



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00002CK
Revision No:
1

This is to certify:

That

Valforge S.r.l.

Via Provinciale, 41/43 - 23813 Cortenova, LC, Italy

is an approved manufacturer of
Steel Forgings

in accordance with

DNV-OS-E302 – Offshore mooring chain, Edition July 2018 (Amended August 2021)

and the following particulars:

Product	Forgings for chain cable accessories
Grade	R3S
Max. thickness	565 mm
Heat treatment condition	See page 2
Remarks	See particulars of the approval

Manufacturer approved by this certificate is accepted to deliver according to DNV GL, DNV and GL rules. Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Høvik** on **2021-12-10**

for **DNV**

This Certificate is valid until **2024-12-31**.

DNV local station: **Italy/Malta CMC**

Approval Engineer: **Dechun Lou**

Sondre Løken
Head of Section

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Particulars of the approval

Forgings for chain cable accessories			
Grade	Heat treatment conditions ¹⁾	Max. diameter or thickness (mm)	Material manufacturer ²⁾
R3S	NQT	565	Metalcam SPA

Remarks:

- 1) NQT: Normalised, Quenched and Tempered.
- 2) The approval is limited to the listed raw material manufacturer.
- 3) For approved specification see table S1

Table S1 - Specification for chemical composition - Forgings for chain cable accessories													
Grade, dia. or thickness (mm)			C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Al	N
R3S	565	Min	.05	.30	-	-	-	2.00	-	.87	-	.020	-
		Max	.15	.60	.50	.015	.006	2.50	.50	1.13	.20	.045	.010

Remarks:

The content of Sn, Sb, As and B may be required. In such cases, the maximum content shall be 0.010 % for Sn, 0.005 % for Sb, 0.015% As and 0.0005% for B.