

LEROY-SOMER™



LSAP 45 - 4 POLES
AC GENERATORS
Installation and maintenance

LSAP 45 - 4 POLES
AC GENERATORS

This manual concerns the ac generator 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.

WARNING SYMBOLS

We wish to draw your attention to the following 2 safety measures which must be complied with:

a) During operation, do not allow anyone to stand in front of the air outlet guards, in case anything is ejected from them.

b) Do not allow children younger than 14 to go near the air outlet guards.

A set of self-adhesive stickers depicting the various warning symbols is included with this maintenance manual. They should be positioned as shown in the drawing below once the machine has been fully installed.

WARNING

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

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.

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1 - RECEIPT

1.1 - Standards and safety measures

Our ac generators comply with most international standards. See the EC Declaration of Incorporation on the last page.

1.2 - Inspection

On receipt of your ac generator, check that it has not suffered any damage in transit. If there are obvious signs of knocks, contact the transporter (you may be able to claim on their insurance) and after a visual check, turn the machine by hand to detect any malfunction.

1.3 - Identification

The ac generator is identified by means of a nameplate fixed on the machine (see drawing).

Make sure that the nameplate on the machine conforms to your order.

1.3.1 - Nameplate

So that you can identify your machine quickly and accurately, we suggest you write its specifications on the nameplate below.

1.4 - Storage

Prior to commissioning, machines should be stored :

- Away from humidity (< 90%); after a long period of storage, check the machine insulation (section 3.2.1). To prevent the bearings from becoming marked, do not store in an environment with significant vibration.

1.5 - Application

These ac generator are mainly designed to produce electricity in the context of applications involving the use of generator s.

1.6 - Contraindications to use

Use of the machine is restricted to operating conditions (environment, speed, voltage, power, etc) compatible with the characteristics indicated on the nameplate.

LEROY-SOMER™				
BRUSHLESS SYNCHRONOUS GENERATOR				
Type	<input type="text"/>	M/CNo.	<input type="text"/>	<input type="text"/>
kVA	<input type="text"/>	Insul.Class	<input type="text"/>	Encl. <input type="text"/> Conn. <input type="text"/>
kW	<input type="text"/>	Direction DE	<input type="text"/>	Hz <input type="text"/> Altitude <input type="text"/>
Volts	<input type="text"/>	Ambient °C	<input type="text"/>	P.F. <input type="text"/> RPM <input type="text"/>
AMPS:	<input type="text"/>	SAE / Disc	<input type="text"/>	Duty <input type="text"/> Wt. <input type="text"/> Kg.
Phase	<input type="text"/>	Excitation	<input type="text"/> VOLTS	AMPS. <input type="text"/>
AVR	<input type="text"/>	Bearing	DE. <input type="text"/> NDE. <input type="text"/>	IEC 34.1 / IS: 13364/4722
Nidec Industrial Automation India Private Ltd. BENGALURU - 562 162. INDIA				

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2 - TECHNICAL CHARACTERISTICS

2.1 - Electrical characteristics

The LSAP 45 ac generator is a machine without sliprings or revolving armature brushes, wound as "2/3 pitch", 6 or 12-wire, with class H insulation and a field excitation system available in either SHUNT, AREP or «PMG» version (see diagrams and AVR manuals).

2.1.1 - Electrical options

- Stator temperature detection sensors
- Bearing sensors (PTC, PT100, etc)
- Space heater

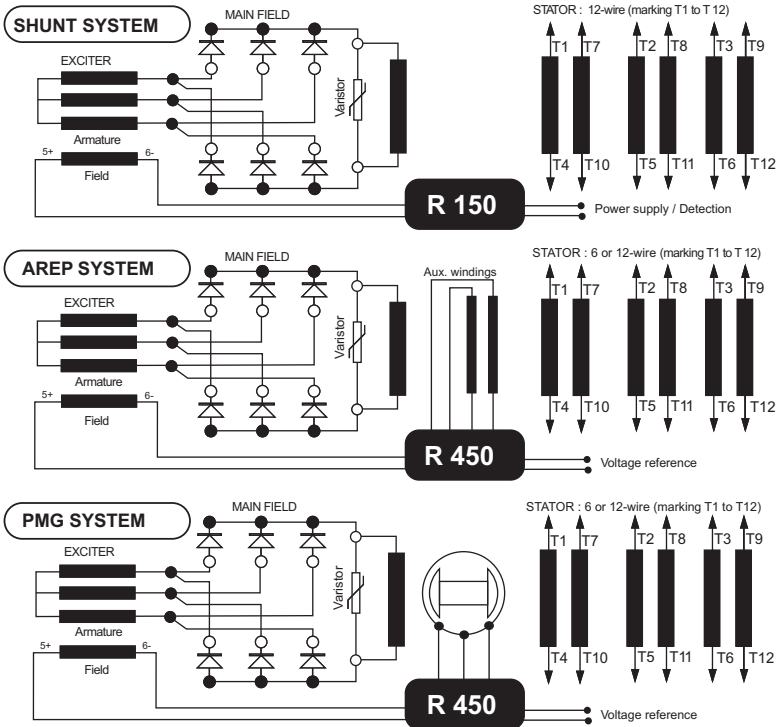
Interference suppression conforms to standard EN 55011, group 1, class B (Europe).

2.2 - Mechanical characteristics

- Steel frame
- Cast iron end shields
- Protected ball bearings, greased for life
- Mounting arrangements:
IM 1201 (MD 35) foot and fange mounted, single-bearing with SAE coupling disc.
IM 1001 (B 34) double-bearing with SAE fange and standard cylindrical shaft extension.
- Drip-proof machine, self-cooled
- Degree of protection: IP 23

2.2.1 - Mechanical options

- Air inlet filter
- Regreasable ball bearings
- IP 44 protection



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3 - INSTALLATION

Personnel undertaking the various operations indicated in this section must wear personal protective equipment appropriate for mechanical and electrical hazards.

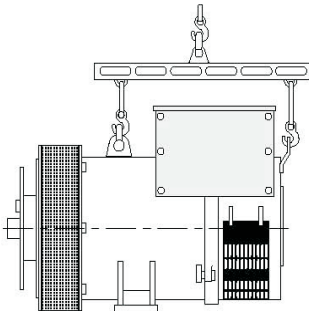
3.1 - Assembly



All mechanical handling operations must be undertaken using suitable equipment and the machine must be horizontal. Check how much the machine weighs (see 4.8.3.) before choosing the lifting tool.

3.1.1 - Handling

The generously-sized lifting rings are for handling the alternator alone. They must not be used to lift the genset. The choice of lifting hooks or handles should be determined by the shape of these rings. Choose a lifting system which respects the integrity and the environment of the alternators.



During this operation, do not allow anyone to stand under the load.

3.1.2 - Coupling

3.1.2.1 - Single-bearing ac generator

Before coupling the machines, check that they are compatible by:

- undertaking a torsional analysis of the transmission,
- checking the dimensions of the flywheel and its housing, the flange, coupling discs and offset.

WARNING

When coupling the ac generator to the prime mover, do not use the fan to turn the ac generator or rotor.

The holes of the coupling discs should be aligned with the flywheel holes by cranking the engine.

Make sure the ac generator is securely wedged in position during coupling.

Check that there is lateral play on the crankshaft.

3.1.2.2 Double-bearing ac generator

- Semi-flexible coupling

Careful alignment of the machines is recommended, checking that the lack of concentricity and parallelism of both parts of the coupling do not exceed 0.1 mm.

This ac generator has been balanced with a 1/2 key.

3.1.3 - Location

The room where the ac generator is placed must be ventilated to ensure that the ambient temperature cannot exceed the data on the nameplate.

3.2 - Checks prior to first use

3.2.1 - Electrical checks



Under no circumstances should an ac generator, new or otherwise, be operated if the insulation is less than 1 megohm for the stator and 100,000 ohms for the other windings.

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There are 2 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.

Note : Prolonged standstill: In order to avoid these problems, we recommend the use of space heaters, as well as turning over the machine from time to time. Space heaters are only really effective if they are working continuously while the machine is stopped.

WARNING

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

3.2.2 - Mechanical checks

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

- all fixing bolts and screws are tight.
- the cooling air is drawn in freely.
- the protective grilles and housing are correctly in place.

- the standard direction of rotation is clockwise as seen from the shaft end (phase rotation in order 1 - 2 - 3).

For anti-clockwise rotation, swap 2 and 3.

- the winding connection corresponds to the site operating voltage (see section 3.3).

3.3 - Terminal connection diagrams

To modify the connection, change the position of the stator cables on the terminals. The winding code is specified on the nameplate.

3.3.1 - Terminal connection: 12 wire

The connection accessories are detailed in section 5.3.3.

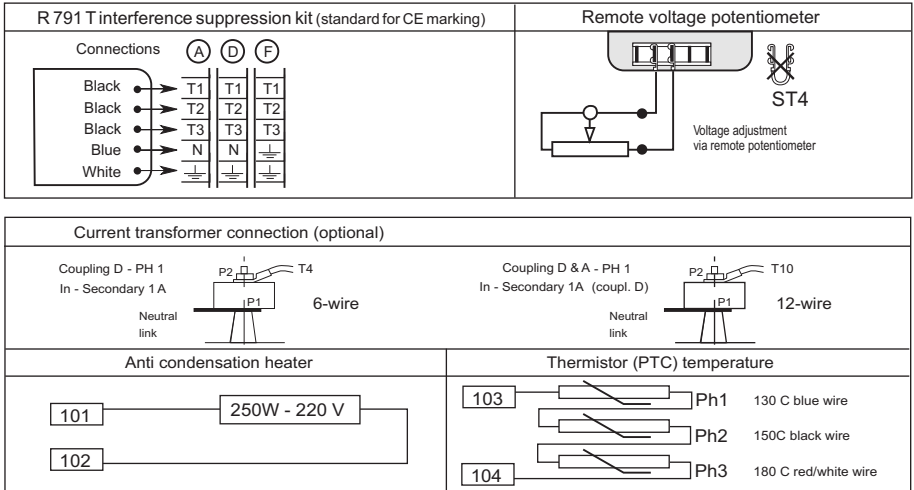


Any intervention on the alternator terminals during reconnection or checks should be performed with the machine stopped.

Connection codes	Voltage L.L			Factory connection					
<p>(A)</p> <p>3-phase</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Winding</th> <th style="width: 15%;">50 Hz</th> <th style="width: 15%;">60 Hz</th> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">190 - 208</td> <td style="text-align: center;">190 - 240</td> </tr> </table>	Winding	50 Hz	60 Hz	6	190 - 208	190 - 240		
Winding	50 Hz	60 Hz							
6	190 - 208	190 - 240							
<p>⚠ R 450 voltage detection : 0 => (T3) / 220 V => (T2)</p>									
<p>(D)</p> <p>3-phase</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Winding</th> <th style="width: 15%;">50 Hz</th> <th style="width: 15%;">60 Hz</th> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">380 - 415</td> <td style="text-align: center;">380 - 480</td> </tr> </table>	Winding	50 Hz	60 Hz	6	380 - 415	380 - 480		
Winding	50 Hz	60 Hz							
6	380 - 415	380 - 480							
<p>⚠ R 450 voltage detection : 0 => (T3) / 380 V => (T2)</p>									
<p>⚠ In case of reconnection, ensure that AVR voltage detection is correct ! The factory can supply a set of flexible shunts and special connection links as an option for making these connections. (*).</p>									

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3.3.2 - Option connection diagram



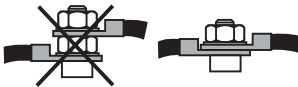
3.3.3 - Connection checks



Electrical installations must comply with the current legislation in force in the country of use.

Check that:

- The residual circuit-breaker conforms to legislation on protection of personnel, in force in the country of use, and has been correctly installed on the alternator power output as close as possible to the alternator. (In this case, disconnect the wire of the interference suppression module linking the neutral).
- Any protection devices in place have not been tripped.
- If there is an external AVR, the connections between the alternator and the cabinet are made in accordance with the connection diagram.
- There is no short-circuit phase-phase or phase-neutral between the alternator output terminals and the generator set control cabinet (part of the circuit not protected by circuitbreakers or relays in the cabinet).
- The machine should be connected with the busbar separating the terminals as shown in the terminal connection diagram.



3.4 - Commissioning



The machine can only be started up and used if the installation is in accordance with the regulations and instructions defined in this manual.

The machine is tested and set up at the factory. When first used with no load, make sure that the drive speed is correct and stable (see the nameplate). With the regreassable bearing option, we recommend greasing the bearings at the time of commissioning (see 4.2.2).

On application of the load, the machine should achieve its rated speed and voltage; however, in the event of abnormal operation, the machine setting can be altered (follow the adjustment procedure in section 3.5). If the machine still operates incorrectly, the cause of the malfunction must be located (see section 4.4).

3.5 - Setting up



The various adjustments during tests must be made by a qualified engineer.

Ensure that the drive speed specified on the nameplate is reached before commencing adjustment.

After operational testing, replace all access panels or covers.

The AVR is used to make any adjustments to the machine.

4.0 GENERATOR ERECTION AND ASSEMBLY:

4.1 DELIVERY AND STORAGE

Upon receipt of the generator, it is recommended that it should be carefully examined for possible damage incurred in shipment. The generator was given to the Freight Company in good condition, and they are responsible for the product from our dock to yours. Any damage should be noted on the freight bill before accepting the shipment. Claims for damages must be promptly filed with the Freight Company.

The AC Generator must be stored in a clean and dry place to avoid entry of moisture and the harmful dusts as otherwise the insulation resistance of the windings will get affected.

In order to prevent compression pits in the bearings, the AC Generator should be stored in vibration free premises.

4.2 LOCATION

The AC Generator shall be installed where there is sufficient circulation of fresh-air. i.e. ambient temperature never exceeds 40°C for the normal rating. For higher temperature, a deration factor should be applied. Further the room must be dry and the machine must be easily accessible.

Vibration of the AC Generator should be with in values specified in IS: 4722. If vibration is more, then the levels of the AC Generator feet should be checked with the help of dial indicator and corrected.

Care should be taken that exhaust of diesel engine does not get mixed with the air inlet of the AC Generator.

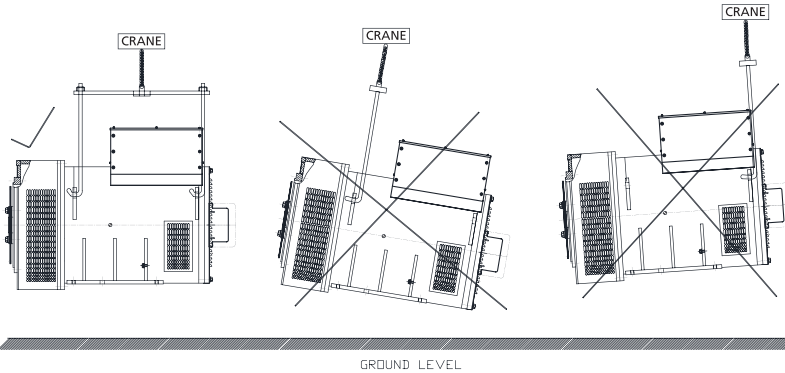
4.3 FOUNDATION

The machine should be mounted on a foundation / base frame, which may be of steel structure or concrete platform. The foundation / base frame must be well designed for adequate rigidity and long life, taking into consideration the dynamic loading under abnormal running of the machine, vibration resulting from running machinery and other relevant factors. Care must be taken to ensure that the surface to which the machine is bolted down is aligned and leveled in all directions prior to mounting the machine.

4.4 INSTALLATION

Make sure that the air inlet and outlet openings are clear without any obstruction. The AC Generators are intended for horizontal mounting and direct-drive through flexible coupling in case of double bearing machine and with coupling disc in single bearing machine; the tapped holes provided in the shaft end/hub can be used for fitting coupling.

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4.5 ALIGNMENT

Measuring the concentricity and parallelism of the coupling shall carefully align the AC Generator and the prime mover. The difference between the two coupling halves shall not exceed 0.1mm.

4.6 DIRECTION OF ROTATION

The AC Generator can be driven in either direction of rotation. For the standard phase sequence U-V-W, the rotation is clockwise looking from the drive end of the AC Generator, for anticlockwise rotation; transpose phases V and W to get U-W-V phase sequence.

4.7 TERMINATIONS AND SWITCHGEAR

Standard termination consists of four terminals, three-phase and a neutral. Correct size of cable glands should be chosen.

The switchgear should include all those required for the operation of the AC Generator and the same is not in the scope of supply of generator manufacturer as such. Adequate protection system has to be provided to protect and to isolate the generator during any malfunction.



For the optimum performance, the current in the three lines should be equal. However unbalance of up to 25% may be allowed for short period without exceeding the rated current. Voltage regulation and other performance characteristics are not guaranteed for unbalance and non-linear loads.

5.0 COMMISSIONING CHECKS:

5.1 INSULATION CHECKS

If the machine is stored for long period or is suspected to be damp, the insulation resistance of the winding should be checked. While checking the insulation resistance of the winding it must be ensured that all the connections to the AVR and rotating rectifier assembly are removed.

The insulation resistances of all windings are to be checked using a 500V megger before the AC Generator is put into operation. The insulation resistance of the winding and earth should be greater than 2 Mega ohm. If the resistance is less than this value, connect 230V, single phase supply to space heater terminals is provided inside the terminal box for 1 or 2 hours. Again recheck for IR value. Alternative methods to improve IR Value are as follows :-

Disconnect the AVR from the terminals, short circuit the three stator output terminals through a cable capable of carrying the rated current and also provide an ammeter to monitor the current flowing in the short circuit terminals. Connect a 24V battery to the field winding (F1 & F2) terminals of the exciter stator with respect to the polarities in series with a rheostat of about 10 ohms and 250W, with a switching system kept in open position.

Run the generator to its rated speed and adjust its excitation through the rheostat after closing the switch in order to obtain the rated current in the short-circuited terminals. After getting heated up stop the prime mover and again measure the insulation resistance value.

Another method of improving IR value of winding is to circulate the hot air through the machine. Placing heaters inside or near the machine may do it. Care should be taken to see that temperature of no part of the winding exceeds 90°C (194°F) total temperature by thermometer.

5.2 CONNECTION CHECKS

Most of the problems that arise during operation are due to wrong, loose or snapped connections from AVR/switchgear to the machine. Hence, it is important to check these connections thoroughly.

The connection between AVR and the generator terminal should be checked as per the connection diagram.

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5.3 RESIDUAL VOLTAGE CHECKS

The minimum residual voltage at the generator terminals required for positive buildup is about 2.5V between line to neutral with the generator running at rated speed. If the machine does not build up due to low or loss of residual magnetism, the following procedure is applied to recharge the ac generator. Stop the Engine and disconnect the AVR connections. Flash the Exciter field by connecting 12/24V battery with F1 connected to positive and F2 to negative terminal of the battery for 10 - 15 seconds. Failures to build up voltage refer ' Trouble Shooting Chart'.



Do Not Megger or Flash test the Generator Windings unless all leads to the

AVR have been disconnected.

5.4 RATED VOLTAGE AND BALANCED VOLTAGE CHECKS

The generator is started and run at its rated speed. Whenever manual control of voltage is provided as a feature, the generator should be excited on no load manually, till the rated voltage is developed between line to line. The voltage balance on the three lines of the generator should be checked.



Do Not Start the Generator with Load On

Removal of pot sealing in AVR warranty void.

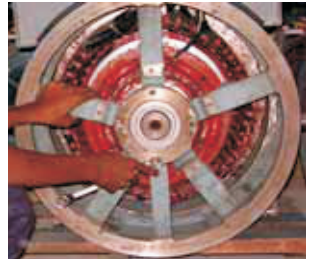
6. RECOMMENDED SPARES:

- | | |
|--------------------------------------|--------|
| 1. Automatic Voltage Regulator(AVR) | -1 No |
| 2. Bearing NDE | -1 No |
| 3. Rotating Rectifier Assembly (RRA) | -1 Set |
| 4. Wound Exciter Rotor | -1 No |
| 5. Wound Exciter Stator | -1 No |
| 6. Terminal Bar | -1 No |

7. SERVICING TIPS:

7.1 Rotor Removal

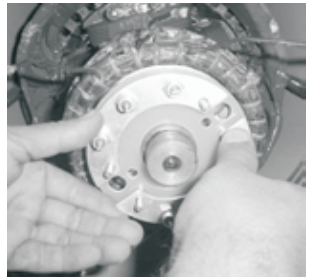
1. Remove NDE front cover.
2. Remove the screws of NDE bearing cap.
3. Disconnect exciter stator winding leads from AVR.
4. Unbolt the NDE end shield from the stator body and jack the NDE end shield with the help of suitable bolts.
5. Take out the Rotor towards the DE side along with the Fan & bearing from the stator body.
6. Re-assemble the Rotor in reverse order.



NDE END SHIELD REMOVAL.

7.2 Rotating Rectifier Assembly Removal

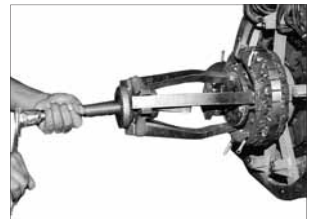
1. Disconnect the RRA connections from Main Rotor and exciter Rotor.
2. Unbolt the RRA from the Exciter Rotor with the help of suitable spanners.
3. Withdraw the RRA assembly towards the NDE side.
4. Refit the RRA on Exciter Rotor in reverse order.



RRA REMOVAL

7.3 Exciter Rotor Removal

1. Remove bearing from the shaft using suitable bearing puller.
2. Remove RRA from the exciter rotor.
3. Fix suitable fixture to studs provided in exciter rotor.
4. Pull out the exciter rotor from the shaft with suitable puller towards the NDE side.



BEARING REMOVAL

7.4 Exciter Stator Removal

1. Disconnect the exciter stator winding leads from AVR.
2. Unbolt the NDE shield from the stator body.
3. Unbolt the exciter stator core from NDE shield.
4. Refit the exciter stator in reverse order.



EXCITER ROTOR REMOVAL

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8. FAULT FINDING CHART

Fault	Cause	Rectification
1. No voltage from generator	Defective Voltmeter	Check voltmeter & replace
	Excitation circuit open	Check for loose connection
	Incorrect excitation circuit connection	Check for proper connection
	Low residual voltage	Check for residual voltage. If residual voltage is less than 2.5 volts (L –N), field flashing required for few seconds.
		Field Flashing procedure : 1. Disconnect regulator connections 2. Connect 12 / 24 V battery keeping F1 to Positive and F2 to Negative terminal of exciter stator.
	Grounded exciter field	Check and correct
	Rotating rectifier faulty	Check rotating diodes
2. Voltage developed but excitation current is high	Fuses in AVR failed	Replace fuses
	AVR Defective	Replace AVR
	Rotating Diode faulty	Check rotating diodes and replace faulty diodes
	Prime mover	Adjust prime mover
3. Low Voltage build up	Prime mover speed is low	Adjust prime mover speed to rated speed
	V – Trim Pot incorrectly set.	Adjust Voltage by V – Trim Pot in AVR
4. Voltage - High	Low prime mover speed	Adjust prime mover speed to rated speed
	Loose OR No- connection to ' U ' terminals of the AVR	Check and correct
	Incorrect Voltage setting	Adjust Voltage by V – Trim Pot in AVR
5. Voltage fluctuation	AVR defective	Replace AVR
	Speed fluctuation of the prime mover	Set the speed of the prime mover
	Incorrect setting of stability Pot	Adjust stability Pot in AVR
	Leading load power factor	Correct the power factor
6. Over heating of generator	Load hunting, fluctuates rapidly	Check and reduce the non – linear load.
	High percentage of Non – linear load	Rectification
6. Over heating of generator	Over loading of generator	Check the load and correct. To be in line with name plate rating.
	Blocking of ventilation passage	Check ventilation and clean passage if necessary
	Low speed on load	Adjust prime mover speed
	Low load power factor	Reduce the load
	Generator operating at very high voltage	Check voltage and adjust
	High percentage of non – linear load	Check and reduce non – linear load

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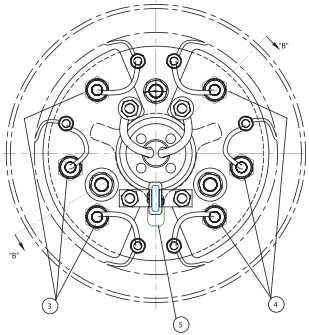
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7. Excessive vibration and noise	Poor alignment	Re – align properly
	Coupling and foundation bolts loose	Tighten the bolts
	Bearing defective	Replace bearings
8. Over heating of bearing	Incorrect assembly of bearing	Re – assemble correctly
	Bearing damaged	Replace bearing
9. Generator does not share kW load proportionately	Prime mover speed droop improperly set	Set prime mover speed properly. Droop (Governor) characteristic of engines.
10. Generator does not share kVA load proportionately	Quadrature droop incorrect	Set quadrature droop correctly by QDC Pot in AVR
	QDC – CT polarity reversed	Interchange CT secondary
	QDC – CT are not in W - phase	Check and rectify.

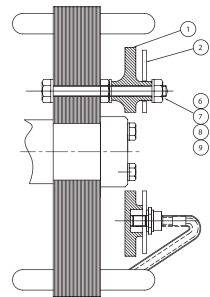
9. ROTATING RECTIFIER ASSEMBLY:

Ref . No.	Description	Quantity
1	Base Plate	1
2	Al. Plate	2
3	Forward Diode	3
4	Reverse Diode	3
5	Varistor	1

ROTATING RECTIFIER ASSEMBLY



ROTATING RECTIFIER ASSEMBLY



SECTION "BB"

Ref. No.	Description	Quantity
1	Hub	1
2	AL. Plate	2
3	Forward Diode	3
4	Reverse Diode	3
5	Varistor	1
6	Hex. Bolt	3
7	Hex. Nut	3
8	Plain Washer	3
9	Lock Washer	3

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10. RECOMMENDED TORQUE VALUES FOR BOLTS & SCREWS IN A C GENERATOR ASSEMBLY:

10.1 The Hexagonal Head Screws & Socket Head Cap Screws in A C Generator Assembly have to be tightened to Torque Values as stated in Table below unless called for otherwise in the relevant Drawing / Specification.

	UNIT	M6	M8	M10	M12	M16	M20	M24
Torque Value	N.m	10	25	50	90	220	440	750
	Kgf.m	1.0	2.5	5.0	9.0	22.0	44.0	75.0

10.2 The Terminal board Stud in A C Generator Assembly has to be tightened to torque values as stated in table below.

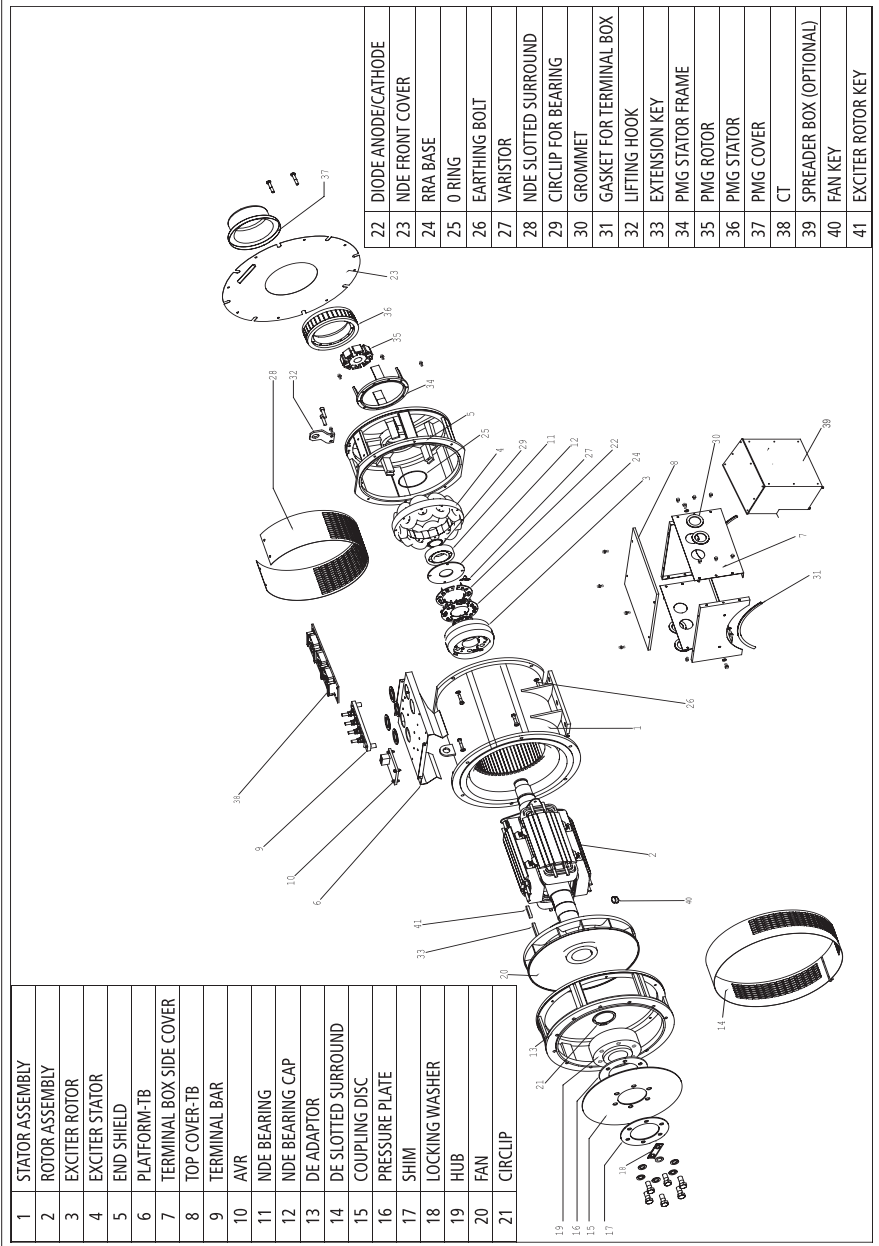
Sl No.	Frame	Stud Size	Torque in	
			N.m	kgf.m
1	LSAP 45	M12	46	4.6

10.3 RRA Base Studs has to be tightened to a Torque Value of 5 N.m / 0.5 kgf.m

Note : Tightening Torque tolerance is $\pm 10\%$ for all the above

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11. EXPLODED VIEW OF LS BRUSHLESS AC GENERATOR SINGLE BEARING



Installation and maintenance

**LSAP 45 - 4 POLES
AC GENERATORS**

6. WARRANTY CERTIFICATE

Ref No.

Date:

This is to certify that the AC Generator mentioned here under is warranted against inherent manufacturing defects under normal use and preventive maintenance. The AC generator its components will be repaired free of cost if failed due to inherent manufacturing defects within a period of 12 calendar months from the date of commission or 18 calendar months from the date of dispatch whichever is earlier.

FRAME	kVA/ PHASE	RPM	MACHINE NO	ENGINE MAKE & TYPE

The above machine conforms strictly to the specification referred and if it is found defective during the above period, it will be rectified / replaced / repaired free of cost by us / by our authorized service center on receipt of the defective product.

Refer Warranty Clause for more details

For Nidec Industrial Automation India Private Ltd.

Authorized Signatory

Name &

Address of the OEM/Dealer:

(Seal)

Name &

Address of Customer

OEM's Invoice No:

Date of commissioning:

7. WARRANTY CLAUSE

1. The AC Generator will be repaired free of cost with in the warranty period, if it goes out of order due to inherent manufacturing defects.
2. The period of warranty is for TWELVE calendar months from the date of commissioning or EIGHTEEN calendar months from the date of dispatch whichever is earlier.
3. The warranty is subject to conditions that the AC Generator is returned to our works or authorized service center as directed, intact and without any alterations/additions/repairs done or attempted.
4. The warranty is applicable for AC Generators under normal use and preventive maintenance.
5. The warranty does not cover normal wear and tear or damages caused by accidents or wrong handling or due to improper installation and maintenance.

NOTE :- In order to provide efficient & correct services, our authorized technician should be allowed to inspect, analyse and assess the failure/ causes of failure at the site. Your co-operation in this regard helps us to serve you better.

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This sheet to be sent for availing the warranty to the address below.

10. AC GENERATOR REGISTRATION FORM (ARF)-

1. Name and Address of user (s) : - _____

PIN:: _____

Ph: _____

2. Rating and M/c Number of the AC GENERATOR:

a. Rating _____ kVA b. Machine Number _____

3. Name and address of the agency from which you have purchased the AC Generator.

Name: _____

PIN: _____ Ph: _____ Fax: _____

1. Date of Commissioning d m y

2. Nature of power application from the AC Generator

(Please tick in the appropriate box)

Standby / Emergency power generation Captive Power Generation Others (Please specify below)

3. Whether the voltage buildup was proper or not? Yes No.

4. Quality of power available from the Brushless AC Generator: Satisfactory Unsatisfactory

If unsatisfied, please elaborate:

Signature Name & Company of Commissioning Engineer

Signature of Customer

Date:

Place:

BOOK - POST

To.

Nidec Industrial Automation India Private Ltd.

#45, Nagarur, Huskur Road, Off Tumkur Road,
Bengaluru - 562 162, India

T: +91 80 6726 4800 / F: +91 80 23717808

www.leroy-somer.in

Postage
Stamp

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SERVICE HISTORY CARD

Date	Type Complaint	Action Taken	Parts Replaced	Result	Repair work Done by	Date of Completion

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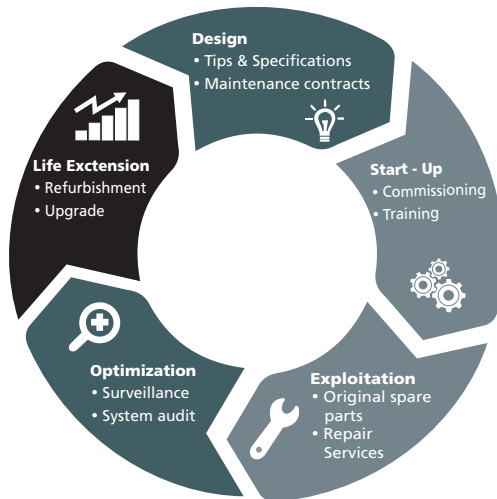
Service Support

Our network of international service of more than 80 installations is at your disposal. This local presence guarantees fast, efficient tracking, support and maintenance services

Trust the power generation experts for the maintenance and support of your alternator. Our field staff is qualified and perfectly trained to work in most environments and on all types of machines.

Our in-depth knowledge of alternator operation ensures optimal service to reduce your operating costs.

We are able to help you in the following areas



To Contact us:

Americas: +1 (507) 625 4011

Europe & International: +33 238 609 908

Asia-Pacific: +65 6250 8488

China: +86 591 88373036

India: +91 80 6726 4867

✉ service.epg@leroy-somer.com



Scan the code or go to the page:
www.lrsom.co/support

CLIMATE AND ENVIRONMENT

1) Anti-Condensation heaters (SPACE HEATERS)

Space heaters are recommended in areas of high humidity. Condensation will form on all surfaces which are cooler than ambient temperature. To avoid this, anti-condensation heaters can be fitted which will ensure the winding temperature remains a few degrees above the ambient temperature and hence no condensation will form. Note that the anti-condensation heaters should be on only when the D.G Set is OFF, and they should be switched off while the D.G set is in use.

2) Air Filters

Under site conditions where the air may be heavily laden with fine dust or sand we strongly recommend the fitting of inlet air filter. The sizing of these is important to avoid airflow restrictions and advice should be sought from the works.

Recommended deration to be considered for machines fitted with air filters.

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Disposal and recycling instructions

We are committed to limiting the environmental impact of our business. We constantly monitor our production processes, our raw material supplies and the design of our products to improve the ability to recycle them and reduce our carbon footprint. These instructions are provided for information purposes only. It is the user's responsibility to comply with local waste disposal and recycling legislation.

Recyclable Materials

Our alternators are mainly composed of cast iron, steel and copper, which can be upgraded by recycling. These materials can be recovered via a set of dismantling, mechanical separation and melting processes. Our technical support can give you detailed instructions on disassembling products on request.

Waste and hazardous materials

The following components and materials require suitable treatment and must be removed from the alternator prior to the recycling process: the electronic materials in the terminal box, including the automatic voltage regulator (198), the current transformers (176), the interference suppression module (199) and the other semiconductors.

- the diode bridge (343) and the varistor (347), assembled on the rotor of the alternator; the main plastic components, such as the structure of the terminal box on certain products. These components usually have a symbol indicating the type of plastic used.

All the materials listed above must suitably be processed to separate the waste from the recoverable materials and must be entrusted to the valorization companies.

The oil and grease used for bearing lubrication must be considered as hazardous waste and treated in accordance with local legislation.

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