

# APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

**Balltec Limited**  
**MORECAMBE, Lancashire, United Kingdom**

is an approved manufacturer of  
**Chain Cables**

in accordance with  
**DNV-OS-E302 Offshore Mooring Chain**

and the following particulars:

<b>Product</b>	<b>Forged chain cable accessories</b>
<b>Grade</b>	<b>NV R3S</b>
<b>Delivery condition</b>	<b>Normalized, quenched and tempered, see page 2</b>
<b>Max. diameter</b>	<b>600 mm, see page 2</b>

This Certificate is valid until **2019-12-31**.

Issued at **Høvik** on **2015-09-29**

DNV GL local station: **Manchester**

Approval Engineer: **Gorka Lozano**

for **DNV GL**

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

Job Id: **263.11-005012-1**  
Certificate No: **AMMM0000055**

## Particulars of the approval

Offshore mooring chain cable accessories			
Grade	Delivery conditions <sup>1)</sup>	Max. diameter or thickness (mm)	Material manufacturer <sup>2)</sup>
R3S	NQT	600	Breitenfeld Edelstahl AG <sup>3)</sup>

Remarks:

- <sup>1)</sup> NQT: Normalized, Quenched and Tempered
- <sup>2)</sup> The approval is limited to the listed raw material manufacturer.
- <sup>3)</sup> Forging carried out by OFAR S.p.A
- <sup>4)</sup> For approved specification see table S1

Table S1 - Specification for chemical composition - Ingots for chain cables													
Grade, thickness (mm)		C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Al	V	N
NV R3S	600	Min	.10	.30	-	-	2.00	-	.90	-	.020	.03	-
		Max	.20	.90	.50	.025	.015	2.50	.50	1.20	.35	.025	.05

Remarks:

The content of Sn, Sb, As and B may be required. In such cases, the maximum content shall be 0.025 % for Sn, 0.0025 % for Sb, 0.010% As and 0.0005% for B.

### Miscellaneous:

- 1) Approval of procedures detailed in the approval letter: OENNO310/GLC/P261.1H-J-5367