3 / 104 / 15 / 6885/1

ROBA-stop®-S Brake

**ROBA-stop®-S Brakes have two functions. During standard operation they work as holding brakes. When the drives have been switched off the brakes hold the equipment safely in position.
During critical operational situations, e.g. with emergency-off or power failure, ROBA-stop®-S Brakes are designed to absorb peak loads with high friction work. These brakes are designed for vertical and horizontal operations.**

Dust and waterproof
Completely enclosed brake design corresponds to IP 67 protection.

Permanent protection against corrosion:
IP 67 protection, a high-quality brake body primary coating, chrome or nickel-coated interior parts or use of rustproof steel ensure protection against corrosion.

Easy handling
Compact construction and small outer diameters mean easy brake handling.

Inspection without equipment downtimes
A hole allows fast inspection of the air gap without dismantling the brake or equipment stoppage.

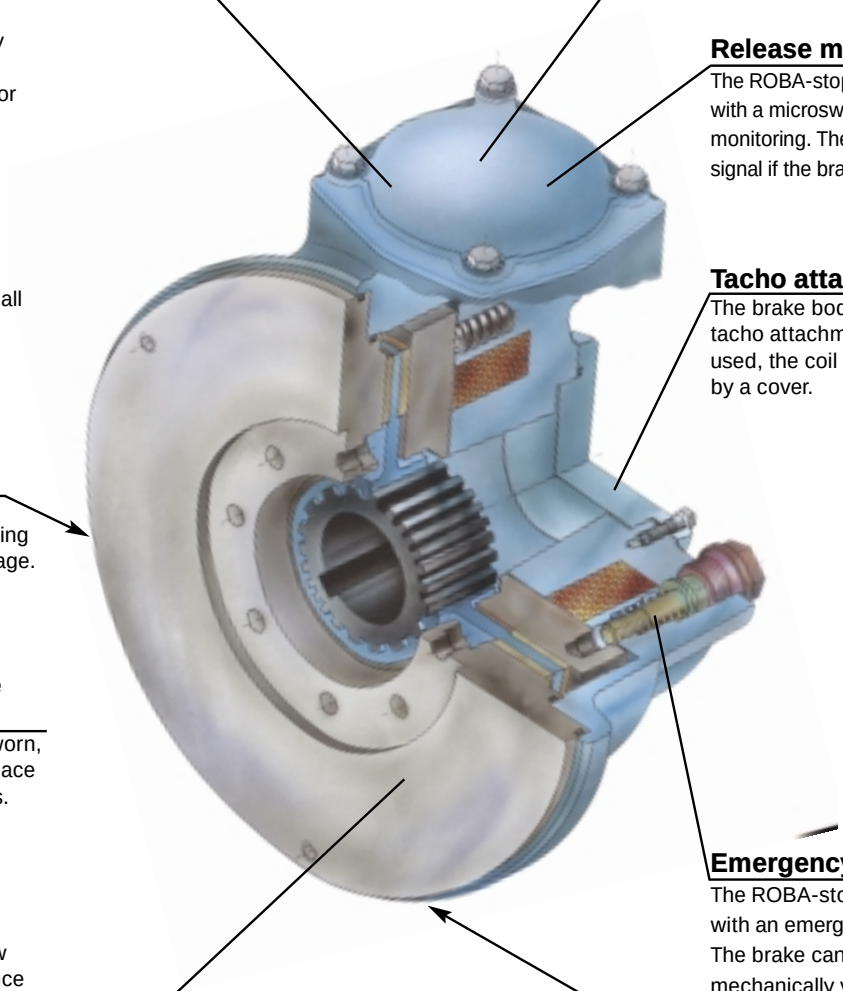
Minimum maintenance expenditure
Should the friction linings be worn, just readjust the air gap or replace the rotor with its friction linings.

Minimum operating expenses
High working reliability and low maintenance expenditure reduce the operating expenses of the brake to a minimum.

Rectifier
A rectifier integrated in the terminal box allows a brake connection to AC-supply. The magnetic coil is designed as a DC-coil.

Wear control
An additional microswitch can be installed into the ROBA-stop®-S Brake which monitors the wear on the friction linings.

Brake housing and integral terminal box
The one-piece cast iron housing with integrated terminal box is extremely robust and, therefore, protected against mechanical damages.



Anti-condensation heating
The heater avoids condensation water inside the brake. This usage is especially recommended at temperatures under zero degrees Celsius or in high air humidity.

Braking torque
By changing the number of springs, the brake torque can be adapted to the customer's requirements.

Optimum protection for electrical equipment
The inspection and monitor function electrical supply and microswitch are completely protected inside the cast terminal box.

Release monitoring
The ROBA-stop®-S Brake is fitted with a microswitch for release monitoring. The microswitch emits a signal if the brake is opened.

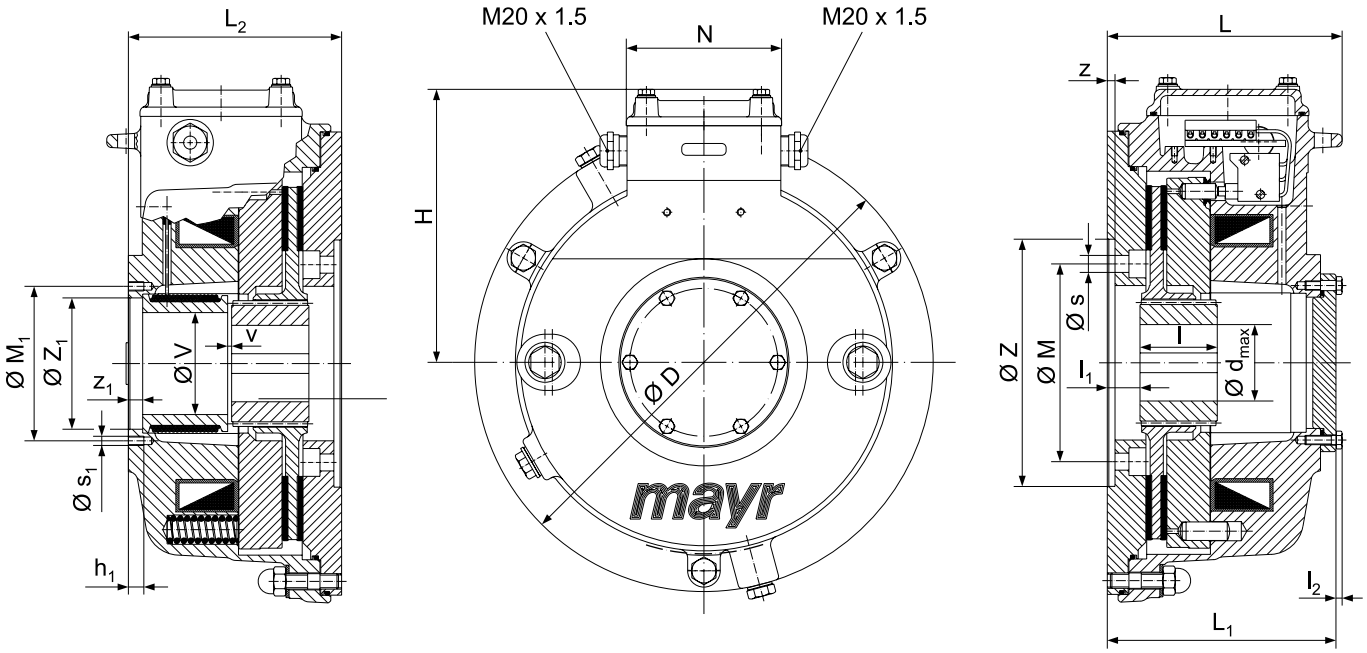
Tacho attachment
The brake body can be fitted with a tacho attachment. If no tacho is used, the coil carrier is closed by a cover.

Emergency hand release
The ROBA-stop®-S Brake is fitted with an emergency hand release. The brake can be released mechanically via two screws.

Condensation water inspection
Regular inspection is possible via a drain plug.

Motors with self-ventilation
In order to assemble the ROBA-stop®-S Brake onto motors with through-running shafts at the B-bearing side, the closed standard-cover at the brake rear side is exchanged for the open cover with integrated radial shaft seal ring.

Sizes 8 - 10 **Type 856**



Technical Data and Dimensions

Size	Braking torque M[1)] [Nm]	Max. speed n [rpm]	Input power P_{20} coil [W]	Input power ACH* [W]	Moment of inertia rotor and hub bore d_{max} [10^{-4} kgm²]	Tightening torque mounting screws [Nm]	Friction work per 0.1 mm wear $Q_{0.1}$ [J/0.1]	Friction work up to adjustment Q_N [J]	Friction work up to wear of rotor $Q_{tot.}$ [J]	Weight [kg]
8	100	3400	85	15	17.9	23	44 x 10^6	132 x 10^6	308 x 10^6	19
9	200	3000	100	15	33.7	23	54.5 x 10^6	272 x 10^6	545 x 10^6	26
10	400	3000	120	21	84.8	46	70 x 10^6	420 x 10^6	770 x 10^6	42

1) Braking torque tolerance = +40%/-20%

*ACH = Anti-Condensation-Heating
standard voltages 115/230 VAC

Standard voltages 24; 104; 180; 207 VDC
Permissible voltage tolerance to DIN; ICE 38 +/- 10%

Size	Ø d_{min}[2)]	Ø d_{max} DIN 6885/1	Ø d_{max} DIN 6885/3	Ø D	H	h_1	L	L_1	L_2	l[3)]	l_1	l_2
8	25	45	–	240	155	10	143.5	118	108	35	12	4
9	25	47	50	270	167	10	138.5	128.5	118.5	35	18	4
10	25	57	60	310	185	10	152.0	148	138	50	21_{-10}	4

Size	M	Ø M_1	N	s	s_1	ØV	v	Z^{H8}	$Z^{H8}{}_1$	z	z_1
8	100	100	109	6 x 9	M6	46	6.5	130	85	5	5.5
9	110	100	109	8 x 9	M6	50	6.5	140	85	5	6
10	128	100	109	8 x 11	M6	66	2.0^{+10}	160	85	5	9

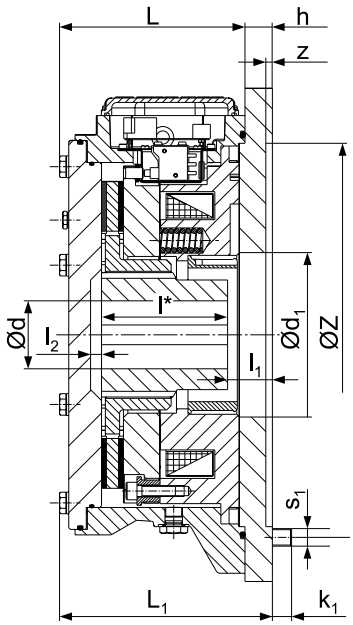
2) Please observe load shaft and keyway

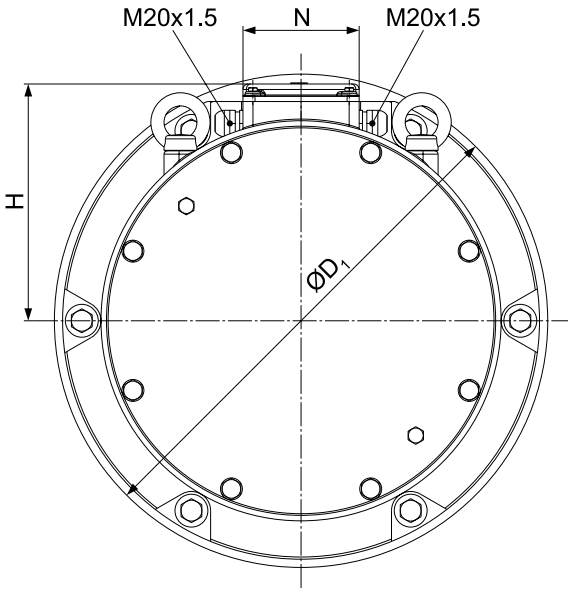
3) Supporting length of keyway.

We reserve the right to make dimensional and design alterations.

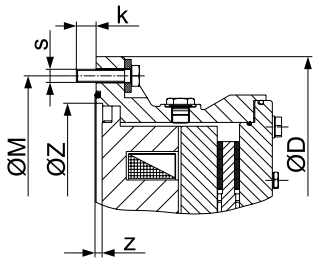
Size 11

Type 856.417._





View without Flange plate



Technical Data and Dimensions

Size	Braking torque M[1)] [Nm]	Max. speed n [rpm]	Input power P_{20} [W]	Weight [kg] With flange plate	Weight [kg] Without flange plate	Moment of inertia rotor and hub with d_{max} I [kgm²]	Tightening torque mounting screw [Nm] Ø s	Tightening torque mounting screw [Nm] Ø s_1
11	800	3000	268	95	86	3.606 x 10^{-2}	61	122

Size	Wear values [2)] Friction work per 0.1 mm wear Q 0.1 [J/0.1]	Wear values [2)] Friction work up to 1st adjustment Q_N [J]	Wear values [2)] Total friction work up to wear of rotor $Q_{tot.}$ [J]	Bore Ø d_{min} DIN 6885/1	Bore Ø d_{max} DIN 6885/1
11	95 x 10^6	475 x 10^6	1900 x 10^6	55	75

Size	Ø D	Ø D_1	Ø d_1	H	h	k	k_1	L	L_1	l*	l_1	l_2	Ø M	Ø M_1	N	s	s_1	Z^{F6}	z
11	435	450	150	217	25	24	17.5	169.1	194.1	115	40.8	10	400	400	106	6xM12	8xM16	350	6

* Please observe shaft loader or key respectively.
1) Braking torque tolerance: + 40% / - 20%. Higher torques available on request.
2) Related to switching work 100 000 J

We reserve the right to make dimensional and design alterations.

Order Example:

To be stated on order:	Size	Type	Voltage [V DC]	Bore Ø d^{H7}	Keyway to DIN
Order number:		856.417._			

8 - 11

Terminal box with terminal 1
Terminal box with half-wave rectifier..... 4
Terminal box with bridge rectifier 5

6885/1
6885/3

According to size

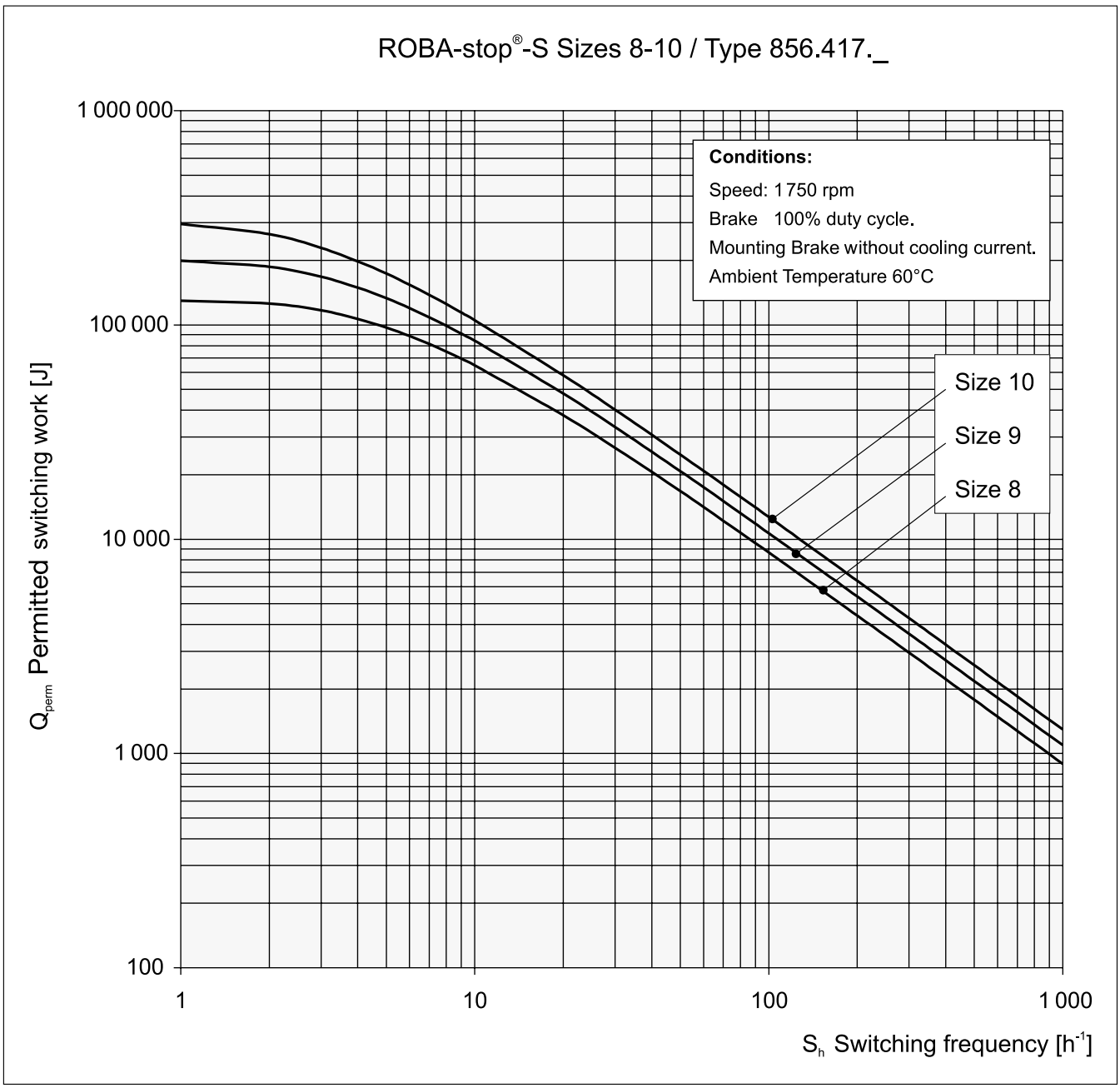
24; 104; 180; 207 V-coil

Options:
– Anti-condensation heating
– Microswitch for wear monitoring
– Tacho attachment possible (size 8 – 10 standard)
– Also available without flange plate (only on size 11)
– Other Types available on request

Example: Order number 9 / 856.417.4 / 30 / 6885/1

Sizes 8-10 **Type 856.417._**

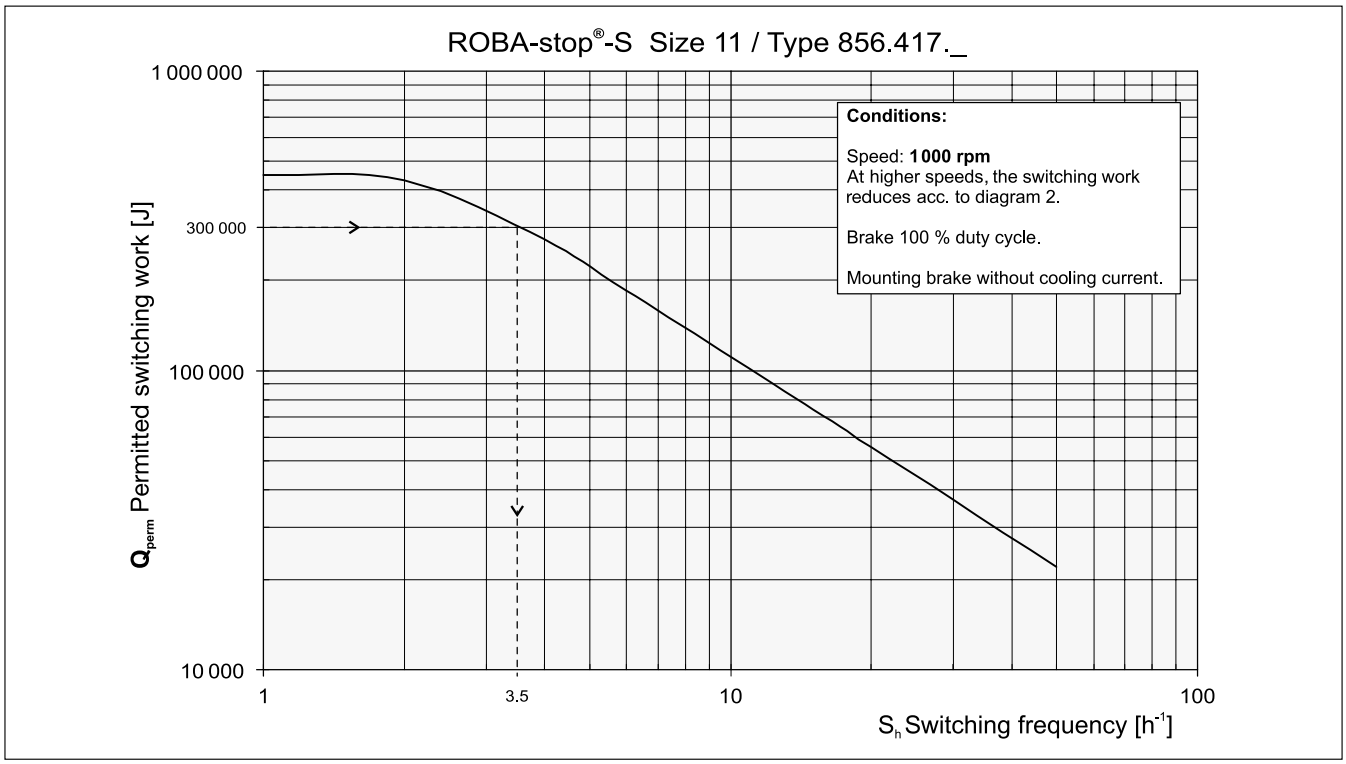
Friction Power Diagram

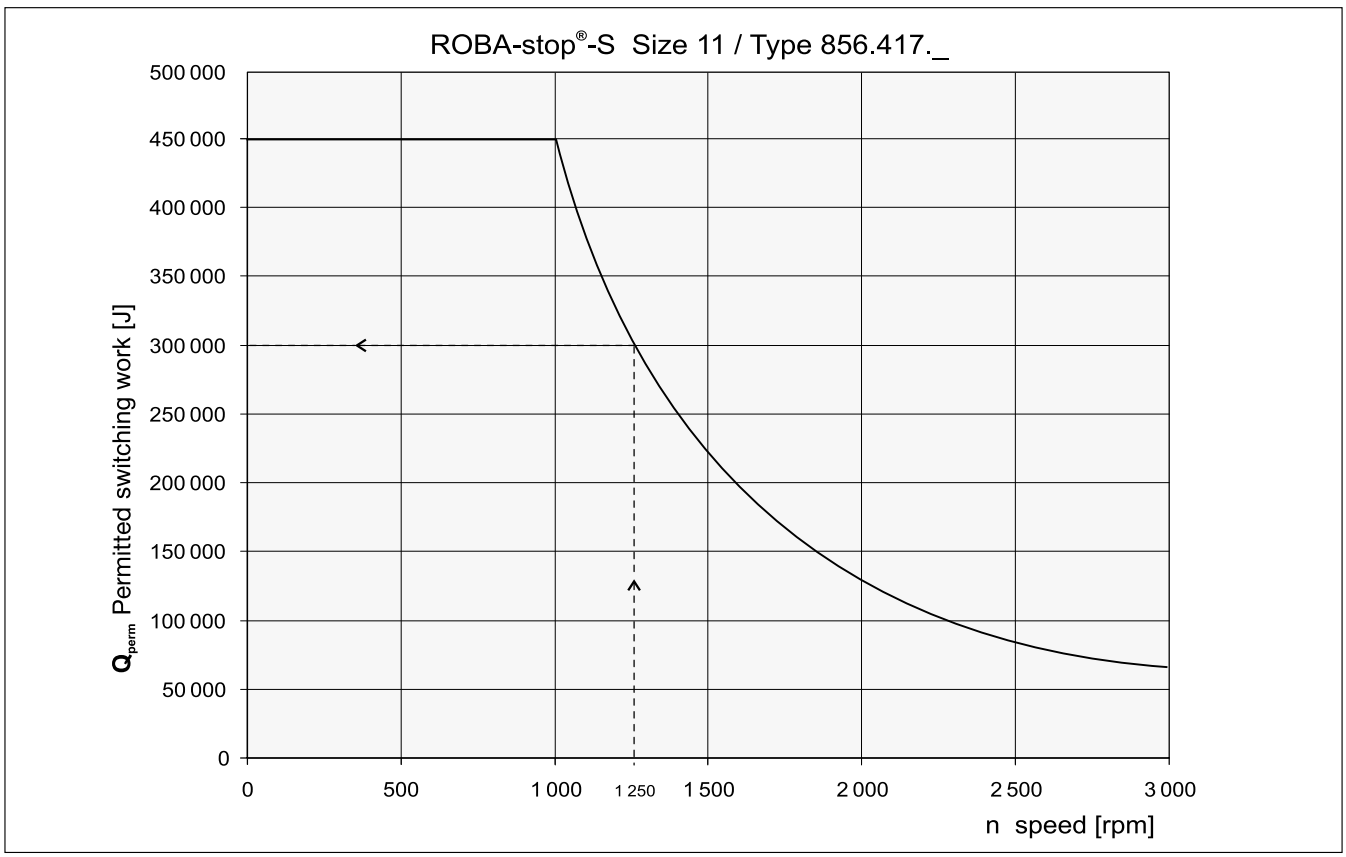


For higher speeds than 1750 rpm (size 8, 9 and 10):
Please contact the manufacturers for information on the permitted friction work $Q_{perm.}$

Size 11 **Type 856.417._**

Friction Power Diagram





Design example for a speed of 1250 rpm:
Permitted switching work Q_{perm} for 1250 rpm from diagram 2: 300 000 J.
This value limits the permitted switching work Q_{perm} acc. to diagram 1 for low switching frequencies (here up to 3.5 switchings per hour).
The permitted switching work Q_{perm} reduces acc. to diagram 1 with higher switching frequencies.

Brake Installation

Installation Conditions

The eccentricity of the shaft end against the mounting hole circle must not exceed 0.2 mm (on brakes sizes 3-6) and on larger brakes, 0.4 mm.

The axial run-out deviation of the screw-on surface to the shaft may not exceed the permitted axial run-out tolerance according to DIN 42955.

Larger deviations can cause a reduction in torque, continuous slipping of the rotor (5) and overheating.

The rotor (35) and the brake surfaces must be oil and grease-free.

A suitable counter friction surface made of steel or grey cast iron must be provided for the rotor (35). Sharp-edged interruptions on the friction surface are to be avoided.

If no suitable friction surface is available, please use our flange plate (29, Fig. 2, lower half).

Installation

ROBA-stop® brakes are particularly easy to install:

The hub (1) is mounted onto the shaft and fixed axially (e.g. using a locking ring). The recommended tolerance for hub – shaft connection is k6/H7. Avoid too tight hub – shaft connections on maximum bores. They lead to the rotor jamming on the hub and therefore to malfunctions. After pushing the rotor (35) onto the hub (1), the brake just needs to be secured with the fixing screws (13) to the motor bearing shield or to the machine wall. Please tighten these screws (13) to the tightening torque M_a (see Table 1). Installation is possible vertically or horizontally.

In the design with a mounted cover plate (30), the brake is completely enclosed and corresponds to Protection IP 54.

Braking Torque

Definition

The braking torque shown in the Technical Data is the switching torque measured according to measured using the mean friction radius and a circumferential speed of v = 1.0 m / s.

Please observe on using the brake for different applications that braking torque deviations of up to c. + 40 / – 20 % can occur (if necessary, please contact the manufacturers).

The load torque on the machine should be max. 50 % of the given braking torque.

Adjustment

ROBA-stop® brakes have a standard setting of the nominal torque shown in the Technical Data. By turning the set screws (14) to the left, the braking torque is reduced. By turning them to the right, the braking torque is increased. When adjusting the torque, all set screws (14) must be adjusted evenly.

If the braking torque is to be decreased to a larger extent, some springs (11) must be removed from the brake. The springs (11) remaining in the brake must be distributed so that the armature disk (5) is evenly loaded.

Please order the respective Adjustment Diagrams from the manufacturer if changing the braking torque customer-side.

Hand Release Installation

The hand release is to be installed and adjusted according to the Instructions.

When adjusting the locking nuts (21), please observe that the restoring bolts (17) limit the armature disk (5) stroke in the direction of the brake. They may only be tightened using the locking nuts so much that the armature disk (5) can still carry out the stroke x (see Table 1 and Fig. 2 (Detail).

Parts List

1 Hub
2 Coil carrier
3 Armature disk
11 Brake spring
13 Fixing screw
14 Set screw
16 Threaded bolt
16 Restoring bolt
18 Spherical button
19 Return spring
21 Locking nut
22 Hand release bracket
29 Flange plate
30 Cover plate
31 Distance ring
35 Rotor
58 Lock washer

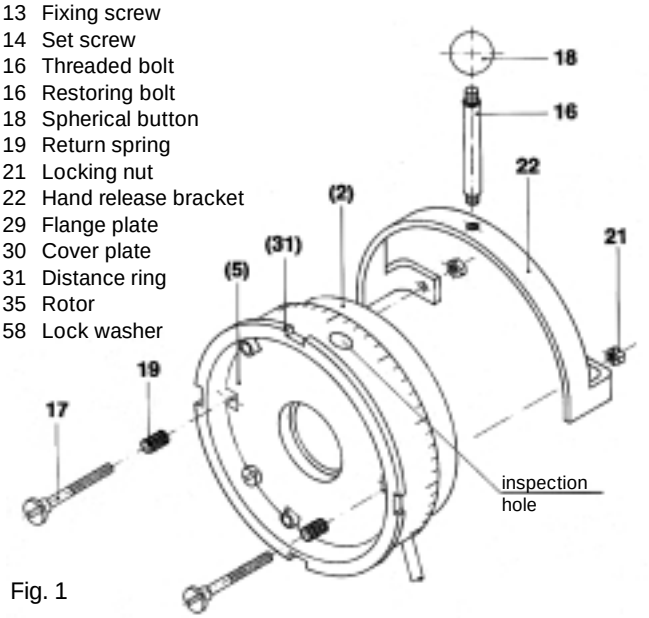


Fig. 1

Size	Nominal air gap a [mm]	Stroke x [mm]	Release angle α [°]	Manual force F [N]	Screw tightening torque M_a [Nm]
2	0.15	0.8	10	10	3
3	0.2	1.0	15	17	3
4	0.2	1.1	15	30	3
5	0.2	1.2	11	50	6
6	0.25	1.6	11	80	8
7	0.35	1.4	8	160	8
8	0.35	1.5	7	200	10
9	0.4	1.5	7	350	10
10	0.4	2.0	15	350	10
11	0.5	-	-	-	40

Table 1

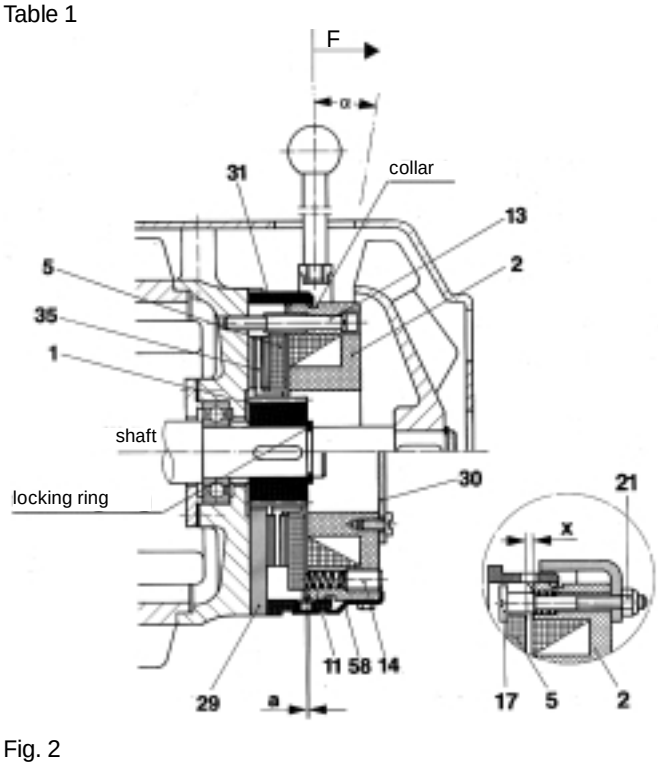


Fig. 2

Air gap Adjustment

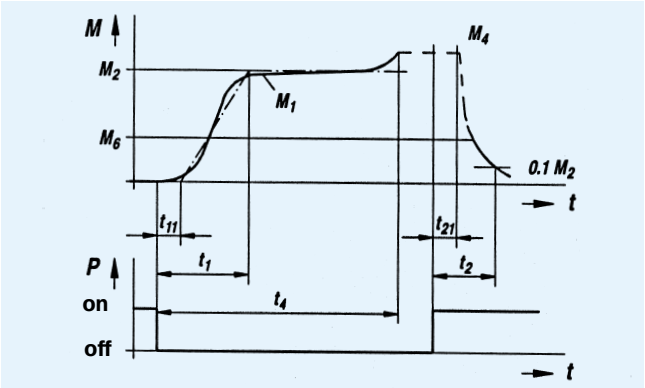
As the rotor (35) friction lining wears down, the air gap “a” increases. The nominal air gap can be restored by turning the threaded distance ring (31) (one graduation = 0.05 mm).
The fixing screws (13) and the lock washer (58) must be loosened and the graduated threaded distance ring (31) is rotated counter-clockwise to compensate for the wear (view brake rear side). Afterwards, the fixing screws (13) and the lock washer (58) must be re-tightened. This adjustment process can be repeated until the graduated distance ring (31) lies against the coil carrier (2) collar.

Switching Times

The brake switching times are influenced by the temperature, the method of spark quenching and the air gap between the armature disk and the coil carrier, which in turn depends on the lining wear.
The guideline values given in Table 2 are mean values which refer to the nominal air gap on a warm brake.

Maintenance

At specific intervals, the air gap between the armature disk and the coil carrier must be inspected and adjusted. When the rotor has reached the maximum permitted degree of wear, it must be replaced. Please make sure that on replacement the **friction surfaces and brake linings are free of oil and grease.**
In all other respects, the brake is maintenance-free.



Torque - Time diagram

Fig. 3

Key:
M_1 = Switching torque
M_2 = Nominal torque (characteristic torque)
M_4 = Transmittable torque
M_6 = Load torque
t_1 = Disconnection time
t_{11} = Response delay during connection
t_2 = Disconnection time
t_{21} = Response delay during disconnetion

Switching Times

Size	Braking torque M [Nm]	DC-switching				AC-switching			
		Brake with standard armature		Brake with fast acting armature		Brake with standard armature		Brake with fast acting armature	
		t_2 [ms]	t_1 [ms]	t_2 [ms]	t_1 [ms]	t_2 [ms]	t_1 [ms]	t_2 [ms]	t_1 [ms]
2	1,5	20	13	-	-	20	80	-	-
3	3	25	20	30	13	25	120	30	90
4	6	30	26	35	20	30	200	35	100
5	12	40	46	50	26	40	260	50	200
6	26	60	78	70	33	60	650	70	330
7	50	80	100	85	50	80	700	85	310
8	100	100	200	110	80	100	1000	110	600
9	200	150	250	170	120	150	1300	170	800
10	400	200	400	230	250	200	3000	230	1800
11	800	300	500	350	350	300	3100	350	2000

Table 2

Brake Size Calculation:

Brake selection:

(1) $M_n = \frac{9550 \cdot P}{n_1}$ [Nm]

(2) $M_v = M_2 \underset{(-)}{+} M_L$ * [Nm] ($M_L \leq 0.5\ M_2$)

(3) $t_v = \frac{I \cdot n_1}{9.55 \cdot M_v}$ [sec]

(4) $I_1 = I_2 \cdot (\frac{n_2}{n_1})^2$ [kgm²]

Examination of the thermal load:

(5) $Q_r = \frac{I \cdot n_1^2}{182.4} \cdot \frac{M_2}{Mv}$ [$\frac{J}{\text{braking action}}$]

The permitted friction work per braking action Q_Z or Q_{ZS} with given switching frequency can be taken from the friction work diagrams below (Figs. 4 and 5).

Service Lifetime Calculation:

(6) $Z_{0.1} = \frac{Q_{0.1}}{Q_r}$

(7) $Z_N = Z_{0.1} \cdot V_N$

(8) $Z_g = Z_{0.1} \cdot V_g$

Friction Work Diagrams:

Key:

P	[kW]	= Drive power
n_1	[rpm]	= Speed brake (motor)
n_2	[rpm]	= Speed working machine
M_n	[Nm]	= Drive nominal torque
M_2	[Nm]	= Brake nominal torque
M_v	[Nm]	= Braking action deceleration torque
M_L	[Nm]	= Load moment* the preceding sign in brackets applies if a load moving downwards is braked
t_v	[sec]	= Braking action
I	[kgm²]	= Moment of inertia
I_1	[kgm²]	= Reduced moment of inertia
Q_r	[$\frac{J}{\text{braking action}}$]	= Existing friction work per braking action
Q_z	[$\frac{J}{\text{braking action}}$]	= Permitted friction work per braking action (Fig. 4)
Q_{zs}	[$\frac{J}{\text{braking action}}$]	= Permitted friction work per braking action during peak load (Fig. 5)
z	[$\frac{\text{braking actions}}{\text{min.}}$]	= Number of braking actions/minute
$Z_{0.1}$	[—]	= Number of braking actions up to 0.1 mm wear
$Q_{0.1}$	[$\frac{J}{0.1\ \text{wear}}$]	= Friction work per 0.1 mm wear
Z_N	[—]	= Number of braking actions up to adjustment
Z_g	[—]	= Total number of braking actions
V_N	[—	= Wear factor up to adjustment
V_g	[—]	= Wear factor for total wear

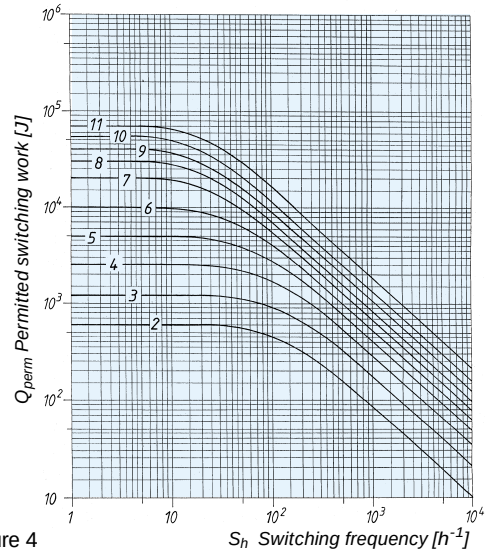


Figure 4
Positioning tacho brake

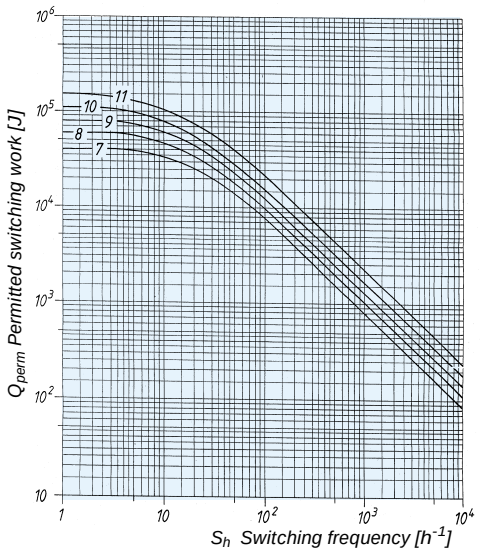


Figure 5
Peak load brake

Wear values (Reference values! For 1500 rpm as well as for mean friction work and fast acting armature)

Size	Positioning brake / Peak load brake			Tacho brake	
	$Q_{0.1}$	V_N	V_g	$Q_{0.1}$	V_g
	Friction work per 0.1 mm wear values x 10^6 J/0.1 wear	Wear factor up to adjustment	Wear factor for total wear	Friction work per 0.1 mm wear values x 10^6 J/0.1 wear	Wear factor for total wear
2	6.0	-	2.0	-	-
3	7.0	1.5	15	7.0	1.5
4	11.0	2	16.5	11.0	2
5	17.9	4.5	18	17.9	4.5
6	29.4	5	19.54	29.4	5
7	33.3	5	21	33.3	5
8	46.6	5	22.5	46.6	5
9	57.5	5	30	57.5	5
10	76.9	5	36	76.9	5
11	111	9	39	111	9

Table 3

Brake Size Calculation:

Data:

Electric motor
P = 3 kW;
n_1 = 1400 rpm
I_M = 0.0068 kgm^2
I_K = 0.0035 kgm^2

Working machine
$M_{6.2}$ = 50 Nm;
n_2 = 370 rpm
I_2 = 0.3 kgm^2
z = 5 braking actions/min.

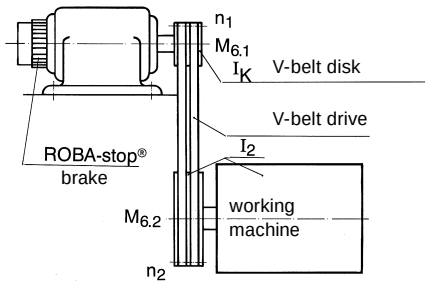


Fig. 6

Calculation for nominal torque, motor:

$$M_n = \frac{9550 \cdot P}{n_1} = \frac{9550 \cdot 3}{1400} = 20.5 \text{ [Nm]}$$

ROBA-stop®-positioning brake size 6 with M = 26 Nm is chosen

$$\text{Transmission: } i = \frac{n_1}{n_2} = \frac{1400}{370} = 3.8 \text{ [–]}$$

Calculation of the load moment M_{L1}
with reference to the motor shaft:

$$M_{6.1} = \frac{M_{6.2}}{i} = \frac{50 \text{ Nm}}{3.8} = 13.1 \text{ [Nm]}$$

The deceleration torque is:
$M_v = M_2 – M_{6.1} = 26 - 13.1 = 12.9$ [Nm]
(The load moment has an accelerating effect)

The mass moment of inertia with reference to the motor shaft:

$$I_{red.} = I_M + I_{Br} + I_K + I_2 \left(\frac{n_2}{n_1}\right)^2 =$$

$$0.0068 + 0.000199 + 0.0035 + 0.3 \left(\frac{370}{1400}\right)^2 = 0.031 \text{ [kgm}^2\text{]}$$

The braking time can then be calculated:

* $t_v = \frac{I \cdot n}{9.55 \cdot M_v} = \frac{0.031 \cdot 1400}{9.55 \cdot 12.9} = 0.35$ [sec]
* Demonstration: The friction time of the brake is indicated as tr (s). The switching times t (Table 2, page 26) are to be considered on calculation.

Friction work per braking action:

$$Q_r = \frac{I \cdot n_1^2}{182.4} \cdot \frac{M_2}{M_v} =$$

$$\frac{0.031 \cdot 1400^2}{182.4} \cdot \frac{26}{12.9} = 671 \left[\frac{J}{\text{braking action}}\right]$$

$$Q_r = 671 \left[\frac{J}{\text{braking action}}\right] < Q_z$$

The thermal load is permitted (see Fig. 4)

Service Lifetime:

$$Z_{0.1} = \frac{Q_{0.1}}{Q_r} = \frac{29.4 \cdot 10^6}{671} = 43\,815 \text{ braking actions up to}$$

0.1 mm wear ($Q_{0.1}$ from table 3, page 27)

$Z_N = Z_{0.1} \cdot V_N = 43\,815 \cdot 5.5 = 240\,982$ braking actions
up to adjustment

$Z_g = Z_{0.1} \cdot V_g = 43\,815 \cdot 19.5 = 854\,392$ braking actions
up to total wear
($V_N + V_g$ from Table 3, page 27)

$$\frac{854\,392 \text{ braking actions}}{5 \text{ braking actions/min.}} = 170\,878 \text{ min.} = 2\,848 \text{ hours}$$

The rotor must be exchanged after 2 848 working hours.

Electrical Connection

DC current is necessary for operation. 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). Operation is possible both via alternating voltage in connection with a rectifier or with another suitable DC supply. 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 regulations and standards (e.g. DIN EN 60204-1 as well as DIN VDE 0580). Their observance must be guaranteed and double-checked!

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.

Switching Behaviour

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

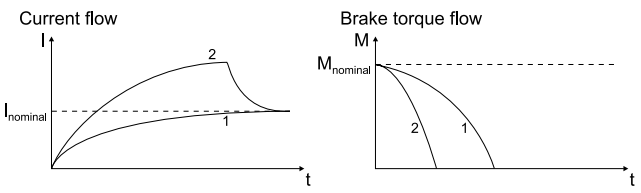
When the voltage is switched on, a magnetic field is built up in the brake coil, which attracts the armature disk to the coil carrier and releases the brake.

Field Build-up with Normal Excitation

If we energise the magnetic coil with nominal voltage, the coil current 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) is also delayed.

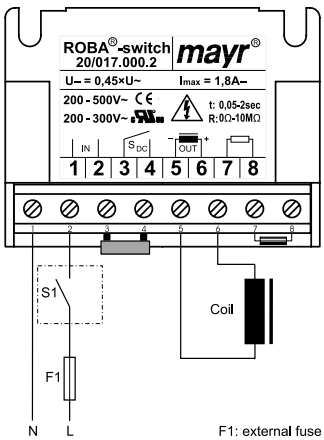
Field Build-up with Overexcitation

A quicker and safer 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, it is possible to switch to the nominal voltage (curve 2). The relationship between the overexcitation and the switching time is roughly indirectly proportional at up to four times the nominal voltage: this means that at doubled nominal voltage, the switching time for brake release is halved. The effective capacity may however not be larger than the nominal capacity of the coil. The ROBA®-switch fast acting rectifier and the phase demodulator work on this principle.



