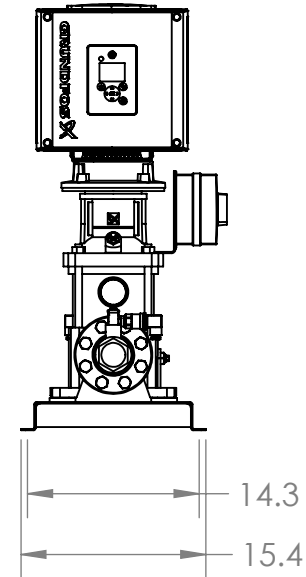
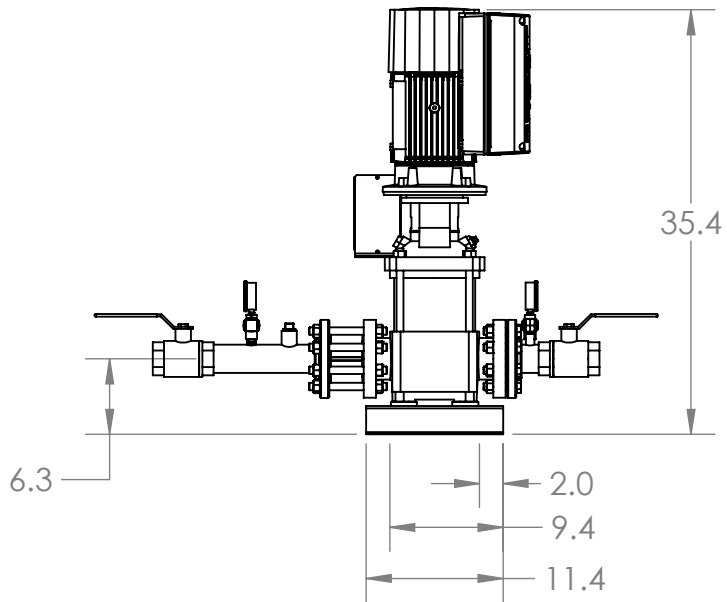
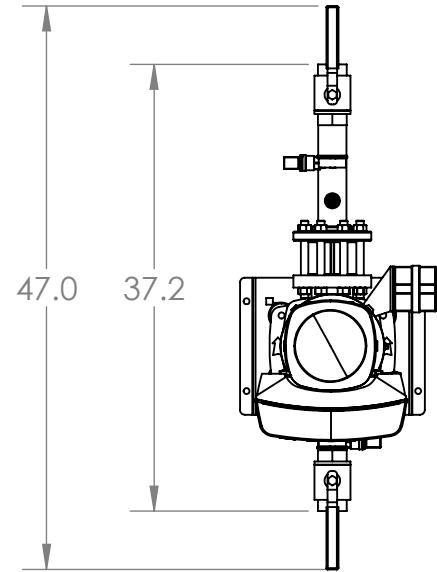
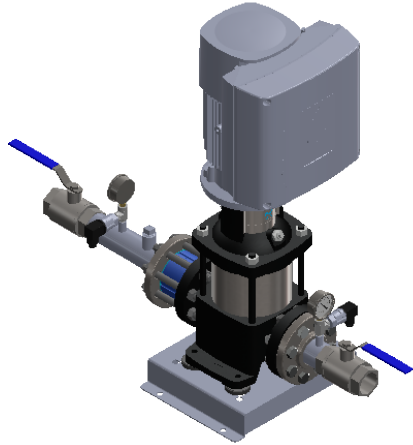


1. Manifolds connections 2" NPT
2. Base/Frame AISI 304SS
3. Full port ball valve ASTM



**GRUNDFOS**   
 FRESNO, CALIFORNIA 93727 USA

Note:  
 All dimensions are  $\pm 0.5"$   
 Not for Construction  
 All dimensions subject to  
 changewithout notice.

|          |      |                      |         |
|----------|------|----------------------|---------|
| Model:   |      | CRE-PLUS CRE15-2     |         |
| Power:   |      | 3x208-230 60HZ 1x5HP |         |
| Job:     |      | Scale: 1:16          |         |
| Dwg No:  | Rev: | Date:                | Drawer: |
| 91138487 | 0    | 11/26/2019           | 71999   |
| Page:    |      |                      | 1 of 1  |

|                       |                        |                 |
|-----------------------|------------------------|-----------------|
| PROJECT: _____        | UNIT TAG: _____        | QUANTITY: _____ |
| REPRESENTATIVE: _____ | TYPE OF SERVICE: _____ | DATE: _____     |
| ENGINEER: _____       | SUBMITTED BY: _____    | DATE: _____     |
| CONTRACTOR: _____     | APPROVED BY: _____     | DATE: _____     |
|                       | ORDER NO.: _____       | DATE: _____     |

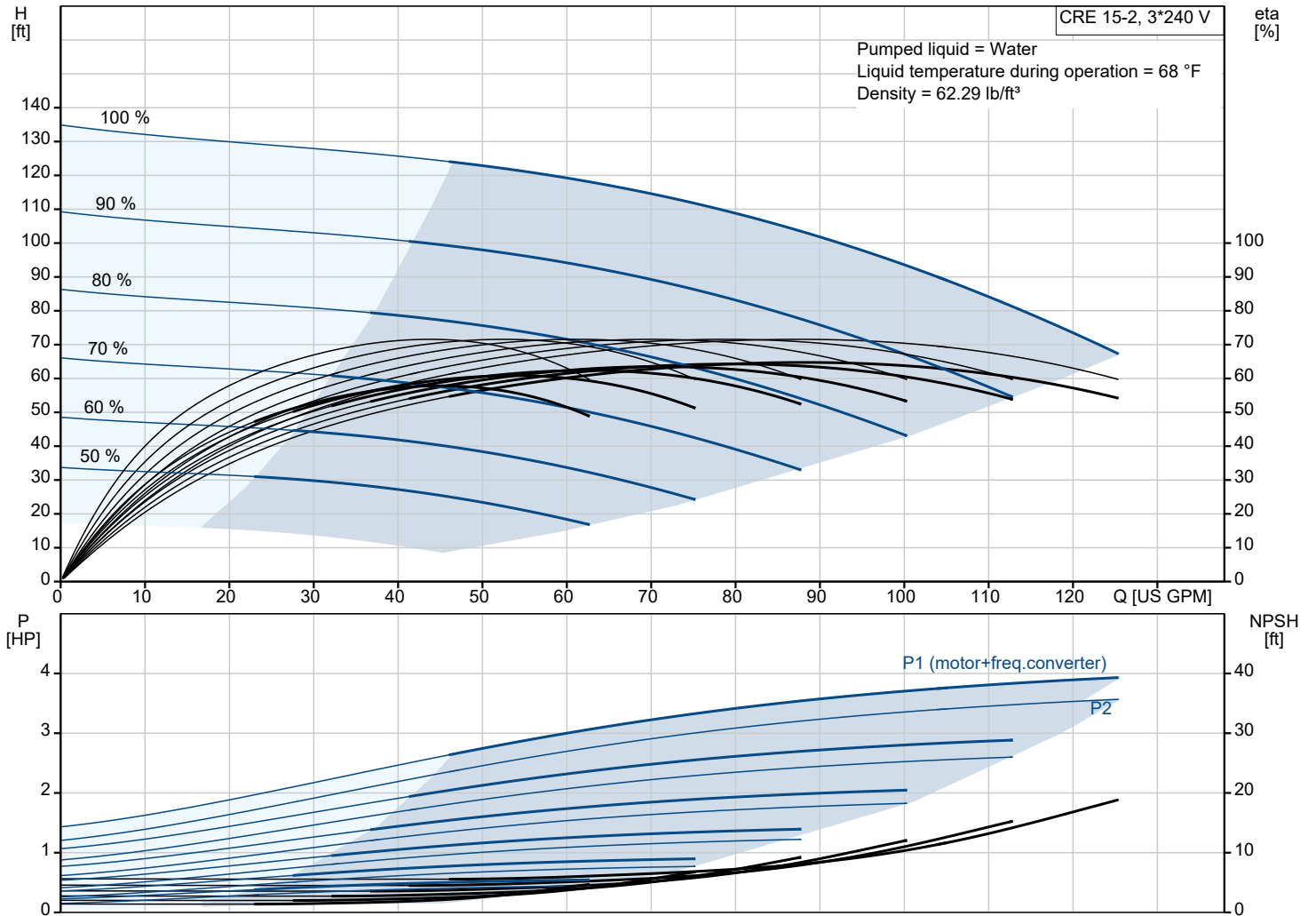


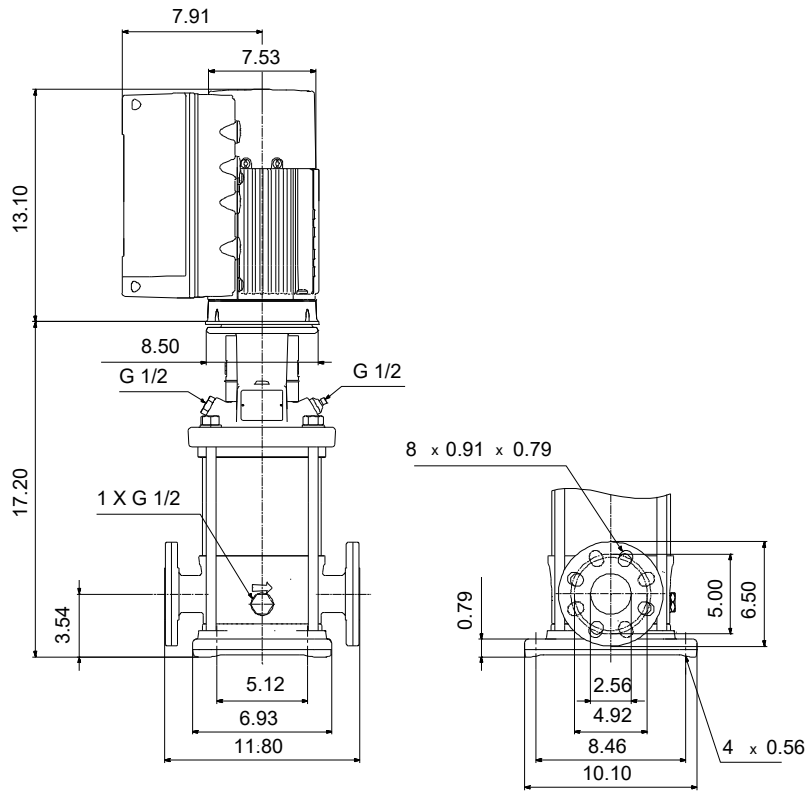
## CRE 15-2 N-GJ-A-E-HQQE

Vertical, multistage centrifugal pump with integrated frequency converter. The pump head and base are in cast iron - all other wetted parts are in stainless steel (EN 1.4301)

Note! Product picture may differ from actual product


| Conditions of Service |       | Pump Data                    |                  | Motor Data        |           |
|-----------------------|-------|------------------------------|------------------|-------------------|-----------|
| Liquid:               | Water | Max pressure at stated temp: | 232 psi / 250 °F | Rated power - P2: | 5 HP      |
| Temperature:          | 68 °F | Liquid temperature range:    | -4 .. 248 °F     | Rated voltage:    | 200-240 V |
| Specific Gravity:     | 1.000 | Maximum ambient temperature: | 104 °F           | Mains frequency:  | 60 Hz     |
|                       |       | Shaft seal:                  | HQQE             | Enclosure class:  | IP55      |
|                       |       | Product number:              | 99392124         | Insulation class: | F         |
|                       |       |                              |                  | Motor protection: | ELEC      |
|                       |       |                              |                  | Motor type:       | 112C      |
|                       |       |                              |                  | Eta 1/1:          | 90.9 %    |





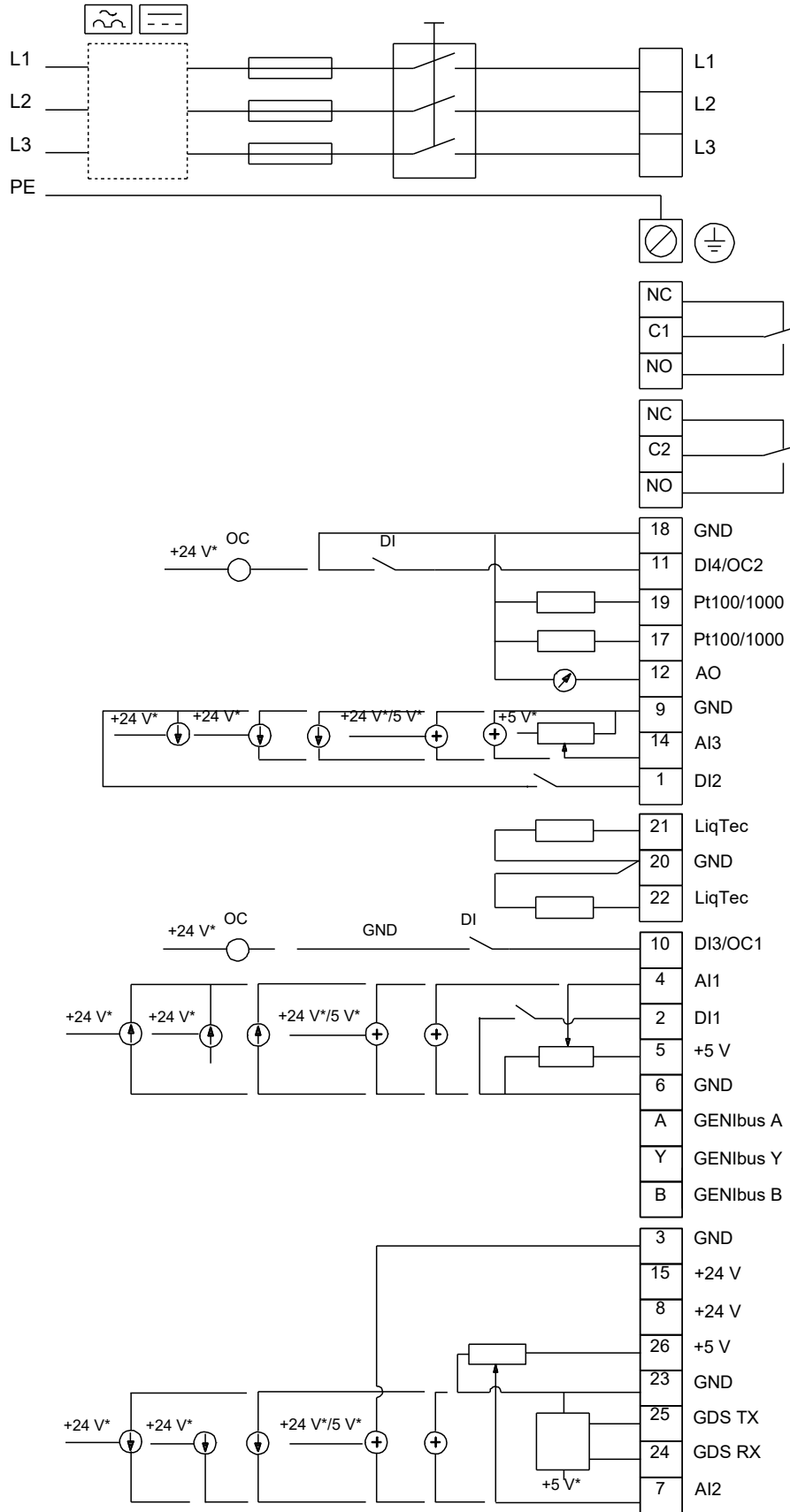
**Materials:**

- Base: Cast iron
- Base: EN 1561 EN-GJL-200
- Base: ASTM A48-25B
- Impeller: Stainless steel
- Impeller: AISI 304
- Impeller: EN 1.4301
- Material code: A
- Code for rubber: E

