



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Electro Adda spa												
Address	Via Nazionale 8, Beverate Di Brivio Lc, 23883, Italy												
Type	Electric Motors												
Description	Three Phases Asynchronous Brake Motors (DC Brake)												
Trade Name	FECCL (DC BRAKE)												
Application	Marine, Offshore and Industrial use.												
Specified Standard	IEC 60034-1:2017 IEC 60034-2-1:2014 IEC 60034-6: 1991 (IEC 60034-30:2008) IEC 60034-30-1:2014 Lloyd's Register Rules and Regulation for the Classification of Ships, 2018 - Part 6, Chapter 2, Section 9												
Ratings	<table><tr><td>Rated Power [kW]</td><td>0.75 ÷ 200</td></tr><tr><td>Rated Voltage [V]</td><td>220 ÷ 690</td></tr><tr><td>Rated Frequency [Hz]</td><td>50 / 60 or Frequency Converter Fed</td></tr><tr><td>Brake Type</td><td>Precima FDW Series (IP66) Precima FDX Series (IP67)</td></tr><tr><td>Working Brake [Nm]</td><td>10 ÷ 1000</td></tr><tr><td>Holding Brake [Nm]</td><td>15 ÷ 1500</td></tr></table>	Rated Power [kW]	0.75 ÷ 200	Rated Voltage [V]	220 ÷ 690	Rated Frequency [Hz]	50 / 60 or Frequency Converter Fed	Brake Type	Precima FDW Series (IP66) Precima FDX Series (IP67)	Working Brake [Nm]	10 ÷ 1000	Holding Brake [Nm]	15 ÷ 1500
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71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Maurizio Crucil

Electrical & Control Technical Manager -
South Europe to Lloyd's Register EMEA
A member of the Lloyd's Register group

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Shaft height [mm]	80 ÷ 315
Poles Number	2 – 4 – 6
Insulation Class	F
Efficiency Class	IE1 – IE2 – IE3 – IE4
Degree of Protection	IP55, IP56 + IP65
Duty	S1
Frame	A (aluminium) – S (steel or cast iron)
Shields	Aluminium or Cast iron
Cooling – Ventilation	IC411 or IC416 (optional)

RANGE as per Manufacturer's Data Sheet.
Frame/Brake Table available at appendix.

Other Conditions

- Temperature Rise for Lloyd's Register application have to be within insulation class F limits, as per Lloyd's Register Rules and Regulation for the Classification of Ships, Part 6, Chapter 2, Section 9
- Temperature Rise for Power Frequency applications satisfies class B limits, except for C2A 225 MT 2 poles, within class F limit.
- Motors suitable for Inverted-Fed application, without any needs of power de-rating. Temperature Rise within class F limits.
- Motors rated 100 kW and above intended for Lloyd's Register application have to satisfy the additional requirements as specified in the LR Rules and Regulation for the Classification of Ships, Part 6, Chapter 2.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 19/00009

The Design Appraisal Document LR2419039DA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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APPENDIX to Certificate no. LR2419039TA

RANGES:

FRAME	BRAKE	WORKING \nBRAKE	HOLDING \nBRAKE
80	FDW10	10Nm	15Nm
90S – 90L	FWD13	20Nm	30Nm
100L – 112MT	FWD13	20Nm	30Nm
112M	FWD15	40Nm	60Nm
112M	FWD17	60Nm	90Nm
132S – 132M	FWD17	60Nm	90Nm
160MT	FWD20	100Nm	150Nm
160M – 160L	FWD23	150Nm	225Nm
180MT – 180LT	FWD23	150Nm	225Nm
180L	FWD26	250Nm	375Nm
200LT	FWD26	250Nm	375Nm
200L	FDX26	250Nm	375Nm
225ST – 225MT	FDX26	250Nm	375Nm
225M	FDX30	500Nm	850Nm
250MT	FDX30	500Nm	850Nm
250M	FDX30	500Nm	850Nm
280ST – 280MT	FDX30	500Nm	850Nm
315M	FDX40	1000Nm	1500Nm

Permissible deviations of braking torque:

- Working brake: -30% (new) // $\pm 20\%$ (run-in)
- Holding brake: $\pm 20\%$ (new) // -10%/+30% (run-in)