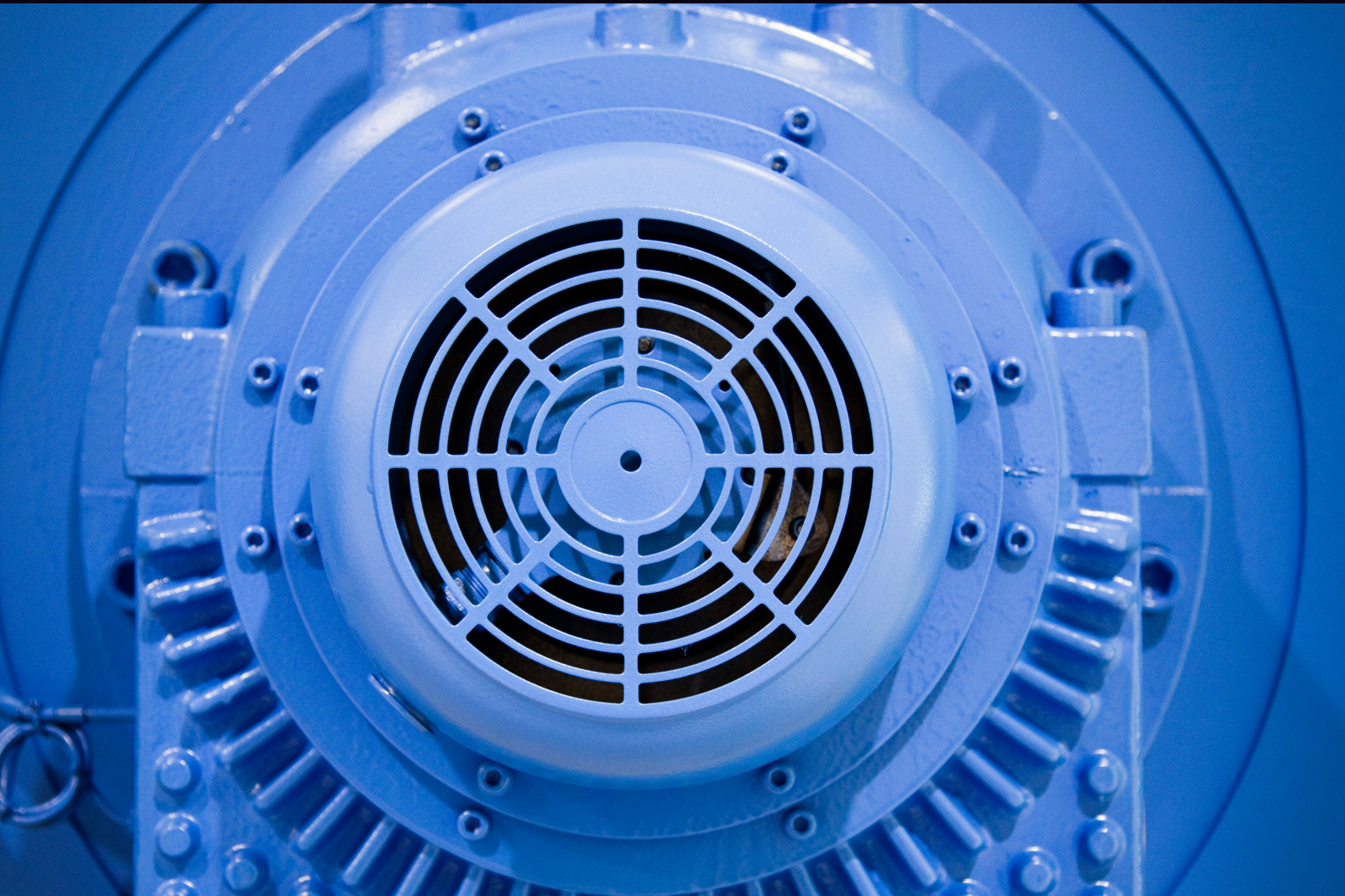


EXCELLENCE IN ELECTRIC

MOTORS

DOUBLE JACKET WATER COOLED MOTORS



EXCELLENCE IN ELECTRIC



norwegian
electric systems

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DOUBLE JACKET WATER COOLED MOTORS

The double jacket motors represents the latest generation of asynchronous motors. Our motors are specially designed for marine heavy duty applications where limited space and natural ventilation is some of the key factors.