Magnetic Field Removal

AC-side Switching

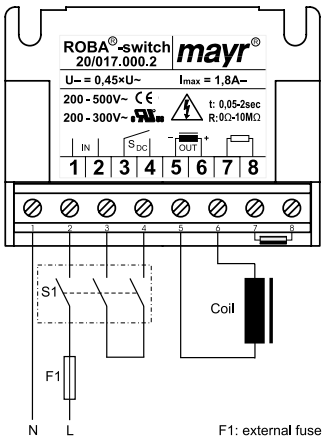


The power circuit is interrupted before the rectifier. The magnetic field slowly reduces. This delays the rise in braking torque.

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

➔ lower **switching** noise; however, the brake engagement time is longer (c. 6-10 times longer than with DC-side switching). Use for non-critical brake 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 rapidly, 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.

➔ **short brake engagement time (e.g. for emergency OFF)**; however, 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 are 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 times.

Half-wave Rectifiers and Bridge Rectifiers Type 02_.000.6

Application

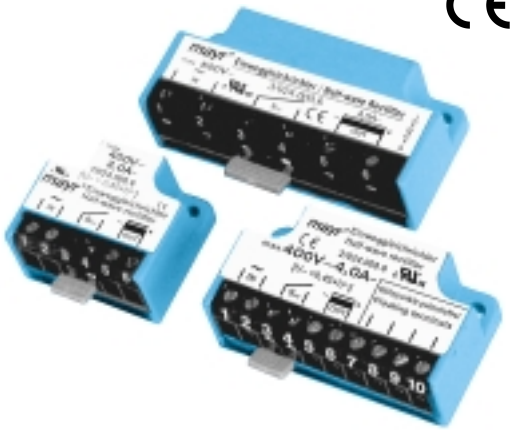
Rectifiers are used to connect DC units to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA-quick®, ROBATIC®), electromagnets, electrovalves, contactors, DC motors, etc.

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.

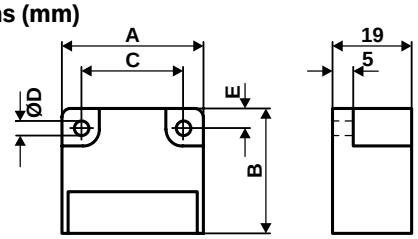
Electrical Connection (Terminals)

1 + 2	Input voltage
3 + 4	Connection for an external switch for coil-side switch-off
5 + 6	Coil
7 – 10	Potential-free terminals (only for size 2)



E189728 (N)

Dimensions (mm)



Size	A	B	C	ØD	E
1	34	30	25	3.5	4.5
2	54	30	44	4.5	5.0
3/4	64	30	54	4.5	5.0

Accessories: Mounting bracket set for 35 mm rail (EN50022)
Article Number 1803201

Order Example:

To be stated on order:	Size	Type
Order number:	_	02_ .000.6

Sizes 1 – 4 →

← 4 Half-wave rectifier
← 5 Bridge rectifier

Technical Data

	Bridge rectifier		Half-wave rectifier			
Calculation output voltage	VDC = VAC x 0.9		VDC = VAC x 0.45			
Types	**1/025**	**2/025**	**1/024**	**2/024**	**3/024**	**4/024**
Input voltage max. (IN) [VAC]	230	230	400	400	500	600
Output voltage max. (OUT) [VDC]	207	207	180	180	225	270
Max. current load at ≤ 50 °C [A]	2.5	2.5	3.0	4.0	4.0	4.0
Max. current load at 85 °C [A]	1.7	1.7	1.8	2.4	2.4	2.4
Max. coil capacity [Watt] at 115 VAC up to 50 °C	260	260	–	–	–	–
Max. coil capacity [Watt] at 115 VAC up to 85 °C	117	117	–	–	–	–
Max. coil capacity [Watt] at 230 VAC up to 50 °C	517	517	312	416	416	416
Max. coil capacity [Watt] at 230 VAC up to 85 °C	352	352	187	250	250	250
Max. coil capacity [Watt] at 400 VAC up to 50 °C	–	–	540	720	720	720
Max. coil capacity [Watt] at 400 VAC up to 85 °C	–	–	324	432	432	432
Max. coil capacity [Watt] at 500 VAC up to 50 °C	–	–	–	–	900	900
Max. coil capacity [Watt] at 500 VAC up to 85 °C	–	–	–	–	540	540
Max. coil capacity [Watt] at 600 VAC up to 50 °C	–	–	–	–	–	1080
Max. coil capacity [Watt] at 600 VAC up to 85 °C	–	–	–	–	–	648
Peak reverse voltage V	1600	1600	2000	1600	2000	2000
Rated insulation voltage	250 V_{RMS}	320 V_{RMS}	500 V_{RMS}	500 V_{RMS}	630 V_{RMS}	630 V_{RMS}
Pollution degree (insulation coordination)	3	2	2	1	3	2
Protection fuse	To be included in the input voltage line (VAC).					
Recommended microfuse switching capacity H The microfuses correspond to the max. possible connection capacities. If fuses are used corresponding to the actual capabilities, the permitted limit integral I^2t must be observed on selection.	FF 3.15A	FF 3.15A	FF 4A	FF 5A	FF 5A	FF 5A
Permitted limit integral I^2t	40 A^2s	40 A^2s	50 A^2s	100 A^2s	50 A^2s	50 A^2s
Protection class	IP 65 components, encapsulated / IP 20 terminals					
Ambient temperature	- 25 °C up to + 85 °C					
Storage temperature	- 25 °C up to + 105 °C					
Conformity markings	UL, CE	UL, CE	UL, CE	UL, CE	UL, CE	CE
Max. clamping cross-section	0.14 - 1.5 mm^2 / AWG 26-14					
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 electro-magnetic brakes and couplings (ROBA-stop®, ROBA®-quick, ROBATIC®) as well as electromagnets and electrovalves etc.

Fast acting rectifier ROBA®-switch 017.000.2

- Consumer operation with overexcitation or power reduction
- Input voltage: 100 - 500 VAC
- Maximum output power: 2 A at 250 VAC
- UL-approved (up to 300 VAC)

Function

The ROBA®-switch units are used for operation at an input voltage of between 100 und 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

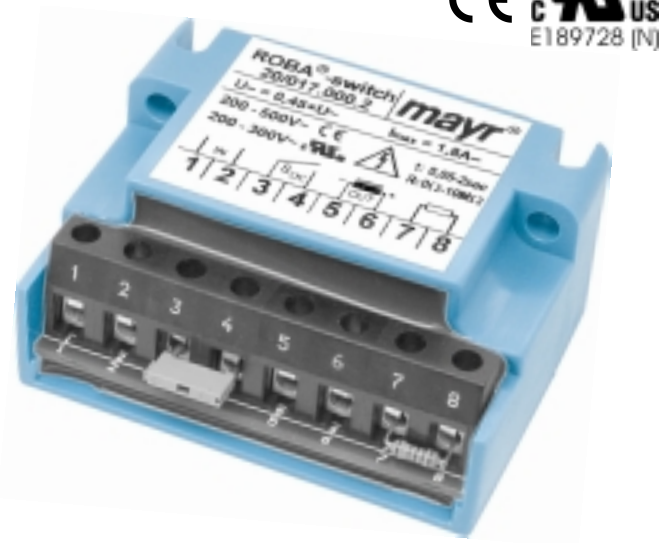
Technical Data

Input voltage	see Table 1
Output voltage	see Table 1
Protection	IP65 components, IP20 terminal, 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

Order Example:

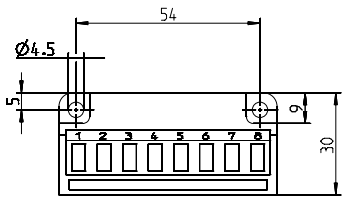
To be stated on order:	Size	Type
Order number:	_	017 .000.2

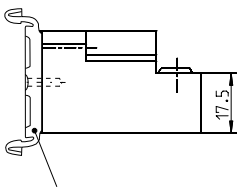
Sizes 0 – 20 →

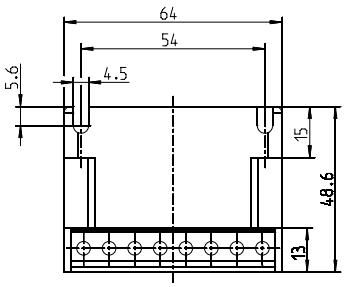


E189728 (N)

Dimensions (mm)







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

ROBA®-switch sizes, Table 1

	Size					
	10	**20**	**0[1)]**	**1[1)]**	**2[1)]**	**3[1)]**
Input voltage VAC ±10 %	100.. ..250	200.. ..500	115	230	230.. ..400	400.. ..500
Output voltage VDC, U_{bridge}	90.. ..225	180.. ..450	104	207	207.. ..360	360.. ..450
Output voltage VDC, $U_{half\text{-}wave}$	45.. ..113	90.. ..225	52	104	104.. ..180	180.. ..225
Output current I_{RMS} at ≤ 45 °C, (A)	2.0	1.8	2.0	2.0	1.8	1.8
Output current I_{RMS} at max. 70 °C, (A)	1.0	0.9	1.0	1.0	0.9	0.9
Conformity Markings	cULus CE	cULus up to 300V CE	cULus CE	cULus CE	cULus up to 300V CE	cULus CE

Key:
1) Size 10 replaces the sizes 0 and 1; size 20 replaces the sizes 2 and 3.

Application

ROBA®-switch fast acting rectifier units are used to connect DC units to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA®-quick, ROBATIC®), electromagnets, electrovalves etc.

Fast acting rectifier ROBA®-switch 017.100.2
- consumer operation with overexcitation or power reduction
- input voltage: 100 - 500 VAC
- max. output current: 3 A at 250 VAC
- UL-approved

Function

The ROBA®-switch units are used for operation at a supply voltage of between 100 - 500 VAC, depending on the size. They can switch automatically internally from bridge rectification to half-wave rectification. The bridge rectification time can be modified from 0.05 to 2 seconds by replacing the external resistor.

Electrical Connection (Terminals)

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

Technical Data

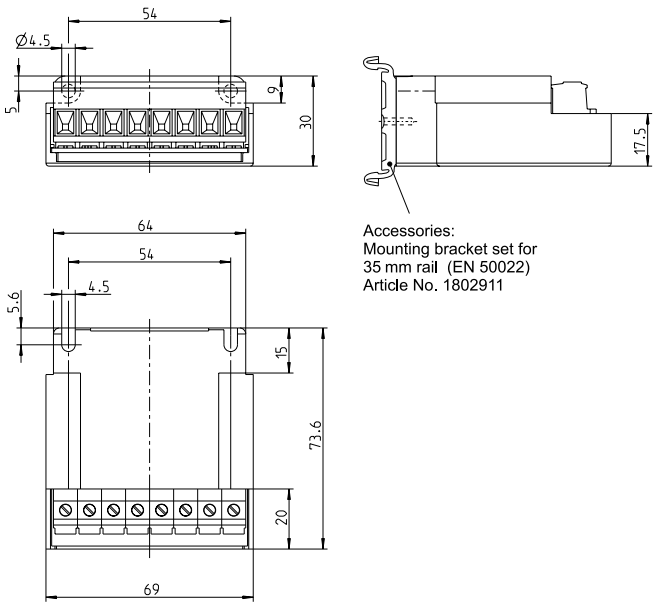
Input voltage	See Table 1
Output voltage	See Table 1
Protection	IP65 components, IP20 terminal IP10 R_{ext}
Terminal cross-section	1.5 mm² (AWG 22-14)
Ambient temperature	-25 °C up to +70 °C
Storage temperature	-40 °C up to +105 °C

Order Example:

To be stated on order:	Size	Type
Order number:	_	017 .100.2

Sizes 0 – 20

Dimensions (mm)



Accessories:
Mounting bracket set for
35 mm rail (EN 50022)
Article No. 1802911

ROBA®-switch sizes, Table 1

	Size					
	10	20	0[1)]	1[1)]	2[1)]	3[1)]
Input voltage VAC ±10 %	100.. ..250	200.. ..500	115	230	230.. ..400	400.. ..500
Output voltage VDC, U_{bridge}	90.. ..225	180.. ..450	104	207	207.. ..360	360.. ..450
Output voltage VDC, $U_{half\text{-}wave}$	45.. ..113	90.. ..225	52	104	104.. ..180	180.. ..225
Output current I_{RMS} at ≤ 45 °C, (A)	3.0	2.0	3.0	3.0	2.0	2.0
Output current I_{RMS} at max. 70 °C, (A)	1.5	1.0	1.5	1.5	1.0	1.0
Conformity Markings	cULus CE	cULus CE	cULus CE	cULus CE	cULus CE	cULus CE

Key:
1) Size 10 replaces the sizes 0 and 1; size 20 replaces the sizes 2 and 3.

Application

Phase demodulators are used to connect DC units to alternating voltage supplies. Due to automatic switching from the applied over-excitation voltage to the holding voltage, it is possible to energise brakes for shorter switching times with overexcitation and to reduce power dissipation after the armature disk has attracted.

Phase demodulators cannot be used in all applications. Using the phase demodulator is not possible when, for example, operating with damped brakes. Therefore, the usability is to be checked in advance.

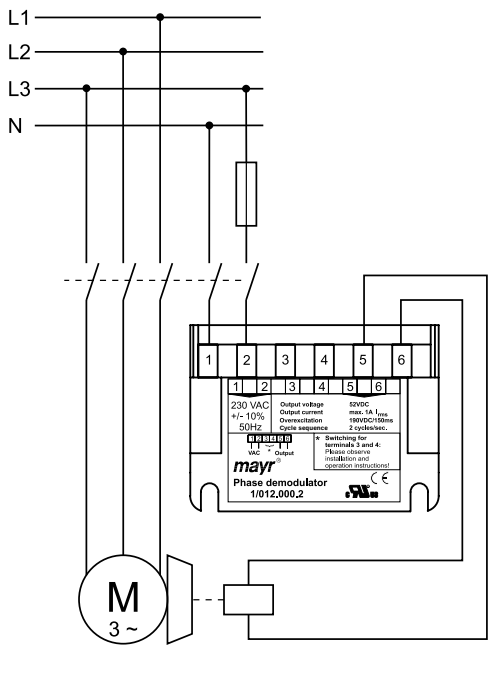
Function

The phase demodulator is provided for operation of an input voltage of 230 VAC.
The coil is energised after the input voltage is switched on using overexcitation voltage. After the overexcitation time has passed, the unit switches automatically to the holding voltage. Additionally, the phase demodulator has an integrated automatic DC-side switch-off. Contrary to the conventional DC-side switch-off, no further protective measures or external components are necessary. The integrated automatic DC-side switch-off can be deactivated by fitting a jumper.

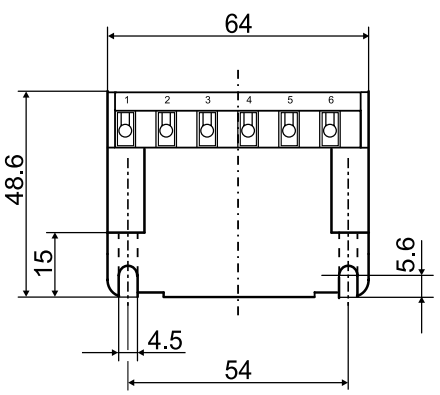
Technical Data (Type 012.00_.2)

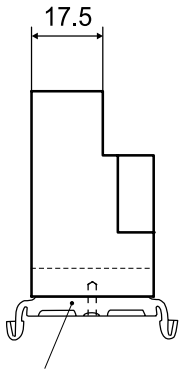
Input voltage	230 VAC ±10 %, 50 Hz
Output voltage -Holding voltage	52 VDC ±35 %
Output voltage - Overexcitation voltage	190 VDC
Overexcitation time	150 ms ±20 % plus ±10 ms
Output current	1 A, I_{RMS}/45 °C
Max. coil capacity	130 Watt
Max. switching frequency	2/s
Protection	IP65 components, IP20 terminal
Nominal cross-section	1.5 mm² (AWG 22-14)
Ambient temperature	-25 °C to +85 °C
Storage temperature	-40 °C to +105 °C
Conformity markings	UL, CE
Microfuse	FF 5 A (H), 5 x 20 mm

Wiring Example

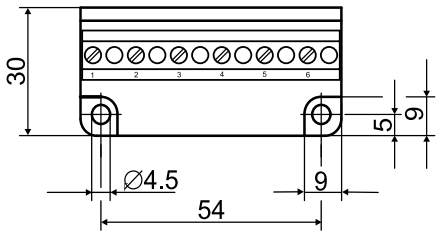


Dimensions (mm)





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



Order Example:

To be stated on order:	Size	Type
Order number:	_	0 1 2 . 0 0 _ . 2

Size 1 (230 VAC)

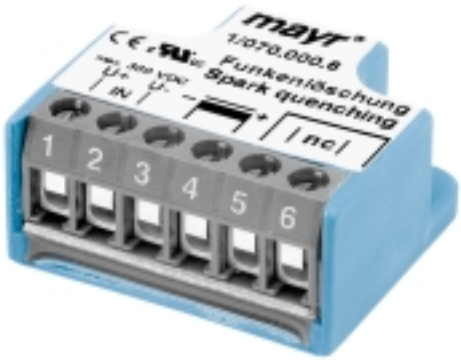
Special designs with different input and output voltages as well as different overexcitation times are available on request!

Spark Quenching Unit Type 070.000.6

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 freewheel diodes.



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 70V and reduces the contact load. Switching products with a contact opening distance of > 3 mm are suitable for this purpose.

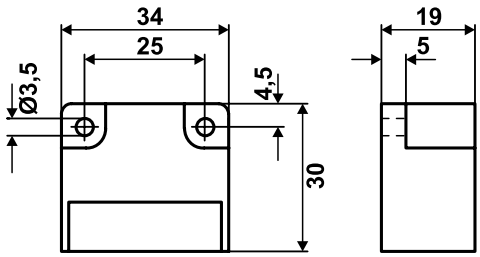
Electrical Connection (Terminals)

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

Technical Data

Input voltage	max. 300 VDC, max. 615 V_{peak} (rectified voltage 400 VAC, 50/60 Hz)
Switch-off energy	max. 9J/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 mm² / AWG 26-12
Max. terminal tightening torque	0.5 Nm

Dimensions (mm)



Accessories:

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

The installation position of the spark quenching unit Type 070.000.0 deviates from Type 1/070.000.6. An installation adaptation is possible by using a base plate: Article No. 4801575.

