



Design Appraisal Document

Lloyd's Register EMEA
Rotterdam Technical Support Office
Address: K.P. van der Mandelelaan 41a, 3062MB Rotterdam
P.O. Box 701, 3000 AS Rotterdam
Tel.: +31(0)10 414 50 88, Fax.: +31(0)10 201 84 51
Email: Rot-planapp@lr.org

Date
08 June 2021

Please quote this reference number on all future communications
RTS-ENG-210876-SDX

MACHINERY GENERAL DESIGN APPRAISAL

MANUFACTURER:	PRECIMA MAGNETTECHNIK GMBH
SUBJECT:	SPRING LOADED BRAKES
G.A. REGISTRATION:	ROT.21.M.007
SIZE / TYPES :	FDX 26
	FDX 30
	FDX 40

VALID UNTIL 07 JUNE 2026

The Document(s) listed in paragraph 1 of the appendix have been examined for compliance with the **Code for Lifting Appliances in a Marine Environment, July 2020, Chapter 9** and will be approved, as indicated, in accordance with the following conditions:

A. Spring Loaded Brakes Details

Brake Size / Brake Type	FDX 26
Nominal Torque [Nm]	250
Brake Holding Torque [Nm]	375
Friction Coefficient (Brake Holding) [-]	0.34
Friction Coefficient (Dynamic Braking) [-]	0.38
Operating temperature [°C]	-40 / +40

Brake Size / Brake Type	FDX 30
Nominal Torque [Nm]	500
Brake Holding Torque [Nm]	850
Friction Coefficient (Brake Holding) [-]	0.34
Friction Coefficient (Dynamic Braking) [-]	0.38
Operating temperature [°C]	-40 / +40

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a member of Lloyd's Register group

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Lloyd's Register EMEA
Rotterdam Technical Support Office
Address: K.P. van der Mandelelaan 41a, 3062MB Rotterdam
P.O. Box 701, 3000 AS Rotterdam
Tel.: +31(0)10 414 50 88, Fax.: +31(0)10 201 84 51
Email: Rot-planapp@lr.org

Date
08 June 2021

Please quote this reference number on all future communications
RTS-ENG-210876-SDX

Brake Size / Brake Type		FDX 40
Nominal Torque	[Nm]	1000
Brake Holding Torque	[Nm]	1500
Friction Coefficient (Brake Holding)	[-]	0.34
Friction Coefficient (Dynamic Braking)	[-]	0.38
Operating temperature	[°C]	-40 / +40

1. Comments

The brakes are eligible for either Certified LR Lifting Appliance as defined per the Code, Chapter 1, section 1.2 and Chapter 13, Table 13.2.1 or LR Classed Lifting Appliances as defined per the Code, Chapter 1, section 1.3, and Chapter 13, Table 13.3.1. Material requirements and certification as per applicable table. Further, the selected steel grades are to provide adequate assurance against brittle fracture taking design temperature into account and in general the Charpy-V impact requirements.

AQS
MANUFACTURER

Testing shall be performed as per Chapter 9, Section 6.1.1. Details to the attending Surveyor's satisfaction.

AQS
MANUFACTURER

It has been understood that toothed rotor/ hub material is AISI 430F with material yield properties not less than 450MPa. This has to be to attending surveyors' satisfaction.

AQS
MANUFACTURER

The expected coefficient of friction is exceeding 0.3 hence, as per Chapter9, Section 3.8.5. details of proof of friction coefficients exceeding this value are to be submitted for consideration to attending Surveyors satisfactions.

AQS
MANUFACTURER

The approval of the spring-loaded brakes has been based on maximum clamping force as per calculation documents in paragraph A. The performance of the brake in the actual installation has not been considered with this appraisal and it needs to be demonstrated during testing.

--

The brake performance may be tested at the shop or during final commissioning.

--

The approval has been based on load and boundary conditions from Calculation reports from Appendix 2 of this document.

--

The design fatigue aspects have not been considered with this appraisal.

--

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a member of Lloyd's Register group

Lloyd's Register EMEA
Rotterdam Technical Support Office
Address: K.P. van der Mandelelaan 41a, 3062MB Rotterdam
P.O. Box 701, 3000 AS Rotterdam
Tel.: +31(0)10 414 50 88, Fax.: +31(0)10 201 84 51
Email: Rot-planapp@lr.org

Date
08 June 2021

Please quote this reference number on all future communications
RTS-ENG-210876-SDX

Appendix

Sanjin Dragicevic
Specialist
Engineering Systems
Rotterdam Technical Support Office

1. The documents listed below have been examined for art. No. 777-02513

Document No.	Rev.	Title	Status	Date
FDX 026.0417.007	1	SPRING LOADED BRAKE FDX 26	SI	08-Jun-2021
M100-011	4	SPRING LOADED BRAKE	SI	08-Jun-2021
M100-013	2	SPRING LOADED BRAKE	SI	08-Jun-2021

2. The documents listed below have been considered together with the submitted documents in the appraisal

Document No.	Rev.	Title
FDX 26 LR HT (6230) - contoured		CALCULATION
FDX 26...40 - (standard) Fastening calculation		CALCULATION
FDX 26 LR Feather - key calculation		CALCULATION
FDX 30 (standard) - Feather key calculation		CALCULATION
FDX 40 (standard) - Feather key calculation		CALCULATION
FDX 26...40 - (standard) Hollow screw calculation		CALCULATION
FDX 26...40 - (standard) Rotor calculation		CALCULATION
FDX 26 HS (R218) - uncontoured		CALCULATION

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a member of Lloyd's Register group

Lloyd's Register EMEA
Rotterdam Technical Support Office
Address: K.P. van der Mandelelaan 41a, 3062MB Rotterdam
P.O. Box 701, 3000 AS Rotterdam
Tel.: +31(0)10 414 50 88, Fax.: +31(0)10 201 84 51
Email: Rot-planapp@lr.org

Date
08 June 2021

Please quote this reference number on all future communications
RTS-ENG-210876-SDX

Appendix

Document No.	Rev.	Title
FDX 30 HS (R218) uncontoured	-	CALCULATION
FDX 40 HS (R218) uncontoured	-	CALCULATION
FDX 26 (standard) Feather key calculation	-	CALCULATION
FDX 26 HT (6230) contoured	-	CALCULATION
FDX 26 LR Fastening - calculation	-	CALCULATION
FDX 26 LR Hollow screw calculation	-	CALCULATION
FDX 26 LR Rotor calculation	-	CALCULATION

Appraisal Status Key

SI	Retained for information as supporting documentation only
AQS	Details to be submitted by the client to the local Surveyor's office responsible for the building and the arrangements verified in accordance with the Rule/Regulation requirements by the Surveyor.

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a member of Lloyd's Register group