



KENDRION INDUSTRIAL BRAKES

Elevation Line

Spring-applied double-circuit brake
 Mounting Instructions 78 110..A00
 Types: 78 11019A00 78 11029A00
 78 11033A00 78 11040A00

PRECISION. SAFETY. MOTION.

Contents

1. General	1
1.1 Foreword	1
1.2 Manufacturer	1
1.3 Product, types, versions	1
1.4 Manufacturer's liability	2
1.5 Applicable documents.....	2
2. Safety and warning symbols	2
3. Delivery condition spring-applied double-circuit brake	2
4. Product description	2
4.1 Spring-applied double-circuit brake design	2
4.2 Brake component parts, including centring device.....	2
5. Machine shaft (5) and end shield (6)	3
6. Installation	3
6.1 Mechanical installation.....	3
6.2 Electrical brake connection	4
7. Set-up and start-up	4
8. Add-on kit for encoder (optional)	5
8.1 Mechanical installation of add-on kit	5
8.2 Installation and electrical connection of encoder.....	6
9. Werkzeuge und Messmittel zur Montage	6
10. Revision history	6

Document information:

Issued by: Kendrion (Villingen) GmbH
 Replaces document: -
 Last updated: 22.04.2020
 Replaces the issue dated: 10.10.2019
 Document type: translation of original German mounting instructions MA 78 110..A00
 Document status: released
 Document title: MA 78 110..A00 Englisch

1. General

1.1 Foreword

This Mounting Instructions explains how to install, set up and start up spring-applied double-circuit brakes type 78 110..A00 correctly and safely. The information and advice provided in this document must be strictly followed when the brake is first mounted to the lift machine and then started. In addition the information in the operating instructions BA 78 110..A00 and offer drawings (see chapter 1.5, applicable documents) must be observed.

1.2 Manufacturer

Kendrion (China) Co., Ltd. Tel.: +86 5128398-1819
 Factory Building No. 2 E-Mail: CHN@kendrion.com
 17 Su Hong East Road
 215026 Suzhou Industrial Park
 Suzhou, P.R. China

1.3 Product, types, versions

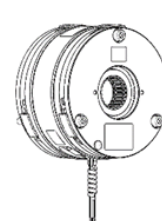
Product: Electromagnetically released spring-applied double-circuit brake
 Types: 78 11019A00 78 11029A00 78 11033A00
 78 11040A00

Types	Version	Tranmissable torqueM ₄
78 11019A00	-0001	2 x 100Nm
	-0002	2 x 125Nm
	-0003	2 x 160Nm
	-0004	2 x 200Nm
78 11029A00	-0001	2 x 220Nm
	-0002	2 x 250Nm
78 11033A00	-0001	2 x 320Nm
	-0002	2 x 380Nm
	-0003	2 x 400Nm
78 11040A00	-0001	2 x 475Nm
	-0002	2 x 500Nm
	-0003	2 x 560Nm
	-0004	2 x 630Nm
	-0005	2 x 700Nm

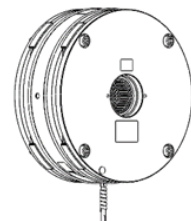
Table 1/1: List of types and versions

Brake size	19	29	33	40
Rated air gap s _N [mm]:	0,35 ^{+0,15}	0,35 ^{+0,15}	0,35 ^{+0,15}	0,35 ^{+0,15}
Weight m [kg]:	19	24	33,5	58,5
Length L [mm]:	123,5	124,5	131	136
Outside diameter.D [mm]:	199	235	270	326

Table 1/2: Rated air gaps s_N, weights and dimensions



Size 19, 29 and 33 brakes
(3 mounting screws (3))



Size 40 brake
(4 mounting screws (3))

Fig. 1/1: Brake types, number of mounting screws (3)
(Presentation version without add-on kit (13) for encoder)

1.4 Manufacturer's liability

The manufacturer will not assume any responsibility for damage caused by failure to use the products in accordance with their intended use. The information in this manual was correct and up-to-date before going to print.

1.5 Applicable documents

- Offer drawings
78 110..A00-O (without Add-on kit for encoder)
78 110..A00-O (with Add-on kit for encoder)
- Operating instructions BA 78 110..A00

2. Safety and warning symbols

Personal injury			
Symbol	Signal word	Indicates...	Potential conseq.
	DANGER	an imminent hazardous situation which, if not avoid, personal injury	Dead or serious injury
	WARNING	a potentially hazardous situation which, if not avoid, could personal injury	Dead or serious injury
	CAUTION	a potentially hazardous situation which, if not avoid, could personal injury	Minor or moderate injury
Equipment damage			
Symbol	Signal word	Indicates ...	Potential conseq.
	NOTICE	potential property damage	Damage to the component or to the environment
Information			
Symbol	Signal word	Provides ...	
	IMPORTANT	information on the safe use and operation of the component	

3. Delivery condition spring-applied double-circuit brake

The spring applied double circuit brake is delivered ready for mounting. The rated air gaps s_N of the two brake circuits (MGB1 (1.1) and MGB (2.1)) are factory-adjusted and cannot be changed. The friction discs (1.6 and 2.6) between the armature (1.3 and 2.3) and flange (1.4 and 2.4) are perfectly aligned relative to each other at the manufacturer's premises and firmly locked when the brake circuits (MGB1 and MGB) are closed. The mounting screws (3) and the washers (4) are enclosed with the delivery.

IMPORTANT:

i If the brake is not installed immediately upon delivery, it must be stored in a dry and dust-free place. For storage, especially long-term storage of the brake, the environmental conditions according to EN IEC 60721-3-1 (classes 1K21, 1Z2, 1B1, 1C2, 1S11, 1M11) must be considered and complied. Always check the brake for transit damage before mounting.

4. Product description

4.1 Spring-applied double-circuit brake design

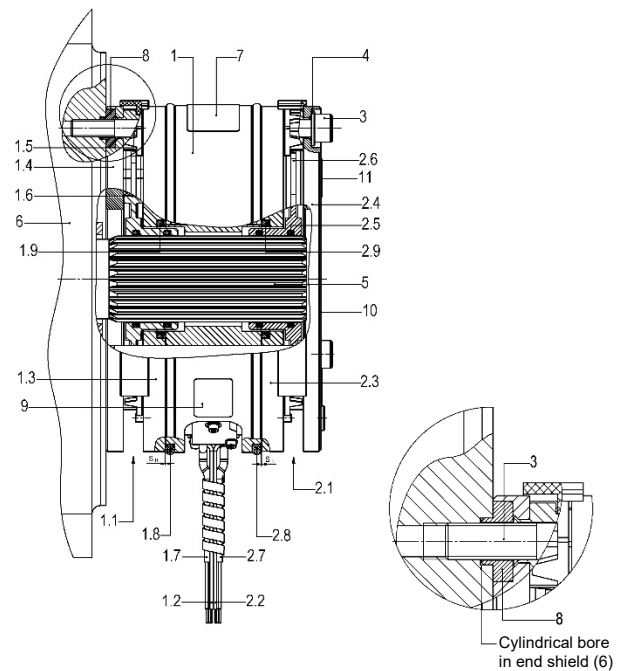


Fig. 2/1: Design of spring applied double circuit brake

4.2 Brake component parts, including centring device

Pos.	Bezeichnung
1	Solenoid housing (coil system)
1.1	Brake circuit MGB1
1.2	Wire leads (MGB1)
1.3	Armature (MGB1)
1.4	Flange (MGB1)
1.5	Damping ring friction disc (MGB1 (1.6)) (2 pieces)
1.6	Friction disc (MGB1)
1.7	Connecting cable microswitch KB1
1.8	Damping ring (MGB1)
1.9	Sealing ring (MGB1)
2.1	Brake circuit MGB
2.2	Wire leads (MGB)
2.3	Armature (MGB)
2.4	Flange (MGB)
2.5	Damping ring friction disc (MGB1 (1.6)) (2 pieces)
2.6	Friction disc (MGB)
2.7	Connecting cable microswitch KB
2.8	Damping ring (MGB)
2.9	Sealing ring (MGB)
3	Fixing screw (3 resp. 4 ¹⁾ pieces)
4	Washer (3 resp. 4 ¹⁾ pieces)
5	Machine shaft
6	Bearing shield
7	Rating plate
8	Bush (3 resp. 4 ¹⁾ pieces)
9	Prohibiting label (microswitch KB, KB1) (2 pieces)
10	Information label (air gap examination and range)
11	Warning label (hot surfaces)
12	Centring device

Table 2/1: Key to Fig. 2/1, Fig. 3/1, Fig. 3/2, Fig. 5/1 and Fig. 5/2

¹⁾ Typ 78 11040A00.

