

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000W7
Revision No:
2

This is to certify:

That

Dongbei Special Steel Group Co., Ltd.
No. 18 South Hebin Road, Dengshahe Harbor Industrial Zone, Jinzhou District,
Dalian,
China

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 Forgings for gearing
Steel type	Carbon and carbon-manganese, Alloy, See page 2
Forging method	Open die forging
Max. weight	See page 2
Max. diameter / section	See page 2
Heat treatment condition	See page 2
Additional approval conditions	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 **2019-08-22**

for **DNV GL**

This Certificate is valid until **2022-08-31**.

DNV GL local station: **Dalian**

Approval Engineer: **Enno Brück**

Thorsten Lohmann
Head of Section



Job Id: **263.11-004969-2**
Certificate No: **AMMM00000W7**
Revision No: **2**

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	OD	60 000	900	N, NT, QT
Alloy	VL F550AW, VL F600AW, VL F650AW	OD	20 000	600	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	OD	60 000	900	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD	20 000	600	QT

Forgings for gearing

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	OD	60 000	900	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD	20 000	600	QT

Remarks:

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

Additional approval conditions:

- Steelmaking: Basic Oxygen Converter, Ingot Casting
- Deoxidation: Killed