

## Type Approval Certificate Extension

*This is to certify* that Certificate No. 95/70071(E4) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

<b>PRODUCER</b>	Danfoss A/S DK-6430 Nordborg Denmark
<b>PLACE OF PRODUCTION</b>	Danfoss Poland Sp. z o.o. Ul. Chrzanowska 5 PL-05-825 Grodzisk Mazowiecki Poland
<b>DESCRIPTION</b>	Pressure switch
<b>TYPES</b>	MBC 5100-AABC-XZZZZ

AA = Setting range: -0.20-400 bar

B = Type:

- 1 Low pressure bellows (-0.2-10 bar)
- 2 High pressure bellows (2-30 bar)
- 3 Low pressure diaphragm (0.5-25 bar)
- 4 High pressure diaphragm (5-100 bar)
- 5 High pressure piston (40-400 bar)

C = Microswitch:

- 1 0.5 A, 250 V (AC 15), 12 W, 125 V (DC 13)

<b>Certificate No.</b>	15/20058
<b>Issue Date</b>	01 July 2015
<b>Expiry Date</b>	20 June 2020
<b>Sheet</b>	1 of 2



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## TYPES CONTINUES

X = Electrical connection:

- 0 No plug
- 1 Pg 11 plug (DIN 43650A)
- 2 Pg 13.5 plug (DIN 43650A)
- 3 Pg 9 plug (DIN 43650A)
- x cable version with pre-mounted flame retardant and marine approved cable (max. length 12 meter)

ZZZZ = Pressure connection:

- CA05 M10x1 female
- CB04 G ¼ female
- DA05 M10x1 female with flange connection
- DB04 G ¼ female with flange connection

## APPLICATION

Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – 2013.

## ADDITIONAL TESTS

Degree of protection: IP65  
Salt mist  
Shock: acceleration level: 40g/6ms.

## DESIGN CODE

Manufacturer's specification



*"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."*

*The attached Design Appraisal Document No. HTS/ETS 31971-15 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

All other details remain as the previous Certificate No. 95/70071(E4) to which this extension should be attached.

Certificate No. 15/20058  
Issue Date 01 July 2015  
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Sheet 2 of 2

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LR031.1.2013.12

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## Marine Design Appraisal Document

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Date  
01 July 2015

Please quote this reference number on all future communications  
HPC1562085/31971-15/TW/ND/SC

**THE LLOYD'S REGISTER'S TYPE APPROVAL SYSTEM, 2002  
ISSUED TO: DANFOSS A/S  
FOR: PRESSURE SWITCH  
TYPE APPROVAL CERTIFICATE EXTENSION NO. 15/20058**

The additional undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register's Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

### ADDITIONAL APPROVAL DOCUMENTATION

Form 2571	Application for Type Approval Certification	27.03.2015
GDK1500134	Production Quality Assessment Form	16.03.2015
DK002813	ISO 9001:2008 V1 Bureau Veritas	02.02.2015
520B5809	Data sheet Heavy duty pressure switch	07.2014
EPD116223A	Data sheet TE Cable	28.04.2014
141022-11	Engineering sheet Wärtsilä	22.10.2014

### TEST REPORTS

8540/NZL/NBR/14	Test Report Degree of Protection Electrotechnical Institute	10.09.2014
G2L40002	Test Report SGS Environmental Tests	04.06.2014

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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### **Supplementary Type Approval Terms and Conditions**

*Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.*

*Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.*

*Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.*

*Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the LR Type Approval System Procedure.*

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**Part 3**  
**Transmitters/Transducers**

Producer/Licence No.	Item Description	Technical Details	Category/Additional Tests	Remarks	Cert. No.
Danfoss A/S, DK-6430 Nordborg, Denmark	<p>Pressure Switch Type: MBC 5100-AABC-XZZZZ</p> <p>AA = Setting range: -0.20-400 bar</p> <p>B = Type: 1 Low pressure bellows (-0.2-10 bar) 2 High pressure bellows (2-30 bar) 3 Low pressure diaphragm (0.5-25 bar) 4 High pressure diaphragm (5-100 bar) 5 High pressure piston (40-400 bar)</p> <p>C = Microswitch: 1 0.5 A, 250 V (AC 15), 12 W, 125 V (DC 13)</p> <p>X = Electrical connection: 0 No plug 1 Pg 11 plug (DIN 43650A) 2 Pg 13.5 plug (DIN 43650A) 3 Pg 9 plug (DIN 43650A) x cable version with pre-mounted flame retardant and marine approved cable (max. length 12 meter)</p> <p>ZZZZ = Pressure connection: CA05 M10x1 female CB04 G 1/4 female DA05 M10x1 female with flange connection DB04 G 1/4 female with flange connection</p>	<p>Pressure range: -0.2...400 Bar</p> <p>Process fluid temp.: -10...85 °C</p> <p>Diaphragm version: -40...85 °C</p> <p>Repeatability: ±1% FS (max)</p> <p>Diaphragm/piston version: ±0.5% FS (max)</p> <p>Bellows version: &lt;4 ms.</p> <p>Response time</p>	<p>ENV1 ENV2 ENV3 (2013)</p> <p>Salt mist test Shock test: Acceleration level: 40g/6ms. Degree of protection: IP65</p>	Expires: 20 June 2020	15/20058

*[Signature]*