



Marine &amp; Offshore

Certificate number: 56866/A0 BV

File number: .

Product code: 14511

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  
**Flebu International AS**  
SANDVIKA - NORWAY

for the type of product  
**CENTRIFUGAL FAN**  
Centrifugal Fans (Flebu BF)

### Requirements:

Bureau Veritas Rules for the Classification of Steel 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: 20 Apr 2025**

For Bureau Veritas Marine & Offshore,  
At BV OSLO, on 20 Apr 2020,  
Rune MARSTEIN

*Rune Marstein*



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 electronic version is available at: <http://www.veristamb.com/veristamb/jsp/viewPublicPdfTypec.jsp?id=yjnn6tgpdn>  
BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION

**Flebu Centrifugal Boiler Fans driven by electric motor (for exhaust gas applications)**

1.1 Technical Data

Motor frequency 50Hz - 60Hz:

Fan Type	Inlet Diameter (cm)	Max. Airflow (m <sup>3</sup> /h *1000) Inlet Gas Density: 0,525	Maximum Design Temperature (°C)	Max Speed (rpm)	Total Weight (kg)	Motor HMC2 Type
BF 1.43 / 31.5 - 5	31.5	11,6	400	3809	750	HMC2 160M1-2
BF 1.43 / 35.5 - 5	35.5	14,9		3500	900	HMC2 160M1-2
BF 1.43 / 45 - 5	45	23.2		3000	1060	HMC2 180M-2
BF 1.43 / 56 - 5	56	40.7		2480	1250	HMC2 180M-2
BF 1.43 / 63 - 5	63	50.6		2080	1600	HMC2 225M-2
BF 1.43 / 71 - 5	71	70.5		2050	2500	HMC2 280S-2
BF 1.43 / 80- 5	80	92.6		1750	2700	HMC2 280M-2
BF 1.43 / 90 - 5	90	108.3		1550	3700	HMC2 315S-4
BF 1.43 / 100 - 5	100	145.1		1235	3800	HMC2 315L2-4

1.2 Materials

Fan wheel	S355JR / Strenx 700
Cover	S235JR
Casing	Corten
Shaft	S355JR

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

### 2. DOCUMENTS AND DRAWINGS

- Drawing N°Q11201-2\_00 "BF 1,43 / 31,5 - 6 Right (LGO) Boiler Fan (Size 2)" dated 08/05/2018
- Drawing N°Q11201-3\_00 "BF 1,43 / 35,5 - 5 Right (LGO) Boiler Fan (Size 3)" dated 08/05/2018
- Drawing N°Q11201-4\_00 "BF 1,43 / 45 - 5 Right (LGO) Boiler Fan (Size 4)" dated 08/05/2018
- Drawing N°Q11201-6\_00 "BF 1,43 / 56 - 5 Right (LGO) Boiler Fan (Size 6)" dated 18/04/2018
- Drawing N°Q11201-8\_00 "BF 1,43 / 63 - 5 Right (LGO) Boiler Fan (Size 8)" dated 18/04/2018
- Drawing N°Q11201-11\_00 "BF 1,43 / 71 - 5 Right (LGO) Boiler Fan (Size 11)" dated 18/04/2018
- Drawing N°Q11201-15\_00 "BF 1,43 / 80 - 5 Right (LGO) Boiler Fan (Size 15)" dated 18/04/2018
- Drawing N°Q11201-18\_00 "BF 1,43 / 90 - 5 Right (LGO) Boiler Fan (Size 18)" dated 20/04/2018
- Drawing N°Q11201-22\_00 "BF 1,43 / 100 - 5 Right (LGO) Boiler Fan (Size 22,5)" dated 18/04/2018
- General Instruction for Handling-Operation-Maintenance - Flebu Centrifugal Boiler Fans- dated 25/02/2019

*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

Not required.

#### **4. APPLICATION / LIMITATION**

- 4.1 May be used as centrifugal fans approved in marine and offshore ventilation in non-hazardous areas.
- 4.2 Where necessary, fans are to be suitably earthed to the hull in order to prevent electrostatic charges during operation.
- 4.3 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.
- 4.4 Electrical motors are excluded from this certificate.

#### **5. PRODUCTION SURVEY REQUIREMENTS**

- 5.1 The products are to be supplied by **Flebu International AS** 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, **Flebu International AS** has declared to BureauVeritas the following production site:

**Flebu Eesti OU**  
**Perterburi tee 63A**  
**11415 Tallinn**  
**ESTONIA**

#### **6. MARKING OF PRODUCT**

Each centrifugal 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 **Flebu International AS**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the products and of the conditions of this approval.

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