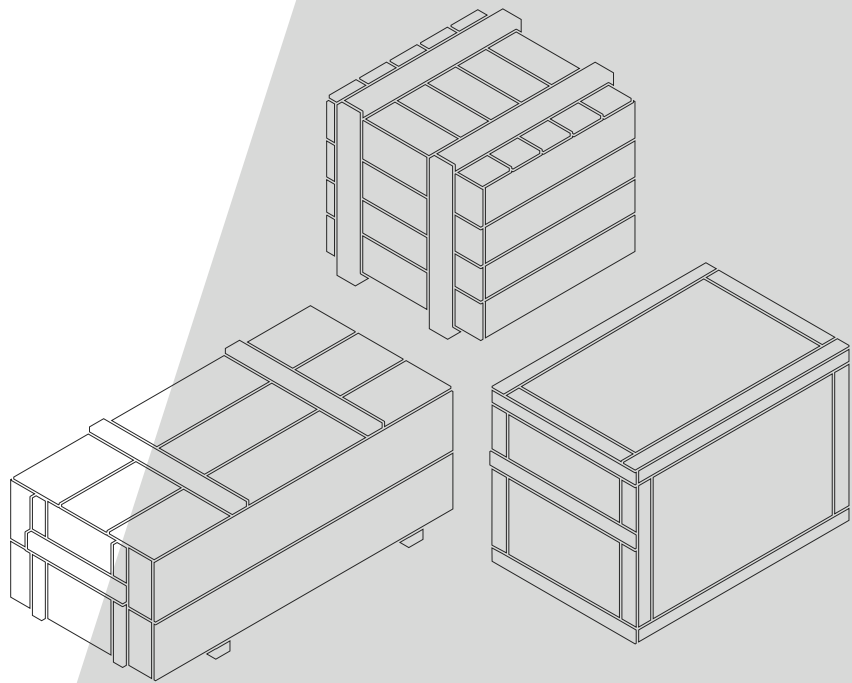
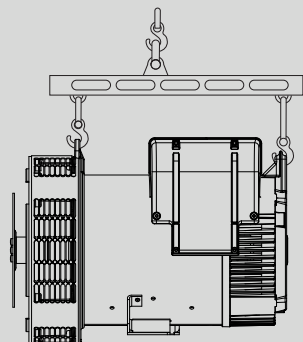




Power



TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

Installation and maintenance

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

**This manual concerns the alternator which you have just purchased.
We wish to draw your attention to the contents of this maintenance manual.**

SAFETY MEASURES

Before using your machine for the first time, it is important to read the whole of this installation and maintenance manual.

All necessary operations and interventions on this machine must be performed by a qualified technician.

Our technical support service will be pleased to provide any additional information you may require.

The various operations described in this manual are accompanied by recommendations or symbols to alert the user to the potential risk of accidents. It is vital that you understand and take notice of the different warning symbols used.

WARNING

Warning symbol for an operation capable of damaging or destroying the machine or surrounding equipment.



Warning symbol for general danger to personnel.



Warning symbol for electrical danger to personnel.

SAFETY INSTRUCTIONS

Any personnel carrying out the procedures mentioned in this manual must wear personal protective equipment designed for mechanical and electrical hazards.



All lifting and handling operations must be performed using approved equipment, and the alternator must be kept horizontal at all times. Before choosing a lifting tool, check the alternator's dimensions by referring to the maintenance manual.

WARNING

The alternators must not be put into service until the machines in which they are to be incorporated have been declared compliant with EC Directives plus any other directives that may be applicable.

This manual is to be given to the end user.

The range of electric alternators and their derivatives, manufactured by us or on our behalf, comply with the technical requirements of the customs Union directives.

The alternator is a sub-assembly delivered without a system of protection against short-circuits. The protection must be provided by the circuit-breaker of the generator, sized to interrupt the fault current.

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Share Capital: 32,239,235 €, RCS Angoulême
338 567 258.

We reserve the right to modify the characteristics of this product at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.

This document may not be reproduced in any form without prior authorization.

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

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

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Disposal and recycling instructions

EC Declaration



All maintenance and repair operations are to be carried out by personnel trained in the commissioning, servicing and maintenance of electrical and mechanical components so that all risk of accident is avoided and the alternator is maintained in its original state.

WARNING

In order for the manufacturer's warranty to remain in effect, all the preventative measures described in the packaging, storage and inspection instructions must be fully adhered to and implemented.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

1 - PACKAGING AND PROTECTION OF MACHINES

1.1 - Description of packaging types

The different grades of packaging are described below. Check that the packaging grade used matches the order.

Packaging Grade 1: Wooden base without protection.

Packaging Grade 1.1: Wooden base + plastic cover + desiccant sachet.

Packaging Grade 11: Cardboard packaging.

Packaging Grade 11.1: Cardboard packaging + plastic cover + desiccant sachet.

Packaging Grade 3: Open-slat crate.

Packaging Grade 3.1: Open-slat crate + plastic cover + desiccant sachet.

Packaging Grade 4.1: Shipping crate + plastic cover + desiccant sachet.

Packaging Grade 5.1: Shipping crate + air-tight, vacuum-sealed aluminium foil.

2 - TRANSPORT AND UNPACKING

2.1 - Transport

During transport the level of intermittent shocks suffered by the machines must remain below 30 m/s².

Machines equipped with a single bearing must have their rotor locked during the transport to avoid any «false brineling» problem.

The temperature of the machine must remain between -20°C and 70°C. However, it is possible to go down to -40°C if not for more than a few hours.

The machine must be protected against the weather and condensation.

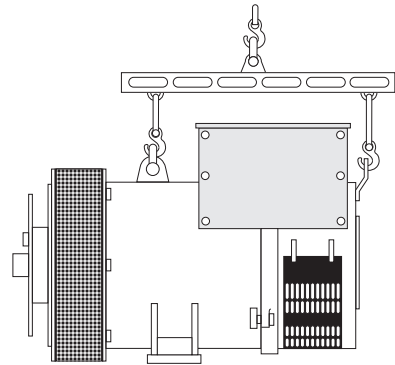
2.2 - Checks on receipt

When taking delivery of your alternator, check that it has not suffered any damage in transit. If there are any obvious signs of damage, inform the carrier of your concerns (you may be able to claim on their insurance)

and, after looking the machine over carefully, check its general appearance and turn it over manually to find out whether or not it is functioning normally.

WARNING

The generously-sized lifting rings should only be used to move the alternator itself. The lifting hooks or handles used must fit the shape of these rings. Choose a lifting system that is suited to the alternator's environment.



2.3 - Checks during unpacking

Before the machines are sent out, they are fitted with a device which immobilises the rotor to avoid any damage to the bearings. We recommend that this device is kept for use during any future transportation.

After unpacking your machine, carry out a visual inspection. Do not remove the grease protecting the shaft end, the flange and the coupling disc. This protection must be left in place until installation is complete.

Check all the information on the nameplate to see that it matches your order.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

3 - PROLONGED STORAGE

The storage period is determined from the date of manufacture of the alternator (see nameplate).

3.1 - Short-term indoor storage (< 6 months)

If the alternators are not unpacked immediately, the crates must be stored on a level surface and in a dry location that is free from dust, gas and corrosive substances. No other objects should be stacked on top of or against the sides of the crates. In order to avoid any damage to the bearings, the alternators should be stored in a place that is free from vibrations.

WARNING

The storage premises must:

- be closed and covered,
- be protected against humidity and against the presence of rodents and insects,
- be free from corrosive gases and exhaust fumes,
- be insulated against any continuous or intermittent vibrations,
- have a ventilation system fitted with a filter,
- have an ambient temperature of between: $5^{\circ}\text{C} < t < 60^{\circ}\text{C}$, with no sudden temperature variations,
- have a relative air humidity of $< 50\%$,
- be equipped with a fire detection system,
- have an electrical supply for space heaters.

3.2 - Short-term outdoor storage (< 6 months)

If possible, choose a storage place that is dry and free from flooding and vibrations.

Check for possible damage to the packaging before placing the equipment in storage, since this is the only way to make sure that storage conditions are appropriate.

Position the machines on wooden pallets or on foundations to ensure that they are protected against humidity from the ground and to prevent the equipment from sinking into the ground. There must be enough room underneath the equipment for air to circulate freely.

The sheeting used to protect the equipment

from harsh weather conditions should not be allowed to touch its surfaces.

3.3 - Long-term storage (> 6 months)

In addition to the precautions described for short-term storage, it is recommended that the windings' insulation resistance is measured every three months, or that their insulation is checked using dielectric testing. In this case, it is essential that all the AVR wires are first disconnected.

WARNING

Under such circumstances, any damage caused to the AVR will not be covered by our warranty. See maintenance manual.

Check the state of the painted surfaces every three months. If any traces of corrosion are found, remove them, and apply anticorrosive paint.

Check the state of the anticorrosion coating on the machine-finished surfaces, shaft end, coupling discs and flange spigot every three months. If any traces of corrosion are found, remove them with a fine emery cloth, and apply a new layer of protective grease. If the machine is stored inside a wooden crate, check the ventilation openings. Make sure that no water, insects or pests can get inside the crate.

Prolonged standstill: to avoid these problems, we recommend the use of space heaters.

After 6 months of downtime, grease by injecting double the volume of grease used for standard maintenance.

Then, every 3 months, rotate the machine shaft line several times while injecting a standard volume of grease.

WARNING

It is essential that the space heater is connected whenever the temperature in the storage location is $< 5^{\circ}\text{C}$ and relative air humidity is $> 50\%$.

In these conditions the plastic film covering the machine should be removed, allowing the air to circulate around it freely.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

4 - INSTALLATION

4.1 - Cleaning after long-term storage

The inside and outside of the machine must be free from all traces of oil, water, dust and dirt.

The inside of the alternator must be cleaned using low pressure compressed air.

- Remove the anti-rust protection from the exposed surfaces using a cloth soaked in the petroleum-based solvent.

WARNING

Cleaning the machine using water or a high-pressure washer is strictly prohibited. Any problems arising from such treatment are not covered by our warranty.



These operations must be carried out at a cleaning station equipped with a vacuum system that is designed to collect and dispose of the products used.

4.2 - Electrical checks before starting up the machine after long-term storage

Disconnect the three phases at the generator terminals.

WARNING

All accessories must be disconnected (AVR, EMC filter, etc.). Refer to the electrical schematics to identify the accessories to disconnect.

The measurement has to be taken between one phase and the earth. The reading is taken after 1 minute of test.

| | Test voltage (VDC) | Criteria (MΩ ; 40°C) |
|--------------------------------------|--------------------|----------------------|
| Stator: U ≤ 1 kV | 500 | 5 |
| Rotor | 500 | 5 |
| Exciter (stator and rotor) | 500 | 5 |
| Excitation auxiliary windings (AREP) | 250 | 5 |
| PMG (stator) | 100 | 5 |
| Heating element | 500 | 5 |
| Temperature sensors | 500 | 5 |

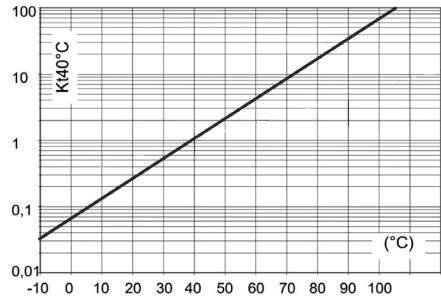
IEEE 43 recommendations

If the insulation resistance is not measured with a tested element à 40°C, a corrective factor has to be used.

$$R_{m\ 40^{\circ}\text{C}} = R_t \times K_{t40}$$

R_t Measured insulation resistance

K_{t40} Corrective factor



There are several possible methods for restoring the above minimum values.

a) Dry out the machine for 24 hours in a drying oven at a temperature of 110 °C (without the regulator).

b) Blow hot air into the air intake, having made sure that the machine is rotating with the exciter field disconnected.

WARNING

Ensure that the alternator has the degree of protection matching the defined environmental conditions.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

4.3 - Mechanical checks

Before starting the machine for the first time, check that:

- all fixing dismantled bolts are tight,
- the length and tightening torque of the added bolts are correct,
- the cooling air is being drawn in freely,
- the protective guards and housing are correctly positioned,
- the direction of rotation matches that specified in the maintenance manual,
- the winding connection matches the site operating voltage exactly (see maintenance manual).

In the case of regreasable bearings, it is recommended that the machine be regreased prior to initial start-up, then again once it has been running for several hours. The quality and amount of grease to be used can be found in the machine's maintenance manual.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

Disposal and recycling instructions

We are committed to limiting the environmental impact of our activity. We continuously monitor our production processes, material sourcing and product design to improve recyclability and minimise our environmental footprint.

These instructions are for information purposes only. It is the user's responsibility to comply with local legislation regarding product disposal and recycling.

Recyclable materials

Our alternators are mainly constructed from iron, steel and copper materials, which can be reclaimed for recycling purposes.

These materials can be reclaimed through a combination of manual dismantling, mechanical separation and melting processes. Our technical support department can provide detailed directions on how to dismantle products on request.

Waste & hazardous materials

The following components and materials require special treatment and must be separated from the alternator before the recycling process:

- electronic materials found in the terminal box, including the automatic voltage regulator (198), current transformers (176), interference suppression module and other semi-conductors.
 - diode bridge (343) and surge suppressor (347), found on the alternator rotor.
 - major plastic components, such as the terminal box structure on some products.
- These components are usually marked with information concerning the type of plastic.

All materials listed above need special treatment to separate waste from reclaimable materials and should be entrusted to specialist recycling companies.

The oil and grease from the lubrication system should be treated as hazardous waste and must be treated in accordance with local legislation.

Our alternators have a specified lifetime of 20 years. After this period, the operation of the product should be stopped, regardless of its condition. Any further operation after this period will be under the sole responsibility of the user.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

Angoulême, 16th June 2024

EC Declaration

Moteurs Leroy-Somer declares hereby that the electric generators of the types:

LSA 40 – LSA 42.3 – LSA 44.3 – LSA 46.3 – LSA 47.2 – LSA 47.3 – LSA 49.1 – LSA 49.3 – LSA 50.1 – LSA 50.2 – LSA 51.2 – LSA 52.2 – LSA 52.3 – LSA 53 – LSA 53.1 – LSA 53.2 – LSA 54 – LSA 54.2 – LSA 55.3 – TAL040 – TAL 042 – TAL 044 – TAL 046 – TAL 047 – TAL 047.3 – TAL 049 – LSAH 42.3 – LSAH 44.3 as well as their derivatives, manufactured by Leroy-Somer or on Leroy-Somer's behalf:

MOTEURS LEROY-SOMER

Boulevard Marcellin Leroy
16015 Angoulême
France

LEROY-SOMER ELECTRO-TECHNIQUE Co., Ltd

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Fuzhou, Fujian 350026
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MLS HOLICE STLO.SRO

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772 04 Olomouc
Czech Republic

NIDEC INDUSTRIAL AUTOMATION INDIA PRIVATE Ltd - BANGALORE

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Bengaluru-562 162
India

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45800 St Jean de Braye France

NIDEC INDUSTRIAL AUTOMATION INDIA PRIVATE Ltd - HUBLI

#64/A, Main Road,
Tarihal Industrial Area,
Tarihal, Hubli-580 026
India

meet the requirements of the following standards and directives:

Declaration of compliance:

- Low Voltage Directive Nr 2014/35/EU dated 26th February 2014.
- EN and IEC 60034-1, 60034-5 and 60034-22.
- ISO 8528-3 "Reciprocating internal combustion engine driven alternating current generating sets. Part3.Alternating current generators for generating sets".

These generators also comply with the ROHS Directive Nr 2011/65/EU dated 8th June 2011 and its Annex II Nr 2015/863 dated 31st March 2015, as well as the EMC Directive Nr 2014/30/EU dated 26th February 2014.

Declaration of incorporation:

These generators are designed to meet the essential requirements Annex I, chapters 1.1.2, 1.1.3, 1.1.5, 1.3.1 to 1.3.3, 1.3.6 to 1.3.8.1, 1.4.1, 1.4.2.1, 1.5.2 to 1.5.11, 1.5.13, 1.6.1, 1.6.4, 1.7 (except 1.7.1.2) of Machinery Directive Nr 2006/42/EC, as well as Annex VII, part B of this directive and the aforementioned standards.

As a result, these "Partly completed machinery" are designed to be incorporated into Electrical Gen-Sets complying with the Machinery Directive Nr 2006/42/EC dated 17th May 2006.

WARNING:

The here mentioned generators should not be commissioned until the corresponding Gen-Sets have been declared in compliance with the Directives Nr 2006/42/EC, 2014/30/EU, 2011/65/EU and 2015/863, as well as with other relevant Directives.

Moteurs Leroy-Somer undertakes to transmit, in response to a reasoned request by the national authorities, relevant information on the generator.

Those responsible for compiling the technical files and this declaration are:

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SAS with share capital of 32,239,235 € - RCS Angoulême 338 567 258.

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The contractual EC Declaration of compliance and incorporation can be obtained from your contact on request.

TRANSPORT AND STORAGE

Low Voltage Alternators - 4 poles

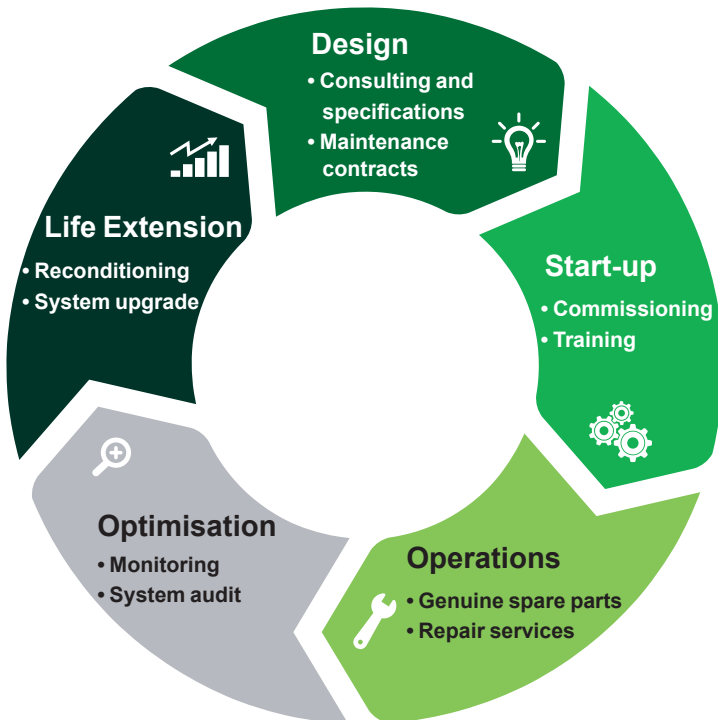
Service & Support

Our worldwide service network of over 80 facilities is at your service. Our local presence is your guarantee for fast and efficient repair, support and maintenance services.

Trust your alternator maintenance and support to electric power generation experts. Our field personnel are 100% qualified and fully trained to operate in all environments and on all machine types.

We have a deep understanding of alternators operations, providing the best value service to optimize your cost of ownership.

How can we help:



Contact us:

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