



**BUREAU
VERITAS**

*Marine & Offshore
Division*

Certificate number: 22467/B0 BV

File number: ACM 180/2506/01

Product code: 71511

*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

KONCAR-MES d.d.

Zagreb - CROATIA

for the type of product

ANTISPARKING CENTRIFUGAL FANS

Marine Centrifugal Flow Fans Series VARSK B 160 - 1120

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships

This certificate is issued to attest that BUREAU VERITAS 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: 01 Feb 2021

For BUREAU VERITAS,

At BV RIJEKA, on 01 Feb 2016,

Slaven Celic



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. 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 Division 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 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.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Marine Centrifugal Flow Fans Series VARSK B 160 - 1120, with spiral housing and driven by electric motor

1.1 Design

Design B3, not ATEX design	Direct drive	N°1139347/A and A1
Design B5, B14, not ATEX design	Direct drive	N°1139347/B and B1
Design B3, ATEX design	Direct drive	N°1139347/C and C1
Design B5, B14, ATEX design	Direct drive	N°1139347/D and D1
Design B3, not ATEX design	External motor, belt drive	N°1139347/E and E1
Impeller type C	Low pressure	N°1139347/H and H1
Impeller type T	Medium pressure	N°1139347/K and K1
Impeller type A	High pressure	N°1139347/M
Impeller type HN	Medium pressure	N°1139347/U
Impeller type TN	Low pressure	N°1139347/V

1.2 Technical Data

Inlet size (mm)	Casing thickness (mm)	Gap (mm)	Inlet size (mm)	Casing thickness (mm)	Gap (mm)
160	2	2	450	3	4
180	2	2	500	3	5
200	2	2	560	3	5
220	2	2	630	3	6
250	2	2	710	3	8
280	2	3	800	3	8
310	2	3	900	3	10
350	2	3	1000	3	10
400	2	4	1120	3	10

1.3 Air Capacity, pressure and motor power

Flow rate (m ³ /s)	Max. 25
Motor power (kW)	0,03 - 180 (IEC 63-315) @ 50 Hz 60 Hz
Static pressure (Pa)	10000
Speed (rpm)	Max. 3600
Temperature range (°C)	-20/60
Max fluid density (kg/m ³)	1,3
Max fluid temperature (°C)	+80
Belt velocity (m/s)	≤30

1.4 Materials

Casing	Steel St 37
Flanges	Steel St 37
Impeller	Steel, coated, aluminium
Inlet ring	Steel or copper
Non sparking ring	CuZn39Sn, CuZn39Pb3
Shaft (belt drive)	Steel St 37

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

2. DOCUMENTS AND DRAWINGS

- Technical description N° 1139347 dated 22/10/2007
- Technical description Annex 1 N° 1139347 Edition 3 dated 25/01/2010
- Technical description Annex 2 N° 1139347 dated 15/10/2013
- Drawings N°1139347/A and A1 Centrifugal flow fan, series VARSK design B3 Main dimensions
- Drawings N°1139347/B and B1 Centrifugal flow fan, series VARSK design B5, B14 Main dimensions
- Drawings N°1139347/C and C1 Centrifugal flow fan, series VARSK Atex design B3 Main dimensions
- Drawings N°1139347/D and D1 Centrifugal flow fan, series VARSK Atex design B5, B14 Main dimensions
- Drawings N°1139347/E and E1 Centrifugal flow fan, series VARSK External motor, belt drive design B3 Main dimensions
- Drawings N°1139347/H and H1 Centrifugal flow fan, series VARSK Impeller type C
- Drawings N°1139347/I and I1 Centrifugal flow fan, series VARSK Inlet ring type C
- Drawings N°1139347/K and K1 Centrifugal flow fan, series VARSK Impeller type T
- Drawings N°1139347/L and L1 Centrifugal flow fan, series VARSK Inlet ring type T
- Drawing N°1139347/M Centrifugal flow fan, series VARSK Impeller type A and inlet ring
- Drawing N°1139347/N Centrifugal flow fan, series VARSK Flanges rectangular
- Drawing N°1139347/O Centrifugal flow fan, series VARSK Protection wire net
- Drawing N°1139347/R Centrifugal flow fan, series VARSK Inspection door
- Drawings N°1139347/S and S1 Centrifugal flow fan, series VARSK Main dimensions dated 31/03/2009 and 08/12/2015
- Drawings N°1139347/T and T1 Centrifugal flow fan, series VARSK Main dimensions dated 31/03/2009 and 08/12/2015
- Drawings N°1139347/U and char.2.4.6 Centrifugal flow fan, VARSK Impeller type HN dated 31/03/2009, 07/05/2009
- Drawings N°1139347/V and char.2.4.6.8.12 Centrifugal flow fan, VARSK Impeller type TN dated 31/03/2009, 07/05/2009
- Drawings N°1139347/Z and Z1 Centrifugal flow fan, VARSK ABT 315-1000 impellers type HN and TN dated 21/07/2009
- Drawing N°1139347/F and F1 Centrifugal flow fan, series VARSK belt drive dated 25/01/2010
- Casing VARSK 160-1120 N° KIP-011 and VARSK 160-710 N° KIP-012 dated 22/03/2008
- Manufacturer's Manual N°1136712 dated 25/01/2010
- Installation, operation and maintenance instructions dated 15/10/2013

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- 3.1 Performance test report N° 21572-06/734 EI for centrifugal flow fan type VARSK AB 500
- 3.2 Performance test report N° 21572-08/884 EI for axial flow fan type VAAZ B 710-A (L750 L1720 M112 B14 M4,5)
- 3.3 Type test report N° HREx T 07.015 issued by laboratory Ex-Agency.

4. APPLICATION / LIMITATION

- 4.1 Fans used in marine and offshore ventilation for hazardous or non-hazardous applications. Non-sparking type driven by Explosion-proof motor are approved for hazardous areas. Fans are suitable for vertical and horizontal installation.
- 4.2 Fans are to be suitably earthed to the hull in order to prevent electrostatic charges during operation where necessary.
- 4.3 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.
- 4.4 The installation on board is to be carried out in compliance with manufacturer's instructions and in accordance with the provisions of Requirements stated on the front page of this certificate.
- 4.5 Electrical motors are excluded from this certificate. Electrical motors Ex-protected will have to comply with the relevant class for the ship. The certificate for the motors will be provided for the ship Surveyor at each classification/visit. The certificate of the complete non-sparking fan, including running test at the factory, will be provided.

5. PRODUCTION SURVEY REQUIREMENTS

- 5.1 The products are to be supplied by **KONCAR-MES d.d** 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 for the finished product.

Place of production

KONCAR-MES. d.d.
10110 Zagreb
Fallerovo setaliste 22
CROATIA

6. MARKING OF PRODUCT

The product shall be marked with at least:

- Manufacturer's name or logo
- Serial number
- Fan type designation
- Motor type designation
- Air flow capacity
- Additional information for every fan with ex-protection used for hazardous areas
- Society's brand as relevant

7. OTHERS

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the products and of the conditions of this approval.

This certificate supersedes the Type Approval Certificate No. 22467/A0 BV issued on 03/09/2010 by the Society.

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