

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

SSK von Schaewen Hückeswagen GmbH
Hückeswagen, Germany

is an approved manufacturer of
Steel Forgings

in accordance with

DNV GL rules for classification – Ships
GL Rules for Classification and Construction II - Materials and Welding Part 1 - Metallic
Materials

and the following particulars:

Products	Open die forgings
Steel type(s)	Carbon and carbon-manganese Alloy Stainless
Max. weight	20 000 kg
Remarks	See particulars of the approval

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.

This Certificate is valid until **2019-06-30**.

Issued at **Hamburg** on **2016-05-03**

DNV GL local station: **Essen**

Approval Engineer: **Christian Wildhagen**

for **DNV GL**

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Thorsten Lohmann
Head of Section

Job Id: **263.11-000720-4**
 Certificate No: **AMMM00000JA**

Particulars of the approval

Forgings:

Grade	Product	Supply Condition	Thickness [mm], max.	Weight [kg], max.	Length [m], max.
Forgings for hull structures and equipment					
F400UW, F440UW, F480UW, F520UW, F560UW, F600UW	FF	N, N+T, Q+T	1500	20000	14
F550AW, F600AW, F650AW	FF	Q+T	1500	20000	14
Forgings for shafting and machinery					
F400U, F440U, F480U, F520U, F560U, F600U, F640U, F680U, F720U, F760U	FF	N, N+T, Q+T	1500	20000	14
F600A, F700A, F800A, F900A, F1000, F1100A	FF	Q+T	1500	20000	14
Non-alloy steels					
C & C-Mn steels acc. to EN 10083-2	FF	acc. Standard	1500	20000	14
C & C-Mn steels acc. to EN 10250-2	FF	acc. Standard	1500	20000	14
Alloy steels					
Alloy steels acc. to EN 10083-3	FF	acc. Standard	1500	20000	14
Alloy steels acc. to EN 10250 -3	FF	acc. Standard	1500	20000	14
Stainless steels					
1.4462 acc. to EN 10250-4	FF	S+Q	1500	20000	14
1.4462 acc. to EN 10222-5	FF	S+Q	1500	20000	14
1.3964 acc. to SEW390 and VG81237 (WL1.3964)	FF	S+Q	400	3000	3

FF: open die forgings (incl. bars) N: normalized N+T: normalized + tempered Q+T: quenched + tempered
 S+Q: solution annealed + quenched