

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001KN
Revision No:
1

This is to certify:

That

Rosswag GmbH
August-Roßwag-Str. 1, 76327 Pfinztal, Germany

is an approved manufacturer of
Steel Forgings

in accordance with
DNV GL rules for classification – Ships
DNV GL rules for classification – Naval vessels

and the following particulars:

Application area	Forgings for hull structures and equipment, Forgings for shafting and machinery, Forgings for boilers, pressure vessels and piping systems, Non-magnetizable steels Liquid quenched and tempered structural steels
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless, Ferritic-austenitic (duplex) stainless
Forging method	Open die forging/ring rolling,
Max. weight	See page 2 ff.
Heat treatment condition	See page 2 ff.
Additional approval conditions	See page 2 ff.

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 **2020-10-01**

for **DNV GL**

This Certificate is valid until **2023-06-30**.

DNV GL local station: **Essen**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section

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Job Id: **263.11-003987-3**
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Particulars of the approval

Forgings for hull structures and equipment

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

Forgings for shafting and machinery

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	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	OD/RR	5 000	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD/RR	5 000	QT

Forgings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	VL F450H, VL F490H	OD/RR	5 000	N, NT, QT
Alloy	VL F0.5Mo, VL F1Cr0.5Mo	OD/RR	5 000	NT, QT
	VL F2.25Cr1Mo	OD/RR	5 000	N, QT

Forgings of liquid quenched and tempered structural steels

Steel type / grade	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
VL-M550S (1.6780/HY80)	OD	5 000	QT

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Stainless steel forgings

Steel type / grade ⁴⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
Austenitic stainless	OD	5 000	SHT
Ferritic-austenitic (duplex) stainless 22Cr duplex, 25Cr duplex	OD	5 000	SHT
Martensitic stainless	OD	5 000	QT
Non-magnetizable austenitic stainless steel in grades 1.3964 and 1.3974	OD	5 000	SHT

Steel forgings acc. to other standards

Steel type	Grade	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn, Alloy	EN 10250-2	OD, RR	5 000	acc. to rules/standard
	EN 10222-4	OD, RR	5 000	acc. to rules/standard
	EN-10269	OD, RR	5 000	acc. to rules/standard
Austenitic, Austenitic-ferritic, Martensitic	EN 10088-3	OD, RR	5 000	acc. to rules/standard
	EN 10250-4	OD, RR	5 000	acc. to rules/standard
	EN 10222-5	OD, RR	5 000	acc. to rules/standard

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.