



Technical brochure

# Heavy duty pressure controls Type MBC 5000 and MBC 5100



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

MBC's are compact pressure controls, designed according to our block design to survive in the harsh conditions known from machine rooms onboard ships among others.

BC's have high vibration resistance and MBC 5100 features all commonly 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.

**Approvals**

 EN 60947-4-1  
 EN 60947-5-1

China Compulsory Certificate, CCC

**Ship approvals,  
Type MBC 5100**

 Lloyd's Register of Shipping, LR  
 Germanischer Lloyd, GL  
 Registro Italiano Navale, RINA,  
 Nippon Kaiji Kyokai, NKK  
 Det Norske Veritas, DNV

 Bureau Veritas, BV  
 American Bureau of Shipping, ABS  
 Korean Register of Shipping, KR  
 Russian Maritime Register of Shipping, RMRS  
 China Classification Society, CCS

**Technical data**
*Performance*

|                                |   |  |
|--------------------------------|---|--|
| Repeatability                  | Bellows versions  | ± 0.2 % FS (typ.)<br>± 0.5 % FS (max.)                     |
|                                | Diaphragm versions  | ± 0.5 % FS (typ.)<br>± 1 % FS (max.)                       |
|                                | Piston versions   | ± 1 % FS (typ.)<br>± 1 % FS (max.)                         |
| Response time                  |   | < 4 ms   |
| Max. switch frequency          |   | 10/min (0.16 Hz)   |
| Differential                   |   | see page 3   |
| Permissible operating pressure |   | see page 3   |
| Burst pressure                 |   | see page 3   |
| Life time                      | Mechanical for diaphragm and bellows<br>Mechanical for piston type<br>Electrical at max. contact load | > 400,000 cycles<br>> 1 million cycles<br>> 100,000 cycles |

*Electrical specifications*

| Switch       |      |             |       | SPDT        |
|--------------|------|-------------|-------|-------------|
| Contact load | AC 1 | 10 A, 250 V | AC 15 | 0.5A, 250 V |
|              | AC 3 | 3A, 250 V   | DC 13 | 12 W, 125 V |

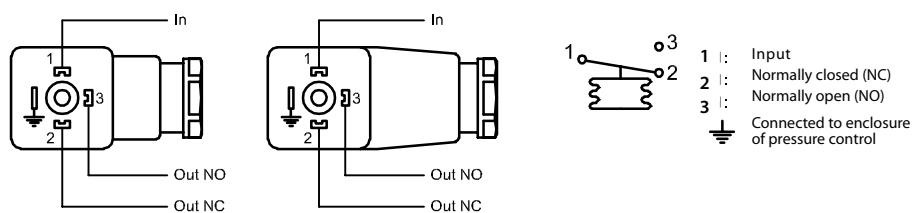
*Environmental conditions*

|                     |            |   |   |
|---------------------|------------|---|---|
| Temperature         | Operation  | Bellows versions<br>Diaphragm versions<br>Piston versions | -40 to +85 °C<br>-10 to +85 °C<br>-40 to +85 °C |
|                     | Transport  | Bellows versions<br>Diaphragm versions<br>Piston versions | -50 to +85 °C<br>-50 to +85 °C<br>-40 to +85 °C |
| Enclosure           |            |   | IP 65, IEC 529                                  |
| Vibration stability | Sinusoidal | 20 g, 25 Hz - 2 kHz                                       | IEC 68-2-6                                      |
|                     |            | piston type 4.4g, 25-200 Hz                               | IEC 60068-2-27                                  |

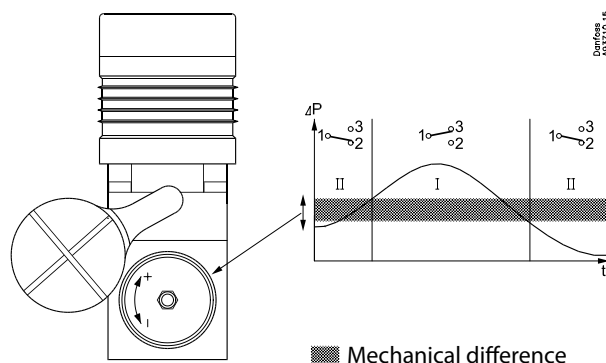
*Mechanical characteristics*

|                       |   |  |
|-----------------------|---|--|
| Pressure connection   | Standard<br>Option                                  | G 1/4 female (ISO 228/1) or flange<br>see specification form, page 3                               |
| Electrical connection | Plug  | DIN 43650, Pg 9 / Pg 11 / Pg 13.5  |
| Wetted parts material | Housing<br>Bellows<br>Diaphragm<br>Piston<br>O-ring | Anodized AlMgSi1<br>Stainless steel 1.4306 (18/8)<br>Viton<br>Stainless steel 1.4028 (3H13)<br>NBR |
| Enclosure material    | Housing<br>Plug fixture<br>Contact system           | AlMgSi1<br>Glass filled polyamid, PA 6.6<br>Silver (AG) microprofile                               |
| Weight                |   | 0.4 kg   |

