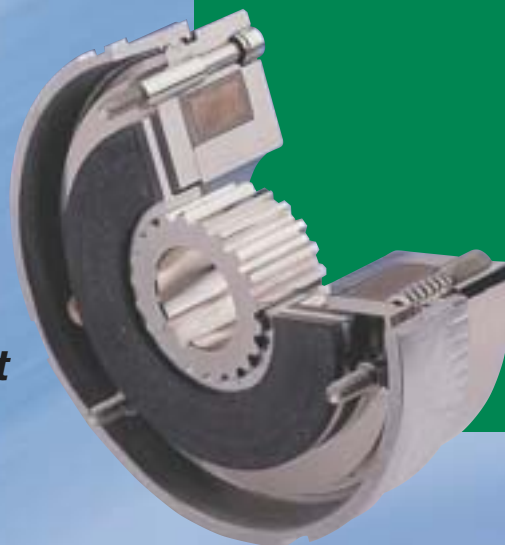


Safety Brake for

*Cranes and Hoists
Machinery
Power Transmission
Materials Handling Equipment*



ROBA-stop®

Electromagnetic Safety Brake

- *Easy central wear adjustment*
- *Sensitive braking torque adjustment*
- *Optimised for Emergency-OFF operation*
- *High capacity, robust construction*

mayr®
power
transmission

K.800.02.GB

Your advantages with ROBA-stop[®]

ROBA-stop[®] brakes have outstanding benefits for operational security and easy maintenance.

For nearly all applications the enclosed structural design guarantees a high degree on functional security of the brake without additional protective measurements.

The high reliability increases the security and efficiency of your complete machinery or equipment.

The sensitive adjustment of the braking torque is especially important when an exact positioning is required or when drives must be adapted to alternative

manufacturing programmes. The production sequence is optimised, its flexibility is brought to a maximum and quality is increased. The integral wear adjustment is an additional distinguished feature. It minimises the risk of adjusting errors, simplifies maintenance, saves time and maintenance costs and decreases the downtime of your machinery.

Application possibilities for ROBA-stop[®] Electromagnetic Spring Applied Safety Brakes

Quiet

ROBA-stop[®] Safety Brakes offer a complete selection of different variations. Nearly 30 years' manufacturing and application experience with spring applied safety brakes and the knowledge of multiple requirements in the electrical power transmission field are behind this programme. Perfected technology and continuous application specific development guarantee that a suitable brake is available for virtually every application.

Small overall dimensions
with high braking torques

ROBA-stop[®] Positioning Brakes offer exact positioning and highly repetitive accuracy even with high switching frequency. The braking torque can be set sensitively. This construction and design can accommodate most applications with a choice of armature discs.

Simple and troublefree brake installation.
Mounting without time-consuming
adjustments.

ROBA-stop[®] Holding Brakes achieve very high braking torques. They are designed to hold large masses or loads without friction work. Braking from low speed with low friction work and corresponding application conditions can be allowed.

ROBA-stop[®] Tacho Brakes have a counterbore and tapped holes for attachment of a tachogenerator on the back face. The sensitive braking torque adjustment allows exact positioning with high repetitive accuracy.

ROBA-stop[®] Tacho-Peak Load Brakes correspond to the Tacho Brake in function. Additionally they are equipped with an extremely strong armature disc which allows high friction work.

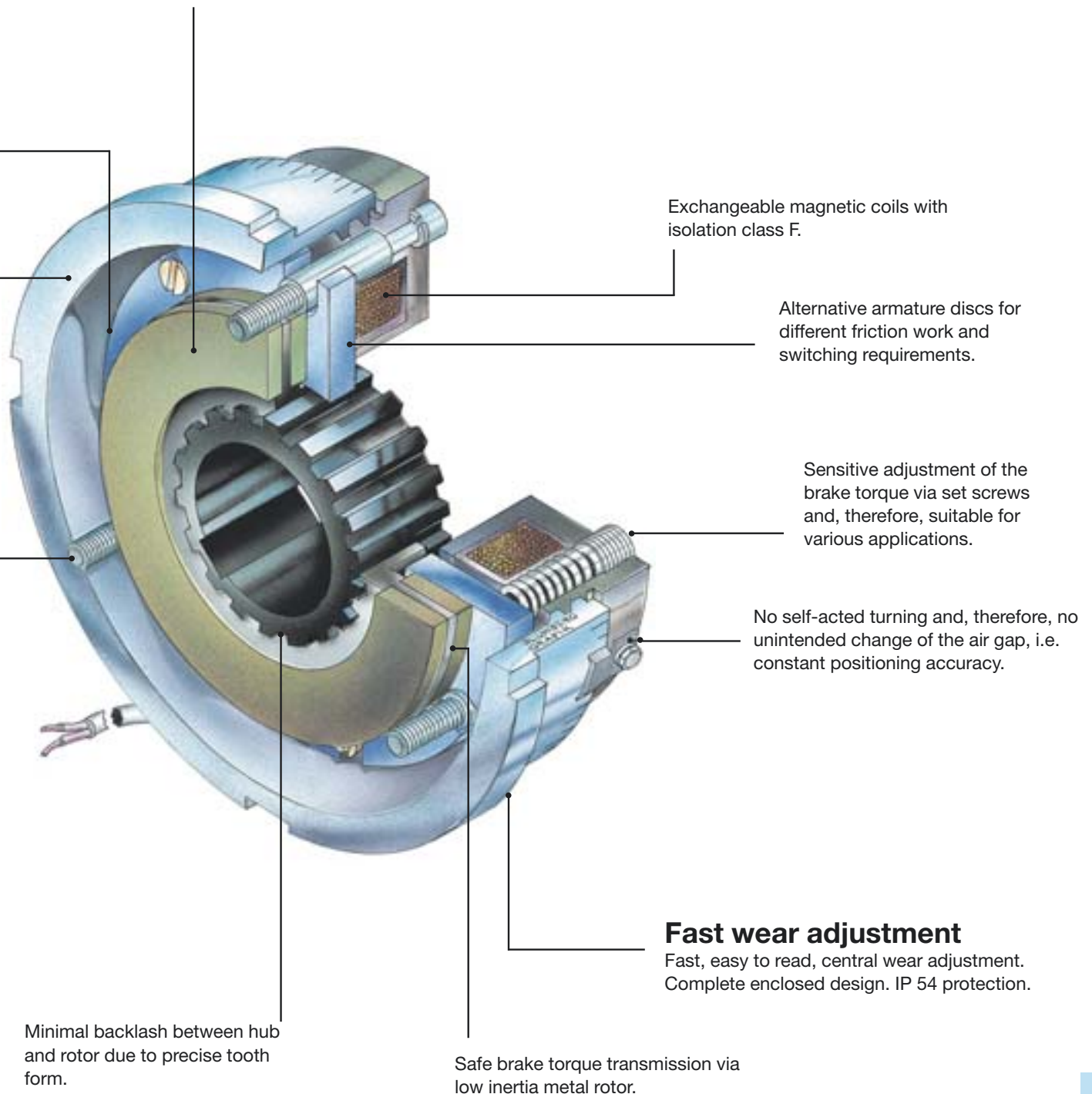
ROBA-stop[®] Peak Load Brakes are available in two further variations. Both are designed with extremely strong armature discs for high friction work. The design with open distance ring dissipates the braking heat to the environment. The unit with closed distance ring is selected when high friction work is to be absorbed and increased protection against outer influences is required.

ROBA-stop[®] Sealed Brake and
ROBA-stop[®]-S Brake corresponds to protection IP 67.
They are completely sealed designs and corrosion resistant.

Your individual solution – Our universal brake

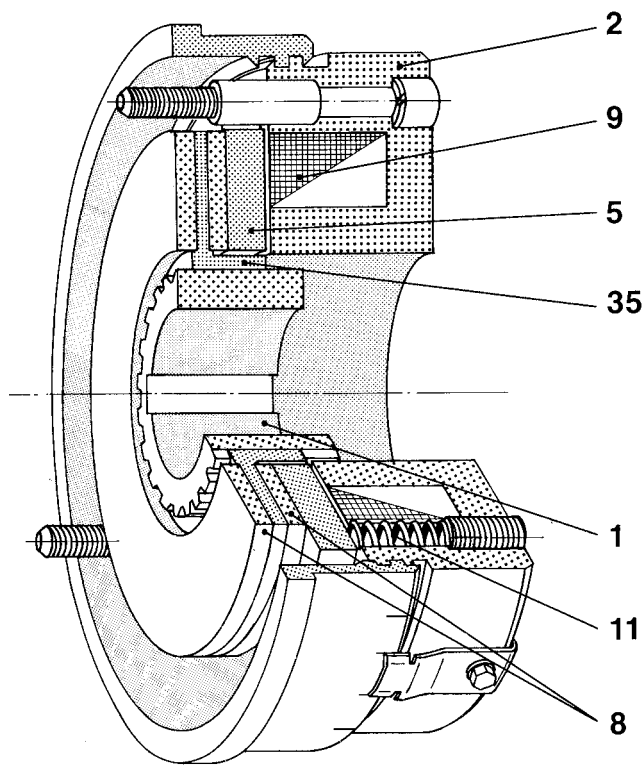
Constant braking times

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

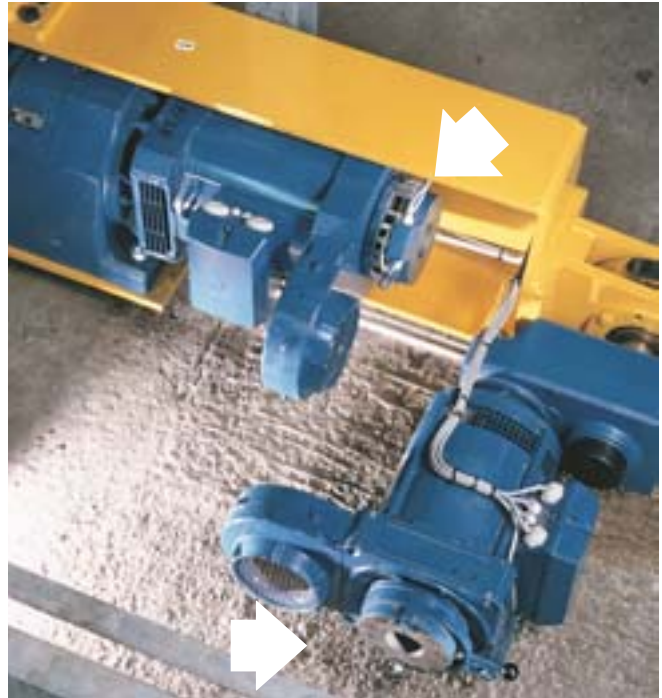


Function

ROBA-stop[®] brakes are electromagnetic spring applied safety brakes. In a de-energised condition they are closed and correspond to the demanded safety aspects, as for example if there is a power failure or an „emergency off“ condition. In a de-energised condition helical springs (11) press against the armature disc (5). The friction linings (8) of the rotor (35) which is connected with the input shaft via a gear hub (1) are held stationary between this armature disc and corresponding mounting surface of the brake. If the coil (9) is energised a magnetic field is built-up which attracts the armature disc (5) to the coil carrier (2) and releases the rotor (35) with its friction linings (8). The brakes are released with applied voltage.



ROBA-stop[®] usage in a palletised warehousing




Hoist and travelling drives of the narrow aisle materials handling system are equipped with ROBA-stop[®] brakes. The ROBA-stop[®] Positioning Brake at the rear of the travel motor brakes the drive from a slow speed exactly to the required position. The ROBA-stop[®] Peak Load Brake on the hoist motor undertakes the same function during the standard operation – braking and positioning from a slow speed. In case of emergency-off or power failure, this brake can brake safely from high speeds and with a downward moving load. It is capable of absorbing high friction work and dissipating the heat to the environment very rapidly.

Quality, Experience, Competence

Mayr[®] Power Transmission have applied the highest technical and innovative standard for decades. The foundation for this success are the skills, productivity and quality consciousness of all Mayr[®] employees. The DIN ISO 9001 certification achieved confirms the high demands we set to experience, together with total our engineering integrity, and quality manufacturing processes. Mayr[®] Power Transmission offers you comprehensive depth of management to ensure your confidence, and many year's expertise, gained in both mechanical and electrical power transmission, confirms our position as leaders in this field.





Manufacturer's declaration

ROBA-stop® brakes as well as rectifiers, phase demodulators, ROBA®-switch, spark quenching units and power supply units are not machines within the scope of the Machinery directive 98/37/EG, but components for installation into machines. An initial start up is prohibited until it has been noticed that the machinery or the equipment into which this product has been incorporated correspond to the EG-guide lines.

ROBA-stop® brakes are developed and manufactured in conformance with the national standard DIN VDE 0580 according to the low-voltage directives 73/23/EWG. The observance of the relevant EMV-guide line 89/336/EWG is to be guaranteed.

Safety regulations



Attention!

Hazardous conditions when contacting hot connections and components.

Danger, if the spring applied brake is used in an improper way, if the spring applied brake has been modified or reconverted, if the relevant standards of the safety or installation conditions are not observed.

Only qualified and well-trained specialists should work on the units to avoid any personal injury or damage to machinery.



Attention!

The installation and operating instructions must be read carefully and all safety regulations observed before installation and initial operation as danger to personnel and damage to machinery may be caused.

Spring applied brakes are developed and manufactured in conformance with the temporarily known rules of the technology and they are basically considered as fail-safe at the time of delivery.

Spring applied brakes are not suitable for the application in potentially explosive or aggressive atmospheres.

Observe!

- Only qualified well-trained specialists which are familiar with transportation, installation, initial operation, maintenance and operating of the units as well as with relevant standards may carry out the corresponding work.
- Technical data and indications (Type tag and documentation) are to be kept in any case.
- Supply connection according to Type tag.
- Assembly, maintenance or repair must not be made when the unit is energised.
- Electrical leads must not be under tension when connected.
- Check current carrying components regarding damage before initial operation. They must not be in contact with water.
- If the friction lining and the friction surface come in contact with oil or grease there is a **loss of the braking torque**.

With these safety regulations no claim on completeness is raised!

Necessary protective measures to be undertaken by the user:

- Cover all moving parts to prevent personnel injury as squeezing and seizing.
- Cover dangerously hot magnetic parts to prevent contact.
- Attach a conductive connection between magnetic part and electrical conductor (PE) of the fixed installation (protection class I) to prevent electrical shock.
- Install spark quenching units to prevent high inductive cut-off peaks.

Note to electromagnetic compatibility

Important

There are no emissions from the listed single components within the meaning of EMV guideline 89/336/EMG. However, increased interference levels can occur when working components are operated outside their specification limits as for example, energising the brake with rectifiers, phase demodulators or ROBA®-switch in the line side.

Therefore, the installation and operating instructions must be read carefully and the EMV guidelines are to be observed.

Standards and Instructions

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

Following directives have been used:

98/37/EG	Machinery directive
73/23/EWG	Low-voltage directive
89/336/EWG	EMV-guideline

Protection class I

The protection is not only based on the basis isolation, but that all conductive components must be connected with the protective conductor of the fixed installation. In case the basis isolation fails, no contact voltage can remain existing. (EN 50144-1, 11.99, classification VDE 0740-1)

Protection IP 54

Dustproof and protection against contact and splash water from all directions (DIN EN 60529)

Ambient temperature

-20 °C up to +40 °C

Attention!

The torque could be severely reduced in case of temperatures over or under the freezing point due to thawing. The user must provide corresponding counter measures.

Conditions of the unit

Important

The catalogue values are for reference only, and may vary in certain cases. When selecting the brake, site of installation, braking torque fluctuations, permissible friction work, behaviour during run-in, wear and ambient conditions are to be carefully checked and agreed with the unit manufacturer.

Observe!

- The mounting and connecting dimensions at the site of installation must match to the size of the brake.
- ROBA-stop® brakes are designed for a relative continuous operation.
- ROBA-stop® disk brakes are designed for a dry running **only**.

Attention!

Should oil, grease, water or similar materials come in contact with the friction surfaces **the braking torque could be reduced**.

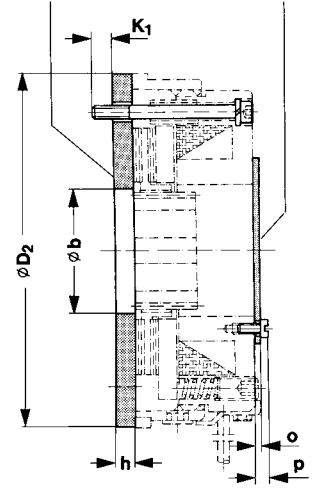
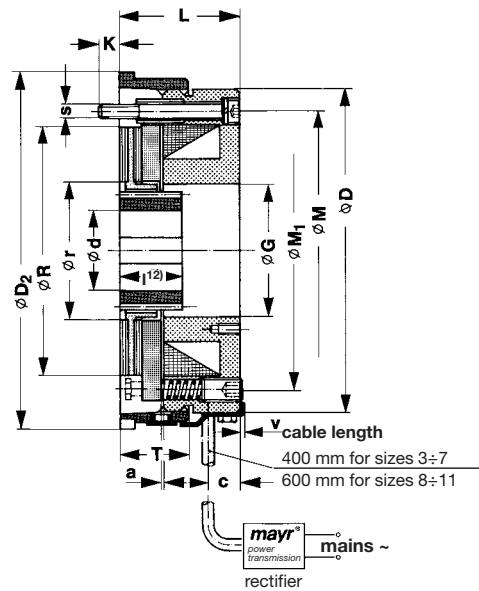
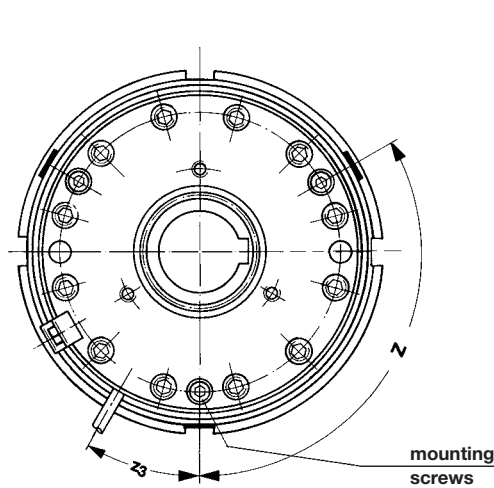
- The braking torque depends on the corresponding running-in condition of the brake.
- **Protective system** for damping of overvoltages, as high inductive voltage peaks occur when the brake is switched off on the DC side which can result in damage to the coil isolation as well in the burning away of the switching contact in extreme cases.
- **Provide additional necessary safety measures against corrosions of the brake** if they are used in extreme ambient conditions or in the open with direct atmospheric influences. The metallic surface of the brake is protected against corrosion arranged by the factory.
- The connecting cables or leads have a silicone coating which has a limited resistance to chemical attack. The place of operation and the suitability must be checked.

Sizes 3 – 11 Standard

Type 80_.41_.

Flange plate
Type 802.411.3

Back cover
Type 802.412.3



Sizes 3 - 11 Type 802.410.3

Sizes 3 - 11 Type 802.411.3
Type 802.412.3



Electromagnetic safety brake for braking and exact positioning. A highly repetitive accuracy is guaranteed with high switching frequencies. Three different armature discs are available for various requirements according to friction work, switching times and braking noise of the brake.

Standard armature

Short attraction time (brake release), longer switching time from switching-off power supply to the time when brake torque is provided (drop time). Heavy duty of construction allows the absorption of high friction work.

Fast acting armature

Same characteristics as the standard armature with somewhat longer attraction time, however, with substantial shorter drop time.

The switching times can be substantially affected by the electrical switching and the kind of voltage supplied.

The brake can easily be connected to DC voltage supply via our comprehensive range of electrical accessories (see page 26).

Order example:

To be included when ordering, please state:	size	type	voltage [V DC]	bore Ø d ^{H7}	keyway DIN
Order number:		80_.41_.			

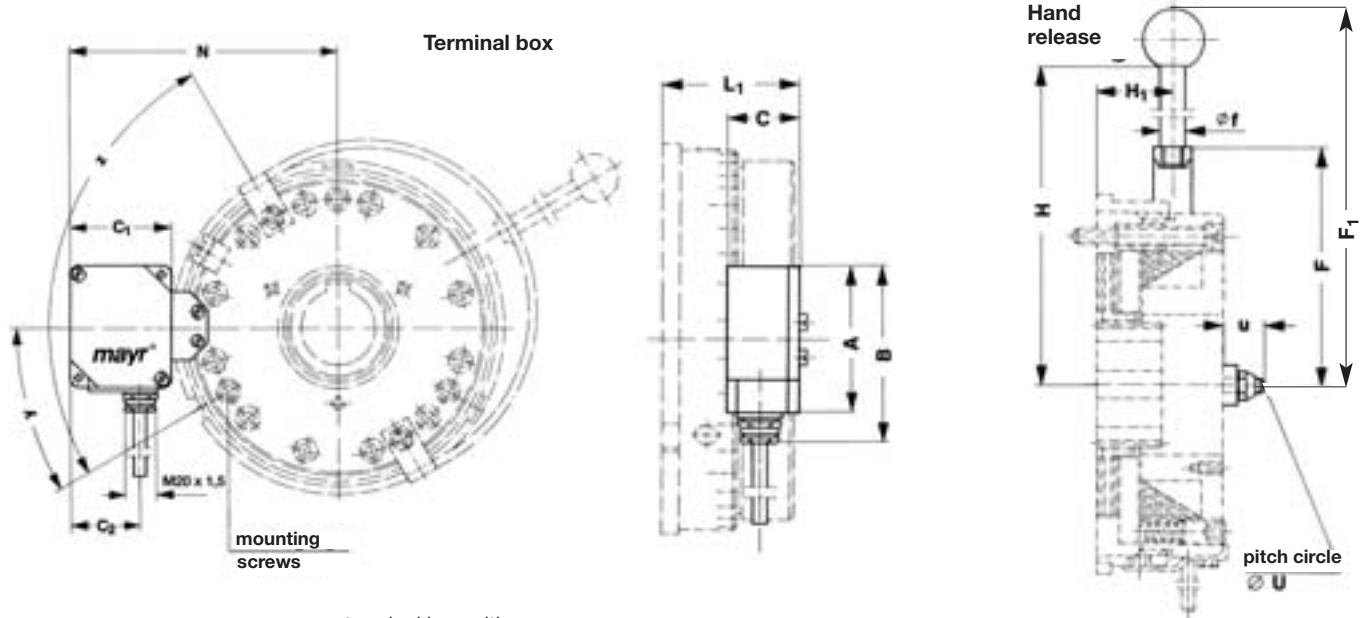
- 3 - 11
- Standard armature 0
- Fast acting armature 2
- Without supplementary parts 0
- Flange plate 1
- Back cover 2
- Hand release 3
- Flange plate/Back cover 4
- Flange plate/Hand release 5
- Back cover/Hand release 6
- Flange plate/Back cover/Hand release 7
- 6885/1
- 6885/3
- according to size
- 24; 104; 180; 207 V-coil
- 1 Terminal box with terminal
- 3 Cable
- 4 Terminal box half-wave rectifier
- 5 Terminal box bridge connected 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 802.41_1 terminal .4 half wave rectifier

.5 bridge connected rectifier .6 spark quenching

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

Technical data and dimensions

size	brake 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 kgm ²]	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	I 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 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 shaft or keyway
 13) tolerance
 standard voltages 24, 104, 180, 207 V
 permissible voltage tolerance ±10%; to IEC 60038
 We reserve the right to make dimensional and design alterations.

Manufacturing declaration

Rectifiers are components in compliance with the machine guide line 98/37/EG which are determined for installation into a machine.

An operation is prohibited until the machine guideline for the final product in which this unit is fitted if fulfilled. The rectifier correspond to the low-voltage recommendation 73/23/EG.

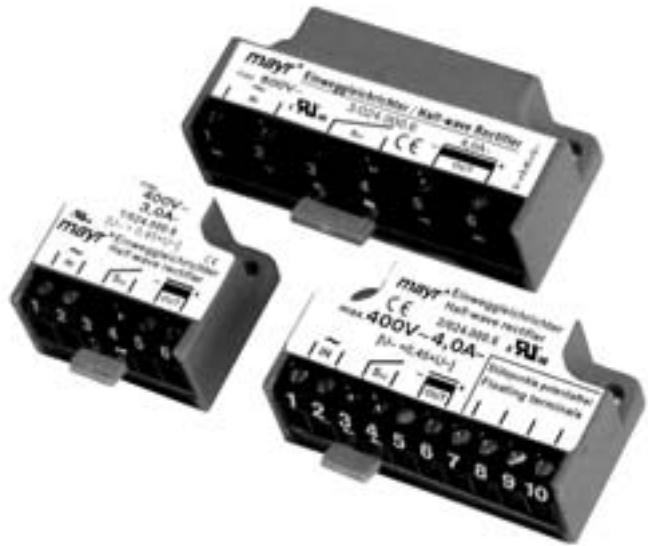
Note for malfunction signal:

The rectifier does not generate any malfunction signals, however, malfunction signals above the permissible limit values might be possible in connection with other components.

The EMV-corresponding installation is to be observed.

Application

Rectifiers are used to connect DC coils to an AC voltage supplies. For example: Electromagnetic brakes and clutches (ROBA-stop[®], ROBA-quick[®], ROBATIC[®]), also electromagnets, electro valves, contactors, safe connecting



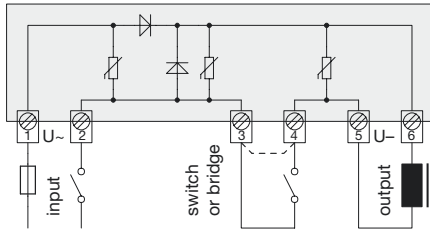
Bridge rectifier

<p>Wiring diagram</p>	<p>Formula for calculation of the bridge-output voltage</p> $U_- = U_{\sim} \times 0,9 \text{ (VDC)}$ <table border="1"> <tr> <td>input</td> <td>U_{\sim}</td> <td>50</td> <td>100</td> <td>115</td> <td>150</td> <td>200</td> <td>230</td> <td>250</td> </tr> <tr> <td>output</td> <td>U_-</td> <td>45</td> <td>90</td> <td>104</td> <td>135</td> <td>180</td> <td>207</td> <td>225</td> </tr> </table>	input	U_{\sim}	50	100	115	150	200	230	250	output	U_-	45	90	104	135	180	207	225
input	U_{\sim}	50	100	115	150	200	230	250											
output	U_-	45	90	104	135	180	207	225											
<p>Type 1/025.000.6</p> <p>Characteristic: supply terminal with 6 channels</p>	<p>Technical data: supply voltage (IN) max. 230 VAC output voltage (OUT) Max. 207 VDC max. current load 2,5 Amp. with ≤ 50 °C ambient temp. 1,7 Amp. with ≤ 85 °C ambient temp. peak reverse voltage 1600 V</p> <p>Permissible max. coil capacity:</p> <table border="1"> <thead> <tr> <th>IN</th> <th>OUT</th> <th>Watt with ambient temperature</th> </tr> </thead> <tbody> <tr> <td>115 VAC</td> <td>104 VDC</td> <td>up to 177 Watt with ≤ 85 °C ambient temp. up to 260 Watt with ≤ 50 °C ambient temp.</td> </tr> <tr> <td>230 VAC</td> <td>207 VDC</td> <td>up to 352 Watt with ≤ 85 °C ambient temp. up to 517 Watt with ≤ 50 °C ambient temp.</td> </tr> </tbody> </table>	IN	OUT	Watt with ambient temperature	115 VAC	104 VDC	up to 177 Watt with ≤ 85 °C ambient temp. up to 260 Watt with ≤ 50 °C ambient temp.	230 VAC	207 VDC	up to 352 Watt with ≤ 85 °C ambient temp. up to 517 Watt with ≤ 50 °C ambient temp.									
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<p>Type 2/025.000.6</p> <p>Characteristic: supply terminal with 10 channels Terminals 7 up to 10 potential free points of support</p>	<p>Technical data: supply voltage (IN) max. 230 VAC output voltage (OUT) max. 207 VDC max. current load 2,5 Amp. with ≤ 50 °C ambient temp. 1,7 Amp. with ≤ 85 °C ambient temp. peak reverse voltage 1600 V</p> <p>Permissible max. coil capacity:</p> <table border="1"> <thead> <tr> <th>IN</th> <th>OUT</th> <th>Watt with ambient temperature</th> </tr> </thead> <tbody> <tr> <td>115 VAC</td> <td>104 VDC</td> <td>up to 177 Watt with ≤ 85 °C ambient temp. up to 260 Watt with ≤ 50 °C ambient temp.</td> </tr> <tr> <td>230 VAC</td> <td>207 VDC</td> <td>up to 352 Watt with ≤ 85 °C ambient temp. up to 517 Watt with ≤ 50 °C ambient temp.</td> </tr> </tbody> </table>	IN	OUT	Watt with ambient temperature	115 VAC	104 VDC	up to 177 Watt with ≤ 85 °C ambient temp. up to 260 Watt with ≤ 50 °C ambient temp.	230 VAC	207 VDC	up to 352 Watt with ≤ 85 °C ambient temp. up to 517 Watt with ≤ 50 °C ambient temp.									
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Rectifier

Half-wave rectifier

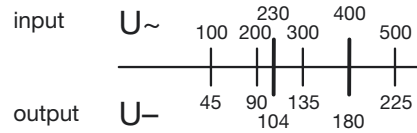
Wiring diagram



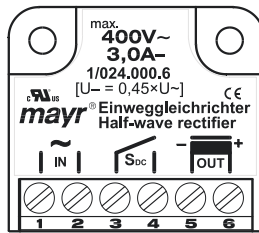
Formula

for calculation of the bridge-output voltage

$$U = U_{\sim} \times 0,45 \text{ (VDC)}$$



Type 1/024.000.6



Characteristic:
supply terminal with 6 channels

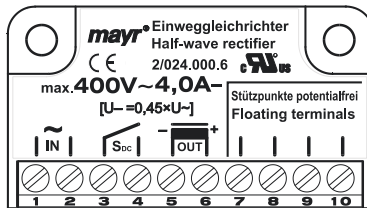
Technical data:

supply voltage (IN) max. 400 VAC
output voltage (OUT) max. 180 VDC
max. current load 3 Amp. with $\leq 50^{\circ}\text{C}$ ambient temp.
1,8 Amp. with $\leq 85^{\circ}\text{C}$ ambient temp.
peak reverse voltage 2000 V

Permissible max. coil capacity:

IN	OUT	Watt with ambient temperature
230 VAC	104 VDC	up to 187 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 312 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.
400 VAC	180 VDC	up to 324 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 540 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.

Type 2/024.000.6



Characteristic:
supply terminal with 10 channels
Terminals 7 up to 10 potential free points of support

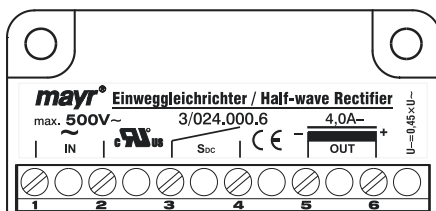
Technical data:

supply voltage (IN) max. 400 VAC
output voltage (OUT) max. 180 VDC
max. current load 4 Amp. with $\leq 50^{\circ}\text{C}$ ambient temp.
2,4 Amp. with $\leq 85^{\circ}\text{C}$ ambient temp.
peak reverse voltage 1600 V

Permissible max. coil capacity:

IN	OUT	Watt with ambient temperature
230 VAC	104 VDC	up to 250 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 416 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.
400 VAC	180 VDC	up to 432 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 720 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.

Type 3/024.000.6



Characteristic:
Terminal with 6 channels

Technical data:

supply voltage (IN) max. 500 VAC
output voltage (OUT) max. 225 VDC
max. current load 4 Amp. with $\leq 50^{\circ}\text{C}$ ambient temp.
2,4 Amp. with $\leq 85^{\circ}\text{C}$ ambient temp.
peak reverse voltage 2000 V

Permissible max. coil capacity:

IN	OUT	Watt with ambient temperature
230 VAC	104 VDC	up to 250 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 416 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.
400 VAC	180 VDC	up to 432 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 720 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.
500 VAC	225 VDC	up to 540 Watt with $\leq 85^{\circ}\text{C}$ ambient temp. up to 900 Watt with $\leq 50^{\circ}\text{C}$ ambient temp.

Type 3/024.000.6 (without illustration)

Characteristic:
Terminal with 6 channels

600 VAC 270 VDC max. current load 4 Amp.