



Marine & Offshore

Certificate number: 22940/B2 BV

File number: ACE 4/440/02

Product code: 2584I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

MOTEURS LEROY SOMER
ANGOULEME CEDEX - FRANCE

for the type of product

ASYNCHRONOUS MACHINES (Power 100kW and over)
LS - LSES - FLS - FLSES - LSMV - PLS - PLSES series.

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships and Naval ships.

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 12 Nov 2020

For Bureau Veritas Marine & Offshore,

At BV BORDEAUX, on 06 Jan 2020,

Gabriel ZIMMER



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

1.1 - Three phase Cage Induction Marine Motors - Type FLS – FLSES (FLSES = Energy Saving AC Mtors):

Frame material	Cast iron
Number of poles:	2 to 8 and combinaison poles
Height of frame:	280, 315,355
Power supply:	230 to 690 V 50 Hz – 415V 50Hz - 440
V/480V 60 Hz	
Enclosure en cooling	IP 55 - IC411
Ambient temperature:	40°C to 50°C
Duty type:	S1 to S10
Insulation class:	F
Temperature rise:	B or F

Rated power at S1 with ambient temperature 40°C and ΔT 80°K*

Motor type	kW 2 poles 50 Hz	kW 2 poles 60 Hz	kW 4 poles 50 Hz	kW 4 poles 60 Hz	kW 6 poles 50 Hz	kW 6 poles 60 Hz	kW 8 poles 50 Hz	kW 8 poles 60 Hz
FLS280M	/	103	/	103	/	/	/	/
FLS315ST	110	126	110	125	/	/	/	/
FLS315M	132	150	132	150	/	105	/	/
FLS315LA	160	180	160	185	110	125	/	105
FLS315LB	200	230	200 ²	230 ²	132	150	110	125
FLS315LB	/	/	/	/	150	170	/	/

1.2 - Three phase Cage Induction Marine Motors - Type LS – LSES (LSES = Energy Saving AC Mtors):

Frame material	Aluminium
Number of poles:	2 to 6 and combinaison poles
Height of frame:	280, 315
Power supply:	230 to 690 V 50 Hz – 415V 50Hz - 440 V/480V 60 Hz
Enclosure en cooling	IP 55 - IC411
Ambient temperature:	40°C to 50°C
Duty type:	S1 to S10
Insulation class:	F
Temperature rise:	B or F

Rated power at S1 with ambient temperature 40°C and ΔT 80°K*

Motor type	kW 2 poles 50Hz	kW 2 poles 60Hz	kW 4 poles 50Hz	kW 4 poles 60Hz	kW 6 poles 50Hz	kW 6 poles 60Hz
LS / LSES 280 MC	-	110	-	-	-	-
LS / LSES 280 MD	-	-	-	110	-	-
LS / LSES 315 SP	110	132	110	132	-	-
LS / LSES 315 SN	110	132	-	-	-	-
LS / LSES 315 MP	132	160	132	160	-	110
LS / LSES 315 MP	160	190	160	190	-	110
LS / LSES 315 MP	176	210	-	-	-	110
LS / LSES 315 MP	200	240	-	-	-	110
LS / LSES 315 MR	160	190	189	230	110	132
LS / LSES 315 MR	200	240	200	240	132	160

* : The power indicated in this table can be modified according to ambient temperature and duty type dedicated to the motor

² : Temperature rise class F

1.3 - Three phase Cage Induction Marine Motors driven by electronic drive - Type LSMV:

Frame material	Aluminium
Number of poles:	4
Height of frame:	280 - 315
Power supply:	380 VY - 400 VY and 415 VY at 50 Hz; 460 VY 60 Hz
Enclosure en cooling	IP 55 - IC411
Ambient temperature:	40°C to 50°C
Duty type:	S1 to S10
Insulation class:	F
Temperature rise:	B or F

Rated power at S1 with ambient temperature 40°C and ΔT 80°K*

Motor type	kW 4 poles 50 Hz	kW 4 poles 60 Hz	kW 6 poles 60 Hz
LSMV 280 MK	/	103	/
LSMV 315 SP	110	126	/
LSMV 315 MR	132	152	/
LSMV 315 MP	/	/	103

* : The power indicated in this table can be modified according to ambient temperature and duty type dedicated to the motor

1.4 - Three phase Cage Induction Marine Motors - Type PLS - PLSES (PLSES= Energy saving AC motors):

Frame material	Steel or aluminium
Number of poles:	2 to 8
Height of frame:	250, 280, 315
Power supply:	230 to 690 V 50 Hz – 415V 50Hz - 440 V/480V 60 Hz
Enclosure en cooling	IP 23 – IC01
Ambient temperature:	40°C to 50°C
Duty type:	S1 to S10
Insulation class:	F
Temperature rise:	B or F

Rated power at S1 with ambient temperature 40°C and ΔT 80°K*

Motor type			kW 2 poles 50Hz	kW 2 poles 60Hz	kW 4 poles 50Hz	kW 4 poles 60Hz	kW 6 poles 50Hz	kW 6 poles 60Hz	kW 8 poles 50Hz	kW 8 poles 60Hz
PLS / PLSES	250	MP	110	130	-	-	-	-	-	-
PLS / PLSES	250	MF	110	130	-	110	-	-	-	-
PLS / PLSES	250	SF	-	110	-	-	-	-	-	-
PLS / PLSES	250	SP	-	110	-	-	-	-	-	-
PLS / PLSES	250	SF	-	110	-	-	-	-	-	-
PLS / PLSES	280	SC	132	160	110	130	-	-	-	-
PLS / PLSES	280	SGJ	-	-	110	130	-	-	-	-
PLS / PLSES	280	SGU	-	-	110	130	-	-	-	-
PLS / PLSES	280	MC	132	160	-	-	-	-	-	-
PLS / PLSES	280	MD	132	160	132	160	-	-	-	-
PLS / PLSES	280	MG	160	190	132	160	-	-	-	-
PLS / PLSES	280	MGU	-	-	132	160	-	-	-	-
PLS / PLSES	315	S	160	190	160	190	-	-	-	-
PLS / PLSES	315	SU	160	190	-	-	110	130	-	-
PLS / PLSES	315	M	200	240	200	240	-	-	-	-
PLS / PLSES	315	SUR	-	-	160	190	-	-	-	-
PLS / PLSES	315	MU	200	240	200	240	132	160	-	-
PLS / PLSES	315	MUR	-	-	200	240	-	-	-	-
PLS / PLSES	315	MGU	315	380	-	-	180	220	-	-
PLS / PLSES	315	MG	280	340	280	340	180	220	132	150
PLS / PLSES	315	MG	315	380	315	380	200	240	-	-
PLS / PLSES	315	MG	315	380	315	380	220	260	-	-
PLS / PLSES	315	LD	250	300	-	-	-	-	-	-
PLS / PLSES	315	LD	280	340	-	-	200	240	-	-
PLS / PLSES	315	LG	355	430	280	340	200	240	160	180
PLS / PLSES	315	LG	400	480	315	380	250	300	180	200
PLS / PLSES	315	LG	400	480	400	480	250	300	-	-
PLS / PLSES	315	LG	400	480	355	430	-	-	-	-
PLS / PLSES	315	VLG	450	540	400	480	200	240	200	230

PLS / PLSES	315	VLG	450	540	450	540	280	340	-	-
PLS / PLSES	315	VLGU	500	600	450	540	250	300	-	-
PLS / PLSES	315	VLGU	500	600	500	600	315	380	-	-
PLS / PLSES	315	L	211	250	250	300	160	190	-	-
PLS / PLSES	315	L	230	280	-	-	-	-	-	-
PLS / PLSES	315	L	250	300	-	-	-	-	-	-
PLS / PLSES	315	LD	250	300	280	340	180	220	-	-
PLS / PLSES	315	LD	280	340	-	-	200	240	-	-
PLS / PLSES	315	LD	315	380	-	-	-	-	-	-
PLS / PLSES	315	LD	280	340	-	-	-	-	-	-
PLS / PLSES	315	LDS	-	-	-	-	-	-	-	-
PLS / PLSES	315	LU	-	-	260	310	-	-	-	-
PLS / PLSES	315	LU	-	-	280	340	-	-	-	-
PLS / PLSES	315	LUS	-	-	250	300	-	-	-	-

* : The power indicated in this table can be modified according to ambient temperature and duty type dedicated to the motor

² : Temperature rise class F

2. DOCUMENTS AND DRAWINGS :

Out-line drawings and technical data

Type LS as per catalogue Leroy Somer N° 3676 fr – 06.2008 / g

Type LSMV as per catalogue Leroy Somer N° 3791 fr – 06.2008 / d

Type FLS - FLSC as per catalogue Leroy Somer N° 3653 fr – 09.2007 / f

Type PLS as per catalogue Leroy Somer N° 3627 fr – 06.2005 / d

For B1 version:

Specification for types LSES - FLSES - PLSES ref. 5147 fr, dated Apr.2016.

Specification ref. 4850 fr, dated Jun.2016.

Specification ref. 1889, dated Feb.2016.

Drawings refs. m10058, m10061, m10077, m10078, m10079, m10080, m10081, m10250, m10254, m10255, m10259, m8337, m8387, m8388, m8685, m8822, m9588.

3. TEST REPORTS :

Q1 - T 137 Rev C dated 03/04/2009N° for Degree of protection

Type tests report carried out according to BV Rules Pt C, Ch 2, Sec 4 table 1

For B1 version:

MOTEURS LEROY SOMER:

- Tests reports refs. E01_C089, E02_C089, E03_C089, E04_C089, E05_C065, E07_C087, E09_C087, E10_C066, E11_C066, E11_C067, E12_C067, E14_C087, E14_C088, E16_C087, E18_C065, E23_C066, E025_C066, E30_C067, E35_C088, E37_C85, E42_C056, E43_C057, E43_C086, E43_C088, E46_C086, E47_C056, E47_C057, E48_C056, E48_C088, E48_C057, E49_C056, E50_C057.

- Test report T79 R002, dated 03.Apr.2012.

4. APPLICATION / LIMITATION:

4.1 - Application / Limitation of use

According to BV Rules for the Classification of Steel Ships, Naval Ships and IEC 60092 series.

4.2 - On board installation & Maintenance requirements

According to BV Rules for the Classification of Steel Ships, Naval Ships and IEC 60092 series.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **MOTEURS LEROY SOMER** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.3 - BV product certificate is required.

5.4 - For information, **MOTEURS LEROY SOMER** has declared to Bureau Veritas the following production sites:

**MOTEURS LEROY SOMER
SERVICE COMPTABILITE
BOULEVARD MARCELLIN LEROY
BP 1162
16005 ANGOULEME CEDEX
FRANCE**

**MOTEURS LEROY SOMER (Usine de GOND PONTOUVRE)
ZI N° 3
16015 Angouleme
FRANCE**

**MOTEURS LEROY SOMER (Usine de SAINT GROUX)
Usine de Saint Groux
16230 MANSLE
FRANCE**

6. MARKING OF PRODUCT:

6.1 - Trade name.

6.2 - Date of manufacture and serial number.

6.3 - Equipment type or model identification under which it was type-tested

7. OTHERS:

7.1 - It is **MOTEURS LEROY SOMER** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate No. 22940/B1 BV issued on 18 Sep 2017 by the Society.

***** END OF CERTIFICATE *****