

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Class B Recesses for Light Fittings, Ventilation Units and similar**

with type designation(s)

FL220NF-N-B15A, FL240NF-N-B15A, LEB407NF-N-B15A, LEB807NF-N-B15A

Issued to

**Daeyang Electric Co., Ltd.
Busan, Republic of Korea**

is found to comply with

DNV GL offshore standards**DNV GL rules for classification – Ships****DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations****Application :****Approved as light fixtures for use in B-0 and B-15 class ceilings.****(See Application/Limitation on page 2.)****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2021-06-30**.Issued at **Høvik** on **2016-08-17**DNV GL local station: **Pusan**for **DNV GL**Approval Engineer: **Piotr Orzechowski**

**Petter Langnes
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

"FL220NF-N-B15A, FL240NF-N-B15A, LEB407NF-N-B15A, LEB807NF-N-B15A"

Light fixtures installed in cut-outs in B-15 ceilings. The light fixtures are composed of steel bodies with reflectors, etc., and with flanges made of 0.8 mm thick steel sheets, fastened to the ceiling by means of Ø6 bolting. The light fixtures are covered with insulation boxes made of 50 mm thick Al-foiled "HI-WOOL" (density 120 kg/m³) on top and around the edges. The ceiling insulation is covering the periphery of the cut-out and the first 40 mm of the height of the light fixtures. For further details, see the Type Approval documentation listed below.

Application/Limitation

Light Fixture Type	Maximum size (L x W x H)	Maximum weight
LEB407NF-N-B15A (LEB407WF-N-B15A, LEB407NL-N-B15A, LEB407ND-N-B15A); FL220NF-N-B15A (FL220WF-N-B15A, FL220NL-N-B15A, FL220ND-N-B15A)	684 x 282 x 100 mm	5.44 kg
LEB807NF-N-B15A (LEB807WF-N-B15A, LEB807NL-N-B15A, LEB807ND-N-B15A); FL240NF-N-B15A (FL240WF-N-B15A, FL240NL-N-B15A, FL240ND-N-B15A)	1294 x 282 x 100 mm	9.44 kg

The light fixtures are approved for use in approved B-0/B-15 ceilings consisting of panels constructed by not less than 0.6 mm thick galvanized steel sheets covered by minimum 40 mm thickness (80 kg/m³) insulation on unexposed side.

Maximum size of panels: 300 x 2420 mm (width x length).

Minimum distance between the recesses should not be less than 200 mm.

The manufacturer of ceiling is responsible to document that the structural and thermal integrity is maintained after fitting the light fixtures into the ceiling. The arrangement is subject for approval in each case.

Each product is to be supplied with its manual for installation, use and maintenance.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2015.

Test report no. KOMERI-0402-12T133-1 dated 19 March 2012 from Korea Marine Equipment Research Institute (KOMERI), Busan, Korea.

Drawing no. FL-B15-00 (8 sheets) dated 2014-06-27 from the manufacturer.

Tests carried out

Tested according to IMO FTPC Part 3 and in compliance with IMO 2010 FTP Code Ch. 8.

Marking of product

The product or packing is to be marked with name of manufacturer and type designation.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNVGL-CP-0338, Section 4.