

# TYPE APPROVAL CERTIFICATE

## This is to certify:

### That the Electric Motor

with type designation(s)  
**HMCX 80 up to HMCX 400**

Issued to

**Svend Hoyer A/S**  
**Hadsten, Midtjylland, Denmark**

is found to comply with

**DNV 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.

Degree of protection	IP55, IP56, IP65, IP66
Insulation class	F
Temp. class (°C)	155
Voltage (V)	380-690V
Power (kW)	0,55kW up to 450kW
Frequency (Hz)	50, 60
Speed (RPM)	750-3600

Issued at **Høvik** on **2023-03-13**

for **DNV**

This Certificate is valid until **2028-03-12**.

DNV local unit: **Denmark CMC**

Approval Engineer: **Georgy Abramenko**

**Marta Alonso Pontes**  
**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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Manufactured by

DNV ID - 10694675  
 DNV ID - 10330395

## Product description

Type HMCX (flameproof enclosure) are 3-phase squirrel cage induction motors according to IEC/EN-standards, IEC frame of cast iron for hazardous areas, frame sizes 80 up to 400.

Type:	HMCX 80 up to HMCX 400
Nominal power, S1 duty:	Max 450 kW
Duty type:	S1, S2 ... S9 according to IEC standard
Number of poles:	2, 4, 6, 8, 10, 12
Degree of protection:	IP55, IP56, IP65, IP66
Insulation class:	F
Degree of Ex protection:	Ex-db, Ex-db eb, Ex-tb, Ex-tc

## Application/Limitation

1. For installation in hazardous area. The information related to Ex-certification from recognized test institution is given as information only. Ex installations to be approved in each case according to the Rules and Ex-certification/ Special conditions for safe use, listed in valid Ex certificate issued by a notified/ recognized body.

Certificate of conformity	Ex protection data
CNEX 21 ATEX 0005X	Ex db eb (terminal box) IIB T4
CNEX 19 ATEX 0028X	Ex db eb (terminal box) IIB/IIC T4
IECEX CNEX 19.0019X	Ex db eb IIB/IIC T4 Gb
IECEX CNEX 21.0006X	Ex db IIB/IIC T4 Gb
	Ex tb IIIC T130°C Db
	Ex tc IIIB T130°C Dc

2. For installation on open deck DNV Rules for Ships Pt.4 Ch.8/ Offshore Standard D201 Ch.2 Sec.10 Table 1 to be followed.

3. Motors equipped with PTC thermistors embedded to stator windings may be operated with S2-S10 duty cycles.

4. Motors with 80 – 355 frame sizes can be operated direct-on-line (DOL) or with variable speed converters (VSD) following the instructions in manufacturer manual, as specified in CNEX 19 ATEX 0028 X Issue 3 (description of equipment).

For operation with VSD, motors shall be equipped with embedded RTD's (resistance temperature detectors) in the windings, and an over temperature trip device.

5. Motors of HMCX-400H- series shall be operated direct-on-line (DOL), according to IECEX CNEX 21.0006X.

## Type Approval documentation

### Drawings:

- Appendix 12\_96210 (arrangement drawing 3-90S), dated 19-05-2020
- Appendix 10\_96241 (arrangement drawing 3-200L), dated 14-05-2020
- Appendix 13\_97300\_68435 (arrangement drawing 3-355SM), dated 12-05-2020
- Appendix 11\_96230 (arrangement drawing 3-160), dated 18-05-2020
- Appendix 14 Motor Manual, dated November 2020

### Test reports:

- Appendix list TA\_DN (test reports), dated 15-02-2023
- Appendix 1-9D (test report)
- P20031IA-TR ExTR60079-0-7A-DS formal (Ex test report), dated 28-04-2020
- Test certificate N1427BJS, FS400H8-10 450kW\_Signed test report, dated 28-09-2021

## Tests carried out

Tests according to DNV Rules for Ships Pt.4 Ch.8 Sec.5, DNV type approval program CP-0399, DNV Class Guidance CG-0339 – January 2022.

## Marking of product

Hoyer Motors – HMCX frame size

### **Periodical assessment**

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

The main elements of the assessment are:

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

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE