

TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00000YN
Revision No:
6

This is to certify:

That the **Generator**

with type designation(s)
LSAM, LL and LC

Issued to

Moteurs Leroy Somer
Angoulême Cedex 9, France

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft
DNV class programme DNV-CP-0393 – Type approval – Rotating electrical machines

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Degree of protection	IP23, IP44 (derating 10%)
Insulation class	H
Temp. class (°C)	B, F or H
Voltage (V)	220V - 690V
Power (kW)	9kVA to 2350kVA (50Hz) ; 10.5kVA to 2615kVA (60Hz)
Frequency (Hz)	50 or 60 Hz
Speed (RPM)	1500 rpm or 1800 rpm

Issued at **Høvik** on **2022-05-23**

This Certificate is valid until **2027-03-22**.

DNV local station: **France NB**

for **DNV**

Approval Engineer: **Nicolay Horn**

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Trond Sjøvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Name and place of manufacturer

Nidec Moteurs Leroy Somer
 EPG
 Boulevard Marcellin Leroy
 CS 10015
 16915 Angoulême cedex 9
 France

Nidec Leroy Somer EPG
 Av. Industrial Reynosa Lote M-6
 Parque Industrial Center
 CP 88780 Reynosa
 Mexico

Leroy Somer Electro
 Technology (Fuzhou) Co. Ltd
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 District
 350026 Fuzhou
 China

Nidec Moteurs Leroy Somer
 OLO1 M.L.S
 Holice Spol. S.R.O
 Sladkovskeho 43
 772 04 Olomouc
 Czech Republic

Nidec Moteurs Leroy Somer
 OLO2&OLO3 M.L.S
 Holice Spol. S.R.O
 Prumyslova
 772 04 Olomouc
 Czech Republic

Nidec Leroy Somer EPG
 669 Natchez Trace Drive
 TN 38351 *Lexington*
 United States of America

Product description

AC Synchronous Generators for marine environments Type LSAM, LL and LC

LSAM types: 40, 42.3, 44.3, 46.2, 46.3, 47.2, 47.3, 49.1, 49.3, 50.2, 52.3

LL/LC types: 11, 15, 31, 50, 51, 61, 62, 70, 72 and LL82 and 93

Enclosure class:	IP23, IP44 (derating 10%)
Winding insulation:	Class H
Temperature rise limits:	Class B, Class F or Class H
Voltage class:	220V to 690V
Power class:	9kVA to 2350kVA (50Hz) ; 10,5kVA to 2615kVA (60Hz)
Frequency class:	50 or 60 Hz
Speed:	1500 or 1800 rpm
Duty type:	S1
Power factor:	0,8, 0.9
Ambient temperature	45°C, 50°C
AVR:	R220, R250, R438, R449, R450, AREP, AREP+, PMG, D350, D510C, D550 and D700

Application/Limitation

The generator must be regarded as a component. The voltage regulator is a part of this type approval. However, the end user / system responsible must ensure that the generator including the voltage regulator fulfills the DNV Rules Pt.4 Ch.8 Sec.5 2.2. The adjustment of the AVR (lexc max, droop, U/f, knee point) to be checked during commissioning on board.

This type approval certificate does not replace the requirement to DNV Product Certificate for units larger than 300kVA.

Type Approval documentation

Tests carried out

Tested according to IEC 60034-1 / 2010-01 and GL Guidelines for the Performance of Type Approvals, VI-7-6 part 4, ed. 1999.

Marking of product

Leroy Somer S.A, type designation, serial number, ingress protection (IP), ambient temperature, power factor, voltage, current, frequency, speed, output apparent power, winding insulation.

Periodical assessment



Job Id: **262.1-021380-10**
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The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE