TYPE APPROVAL CERTIFICATE

Certificate No:
TAA0000085
Revision No:
4

This is to certify:

That the Solenoid Valve

with type designation(s)
EV * *, EV224B 15-25, EV310B 3, EV212B

Issued to
Danfoss A/S
Nordborg, Syddanmark, Denmark

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
EV * *	C	B	A	B	C
EV224B 15-25, EV310B 3	B	B	B	B	B
EV212B	A	B	B	B	B IP65/67

Issued at **Høvik** on **2021-03-25**

This Certificate is valid until **2025-12-31**.
DNV local station: **Denmark CMC**

Approval Engineer: **Nils Jarem**

for **DNV**
Digitally Signed By: Sneen, Ståle
Location: DNV Høvik, Norway
on behalf of

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.

Product description

Type EV * * covering the following types:

EVR 2	EVRA 3	EVRAT 10	EVRS 3	EVRST 10	EVM	EV210B 1.5B	EV212B	EV220B 6B	EV250B 12B
EVR 3	EVRA 10	EVRAT 15	EVRS 10	EVRST 15		EV210B 2B		EV220B 10B	EV224B 15
EVR 6	EVRA 15	EVRAT 20	EVRS 15	EVRST 20		EV210B 3B		EV220B 12B	EV224B 20
EVR 10	EVRA 20		EVRS 20			EV210B 6B		EV220B 15B	EV224B 25
EVR 15	EVRA 25					EV210B 10B		EV220B 20B	
EVR 18	EVRA 32					EV310B 3		EV220B 25B	
EVR 20	EVRA 40							EV220B 32B	
EVR 22								EV220B 40B	
EVR 25								EV220B 50B	
EVR 32									
EVR 40									

At an ambient temperature of 80°C the maximum temperature of medium is as follows:
For EVR: max. 105°C

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Type	Drawings	Data sheets
EVR 2/3 (032F)	032M0760, Rev. 00 pg. 1 & 2	AI249086497583en-001101
EVR 6/10 (032F)	032M0761, Rev. 00 pg. 1 & 2	
EVR 15/20/22 (032F)	032M0762, Rev. 00 pg. 1 & 2	
EVR 25 (032F)	032M0589, Rev. 01 pg. 1 & 2	
EVR 32/40 (042H)	032M0590, Rev. 01 pg. 1 & 2	
EVR 4/8 (032L)	032F6371, Rev. 01	
EVR 10 (032L)	032F6372, Rev. 01	
EVR 15/18 (032L)	032F6373, Rev. 01	
EVR 20/22 (032L)	032F6374, Rev. 01	
EVR 25 (032L)	032F6375, Rev. 01	
EVR 32/40 (032L)	032F6376, Rev. 01	
EVRA 3	032M0560, Rev. 01 pg. 1 & 2	AI221486430911en-000901
EVRA 10/15/20	032M0558, Rev. 01 pg. 1 & 2	
EVRA 25	032M0594, Rev. 01 pg. 1 & 2	
EVRA 32/40	032M0595, Rev. 02 pg. 1 & 2	
EVRAT 10/15/20	032M0588, Rev. 01 pg. 1 & 2	
EVRS 3/10/15/20	032F9043, dated 1995-01-18	72886419420en-000502
EVRST 10/15	032F9044, Rev. 03	
EVRST 20	032F9501, Rev. 00	
EVM	027B0990, Rev. 00	AI248786497190en-000501
EV210B 1.5B	032M0577, Rev. 00 pg. 1 & 2	AI200686429133en-000802
EV210B 2 B		
EV210B 3 B		
EV210B 6B/10B	032M0659, Rev. 00 pg. 1 & 2	
EV212B		IC.PD.200.B3.02
EV220B 6B	032M0578, Rev. 00 pg. 1 & 2	AI236986441887en-001001
EV220B 10B		
EV220B 12B	032M0579, Rev. 00 pg. 1 &2	
EV220B 15B	032M0581, Rev. 00 pg. 1 & 2	AI236986444669en-000604
EV220B 20B		
EV220B 25B		
EV220B 32B		
EV220B 40B		
EV220B 50B		
EV250B 12B	032M0673, Rev. 02	AI236986441319en-000801
EV224B 15	032M0769	AI260151589548en-001110
EV224B 20		
EV224B 25		
EV310B 3	032M0790	IC.PD.200.J6.02

Type	Drawings	Data sheets
For coils type BR and plugs approved see datasheet AI353443381491en-000101		
Test reports:		
DANAK-19/17740 Rev. A dated 2017-05-24; Marine type tests of EVR solenoid valve and coil		
DANAK-19/18293 Rev. A dated 2017-11-06; Test for Marine type approval of solenoid valve EVR xx-series		
120-32879-1 dated 2020-11-02; Flame retardant test for marine type approval of coils and plugs		
120-34845-1 dated 2021-02-22; Marine type testing of Solenoid EV212B valves		
Type approval renewal assessment report for TAA0000085, DNV GL Denmark CMC 2020-12-02.		

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, December 2019.

Marking of product

The products to be marked with:
- Manufacturer name
- Type and code number
- Production week/year

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, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- 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, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or 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

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