

TYPE APPROVAL CERTIFICATE

Certificate No:

TAS000007B
DNV GL

This is to certify:

That the Mooring and Towing Equipment

with type designation(s)
KETA- 45F

Issued to

TANKTECH CO., LTD.
Busan, Republic of Korea

is found to comply with

Det Norske Veritas' Rules for Classification of Ships
OCIMF's Recommendations for Equipment Employed in the Bow Mooring of Conventional Tankers at Single Point Moorings, Fourth Edition May 2007

Application :

Single Point Mooring with product description as stated on page 2 of this certificate for conventional tankers of any size.

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2015-11-19**

DNV GL local station: **Pusan**

Approval Engineer: **Chi Wan Bang**

for **DNV GL**

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

Fwd. Single Point Mooring System KETA-45F with drawing No. KSP-5AR100:

- Safe Working load (SWL): 200t
- Minimum breaking load (MBL)*: 438t

- Safe Working load (SWL): 250t
- Minimum breaking load (MBL)*: 498t

- Safe Working load (SWL): 350t
- Minimum breaking load (MBL)*: 612t

System intended for Single Point Mooring for 76 mm stud link chain cable of max nominal breaking load 612 tonnes. The detailed information of the strong point and fairlead is described in the drawing no.: KSP-5AR100 Rev.2 dated 2007.11.12.

*) Minimum Breaking Load (MBL): Minimum breaking load of a new mooring line or chain according to glossary of terms in OCIMF's Recommendations for Equipment Employed in the Bow Mooring of Conventional Tankers in Single Point Moorings.

Application/Limitation

- The structural strength of the stopper, bow fairlead are based on a safety factor of 2.0 against the yield criterion when applying a load equal to SWL according to DNV Rules for Ships Pt.5 Ch.3 Sec.15 C103.
- The connection and support of the above component 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 DNVGL material 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.

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-45F, dated 05 Oct., 2001, witnessed by DNV.
- Strength Test Report for Model KETA-45F, dated 12 Sept., 2002, witnessed by NK.

Marking of product

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



Job Id: **262.1-006500-5**
Certificate No: **TAS000007B**

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