

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

Brafe Engineering Ltd
Grundisburgh Road, Woodbridge, Suffolk, IP136HX,
United Kingdom

is an approved manufacturer of
Steel Castings

in accordance with
DNV GL rules for classification – Ships

and the following particulars:

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

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 GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2019-09-13**

for **DNV GL**

This Certificate is valid until **2022-09-12**.

DNV GL local station: **London**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section



Job Id: **263.11-010310-1**
Certificate No: **AMMM00000XG**
Revision No: **1**

Particulars of the approval

Castings for hull structure and equipment

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

Castings for machinery

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

Castings for boilers, pressure vessels and piping systems

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

Stainless steel castings

Steel type	Casting method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
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 GL. The requirements for repair welding as stated in DNVGL- RU-SHIP Pt.2 Ch.2 Section 8 shall be complied with.