DNV·GL

Certificate No:
TAS000005X

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Emergency Towing Arrangement

with type designation(s)
KETA-40F, KETA-45F, KETA-40A, KETA-40A Under deck type

Issued to
TANKTECH CO., LTD.
Busan, Republic of Korea

is found to comply with
IMO Resolution MSC 35 (63) of 20 May 1994
Det Norske Veritas' Rules for Classification of Ships

Application :

Emergency Towing System with product description as stated on page 2 of this certificate for tankers of 50 000 Tonnes Deadweight and above - Safe Working Load 2 000 kN

This Certificate is valid until **2019-11-23**.

Issued at **Høvik** on **2015-11-24**

for **DNV GL**

DNV GL local station: **Pusan**

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.

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Product description

Fwd. Emergency Towing System KETA-40F with drawing No. KSP-4AR100:

- Safe Working load (SWL): 2 000kN (equivalent to 204t)
- Minimum breaking load (MBL): 4 000kN (equivalent to 408t)

The detailed information of the Chafing chain, strong point and fairlead is described in the drawing no.: KSP-4AR100 Rev.1 dated 1998.02.20.

Fwd. Emergency Towing System KETA-45F with drawing No. KSP-5AR100:

- Safe Working load (SWL): 2 000kN (equivalent to 204t)
- Minimum breaking load (MBL): 4 000kN (equivalent to 408t)

The detailed information of the Chafing chain, strong point and fairlead is described in the drawing no.: KSP-5AR100 Rev.1 dated 2007.04.05.

Aft Emergency Towing System KETA-40A with drawing No. KSP-4AR200 or KSP-4AR200-1:

- Safe Working load (SWL): 2 000kN (equivalent to 204t)
- Minimum breaking load (MBL): 4 000kN (equivalent to 408t)

The detailed information of the Buoy, Pick-up gear, towing pennant, groove spelter socket, fairlead/strongpoint, storage box and storage drum is described in the drawing no.: KSP-4AR200 or KSP-4AR200-1 Rev.0 dated 2000.08.21.

Aft Emergency Towing System KETA-40A under deck type with drawing No. KSP-4AR230 and KSP-4AR230-01:

- Safe Working load (SWL): 2 000kN (equivalent to 204t)
- Minimum breaking load (MBL): 4 000kN (equivalent to 408t)

The detailed information of the Buoy, Pick-up gear, towing pennant, groove spelter socket, fairlead/strongpoint, storage box and storage drum is described in the drawing no.: KSP-4AR230 Rev.0 dated 2015.05.30 and KSP-4AR230-01 Rev.0 dated 2015.05.30.

Application/Limitation

- The connection and support of the above components to the ship's structure are to be covered by separate approvals.
- Equipment Product Certificate: if installed on DNVGL vessels, DNVGL product certificate is to be issued for each single product and the following will apply:
  - Material Certificate: all main load bearing components shall be delivered with work certificate.
  - All welding is to be carried out by approved welders and according to approved welding procedures.
  - Non-destructive testing is to be carried out to the attending surveyor's satisfaction.
  - The manufacturer is required to have DNVGL surveyor witness all important production and tests as required.
  - Towing pennant and pick-up gear may be delivered with maker's certificate.
  - For steel materials subject to welding the carbon content will be limited to maximum 0.23%.

Type Approval documentation

Tests carried out

- Strength Test Report for Model KETA-40F, dated 29.07.1998, witnessed by LR-surveyor.
- Deployment Test Report for Model KETA-40F, dated 98-09-10, witnessed by DNV-surveyor.
- Strength Test Report for Model KETA-40A, dated 27.02.98, witnessed by KR-, BV-, DNV-, LR-, and NK-surveyors.
- Deployment Test Report for Model KETA-40A, dated 20.04.98, witnessed by KR-, BV-, DNV-, LR-, and NK-surveyors.
- Test Report – Brake Force Test, Model KETA-40A, dated 14 Sept., 2001.
- Strength Test Report for Model KETA-45F, dated 05 Oct., 2001, witnessed by DNV.
  Strength Test Report for Model KETA-45F, dated 12 Sept., 2002, witnessed by NK.
- Strength Test Report No. LT050217-2 for C Socket and Stopper Socket, dated 18 Febr., 2005, witnessed by BV-surveyor.
- Strength Test Report No.NID070611-01 for Model KETA-40A under deck type, dated 06.14.2007, witnessed by NK-surveyor.
- Deployment & Spray Test Report No. NID070212-01 for Model KETA-40A under deck type dated 02.14.2007, witnessed by DNV-, BV-, ABS-, LR-surveyors.

Marking of product

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

Periodical assessment

For retention of the Type Approval, DNVGL surveyor shall perform a survey every second year and before expiry date of this certificate in order to verify that the conditions of the type approval are complied with.

END OF CERTIFICATE