

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

EUSKAL FORGING, S.A
Calle Altos Hornos de Vizcaya 25, 48910 Sestao, Bizkaia,
Spain

is an approved manufacturer of
Steel Forgings

in 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, Forgings for shafting and machinery, Forgings for gearing, Forgings for boilers, pressure vessels and piping systems
Steel type	Ferritic steel forgings for low temperature service Carbon and carbon-manganese Alloy
Forging method	See page 2
Max. weight	See page 2
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 **2020-05-18**

for **DNV GL**

This Certificate is valid until **2023-06-18**.
DNV GL local station: **Area NB/CMC Iberia**

Approval Engineer: **Andreas Koch**

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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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **263.11-010812-1**
 Certificate No: **AMMM00000KM**
 Revision No: **2**

Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F400UW, VL F440UW, VL F480UW, VL F520UW, VL F560UW, VL F600UW	RR/OD	30 000	504	QT
C and C-Mn	VL F480UW	RR/OD	85 000	504	N
Alloy	VL F550AW, VL F600AW, VL F650AW	RR/OD	30 000	504	QT

Forgings for shafting and machinery

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F400U, VL F440U, VL F480U, VL F520U, VL F560U, VL F600U, VL F640U, VL F680U, VL F720U, VL F760U	RR/OD	30 000	504	N
C and C-Mn	VL F480U	RR/OD	85 000	504	N
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	RR/OD	30 000	504	QT

Forgings for gearing

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F400U, VL F440U, VL F480U, VL F520U, VL F560U, VL F600U, VL F640U, VL F680U, VL F720U, VL F760U	RR/OD	30 000	504	N
C and C-Mn	VL F480U	RR/OD	85 000	504	N
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	RR/OD	30 000	504	QT

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Forgings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Delivery condition²⁾
C and C-Mn	F450H F490H	RR/OD	85 000	504	N
Alloy	F0.5Mo F1Cr0.5Mo F2.25Cr1Mo	RR/OD	30 000	504	QT

Ferritic steel forgings for low temperature service

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Delivery condition²⁾
C and C-Mn	F450L F490L	RR/OD	30 000	504	N

Remarks:

- 1) RR: Ring Rolling,
OD: Open Die
- 2) N: Normalised
QT: Quenched and Tempered
- 3) Incl. equivalent grades in acc. to other standards.