| Qty. | Description   |
|------|---|
| 1    | <p data-bbox="124 85 427 116"><b>CRE 15-2 N-GJ-A-E-HQQE</b></p>  <p data-bbox="517 434 987 459"><b>Note! Product picture may differ from actual product</b></p> <p data-bbox="124 465 389 492">Product No.: <a href="#">99392124</a></p> <p data-bbox="124 524 1522 600">Vertical, multistage centrifugal pump with inlet and outlet ports on same the level (inline). The pump head and base are in cast iron – all other wetted parts are in stainless steel. A cartridge shaft seal ensures high reliability, safe handling, and easy access and service. Power transmission is via a rigid split coupling. Pipe connection is via combined ANSI-JIS flanges.</p> <p data-bbox="124 611 1051 638">The pump is fitted with a 3-phase, fan-cooled, permanent-magnet, synchronous motor.</p> <p data-bbox="124 640 940 667">The motor efficiency is classified as IE5 in accordance with IEC 60034-30-2.</p> <p data-bbox="124 669 1522 719">The motor includes a frequency converter and PI controller in the motor terminal box. This enables continuously variable control of the motor speed, which again enables adaptation of the performance to a given requirement.</p> <p data-bbox="124 725 1469 752">The operating panel on the motor terminal box features a four-inch TFT display, push-buttons and the Grundfos Eye indicator.</p> <p data-bbox="124 786 888 813">The display gives an intuitive and user-friendly interface to all functions.</p> <p data-bbox="124 815 1461 864">The push-buttons are used to navigate through the menu structure to access pump and performance data on site and enable setting of required setpoint as well as setting of pump to "Min." or "Max." operation or to "Stop".</p> <p data-bbox="124 934 1522 1010">Communication with the pump is also possible by means of Grundfos GO Remote (accessory). The remote control enables further settings as well as reading out of a number of parameters such as "Actual value", "Speed", "Power input" and total "Power consumption".</p> <p data-bbox="124 1048 1115 1075">The Grundfos Eye indicator on the operating panel provides visual indication of pump status:</p> <ul data-bbox="164 1077 1434 1167" style="list-style-type: none"> <li>• "Power on": Motor is running (rotating green indicator lights) or not running (permanently green indicator lights)</li> <li>• "Warning": Motor is still running (rotating yellow indicator lights) or has stopped (permanently yellow indicator lights)</li> <li>• "Alarm": Motor has stopped (flashing red indicator lights).</li> </ul> <p data-bbox="124 1169 1501 1218">The terminal box has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required:</p> <ul data-bbox="164 1225 1501 1608" style="list-style-type: none"> <li>• two dedicated digital inputs</li> <li>• three analog inputs, 0(4)-20 mA, 0-5 V, 0-10 V, 0.5 - 3.5 V; the factory-fitted pressure sensor is connected to one of these inputs</li> <li>• 5 V voltage supply to potentiometer and sensor</li> <li>• one analog output, 0-10 V, 0(4)-20 mA</li> <li>• two configurable digital inputs or open-collector outputs</li> <li>• two Pt100/Pt1000 inputs</li> <li>• LiqTec, dry-running protection sensor input</li> <li>• Grundfos Digital Sensor input and output</li> <li>• 24 V voltage supply for sensors</li> <li>• two signal-relay outputs (potential-free contacts)</li> <li>• GENIbus connection</li> <li>• interface for Grundfos CIM fieldbus module.</li> </ul> <p data-bbox="124 1641 201 1668">Liquid:</p> <p data-bbox="124 1671 557 1697">Pumped liquid: Water</p> <p data-bbox="124 1700 611 1727">Liquid temperature range: -4 .. 248 °F</p> <p data-bbox="124 1729 549 1756">Selected liquid temperature: 68 °F</p> <p data-bbox="124 1758 606 1785">Density: 62.29 lb/ft<sup>3</sup></p> <p data-bbox="124 1818 239 1845">Technical:</p> <p data-bbox="124 1848 743 1874">Pump speed on which pump data are based: 3461 rpm</p> <p data-bbox="124 1877 639 1904">Rated flow: 90.3 US GPM</p> <p data-bbox="124 1906 572 1933">Rated head: 103.7 ft</p> <p data-bbox="124 1935 564 1962">Actual impeller diameter: 4.13 in</p> <p data-bbox="124 1964 572 1991">Pump orientation: Vertical</p> <p data-bbox="124 1993 549 2020">Shaft seal arrangement: Single</p> <p data-bbox="124 2022 564 2049">Code for shaft seal: HQQE</p> <p data-bbox="124 2051 576 2078">Approvals: CURUS</p> <p data-bbox="124 2080 635 2107">Approvals for drinking water: NSF/ANSI 61</p> <p data-bbox="124 2110 683 2136">Curve tolerance: ISO9906:2012 3B</p> |

| Qty. | Description  |
|------|--|
|      | <p><b>Materials:</b></p> <p>Base: Cast iron<br/>EN 1561 EN-GJL-200<br/>ASTM A48-25B</p> <p>Impeller: Stainless steel<br/>EN 1.4301<br/>AISI 304</p> <p>Bearing: SIC</p> <p>Installation:</p> <p>t max amb: 104 °F</p> <p>Maximum operating pressure: 232.06 psi</p> <p>Max pressure at stated temp: 232 psi / 250 °F<br/>232 psi / -4 °F</p> <p>Type of connection: ANSI / JIS</p> <p>Size of inlet connection: DN 50</p> <p>Size of outlet connection: DN 50</p> <p>Pressure rating for connection: PN 25</p> <p>Flange rating inlet: 300 lb</p> <p>Flange size for motor: 182TC</p> <p><b>Electrical data:</b></p> <p>Motor standard: NEMA</p> <p>Motor type: 112C</p> <p>IE Efficiency class: IE5</p> <p>Rated power - P2: 5 HP</p> <p>Power (P2) required by pump: 5 HP</p> <p>Mains frequency: 60 Hz</p> <p>Rated voltage: 3 x 200-240 V</p> <p>Service factor: 1.15</p> <p>Rated current: 13.2-10.9 A</p> <p>Cos phi - power factor: 0.94</p> <p>Rated speed: 360-4000 rpm</p> <p>Efficiency: 90.9%</p> <p>Motor efficiency at full load: 90.9 %</p> <p>Enclosure class (IEC 34-5): IP55</p> <p>Insulation class (IEC 85): F</p> <p>Motor No: 99301701</p> <p><b>Controls:</b></p> <p>Frequency converter: Built-in</p> <p>Pressure sensor: Y</p> <p><b>Others:</b></p> <p>DOE Pump Energy Index VL: 0.42</p> <p>Net weight: 141 lb</p> <p>Gross weight: 227 lb</p> <p>Shipping volume: 13.1 ft³</p> |

# 99392124 CRE 15-2 N-GJ-A-E-HQQE 60 Hz



Note! All units are in [in] unless others are stated.

**Ball Valves**



**General**

- Threaded Ends
- Blow Out Proof Stem
- 600 WOG
- 2-Piece Body
- Teflon Seats
- Teflon Packing

**Dimensions & Weights**

| Size   | DN (in) | S (in) | H (in) | L (in) | WT. (lb) |
|--------|---------|--------|--------|--------|----------|
| 1/4"   | 0.39    | 1.76   | 1.75   | 3.54   | 0.35     |
| 3/4"   | 0.75    | 2.50   | 2.18   | 3.94   | 0.79     |
| 1-1/4" | 1.26    | 3.42   | 2.87   | 4.80   | 1.75     |
| 1-1/2" | 1.57    | 3.76   | 3.48   | 5.91   | 2.47     |
| 2"     | 1.97    | 4.25   | 3.82   | 5.91   | 3.46     |



**MATERIAL SPECIFICATIONS**

| NO. | PART      | MATERIAL (ASTM)          |
|-----|-----------|--------------------------|
| 1   | NUT       | ZINC PLATED STEEL        |
| 2   | HANDLE    | ZINC PLATED STEEL        |
| 3   | BONNET    | BRASS (C37000)           |
| 4   | PACKING   | TEFLON                   |
| 5   | STEM      | BRASS (C37000)           |
| 6   | BALL SEAT | TEFLON                   |
| 7   | END PIECE | LOW LEAD BRASS (LTN60-6) |
| 8   | BODY      | LOW LEAD BRASS (LTN60-6) |
| 9   | BALL      | LOW LEAD BRASS (LTN60-6) |
| 10  | SLEEVE    | PVC                      |

**APPROVALS**

- NSF 61, IAPMO - N4359
- AB1953, IAPMO - 5653



# Wafer Check Valve    Silent Check    Model 888

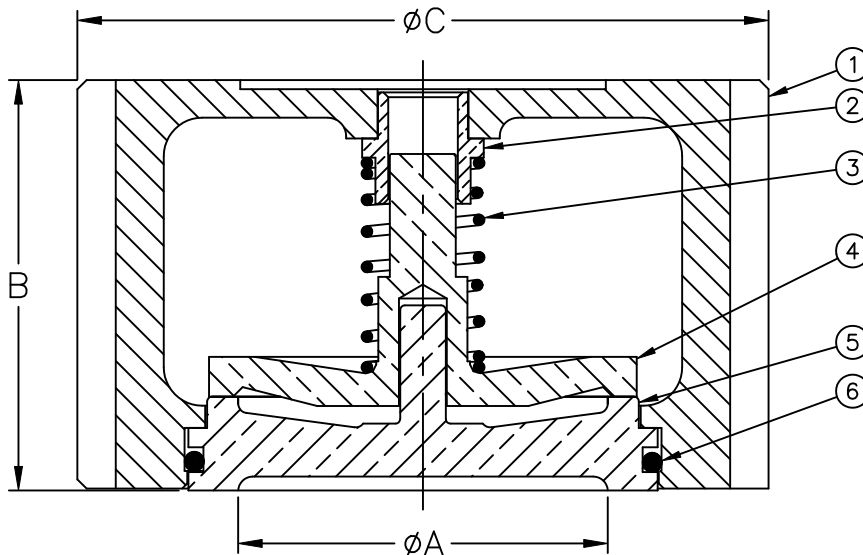
Sizes 2" Thru 6" / 50 mm & 150 mm



Flomatic Corporation



## Materials



| Item # | Qty | Description         | Material        | ASTM          |
|--------|-----|---------------------|-----------------|---------------|
| 1      | 1   | Body (Epoxy Coated) | Cast Iron       | A126, Class B |
| 2      | 1   | Bushing             | Bronze          | C95400        |
| 3      | 1   | Spring              | Stainless Steel | 302           |
| 4      | 1   | Poppet              | Silicon Brass   | C87800        |
| 5      | 1   | Seat Ring*          | Silicon Brass   | C87800        |
| 6      | 1   | O'Ring              | Buna-n          | -----         |

\*OPTIONAL RESILIENT SEAT AVAILABLE, ADD "R" TO THE PART NUMBER 5" AND THE RESILIENT SEATED VALVES ARE NOT NSF61 APPROVED

Max Temp 180°F (82°C)

Max Inlet Pressure (125#) 200 psi (14bar)

Max Inlet Pressure (250#) 400 psi (27bar)

PATENT # 6,024,121

## Dimensions

| Size  |     | Part # | A       |     | B     |     | C     |     | Weight |      | # of Bolts |      | Bolt Size by Flange |             |
|-------|-----|--------|---------|-----|-------|-----|-------|-----|--------|------|------------|------|---------------------|-------------|
| inch  | mm  |        | inch    | mm  | inch  | mm  | inch  | mm  | lbs    | kg   | 125#       | 250# | 125#                | 250#        |
| 2     | 50  | 2434   | 2-13/32 | 61  | 2-5/8 | 67  | 4-1/4 | 108 | 5      | 2.5  | 4          | 8    | 5/8 x 5-1/4         | 5/8 x 5-1/2 |
| 2-1/2 | 65  | 2432   | 2-9/16  | 65  | 2-7/8 | 73  | 5     | 127 | 7      | 3    | 4          | 8    | 5/8 x 5-1/4         | 3/4 x 6-1/2 |
| 3     | 80  | 2435   | 3-1/4   | 83  | 3-1/8 | 79  | 5-3/4 | 146 | 11     | 5    | 4          | 8    | 5/8 x 6-1/4         | 3/4 x 7     |
| 4     | 100 | 2436   | 4-3/8   | 111 | 4     | 102 | 7     | 178 | 18     | 8    | 8          | 8    | 5/8 x 7             | 3/4 x 8     |
| 5     | 125 | 2433   | 5-1/4   | 133 | 4-3/4 | 121 | 8-3/8 | 213 | 25     | 11.5 | 8          | 8    | 3/4 x 7-3/4         | 3/4 x 9     |
| 6     | 150 | 2437   | 5-29/32 | 150 | 5-1/2 | 140 | 9-3/4 | 248 | 36     | 16.5 | 8          | 12   | 3/4 x 8-3/4         | 3/4 x 10    |

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April 4, 1995  
Dwg No: S888-1 Rev S (3/15)

FLOMATIC CORPORATION  
GLENS FALLS, N.Y. 12801  
PHONE (518) 761-9797  
FAX (518) 761-9798



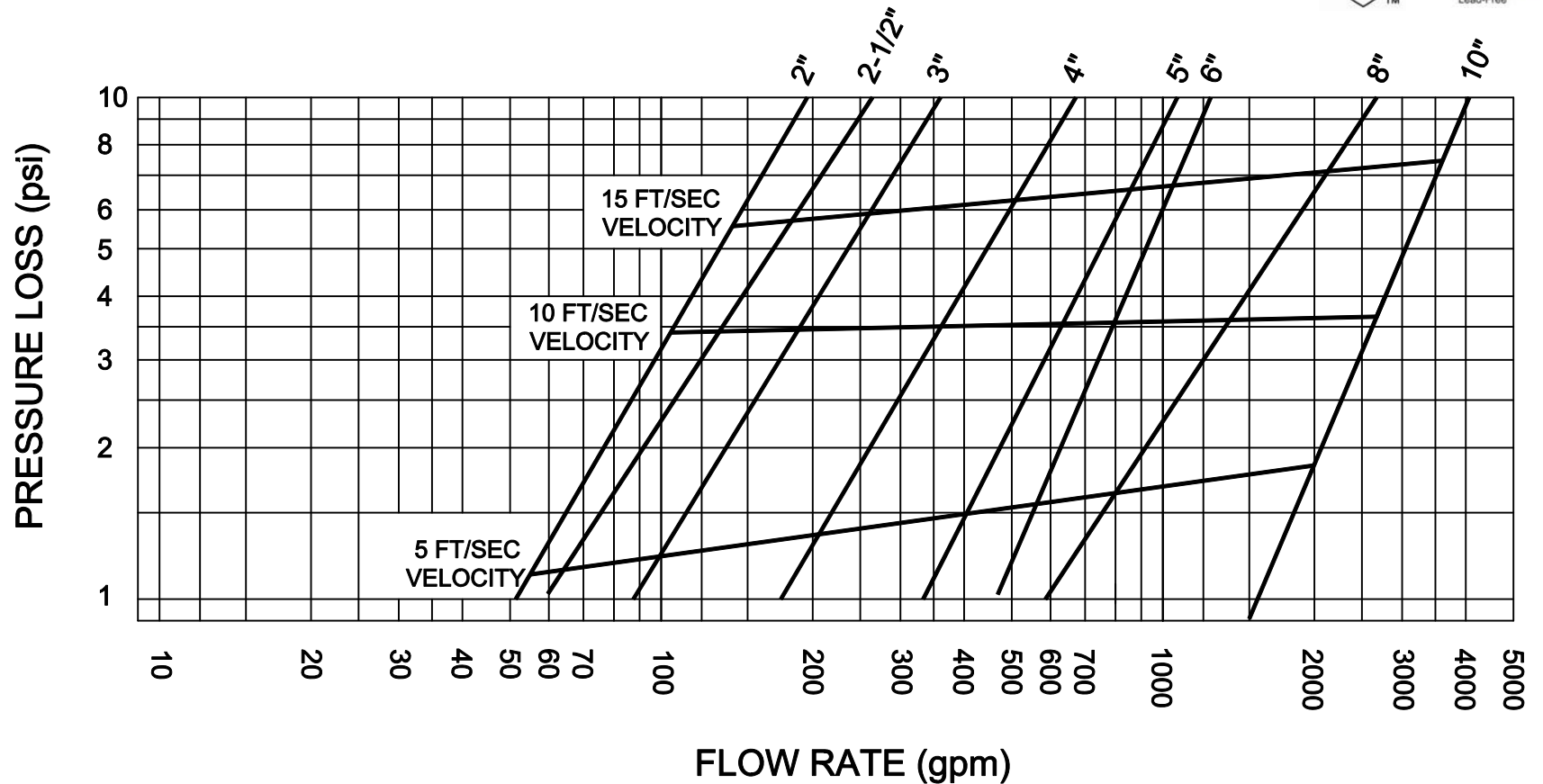
# Wafer Check Valve

# Headloss Chart

# Model 888/888R



Sizes 2" thru 10"/ 50 mm thru 250 mm



PATENT # 6,024,121

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December 28, 1994  
Dwg No: S888HL Rev: E (6/13)

FLOMATIC CORPORATION  
GLENS FALLS, N.Y. 12801  
PHONE (518) 761-9797  
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# D80 Series

Dry or Liquid Filled • Stainless Steel Case

UTILITY GAUGES



D82LFB shown



- ▶ 1 1/2", 2", 2 1/2", 4" Dial Sizes
- ▶ ±1.6% Accuracy (1% Optional)
- ▶ Stainless Steel Case
- ▶ Glycerine Fill Standard

The Trerice **D80 Series** Industrial Gauge is designed for rugged performance requirements at an economical cost. This liquid filled gauge is furnished with a stainless steel case and crimped ring. Wetted parts are either bronze tube with Lead-Free (PBF) brass socket or stainless steel.

- **Optional features and case style variations available: Please consult the Options & Accessories Section for details.**
- **For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.**

## Specifications

| Models                     | Wetted Parts   |   |
|----------------------------|--|---|
| <b>D82B</b>                | (dry)  | Bronze tube, brass socket                           |
| <b>D82LFB</b>              | (liquid filled)  | Lead-Free (PBF) Meets NSF/ANSI Standards 372 and 61 |
| <b>D83SS</b>               | (dry)  | 316 Stainless steel tube & socket                   |
| <b>D83LFSS</b>             | (liquid filled)  |   |
| <b>Dial Sizes</b>          | 1 1/2", 2", 2 1/2", 4"   |   |
| <b>Fill</b>                | Glycerine, other fills available See Optional Features Section |   |
| <b>Movement</b>            | <b>D82:</b> Brass<br><b>D83:</b> 316 Stainless steel           |   |
| <b>Connection</b>          | Lower male or center back male, (Lower back male 4" Dial only) |   |
| <b>Case</b>                | 304 stainless steel, stem-mounted flangeless                   |   |
| <b>Ring</b>                | Crimped 304 stainless steel                                    |   |
| <b>Window</b>              | Acrylic  |   |
| <b>Pointer</b>             | Plain, black finished  |   |
| <b>Dial Face</b>           | Aluminum, white background with black graduations and markings |   |
| <b>Accuracy</b>            | ±1.6% Full Scale (1% available as an option)                   |   |
| <b>Maximum Temperature</b> | <b>150°F (65°C)</b>  |   |

### Approximate Shipping Weight

- 1 1/2" Dial Size: 0.4 lbs [0.18 kg]
- 2" Dial Size: 0.4 lbs [0.18 kg]
- 2 1/2" Dial Size: 0.5 lbs [0.23 kg]
- 4" Dial Size: 1.0 lbs [0.45 kg]

## HOW TO ORDER

Sample Order Number: **D82LFB 25 02 L A 110**

| Model          | Dial Size | Connection Size | Connection Location | Units of Measure | Range Code          |
|----------------|-----------|-----------------|---------------------|------------------|---------------------|
| <b>D82LFB</b>  | 15 1 1/2" | 01 1/8 NPT*     | L Lower             | A psi            | See Standard Ranges |
| <b>D83LFSS</b> | 20 2"     | 02 1/4 NPT**    | B Back              | D psi/kPa        |                     |
| <b>D82B</b>    | 25 2 1/2" | 04 1/2 NPT***   |                     |                  |                     |
| <b>D83SS</b>   | 40 4"     |                 |                     |                  |                     |

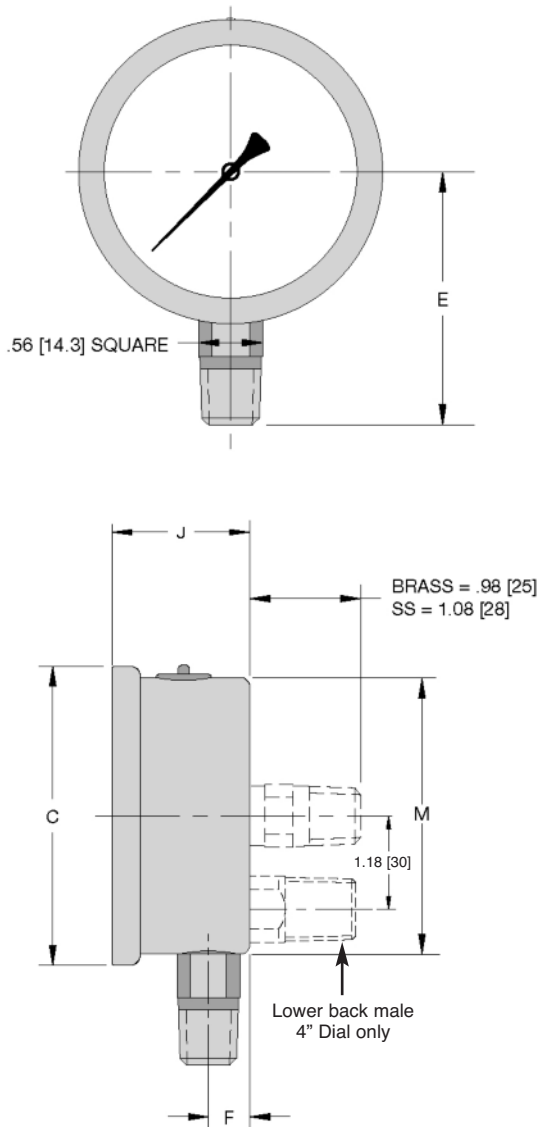
\* 1/8 NPT connection size not available with 4" dial size.  
 \*\* 1/4 NPT connection size not available with 1 1/2" dial size.  
 \*\*\* 1/2 NPT connection size only available with 4" dial size.

# D80 Series

## Dry or Liquid Filled • Stainless Steel Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.

UTILITY GAUGES



### Standard Ranges

| psi Ranges (A) |                      | D82              |                 | D83              |                 |
|----------------|----------------------|------------------|-----------------|------------------|-----------------|
| Range Code     | Specific Range (psi) | Figure Intervals | Minor Divisions | Figure Intervals | Minor Divisions |
| 010            | 30" Hg to 0          | 5                | 0.5             | 5                | 0.5             |
| 020            | 30" Hg to 15 psi     | 10/5             | 1/0.5           | 10/5             | 1/0.5           |
| 030            | 30" Hg to 30 psi     | 10/5             | 1/1             | 10/5             | 1/1             |
| 040            | 30" Hg to 60 psi     | 10/10            | 2/1             | 10/10            | 2/1             |
| 050            | 30" Hg to 100 psi    | 30/20            | 2/2             | 30/20            | 2/2             |
| 060            | 30" Hg to 150 psi    | 30/30            | 5/2             | 30/30            | 5/2             |
| 070            | 30" Hg to 300 psi    | 30/50            | 5/5             | 30/50            | 5/5             |
| 080            | 0 to 15 psi          | 3                | 0.2             | 3                | 0.2             |
| 090            | 0 to 30 psi          | 5                | 0.5             | 5                | 0.5             |
| 100            | 0 to 60 psi          | 10               | 1               | 10               | 1               |
| 110            | 0 to 100 psi         | 10               | 1               | 10               | 1               |
| 120            | 0 to 160 psi         | 20               | 2               | 20               | 2               |
| 130            | 0 to 200 psi         | 20               | 2               | 20               | 2               |
| 140            | 0 to 300 psi         | 50               | 5               | 50               | 5               |
| 150            | 0 to 400 psi         | 50               | 5               | 50               | 5               |
| 160            | 0 to 600 psi         | 100              | 10              | 100              | 10              |
| 180            | 0 to 1000 psi        | 100              | 20              | 100              | 20              |
| 190            | 0 to 1500 psi        | 300              | 20              | 300              | 20              |
| 200            | 0 to 2000 psi        | 200              | 20              | 200              | 20              |
| 210            | 0 to 3000 psi        | 500              | 50              | 500              | 50              |
| 220            | 0 to 5000 psi        | 1000             | 100             | 1000             | 100             |

Ranges over 5000 PSI are not available on D82LFB.

|     |                |     |     |      |     |
|-----|----------------|-----|-----|------|-----|
| 230 | 0 to 10000 psi | N/A | N/A | 2000 | 200 |
| 240 | 0 to 15000 psi | N/A | N/A | 3000 | 200 |

For dual scale ranges specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code**

| Dial Size  | C          | E          | F         | J         | M          |
|------------|------------|------------|-----------|-----------|------------|
| 1 1/2" D82 | 1.85 [47]  | 1.50 [38]  | 0.32 [8]  | 1.06 [27] | 1.61 [41]  |
| 1 1/2" D83 | 1.85 [47]  | 1.50 [38]  | 0.32 [8]  | 1.06 [27] | 1.61 [41]  |
| 2" D82     | 2.28 [58]  | 1.89 [48]  | 0.39 [10] | 1.14 [29] | 2.05 [52]  |
| 2" D83     | 2.28 [58]  | 2.05 [52]  | 0.35 [9]  | 1.18 [30] | 2.05 [52]  |
| 2 1/2" D82 | 2.68 [68]  | 2.24 [57]  | 0.39 [10] | 1.18 [30] | 2.44 [62]  |
| 2 1/2" D83 | 2.68 [68]  | 2.32 [59]  | 0.51 [13] | 1.38 [35] | 2.44 [62]  |
| 4" D82     | 4.29 [109] | 3.07 [78]  | 0.47 [12] | 1.42 [36] | 3.90 [99]  |
| 4" D83     | 4.29 [109] | 3.94 [100] | 0.75 [19] | 1.93 [49] | 3.94 [100] |

# Data sheet

# MBS 3000 pressure transmitter for industrial applications

## Introduction

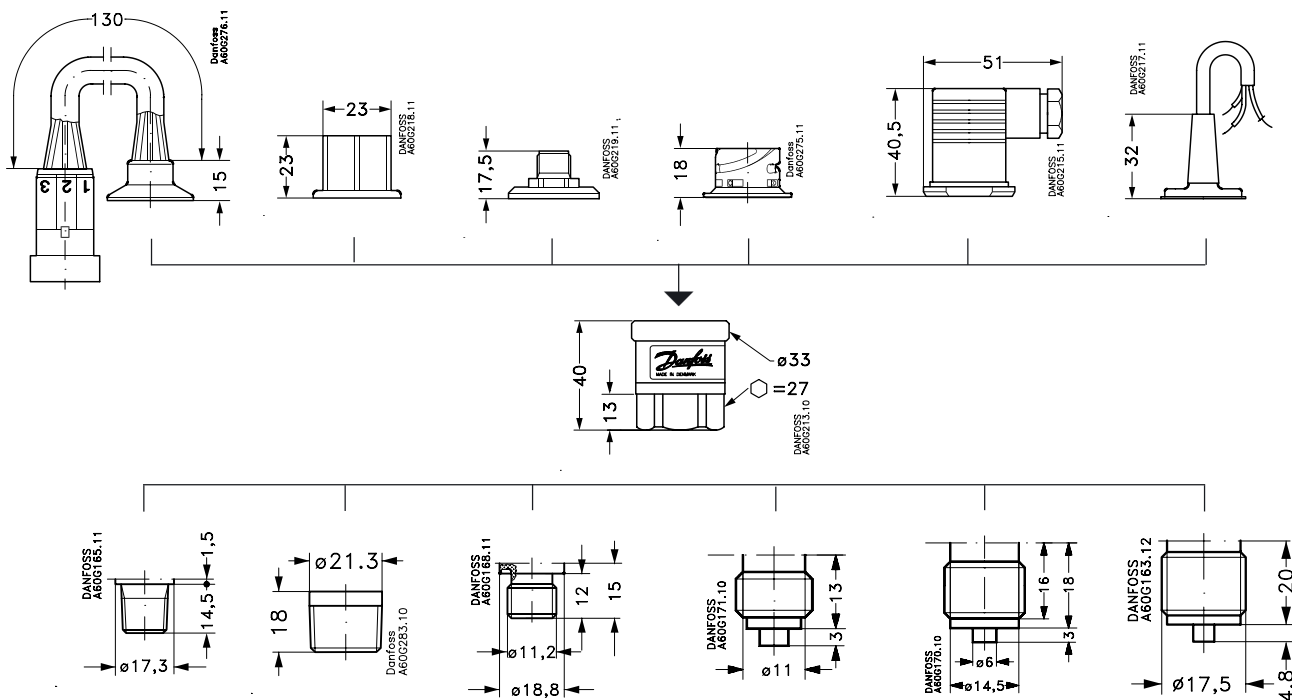


- Designed for use in severe industrial environments
- Enclosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- All standard output signals: 4-20 mA, 0-5 V, 1-5 V, 1-6 V, 0-10 V
- A wide range of pressure and electrical connections
- Temperature compensated and laser calibrated
- Typical applications:
  - Pumps
  - Compressors
  - Pneumatics
  - Water treatment

## Dimensions

### Ordering

|                     |                                    |                                  |                             |                                       |                 |                    |
|---------------------|------------------------------------|----------------------------------|-----------------------------|---------------------------------------|-----------------|--------------------|
| Type code<br>Page 4 | 8                                  | 2                                | 5                           | 7                                     | 1               | 3                  |
|                     | AMP Superseal<br>1.5 series (male) | AMP Econoseal<br>J series (male) | IEC 947-5-2<br>M12x1, 4-pin | ISO 15170-A1-3.2-Sn<br>(Bayonet plug) | DIN 43650, Pg 9 | 2 m screened cable |



### Ordering

|                     |              |              |   |                     |                     |                     |
|---------------------|--------------|--------------|---|---------------------|---------------------|---------------------|
|                     | 1/4 - 18 NPT | 1/2 - 14 NPT | DIN 3852-E-G1/4<br>Gasket:<br>DIN 3869-14 | G 1/4 A<br>(EN 837) | G 3/8 A<br>(EN 837) | G 1/2 A<br>(EN 837) |
| Type code<br>page 4 | AC04         | AC08         | GB04                                      | AB04                | AB06                | AB08                |

**Technical data**
**Main specifications**

|                        |             |               |               |              |              |               |               |       |
|------------------------|-------------|---------------|---------------|--------------|--------------|---------------|---------------|-------|
| Pressure connections   | see page 1  |               |               |              |              |               |               |       |
| Measuring ranges [bar] | 0-1<br>0-25 | 0-1.6<br>0-40 | 0-2.5<br>0-60 | 0-4<br>0-100 | 0-6<br>0-160 | 0-10<br>0-250 | 0-16<br>0-400 | 0-600 |
| Output signals         | 4-20 mA     | 0-5 V         | 1-5 V         | 1-6 V        | 0-10 V       |               |               |       |
| Electrical connections | see page 3  |               |               |              |              |               |               |       |

**Performance (IEC 770)**

|  |  |
|--|--|
| Accuracy                               | ±0.5% FS (typ.)<br>±1% FS (max.)               |
| Non-linearity (best fit straight line) | ≤ ±0.5% FS                                     |
| Hysteresis and repeatability           | ≤ ±0.1% FS                                     |
| Thermal zero point shift               | ≤ ±0.1% FS/10K (typ.)<br>≤ ±0.2% FS/10K (max.) |
| Thermal sensitivity (span) shift       | ≤ ±0.1% FS/10K (typ.)<br>≤ ±0.2% FS/10K (max.) |
| Response time                          | < 4 ms   |
| Overload pressure                      | 6 × FS (max. 1500 bar)                         |
| Burst pressure                         | 6 × FS (max. 2000 bar)                         |
| Durability, P: 10-90% FS               | >10×10 <sup>6</sup> cycles                     |

**Electrical specifications**

|  | Nom. output signal (short-circuit protected) |                        |                        |
|--|--|------------------------|------------------------|
|  | 4 – 20 mA                                    | 0-5, 1-5, 1-6 V d.c.   | 0-10 V d.c.            |
| Supply voltage [U <sub>B</sub> ], polarity protected     | 9 → 32 V d.c.                                | 9 → 30 V d.c.          | 15 → 30 V d.c.         |
| Supply - current consumption                             | -  | ≤ 5 mA                 | ≤ 8 mA                 |
| Supply voltage dependency                                | ≤ ±0.05% FS/10 V                             |                        |                        |
| Current limitation (linear output up to 1.5x nom. range) | 34 mA (typ.)                                 | -                      |                        |
| Output impedance   | ≤ 25Ω  |                        |                        |
| Load [R <sub>L</sub> ] (load connected to 0V)            | R <sub>L</sub> ≤ (U <sub>B</sub> -9V)/0.02   | R <sub>L</sub> ≥ 10 kΩ | R <sub>L</sub> ≥ 15 kΩ |

**Environmental conditions**

|  |                         |                                     |  |              |
|--|-------------------------|-------------------------------------|--|--------------|
| Medium temperature range                                       | -40 → +85°C             |                                     |  |              |
| Ambient temperature range (depending on electrical connection) | see page 3              |                                     |  |              |
| Compensated temperature range                                  | 0 → +80°C               |                                     |  |              |
| Transport temperature range                                    | -50 → +85°C             |                                     |  |              |
| EMC - Emission   | EN 61000-6-3            |                                     |  |              |
| EMC - Immunity   | Electrostatic discharge | Air mode                            | 8 kV                                   | EN 61000-6-2 |
|  |                         | Contact mode                        | 4 kV                                   | EN 61000-6-2 |
|  | RF field                | conducted                           | 10 V/m, 26 MHz - 1 GHz                 | EN 61000-6-2 |
|  |                         | radiated                            | 10 V <sub>rms</sub> , 150 kHz - 30 MHz | EN 61000-6-2 |
|  | Transient               | burst                               | 4 kV (CM), Clamp                       | EN 61000-6-2 |
| surge  |                         | 1 kV (CM,DM), Rg = 42Ω              | EN 61000-6-2                           |              |
| Insulation resistance  | > 100 MΩ at 100 V d.c.  |                                     |  |              |
| Mains frequency test   | 500 V, 50 Hz            |                                     | SEN 361503                             |              |
| Vibration stability  | Sinusoidal              | 15.9 mm-pp, 5Hz-25Hz                | IEC 60068-2-6                          |              |
|  |                         | 20 g, 25 Hz - 2 kHz                 |  |              |
| Shock resistance   | Random                  | 7.5 g <sub>rms</sub> , 5 Hz - 1 kHz | IEC 60068-2-34, IEC 60068-2-36         |              |
|  | Shock                   | 500 g / 1 ms                        | IEC 60068-2-27                         |              |
| Enclosure (depending on electrical connection)                 | Free fall               |                                     | IEC 60068-2-32                         |              |
|  | see page 3              |                                     |  |              |