5. Machine shaft (5) and end shield (6)

Check that the machine shaft (5) and bearing shield (end shield) (6) of the lift machine meet the following requirements:

- Absence of oil and grease
- No impact marks or other damage to the external teeth of the machine shaft (5) and the centering bores (cylindrical bores) (Fig. 2/1, Fig. 3/1) in the bearing shield (6).

6. Installation

6.1 Mechanical installation

Remove the transport packaging. Slip the brake with the internally toothed friction discs (1.6 and 2.6) onto the externally toothed machine shaft (5). Align the brake on the bearing shield (end shield) (6) so that the bushes (8) provided in the flange (1.4) of brake circuit MGB1 form-fit into the centering bores (cylindrical bores) in the bearing shield (6) (Fig. 3/1). Use the fixing screws (3) and washers (4) (see Table 4/1) to fix the brake to the bearing shield (6) of the lift machine (Fig. 3/2). The M_A tightening torque specified for the fixing screws (3) can be found in (Table 3/1).

Centring the brake:

For installation, lift the brake and slip it onto the screwed-on centring device (12).

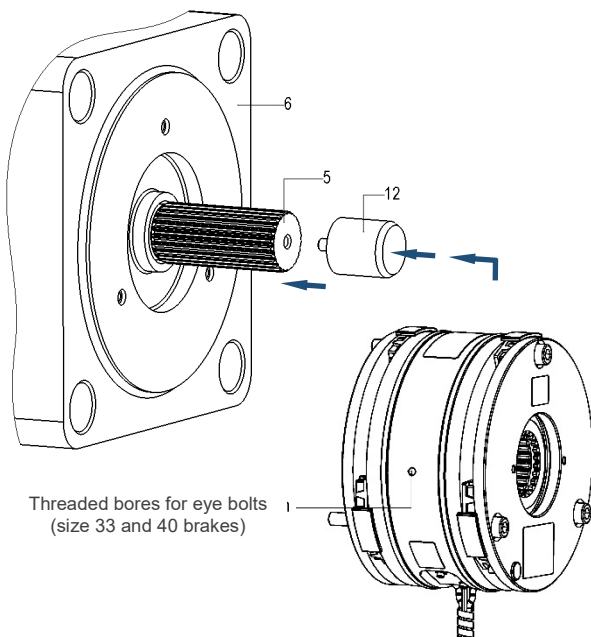


Fig. 3/1: Centring the spring applied double circuit brake

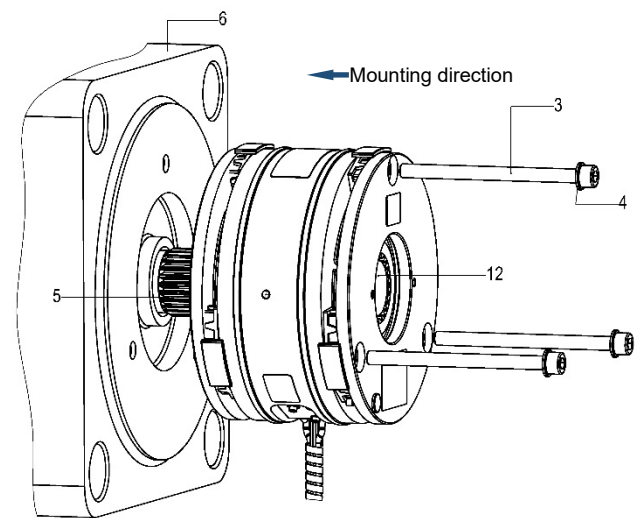
IMPORTANT:

i In order to ensure easy handling of the brake during the installation procedure, a handling apparatus or eye bolts to DIN 580 (only for brake types 78 11033A00 and 78 11040A00) can be used to lift and hold the brake and slip it onto the centring device (12).

IMPORTANT:

i Proceed with extreme caution when slipping the brake onto the externally toothed machine shaft (5). If necessary, use a centring device (12) (see Fig. 3/1) to slip the brake onto the machine shaft (5). Tightly screw the centring device (12) into the internal thread of the machine shaft (5) on the face side. The damping rings (1.5 and 2.5) are slightly greased at the manufacturer's premises to prevent them from twisting when the brake is slipped onto the externally toothed machine shaft (5). Remove the centring device (12) after completion of brake installation.

Fixing the brake:



Slip the brake with the internally toothed friction discs (1.6 and 2.6) onto the externally toothed machine shaft (5) and fix it to the end shield (6) by means of the mounting screws (3) and washers (4). Proceed with extreme caution! Remove the centring device (12) after completion of brake

Fig. 3/2: Fixing the spring-applied double-circuit brake

Brake size	19	29	33	40
Tightening torque M_A [Nm]	39-40	39-40	75-80	75-80

Table 3/1: Tightening torque for mounting screws (3)

NOTICE:

! Risk of damage to the brake or the mounting screws (6) if the tightening torque is too high

- Release of the spring-applied single-double circuit brake may no longer be possible.
- Malfunction of the elevator machine.
- Potential breakage of the mounting screws (3).
- The M_A tightening torques specified for the mounting screws (3) according to Table 3/1 must be observed. Tighten the mounting screws (3) evenly in several steps.

IMPORTANT:

- i** Use a calibrated torque wrench to check the M_A tightening torque (see Table 3/1). Ensure that the fixing screws (3) are not used without the washers (4). Locking compound should be applied to the fixing screws (3) after completion of brake mounting.

Type	Fixing screws (3)	Quantity
78 11019A00	ISO 4762-M10x140-8.8	3
78 11029A00	ISO 4762-M10x140-8.8	3
78 11033A00	ISO 4762-M12x150-8.8	3
78 11040A00	ISO 4762-M12x150-8.8	4
Type	Washers (4)	Quantity
78 11019A00	ISO 7090-10-200 HV	3
78 11029A00	ISO 7090-10-200 HV	3
78 11033A00	ISO 7090-12-200 HV	3
78 11040A00	ISO 7090-12-200 HV	4

Table 4/1: Mounting screws (3) and washers (4)

NOTICE:

! Risk of damage to the wire leads (1.2, 2.2), machine shaft (7), friction discs (1.6,2.6) and damping rings (1.11, 2.11) in case of incorrect brake mounting

- Putting into service of the spring-applied double-circuit brake and elevator machine may not be possible.
- When connecting the friction discs (1.6 and 2.6), avoid any damage to the teeth of the machine shaft (5) respectively friction discs (1.6 and 2.6) and to the damping rings (1.5 and 2.5) placed in the cylindrical grooves of the friction discs (1.6 and 2.6). Make absolutely sure that any tilting or jamming of the friction discs (1.6 and 2.6) on the machine shaft (5) of the lift machine is avoided. Check that you feel no resistance when sliding the friction discs (1.6 and 2.6) along the machine shaft (5) in axial direction. Avoid damage to the wire leads (1.2, 2.2) and wire cable (1.7, 2.7) e.g. by kinking the lead insulation.

6.2 Electrical brake connection

Follow the instructions provided by the lift system manufacturer to electrical connect the brake and microswitches KB1, KB to the power source.

IMPORTANT:

- i** During overall machine installation, the wire leads (1.2 and 2.2) of the brake circuits (MGB1 and MGB) and the connecting cables (1.7 and 2.7) of the microswitches (KB1, KB) must be connected as specified by the machine manufacturer. Avoid any damage to the wire leads (1.2 and 2.2) and connecting cables (1.7 and 2.7), e.g. by kinking the lead or cable insulation.



DANGER:



Electricity hazards from incorrect electrical connection of the component

- Fatal electric shock hazard.
- All work must be performed by qualified specialist personnel only. Check that no voltage is present before connecting the component to the power supply. The specifications on the rating plate and the information provided in the circuit diagram in the terminal box of the elevator machine must be strictly observed.

7. Set-up and start-up

Check that the spring-applied double-circuit brake has been mounted and connected correctly before equipment start-up.

IMPORTANT:



Check the specifications on the rating plate (7) of the brake and compare them against the system ratings. The voltage level and voltage type specified on the rating plate (7) must be strictly observed when connecting the brake. Any tests conducted to confirm correct brake function and operation must be performed with extreme caution and by qualified specialist personnel only. Installed prohibiting labels (9), information labels (10) and the warning label (11) must be observed.

Prohibition label (9)



Information label (10):



Warning label (11)

After the electrical connection has been made, perform a functional test to check that the friction discs (1.6, 2.6) run smoothly. For this purpose, turn the machine shaft (5) while the brake is energized and the lift machine is unpowered.



CAUTION:



Hazards from contact with rotating parts (friction discs (1.6, 2.6), machine shaft (5)) during operation of spring-applied double circuit brake rep. elevator machine

- Physical injury hazard (e.g. chafing, cuts etc.) to hands and limbs
- Functional testing of the brake must not be performed unless the machine has been turned off and secured so that it cannot be turned back on inadvertently. Do not touch rotating friction discs (1.6, 2.6) or machine shaft (5).

CAUTION:



Hazards from contact with hot parts during operation of the spring-applied double-circuit brake

- Injury hazard (e.g. skin burns) to hands, limbs and other parts of the body.
- Depending on the operating state of the brake, its surface temperature may rise to over 60°C. If necessary, suitable protections and hand guards must be installed to avoid accidental contact with hot surfaces.
- Wear protective gloves, if necessary.

Checking the rated air gap s_N :

If necessary, the rated air gaps s_N (Table 1/2) of the two brake circuits MGB1 and MGB can be checked with a feeler gauge.

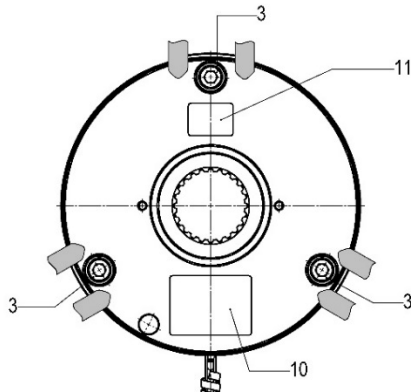


Fig. 5/1: Feeler gauge insertion points for determining respectively checking the rated air gap s_N (Representation types 78 11019A00, 7811029A00 and 78 11033A00)

The radial feeler gauge insertion points for determining respectively checking the two rated air gaps s_N are shown in Fig. 5/1 respectively information label (13) (the figure applies to size 19, 29 and 33 brakes, size 40 brakes have 4 mounting screws (3)). The feeler gauge insertion points are located to the right and left of the mounting screws (3). The rated air gap s_N of the two brake circuits (MGB1 and MGB) is measured between the armature (1.3 and 2.3) and the solenoid housing (1). The average value from the six respectively eight ¹⁾ measurement respectively check values per brake circuit (MGB1, MGB) gives the rated air gap s_N .

IMPORTANT:



Alternatively and with sufficient accuracy the rated air gap s_N of each brake circuit (MGB1, MGB) can be determined or respectively checked at only three or four ¹⁾ insertion positions, always right or left next to the mounting screws (3).

²⁾ Type 78 11040B01.

NOTICE:



Risk of brake damage caused by incorrect testing of component

- Function and operation of the spring-applied double-circuit brake limited.
- Putting into service of the spring-applied double-circuit brake and elevator machine may not be possible.
- The determining respectively checking of the rated air gaps s_N must be executed with extreme caution and by qualified specialist personnel only. Ensure that the damping rings (1.8, 2.8) are not shifted or damaged during the checks.

8. Add-on kit for encoder (optional)

For installation of an encoder at the spring applied double circuit brake, the add-on kit (13) according to the encoder type (see Table 5/2), consisting mounting flange (13.1) and fixing screws (13.2) (see Table 5/1), must be used.

