



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM000023A**  
Revision No:  
**2**

This is to certify:

That

**Anker Schroeder ASDO GmbH**  
Hannöversche Straße 48, 44143 Dortmund,  
Germany

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-0351 Manufacture of heat treated products - heat treatment workshop**

and the following particulars:

|                                 |  |
|---------------------------------|--|
| <b>Application area</b>         | <b>Forgings for hull structures and equipment</b><br><b>Forgings for shafting and machinery</b><br><b>Bolts and nuts</b> |
| <b>Steel type</b>               | <b>Carbon and carbon-manganese,</b><br><b>Alloy,</b><br><b>See page 2</b>  |
| <b>Forging method</b>           | <b>Open die forging,</b><br><b>Closed die forging,</b><br><b>See page 2</b>  |
| <b>Max. diameter</b>            | <b>See page 2</b>  |
| <b>Max. weight</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 **2023-03-28**

for **DNV**

This Certificate is valid until **2025-06-30**.

DNV local unit: **Essen**

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: 2022-12

www.dnv.com

Page 1 of 2

## Particulars of the approval

### Forgings for hull structures and equipment

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

### Forgings for shafting and machinery

| Steel type | Grade <sup>3)</sup>  | Forging method <sup>1)</sup> | Max. weight [kg] | Heat treatment condition <sup>2)</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                           | 5 000            | N, NT, QT                              |
| Alloy      | NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A                                       | OD                           | 5 000            | QT                                     |

### Bolts and nuts

| Steel type | Standards                      | Forging method <sup>1)</sup> | Max. diameter | Heat treatment condition <sup>2)</sup> |
|------------|--------------------------------|------------------------------|---------------|--|
| C and C-Mn | EN 10250-2<br>DIN EN ISO 683-1 | CD                           | M 300         | N, QT                                  |
| Alloy      | EN 10250-3<br>DIN EN ISO 683-2 | CD                           | M 300         | QT                                     |

#### Remarks:

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