

## Data Sheet

# Pressure switch

## Type **MBC 5000** and **MBC 5100**

For heavy-duty marine applications



MBC pressure switches are used in industrial and marine applications where space and reliability are the most important features.

MBCs are compact pressure switches, designed according to our block design to survive in the harsh conditions known from machine rooms onboard ships.

MBCs have high vibration resistance and MBC 5100 features all common marine approvals. The fixed, but low differential guarantees accurate monitoring of critical pressures.

MBV test valves can be delivered as standard option for MBC.

### Features

- Designed for use in severe industrial, environments
- High vibration stability
- Part of the Danfoss block system, consisting of MBC pressure controls, MBS pressure transmitters and MBV test valves
- MBC 5100 with all major ship approvals
- High repeatability
- Optimal compact design for machine building purposes
- Intended for alarm indication, shut down, control and diagnostics in many applications - motors, gears, thrusters, pumps, filters, compressors, etc.

## Product specification

### Technical data

**Table 1: Performance**

Repeatability	Bellows versions	± 0.2 % FS (typ.) ± 0.5 % FS (max.)
	Diaphragm versions	± 0.5 % FS (typ.) ± 1.0 % FS (max.)
	Piston versions	± 1.0 % FS (typ.) ± 1.0 % FS (max.)
Max. switch frequency		10/min (0.16 Hz)
Differential		See page 6
Permissible operating pressure		See page 6
Burst pressure		See page 6
Lifetime	Mechanical for diaphragm and bellows	> 400,000 cycles
	Mechanical for piston type	> 1 million cycles
	Electrical at max. contact load	> 100,000 cycles

**Table 2: Electrical specifications**

Switch	Utilization category	SPDT
Contact load	AC 15	0.5 A, 250 V
	DC 13	12 W, 125 V

**Table 3: Environmental conditions**

Temperature	Operation	Bellows versions Diaphragm versions Piston versions	-40 – 85 °C -10 – 85 °C -40 – 85 °C
	Transport	Bellows versions Diaphragm versions Piston versions	-50 – 85 °C -50 – 85 °C -40 – 85 °C
Enclosure			IP65, EN 60529
Vibration stability	Sinusoidal	20 g, 25 – 2 kHz	EN 60068-2-6
		Piston type 4.4 g, 25 – 200 Hz	IEC 60068-2-27

**Table 4: Mechanical characteristics**

Pressure connection	Standard	G 1/4 female (ISO 228-1) or flange
	Option	See specification form, page 4
Electrical connection	Plug	DIN 43650, Pg 9 / Pg 11 / Pg 13.5
Wetted parts material	Housing	Anodized AlMgSi1, AW-6082T6
	Bellows	Stainless steel 1.4306 (18/8), acc. to EN10088-3
	Diaphragm	Stainless steel 1.4306 (18/8), acc. to EN10088-2
	Piston	Stainless steel 1.4028 (3H13), acc. to EN10088-2
	O-ring	NBR
	Hole plug (flange version)	Nickel plated brass or zinc plated steel
	Seal (piston version)	Turcon T05
Enclosure material	Housing	Anodized AlMgSi1, AW-6082T6
	Plug fixture	Glass filled polyamid, PA 6.6
	Contact system	Silver (AG) microprofile
Net weight		0.25 kg

**Figure 1: Electrical connection**

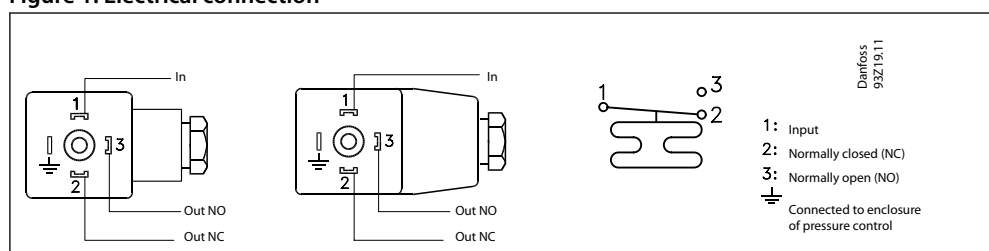
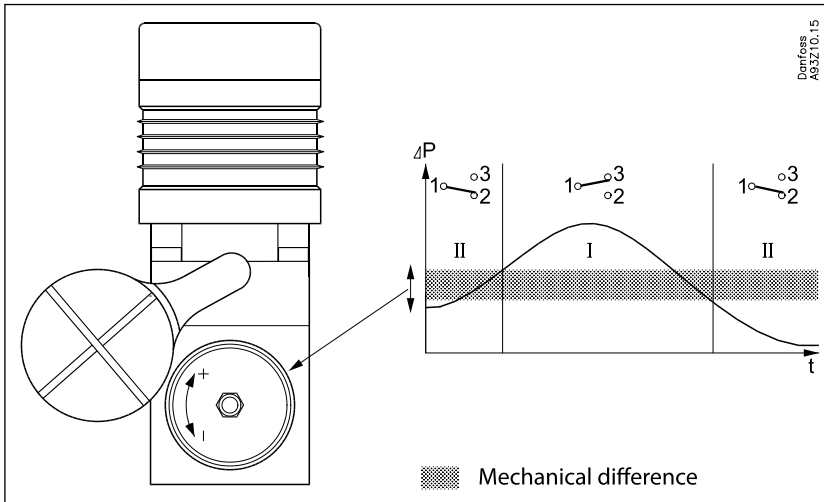


Figure 2: Adjustment



**NOTE:**

One full turn (360°) of MBC setting screw is approx. equal to 7% of the setting range

**Mechanical connection**

Figure 3: Thread

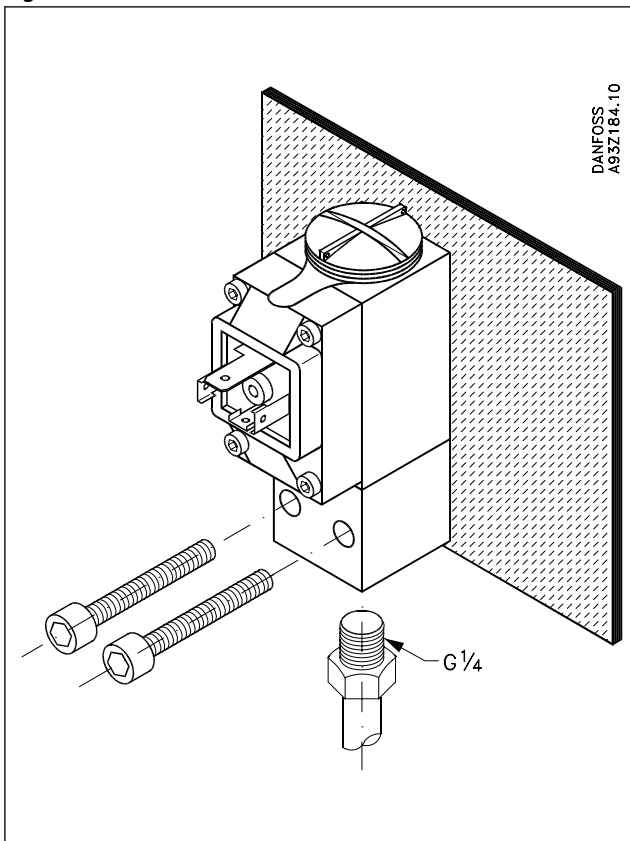
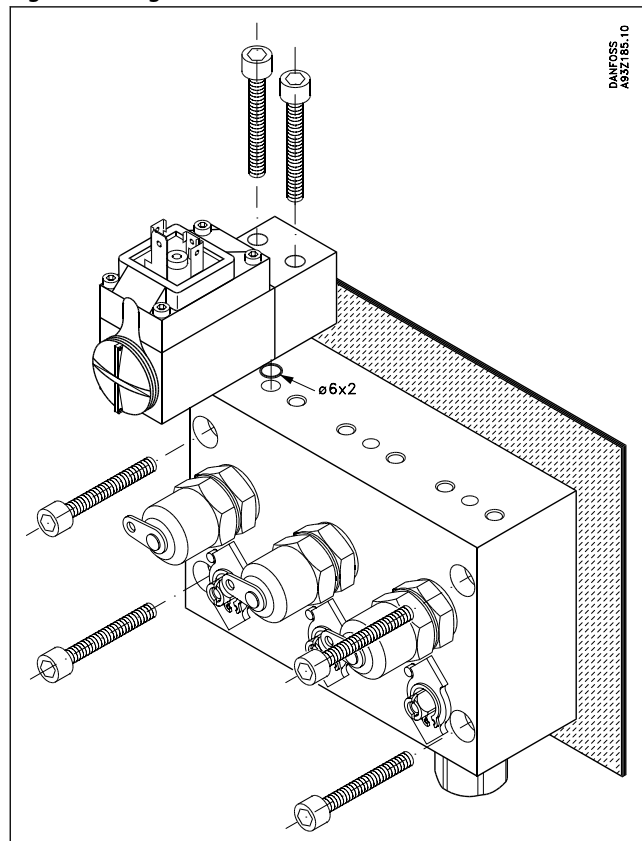


Figure 4: Flange connection on MBV 5000 Test Valve



**NOTE:**

Flange connection is not applicable for piston type MBC

**How to choose**

To achieve the best operating conditions for MBC pressure controls, it is recommended to apply the following rules of thumb.

**Choose:**

## Pressure switch, MBC 5000 and MBC 5100

- The MBC type/types which meet the demands for the operating pressure
- The MBC version with the lowest possible setting range
- A diaphragm type, if pressure peaks and pulsations occur in the system (if possible)
- Bellows type, if low differential is needed
- Piston type for high pressure

### Dimensions and weights

Figure 5: MBC 5000, Net weight: 0.25 kg

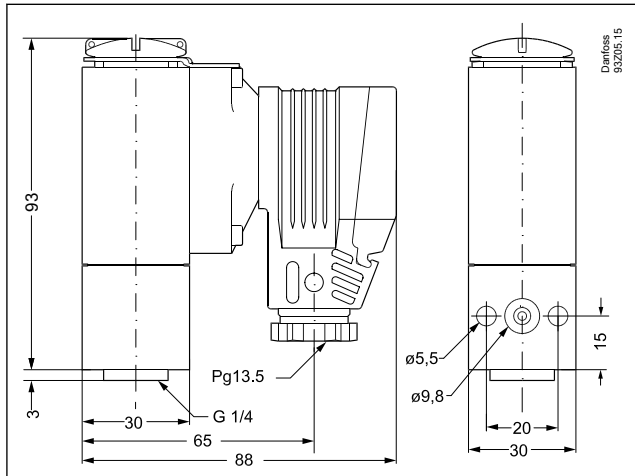
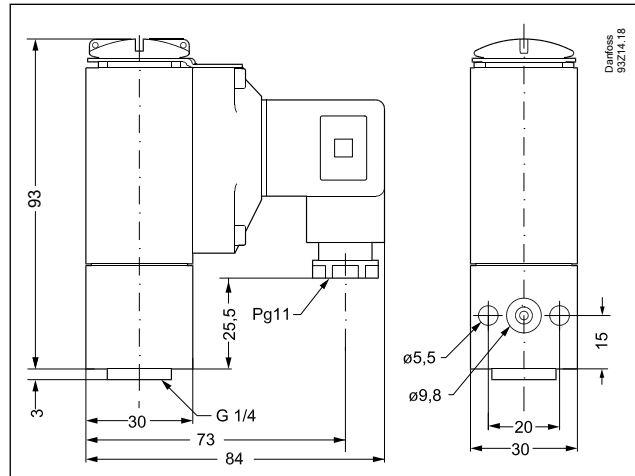


Figure 6: MBC 5100, Net weight: 0.25 kg



## Ordering

### Ordering standard types

Table 5: Standard types

Type: LP Low pressure / HP High pressure	Setting range $P_e$ [bar]	Diff. at min. range <sup>(1)</sup> $P_e$ [bar]	Diff. at max. range <sup>(1)</sup> $P_e$ [bar]	Permissible operating pressure $P_e$ [bar]	Min. burst pressure $P_e$ [bar]	Type designation MBC 5000- /MBC 5100-	MBC 5100 Ship approved Code no.
LP bellows	-0.20 – 1.00	0.30	0.45	15	30	1011-1DB04	061B000566
LP bellows	-0.20 – 4.00	0.30	0.45	15	30	1211-1DB04	061B000466 <sup>(2)</sup>
LP bellows	-0.20 – 10.00	0.40	0.60	15	30	1411-1DB04	061B000266 <sup>(2)</sup>
LP bellows	-0.20 – 10.00	0.40	0.60	15	30	1411-1CB04	061B000066
LP bellows	0.50 – 3.00	0.25	0.30	15	30	2011-1DB04	061B002966
LP bellows	1.00 – 6.00	0.30	0.45	15	30	2211-1DB04	061B000766
HP bellows	5.00 – 30.00	0.90	2.00	45	90	3421-1DB04	061B000366 <sup>(2)</sup>
LP diaphragm	0.50 – 3.00	0.50	0.80	150	300	2031-1DB04	061B101766
LP diaphragm	1.00 – 6.00	1.00	2.50	150	300	2231-1DB04	061B100966
LP diaphragm	1.00 – 10.00	1.00	2.50	150	300	2431-1DB04	061B100466 <sup>(2)</sup>
LP diaphragm	5.00 – 20.00	1.00	2.50	150	300	3231-1DB04	061B100266 <sup>(2)</sup>
LP diaphragm	5.00 – 25.00	1.00	2.50	150	300	3331-1DB04	061B102466
HP diaphragm	5.00 – 40.00	2.00	7.00	150	300	3641-1DB04	061B100566 <sup>(2)</sup>
HP diaphragm	10.00 – 100.00	4.00	12.00	150	300	4241-1DB04	061B100366 <sup>(2)</sup>
HP piston	16.00 – 160.00	15.00	30.00	600	1200	5251-1CB04	061B510066
HP piston	25.00 – 250.00	20.00	40.00	600	1200	5451-1CB04	061B510166
HP piston	40.00 – 400.00	20.00	50.00	600	1200	5651-1CB04	061B510266

<sup>(1)</sup> Max value, all values lower or equal are correct

<sup>(2)</sup> Preferred versions

### Ordering stainless steel types

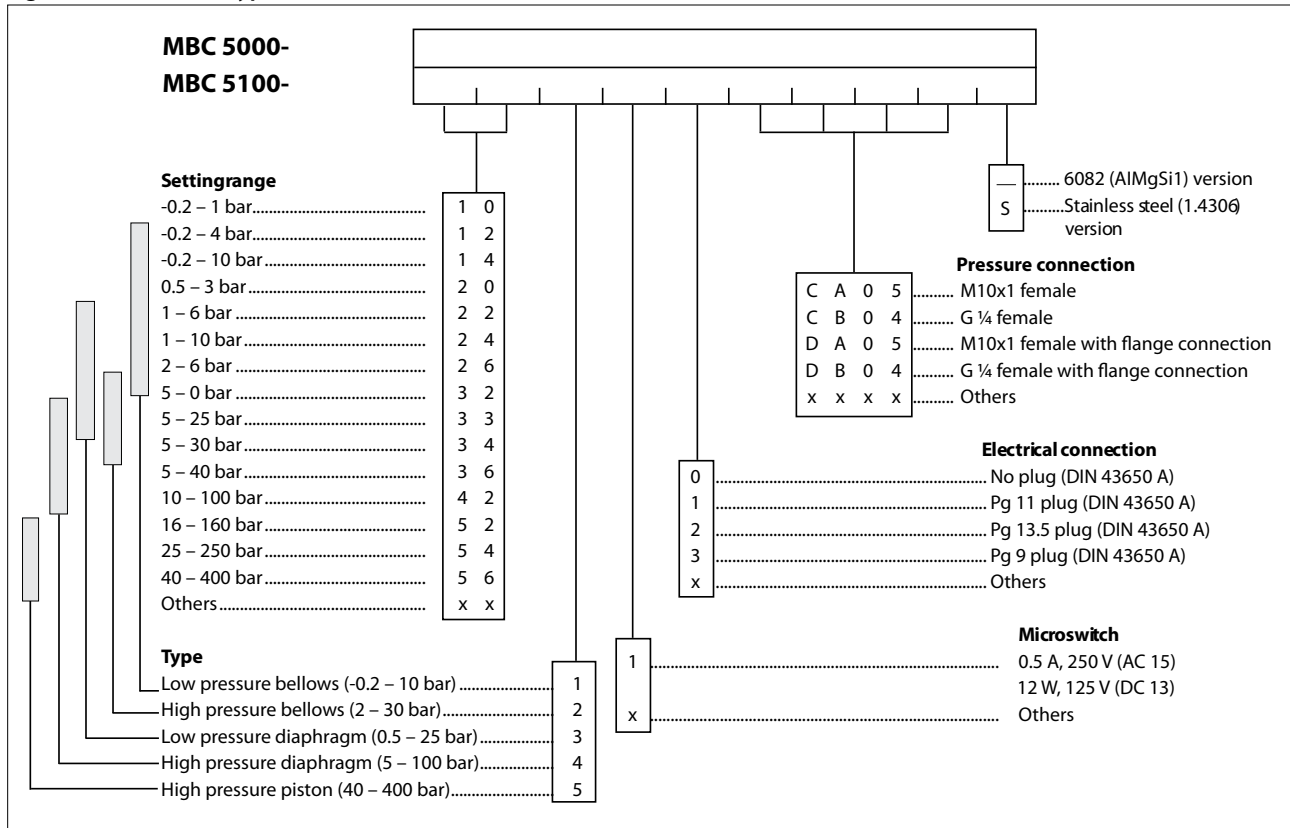
Table 6: Stainless steel types

Type: LP Low pressure / HP High pressure	Setting range $P_e$ [bar]	Diff. at min. range <sup>(1)</sup> $P_e$ [bar]	Diff. at max. range <sup>(1)</sup> $P_e$ [bar]	Permissible operating pressure $P_e$ [bar]	Min. burst pressure $P_e$ [bar]	Type designation MBC 5000- / MBC 5100-	MBC 5100 Ship approved Code no.
LP bellows	-0.20 – 10.00	0.40	0.60	15	30	1411-1DB04S	061B025066
LP bellows	-0.20 – 4.00	0.30	0.45	15	30	1211-1DB04S	061B025166
LP bellows	-0.20 – 10.00	0.40	0.60	15	30	1411-2DB04S	061B025266
LP bellows	-0.20 – 4.00	0.30	0.45	15	30	1211-2DB04S	061B025366

<sup>(1)</sup> Max value, all values lower or equal are correct

### Ordering customized types

Figure 7: Customized types



### Accessories

Table 7: Pulse snubber

Part	Description	Code number
	Male, G1/4A, length 20 mm	061B400166
	Male, G1/4A, length 34 mm	061B400266
	For flange connection	061B722166

## Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at [danfoss.com](http://danfoss.com) or contact your local Danfoss representative if you have any questions.

**Table 8: MBC 5000**

File name	Document type	Document topic	Approval authority
2003010305069847	Electrical - Safety Certificate	-	CCC
EU 060-9680.AA	EU Declaration	LVD	Danfoss
UA.10146.D.00075-19	UA Declaration	EMCD/LVD	LLC CDC EURO TYSK
060-9639.AB	Manufacturers Declaration	China RoHS	Danfoss
2020970305003455	CCC Declaration	-	Danfoss

**Table 9: MBC 5100**

File name	Document type	Document topic	Approval authority
17.20389.258	Marine - Safety Certificate		RMRS
HMB 17529-AE001	Marine - Safety Certificate		KR
14-20046(E1)	Marine - Safety Certificate		LR
GB19PTB00011_05	Marine - Safety Certificate		CCS
TAA00002BB	Marine - Safety Certificate		DNV GL
TA20287M	Marine - Safety Certificate		NKK
16-LD1581072-PDA	Marine - Safety Certificate		ABS
11676-D1 BV	Marine - Safety Certificate		BV
ELE-364617XG	Marine - Safety Certificate		RINA
060-9680.AA	EU Declaration	LVD	Danfoss
2003010305069847	Electrical - Safety Certificate		CCC
UA.10146.D.00075-19	UA Declaration	EMCD/LVD	LLC CDC EURO TYSK
060-9639.AB	Manufacturers Declaration	China RoHS	Danfoss
2020970305003455	CCC Declaration		Danfoss

CE-marked in accordance with:

LVD 2014/35/EU (EN 60947-1, EN 60947-4-1, EN 60947-5-1)

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