**Electrical connection**

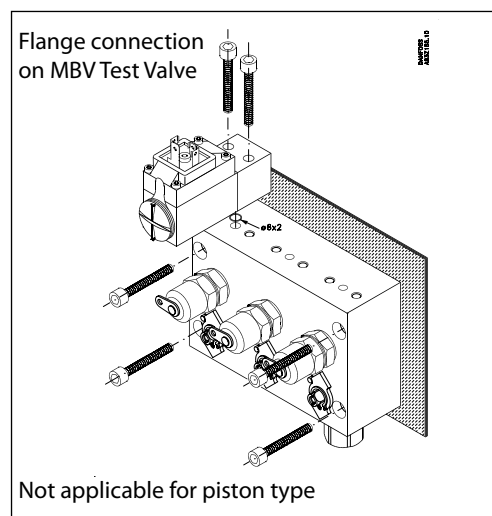
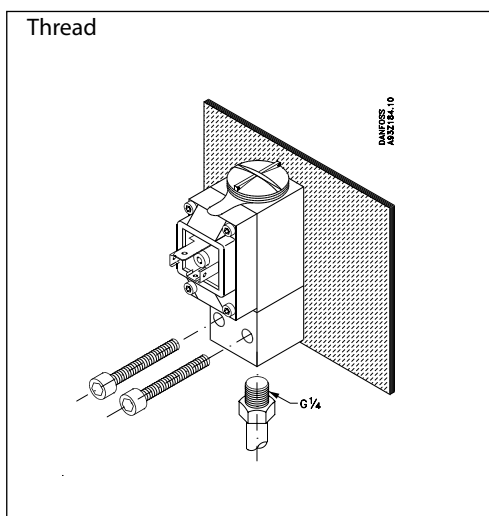


**Adjustment**



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

**Mechanical connection**



**How to choose**

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

Choose:

- 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 types, if low differential is needed
- piston type for high pressure

Ordering standard types

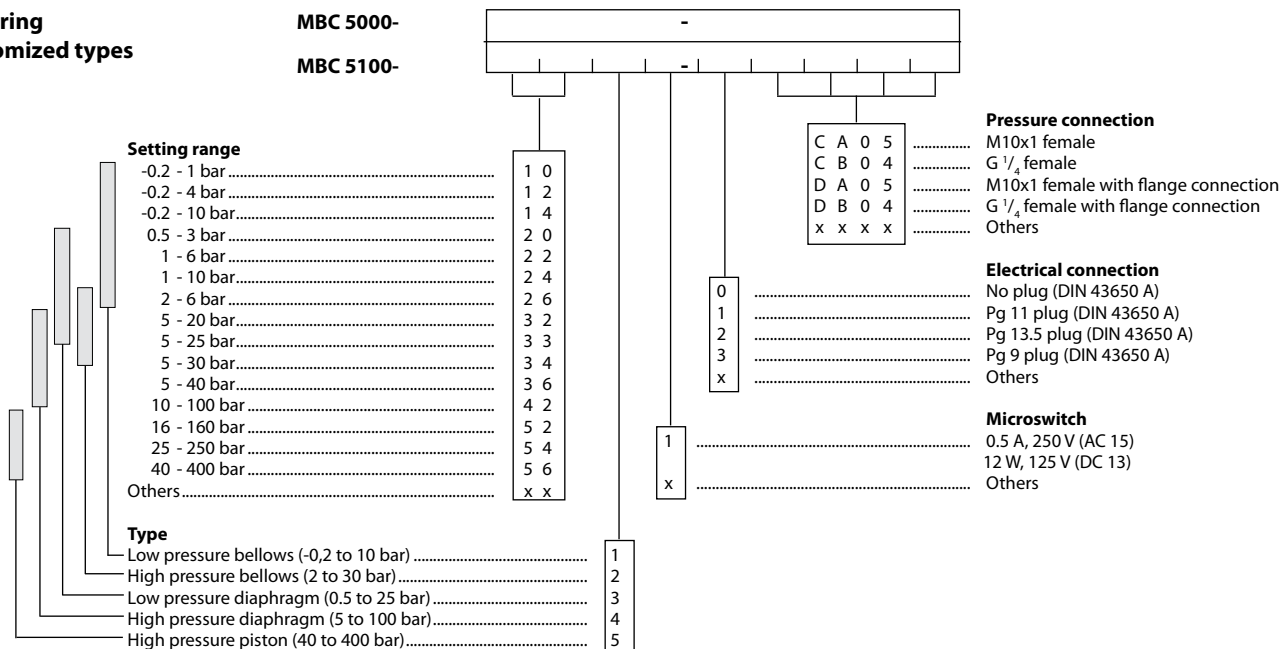
| Type:<br>LP = Low pressure<br>HP = High Pressure | Setting range<br>Pe [bar] | Fixed differential<br>Pe [bar]<br>(typ) | Permissible operating pressure<br>Pe [bar] | Min. burst pressure<br>Pe [bar] | Type designation<br>MBC 5000-/<br>MBC 5100- | MBC 5100<br>Ship approved<br><b>Code no.</b> | MBC 5000<br>Standard<br><b>Code no.</b> |
|--|---------------------------|---|--|---------------------------------|---|--|---|
| LP bellows                                       | -0.2 to 1                 | 0.15 to 0.45 <sup>1)</sup>              | 15   | 30                              | 1011-1DB04                                  | <b>061B000566</b>                            | <b>061B200566</b>                       |
| LP bellows                                       | -0.2 to 4                 | 0.15 to 0.45 <sup>1)</sup>              | 15   | 30                              | 1211-1DB04                                  | <b>061B000466<sup>2)</sup></b>               | <b>061B200466</b>                       |
| LP bellows                                       | -0.2 to 10                | 0.15 to 0.60 <sup>1)</sup>              | 15   | 30                              | 1411-1DB04                                  | <b>061B000266<sup>2)</sup></b>               | <b>061B200266</b>                       |
| LP bellows                                       | -0.2 to 10                | 0.15 to 0.60 <sup>1)</sup>              | 15   | 30                              | 1411-1CB04                                  | <b>061B000066</b>                            | <b>061B200066</b>                       |
| LP bellows                                       | 0.5 to 3                  | 0.15 to 0.30 <sup>1)</sup>              | 15   | 30                              | 2011-1DB04                                  | <b>061B002966</b>                            |   |
| LP bellows                                       | 1 to 6                    | 0.15 to 0.45 <sup>1)</sup>              | 15   | 30                              | 2211-1DB04                                  | <b>061B000766</b>                            |   |
| HP bellows                                       | 5 to 30                   | 0.40 to 1.5 <sup>1)</sup>               | 45   | 90                              | 3421-1DB04                                  | <b>061B000366<sup>2)</sup></b>               | <b>061B200366</b>                       |
| LP diaphragm                                     | 0.5 to 3                  | 0.25 to 0.80 <sup>1)</sup>              | 150  | 300                             | 2031-1DB04                                  | <b>061B101766</b>                            |   |
| LP diaphragm                                     | 1 to 6                    | 0.30 to 2.0 <sup>1)</sup>               | 150  | 300                             | 2231-1DB04                                  | <b>061B100966</b>                            |   |
| LP diaphragm                                     | 1 to 10                   | 0.30 to 2.0 <sup>1)</sup>               | 150  | 300                             | 2431-1DB04                                  | <b>061B100466<sup>2)</sup></b>               | <b>061B300466</b>                       |
| LP diaphragm                                     | 5 to 20                   | 0.4 to 2.5 <sup>1)</sup>                | 150  | 300                             | 3231-1DB04                                  | <b>061B100266<sup>2)</sup></b>               | <b>061B300266</b>                       |
| LP diaphragm                                     | 5 to 25                   | 0.4 to 2.5 <sup>1)</sup>                | 150  | 300                             | 3331-1DB04                                  | <b>061B102466</b>                            |   |
| HP diaphragm                                     | 5 to 40                   | 1.0 to 7.0 <sup>1)</sup>                | 150  | 300                             | 3641-1DB04                                  | <b>061B100566<sup>2)</sup></b>               | <b>061B300566</b>                       |
| HP diaphragm                                     | 10 to 100                 | 1.7 to 14 <sup>1)</sup>                 | 150  | 300                             | 4241-1DB04                                  | <b>061B100366<sup>2)</sup></b>               | <b>061B300366</b>                       |
| HP piston  | 16 to 160                 | 12 to 30 <sup>1)</sup>                  | 600  | 1200                            | 5251-1CB04                                  | <b>061B510066</b>                            | <b>061B500266</b>                       |
| HP piston  | 25 to 250                 | 12 to 40 <sup>1)</sup>                  | 600  | 1200                            | 5451-1CB04                                  | <b>061B510166</b>                            | <b>061B500166</b>                       |
| HP piston  | 40 to 400                 | 15 to 50 <sup>1)</sup>                  | 600  | 1200                            | 5651-1CB04                                  | <b>061B510266</b>                            | <b>061B500066</b>                       |

<sup>1)</sup> Lowest differential at min. setting range, highest differential at max. setting range

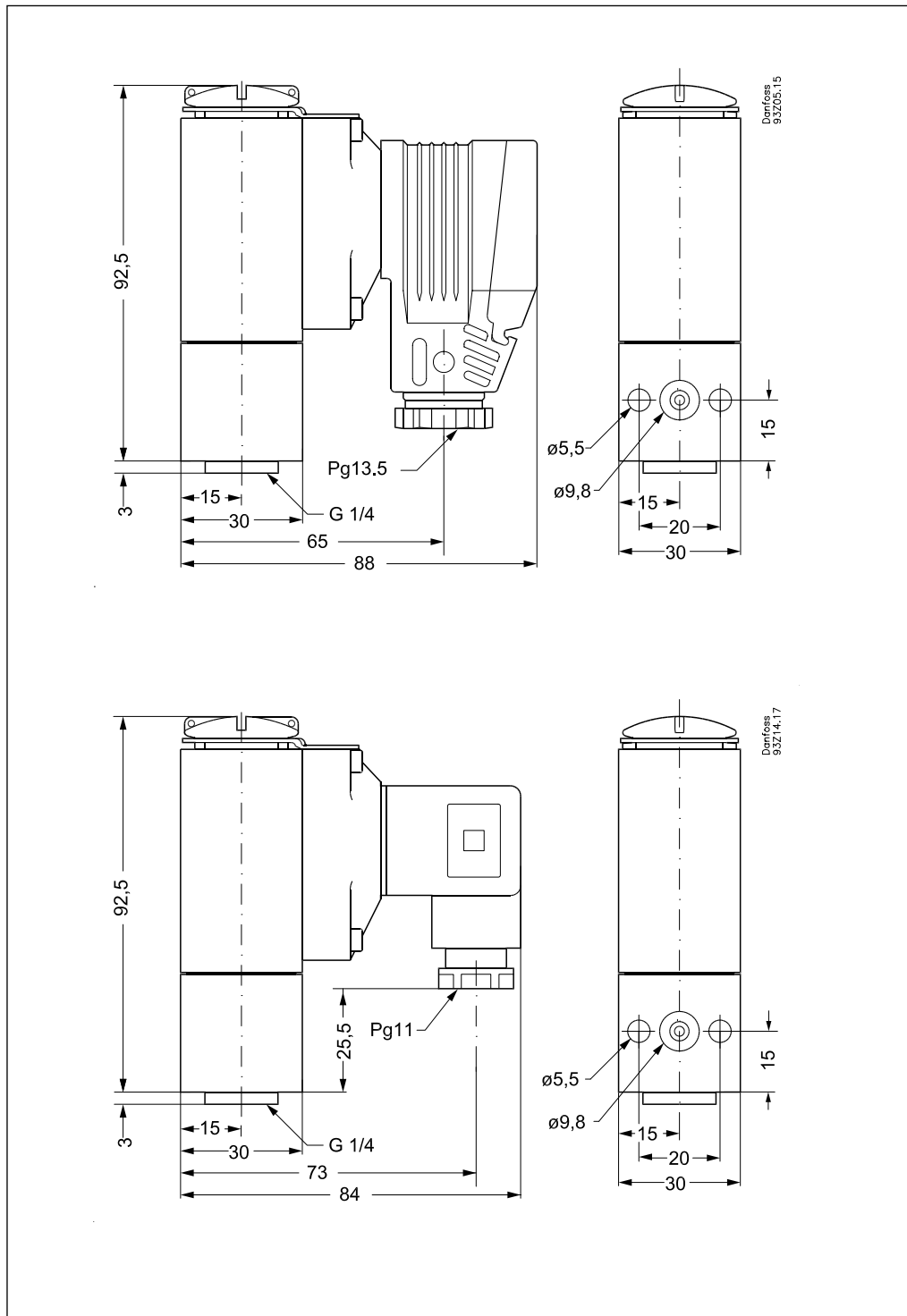
<sup>2)</sup> Preferred versions

Ordering customized types

MBC 5000-  
MBC 5100-



Dimensions



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