

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

Schmiedag GmbH
Grüntaler Str. 11,
58089 Hagen, Germany

is an approved manufacturer of
Steel Forgings

in accordance with
DNV GL rules for classification – Ships

and the following particulars:

Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Stainless steel forgings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, See page 2
Forging method	Closed die forging
Max. weight	500 kg
Max. thickness	100 mm
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 **2019-07-17**

for **DNV GL**

This Certificate is valid until **2022-06-30**.

DNV GL local station: **Essen**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section



Job Id: **263.11-003254-4**
 Certificate No: **AMMM000001Y**
 Revision No: **4**

Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F400UW, VL F440UW, VL F480UW, VL F520UW, VL F560UW, VL F600UW	CD	500	100	N, QT
Alloy	VL F550AW, VL F600AW, VL F650AW	CD	500	100	QT

Forgings for shafting and machinery

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. 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	CD	500	100	N, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	CD	500	100	QT

Stainless steel forgings

Steel type ^{3) 4)}	Forging method ¹⁾	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition ²⁾
Austenitic stainless	CD	500	100	SHT
	CD	500	100	SHT

Steels acc. other standards

Grade	Forging method ¹⁾	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition ²⁾
C and C-Mn steels acc. EN 10083-2	CD	500	100	N, QT
Alloy steels acc. EN 10083-2	CD	500	100	QT
Austenitic steels acc. EN 10222-5	CD	500	100	SHT

Remarks:

- 1) OD: Open die forging
- 2) QT: Quenched and tempered
N: Normalized
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.