

TYPE APPROVAL CERTIFICATE

This is to certify:**That the High Holding Power Anchor and Super High Holding Power Anchor**

with type designation(s)

HHP POOL-M FULLY BALANCED, HHP POOL-N FULLY BALANCED, HHP POOL-TW FULLY BALANCED, SHHP POOL-TW FULLY BALANCED/STANDARD

Issued to

G.J. Wortelboer Jr. B.V.
Rotterdam, Zuid-Holland, Netherlands

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – High speed and light craft****Application :****Approved for use as High Holding Power anchor with a weight reduction of 25% and Super High Holding Power anchor with a weight reduction of 50% in comparison to an ordinary stockless anchor for weight mentioned in this certificate**Issued at **Høvik** on **2021-02-05**This Certificate is valid until **2026-02-04**.for **DNV GL**DNV GL local station: **Netherlands CMC**Approval Engineer: **Lap Van Duong**

Aldo Matteucci
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-035262-1**
Certificate No: **TAS00002X0**

Product description

HHP POOL-M Fully Balanced HHP anchor in range of 24 kg - 26000 kg and weights as specified in document Main Dimensions (ref. certificate 29081HH16, see Note)

HHP POOL-N Fully Balanced anchor with the following weights (ref. certificate TAS000021E, see Note)

Mass of HHP anchor (kg)								
60	180	495	1000	2140	4210	7875	12675	20625
75	200	520	1080	2295	4500	8325	13350	21000
80	225	585	1195	2475	4840	8775	14100	21750
90	240	675	1250	2655	5175	9225	15000	23250
105	270	720	1305	2835	5515	9675	16125	24750
120	300	765	1440	3040	5850	10125	16500	26000
125	315	800	1575	3240	6225	10575	17250	-
135	360	855	1710	3445	6525	11025	18375	-
150	400	900	1845	3670	6975	11550	19500	-
160	430	970	1980	3940	7425	12075	20000	-

HHP POOL-TW Fully Balanced anchor with the following weights (ref. certificate TAS000022E, see Note)

Mass of HHP anchor (kg)								
60	180	495	1000	2140	4210	7875	12675	
75	200	520	1080	2295	4500	8325	13350	
80	225	585	1195	2475	4840	8775	14100	
90	240	675	1250	2655	5175	9225	15000	
105	270	720	1305	2835	5515	9675	16125	
120	300	765	1440	3040	5850	10125	16500	
125	315	800	1575	3240	6225	10575	17250	
135	360	855	1710	3445	6525	11025	21000	
150	400	900	1845	3670	6975	11550	26000	
160	430	970	1980	3940	7425	12075	12675	

SHHP POOL-TW Fully Balanced (6-)/Standard (5-) anchor with the following weights (ref. certificate TAS00001CB, see Note):

Mass per SHHP anchor (kg)								
20	97	180	272	474	720	1000	1447	2140
24	105	184	294	495	724	1024	1553	2224
32	114	200	315	509	765	1080 (5-) / 1082 (6-)	1557	2295
40	125	202	320	544	768	1129	1676	2382
48	135	219	347	579	800	1195	1710	2475
60	138	225	360	585	817	1235	1800	2541
62	149	237	373	617	856	1250	1840 (5-) / 1845 (6-)	2625
75	150	240	404	649	875	1305	1941	-
79	160	255	430	675	935	1341	1980	-
90	167	270	439	685	970	1440	2082	-

Note:

- HHP anchors are in according with Rules for Ships and SHHP anchors are in according with Rules for Light Speed and Light Craft (HSLC)
- This certificate is based on 4 previous type approval certificates: 29081HH16, TAS000021E, TAS000022E and TAS00001CB

Production sites:

- 1) THR Marine (Duinkerkenstraat 40, 9723 BT Groningen, The Netherlands)
- 2) Duisburger Kettenfabrik und Hammerwerk H. D'Hone GmbH & Co. KG (Wildstrasse 20, D-47057 Duisburg, Germany)
- 3) Chongqing XinYe Marine Casting Co., Ltd. (No.2-64# industry park, Longshui Dazu, Chongqing China)
- 4) Constructiebedrijf Stekelenburg B.V. (part of Zwijnenburg) (Molenweg 18, 3241 LH Middelharnis, The Netherlands)
- 5) Rometal (Quarantaineweg 10, 3089 KP Rotterdam, the Netherlands) & Rometal (Romania)
- 6) G.J. Wortelboer Jr. B.V. Rotterdam, NL

Application/Limitation

- This certificate (design assessment) is a verification of the design towards the listed rules/requirements. The assessment does not waive requirements for certification of the anchor (i.e. issuance of DNV GL product certificate) or classification procedure required by DNV GL Rules for product installed on DNV GL vessels.
- The manufacturer is required to have a DNV GL surveyor witnesses all important production and test as required.
- All welding is to be carried out by qualified welders and according to approved welding procedures.
- Relevant NDT shall be performed after proof load testing.
- Each anchor is to be delivered with required material certificates in according with:
 - Pt. 3 Ch.1 Sec. 3 [3.1] and Ch. 11 Sec. 1 [4.2] as specified in the approved drawings. (ref. Rules for Ships and HHP)
 - Pt. 3 Ch. 5 Sec. 1 Table 3 and Sec. 3 [4.2] as specified in the approved drawings. (ref. Rules for HSLC and SHHP)
 - Materials specified according to other standards than DNV GL Rules shall fulfil the relevant corresponding rule requirements in Pt. 2
- Proof load shall correspond to the weight of normal stockless anchor i.e.:
 - 4/3 of HHP anchor weight according to Pt. 3 Ch.11 Sec. 1 [4.5] (ref. Rules for Ships and HHP)
 - 2 times of SHHP anchor weight according to Pt. 3 Ch. 5 Sec. 3 [4.4] (ref. Rules for HSLC and SHHP)
- The anchor shackles are not parts of this type approval. In case of separate delivery, each shackle is to be delivered with required product/material certificates in according with:
 - Pt.3 Ch.1 Sec. 3 [3.1] and to be approved/complied with Ch.11 Sec. 1 [4.3] and tested according to [4.5] (ref. Rules for Ships for HHP)
 - Pt.3 Ch.5 Sec.1 Table 3 and to be approved/complied with Sec. 3 [4.3] and tested according to [4.4] (ref. Rules for HSLC and SHHP)
- Assembly and fitting tolerance shall be in according with Pt. 3 Ch. 3 Sec. 1 [4.4] (ref. Rules for Ships and HHP)

Type Approval documentation

Tests carried out

Type testing were carried out as mentioned in the following type approval certificates:

- 1) TAS000021E for HHP POOL-N fully balanced anchor
- 2) TAS000022E for HHP POOL-TW fully balanced anchor
- 3) 29081 HH 16 for HHP POOL-M fully balanced anchor
- 4) TAS00001CB for SHHP POOL-TW fully balanced/standard anchor

Marking of product



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Each anchor shall be stamped according to Pt. 3 Ch. 5 Sec. 3 [4.6], ref. rules for HSLC
Each anchor shall be stamped according to Pt. 3 Ch. 11 Sec. 1 [4.7], ref. rules for Ships

Periodical assessment

For retention of Type Approval, a DNV GL surveyor shall perform periodical assessment after 2 years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for approval are complied with. Reference to DNVGL-CP-0338.

END OF CERTIFICATE