

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Chain Stopper**

with type designation(s)
Chain stopper for bow loading system with load cell

Issued to

APL Norway AS
Kolbjørnsvik, Norway

is found to comply with
DNV GL rules for classification – Ships

Application :

To work as a mooring strongpoint for temporary mooring of shuttle tanker to an Offshore Loading terminal.

SWL 250 ton, chain diameter Ø76 mm.

SWL 300 ton, chain diameter Ø84 mm.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Chain diam. (mm) 76 & 84
SWL (ton) 300 kN

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2016-10-06**

for **DNV GL**

DNV GL local station: **Kristiansand S**

Approval Engineer: **Sindre Bauck Sole**

Inger-Helene Hals
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.

Job Id: **262.1-006578-3**
Certificate No: **TAS00000RK**

Product description

The chainstopper is part of a bow loading system (BLS) for shuttle tankers. The BLS will be employed when the shuttle tanker is temporary moored to Offshore Loading Terminal when loading/offloading crude oil.

The chainstopper is acceptable to use in BLS systems with Safe Working Load (SWL) of up to 300 ton. A safety factor of 2.0 on the SWL is applied as recommended in fourth edition of OCIMF's recommendations.

The stopper is designed for a chain of nominal diameter of Ø76 mm and Ø84 mm.

Manufacturers

Fortaco OY

Vammaksentie 1,
38210 Sastamala,
Finland

IKM Årdal Mekaniske Verksted AS,

Breivikveien 17 Nordmarka,
4120 Tau,
Norway

Panterra AS

Frolandsveien 6,
4847 Arendal
Norway

HSM Industrie AS

Bredstrupvej 50
8500 Grenaa
DENMARK

Application/Limitation

The manufacturers are required to have DNV surveyor witness all important production and tests (NDT) as required. Based upon such witnessing the surveyor shall stamp the chain stopper and issue a product certificate.

APL has, as the holder of the certificate, the responsibility for the product's compliance with DNV Rules.

Chainstopper foundations and associated ship supporting structure deck are not covered in this approval and is assumed covered by separate approval for each installation.

The chain stopper frame is fitted with an emergency towing bracket with a design load of 200 ton with a safety factor of 2 and an MBL of 400 ton with an upwards angle of 15°.

Loadcell is not within the scope of this type approval. Loadcells certified by independent institution are to be used.

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Type Approval documentation

Marking of product

Product shall be marked with SWL, the manufacturer's name or trademark and type number identification. In addition the surveyor shall stamp each unit as follows for traceability to this type approval certificate:

TAS00000RK

Certificate retention survey

For retention of Type Approval Certificate, Det Norske Veritas' surveyor shall carry out a survey every second year and before the expiry date of this certificate to verify that the conditions of the type approval are complied with.

The initial survey and the retention surveys shall be carried out at all manufacturers listed on page 2.

END OF CERTIFICATE