Pos.	Designation
13	Add-on kit
13.1	Mounting flange
13.2	Fixing screws (2 Stück)

Table 5/1: Parts of add-on kit for mounting encoder

Add-on kit	for encoder type	Manufacturer
78 11019A00500	Sendix 8.5873.HK	Comp. Kübler

Table 5/2: Add-on kit and corresponding encoder type

8.1 Mechanical installation of add-on kit

The installation of the encoder (not included in the delivery of add-on kit (13)), takes place on the rear of the brake with mounting flange (13.1) directly at the flange (MGB) (2.4) of brake circuit MGB (see Abb. 5/2).

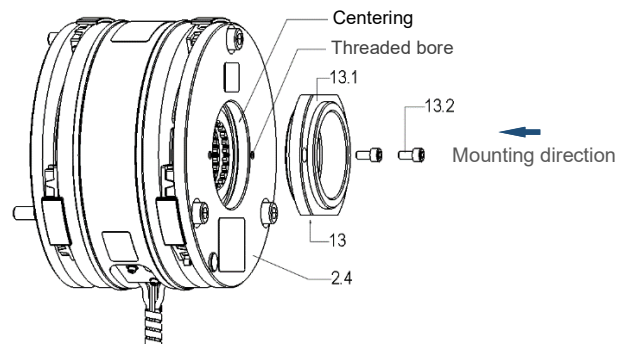


Fig. 5/2: Mounting Add-on kit for encoder (representation for encoder type Sendix 8.5873.HK. Comp. Kübler)

Add-on kit	Fixing torque M_A [Nm]
78 11019A00500	5-6

Table 5/3: Tightening torque for mounting screws (13.2)

Installation Add-on kit 78 11019A00500:

After removing the packaging, the mounting flange (13.1) has to be positioned at the inner diameter of the flange (MGB) (2.4) of the brake circuit MGB and so to adjust, that the mounting bores of the mounting flange (13.1) are arranged concentrically with the threaded bores in the flange (2.4) (see Abb. 5/2). With the fixing screws (13.2) the mounting flange (13.1) has to be fixed with the flange (MGB) (2.4) of the brake circuit MGB (see Abb. 5/2). The tightening torque M_A of the fixing screws (13.2) can be taken from Table 5/3.

NOTICE:



Risk of damage to the brake, mounting flange (13.1) resp. fixing screws (13.2) if the tightening torque is too high

- Encoder cannot be installed.
- Putting into service of the elevator machine may not be possible.
- Potential breakage of the mounting screws (13.2).

The tightening torque M_A specified for the mounting screws (13.2) (see Table 5/3) must be strictly observed. Tighten the fixing screws (13.2) evenly in several steps.

IMPORTANT:



Use a calibrated torque wrench to check the tightening torque M_A (see Table 5/3). Locking compound should be applied to the fixing screws (13.2) after complete installation of add-on kit (13).

8.2 Installation and electrical connection of encoder

The installation at the add-on kit and the electrical connection of the used encoder (not included in the delivery of add-on kit (13)) is carried out in accordance to the specifications and guidelines of the encoder manufacturer.

IMPORTANT:



Before start-up of the encoder, check and ensure that the encoder has been mounted and connected correctly in accordance to the specifications of the encoder manufacturer. The technical design of the machine shaft (5), required for the coupling of the encoder to the machine shaft (5) can be taken from the technical documents (e.g. data sheet, operating instructions, etc.) of the used encoder.

9. Tools and measuring instruments for installation

Werkzeuge, Messmittel	Beschreibung, Anwendung
	Calibrated torque wrench for tightening the mounting screws (3, 13.2).
	Feeler gauge for checking the rated air gaps s_N of the two brake circuits MGB1 and MGB.
	Multimeter zur Überprüfung der elektrischen Anschlussspannung und der ohmschen Widerstände der Erregerwicklungen (1.1, 2.1)
	Centering device (12) for safe and reliable installation of the spring applied double circuit brake.

Table 6/1: Tools and measuring instruments are not supplied

10. Revision history

Date of issue	Changes
10.10.2019	First issue.
22.04.2020	Mounting instructions updated. Information on safety instructions revised.