Order Example:

To be stated on order:	Size	Type
Order number:	1	070.000.6

Worldwide representation

mayr®
power
transmission

Headquarters
Chr. Mayr
GmbH + Co. KG
Eichenstraße 1
87665 Mauerstetten
Tel.: 49-83 41/8 04-2 41
Fax: 49-83 41/8 04 422
info@mayr.de
http://www.mayr.de

Great Britain
Mayr Transmissions Ltd.
Valley Road,
Business Park
Keighley, BD21 4LZ
West Yorkshire
Tel.: 0 15 35/66 39 00
Fax: 0 15 35/66 32 61
sales@mayr.co.uk

Italy
Mayr Italia S.r.l.
Viale Veneto, 3
35020 Saonara (PD)
Tel.: 0 49/8 79 10 20
Fax: 0 49/8 79 10 22
info@mayr-italia.it

France
Mayr France S.A.
Z.A.L. du Minopole
BP 16
62160 Bully-Les-Mines
Tel.: 03.21.72.91.91
Fax: 03.21.29.71.77
contact@mayr.fr

Switzerland
Mayr Kupplungen AG
Tobeläckerstrasse 11
8212 Neuhausen
am Rheinfall
Tel.: 0 52/6 74 08 70
Fax: 0 52/6 74 08 75
info@mayr.ch

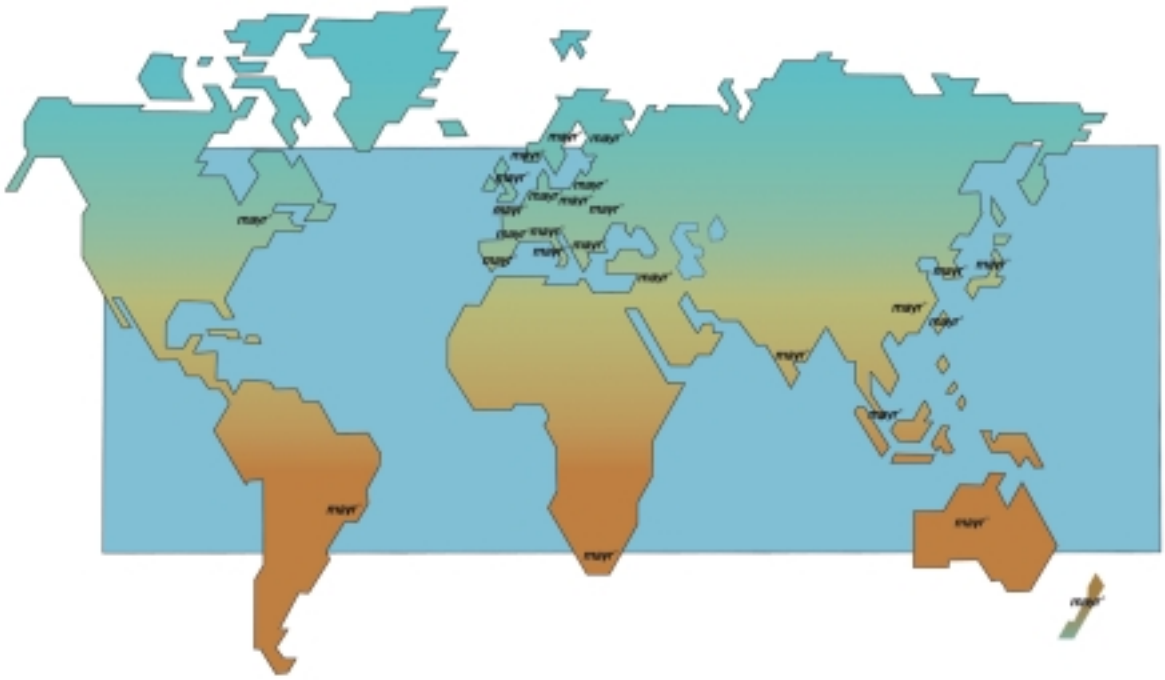
USA
Mayr Corporation
4 North Street
Waldwick
NJ 07463
Tel.: 2 01/4 45-72 10
Fax: 2 01/4 45-80 19
info@mayrcorp.com

Singapore
Mayr Transmission (S)
Pte. Ltd. – Blk 133
Jurong East Street 13
Unit 03-291
Singapore 600133 Asean
Tel.: 00 65/65 60 12 30
Fax: 00 65/65 60 10 00
info@mayr.com.sg

China
Mayr Shanghai
Room 608, No. 1277
West Zhongshan Road,
Conch Building,
200051 Shanghai, China
Tel.: 0 21/62 95 31 38
Fax: 0 21/62 95 31 37
sales@mayr.com.cn

Korea
Mayr Korea
60-11, Woongnam-Dong
ROK Changwon
Rep. of Korea
Tel.: 055/2 62-40 24
Fax: 055/2 62-40 25
info@mayrkorea.com

Japan
Sumitomo HI-PTC
Sales Co., Ltd.
3-5-8, Kandakaji-Cho,
Chiyoda-Ku
Tokyo J101-0045
Tel.: 03/52563091
Fax: 03/52563098
Gotou.k@sumiju.co.jp



Taiwan
German Tech Auto Co. Ltd.
No. 58, Wu Chuan Road
Wu-Ku Industrial Park
Taipei Hsien, Taiwan
Tel.: 02/22 99 02 37
Fax: 02/22 99 02 39
steve@zfgta.com.tw

India
National Engineering
Company (NENCO)
J-225, M.I.D.C. Bhosari
Pune 411 026
Tel.: 0 202/7 47 45 29
Fax: 0 202/7 47 02 29
nenco@vsnl.com

Australia
Transmission Australia Pty. Ltd.
22 Corporate Ave,
3178 Rowville, Victoria
Australien
Tel.: 0 39/755 44 44
Fax: 0 39/755 4411
info@transaus.com.au

South Africa
Torque Transfer
Private Bag 9
Elandsfontein 1406
Tel.: 011/3 45 80 00
Fax: 011/9 74 05 24
torque@bearings.co.za

Machine Tool
Applications in China
DTC. Co.Ltd.,
Block 5th, No. 1699,
East Zhulu Road,
201700 Shanghai, China
Tel.: 0 21/59 88 39 78
Fax: 0 21/59 88 39 79
dtcshanghai@online.sh.cn

Austria
Benelux States
Brazil
Canada
Czech Republic
Denmark
Finland
Greece
Hongkong
Hungary
Indonesia
Israel
Malaysia
New Zealand
Norway
Philippines
Poland
Romania
Russia
Slovakia
Slovenia
Spain
Sweden
Thailand
Turkey

Note:
If a country is not shown, please refer to headquarters or our web site to be advised of the nearest responsible agent.

mayr®
your reliable partner

Delivery Programme

Safety clutches/ torque limiters

- **EAS®-Compact®/EAS®-NC**
  Positive, absolutely backlash-free torque limiter
- **EAS®-smartic®**
  Economic torque limiters with fast assembly
- **EAS®-element clutch/EAS®-elements**
  Load disconnecting protection for high torques
- **EAS®-axial**
  Exact limitation of tensile and compressive forces
- **EAS®-Sp/EAS®-Sm/EAS®-Zr**
  Residual torque free disconnecting torque limiter with ON/OFF function
- **ROBA®-slip hubs**
  Load holding, friction type torque limiting clutch
- **ROBA®-contitorque**
  Magnetic continuous slip clutch

Shaft couplings

- **smartflex®**
  Perfect precision coupling for servo and stepper motors
- **ROBA®-ES**
  Backlash-free and damping of vibration critical drives
- **ROBA®-DS/ROBA®-D**
  Backlash-free, torsionally rigid all-steel coupling
- **EAS®-control-DS**
  Low cost torque-measuring coupling

Electromagnetic brakes/clutches

- **ROBA-stop® Standard**
  Multi-functionally all-round safety brake
- **ROBA-stop®-M motor brakes**
  Robust, cost effective motor brake
- **ROBA-stop®-S**
  Waterproof, robust monobloc brake
- **ROBA-stop®-Z/ROBA-stop®-silenzio®**
  Double security elevator brake
- **ROBA®-diskstop®**
  Compact quiet disk brake
- **ROBA®-topstop®**
  Brake systems for gravity loaded axes
- **ROBA®-linearstop**
  Backlash-free brake system for linear motor axes
- **ROBATIC®/ROBA®-quick/ROBA®-takt**
  Energise to engage electromagnetic pole face clutches and brakes, CBU

DC drives

- ***tendo®*-PM**
  Permanent-magnet D.C. motors
- ***tendo®*-SC**
  1 and 4 Q transistor controllers

11/12/2006 IM

Chr. Mayr GmbH + Co. KG
Eichenstrasse 1
D-87665 Mauerstetten
Germany

Telephon 083 41/804-2 41
Telefax 083 41/804 422
http://www.mayr.de
eMail: info@mayr.de

mayr®
your reliable partner