

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM000006F**  
Revision No:  
**1**

**This is to certify:**

**That**  
**HI Quality Steel Castings Ltd.**  
**Chesterfield, Derbyshire, United Kingdom**

is an approved manufacturer of  
**Steel Castings**

in accordance with  
**DNV GL rules for classification – Ships**  
**DNVGL-OS-E304 – Offshore mooring steel wire ropes, Edition July 2015**

and the following particulars:

<b>Steel types</b>	<b>Carbon and carbon-manganese, Alloy, Austenitic stainless</b>
<b>Max. weight</b>	<b>8 000 kg</b>
<b>Remarks</b>	<b>Including castings for offshore mooring wire rope sockets, see page 2</b>

Manufacturers approved by this certificate is 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 **Høvik** on **2017-08-22**

for **DNV GL**

This Certificate is valid until **2020-06-30**.

DNV GL local station: **Manchester**

Approval Engineer: **Gorka Lozano**

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**Hanne Anita Hjerpetjønn**  
**Head of Section**



Job Id: **263.11-002698-6**  
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## Particulars of the approval

### Castings for offshore mooring wire rope sockets

Grade	Max. thickness (mm)	Max. weight (Kg)	Delivery condition	Casting method
ASTM 487M Grade 10B with modified properties <sup>1) 2)</sup>	140	1 798	Annealed, Quenched and Tempered	Sand casting
ASTM 487M Grade 4B <sup>1)</sup>	125	1 306	Normalised, Quenched and Tempered	
ASTM 487M Grade 4C <sup>1)</sup>	130	398		

Remarks:

<sup>1)</sup> a) Unless otherwise specified, chemical composition and mechanical properties shall be in accordance with relevant ASTM standard and DNVGL-OS-E304.

b) Periodical analysis of Sn, Sb and As is required. In such cases, the maximum content shall be 0.010 % for Sn, 0.010 % for Sb and 0.025 % for As.

<sup>2)</sup> Mechanical properties for ASTM 487M Grade 10 B with modified properties:

Tensile strength, min.	700 MPa
Yield stress, min.	470 MPa
Impact energy, average min.	50 J at -20°C
Elongation, min.	15 %
Reduction of area, min.	35 %