



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000XG**  
Revision No:  
**2**

This is to certify:

That

**Brafe Engineering Ltd**  
Grundisburgh Road, Woodbridge, Suffolk, IP13 6HX,  
United Kingdom

is an approved manufacturer of  
**Steel Castings**

in accordance with  
**DNV rules for classification – Ships**

and the following particulars:

<b>Application area</b>	<b>Castings for hull structures and equipment Castings for machinery Castings for boilers, pressure vessels and piping systems</b>
<b>Steel type</b>	<b>Stainless steel castings Carbon and carbon-manganese, Ferritic-austenitic (Duplex) stainless, Martensitic stainless, See page 2</b>
<b>Casting method</b>	<b>Sand casting, Investment casting</b>
<b>Max. weight</b>	<b>100 kg</b>
<b>Heat treatment condition</b>	<b>See page 2</b>

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.  
Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2022-10-24**

for **DNV**

This Certificate is valid until **2025-09-12**.

DNV local station: **England & Wales FiS**

Approval Engineer: **Christian Wildhagen**

**Thorsten Lohmann**  
**Head of Section**

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.



## Particulars of the approval

### Castings for hull structure and equipment

Steel type	Grade <sup>3)</sup>	Casting method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	NV C400UW, NV C440UW, NV C480UW, NV C520UW	SC, IC	100	N, NT, QT

### Castings for machinery

Steel type	Grade <sup>3)</sup>	Casting method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	NV C400U, NV C440U, NV C480U, NV C520U	SC, IC	100	N, NT, QT

### Castings for boilers, pressure vessels and piping systems

Steel type	Grade <sup>3)</sup>	Casting method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	C450H, C490H	SC, IC	100	N, NT, QT

### Stainless steel castings

Steel type	Casting method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
Martensitic stainless	SC, IC	100	QT
22Cr-duplex stainless	SC, IC	100	SHT
25Cr-duplex stainless	SC, IC	100	SHT

#### Remarks:

- 1) SC: Sand Casting  
IC: Investment Casting
- 2) SHT: Solution Heat Treated (Solution Annealing)  
N: Normalized  
QT: Quenched and tempered  
NT: Normalized and tempered
- 3) Incl. equivalent grades in acc. to other standards

#### Special conditions:

- Repair welding is permitted in accordance with welding procedures approved by DNV. The requirements for repair welding as stated in DNV-RU-SHIP Pt.2 Ch.2 Section 8 shall be complied with.