Certificate No:
TAS00000BW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the High Holding Power Anchor

with type designation(s)
HYT-12

Issued to
Jiangsu Xiangsheng Heavy Industries Co.,Ltd
Rugao, China

is found to comply with
Det Norske Veritas' Rules for Classification of Ships

Application :

Approved for use as High Holding Power Anchor according to DNV Rules for weights from 105kg to 30000kg, with 25% weight reduction compared to ordinary stockless anchor.

This Certificate is valid until **2019-12-03**.

Issued at **Høvik** on **2015-12-04**

for **DNV GL**

DNV GL local station: **Nantong CMC**

Approval Engineer: **Finn-Roger Sørland**

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.

Product description

High Holding Power Anchor HYT-12

Application/Limitation

When a DNV GL product is to be issued, the following shall apply:

- The materials as stated on the stamped drawings are to be delivered with material certificates documenting that the chemical compositions and mechanical properties are in accordance with the Rules. Each anchor and anchor shackle is to be delivered with DNV GL material certificate. Material and test certificate shall accompany each product/delivery.
- The anchor shackles dimensions and materials shall be as stated in the booklet of drawings and measurement list stamped 'Type Approved', according to Pt.3, Ch.3, Sec.3 D300 in the mentioned Rules.
- According to drawing "HY-12-105-30000-03-B – Head Assembly", materials are to be NVE36 with specified Charpy-V test temperature -40°C. In the test report "The high holding power test document of HYN-SB, HYT-12, HY-17 Fabricated Anchor and HY-08 (Danforth) casting steel anchor", the material is Q345C and tested at -20°C. Due to special consideration this material is approved for anchor HYT-12.
- Welding is to be carried out by approved welders and according to approved welding procedures. A tight fit for the shackle pin and proper welding for securing the pin is to be ensured. The tight fit is to avoid the weld to transfer heavy loads. Extent of NDT of welds shall comply with the Rules in question.
- The anchors and anchor shackles are to be tested according to Rules Pt.3 Ch.3 Sec.3 D500. The proof load is to correspond to 4/3 of the weight of an ordinary anchor.
- Non Destructive Testing (NDT) and repairs are to be performed in accordance to DNV Rules Pt.2 Ch.2 Sec.7. The following areas are subject to NDT in addition to areas mentioned in Pt.2 Ch.2 Sec.7:
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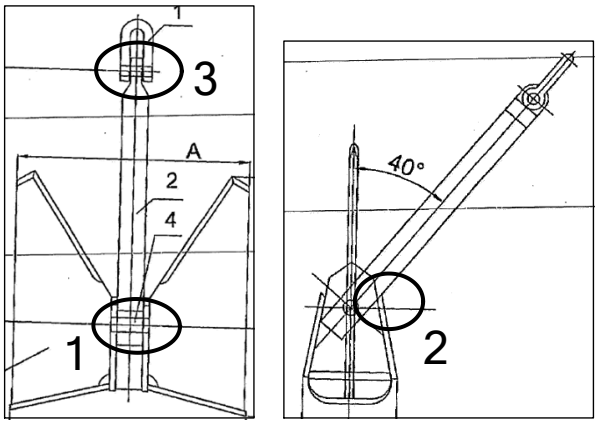
    1. The contact area between the anchor head and the shank assembling bolt
    2. The upper and lower contact area between the anchor head and the shank, The two cross sections of the shank are to be tested
    3. Top of the shank, area where the shackle is attached to the shank
    4. In addition to the list above (point 1 to 3) the attending surveyor may require additional NDT testing



- Surveyor is to issue Product certificate and each anchor is to be inspected and tested prior to issuance of it.

Type Approval documentation

				2015-12-04
				2015-12-04
				2015-12-04

Tests carried out

- Report: "Testing Plan of High Holding Power HYT-12 fabricated steel Anchors At Sea"

- Report: "The high holding power test document of HYN-SB, HYT-12, HY-17 Fabricated Anchor and HY-08 (Danforth) casting steel anchor" (dated 2007-01-25)

Marking of product

When a DNV GL product certificate is to be issued, the anchors shall be marked according to DNV Rules for Classification of Ships Pt.3 Ch.3 Sec.3 D700.

Periodical assessment

For retention of the Type approval, DNV GL surveyor shall perform a survey every second year and before expire date of this certificate to verify that the conditions of the type approval are complied with.

END OF CERTIFICATE