

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

STAVANGER STEEL AS
Stålverksvegen 51, 4100 Jørpeland,
Norway

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 Stainless steel forgings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless, Ferritic stainless, Ferritic-austenitic (duplex) stainless
Forging method	See page 2
Max. weight	Open die forging 6 500 kg
Heat treatment condition	See page 2
Additional approval conditions	Including steel making

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 **2019-09-16**

for **DNV GL**

This Certificate is valid until **2022-08-23**.

DNV GL local station: **Stavanger**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section



Job Id: **263.11-005097-3**
 Certificate No: **AMMM00001MT**
 Revision No: **1**

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	6 500	N, NT, QT
Alloy	VL F550AW, VL F600AW, VL F650AW	OD	6 500	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	6 500	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD	6 500	QT

Stainless steel forgings

Steel type ³⁾⁴⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
Austenitic stainless	OD	6 500	SHT
Non-magnetic austenitic stainless	OD	6 500	SHT
Ferritic stainless	OD	6 500	acc. standard
Martensitic stainless	OD	6 500	QT
Ferritic-austenitic (22Cr & 25Cr duplex) stainless	OD	6 500	SHT

Remarks:

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