



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001WE
Revision No:
2

This is to certify:

That

IRE-OMBA S.p.A.

Via Carlo Serassi, 14 - 24100 Bergamo BG, Italy

is an approved manufacturer of
Steel Forgings

in accordance with

DNV rules for classification – Ships

DNV-OS-B101 – Metallic materials

DNV class programme – DNV-CP-0247 Steel forgings

and the following particulars:

| | |
|---------------------------------|--|
| Application area | Forgings for hull structures and equipment Forgings for shafting and machinery Stainless steel forgings |
| Steel type(s) | Carbon, Carbon-Manganese, Alloy, Austenitic stainless |
| Forging method | Open die forging, ring rolling |
| Max. thickness | 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 classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2023-11-22**

for **DNV**

This Certificate is valid until **2026-12-31**.

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Torben Schälicke**

Thorsten Lohmann
Head of Section

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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. diameter / section [mm] | Heat treatment condition ²⁾ |
|------------|---|------------------------------|------------------|------------------------------|--|
| C and C-Mn | NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW | OD / RR | 4 000 | 250 | N, NT, QT |
| Alloy | NV F550AW, NV F620AW, NV F650AW | OD / RR | 4 000 | 250 | NT, QT |

Forgings for shafting and machinery

| Steel type | Grade ³⁾ | Forging method ¹⁾ | Max. weight [kg] | Max. diameter / section [mm] | Heat treatment condition ²⁾ |
|------------|---|------------------------------|------------------|------------------------------|--|
| 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 | 4 000 | 250 | N, NT, QT |
| Alloy | NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A | OD / RR | 4 000 | 250 | NT, QT |

Stainless steel forgings

| Steel type / grade ⁴⁾ | Forging method ¹⁾ | Max. weight [kg] | Max. diameter / section [mm] | Heat treatment condition ²⁾ |
|----------------------------------|------------------------------|------------------|------------------------------|--|
| Austenitic stainless | OD / RR | 4 000 | 250 | SHT |

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) Including equivalent grades to other standards, e.g. EN 10250-2,-3
- 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