

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Motor**

with type designation(s)
RN series 56 up to 355

Issued to

Rotor B.V.
EIBERGEN, Netherlands

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Degree of protection	IP55 - IP56
Insulation class	F
Temp. class (°C)	155
Voltage (V)	200 - 760
Power (kW)	0,09(0,1) - 500(600)
Frequency (Hz)	50 - 60
Speed (RPM)	500 - 3600

Issued at **Høvik** on **2019-08-29**

This Certificate is valid until **2024-06-30**.

for **DNV GL**

DNV GL local station: **Netherlands FIS**

Approval Engineer: **Nicolay Horn**

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Trond Sjøvåg
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

Type RN & 6 RN 3-phase induction motor:

Rated Voltage:	200V up to 760V
Rated Frequency:	50Hz, 60Hz
Number of poles:	2, 4, 6, 8 and combinations.
Duty type:	S1, S2
Enclosure class:	IP55 and IP56
Cooling	IC411, IC410 , IC416, IC418
Ambient air temp.:	45 deg. C
Material:	Cast iron
Ex rating:	NA
Insulation class:	F or H

Product data RN, 50/60 Hz

Frame Sizes	Type	No of poles	Rated power (kW) (400V 50Hz)	Rated power (kW) (440V 60Hz)
56	RN56M02	2	0.12	0.14
63	RN63M02K	2	0.18	0.21
63	RN63M02	2	0.25	0.29
71	RN71M02K	2	0.37	0.43
71	RN71M02	2	0.55	0.63
80	RN80M02K	2	0.75	0.86
80	RN80M02	2	1.1	1.25
90S	RN90S02	2	1.5	1.75
90L	RN90L02	2	2.2	2.5
100L	RN100L02	2	3.0	3.5
112M	RN112M02	2	4.0	4.6
132S	RN132S02K	2	5.5	6.3
132S	RN132S02	2	7.5	8.6
160M	RN160M02K	2	11.0	12.3
160M	RN160M02	2	15.0	17.2
160L	RN160L02	2	18.5	22.0
180M	RN180M02	2	22.0	26.0
200L	RN200L02A6	2	30.0	35.0
200L	RN200L02A7	2	37.0	42.0
225M	RN225M02A3	2	45.0	53.0
250M	RN250M02B3	2	55.0	65.0
280S	RN280S02B0	2	75.0	90.0
280M	RN280M02B3	2	90.0	103.0
315S	RN315S02B3	2	110.0	123.0
315M	RN315M02B3	2	132.0	150.0
315L	RN315L02B6	2	160.0	180.0
315L	RN315L02B7	2	200.0	224.0
315L	RN315L02B8	2	250.0	280.0
315L	RN315L02A9	2	315.0	353.0
100L	6RN100L02	2	3.0	3.5
112M	6RN112M02	2	4.0	4.6
132S	6RN132S02K	2	5.5	6.3
132S	6RN132S02	2	7.5	8.6
160M	6RN160M02K	2	11.0	12.3
160M	6RN160M02	2	15.0	17.2
160L	6RN160L02	2	18.5	22.0
180M	6RN180M02	2	22.0	26.0

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 Certificate No: **TAE00003N3**

Frame Sizes	Type	No of poles	Rated power (kW) (400V 50Hz)	Rated power (kW) (440V 60Hz)
200L	6RN200L02*6	2	30.0	35.0
200L	6RN200L02*7	2	37.0	42.0
225M	6RN225M02*3	2	45.0	53.0
250M	6RN250M02*3	2	55.0	65.0
280S	6RN280S02*0	2	75.0	90.0
280M	6RN280M02*3	2	90.0	103.0
315S	6RN315S02*3	2	110.0	123.0
315M	6RN315M02*3	2	132.0	150.0
315L	6RN315L02*6	2	160.0	180.0
315L	6RN315L02*7	2	200.0	224.0
315L	6RN315L02*8	2	250.0	280.0
315L	6RN315L02*9	2	315.0	353.0
315L	7RN315L02E*6	2	250.0	300.0
315L	7RN315L02E*7	2	315.0	378.0
355L	7RN355L02E*3	2	355.0	426.0
355L	7RN355L02E*4	2	400.0	480.0
355L	7RN355L02E*5	2	500.0	600.0
56	RN56M04	4	0.09	0.1
63	RN63M04K	4	0.12	0.13
63	RN63M04	4	0.18	0.21
71	RN71M04K	4	0.25	0.29
71	RN71M04	4	0.37	0.43
80	RN80M04K	4	0.55	0.63
80	RN80M04	4	0.75	0.86
90S	RN90S04	4	1.1	1.3
90L	RN90L04	4	1.5	1.75
100L	RN 100L04K	4	2.2	2.5
100L	RN 100L04	4	3.0	3.45
112M	RN 112M04	4	4.0	4.6
132S	RN 132S04	4	5.5	6.3
132M	RN 132M04	4	7.5	8.6
160M	RN 160M04	4	11.0	12.5
160L	RN 160L04	4	15.0	17.3
180M	RN 180M04A3	4	18.5	22.0
180L	RN 180L04A6	4	22.0	27.0
200L	RN 200L04A7	4	30.0	37.0
225S	RN 225S04A0	4	37.0	42.5
225M	RN 225M04A3	4	45.0	53.0
250M	RN 250M04A3	4	55.0	63.0
280S	RN 280S04A0	4	75.0	86.0
280M	RN 280M04A3	4	90.0	103.0
315S	RN 315S04A0	4	110.0	127.0
315M	RN 315M04A3	4	132.0	152.0
315L	RN 315L04A6	4	160.0	184.0
315L	RN 315L04A7	4	200.0	230.0
315L	RN 315L04A8	4	288.0	288.0
315L	RN 315L04A9	4	315.0	362.0
100L	6RN 100L04K	4	2.2	2.5
100L	6RN 100L04	4	3.0	3.45
112M	6RN 112M04	4	4.0	4.6
132S	6RN 132S04	4	5.5	6.3
132M	6RN 132M04	4	7.5	8.6
160M	6RN 160M04	4	11.0	12.5

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Frame Sizes	Type	No of poles	Rated power (kW) (400V 50Hz)	Rated power (kW) (440V 60Hz)
160L	6RN 160L04	4	15.0	17.3
180M	6RN 180M04*3	4	18.5	22.0
180L	6RN 180L04*6	4	22.0	27.0
200L	6RN 200L04*7	4	30.0	37.0
225S	6RN 225S04*0	4	37.0	42.5
225M	6RN 225M04*3	4	45.0	53.0
250M	6RN 250M04*3	4	55.0	63.0
280S	6RN 280S04*0	4	75.0	86.0
280M	6RN 280M04*3	4	90.0	103.0
315S	6RN 315S04*0	4	110.0	127.0
315M	6RN 315M04*3	4	132.0	152.0
315L	6RN 315L04*6	4	160.0	184.0
315L	6RN 315L04*7	4	200.0	230.0
315L	6RN 315L04*8	4	288.0	288.0
315L	6RN 315L04*9	4	315.0	362.0
315L	7RN315L04E*6	4	250.0	300.0
315L	7RN315L04E*7	4	315.0	378.0
355L	7RN355L04E*3	4	355.0	426.0
355L	7RN355L04E*4	4	400.0	480.0
355L	7RN355L04E*5	4	500.0	600.0
71	RN71-6K	6	0.18	0.21
71	RN71-6	6	0.25	0.29
80	RN80-6K	6	0.37	0.43
80	RN80-6	6	0.55	0.63
90S	RN90S-6	6	0.75	0.85
90L	RN90L-6	6	1.1	1.3
100L	RN100L-6	6	1.5	1.75
112M	RN112M-6	6	2.2	2.5
132S	RN132S-6	6	3.0	3.45
132M	RN132M-6K	6	4.0	4.6
132M	RN132M-6	6	5.5	6.3
160M	RN160M-6	6	7.5	8.6
160L	RN160L-6	6	11.0	12.5
180L	RN180L-6	6	15.0	17.3
200L	RN200Lk-6	6	18.5	21.3
200L	RN200L-6	6	22.0	25.3
225M	RN225M-6	6	30.0	34.5
250M	RN250M-6	6	37.0	42.5
280S	RN280S-6	6	45.0	52.0
280M	RN280M-6	6	55.0	63.0
315S	RN315S-6	6	75.0	86.0
315M	RN315M-6	6	90.0	103.0
315L	RN315L6A6	6	110.0	127.0
315L	RN 315L06A7	6	132.0	152.0
315L	RN 315L06A8	6	160.0	184.0
315L	RN 315L06A9	6	200.0	230.0
100L	6RN100L-6	6	1.5	1.75
112M	6RN112M-6	6	2.2	2.5
132S	6RN132S-6	6	3.0	3.45
132M	6RN132M-6K	6	4.0	4.6
132M	6RN132M-6	6	5.5	6.3
160M	6RN160M-6	6	7.5	8.6
160L	6RN160L-6	6	11.0	12.5

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Frame Sizes	Type	No of poles	Rated power (kW) (400V 50Hz)	Rated power (kW) (440V 60Hz)
180L	6RN180L-6	6	15.0	17.3
200L	6RN200Lk-6	6	18.5	21.3
200L	6RN200L-6	6	22.0	25.3
225M	6RN225M-6	6	30.0	34.5
250M	6RN250M-6	6	37.0	42.5
280S	6RN280S-6	6	45.0	52.0
280M	6RN280M-6	6	55.0	63.0
315S	6RN315S-6	6	75.0	86.0
315M	6RN315M-6	6	90.0	103.0
315L	6RN315L6*6	6	110.0	127.0
315L	6RN 315L06*7	6	132.0	152.0
315L	6RN 315L06*8	6	160.0	184.0
315L	6RN 315L06*9	6	200.0	230.0
315L	7RN315L06E*6	6	200.0	240.0
315L	7RN315L06E*7	6	250.0	300.0
355L	7RN355L06E*3	6	315.0	378.0
355L	7RN355L06E*4	6	355.0	426.0
355L	7RN355L06E*5	6	400.0	480.0
63	RN63M08	8	0.04	0.46
71	RN71M08K	8	0.09	0.1
71	RN71M08	8	0.12	0.13
80	RN80M08K	8	0.18	0.21
80	RN80M08	8	0.25	0.29
90S	RN90S08	8	0.37	0.43
90L	RN90L08	8	0.55	0.63
100L	RN100L08	8	0.75	0.86
100L	RN100L08	8	1.1	1.27
112M	RN112M08	8	1.5	1.75
132S	RN132S08	8	2.2	2.5
132M	RN132M08	8	3.0	3.45
160M	RN160M08K	8	4.0	4.6
160M	RN160M08	8	5.5	6.3
160L	RN160L08	8	7.5	8.6
180L	RN180L08B6	8	11.0	12.5
200L	RN200Lk08	8	15.0	17.3
225S	RN225S08	8	18.5	21.3
225M	RN225M08	8	22.0	25.3
250M	RN250M08	8	30.0	34.5
280S	RN280S08	8	37.0	42.5
280M	RN280M08	8	45.0	52.0
315S	RN315S08	8	55.0	66.0
315M	RN315M08	8	75.0	90.0
315L	RN315L08B6	8	90.0	110.0
315L	RN315L08B7	8	110.0	132.0
315L	RN315L08B8	8	132.0	160.0
315L	RN315L08B9	8	160.0	184.0
100L	6RN100L08	8	0.75	0.86
100L	6RN100L08	8	1.1	1.27
112M	6RN112M08	8	1.5	1.75
132S	6RN132S08	8	2.2	2.5
132M	6RN132M08	8	3.0	3.45
160M	6RN160M08K	8	4.0	4.6
160M	6RN160M08	8	5.5	6.3

Frame Sizes	Type	No of poles	Rated power (kW) (400V 50Hz)	Rated power (kW) (440V 60Hz)
160L	6RN160L08	8	7.5	8.6
180L	6RN180L08B6	8	11.0	12.5
200L	6RN200Lk08	8	15.0	17.3
225S	6RN225S08	8	18.5	21.3
225M	6RN225M08	8	22.0	25.3
250M	6RN250M08	8	30.0	34.5
280S	6RN280S08	8	37.0	42.5
280M	6RN280M08	8	45.0	52.0
315S	6RN315S08	8	55.0	66.0
315M	6RN315M08	8	75.0	90.0
315L	6RN315L08*6	8	90.0	110.0
315L	6RN315L08*7	8	110.0	132.0
315L	6RN315L08*8	8	132.0	160.0
315L	6RN315L08*9	8	160.0	184.0
315L	7RN315L08E*7	8	160.0	192.0
315L	7RN315L08E*8	8	200.0	240.0

Application/Limitation

For installation in non hazardous area.

For use as propulsion motor documentation according to DNV GL Rules must be submitted for approval for each project.

Type Approval documentation

Tests carried out

Temperature test [R], Winding resistance cold and warm, Overload test, Vibration measurement after balancing, No load test, Locked rotor test, High voltage test, Insulation resistance.

Marking of product

RN motors – type designation – technical data including rated voltage, RPM, rated power, ambient temperature, rated current, rated frequency, insulation class, IP class.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems/components/materials.

The main elements of the survey are:

- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems/components/materials used comply with type approved documents and/or referenced system/component/material specifications.



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- Review of possible changes in design of systems/components/materials, software version and performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.
- Ensuring that type approved documentation is available.

Survey to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE