

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Mooring Lines/Socket

with type designation(s)

Mandal Fairlead Shackle No. 90 M, Mandal Fairlead Shackle No. 120 M

Issued to

KORONAKIS D. S.A.
PIRAEUS, Greece

is found to comply with

OCIMF Mooring Equipment Guidelines (MEG4), Fourth Edition 2018
DNV GL rules for classification – Ships

Application :

For use as mooring link between wire rope and fiber forerunner, and between fiber rope and fiber forerunner

Issued at **Høvik** on **2020-11-30**

This Certificate is valid until **2025-11-29**.

for **DNV GL**

DNV GL local station: **Piraeus**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Joining shackles as connection devices between wire and mooring lines

- Mandal Fairlead Shackle 90 Tonnes with roller (MBL 90 tonnes)

Responsibility:

The Holder of the Certificate (the manufacturer mentioned on page 1) takes responsibility that both design and production are in accordance with the Standard and Rule listed on page 1 of this Type Approval Certificate.

EUROPE MARINE AS marked on the equipment is owned 100% by its parent company KORONAKIS D. S.A.

Manufactured by:

Fremo AS

Address: 3290 Stavern, Norway

Responsible DNV GL Station: DNV GL Norway CMC, East-South (M-NN-CMCC)

Application/Limitation

- The safety factor of three (3) for the SWL i.e. a breaking load that is three times the SWL, is chosen by the manufacturer and according to OCIMF's MEG4 5.8.4.1.
- Connection lines/arrangements are not part of this approval, it shall comply with the requirements given in OCIMF's MEG4 5.8.4.1.
- D/d ratio shall be considered and comply with OCIMF's MEG4 5.8.4.1 for each arrangement.
- Grades of material as stated on the approved drawings are to be delivered with certificates minimum equal to NS-EN 10204 3.1.
- When a DNV GL product certificate is requested to be issued for each product, the manufacturer is required to have a DNV GL surveyor witness all important production and tests as required i.e. visual inspection, dimensional verification and NDT inspection according to OCIMF's MEG4 5.8.4.1.

Type Approval documentation

Tests carried out

Each shackle is to be load tested up to the SWL. Random tests minimum up to breaking load are to be performed and recorded.

Marking of product

Each shackle is to be permanently marked at least with the manufacturer's name and the SWL.

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