

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM0000011
Revision No:
1

This is to certify:

That

BIFRANGI S.p.A.
Mussolente (VI), Italyis an approved manufacturer of
Steel Forgingsin accordance with
DNV GL rules for classification – Ships
DNVGL-OS-B101 – Metallic materials

and the following particulars:

Application area	Forgings for hull structures and equipment
Steel type	Forgings for boilers, pressure vessels and piping systems
Forging method	Carbon, Carbon-Manganese
Max. weight	Open die forging/closed die forging
Max. diameter / section	See page 2
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 **2019-07-03**This Certificate is valid until **2022-06-30**.DNV GL local station: **Venice**Approval Engineer: **Stefan Röhr**for **DNV GL**

Digitally Signed By: Wildhagen, Christian

Location: DNV GL Hamburg, Germany

Signing Date: 2019-07-04, on behalf of

Thorsten Lohmann
Head of Section

Form code: AM 311

Revision: 2018-03

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Job Id: 263.11-005079-2
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Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. section [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F400UW, VL F440UW, VL F480UW, VL F520UW, VL F560UW, VL F600UW	OD, CD	200	100	N, NT, QT
Alloy	VL F550AW, VL F600AW, VL F650AW	OD, CD	200	100	QT

Forgings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. section [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F450H, VL F490H	OD, CD	200	100	N, NT, QT
Alloy	VL F0.5Mo, VL F1Cr0.5Mo	OD, CD	200	100	N, NT, QT
	VL F2.25Cr1Mo	OD, CD	200	100	N, QT

Remarks:

- 1) OD: Open die forging; CD: Closed die forging
- 2) QT: Quenched and tempered; N: Normalized; NT: Normalized and tempered
- 3) Incl. equivalent grades in acc. to other standards