



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000DB**  
Revision No:  
**3**

This is to certify:

That

**ASFO S.p.A.**  
Via Stradone del Dieci, 24  
45030 Villamarzana RO,  
Italy

is an approved manufacturer of  
**Steel Forgings**

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

and the following particulars:

<b>Application area</b>	<b>Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for gearing Stainless steel forgings</b>
<b>Steel type</b>	<b>Carbon and carbon-manganese, Alloy, Austenitic-ferritic (Duplex) stainless See page 2</b>
<b>Forging method</b>	<b>Open die forging, Ring rolling, see page 2</b>
<b>Max. weight</b>	<b>See page 2</b>
<b>Max. diameter / section</b>	<b>See page 2</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 **2022-03-10**

for **DNV**

This Certificate is valid until **2025-02-28**.

DNV local station: **Venice**

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.



Form code: AM 311

Revision: 2021-03

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Page 1 of 3

## Particulars of the approval

### Forgings for hull structures and equipment

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Max. Height [mm] <sup>5)</sup>
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	OD, RR	14 000	600	N, NT, QT	1 200
Alloy	NV F550AW, NV F600AW, NV F650AW	OD, RR	14 000	600	QT	1 200

### Forgings for shafting and machinery

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Max. Height [mm] <sup>5)</sup>
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	OD, RR	14 000	600	N, NT, QT	1 200
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD, RR	14 000	600	QT	1 200

### Forgings for gearing

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Max. Height [mm] <sup>5)</sup>
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	OD, RR	14 000	600	N, NT, QT	1200
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD, RR	14 000	600	QT	1200

### Stainless steel forgings

Steel type <sup>3)4)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Max. Height [mm] <sup>5)</sup>
22 Cr Duplex (1.4462 acc. EN 10088-3)	OD, RR	14 000	600	SHT	1 200
25 Cr Duplex (1.4460 acc. EN 10088-3)	OD, RR	14 000	600	SHT	1 200

Remarks:

- 1) OD: Open die forging  
RR: Ring Rolling
- 2) QT: Quenched and tempered  
N: Normalised  
NT: Normalised and tempered  
SHT: Solution Heat Treated (Solution Annealing)
- 3) Incl. equivalent grades in acc. to other standards
- 4) Stainless steel forgings shall be in accordance with recognized standards, e.g. EN 10222, ASTM A473/A965/A1049 and JIS G 3214, provided that supplementary requirements contained herein are also met. Recognition of other standards is subject to submission to the Society for evaluation
- 5) Height of ring forging