**Mechanical characteristics**

|   |                        |                               |
|---|------------------------|-------------------------------|
| Materials   | Wetted parts           | DIN 17440-1.4404 (AISI 316 L) |
|   | Enclosure              | DIN 17440-1.4404 (AISI 316 L) |
|   | Electrical connections | see page 3                    |
| Weight (depending on pressure connection and electrical connection) | 0.2-0.3 kg             |                               |

Electrical connections

| Type code, page 4  |   |  |   |   |  |
|--|---|--|---|---|--|
| 1  | 2   | 5  | 7   | 8   | 3  |
| DIN 43650, Pg 9<br>  | AMP Econoseal J series (male)<br>                   | IEC 947-5-2 M12x1<br>  | ISO 15170-A1-3.2-Sn (Bayonet plug)<br>                                    | AMP Superseal 1.5 series (male)<br>                 | 2 m screened cable<br>   |
| <i>Ambient temperature</i>   |   |  |   |   |  |
| -40 → + 85 °C  | -40 → + 85 °C                                       | -25 → +85 °C   | -40 → +85 °C  | -40 → +85 °C  | -30 → +85 °C   |
| <i>Enclosure</i>   |   |  |   |   |  |
| IP 65  | IP 67   | IP 67  | IP 67 / IP 69K  | IP 67   | IP67   |
| <i>Materials</i>   |   |  |   |   |  |
| Glass filled polyamid, PA 6.6  | Glass filled polyamid, PA 6.6 <sup>1)</sup>         | Nickel plated brass, CuZn/Ni   | Glass filled polyester, PBT   | Glass filled polyamid, PA 6.6 <sup>2)</sup>         | Polyolifin cable with PE shrinkage tubing  |
| <i>Electrical connection, 4-20 mA output (2 wire)</i>                                  |   |  |   |   |  |
| Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Not used<br>Earth: Connected to MBS housing | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Not used | Pin 1: +supply<br>Pin 2: Not used<br>Pin 3: Not used<br>Pin 4: ÷supply | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Ventilation<br>Pin 4: Not used | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Not used | Brown wire: +supply<br>Black wire: ÷supply<br>Red wire: Not used<br>Orange: Not used<br>Screen: Not connected to MBS housing |
| <i>Electrical connection, 0-5V, 1-5V, 1-6V, 0-10V output</i>                           |   |  |   |   |  |
| Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Output<br>Earth: Connected to MBS housing   | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Output   | Pin 1: +supply<br>Pin 2: not used<br>Pin 3: Output<br>Pin 4: ÷supply   | Pin 1: +supply<br>Pin 2: Output<br>Pin 3: Ventilation<br>Pin 4: ÷supply   | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Output   | Brown wire: Output<br>Black wire: ÷supply<br>Red wire: + supply<br>Orange: Not used<br>Screen: Not connected to MBS housing  |

<sup>1)</sup> Female plug: Glass filled polyester, PBT

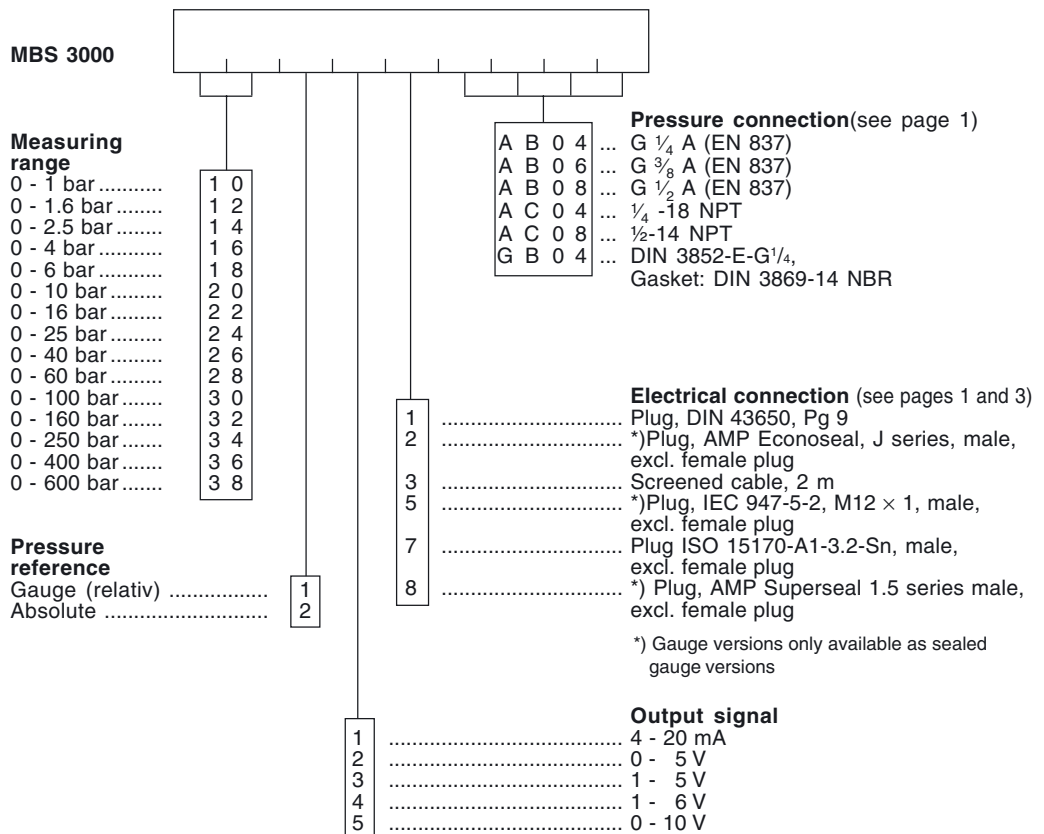
<sup>2)</sup> Wire: PETFE (teflon)

Protection sleeve: PBT mesh (polyester)

**Ordering of standard MBS 3000 with DIN 43650 plug Pg 9**

| Pressure connection | Pressure range Pe    | Type                 | Code no. |
|---------------------|----------------------|----------------------|----------|
| G 1/4 A<br>(EN 837) | 0 - 1 bar            | MBS 3000 1011-1 AB04 | 060G1113 |
|                     | 0 - 1.6 bar          | MBS 3000 1211-1 AB04 | 060G1429 |
|                     | 0 - 2.5 bar          | MBS 3000 1411-1 AB04 | 060G1122 |
|                     | 0 - 4 bar            | MBS 3000 1611-1 AB04 | 060G1123 |
|                     | 0 - 6 bar            | MBS 3000 1811-1 AB04 | 060G1124 |
|                     | 0 - 10 bar           | MBS 3000 2011-1 AB04 | 060G1125 |
|                     | 0 - 16 bar           | MBS 3000 2211-1 AB04 | 060G1133 |
|                     | 0 - 25 bar           | MBS 3000 2411-1 AB04 | 060G1430 |
|                     | 0 - 40 bar           | MBS 3000 2611-1 AB04 | 060G1105 |
|                     | 0 - 60 bar           | MBS 3000 2811-1 AB04 | 060G1106 |
|                     | 0 - 100 bar          | MBS 3000 3011-1 AB04 | 060G1107 |
|                     | 0 - 160 bar          | MBS 3000 3211-1 AB04 | 060G1112 |
|                     | 0 - 250 bar          | MBS 3000 3411-1 AB04 | 060G1111 |
|                     | 0 - 400 bar          | MBS 3000 3611-1 AB04 | 060G1109 |
| 0 - 600 bar         | MBS 3000 3811-1 AB04 | 060G1110             |          |

**Ordering of special versions**



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