



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-9147
This Certificate consists of 4 pages

This is to certify that the
Electric Motor
with type designation(s)
M2CA

Manufactured by
ABB Oy, Motors,
Finland

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For installation in non hazardous area.

Enclosure class	IP55 -IP56
Insulation class	F
Temp. class (°C)	45
Voltage (V)	220 - 690
Power (kW)	37 - 670
Frequency (Hz)	50 - 60
Speed (RPM)	750 - 3600

Place and date
Høvik, 2008-08-20

for DET NORSKE VERITAS AS

Trond Sjøvåg
Trond Sjøvåg
Head of Section



Local Office
DNV Helsinki

This Certificate is valid until
2011-12-31

Roger Thomas Volden
Roger Thomas Volden
Surveyor

Notice: 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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



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File No.: 821.20

Product description

Type M2CA: 3-phase squirrel cage induction motors acc. to IEC 60034, IEC frame of steel, frame sizes 280 up to 450.

Rated Voltage:	220V - 690V
Rated Frequency:	50Hz, 60Hz
Nominal power:	37 kW - 670 kW
Number of poles:	2, 4, 6, 8 and multipoles
Duty type:	S1 - S9
Enclosure class:	IP55 & IP56
Ambient air temp.:	45 °C
Insulation class:	F

Technical data for 440 V and 60 Hz:

Type designation	Nom. Power	Type designation	Nom. Power
2 Pole		6 Pole	
280SA 2	90	280SA 6	55
280SMA 2	105	280SMA 6	63
280MB 2	125	315SA 6	86
315SA 2	125	315SMA 6	105
315SMA 2	155	315MB 6	125
315MB 2	185	315LA 6	150
315LA 2	230	355SA 6	160
355SA 2	225	355SB 6	195
355MA 2	285	355MA 6	230
355MB 2	315	355MB 6	275
355LA 2	360	355 LKD	340
355LB 2	355	400MLA 6	400
400MLA 2	500	400MLB 6	440
400LKA 2	600	400LKA 6	500
400LKB 2	670	400LKB 6	560



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Type designation	Nom. Power	Type designation	Nom. Power
4 Pole		8 Pole	
280SA 4	88	280SA 8	43
280SMA 4	105	280SMA 8	55
315SA 4	125	315SA 8	63
315SMA 4	150	315SMA 8	85
315MB 4	185	315MB 8	105
315LA 4	230	315LA 8	125
355SA 4	230	355SA 8	125
355MA 4	285	355MA 8	150
355LA 4	345	355MB 8	180
355LB 4	400	355LKD 8	230
355LKD 4	450	400MLA 8	285
400MLA 4	500	400LKA 8	360
400MLB 4	550	-	-
400LKA 4	600	-	-
400LKB 4	670	-	-

Application/Limitation

For installation in non hazardous area.

For installation on open deck Rules Pt.4, Ch.8, Sec.10 table B1 note 6 to be followed.

Type Approval documentation

Drawings:

1493 HRX 20014, H317366/14 & 15, 13 HXV 28001 C, 13 HXV 28002 B,
13 HXVA 31501 B, 13 HXVA 31502 B, 13 HXV 35501 B, 13 HXV 35502 B, 23 M2CA
400 A H321365 & H221579.

Test reports:

NV HEL 03-1914 03.03 issued 2003-03-13, NV HEL 04-1918 02.04 issued 2004-02-25.

Tests carried out

Temperature, Overload, Overspeed, Insulation resistance, Winding resistance, No load.

Marking of product

- Manufacturers name and type designation
- Serial number and date of manufacture
- Voltage, frequency, rpm
- Power class (kW / kVA)
- Winding insulation class
- Degree of protection



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Certificate retention survey

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

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at renewal only.

END OF CERTIFICATE