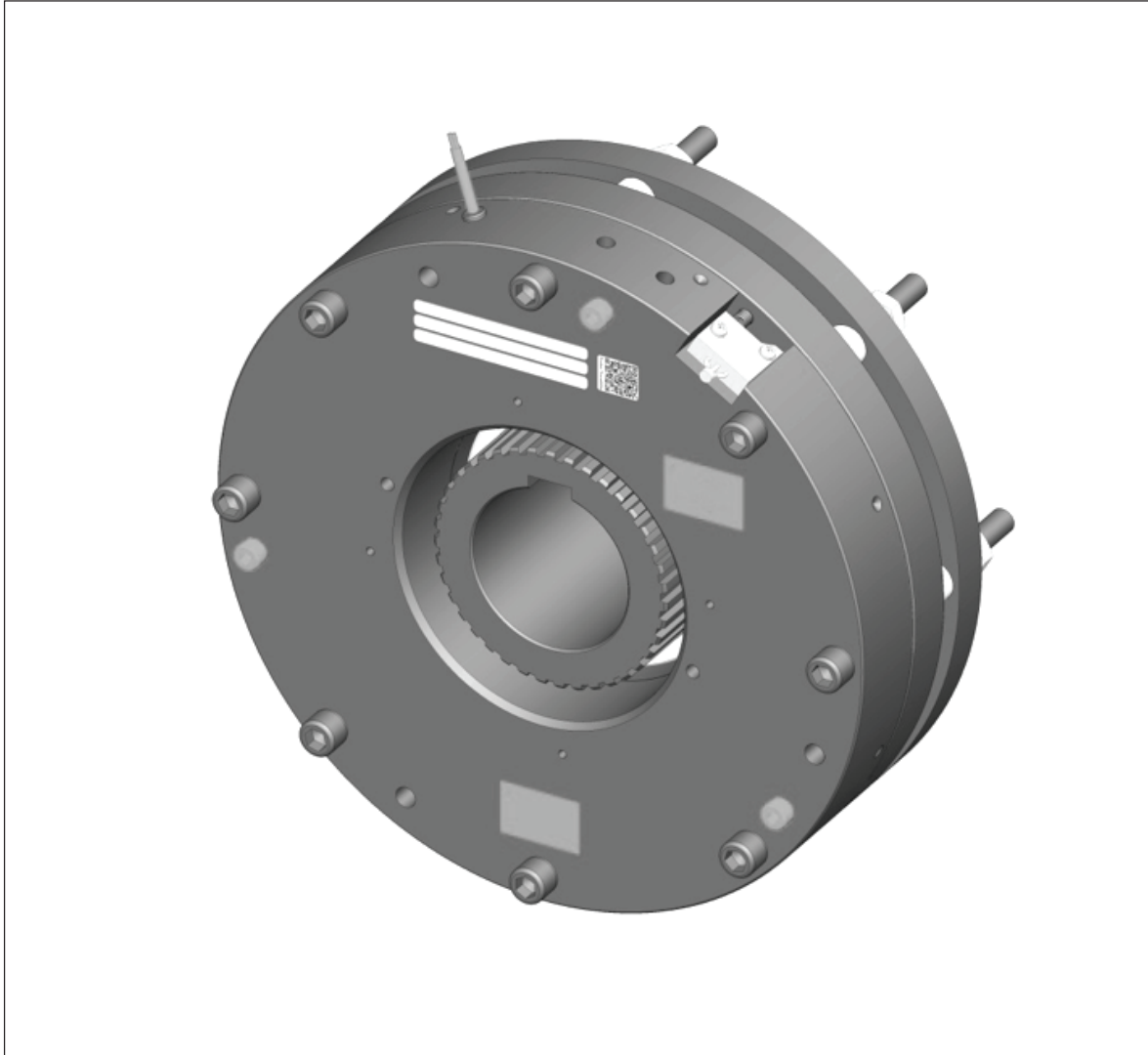


# Electrically Released Brake ERS VAR10 SZ 2500

Service & Installation Instructions

P-2107-WE-A4  
SM477GB



 **Warner Electric**<sup>®</sup>  
*Altra Industrial Motion*

# CONTENTS



<b>1-</b>	<b>EU DECLARATION OF CONFORMITY</b>	<b>3</b>
<b>2-</b>	<b>PRECAUTIONS AND SAFETY MEASURES</b>	<b>3</b>
2.1 -	SYMBOLS USED IN THIS MANUAL	3
2.2 -	SAFETY PRECAUTIONS FOR INSTALLATION AND MAINTENANCE	4
2.3 -	PRECAUTIONS FOR HANDLING	5
2.4 -	PRECAUTIONS ON USE	5
2.5 -	RESTRICTIONS ON USE	6
<b>3-</b>	<b>STORAGE</b>	<b>6</b>
<b>4-</b>	<b>TECHNICAL SPECIFICATION</b>	<b>7</b>
4.1 -	BRAKE DESCRIPTION	7
4.2 -	TECHNICAL DATA	7
4.3 -	LABELING DETAILS	8
<b>5-</b>	<b>INSTALLATION</b>	<b>9</b>
5.1 -	CUSTOMER INTERFACE SPECIFICATION	9
5.2 -	BRAKE MOUNTING	9
<b>6-</b>	<b>ELECTRICAL CONNECTION</b>	<b>10</b>
6.1 -	MICROSWITCH TECHNICAL DATA	10
<b>7-</b>	<b>MAINTENANCE</b>	<b>11</b>
7.1 -	AIR GAP CHECKING	11
7.2 -	DISCS EXCHANGE	12
7.3 -	DETECTION CHECKING	12
7.4 -	DETECTION SETTING	13
7.5 -	MICROSWITCH EXCHANGE	13
<b>8-</b>	<b>SPARE PARTS</b>	<b>14</b>
<b>9-</b>	<b>TOOLING</b>	<b>14</b>
<b>10-</b>	<b>TROUBLESHOOTING</b>	<b>15</b>
<b>11-</b>	<b>CONTACT</b>	<b>15</b>

## 1- EU Declaration of conformity

The Product described in this manual is in conformity with the relevant EU harmonized legislation:

**Directive 2014/33/EU** Ensuring lift safety

**Directive 2014/35/EU** Electrical safety: Low-voltage electrical equipment

**Directive 2006/42/EC** Machinery safety

Evidence of conformity to the Directives is assured through the application of the following standards:

**EN 81-1+A3:2009** Safety rules for the construction and installation of lifts – Part 1: Electric lifts (end of the period of applicability: 31 August 2017).

**EN 81-20:2014** Safety rules for the construction and installation of lifts – Lifts for the transport of persons and goods – Parts 20: Passenger and goods passenger lifts.

**EN 81-50:2014** Safety rules for the construction and installation of lifts – Examinations and tests – Parts 50: Design rules, calculations, examination and tests of lift components.

**DIN VDE 0580:2011** Electromagnetic devices and components, General requirements.

**EN ISO 12100:2010** Safety of machinery – General principles for design – Risk assessment and risk reduction.

## 2- Precautions And Safety Measures

**Precautions and safety measures must be read before any installation or maintenance of the brake.**

**Compliance with the instructions and values given by the documentation and marking of the unit is imperative in order to ensure a proper functioning of the brake.**

### 2.1 - Symbols used in this manual



Action that might damage the brake.



Action that might be dangerous to human safety.



Electrical action that might be dangerous to human safety.



Handling of loads that might be dangerous to human safety.



Surface temperature that might be dangerous to human safety.

## 2.2 - Safety precautions for installation and maintenance



During maintenance, make sure that the driving mechanism is stopped and that there is no risk of accidental starting. The intervention must be signaled and the work area delimited.



All intervention must be done by authorized and qualified personnel, having read and understood this manual, using adapted procedures and professional tools. All intervention must be done according to the regulation of the country of the installation.



All works on the electrical connections must be done with power off.



Magnetic field generated by the magnet, can create dysfunctions on near machine or device. Users must also be careful about attractions of tools or other devices during interventions.



Due to the magnetic field generated by the magnet, the bearers of a heart pace-maker or an implant must avoid the proximity of the unit.



During operation the brake surface can reach temperatures higher than 80°C. Users must be careful during contact with the unit.

### **Respiratory protection**



Inhalation of large amounts of dust can cause coughs and difficulty in breathing.

Respirator must be worn if exposed to friction material dust. [Dust mask FFP2].

Move to fresh air in case of accidental inhalation of dusts.

In the event of persistent symptoms receive medical treatment.

In case of ingestion of friction material dust, consult a doctor.



Provide appropriate exhaust ventilation at places where friction material dust can be generated.

Do not use brushes, pressurized air or hazardous agents to clean the brake. The use of a vacuum cleaner is recommended.



### **Hand protection**

Protective and dust-resistant gloves.



### **Eyes protection**

Friction material dust particles, like other inert materials, may be mechanically irritating the eyes.

Safety goggles with side protection.

In case of contact with eyes, carefully rinse with plenty of water.

In the event of persistent symptoms seek medical treatment.



### **Skin protection**

Prolonged skin contact may cause mechanical irritation.

Dust resistant protective clothing.

In case of contact with skin, wash with soap and water as a precaution.

Consult a doctor if skin irritation persists.



### **Feet protection**

Safety shoes must be worn.



### **Helmet protection**

Safety helmet must be worn.

### **Protective and hygiene measures**

Do not breathe friction material dust.

Wash hands before breaks and at the end of workday.

During maintenance, do not eat, drink or smoke.

Handle in accordance with the general hygienic rules.

Remove and wash contaminated clothes before re-use.

## **2.3 - Precautions for handling**



Avoid any impact or damage to the brake during handling.



To avoid risk of injury (see mass of the units in the service manual of the brake), use an adapted device, hoist or crane, for the handling of the unit.



When handling, use the handling holes intended for this purpose.  
Never lift the brake using the coil cables.

## **2.4 - Precautions on use**



**Customer is responsible of brake qualification with his interface in order to guaranty that brake performances are not reduced.**

The use of the 2 circuits in redundancy is mandatory.

This brake is designed to work in clean conditions. Friction faces must be kept completely clean of any oil, water, grease or abrasive dust.

The friction flange, on customer side, must be, also, carefully cleaned and degreased.

The friction faces must be protected, with adapted devices (cover, heating devices, etc...):

- To avoid pollution and rusting during the lifetime of the unit.
- To avoid condensation, resulting in freezing conditions, in low temperature/high humidity, or sticking of the disc.



This brake is designed to work in ambient temperature between 0°C and 40°C.



This brake is designed to work with duty cycle of 50% (Insulation class: 155°C). The temperature of customer friction flange must not exceed 90°C.



This brake can only be used on « horizontal » position.



When switching on DC-side the coil must be protected against voltage peaks, according DIN VDE0580.



Make sure the rated supply voltage is set within the tolerances, an under-voltage supply, generates a reduction of the maximum air gap.



An over-voltage supply generates additional heat on the surface of the brake, with risks of injury by burning and possible damage to the coil.



**Emergency braking:** for emergency braking the switching OFF must be connected on DC current side, in order to obtain short engaging time of the brake.



**Service braking:** for service braking, the switching OFF and ON must be connected on AC current side, in order to obtain silent switching.

## 2.5 - Restrictions on use



Any modification made to the brake without the express authorisation of a representative of Warner Electric, as far as, any use out of the contractual specification accepted by "Warner Electric", will result in the warranty being invalidated and Warner Electric will no longer be liable in any way with regard to conformity.



If maximum rotation speed is exceeded, the guarantee is no longer valid.



The brake must be replaced if it is submitted to water projections.



For the brake to comply with directive 2014/33/EU, the installer must observe the general conditions for installations and use as defined in the EU type certificate, drawn up by the TÜV SÜD Industrie Service (see EU-BD number in table 1), including the mandatory use of a speed limiting device, in compliance with EN 81-20 paragraphs 5.6.2.2.1 and 5.6.6.10. Under no circumstances, this device can replace the system case against the car overspeed in the descending phase.



The customer must be careful to not alter the factory set parameters: Microswitch adjustment. This brake must not be dismantled.



This brake is designed for static applications. Dynamic brakings are restricted to emergency braking and test braking.



Unless otherwise specified in the manual service, this range of product is not designed to be used according 2014/34/EU directive "Equipment for explosive atmospheres" (ATEX).

## 3- Storage

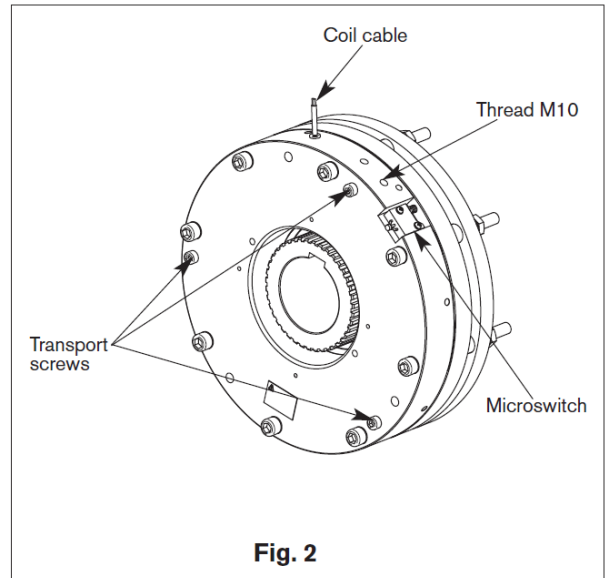
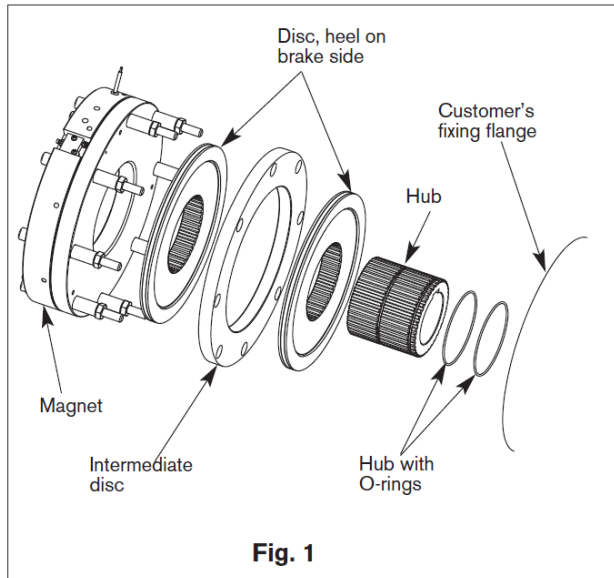


These devices are delivered in a package guaranteeing the preservation of the product providing it is by surface transportation.

In case of a specific request (air or sea transport, long-term storage, etc) contact our factory.

## 4- Technical Specification

### 4.1 - Brake description



### 4.2 - Technical data

<b>Table 1</b>	<b>ERS VAR10 SZ2500/----</b>
Certificate : Directive 2014/33/EU - Norm EN81-20&50 * Directive 95/16/EC - Norm EN81-1+A3**	<b>EU-BD 592</b> ABV 592/3 - ESV 592/3

**CAUTION: Use a power supply with overexcitation**

Size			<b>2500/2200</b>	<b>2500/2500</b>	<b>2500/3000</b>
Per magnet	Torque installed	Nm	<b>2200</b>	<b>2500</b>	<b>3000</b>
	Overexcitation voltage	Vdc	207	207   103,5   48	207
	Holding voltage	Vdc	103,5	103,5   52   24	103,5
	Overexcitation power	Watt	315	315   232   273	315
	Holding power	Watt	79	79   59   68	79
Maximum speed	min-1		250		
Minimum Air gap	mm		0,4		
Maximum Air gap (after wear)	mm		0,7		
Cyclic duration factor	ED		60%		
Weight	Kg		60		

\* Brakes produced from 20 April 2016

\*\* Brakes produced until 19 April 2016

### 4.3 - Labeling details

#### Example of brake labels

Labels shown include:

- Warner Electric-Europe 207/103Vdc 303xxxxx 315/79W 777888-1 CM8 CE
- Warner Electric-Europe ERS VAR09 SZ1700/1700 ABVxxx TUV0036 ESVxxx CE AFAQ 0333 (Valid until 19th april 2016)
- Warner Electric-Europe ERS VAR09 SZ1700/1700 EU-BD xxx TUV0036 CE AFAQ 0333 (Valid from 20th april 2016)
- Warner Electric-Europe 7, Rue de Champfleur Z.I. F-49124 St Barthélémy d'Anjou
- Warner Electric-Europe FRICTION DISC 303xxxxx 777888-1 CM8 CE

In case of presence of QR code label, here is the information contained.

Identify	Data Field
1	Product name
2	Release (NA)
3	Revision (NA)
4	Identification number
5	Serial number
6	Batch number (NA)
7	Manufacturer name
8	Manufacturer postal code
9	Manufacturer town
10	Manufacturer country code

#### Encoded date details:

Y M Day

Encoded year: 1 letter    Encoded month: 1 letter    Production day

2006	2007	2008	2009	2010	2011
U	V	W	X	Y	Z
2012	2013	2014	2015	2016	2017
A	B	C	D	E	F
2018	2019	2020	2021	2022	2023
G	H	I	J	K	L

January	February	March	April	May	June	July	August	September	October	November	December
M	N	O	P	Q	R	S	T	U	V	W	X

Example: YN16 is, 2010, 16th February





## 5- Installation

### 5.1 - Customer Interface Specification

Customer friction flange specification:

- Material: Steel (150 to 250 HV) or Cast iron
- Roughness:  $\leq Ra 3.2$
- Finishing: Dry phosphate (with manganese or zinc)
- Geometric tolerances:

	0,1	Customer shaft axis
	0,1	

### 5.2 - Brake Mounting

#### **Reminder:**

**Precautions and safety measures must be read before any installation or maintenance of the brake.**

**Compliance with the instructions and values given by the documentation and marking of the unit is imperative in order to ensure a proper functioning of the brake.**



Avoid any impact or damage to the brake during handling.

Never lift the brake using the coil cables.

This brake is designed to work in clean conditions. Friction faces must be kept completely clean of any oil, water, grease or abrasive dust.

- Tighten the three transport screws CHc M8.
- Put the hub into position on the customer's shaft.
- Mount the O-rings on the hub (see Fig. 1).
- Engage the disc on the hub as illustrated in Fig. 1, the heel on the brake side.

**Caution:** When installing and should the brake ever be taken apart, make sure that the friction disc heel is the right way round when the brake is put back together (see Fig.1).

- Engage the rear disc the heel on the brake side with the intermediate disc and the brake on the hub.
- Line the brake up with the customer fixing flange, using the fixing screws.

**NOTE:** Secure the fixing screws (safety washer or a thermoplastic liquid such as Loctite).

- Tighten the 8 fixing screws CHc M12, star sequence tightening, to an initial torque of 50 Nm. The supply of current to the brake should be switched off.
- Switch on current to the magnet.
- Tighten the 8 fixing screws CHc M12(Cs: 130 Nm  $\pm 10\%$ ). The supply of current to the brake should be switched on throughout this operation.
- Remove the three transport screws.
- Make all the permanent electrical connections

## 6- Electrical Connection



Brake **ERS VAR10 SZ 2500/---** operates on a direct current supply. Polarity does not affect the brake operation.



All works on the electrical connections have to be made with power off.



Make sure that the nominal supply voltage is always maintained. A lack of power results in a reduction to the maximum air gap.



When switching on DC-side the coil must be protected against voltage peaks, according DIN VDE0580.



**Emergency braking:** for emergency braking the switching OFF must be connected on DC current side, in order to obtain short engaging time of the brake.



**Service braking:** for service braking, the switching OFF and ON must be connected on AC current side, in order to obtain silent switching.



The connecting wires must be thick enough to help prevent sudden drops in voltage between the source and the brake.

Cable length	m	0 -> 10	10 -> 20
Cross section	mm <sup>2</sup>	1.5	2.5

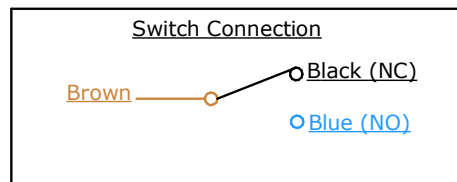
**Table 2**



Tolerances on the supply voltage at the brake terminals: +10% / -15% (CEI 60038:2009:2009-06).

### 6.1 - **Microswitch Technical Data**

#### Microswitch connection



- **Current range:** 10 mA à 100 mA at 24 Vdc
- For maximum electrical lifetime of the microswitch ensure switching under resistive load only.

## 7- Maintenance

### 7.1 - Air Gap Checking



Check the air gap at each maintenance inspection.



This brake is intended for a static application as a safety brake. Any dynamic braking is restricted to emergency and test braking. Normal use will not lead to any noticeable wear on the lining.

Under no circumstances, this device can replace the system case against the car overspeed in the descending phase.



Air gap has to be measured at the 4 points at the circumference and at each braking circuit (see **Fig. 3**). If the maximum value of the air gap (see Table 1) is exceeded in one point, change the disc and the O-ring.



Do not introduce the feeler gauge more than 10 mm into the air gap.  
Avoid the springs and the dampers of noise.

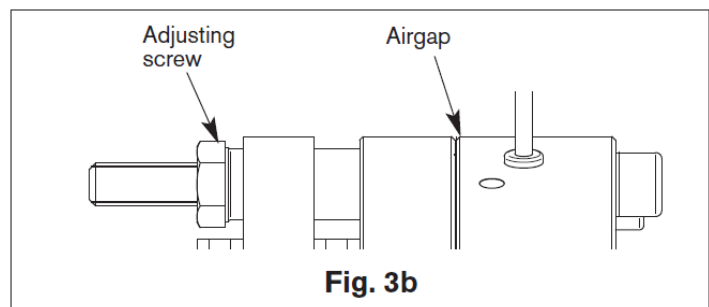
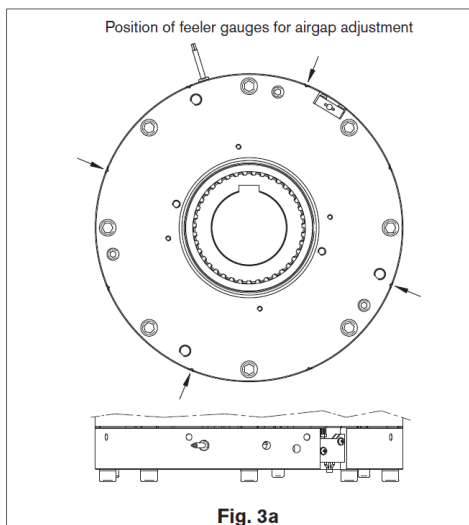


Any modification made to the brake without the express authorisation of a representative of Warner Electric, as far as, any use out of the contractual specification accepted by "Warner Electric", will result in the warranty being invalidated and Warner Electric will no longer be liable in any way with regard to conformity.



The customer must be careful to not alter the factory set parameters: Microswitch adjustment, air gap adjustment and dampening system. This brake must not be dismantled.

- Loosen the fixing screws slightly.
- Slide into the airgap 4 feeler gauges 0,45 mm thick, or according Fig. 3a (put the feeler gauges near the marks on the magnet).
- Set the fixation screws to contact.
- Adjust the adjusting screws, Fig. 3b.
- Remove the 4 feeler gauges.
- Tighten the fixation screws (refer to note point 5.2 Installation).
- Carry out a few successive draws and releases.
- Check the airgap at several points.
- Repeat the process if necessary.



## 7.2 - Discs exchange



During maintenance, make sure that the driving mechanism is stopped and that there is no risk of accidental starting. The intervention must be signaled and the work area delimited.



All intervention must be done by authorized and qualified personnel, having read and understood this manual, using adapted procedures and professional tools. All intervention must be done according the regulation of the country of the installation.



**Warning:** It is mandatory that disassembling and assembling of the encoder is done according the instructions of the drive manufacturer.



**Warning:** not to damage the electric cables during the maintenance action.



This brake is designed to work in clean conditions. Friction faces must be kept completely clean of any oil, water, grease or abrasive dust.  
Customer friction flange must be also carefully cleaned.

- Disconnect the brake electrically
- Remove the fixation screws
- Remove the brake
- Clean the friction faces with a clean and dry cloth.
- After the worn friction disc is replaced, assemble the brake according chapter 5.2.

## 7.3 - Detection Checking



Any modification made to the brake without the express authorisation of a representative of Warner Electric, as far as, any use out of the contractual specification accepted by "Warner Electric", will result in the warranty being invalidated and Warner Electric will no longer be liable in any way with regard to conformity.



The customer must be careful to not alter the factory set parameters: Microswitch adjustment, air gap adjustment and dampening system adjustment. This brake must not be dismantled.

- Switch ON the brake, the state of both microswitches must change.
- Switch OFF the brake.
- Insert a feeler gauge 0.2 mm in the nearest control zone of the microswitch.
- Switch ON the brake, the state of both microswitches must not change.

## 7.4 - Detection setting

- Slide a wedge 0,15mm thick close to the screw in the corresponding airgap.
- Switch on the current and tighten the adjusting screw H M4 (7/flat) in contact with the microswitch until you reach the commutation point.
- Remove the wedge.
- Check that it functions correctly by a few successive draws and releases.

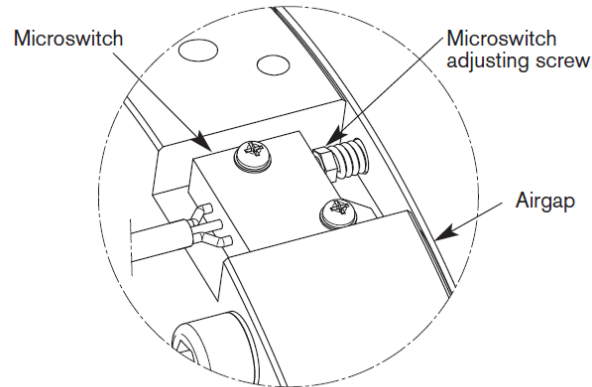


Fig. 4

## 7.5 - Microswitch exchange



During maintenance, make sure that the driving mechanism is stopped and that there is no risk of accidental starting. The intervention must be signaled and the work area delimited.



All intervention must be done by authorized and qualified personnel, having read and understood this manual, using adapted procedures and professional tools. All intervention must be done according to the regulation of the country of the installation.



**Warning:** not to damage the electric cables during the maintenance action.

- Unplug the microswitch
- Remove the microswitch fixing screws
- Replace the microswitch
- Tighten the fixing screws to the torque of 0.8 N.m ( $\pm 10\%$ )
- Re-connect microswitch wires (see chapter 6.1)
- Set the detection as it is shown in the chapter 7.4

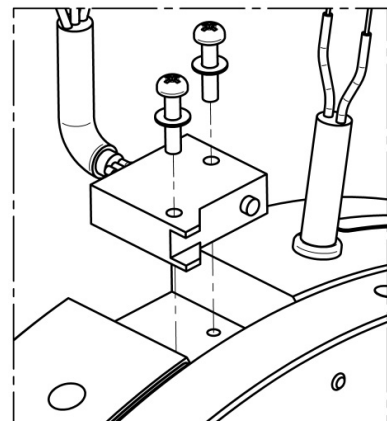


Fig. 5

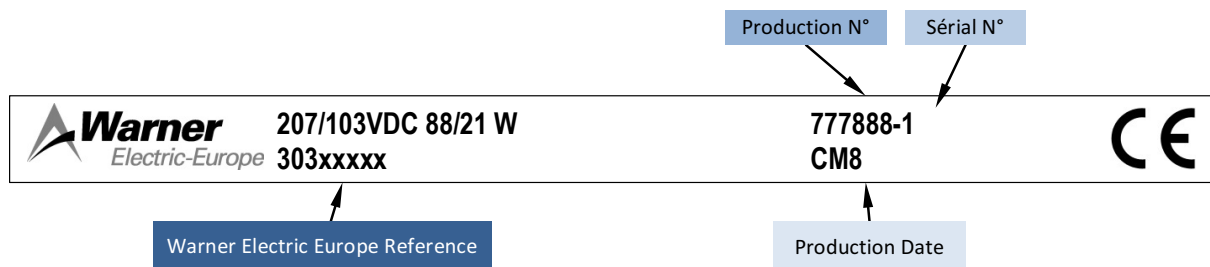
## 8- Spare parts

Available spare parts for this brake are the following:

- Friction disc
- Microswitch
- O-ring Kit

Please, join to your spare part request the following information:

• Warner Electric Europe Reference
• Production Number
• Serial Number
• Production Date



## 9- Tooling

Tools	Function
Airgap adjustment shims	Airgap and microswitch adjustment
Open jawed spanner 21 mm A/F	Airgap adjustment
Torque wrench (measurement range > 140 Nm) with hexagonal socket insert 10 mm A/F	Airgap adjustment
Open jawed spanner 7 mm A/F	Microswitch adjustment
Multimeter	Voltage checking
Hexagon wrench key 6 mm A/F	Transport screws

## 10- Troubleshooting

Troubleshooting		
Fault	Cause	Remedy
<b>Brake does not release</b>	<ul style="list-style-type: none"><li>• Power supply is too low</li><li>• Power supply is interrupted</li><li>• Airgap too large</li><li>• Worn disc</li><li>• Coil is damaged</li><li>• Airgap too small</li></ul>	<ul style="list-style-type: none"><li>• Adjust power supply</li><li>• Reconnect power supply, check the adjustment of microswitch</li><li>• Re-adjust the airgap</li><li>• Change disc and readjust the airgap</li><li>• Replace the brake</li><li>• Re-adjust the airgap</li></ul>
<b>Brake does not brake</b>	<ul style="list-style-type: none"><li>• Voltage present at switch off position</li><li>• Grease on friction faces</li></ul>	<ul style="list-style-type: none"><li>• Check the microswitch's adjustment and the customer's power supply</li><li>• Clean the friction faces, change the disc</li></ul>
<b>Nuisance braking</b>	<ul style="list-style-type: none"><li>• Power supply is too low</li><li>• Wrong information from microswitch</li></ul>	<ul style="list-style-type: none"><li>• Adjust power supply</li><li>• Re-adjust the microswitch</li></ul>

## 11- Contact

Any question? You can contact us at: [info@warnerelectric-eu.com](mailto:info@warnerelectric-eu.com)

*This translation is for information only. In case of discrepancy between this version and the original in French, only the text of the French version prevails.*

*All rights reserved to change without prior notice.*



[www.warnerelectric-eu.com](http://www.warnerelectric-eu.com)

Rue Champfleu, B.P. 20095  
F- 49182 St Barthélemy d'Anjou Cedex  
+33 (0)2 41 21 24 24