

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Brakes

with type designation(s)

FDW, sizes 08 / 10 / 13 / 15 / 17 / 20 / 23 / 26 / 30, FDX, sizes 26 / 30 / 40

Issued to

**Precima Magnettechnik GmbH
Bückeberg, Germany**

is found to comply with

**DNV GL rules for classification – Ships
DNV GL offshore standards**

Application :

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

Issued at **Hamburg** on **2018-10-11**

for **DNV GL**

This Certificate is valid until **2023-10-10**.

DNV GL local station: **Essen**

Approval Engineer: **Andreas Andrecht**

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**Arne Schaarmann
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

Electromagnetic brakes

FDW, sizes 08 / 10 / 13 / 15 / 17 / 20 / 23 / 26 / 30

FDX, sizes 26 / 30 / 40

Service or Parking Brakes for dynamic or static braking

Voltage: 24 V DC up to 360 V DC
operated via rectifier PMG, PMEA, PMBA or DC Supply
Duty type: S1, S4-40 %
Torque: 5 Nm up to 1600 Nm
Ambient temp.: 45 °C
Degree of protection: IP 65, IP 66, IP 67
Thermal class: 155 (F)

Environmental category in accordance with manufacturers specification

Type Approval documentation

Drawings: M98-169 dated 05.06.2013, M98-170 dated 06.06.2013

Datasheet: T 90 - 22 dated 27.1.99 SiHSi-0, Fertigungskarte FM 004

Test reports: Abnahmebericht FDW & FDX dated 13.08.2013,

Report TÜV Nord Nr. 10 204 553873/01.04.2010, 13 993 121357/10.06.2013

Tests carried out

GL Guidelines for the Performance of Type Approvals, VI-7-2, edition 2003

DIN VDE 0580:2000-07

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE