

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Emergency Towing Arrangement**

with type designation(s)

PH2401-A, PH2401-F, PH2402-A, PH2402-F

Issued to

**China National Shipbuilding Equipment & Materials (East China) Co., Ltd.
SHANGHAI, China**

is found to comply with

DNV GL rules for classification – Ships**IMO Resolution MSC 35 (63) of 20 May 1994****OCIMF Mooring Equipment Guidelines (MEG4), Fourth Edition 2018****Application :****Forward and Aft Emergency Towing Arrangements as stated on page 2 of this certificate for tankers over 20 000 but less than 50 000 tonnes deadweight - Safe Working Load 1 000 kN
Forward and Aft Emergency Towing Arrangements as stated on page 2 of this certificate for tankers of 50 000 tonnes deadweight and above - Safe Working Load 2 000 kN****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2019-07-12**This Certificate is valid until **2024-07-11**.for **DNV GL**DNV GL local station: **Shanghai**Approval Engineer: **Chi Wan Bang****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

Forward Emergency Towing Arrangement PH2401-F in accordance with drawing No.: 241PH-002-00(F):

- Safe Working load (SWL): 1 000kN (equivalent to 102 tonnes)

The detailed information of the chafing chain, chain stopper as strongpoint, fairlead and roller pedestal (optional) is described in the drawing no.: 241PH-002-00(F) dated June 2005 as well as the detailed drawings from Type Approval Documentation.

Aft Emergency Towing Arrangement PH2401-A in accordance with drawing No.: 241PH-002-00(A):

- Safe Working load (SWL): 1 000kN (equivalent to 102 tonnes)

The detailed information of the buoy, pick-up gear, towing pennant, towing pennant sockets, stopper ring, fairlead/strongpoint, towing bracket/strongpoint, storage box and storage drum is described in the drawing no.: 241PH-002-00(A) dated June 2005 as well as the detailed drawings from Type Approval Documentation.

Forward Emergency Towing Arrangement PH2402-F in accordance with drawing No.: 241PH-001-00(F):

- Safe Working load (SWL): 2 000kN (equivalent to 204 tonnes)

The detailed information of the chafing chain, chain stopper as strongpoint, fairlead and roller pedestal (optional) is described in the drawing no.: 241PH-001-00(F) dated June 2005 as well as the detailed drawings from Type Approval Documentation.

Aft Emergency Towing Arrangement PH2402-A in accordance with drawing No.: 241PH-001-00(A):

- Safe Working load (SWL): 2 000kN (equivalent to 102 tonnes)

The detailed information of the buoy, pick-up gear, towing pennant, towing pennant sockets, stopper ring, fairlead/strongpoint, towing bracket/strongpoint, storage box and storage drum is described in the drawing no.: 241PH-002-00(A) dated June 2005 as well as the detailed drawings from Type Approval Documentation.

Application/Limitation

- The connection and support of the above components to the ship's structure are not included in this approval and to be covered by separate approvals.
- Winch(storage drum), storage box, towing pennant, pick-up gear, connecting-chain, roller pedestal and chafing gear are not subject to this approval and to be delivered in accordance with the requirements in Resolution MSC.35(63) and OCIMF's MEG4.
- If installed on DNV GL vessels, a DNV GL product certificate is to be issued for each product and the following will apply:
 - The manufacturer is required to have a DNV GL surveyor witness all important production and tests as required.
 - Non-destructive testing is to be carried out to the attending surveyor's satisfaction.
 - All welding is to be carried out by approved welders and according to approved welding procedures.
 - Materials for load carrying parts are to be delivered with required material certificates in accordance with DNVGL-RU-SHIP Pt.5 Ch.5 Sec.1 [4.2].

Job Id: **262.1-009573-4**
Certificate No: **TAS000022K**

- Materials specified to other standards than DNV GL Rules shall fulfill the relevant corresponding rules requirements in Pt.2.
- Where Charpy V-notch impact testing is not specified by the materials standard, materials of welded parts shall be Charpy V-notch tested and impact energy is to be minimum 27J at 0 deg C according to DNVGL-RU-SHIP Pt.5 Ch.5 Sec.2 [2.2.5].
- Towing pennant and pick-up gear may be delivered with maker's certificate.
- The arrangements and positioning of the above components shall comply with the requirements in IMO Resolution MSC.35(63), DNVGL-RU-SHIP Pt.5 Ch.5 Sec.2 [2.2] and OCIMF's MEG4.

Type Approval documentation

Tests carried out

Prototype strength tests for PH2401 and PH2402 were carried out in the presence of DNV on 1 and 3 April 1998, at the Metal Strength Inspection and Testing Centre Jiangsu Wuxi, China.
Prototype strength testing of welded type chain stopper for PH2402-F was carried in presence of ABS surveyor, on 28 June 1999, at Metal Structure Inspection and Testing Centre of CSSC, China.
Deployment test is carried with Hull No. NE012 at Nantong Cosco KHI Ship Eng. Ltd., 2003-03-06.

Marking of product

The load bearing components are to be marked with the SWL, manufacturers name or trademark and type number identification.

Each fitting should be clearly marked by bead weld outline with its SWL. The SWL should be expressed in tonnes (letter 't') to avoid any confusion.

Periodical assessment

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

END OF CERTIFICATE