DNV·GL

Certificate No:
TAS00001S2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Stevshark REX fluke anchors

with type designation(s)
99999-9000

Issued to
Vryhof Anchors B.V.
Schiedam, Zuid-Holland, Netherlands

is found to comply with
DNVGL-OS-E301 – Position mooring, Edition July 2015

Application :

To be used for Temporary, Mobile and Long Term Mooring, as defined in DNVGL-OS-E301 Position Mooring July 2018.

For sizes ranging from 1 ton up to 37 ton

Issued at **Høvik** on **2019-06-17**
This Certificate is valid until **2024-06-16**.
DNV GL local station: **Rotterdam**

Approval Engineer: **Pierre-Eric Moulia**

for **DNV GL**

Inger-Helene Hals
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

Drag Embedment Type Anchor.

There are 41 sizes covered by this type approval : All sizes between 1 mT to 37 mT, plus the 4 intermediary sizes: 1.5, 2.5, 3.5 and 4.5 mT

The R4 grade anchor shackles are type approved separately in DNVGL type approval certificate TAS00001BR.

Application/Limitation

This certificate does not include any geotechnical design review to establish the maximum anchor soil resistance which is site specific.

The anchors are to be used for Temporary, Mobile and Long Term Mooring, as defined in DNVGL-OS-E301 Position Mooring July 2018.

The materials shall be manufactured and tested according to applicable parts of DNVGL-OS-B101, at works which have been approved by DNVGL, and delivered with EN 10.204 3.2 type material certificates.

The anchor line MBL for a given anchor size shall not be greater than the value listed in table below.

This type approval includes also long term mooring (>5 yrs). For fatigue assessment, in the absence of site specific load spectrum, a comparison was done with the mooring chain of highest possible diameter. Since the anchor shackle is more limiting than the anchor itself, the maximum chain diameter shall correspond to the given anchor shackle size, and shall not been greater than the value listed in table below.

Anchor Size (mT)	Mooring Line Max MBL (kN)	Anchor Shackle Max Body Size (mm)	For Long Term Mooring Only: Studless Chain Max Diameter (mm)
1	928	60	43
1.5	1342	70	50
2	1755	70	50
2.5	2152	70	50
3	2548	80	57
3.5	2933	80	57
4	3317	100	71
4.5	3692	100	71
5	4066	100	71
6	4813	110	79
7	5544	120	86
8	6281	130	93
9	6997	130	93
10	7703	140	100
11	8417	150	107
12	9111	150	107
13	9692	160	114
14	10380	160	114
15	10943	170	121
16	11614	170	121

Anchor Size (mT)	Mooring Line Max MBL (kN)	Anchor Shackle Max Body Size (mm)	For Long Term Mooring Only: Studless Chain Max Diameter (mm)
17	12276	180	129
18	12952	180	129
19	13589	190	136
20	14263	190	136
21	14923	190	136
22	15566	200	143
23	16218	200	143
24	16852	210	150
25	17521	210	150
26	18143	210	150
27	18800	220	157
28	19435	220	157
29	20077	220	157
30	20696	230	164
31	21350	230	164
32	21979	230	164
33	22614	230	164
34	22976	230	164
35	22976	230	164
36	22976	230	164
37	22976	230	164

Type Approval documentation

Tests carried out

Prototype proof load tests at 50% of maximum approved MBL were conducted with DNVGL Surveyor (8 mT and 10 mT sizes)

Anchors do not need to be proof load tested, as test waiver is granted thanks to this design review and the above mentioned prototype proof load tests.

Anchor shackles are tested separately (by shackle manufacturer) according to DNVGL-OS-E302.

Fabrication of anchors shall be in accordance with DNVGL-OS-C401.

Marking of product

The anchors shall be marked according to DNVGL-OS-E301 July 2018, Ch3 Sec 2 §3.3.1

Periodical assessment

For retention of this Type Approval, a DNVGL surveyor shall perform a periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days). The objective of the periodical assessment is to verify that the conditions for the Type Approval have not been altered. (Ref DNVGL-CP-0338 Type approval scheme).