The double jacket cooling system has proven to be a superior design for variable speed main propeller- and thruster applications with its high output /size ratio and a high degree of protection towards salient and humid environments.

Super silent motors! Up to five times less noise than conventional air cooled motors.

EXCELLENCE IN ELECTRIC

GENERAL FEATURES

Robust construction designed for heavy, hazardous and continuous duty in confined spaces.

STANDARDS

- IEC 60034, IEC 60072

APPROVALS

- The motors are designed and built in accordance with marine register rules specifications and comply with: ABS, BV, CCS, DNV, GL, KR, LR, NK, RINA, RS.

MOUNTINGS

- Vertical or horizontal feet and/or flange mountings

CONSTRUCTION

- Steel frame
- Cast iron or steel terminal boxes and shields
- Protection degree IP55
- Windings impregnated with VPI system (Vacuum Pressure Impregnation)
- Insulation class F
- Anti-corrosion and rust frame treatment
- Stainless steel nameplate
- Simple earthing
- Drainage hole
- PTCs in windings with terminals in auxiliary terminal box

SUPPLY

- Inverter

COOLING

- Fresh water

SOUND PRESSURE

- Low noise level

BEARINGS

- Rolling bearings
- Regreasing system
- Arrangement for SPM sensors

READ ONLINE



TECHNICAL FEATURES

DUTY TYPE

The power outputs given in this catalogue refer to S1 duty type.

DEGREE OF PROTECTION

Motors are normally provided with IP55 enclosure. A higher degree of protection is available on request.

ENVIRONMENTAL CONDITIONS

Electrical tables refer to a cooling water of +38°C. Please contact Norwegian Electric Systems for different environmental conditions and where cooling water temperature is less than 10°C.

INSULATION

All motors have class F insulation which allows a maximum winding temperature rise of 100°C with cooling fluid temperature of 38°C. On request class H insulation is also available.

TEMPERATURE RISE

The outputs shown in this catalogue refer to temperature rise Class F.

PROTECTIVE TREATMENTS

External Surfaces

Standard finish is a heavy duty epoxy-vinyl paint. Colour is RAL5012. Special paint finishes can be provided to protect against: acids, alkalis, salt air, anhydrous gases and sea water.

Internal Surfaces

Special tropicalised treatment of internal surfaces and electrical windings. Inner cooling channels are coated with rust protector.

SOUND LEVELS

The electric tables show the sound pressure levels [Lp(A)] measured at no load conditions at one meter distance from the machine according to standard ISO R 1680 with tolerances of 3dB(A). The values do not depend on the supply frequency.

MATERIALS

Durability and reliability determine the choice of materials. Fabricated steel frames and cast iron shields are designed for reduced weight. Terminal boxes for frame sizes up to 400LB are in cast iron and from 400LC to 560 frame size in fabricated steel. Please contact Norwegian Electric Systems for different materials. Special steel shafts are available for high load applications.

BALANCING AND VIBRATION GRADE

The motors are dynamically balanced with a half key applied to the shaft extension in accordance with standard IEC 60034-14 to vibration grade reduced (A). On request vibration grade special (B) is also available.

COOLING SYSTEM

IC 7 A1 W7 (Self-circulating primary coolant with integral heat exchanger using remote fresh water). Reduces the noise level and it is ideal for constant torque, low speed, inverter applications.

The cooling fluid must be clean water.

DO NOT USE:

- sea water.
- water with more than 120 mg/l of chloride.
- water with solid content over 10 mg/l.

Two flanged connections are provided for inlet and outlet of cooling water. On the appropriate name plate heat exchanger characteristics are indicated: flow rate, inlet/outlet temperature, min/max pressure.

DERATING FOR INVERTER SUPPLY

The NEMJ series have been designed to satisfy the requirements of speed control by frequency converter supply. Norwegian Electric Systems therefore provides various solutions to obtain the best performances, based on the following information: torque, constant torque or torque curve for all other cases) of the driven equipment;

Electric supply and speed range; Converter supply characteristics (peak voltage values at the motor terminals, rise time, etc.); Maximum inverter overload (time and current value). Inverter fed motors will be supplied with enhanced winding insulation and N-end insulated bearing.

SAFETY

The whole series is supplied with PT100 in windings and internal water leakage sensor as standard.

Water leakage sensor

Advantages of Water Jacket Design

No heating dissipation in the installed area

Compact dimensions

No dust circulation

APPROVALS

In addition to meeting the electrical motor specifications, the NEMJ series also match the requirements of marine register rules for pressure vessels. In particular our motors comply with: ABS, BV, CCS, DNV, GL, KR, LR, NK, RINA, RS.

INPUT DATA NEEDED FOR QUOTATIONS

Output [kW], Voltage [V], Frequency [Hz], Speed [rpm], Mounting [V1, B3 etc], Enclosure [IP], Classification, Ambient temp [°C].

TECNICAL DATA/ LOW VOLTAGE 690V

v-0313

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Rated output		Motor type	Rated speed		Performances at rated outputs				DOL starting		Breakdown torque	Sound pressure level Lpa dB(A)	Moment of inertia J kg m²	Approx. Weight kg
					Torque	50 Hz Current	Efficiency	Power factor	Current	Torque				
50 Hz kW	60 Hz kW		50 Hz rpm	60 Hz rpm	Tn N m	In A	h %	cos -	Is/In p.u.	Ts/Tn p.u.	Tmax/Tn p.u.			

4 poles

330	400	NEMJ 355 LA4	1484	1784	2121	327	96,0	0,88	5,6	2,1	2,5	69	6,2	1600
400	480	NEMJ 355 LB4	1486	1786	2568	395	96,3	0,88	5,6	2,1	2,5	69	7,4	1770
450	540	NEMJ 355 LC4	1486	1786	2889	444	96,4	0,88	5,6	2,0	2,4	69	8,4	1950
500	600	NEMJ 355 LD4	1486	1786	3210	487	96,6	0,89	5,6	2,0	2,5	69	9,5	2100
550	660	NEMJ 355 LF4	1487	1787	3529	535	96,7	0,89	5,6	2,0	2,4	69	10,6	2200
600	720	NEMJ 400 LA4	1486	1786	3852	604	96,7	0,86	5,3	0,8	2,1	71	14	2700
700	830	NEMJ 400 LB4	1486	1786	4494	696	96,8	0,87	5,4	0,9	2,2	71	17	2950
770	920	NEMJ 400 LC4	1486	1786	4943	774	96,9	0,86	5,5	0,9	2,1	71	19	3150
980	1150	NEMJ 450 LA4	1491	1791	6270	958	97,4	0,88	5,7	0,7	2,4	72	30	4040
1050	1250	NEMJ 450 LB4	1492	1792	6714	1015	97,4	0,89	6,0	0,8	2,5	72	33	4325
1180	1400	NEMJ 450 LC4	1492	1792	7545	1138	97,6	0,89	6,1	0,8	2,5	72	37	4680
1400	1600	NEMJ 500 LA4	1493	1793	8946	1364	97,7	0,88	5,3	0,6	2,1	78	49	5730
1560	1800	NEMJ 500 LB4	1493	1793	9968	1518	97,8	0,88	5,3	0,6	2,1	78	55	6180
1750	2000	NEMJ 500 LC4	1494	1794	11175	1683	97,9	0,89	5,8	0,6	2,3	78	62	6700
2000	2300	NEMJ 560 LA4	1494	1794	12771	1996	97,6	0,86	5,2	0,5	2,0	80	111	8220
2400	2800	NEMJ 560 LB4	1495	1795	15315	2365	97,7	0,87	5,8	0,6	2,1	80	139	9297
2700	3200	NEMJ 560 LC4	1496	1796	17218	2724	97,7	0,85	7,2	0,8	2,5	80	162	10355

6 poles

230	280	NEMJ 355 LA6	990	1190	2216	243	95,4	0,83	5,4	2,2	2,2	66	11	1600
300	350	NEMJ 355 LB6	991	1191	2888	316	95,7	0,83	5,4	2,2	2,2	66	14	1820
380	450	NEMJ 355 LC6	992	1192	3654	394	96,1	0,84	5,7	2,5	2,4	66	18	2150
450	530	NEMJ 400 LA6	994	1194	4319	477	96,3	0,82	5,8	0,9	2,4	68	21	2670
530	630	NEMJ 400 LB6	994	1194	5087	547	96,7	0,84	5,8	0,9	2,4	68	27	3150
610	735	NEMJ 400 LC6	994	1194	5855	628	96,8	0,84	5,6	0,8	2,2	68	29	3250
760	900	NEMJ 450 LA6	994	1194	7294	772	97,0	0,85	5,5	0,8	2,3	70	41	4000
850	1000	NEMJ 450 LB6	994	1194	8158	863	97,1	0,85	5,3	0,8	2,2	70	46	4300
930	1100	NEMJ 450 LC6	994	1194	8926	943	97,2	0,85	5,2	0,8	2,2	70	52	4650
1130	1300	NEMJ 500 LA6	995	1195	10834	1145	97,3	0,85	5,7	0,7	2,3	73	71	5620
1300	1500	NEMJ 500 LB6	995	1195	12464	1299	97,5	0,86	5,3	0,7	2,1	73	82	6230
1570	1800	NEMJ 500 LC6	995	1195	15053	1569	97,5	0,86	5,6	0,7	2,2	73	97	6850
1800	2100	NEMJ 560 LA6	995	1195	17258	1780	97,4	0,87	5,3	0,6	2,3	75	206	8600
2100	2400	NEMJ 560 LB6	995	1195	20135	2074	97,5	0,87	5,4	0,6	2,3	75	237	9350
2400	2800	NEMJ 560 LC6	996	1196	22988	2370	97,5	0,87	5,8	0,6	2,5	75	268	10000

8 poles

400	480	NEMJ 400 LA8	743	893	5136	430	95,0	0,82	5,5	1,2	2,1	68	26	2670
440	530	NEMJ 400 LB8	743	893	5650	470	95,7	0,82	5,6	1,2	2,1	68	30	3150
500	600	NEMJ 400 LC8	743	893	6420	533	95,8	0,82	5,4	1,2	2,1	68	33	3250
550	650	NEMJ 450 LA8	745	895	7043	568	96,5	0,84	4,8	1,0	2,1	69	55	4000
610	740	NEMJ 450 LB8	745	895	7811	622	96,6	0,85	4,7	1,0	2,1	69	61	4300
700	830	NEMJ 450 LC8	745	895	8964	713	96,7	0,85	4,7	1,0	2,1	69	69	4650
780	930	NEMJ 500 LA8	745	895	9988	794	96,8	0,85	4,7	0,7	2,3	71	95	5620
880	1050	NEMJ 500 LB8	745	895	11269	885	96,9	0,86	4,7	0,7	2,3	71	110	6230
1000	1200	NEMJ 500 LC8	746	896	12788	1004	97,0	0,86	5,0	0,9	2,3	71	122	6850
1250	1450	NEMJ 560 LA8	746	896	15985	1315	97,1	0,82	5,6	0,7	2,4	74	219	8450
1450	1650	NEMJ 560 LB8	746	896	18543	1526	97,1	0,82	5,6	0,7	2,4	74	252	9320
1700	2000	NEMJ 560 LC8	746	896	21740	1787	97,2	0,82	5,2	0,7	2,3	74	285	10100