Marine & Offshore

Certificate number: 40978/B1 BV
File number: ACM 180/2509/1
Product code: 1452I

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

TALLERES ZITRON

Gijón - SPAIN

for the type of product

AXIAL FAN

Axial fans V1M, V1MC, V1SM and ZVN1

Requirements:
- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- BUREAU VERITAS Rules for the Classification of Naval Ships
- BUREAU VERITAS Rules for the Classification of Yatchs

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: 07 Aug 2025

For Bureau Veritas Marine & Offshore,
At BV BILBAO, on 26 Apr 2021,
Juan Jose GUTIERREZ GARCIA

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

V1M, V1MC, V1SM, V1SM2 and ZVN1 direct driven axial fans

1.1 Design Specifications

Type	Inlet Diameter (mm)
V1M	250 to 1800
V1MC	250 to 1800
V1SM	315 to 1800
ZVN	1000 to 1800

- Ratings per manufacturer's performance specifications

Type	Inlet diameter (mm)	Max. airflow (m3/h)	Max. speed (rpm)	Max weight (kg)
V1M 250	250	3600	3600	50
V1M 280	280	5100	3600	55
V1M 315	315	8000	3600	60
V1M 355	355	11700	3600	74
V1M 400	400	16300	3600	153
V1M 450	450	23400	3600	163
V1M 500	500	31100	3600	264
V1M 560	560	21200	1800	316
V1M 630	630	30700	1800	337
V1M 710	710	41500	1800	364
V1M 800	800	60800	1800	567
V1M 900	900	84800	1800	691
V1M 1000	1000	121000	1800	907
V1M 1120	1120	165000	1800	959
V1M 1200	1200	202000	1800	1931
V1M 1250	1250	226000	1800	1959
V1M 1400	1400	271000	1800	2044
V1M 1600	1600	354000	1500	2156
V1M 1800	1800	482000	1500	2268

Type	Inlet diameter (mm)	Max. airflow (m3/h)	Max. speed (rpm)	Max weight (kg)
V1MC 250	250	3600	3600	50
V1MC 280	280	5100	3600	55
V1MC 315	315	8000	3600	60
V1MC 355	355	11700	3600	74
V1MC 400	400	16300	3600	153
V1MC 450	450	23400	3600	163
V1MC 500	500	31100	3600	264
V1MC 560	560	21200	1800	316
V1MC 630	630	30700	1800	337
V1MC 710	710	41500	1800	364
V1MC 800	800	60800	1800	567
V1MC 900	900	84800	1800	691
V1MC 1000	1000	121000	1800	907
V1MC 1120	1120	165000	1800	959

V1MC 1200	1200	202000	1800	1931
V1MC 1250	1250	226000	1800	1959
V1MC 1400	1400	271000	1800	2044
V1MC 1600	1600	354000	1500	2156
V1MC 1800	1800	482000	1500	2268

Type	Inlet diameter (mm)	Max. airflow (m3/h)	Max. speed (rpm)	Max weight (kg)
ZVN 1-10	1000	115000	1800	920
ZVN 1-11.2	1120	158000	1800	1090
ZVN 1-12	1200	182000	1800	2030
ZVN 1-12.5	1250	221000	1800	2051
ZVN 1-14	1400	270000	1800	5870
ZVN 1-16	1600	286000	1500	3472
ZVN 1-18	1800	482000	1500	4326

Type	Inlet diameter (mm)	Max. airflow (m3/h)	Max. speed (rpm)	Max weight (kg)
V1SM 315 / V1SM2 315	315	8000	3600	163
V1SM 355 / V1SM2 355	355	11700	3600	137
V1SM 400 / V1SM2 400	400	16300	3600	198
V1SM 450 / V1SM2 450	450	23400	3600	214
V1SM 500 / V1SM2 500	500	31100	3600	321
V1SM 560 / V1SM2 560	560	21200	1800	345
V1SM 630 / V1SM2 630	630	30700	1800	370
V1SM 710 / V1SM2 710	710	41500	1800	401
V1SM 800 / V1SM2 800	800	60800	1800	509
V1SM 900 / V1SM2 900	900	84800	1800	625
V1SM 1000 / V1SM2 1000	1000	121000	1800	833
V1SM 1120 / V1SM2 1120	1120	153000	1800	877
V1SM 1200 / V1SM2 1200	1200	184000	1800	1693
V1SM 1250 / V1SM2 1250	1250	206000	1800	1711
V1SM 1400 / V1SM2 1400	1400	203000	1200	1766
V1SM 1600 / V1SM2 1600	1600	292000	1200	1839
V1SM 1800 / V1SM2 1800	1800	358000	1200	1911

1.2 Materials

Casing	Hot dip galvanized steel Stainless steel AISI 304 Stainless steel AISI 316 Aluminium (AlMg2, AlMg3)
Impellers	Glass fibre reinforced polypropylene PPG Nepol GB402HP Glass fibre reinforced polyamide PA6-GF25 Carbon+glass fibre reinforced polyamide PACAS-V0 Glass fibre reinforced polyamide PAG Aluminium EN AC-Al Si12Cu1(Fe) Aluminium EN AC-AlSi9Cu3 Aluminium (AlMg2, AlMg3)
HUB	Aluminium EN AC-Al Si12Cu1(Fe) Aluminium EN AC-AlSi9Cu3 Aluminium (AlMg2, AlMg3) Glass fibre reinforced polypropylene (PPG)

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

1.3 Electrical Motor Specifications

- As per manufacturer's performance specifications

Manufacturer	ABB LEROY SOMER HOYER ATB WEG

The electrical motors are covered by BV Type Approval Certificates

2. DOCUMENTS AND DRAWINGS

- Instructions manual: operating and maintenance of the fans dated 2015
- Test protocol for characteristic curve of fans dated 14/10/2002
- Drawing N°V1MC T-bench dated 26/04/2013
- Drawing N°V1MC V-bench dated 26/04/2013
- Drawing N°V1M external box & inspection hatch T-bench dated 26/04/2013
- Drawing N°V1M external box & inspection hatch V-bench dated 26/04/2013
- Drawing N°V1M external box T-bench dated 26/04/2013
- Drawing N°V1M external box V-bench dated 26/04/2013
- Drawing N°V1M inspection hatch T-bench dated 26/04/2013
- Drawing N°V1M inspection hatch V-bench dated 26/04/2013
- Drawing N°ZVN1 dated 26/04/2013
- Drawing N° V1SM Rev. 0 dated 16/01/2020
- Drawing N° V1SM2-SB dated 25/01/2021
- Drawing N° V1SM2 dated 25/01/2021
- "Max performance" datasheet rev2, dated 09/04/2021

3. TEST REPORTS

Not required.

4. APPLICATION / LIMITATION

4.1 May be used as mechanical fans approved in marine and offshore ventilation in non-hazardous areas. Fans are capable of operation in supply or exhaust mode.

4.2 Fans can be installed both horizontally and vertically.

4.3 Where necessary, fans are to be suitably earthed to the hull in order to prevent electrostatic charges during operation.

4.4 The installation on board is to be carried out in compliance with manufacturer's instructions and in accordance with the provisions of BUREAU VERITAS Rules in force.

4.5 For each order on board ships, running tests of complete fans will have to be carried out to the ship Surveyor's satisfaction.

4.6 Protective screens of not more than 13 mm square mesh are to be fitted in the inlet and outlet of ventilation housing to prevent any accidental contact-protection.

4.7 Electrical motors are excluded from this certificate.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **TALLERES ZITRON** 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, **TALLERES ZITRON** has declared to Bureau Veritas the following production sites:

- TALLERES ZITRON: Autovía AS-II, Nº 2386, Polígono de Roces, 33392 Gijón (Asturias), SPAIN

- TALLERES ZITRON (Marine Division): Nave 11 A. Polígono Industrial Gelidense, 08790 Gelida (Barcelona), SPAIN

6. MARKING OF PRODUCT

Each mechanical fan shall be marked with at least:

- Manufacturer's name or logo
- Type designation and size
- Capacity
- Speed
- Serial number
- Society's brand as relevant

7. OTHERS

It is **TALLERES ZITRON**'s 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.

This certificate supersedes the Type Approval Certificate N° 40978/B0 BV issued by the Society.

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