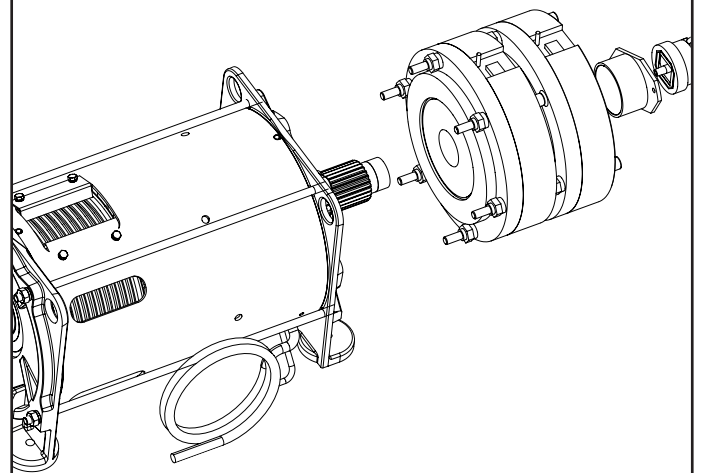




This manual is to be given to
the end user



GEARLESS XAP




A.C. Drive for lifts

Installation and maintenance

GEARLESS XAP

A.C. Drive for lifts

IMPORTANT

These symbols    appear in this document whenever it is important to take special precautions during installation, operation, maintenance or servicing of the motors.

It is essential that electric motors are installed by experienced, qualified and authorised personnel.

In accordance with the main requirements of EEC Directives, the safety of people, animals and property should be ensured when fitting the motors into machines.

Particular attention must be given to equipotential ground or earthing connections.

The following preliminary precautions must be taken before working on any stationary device:

- Mains voltage disconnected and no residual voltage present
- Careful examination of the causes of the stoppage (jammed transmission - loss of phase - cut-out due to thermal protection - lack of lubrication, etc)



Even when not supplied with power, there is voltage at the terminals of a rotating synchronous motor with magnets.

Accordingly, before carrying out any work check carefully that the motor is not rotating.



For dismantling the XAP motor only

Assembly or maintenance of the rotor must not be carried out by people with pacemakers or any other implanted medical electronic device.

The motor rotor contains a powerful magnetic field. When the rotor is separated from the motor, its field may affect pacemakers or disturb digital devices such as watches, mobile phones, etc.

GEARLESS XAP

A.C. Drive for lifts

Dear Customer,

You have just acquired a LEROY-SOMER motor.

This motor benefits from the experience of one of the largest manufacturers in the world, using state-of-the-art technologies – automation, specially selected materials and rigorous quality control. As a result, the regulatory authorities have awarded our motor factories **ISO 9001, Edition 2000 international certification from the DNV**. Similarly, our environmental approach has enabled us to obtain **ISO 14001: 2004**.

Products for particular applications or those designed to operate in specific environments are also approved or certified by the following organisations: **CETIM, LCIE, DNV, ISSEP, INERIS, CTICM, UL, BSRIA, TUV, CCC and GOST**, which check their technical performance against the various standards or recommendations.



We thank you for making this choice, and would ask you to read the contents of this manual.

By observing a few essential rules, you will ensure problem-free operation for many years.

LEROY-SOMER MOTORS

CE conformity

Our motors conform to standard EN 60034 (IEC 34), and therefore to the Low Voltage Directive 73/23/EEC modified by Directive 93/68, which is demonstrated by their marking with the symbol **CE**

	
MOTEURS LEROY SOMER USINE	
DECLARATION OF CONFORMITY AND INCORPORATION	
LEROY-SOMER MOTORS declares that the components :	
conform to the harmonized standard EN 60 034 (IEC 34) and thus meet the essential requirements of Low Voltage Directive 73-23 EEC of 19th February 1973 modified by Directive 93-68 EEC of 22nd July 1993	
The components thus defined also meet the essential requirements of the Electromagnetic Compatibility Directive 89-336 EEC of 3rd May 1989 modified by Directives 92-31 EEC of 28th April 1992 and 93-68 EEC of 22nd July 1993, if they are used within certain voltage limits (IEC 34)	
By reason of such conformity, these component ranges may be used in machines governed by the Machinery Directive 98/37/CE, provided that the method of integration or incorporation and/or assembly conforms to at least the regulations in standard EN 60204 "Electrical Equipment for Machinery" and our installation manual	
The components defined above must not be installed unless the machine in which they are incorporated has been declared as conforming to the relevant directives	
N B : When components are powered by specially adapted electronic converters and/or servo-controlled by electronic control-command devices, they must be installed by a professional person. This person must take responsibility for complying with the regulations concerning electromagnetic compatibility in the country where the machine is used	
Declaration made by	At
Quality Director	On
MOTEURS LEROY-SOMER	Signature
 <small>MOTEURS LEROY SOMER - 8852 SOC. A. 80 WARELLE N. LEROY - 4615 ANCOULEME CEDEX - SOCIETE ANONYME AU CAP 70k DE 111 880 000 F - RCS ANCOULEME 9 289 987 236 - SIRET 289 987 236 00011</small>	

NOTE:

LEROY-SOMER reserves the right to modify the characteristics of its products at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.

Copyright 2003: LEROY-SOMER MOTORS

This document is the property of LEROY-SOMER.

It may not be reproduced in any form without prior authorization.

All brands and models have been registered and patents applied for.

GEARLESS XAP**A.C. Drive for lifts****CONTENTS**

1 - RECEIPT	5
2 - STORAGE	5
2.1 - Storage location	5
2.2 - Prolonged storage (> 3 months)	6
3 - ENVIRONMENT	6
4 - COMMISSIONING	6
4.1 - Mechanical installation	6
4.1.1 - <i>Cleaning</i>	7
4.1.2 - <i>Mechanical installation</i>	7
4.2 - Wiring	8
4.2.1 - <i>Wiring the motor and the thermal probe</i>	8
4.2.2 - <i>Wiring the brakes and microswitches</i>	8
4.2.3 - <i>Encoder wiring</i>	9
4.3 - Commissioning	9
5 - MAINTENANCE/SERVICING	9
5.1 - After one month's operation	9
5.2 - Every year	9
5.3 - Every 5 years	9
6 - BRAKE AND MICROSWITCH ADJUSTMENT PROCEDURE	9
6.1 - Brake adjustment	9
6.2 - Microswitch adjustment	9
7 - REPLACING THE ENCODER	10
7.1 - Dismantling the encoder	10
7.2 - Reassembling the encoder	10
8 - REPLACING THE SHEAVE, THE BRAKE AND MICROSWITCHES	10
8.1 - Replacing the sheave	10
8.2 - Replacing the brake and microswitches	10
9 - ORDERING SPARE PARTS	11
10 - APPENDIX 1: FAILSAFE BRAKE MOTOR AND EC TYPE-EXAMINATION CERTIFICATE	A1

GEARLESS XAP

A.C. Drive for lifts

To ensure that the LEROY-SOMER Gearless XAP motor you have just purchased is entirely satisfactory, it is essential to adhere to the following instructions.



Contact with energised or rotating parts may cause injury. Do not touch the housing of a motor during operation, as it can reach high temperatures.

REMINDER: Installation, servicing and maintenance must only be carried out by qualified personnel.

Failure to follow the instructions in this document, or to apply them correctly, releases the manufacturer from liability.

The product is covered by the warranty during the guarantee period as long as any partial or total dismantling has only been performed with the assistance of LEROY-SOMER (or its approval).



Check that the lift car has been immobilised before performing any work on the motor or the brakes.

1 - RECEIPT

Checks:

- As soon as you receive the machine, check that the nameplate on the machine conforms to your order.
- Inspect the machine as soon as it is received. If there is any damage that has been caused by transportation, contact the carrier in the usual way.

2 - STORAGE

2.1 - Storage location

This location must be dry and protected from harsh weather conditions, cold (temperature above -15°C), frequent temperature variations (to prevent the risk of condensation), and free from vibration, dust and corrosive gases.

If there is any vibration in the storage area, it is advisable to rotate the driving sheave at least twice a month (Supply power to the brakes in order to be able to turn the sheave).

In certain transport conditions the grooves of the driving sheave are protected by a special varnish. This varnish must not be removed during storage.

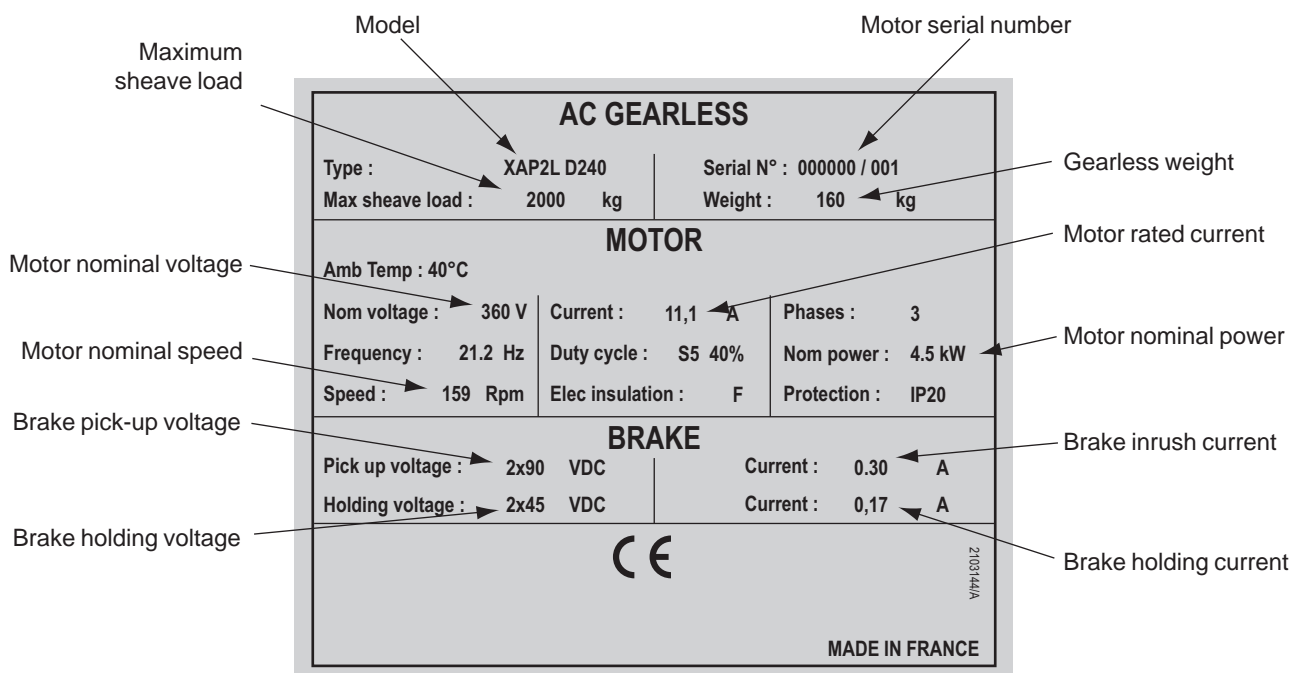


Fig. 1: Nameplate

GEARLESS XAP

A.C. Drive for lifts

2.2 - Prolonged storage (> 3 months)

Place the machine in a sealed waterproof enclosure with a dehydrating sachet inside corresponding to the volume to be protected and the degree of humidity of the location.

3 - ENVIRONMENT

The rated characteristics are given for operation in a standard environment (see IEC 60034-5):

- altitude less than 1000 m
- maximum humidity: 95%
- temperature between 0 and 40°C

Derating may be provided for if special conditions are indicated at the time the equipment is ordered.

4 - COMMISSIONING

BEFORE INSTALLATION

If the equipment has been stored for several months, it is essential to check the correct insulation between the phases and the earth terminal on the motor (minimum 100 MΩ at 500 V D.C. for 60 seconds) after having disconnected all the electronic circuits if necessary.

! Do not apply the megohmmeter to the terminals of the thermal sensors as this may damage them.
If the required value is not reached, dry the motor using internal or external heating.

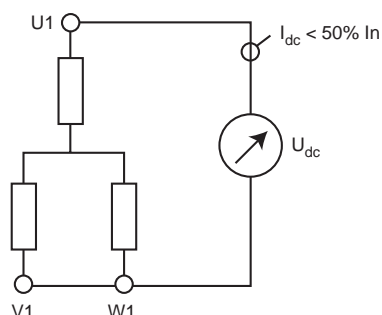
Drying using external heating

- Place the motor in an oven at 70°C for at least 24 hours until the correct insulation is obtained (100 MΩ).
- Take care to increase the temperature gradually to clear the condensation.
- After drying at ambient temperature during the cooling phase, check the insulation value regularly, as it will initially tend to fall then rise.

Drying using internal heating (Fig 2)

Fig. 2

Winding connections for drying using internal reheating



- Connect motor windings V1 and W1 in parallel in relation to U1.
- Read off the resistance between U and V//W.
- Apply a low voltage D.C. current to them (to obtain 10% of the rated current calculated using the winding resistances), then increase the voltage until 50% of the rated current is reached
- Maintain the power for 4 hours. The temperature of the motor should increase slightly.

! If the brakes are released, the sheave will move slightly on power-up (angular setting of the rotor in relation to the stator).

4.1 - Mechanical installation

The installation must comply with the motor characteristics indicated on the nameplate (see section 1).

It must include electrical safety devices.

Check that the handling equipment (slings, etc.) is suitable for the weight of the machine.

Use the attachment points provided on the machine.

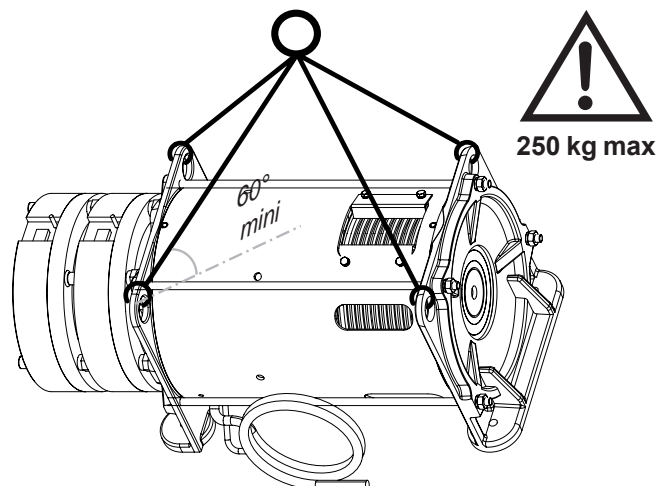


Fig. 3: Lifting the motor
Lifting diagram for illustration only

Check that the cables are correctly positioned so that they are not damaged.

Provide the necessary mechanical protection devices to prevent people working on the machine becoming caught or trapped by the sheave and/or the cables.

The motors must be installed in such a way that the cooling air (not too damp, dust-free, and containing no corrosive gases or vapours) circulates freely.

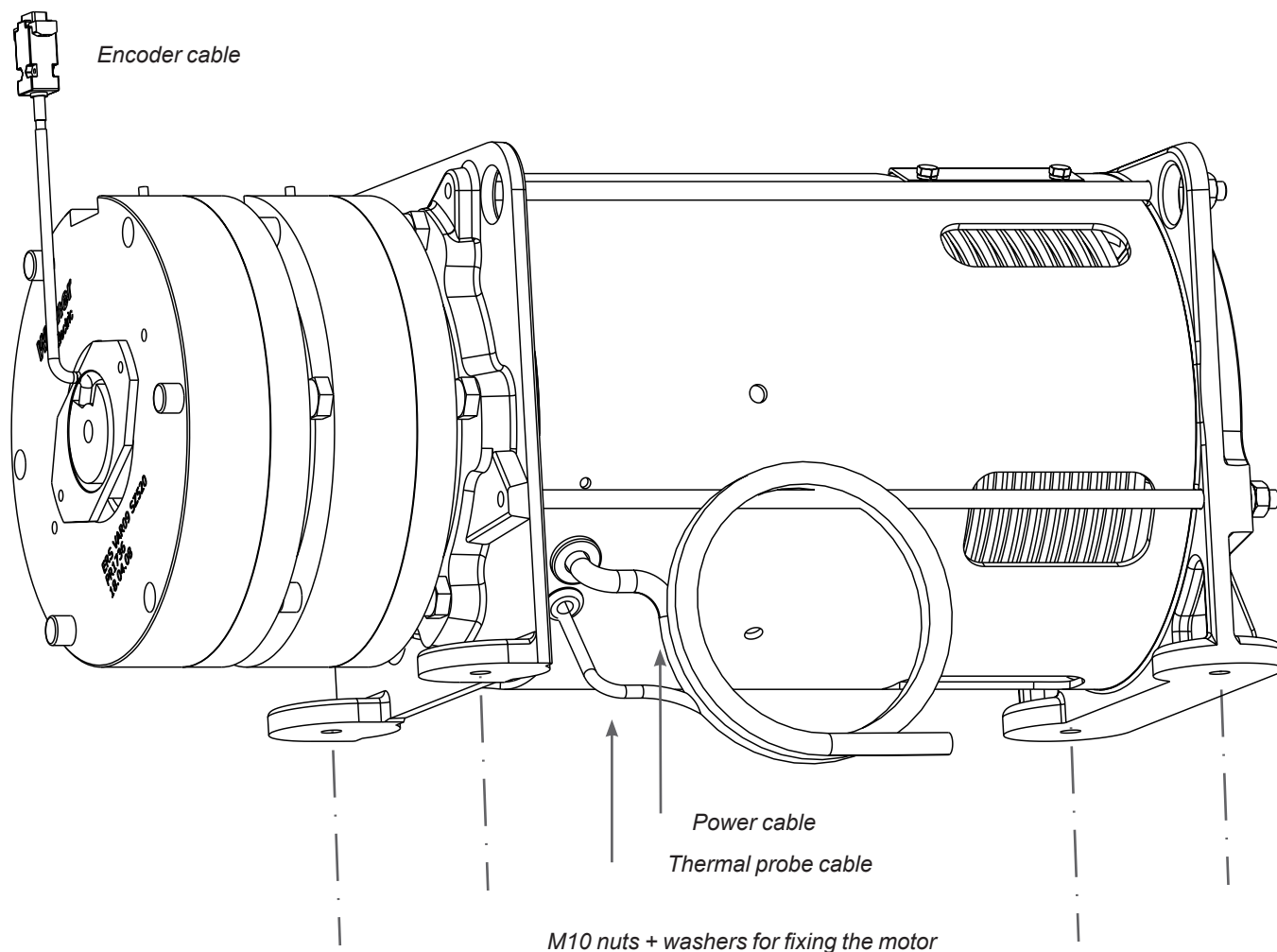
GEARLESS XAP**A.C. Drive for lifts**

Fig. 4: Motor fixing points

4.1.1 - Cleaning

- Release the brake by supplying it with power (section 4.2.2)
- Remove the protective varnish from the sheave grooves

! Do not use abrasive equipment. Use only a cloth soaked in alcohol. Care must be taken not to get any alcohol or grease on the brake disc.

WARNING: Use the alcohol in a well-ventilated area.

4.1.2 - Mechanical installation

- The GEARLESS machine must be installed on a chassis that is not subject to vibration and must be secured using 4 M10 nuts cl. 8.8 and washers, tightened to a torque of 45 Nm.
- Check that the cables are of the correct type for the sheave.
- When the cables have been installed, refit then tighten the guards.

! There is a high risk of jamming your fingers between the cables and the sheave.

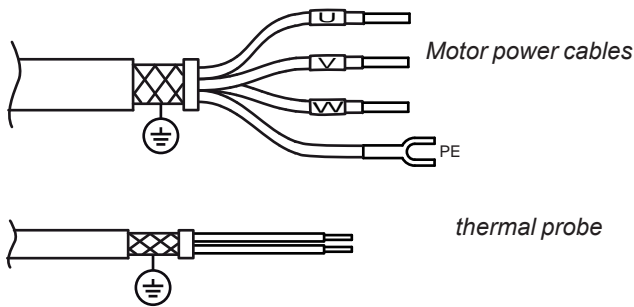
GEARLESS XAP

A.C. Drive for lifts

4.2 - Wiring

4.2.1 - Wiring the motor and the thermal probe

The cable shielding must be connected to earth. The cables exit by means of cable glands.



Connect the motor using cables of the correct cross-section (the cables and tags must be sized according to the current: see the table below).

Nominal I (A) per phase	9.5	12	16	25	34	40	46
Min cable section (mm ²)	1.5	1.5	2.5	4	6	10	10

! It is the responsibility of the user to connect the motor in accordance with the current legislation and regulations in the country of use. This is particularly important as regards the size of the cables, the type and size of fuses, the earth or ground connection, powering down, acknowledging insulation faults and protection against overcurrents.

This table is given for information only, and must under no circumstances be used in place of the current standards.

The recommended cross-sections are given for a single-wire cable, with a maximum length of 10 m. Above this, line drops due to the cable length must be taken into account.

Particular care must be taken to tighten the nuts on the terminals. (Incorrect tightening may lead to the connections being damaged by overheating: see diagram Fig. 6)

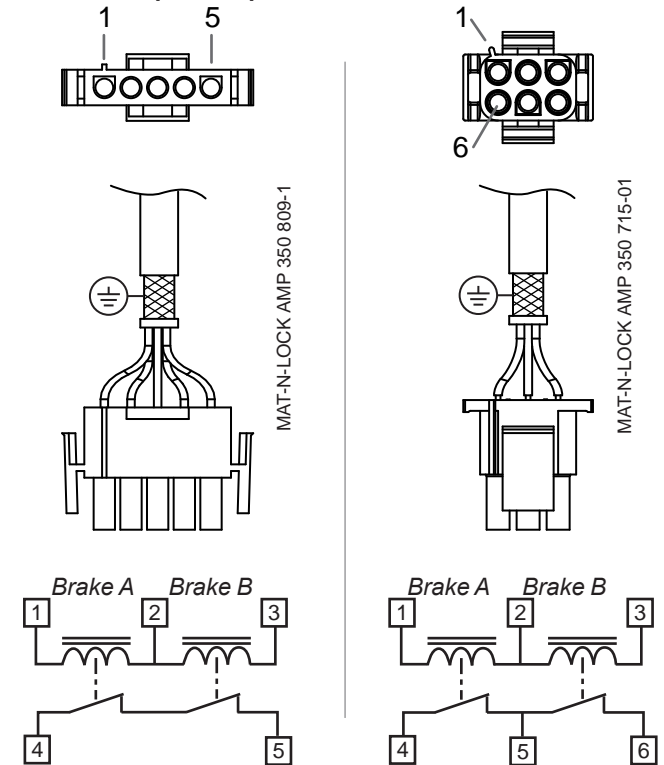
- Connect the power cables to terminals U1, V1 and W1, in accordance with IEC 600034-1.
- Connect the thermal probe to the drive.
- Connect the motor ground to earth.

4.2.2 - Wiring the brakes and microswitches

The brake microswitches are «NC» type. If using an optional CDF9 power supply, please refer to the card manual.

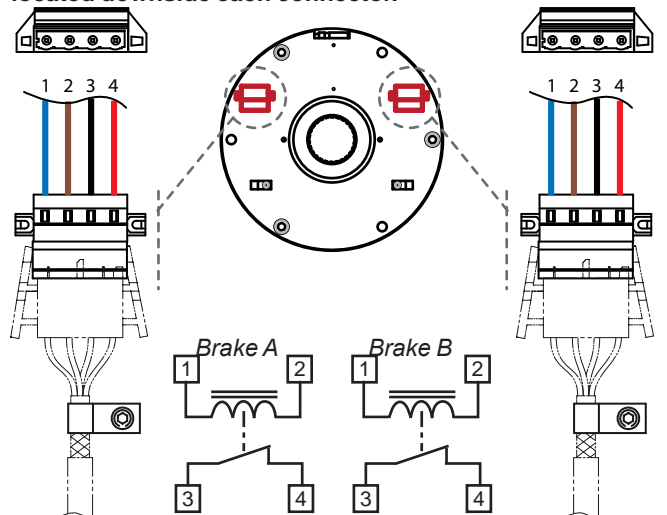
3 connections possibilities are available on the XAF range (except terminal box option) :

Cable with 5 pin or 6 pin connector :



4 pin connector installed on the brake :

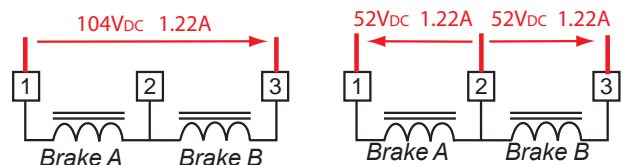
2 WAGO 731-604/019-000 connectors are located on the motor back face (brake). Shield cable fixation bracket is located downside each connector.



Brake electrical connection :

Brake inductor voltage and current values on nameplate are given for each brake device.

Example : Holding Voltage : 52V_{dc} / Current : 1.22A



GEARLESS XAP

A.C. Drive for lifts

4.2.3 - Encoder wiring

Identify the encoder by means of the reference indicated on the encoder label (Fig. 7)

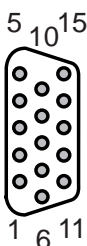
Connect the encoder to the drive with the HD15 socket.

ECN 413 encoder: SinCos encoder with EnDat link

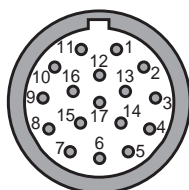
ERN 426 encoder: incremental encoder

CONNECTOR		ENCODER TYPE	
HD15 PIN	M23 17 P	ECN 413	ERN 426
1	15	Cos	A
2	16	CosRef	A/
3	12	Sin	B
4	13	SinRef	B/
5	14	Data	Z
6	17	Data \	Z/
7		-	U
8		-	U/
9		-	V
10		-	V/
11	8	Clock _{out}	W
12	9	Clock _{out} \	W/
13	1 & 7	+5V	+5V
14	4 & 10	0V	0V
15	11	-	-

HD15 male connector



M23 17p male connector



4.3 - Commissioning

Check that the electrical equipment is correctly earthed before starting work.

Before commissioning the machine, check that all the fixings and electrical connections are correctly tightened.

After commissioning, check for:

- Noise
- Vibration
- Operation of the buttons/switches
- Also check the current and voltage on the machine while it is operating with the rated load.

5 - MAINTENANCE/SERVICING

5.1 - After one month's operation

- Check that the screws and electrical connections are correctly tightened.
- Check the vibration. Check that there is no abnormal noise.
- If the brake wear needs to be checked: measure the brake air gap to check that it conforms to the dimension stated in table 1 of appendix 1.

5.2 - Every year

Same as section 5.1.

5.3 - Every 5 years


If the motor is fitted with grease nipples, regrease the bearings in accordance with the information on the nameplate.

6 - BRAKE AND MICROSWITCH ADJUSTMENT PROCEDURE

Correspondence between type of motor/type of brake:

Motor model	Brake model
XAP 2 M	VAR07 SZ 300/300
XAP 2 L	VAR09 SZ 600/500

6.1 - Brake adjustment

 This operation must be made by an agreed Leroy-Somer Service Center.

6.2 - Microswitch adjustment

See appendix 1 section 3.1.

GEARLESS XAP

A.C. Drive for lifts

7 - REPLACING THE ENCODER

! Secure the load before any work is carried out on the motor. Check that no torque is applied to the rotor.

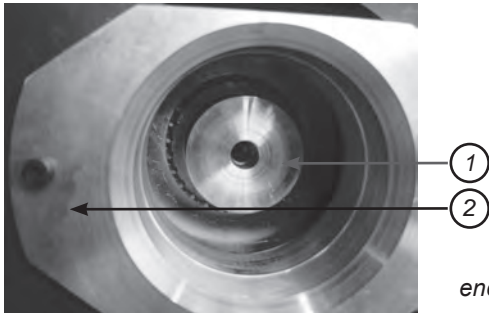


Fig. 9:
encoder support

- Disconnect the encoder.
- Disconnect the brake connector(s).
- Check that the encoder supplied is identical to the one on the motor.

IMPORTANT: Do not dismantle the encoder support piece (Ref. 2 fig. 7) fixed on the brake. It is centre-mounted in the factory to the nearest 0.1 mm using a special tool.

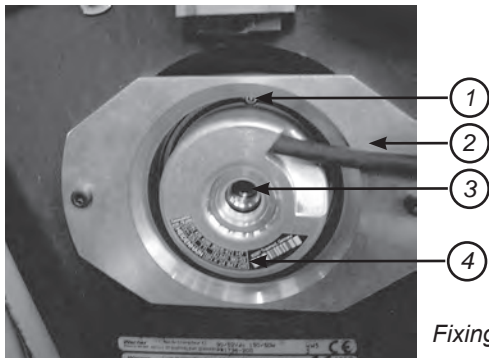


Fig. 7:
Fixing the encoder

7.1 - Dismantling the encoder

- Undo (2 turns with a SW2 spanner) the fixing screw on the encoder casing (Ref. 1 fig. 7) in the support piece.
- Undo the encoder plug (SW4 spanner or screwdriver).
- Undo (SW4 spanner) the central encoder fixing screw (Ref. 3 fig. 9) on the motor shaft.
- Remove the encoder from its support (depending on the model).

7.2 - Reassembling the encoder

- Place the encoder support washer (Ref. 1 fig. 9) on the motor shaft extension. Make sure that it is firmly in place by hitting it gently with a drift and a hammer.
- Undo the new encoder plug (SW4 spanner or screwdriver).
- Insert the encoder in the support piece (Ref. 2 fig. 9) fixed on the brake, then tighten the M5 X 50 chc central screw (SW4 torque wrench) to tightening torque 5 Nm 0/+0.5 Nm. Screw with removable threadlocker to be used a maximum of 3 times.
- Tighten the small M2.5 chc screw (Ref. 1 fig. 7) (SW2 torque wrench or screwdriver) on the encoder casing to a torque of 1.25 Nm 0/-0.2 Nm.
- Retighten the encoder plug (SW4 spanner or screwdriver).
- If necessary, phase the encoder (see drive manual)

8 - REPLACING THE SHEAVE, THE BRAKE AND MICROSWITCHES

8.1 - Replacing the sheave

! As the endshields must be removed to replace the sheave, this operation must be made by an agreed Leroy-Somer Service Center.

8.2 - Replacing the brake and microswitches

! This operation must be made by an agreed Leroy-Somer Service Center.

GEARLESS XAP

A.C. Drive for lifts

9 - ORDERING SPARE PARTS

To ensure optimum after-sales service, the following information must be provided with each spare parts order:

- Type and serial number of the motor

and for each spare part:

- Name and (or) reference number of the part

- Quantity ordered.

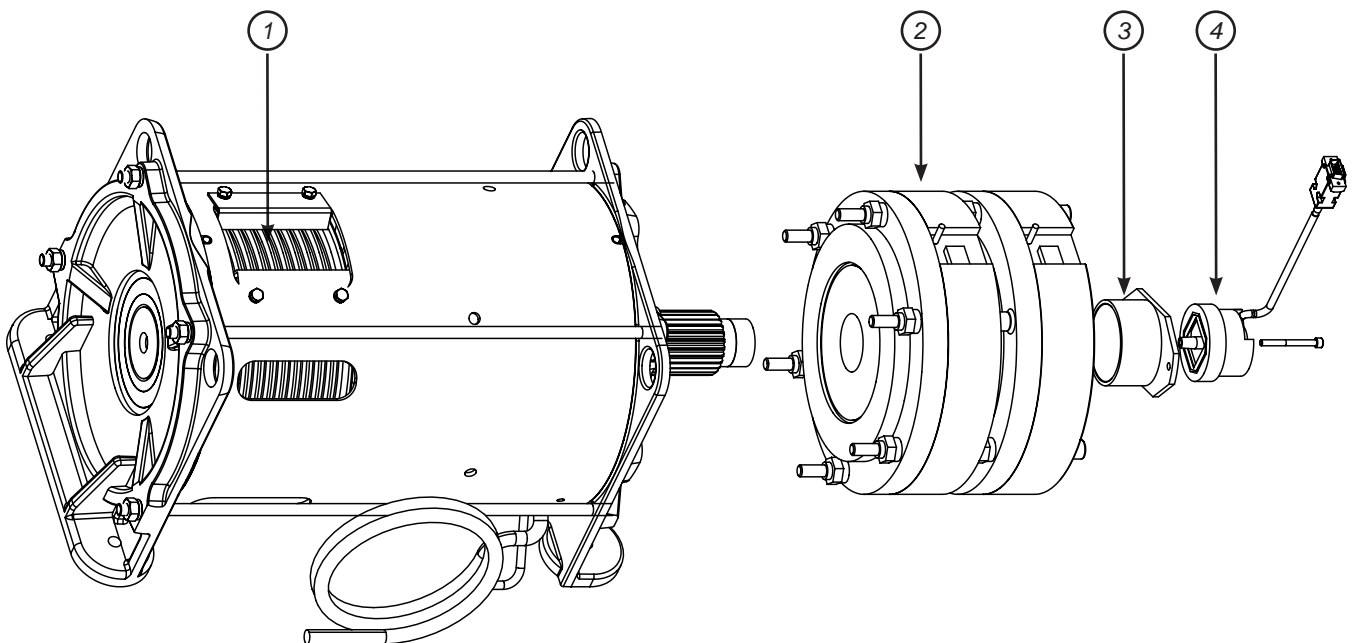
For instant identification, please give the reference of the document used for the order (drawing or manual number). The type and serial number can be found on the nameplate of the motor.



Shields must only be dismantled by an establishment approved by Leroy-Somer.

Part names:

Reference	Name
1	Sheave
2	Complete brake
3	Encoder support
4	Encoder kit
Option	CDF brake motor power supply

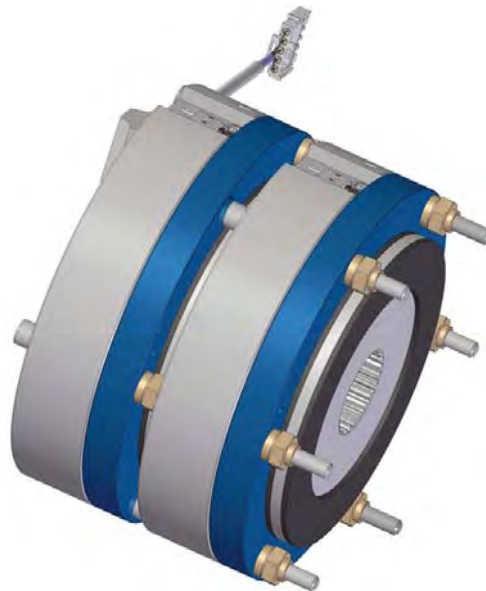


SM407gb - rev 06/10

Electrically Released Brakes

ERS VAR07 SZ 300/300

ERS VAR09 SZ 600/500



We, **WARNER ELECTRIC EUROPE**, 7, rue Champfleür, B.P. 20095, F-49182 St Barthélemy d'Anjou Cedex
declare that the brakes made in our factory from St Barthélemy d'Anjou, and hereafter designated:

ERS VAR07 SZ 300/300

ERS VAR09 SZ 600/500

Fully comply with directive 95/16/EC on Lifts, and are intended for incorporation into an installation or for assembly with other equipment, with the aim of constituting a machine subject to the application of directive 98/37/EC and the directive on Electromagnetic Compatibility 89/336 (modified). Compliance with the basic requirements of the Low Voltage Directive 73/23 (modified) is guaranteed by our full compliance with the following standards: NFC 79300 and VDE 0580/8.65.

Drawn up in St Barthélemy d'Anjou, april 2009

David EBLING, General Managing Director

CONTENTS



1	Technical specifications	3
2	Precautions and restrictions on use	4
2.1	Restrictions on use	4
2.2	Precautions and safety measures	4
3	Maintenance	5
3.1	Adjusting the microswitch	5
4	Electrical connection	5
5	Troubleshooting	6

NOTA: For heavy intervention, use advanced service manual.

1 Technical specifications ERS VAR07

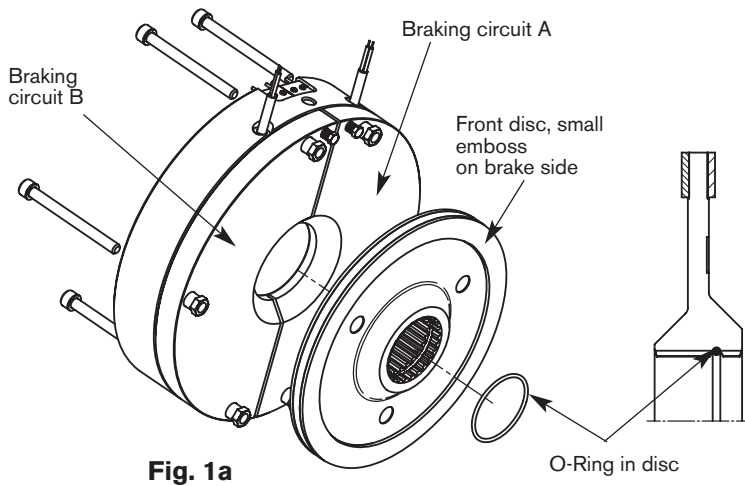


Fig. 1a

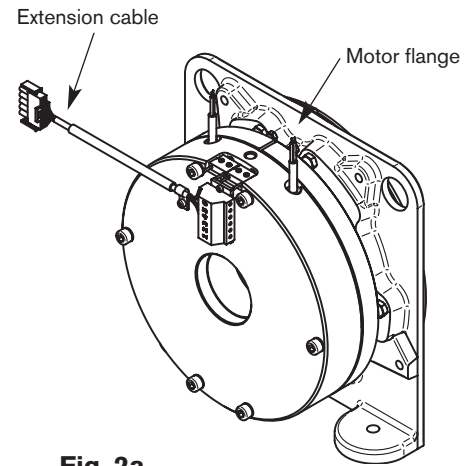


Fig. 2a

1 Technical specifications ERS VAR09

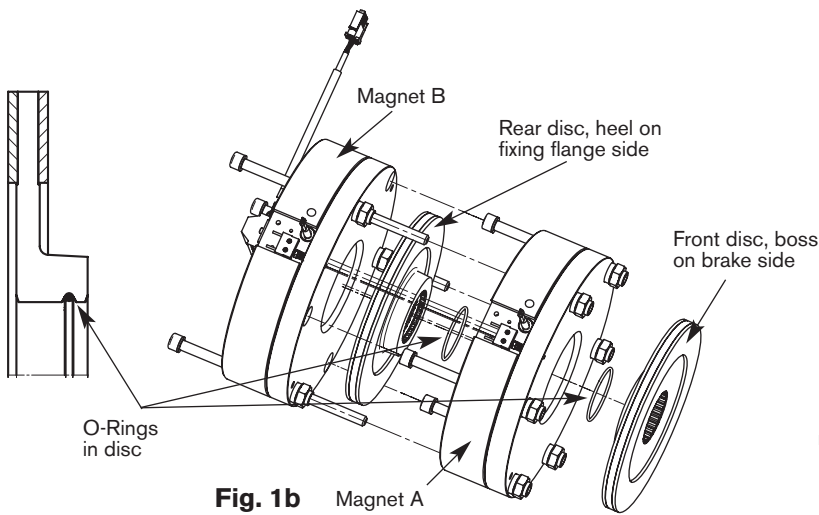


Fig. 1b

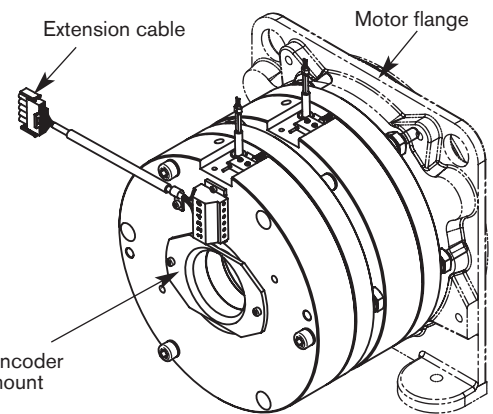



Fig. 2b

Size		ERS VAR07 SZ 300/300			ERS VAR09 SZ 600/500			
 EC Type Certificate (95/16/EC):		ABV819			ABV809			
Leroy Somer Part Number		GAF300FD006	GAF300FD004	GAF300FD0069	GAF500FD004			
Warner Electric Part Number		1 12 107203	1 12 107202	1 12 107201	1 12 107211			
Nominal torque Nm		2 x 300			2 x 500			
Unit with overexcitation								
Per magnet	Voltage (inrush) (1 sec.) +5%/-10%	VDC	48	103,5 (*)	207	48	103,5 (*)	207
	Voltage (holding) +5%/-10%	VDC	24	52	103,5	24	52	103,5
	Power (inrush)	Watt	200	218	207	186,4		
	Power (holding)	Watt	49,6	52	52,3	47		
Maximum speed		min ⁻¹	400			400		
Nominal airgap		mm	0,35 ^{+0,1/-0,1}			0,35 ^{+0,1/-0,1}		
Maximum airgap (after wear)		mm	0,6			0,6		
Cyclic duration factor		ED	50%			50%		
Weight		kg	25			48		
Extension cable		m	2			2		

(*) Suitable for 90 V nominal



Symbol designating an action that might damage the brake



Symbol designating an action that might be dangerous to human safety



Symbol designating an electrical action that might be dangerous to human safety

2 Precautions and restrictions on use

2.1 Restrictions on use

- For the brake to comply with directive 95 / 16 / EC, the integrator must observe the general conditions for installation, including the mandatory use of a speed limiting device, in compliance with EN 81-1 paragraphs 9.9 and 9.10.10., as stated in the EC type-examination certificate from TÜV SÜD Industrie Service (see ABV number in Table 1).

This brake can in no way replace the system against the overspeed of the cabin downwards.

- This brake is designed to work in dry conditions. Any contact with oil, grease, water or abrasive dust generate a decrease torque.

Warning : It is the responsibility of the customer to install the covers needed to avoid pollution of friction faces.

- Torque subject to decrease in case of water contamination. Use of both brake circuits mandatory.

Warning : brake must be replace after water contamination.

- This product is not suitable for use according to ATEX/94/9/EC.

- These units are designed for use in an ambient temperature between 0° C and +40° C max.

Warning : at low temperature, any freezing of the friction face, due to condensation, generates a loss of torque. It is the responsibility of the customer to take measures to avoid this problem.



- If maximum rotation speeds are exceeded, the guarantee is no longer valid.
- It is mandatory to follow instructions and datas given in documentation and marking of the units, in order to ensure the performance of the brake.

- This brake may only be used in a "horizontal axis".

- The customer must be careful not to alter the factory-set airgap. This is in order to ensure the brakes will be properly released.

- Protection class
Mechanical IP10
Electrical IP42

- Insulation class F 155 °C
- Normal use will not lead to any noticeable wear on the lining. Any dynamic braking is restricted to emergency and test braking.

2.2 Precautions and safety measures

- During maintenance, make sure that the mechanism to be held by the brake, is stopped and that there is no risk of it accidentally starting up. All intervention have to be made by qualified personnel, using this manual.



- Any modification made to the brake without the express authorisation of a representative of Warner Electric, in the same way than any use out of the contractual specifications 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.

3 Maintenance

3.1 Adjusting the microswitch

Slide a shim thickness 0,20mm horizontally (only for VAR07), near screw in the corresponding airgap. Switch on the current and tighten (the M4 adjusting screw 7 A/F for ERS VAR09 or the M5 adjusting screw 8 A/F for ERS VAR07) in contact with the microswitch until you reach the actuation point. Then turn the screw in the opposite direction until the microswitch does not actuate. Check, by 3 successive energisings of the brake, that the microswitch does not actuate with the shim thickness of 0.20mm. Then slide a shim thickness 0.178mm or 0.007" and check that the adjustment is stable (the microswitch actuates), by 3 successive energisings of the brake, see Fig. 3a for VAR07 and Fig. 3b for VAR09.

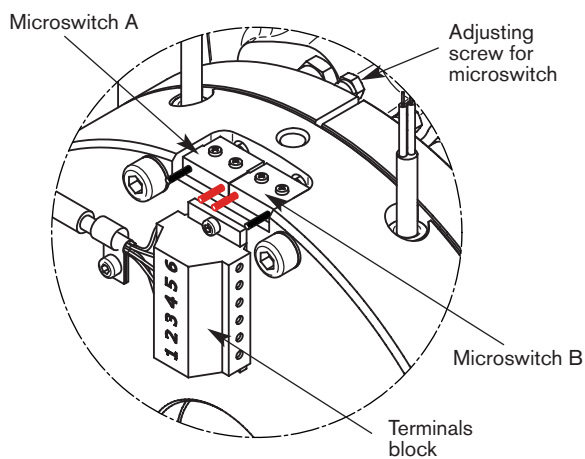


Fig. 3a

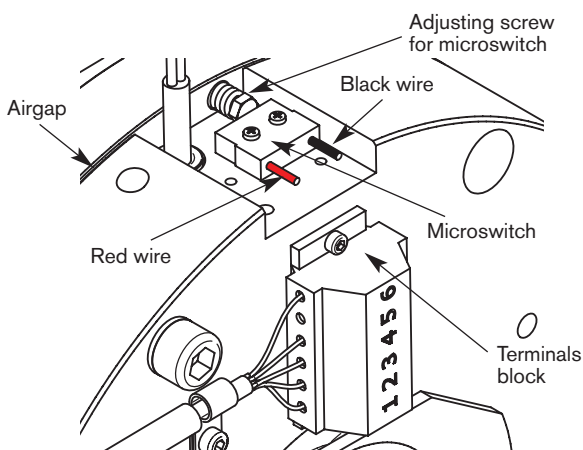


Fig. 3b

Operation microswitch


Current range 10 mA min. to 100 mA max. at 24 VDC.


For maximum electrical lifetime of the microswitch ensure switching under resistive load only.


4 Electrical connection


Brakes **ERS VAR07** and **ERS VAR09** operate on a direct current supply.

Important recommendations

 All work 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 reduced maximum airgap).

 When switching on DC-side the coil must be protected against voltage spikes.

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

Service braking : for service braking, the switching OFF and the switching 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.

Length of cable	0 to 10 m	from 10 to 20 m
Cross section	1,5 mm ²	2,5 mm ²

Tolerances on the supply voltage at the brake terminals +5% / -10% (NF C 79-300).

5 Troubleshooting and fault elimination

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

Subject to alteration without prior notice



EC type-examination certificate

Certificate no.: ABV 819

Notified body: TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199
80686 München - Germany

**Applicant/
Certificate holder:** WARNER Electric Europe
7, rue de Champfleür
BP 20095
49124 St. Barthelemy D'Anjou - France

Date of application: 2009-04-21

Manufacturer: WARNER Electric Europe
7, rue de Champfleür
BP 20095
49124 St. Barthelemy D'Anjou – France

Product: Braking device acting on the shaft of the traction sheave,
as part of the protection device against overspeed for the
car moving in upwards direction

Type: ERS VAR07 SZ 300/___

Test laboratory: TÜV SÜD Industrie Service GmbH
Prüflaboratorium für Produkte der Fördertechnik
Prüfbereich Aufzüge und Sicherheitsbauteile
Westendstrasse 199
80686 München - Germany

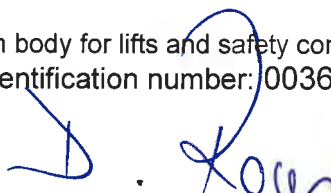
**Date and
number of test report:** 2009-06-29
819

EC-directive: 95 / 16 / EC

Result: The safety component conforms to the directive's
essential safety requirements for the respective scope of
application stated on page 1 - 2 of the annex to this EC
type-examination certificate.

Date of issue: 2009-07-01

Certification body for lifts and safety components
Identification number: 0036


p. p. Dieter Roas





Annex to the EC type-examination certificate no. ABV 819 dated 2009-07-01

1. Scope of Application

1.1 Permissible brake moment when the braking device acts on the shaft of the traction sheave while the car is moving upward 447 - 642 Nm

1.2 Maximum tripping speed of the overspeed governor and maximum rated speed

The maximum tripping speed and the maximum rated speed must be calculated on the basis of the traction sheave's maximum tripping rotary speed and maximum rated rotary speed as outlined in sections 1.2.1 and 1.2.2 taking into account traction sheave diameter and car suspension.

$$v = \frac{D \times \pi \times n}{60 \times i}$$

v = speed (m/s)
D = Diameter of the traction sheave from rope's center to rope's center (m)
 $\pi = 3,14$
n = Rotary speed (min^{-1})
i = Ratio of the car suspension

1.2.1 Maximum tripping rotary speed of the traction sheave 500 min^{-1}

1.2.2 Maximum rated rotary speed of the traction sheave 435 min^{-1}

2. Conditions

2.1 Since the braking device represents only a part of the protection device against overspeed for the car moving in upwards direction an overspeed governor as per EN 81-1, paragraph 9.9 must be used to monitor the upward speed and the braking device must be triggered (engaged) via the overspeed governor's electric safety device.

Alternatively, the speed may also be monitored and the braking device engaged by a device other than an overspeed governor as per paragraph 9.9 if the device shows the same safety characteristics and has been type tested.

2.2 The movement of each brake circuit (each anchor) is to be monitored separately and directly (e.g. by micro switches). If a brake circuit fails to engage (close) while the lift machine is at standstill, next movement of the lift must be prevented.

2.3 In cases where the lift machine moves despite the brake being engaged (closed), the lift machine must be stopped at the next operating sequence at the latest and the next movement of the lift must be prevented (The car may, for example, be prevented from travelling by querying the position of the micro switch which is used to monitor the mechanical movement of the brake circuits, should both brake circuits fail to open).

- 2.4 According to EN 81-1, paragraph 9.10.4 d a braking device must act directly on the traction sheave or on the same shaft on which the traction sheave is situated in the immediate vicinity thereof.

If the braking device does not act in the immediate vicinity of the traction sheave on the same shaft on which the traction sheave is situated, the standard is not complied with. In cases involving shaft failure between the traction sheave and the braking device, safety would no longer be ensured by the latter if the lift car made an uncontrolled upward movement.

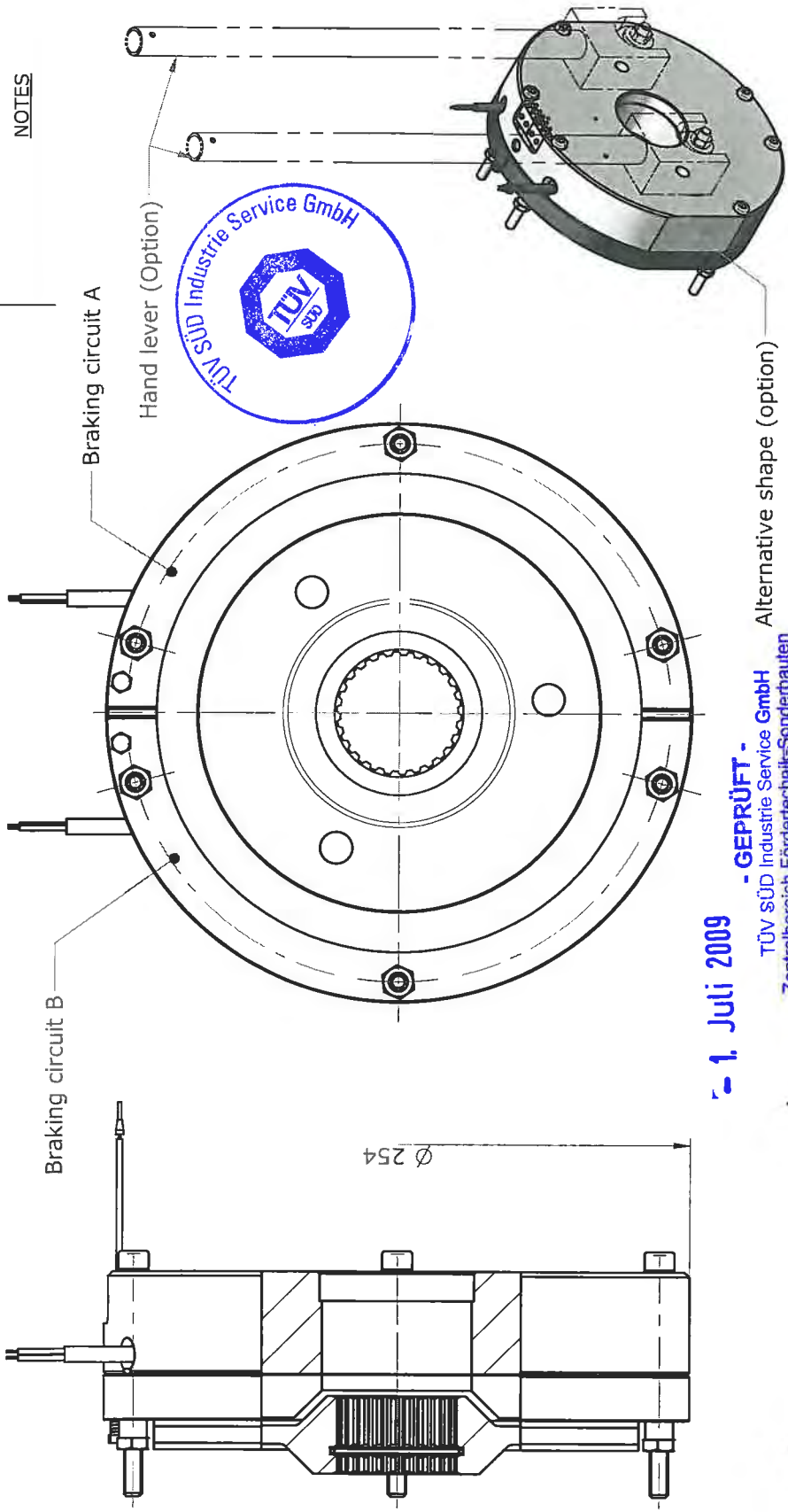
Shaft failure in this area must therefore be ruled out by appropriate design and sufficient dimensioning. In order to eliminate or reduce influencing factors which may lead to failure wherever possible, the following requirements must be satisfied:

- Minimization of bending length between traction sheave and braking device or traction sheave and the next bearing (the next bearing must form part of the drive unit)
 - As far as possible, prevention of a reduction in load-bearing capacity in the area of reversed bending stress (reduction in load-bearing capacity caused, for example, by stress concentration and cross-sectional reductions)
 - Between traction sheave and braking device the shaft must be continuous (made from one piece)
 - Cross-sectional influences on the shaft are only permitted if they act on the following connections: traction sheave – shaft, braking device – shaft, torque of the transmitting component – shaft (situated between traction sheave and braking device).
- 2.5 The manufacturer of the drive unit must provide calculation evidence that the connection braking device – shaft, traction sheave - shaft and the shaft itself is sufficiently safe. The calculation evidence must be enclosed with the technical documentation of the lift.

3. Remarks

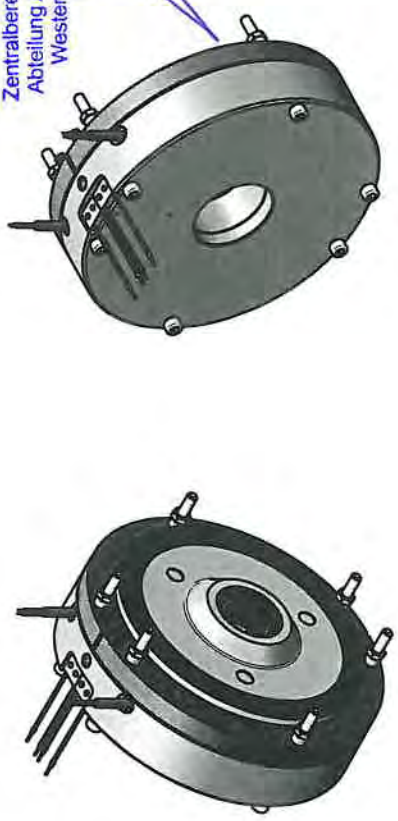
- 3.1 The brake moment effectively adjusted of one brake circuit will be marked at the blank after the type designation ÈRS VAR07 SZ 300/___ .
- 3.2 The permissible braking moments must be applied to the lift system in such a manner that they do not decelerate more than $1 g_n$, if the empty car is moving upwards.
- 3.3 In the scope of this type-examination it was found out, that the brake device also functions as a brake for normal operation, is designed as a redundant system and therefore meets the requirements to be used also as a part of the protection device against overspeed for the car moving in upwards direction.
This type examination only refers to the requirements pertaining to brake devices as per EN 81-1, paragraph 9.10. Checking whether the requirements as per paragraph 12.4 have been complied with is not part of this type examination.
- 3.4 In order to provide identification and information about the design and its functioning drawing No. 1 12 107185, dated 21 April 2009 is to be enclosed with the EC type-examination certificate and the Annex thereto. The installation conditions and connection requirements are presented or described in separate documents.
- 3.5 The EC type-examination certificate may only be used in connection with the pertinent Annex.

Les cotes sans indication de tolérances sont des cotes nominales.
 Untoleranced dimensions are nominal dimensions.



NOTES

- 1. Juli 2009
- GEPRÜFT -
 TÜV SÜD Industrie Service GmbH
 Zentralbereich Fördertechnik-Sonderbauten
 Abteilung Aufzüge und Sicherheitsbauteile
 Westendstr. 199, D-80688 München
 Der Sachverständige



TUV DIFFUSION

Client/customer:		Customer ref :	
Ms (Nm) :		Dimensions	
Md (Nm) :		In mm	
n Md (min-1) :		Manual/Notice :	
n max (min-1) :		SM	
U (Vdc) :		Mass :	
P20°C (W) :		Scale:	1 : 1
Insulation class (°C):		Date: 21.04.09	
Ce plan est la propriété de Warner Electric Europe. Il ne peut être reproduit, ni copié, ni révisé sans l'autorisation écrite.		Checked: Jc-J	
This document is the property of Warner Electric Europe. It is not to be disclosed or reproduced totally or partially, without written permission.		Date: 21.04.09	
Warner Electric Europe		Design: Frein électromagnétique	
		Electromagnetic brake	
		Type: ERS VAR07 SZ300 / 300	
		N° 1 12 107185	
		A3	



EC type-examination certificate

Certificate no.: ABV 809

Notified body: TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstrasse 199
80686 München - Germany

**Applicant/
Certificate holder:** WARNER Electric Europe
7, rue de Champfleür
BP 20095
49124 St. Barthelemy D'Anjou - France

Date of submission: 2008-11-18

Manufacturer: WARNER Electric Europe
7, rue de Champfleür
BP 20095
49124 St. Barthelemy D'Anjou – France

Altra Industrial Motion (Shenzhen)
Songshan Industry Zone
12 Songshan Western Road
Bogang county, Shajing town
Baoan district, Shenzhen city
518104 Guandong Province - China (PRC)

Product: Braking device acting on the traction sheave, as part of the protection device against overspeed for the car moving in upwards direction

Type: ERS VAR 09 SZ 600/___

Test laboratory: TÜV SÜD Industrie Service GmbH
Abteilung Aufzüge und Sicherheitsbauteile
Westendstrasse 199
80686 München - Germany

**Date and number
of test report:** 2009-02-06
809

EC-Directive: 95 / 16 / EC

Statement: The safety component conforms to the directive's essential safety requirements for the respective scope of application stated on page 1 - 2 of the annex to this EC type-examination certificate.

Certificate date: 2009-02-10

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
EC-Identification number: 0036

S. Melzer
Siegfried Melzer





Annex to the EC type-examination certificate no. ABV 809 dated 2009-02-10

1. Scope of Application

- 1.1 Permissible brake moment when the braking device acts on the shaft of the traction sheave while the car is moving upward 841 - 1529 Nm

- 1.2 Maximum tripping speed of the overspeed governor and maximum rated speed

The maximum tripping speed and the maximum rated speed must be calculated on the basis of the traction sheave's maximum tripping rotary speed and maximum rated rotary speed as outlined in sections 1.2.1 and 1.2.2 taking into account traction sheave diameter and car suspension.

$$v = \frac{D \times \pi \times n}{60 \times i}$$

v = speed (m/s)

D = Diameter of the traction sheave from rope's center to rope's center (m)

π = 3,14

n = Rotary speed (min⁻¹)

i = Ratio of the car suspension

- 1.2.1 Maximum tripping rotary speed of the traction sheave 400 min⁻¹

- 1.2.2 Maximum rated rotary speed of the traction sheave 348 min⁻¹

2. Conditions

- 2.1 Since the braking device represents only a part of the protection device against overspeed for the car moving in upwards direction an overspeed governor as per EN 81-1, paragraph 9.9 must be used to monitor the upward speed and the braking device must be triggered (engaged) via the overspeed governor's electric safety device.

Alternatively, the speed may also be monitored and the braking device engaged by a device other than an overspeed governor as per paragraph 9.9 if the device shows the same safety characteristics and has been type tested.

- 2.2 The movement of each brake circuit (each anchor) is to be monitored separately and directly (e.g. by micro switches). If a brake circuit fails to engage (close) while the lift machine is at standstill, next movement of the lift must be prevented.

- 2.3 In cases where the lift machine moves despite the brake being engaged (closed), the lift machine must be stopped at the next operating sequence at the latest and the next movement of the lift must be prevented (The car may, for example, be prevented from travelling by querying the position of the micro switch which is used to monitor the mechanical movement of the brake circuits, should both brake circuits fail to open).



- 2.4 According to EN 81-1, paragraph 9.10.4 d a braking device must act directly on the traction sheave or on the same shaft on which the traction sheave is situated in the immediate vicinity thereof.

If the braking device does not act in the immediate vicinity of the traction sheave on the same shaft on which the traction sheave is situated, the standard is not complied with. In cases involving shaft failure between the traction sheave and the braking device, safety would no longer be ensured by the latter if the lift car made an uncontrolled upward movement.

Shaft failure in this area must therefore be ruled out by appropriate design and sufficient dimensioning. In order to eliminate or reduce influencing factors which may lead to failure wherever possible, the following requirements must be satisfied:

- Minimization of bending length between traction sheave and braking device or traction sheave and the next bearing (the next bearing must form part of the drive unit)
 - As far as possible, prevention of a reduction in load-bearing capacity in the area of reversed bending stress (reduction in load-bearing capacity caused, for example, by stress concentration and cross-sectional reductions)
 - Between traction sheave and braking device the shaft must be continuous (made from one piece)
 - Cross-sectional influences on the shaft are only permitted if they act on the following connections: traction sheave – shaft, braking device – shaft, torque of the transmitting component – shaft (situated between traction sheave and braking device).
- 2.5 The manufacturer of the drive unit must provide calculation evidence that the connection braking device – shaft, traction sheave - shaft and the shaft itself is sufficiently safe. The calculation evidence must be enclosed with the technical documentation of the lift.

3. Remarks

- 3.1 The brake moment effectively adjusted of one brake circuit will be marked at the blank after the type designation ÈRS VAR 09 SZ 600/___ .
- 3.2 The permissible braking moments must be applied to the lift system in such a manner that they do not decelerate more than $1 g_n$, if the empty car is moving upwards.
- 3.3 In the scope of this type-examination it was found out, that the brake device also functions as a brake for normal operation, is designed as a redundant system and therefore meets the requirements to be used also as a part of the protection device against overspeed for the car moving in upwards direction.
This type examination only refers to the requirements pertaining to brake devices as per EN 81-1, paragraph 9.10. Checking whether the requirements as per paragraph 12.4 have been complied with is not part of this type examination.
- 3.4 In order to provide identification and information about the design and its functioning drawing No. 1 12 107132, dated 07 November 2008 is to be enclosed with the EC type-examination certificate and the Annex thereto. The installation conditions and connection requirements are presented or described in separate documents.
- 3.5 The EC type-examination certificate may only be used in connection with the pertinent Annex.

Les cotes sans indication de tolérances sont des cotes nominales.
 Untoleranced dimensions are nominal dimensions.

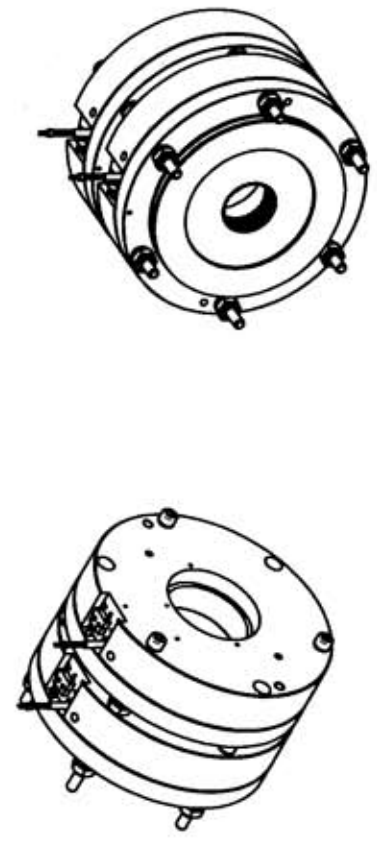
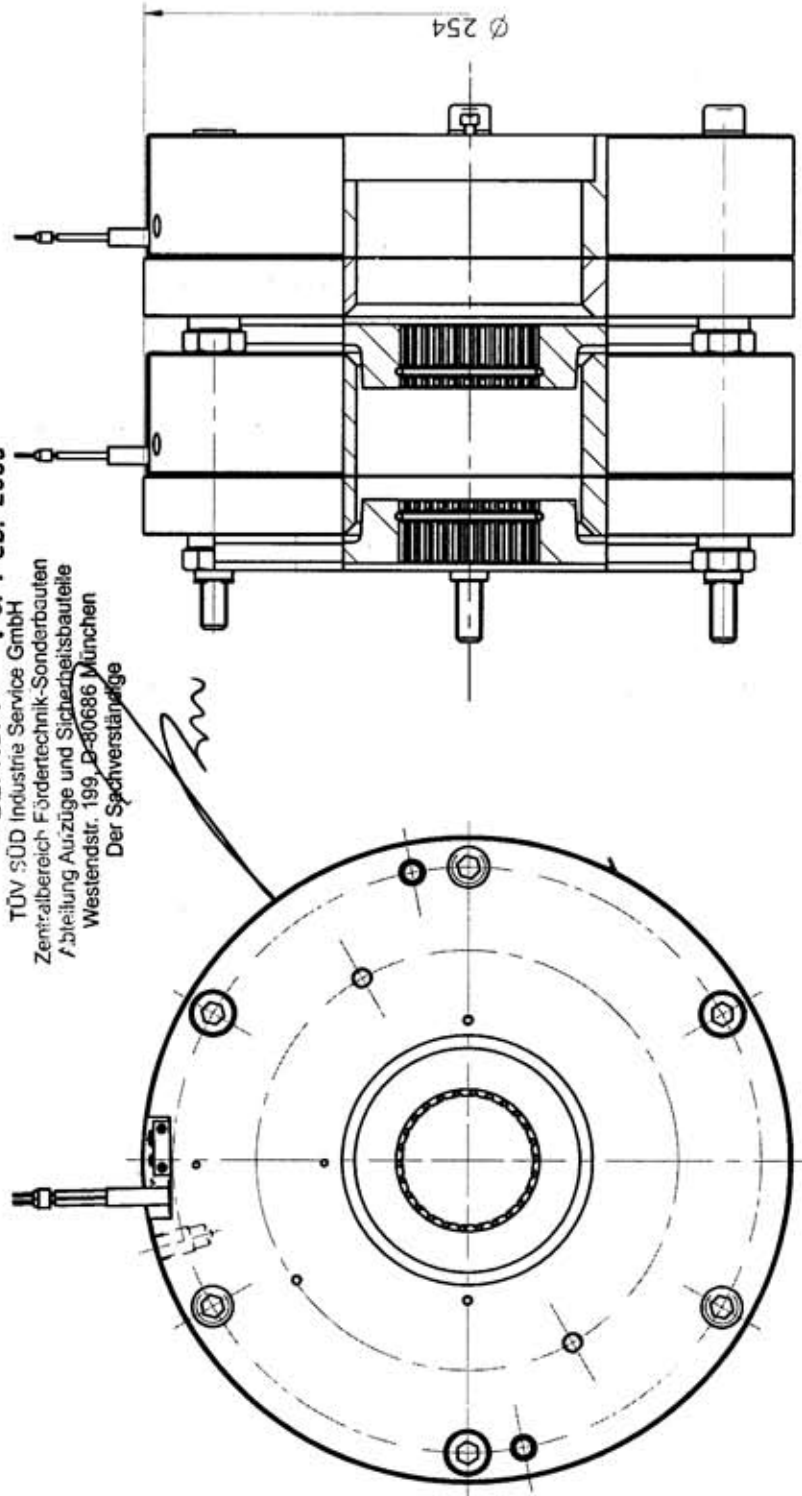
NOTES

-GEPRÜFT - 10. Feb. 2009

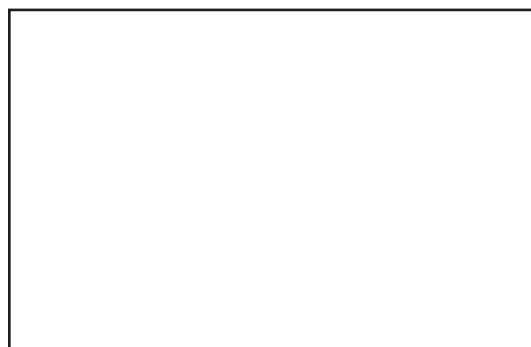
TÜV SÜD Industrie Service GmbH
 Zentralbereich Fördertechnik-Sonderbauten
 Abteilung Anzüge und Sicherheitsbauteile
 Westendstr. 199, D-80686 München
 Der Sachverständige



1-9 NOV. 2008



Client/customer:	Customer ref :	FM	LT	REVISION	DATE	By	Ch.
M _s (Nm) :	Dimensions in mm						
M _d (Nm) :	Manual/Notice :						
n max (min-1) :	Mass :						
n max (min-1) :	Scale :						
U (Vdc) :	Insulation class (°C):						
P20°C (W) :	Ca plan est la propriété de Warner Electric Europe, il ne peut être divulgué ni reproduit entièrement ou partiellement, sans autorisation écrite.						
	This document is the property of Warner Electric Europe, it is not to be disclosed or reproduced totally or partially, without written permission.						
	Warner Electric Europe						
	Design: Frein électromagnétique Electromagnetic brake						
	Type: ERS VAR09 SZ600/---						
	N° 1 12 107132						
	Drawn : G. Ferrand Date:07.11.08						
	Checked: M.P. Date: 18.11.08						



MOTEURS LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

RCS ANGOULÊME No. B 671 820 223
Limited company with capital of 62,779,000 €

<http://www.leroy-somer.com>