

# BMP, -N, -R

Installation and operating instructions

GB D F I E P GR S FIN DK  
PL RU H SI HR YU RO CZ SK TR



## GB Declaration of Conformity

We **Grundfos** declare under our sole responsibility that the products **BMP**, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EC Member States relating to

- Machinery (98/37/EC).  
Standard used: EN ISO 12100.
- Electromagnetic compatibility (89/336/EEC).  
Standards used: EN 61000-6-2 and EN 61000-6-3.
- Electrical equipment designed for use within certain voltage limits (73/23/EEC) [95].  
Standards used: EN 60204-1, EN 60335-2-41: 1996 and EN 60034.

## F Déclaration de Conformité

Nous **Grundfos** déclarons sous notre seule responsabilité que les produits **BMP** auxquels se réfère cette déclaration sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives à

- Machines (98/37/CE).  
Standard utilisé: EN ISO 12100.
- Compatibilité électromagnétique (89/336/CEE).  
Standards utilisés: EN 61000-6-2 et EN 61000-6-3.
- Matériel électrique destiné à employer dans certaines limites de tension (73/23/CEE) [95].  
Standards utilisés: EN 60204-1, EN 60335-2-41: 1996 et EN 60034.

## E Declaración de Conformidad

Nosotros **Grundfos** declaramos bajo nuestra única responsabilidad que los productos **BMP** a los cuales se refiere esta declaración son conformes con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CE sobre

- Máquinas (98/37/CE).  
Norma aplicada: EN ISO 12100.
- Compatibilidad electromagnética (89/336/CEE).  
Normas aplicadas: EN 61000-6-2 y EN 61000-6-3.
- Material eléctrico destinado a utilizarse con determinadas límites de tensión (73/23/CEE) [95].  
Normas aplicadas: EN 60204-1, EN 60335-2-41: 1996 y EN 60034.

## GR Δήλωση Συμμόρφωσης

Εμείς η **Grundfos** δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα **BMP** συμμορφώνονται με την Οδηγία του Συμβουλίου επί της σύγκλισης των νόμων των Κρατών Μελών της Ευρωπαϊκής Ένωσης σε σχέση με τα

- Μηχανήματα (98/37/EC).  
Πρότυπο που χρησιμοποιήθηκε: EN ISO 12100.
- Ηλεκτρομαγνητική συμβατότητα (89/336/EEC).  
Πρότυπα που χρησιμοποιήθηκαν: EN 61000-6-2 και EN 61000-6-3.
- Ηλεκτρικές συσκευές σχεδιασμένες για χρήση εντός ορισμένων ορίων ηλεκτρικής τάσης (73/23/EEC) [95].  
Πρότυπα που χρησιμοποιήθηκαν: EN 60204-1, EN 60335-2-41: 1996 και EN 60034.

## FIN Vastaavuusvakuutus

Me **Grundfos** vakuutamme yksin vastuullisesti, että tuotteet **BMP**, jota tämä vakuutus koskee, noudattavat direktiivejä jotka käsittelevät EY:n jäsenvaltioiden koneellisia laitteita koskevien lakien yhdenmukaisuutta seur.:

- Koneet (98/37/EY).  
Käytetty standardi: EN ISO 12100.
- Elektromagneettinen vastaavuus (89/336/EY).  
Käytetyt standardit: EN 61000-6-2 ja EN 61000-6-3.
- Määrättyjen jänniterajoitusten puitteissa käytettävät sähköiset laitteet (73/23/EY) [95].  
Käytetyt standardit: EN 60204-1, EN 60335-2-41: 1996 ja EN 60034.

## PL Deklaracja zgodności

My, **Grundfos**, oświadczamy z pełną odpowiedzialnością, że nasze wyroby **BMP**, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednolicenia przepisów prawnych krajów członkowskich EG:

- maszyny (98/37/EG),  
zastosowana norma: EN ISO 12100.
- zgodność elektromagnetyczna (89/336/EWG),  
zastosowane normy: EN 61000-6-2 i EN 61000-6-3.
- wyposażenie elektryczne do stosowania w określonym zakresie napięcia (73/23/EWG) [95].  
zastosowane normy: EN 60204-1, EN 60335-2-41: 1996 i EN 60034.

## D Konformitätserklärung

Wir **Grundfos** erklären in alleiniger Verantwortung, dass die Produkte **BMP**, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedstaaten übereinstimmen:

- Maschinen (98/37/EG).  
Norm, die verwendet wurde: EN ISO 12100.
- Elektromagnetische Verträglichkeit (89/336/EWG).  
Normen, die verwendet wurden: EN 61000-6-2 und EN 61000-6-3.
- Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (73/23/EWG) [95].  
Normen, die verwendet wurden: EN 60204-1, EN 60335-2-41: 1996 und EN 60034.

## I Dichiarazione di Conformità

Noi **Grundfos** dichiariamo sotto la nostra esclusiva responsabilità che i prodotti **BMP** ai quali questa dichiarazione se riferisce sono conformi alle Direttive del Consiglio concernente il ravvicinamento delle legislazioni degli Stati membri CE relative a

- Macchine (98/37/CE).  
Standard usato: EN ISO 12100.
- Compatibilità elettromagnetica (89/336/CEE).  
Standard usati: EN 61000-6-2 e EN 61000-6-3.
- Materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione (73/23/CEE) [95].  
Standard usati: EN 60204-1, EN 60335-2-41: 1996 e EN 60034.

## P Declaração de Conformidade

Nós **Grundfos** declaramos sob nossa única responsabilidade que os produtos **BMP** aos quais se refere esta declaração estão em conformidade com as Directivas do Conselho das Comunidades Europeias relativas à aproximação das legislações dos Estados Membros respeitantes à

- Máquinas (98/37/CE).  
Norma utilizada: EN ISO 12100.
- Compatibilidade electromagnética (89/336/CEE).  
Normas utilizadas: EN 61000-6-2 e EN 61000-6-3.
- Material eléctrico destinado a ser utilizado dentro de certos limites de tensão (73/23/CEE) [95].  
Normas utilizadas: EN 60204-1, EN 60335-2-41: 1996 e EN 60034.

## S Försäkran om överensstämmelse

Vi **Grundfos** försäkrar under ansvar, att produkterna **BMP**, som omfattas av denna försäkran, är i överensstämmelse med Rådets Direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende

- Maskinell utrustning (98/37/EC).  
Använd standard: EN ISO 12100.
- Elektromagnetisk kompatibilitet (89/336/EC).  
Använda standarder: EN 61000-6-2 och EN 61000-6-3.
- Elektrisk material avsedd för användning inom vissa spänningsgränser (73/23/EC) [95].  
Använda standarder: EN 60204-1, EN 60335-2-41: 1996 och EN 60034.

## DK Overensstemmelseserklæring

Vi **Grundfos** erklærer under ansvar, at produkterne **BMP**, som denne erklæring omhandler, er i overensstemmelse med Rådets direktiver om indbyrdes tilnærmelse til EF medlemsstaternes lovgivning om

- Maskiner (98/37/EF).  
Anvendt standard: EN ISO 12100.
- Elektromagnetisk kompatibilitet (89/336/EØF).  
Anvendte standarder: EN 61000-6-2 og EN 61000-6-3.
- Elektrisk materiel bestemt til anvendelse inden for visse spændingsgrænser (73/23/EØF) [95].  
Anvendte standarder: EN 60204-1, EN 60335-2-41: 1996 og EN 60034.

## RU Свидетельство о соответствии требованиям

Мы, фирма **Grundfos**, со всей ответственностью заявляем, что изделия **BMP**, к которым и относится данное свидетельство, отвечают требованиям следующих указаний Совета ЕС об унификации законодательных предписаний стран-членов ЕС:

- Машиностроение (98/37/ЕС).  
Применявшиеся стандарты: Евростандарт EN ISO 12100.
- Электромагнитная совместимость (89/336/ЕЭС).  
Применявшиеся стандарты: Евростандарт EN 61000-6-2 и EN 61000-6-3.
- Электрические машины для эксплуатации в пределах определенного диапазона значений напряжения (73/23/ЕЭС) [95].  
Применявшиеся стандарты: Евростандарт EN 60204-1, EN 60335-2-41: 1996 и EN 60034.

## **H** Konformitási nyilatkozat

Mi, a **Grundfos**, egyedüli felelősséggel kijelentjük, hogy az **BMP** termékek, amelyekre jelen nyilatkozat vonatkozik, megfelelnek az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi irányelveinek:

- Gépek (98/37/EK).  
Alkalmazott szabvány: EN ISO 12100.
- Elektromágneses összeférhetőség (89/336/EGK).  
Alkalmazott szabványok: EN 61000-6-2 és EN 61000-6-3.
- Meghatározott feszültség határokon belül használt elektromos eszközök (73/23/EGK) [95].  
Alkalmazott szabványok: EN 60204-1, EN 60335-2-41: 1996 és EN 60034.

## **HR** Izjava o usklađenosti

Mi, **Grundfos**, izjavljujemo uz punu odgovornost, da su proizvodi **BMP**, na koje se ova izjava odnosi, sukladni smjernicama Savjeta za prilagodbu propisa država-članica EZ:

- Strojevi (98/37/EZ).  
Korištena norma: EN ISO 12100.
- Elektromagnetska kompatibilnost (89/336/EEZ).  
Korištene norme: EN 61000-6-2 i EN 61000-6-3.
- Električni pogonski uređaji za korištenje unutar određenih granica napona (73/23/EEZ) [95].  
Korištene norme: EN 60204-1, EN 60335-2-41: 1996 i EN 60034.

## **RO** Declarație de conformitate

Noi, **Grundfos**, declarăm asumându-ne întreaga responsabilitate că produsele **BMP** la care se referă această declarație sunt în conformitate cu Directivele Consiliului în ceea ce privește alinierea legislațiilor Statelor Membre ale CE, referitoare la:

- Utilaje (98/37/CE).  
Standard aplicat: EN ISO 12100.
- Compatibilitate electromagnetică (89/336/CEE).  
Standarde aplicate: EN 61000-6-2 și EN 61000-6-3.
- Echipamente electrice destinate utilizării între limite exacte de tensiune (73/23/CEE) [95].  
Standarde aplicate: EN 60204-1, EN 60335-2-41: 1996 și EN 60034.

## **SK** Prehlásenie o konformite

My firma **Grundfos**, na svoju plnú zodpovednosť prehlasujeme, že výrobky **BMP**, na ktoré sa toto prehlásenie vzťahuje, sú v súlade s nasledovnými smernicami Rady pro zblíženie právnych predpisov členských zemí Európskej únie:

- Stroje (98/37/EG).  
Použitá norma: EN ISO 12100.
- Elektromagnetická kompatibilita (89/336/EWG).  
Použité normy: EN 61000-6-2 a EN 61000-6-3.
- Elektrické prevádzkové prostriedky, použité v určitom napäťovom rozsahu (73/23/EWG) [95].  
Použité normy: EN 60204-1, EN 60335-2-41: 1996 a EN 60034.

## **SI** Izjava o ustreznosti

Mi, **Grundfos**, pod polno odgovornostjo izjavljamo, da so izdelki **BMP**, na katere se ta izjava nanaša, v skladu z naslednjimi smernicami Sveta za uskladitev pravnih predpisov držav članic Evropske skupnosti:

- Stroji (98/37/EG).  
Uporabljena norma: EN ISO 12100.
- Elektromagnetna kompatibilnost (89/336/EWG).  
Uporabljene norme: EN 61000-6-2 in EN 61000-6-3.
- Električna pogonska sredstva za uporabo v določenih napetostnih mejah (73/23/EWG) [95].  
Uporabljene norme: EN 60204-1, EN 60335-2-41: 1996 in EN 60034.

## **YU** Izjava o konformitetu

Mi, **Grundfos**, izjavljujemo pod potpunom odgovornošću da su proizvodi **BMP** na koje se odnosi ova izjava u saglasnosti sa smernicama i uputstvima Saveta za usaglašavanje pravnih propisa članica Evropske unije:

- mašine (98/37/EG),  
korišćen standard: EN ISO 12100.
- elektromagnetna usaglašenost (89/336/EWG),  
korišćeni standardi: EN 61000-6-2 i EN 61000-6-3.
- električna oprema razvijena za korišćenje unutar određenih naponskih granica (73/23/EWG) [95],  
korišćeni standardi: EN 60204-1, EN 60335-2-41: 1996 i EN 60034.

## **CZ** Prohlášení o konformitě

My firma **Grundfos** prohlašujeme na svou plnou odpovědnost, že výrobky **BMP** na něž se toto prohlášení vztahuje, jsou v souladu s ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství v oblastech:

- strojírenství (98/37/EG),  
použitá norma: EN ISO 12100.
- elektromagnetická kompatibilita (89/336/EWG),  
použité normy: EN 61000-6-2 a EN 61000-6-3.
- provozování spotřebičů v toleranci napětí (73/23/EWG) [95],  
použité normy: EN 60204-1, EN 60335-2-41: 1996 a EN 60034.

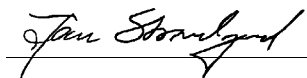
## **TR** Uygunluk Bildirgesi

Biz **Grundfos** olarak, bu beyanda belirtilen **BMP** ürünlerinin,

- Makina (98/37/EC).  
Kullanılan standart: EN ISO 12100.
- Elektromanyetik uyumluluk (89/336/EEC).  
Kullanılan standartlar: EN 61000-6-2 ve EN 61000-6-3.
- Belli voltaj sınırlarında kullanılmak üzere üretilmiş elektrik donanımı (73/23/EEC) [95].  
Kullanılan standartlar: EN 60204-1, EN 60335-2-41: 1996 ve EN 60034.

ile ilgili olarak Avrupa topluluğu'na Üye Devletlerin yasalarında yer alan Belediye Yönetmeliklerine uygun olduğunu, tüm sorumluluğu bize ait olmak üzere beyan ederiz.

Bjerringbro, 1st January 2006



Jan Strandgaard  
Technical Director



# BMP, -N, -R

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Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

### 1. General description

Grundfos BMP pumps are piston pumps, i.e. the flow is proportional to the motor speed. The pressure is equal to the counter pressure. Consequently, it is important that the maximum pump pressure is not exceeded.

BMP pumps are supplied from the factory in boxes in which they should remain until they are to be installed. The pumps are ready for installation.

#### 1.1 Handling

The motor lifting eyes must always be used for lifting the entire pump.

**Note:** The pump may not be in balance.

### 2. Applications

#### 2.1 Pumped liquids

Thin, non-explosive liquids, not containing solid particles or fibres. The liquid must not attack the pump materials chemically. In case of doubt, please contact Grundfos.



The pump must not be used for the pumping of inflammable liquids such as diesel oil, petrol or similar liquids.

The pump must never operate with water/liquid containing substances which would remove the surface tension, e.g. soap. If this type of detergent is used for cleaning the system, the water/liquid must be led around the pump via a bypass.

Pump type	Recommended pumped liquids
BMP	<ul style="list-style-type: none"> <li>Raw water</li> <li>potable water</li> <li>groundwater</li> <li>surface water (lakes and rivers).</li> </ul>
	<ul style="list-style-type: none"> <li>Softened water (cation exchange)</li> <li>demineralised water (demineralised/de-ionised water)</li> </ul>
BMP-N	<ul style="list-style-type: none"> <li>water processed according to the reverse osmosis principle (RO water).</li> </ul> <p>If coolants such as HFA, HFC, etc. are to be pumped, please contact Grundfos.</p>
	<ul style="list-style-type: none"> <li>Brackish water</li> </ul>
BMP-R	<ul style="list-style-type: none"> <li>sea water</li> <li>brine</li> <li>water containing various chemicals.</li> </ul>



**Note:** The liquid to be pumped must be prefiltered to maximum 10 microns (abs.  $\beta_{10} > 5000$ ).

### 3. Preparation

Before installation, the following checks should be made:

- Transport damages**  
Make sure that the pump has not been damaged during transportation.
- Pump type**  
Check that the type designation corresponds to order, see pump nameplate.
- Electricity supply**  
Check that the supply voltage and frequency correspond to the values stated on the motor nameplate and frequency converter nameplate, if any.

### 4. Technical data

See motor and pump nameplates.

#### 4.1 Sound pressure level

The table below indicates the sound pressure level in dB(A) measured in a reverberation room at a distance of 1 metre from the pump. The anechoic noise level is calculated by subtracting 3 dB(A) from the stated values.

Sound pressure level in dB(A) at 140 bar*, 50 Hz					
<b>BMP 0.2</b>	72.4	<b>BMP 0.3 N</b>	72.3	<b>BMP 0.6 R</b>	72.4
<b>BMP 0.4</b>	72.6	<b>BMP 0.6 N</b>	72.4	<b>BMP 1.0 R</b>	72.6
<b>BMP 0.6</b>	72.8	<b>BMP 1.0 N</b>	72.8	<b>BMP 1.8 R</b>	71.7
<b>BMP 1.0</b>	71.3	<b>BMP 1.7 N</b>	72.0	<b>BMP 2.2 R</b>	71.7
<b>BMP 1.2</b>	71.3	<b>BMP 2.1 N</b>	72.0	<b>BMP 5.1 R</b>	78.0
<b>BMP 2.5</b>	71.4	<b>BMP 3.4 N</b>	71.4	<b>BMP 6.5 R</b>	78.0
<b>BMP 3.2</b>	72.4	<b>BMP 4.4 N</b>	72.4	<b>BMP 7.2 R</b>	78.0
<b>BMP 6.2</b>	78.3	<b>BMP 6.2 N</b>	78.3	<b>BMP 8.2 R</b>	78.0
<b>BMP 7.0</b>	78.3	<b>BMP 7.0 N</b>	78.3	<b>BMP 10.2 R</b>	78.0
<b>BMP 8.0</b>	78.3	<b>BMP 8.0 N</b>	78.3		

\* For maximum discharge pressure, see pump nameplate.

#### 4.2 Liquid temperature

3°C to 50°C (37.4°F to 122°F) at maximum discharge pressure.

#### 4.3 Ambient temperature

0°C to 50°C (32°F to 122°F).

## 5. Installation

The BMP pump can be used in both closed and open systems.

- The suction port is marked with an "I".
- The discharge port is marked with an "O".

### 5.1 Position of pump

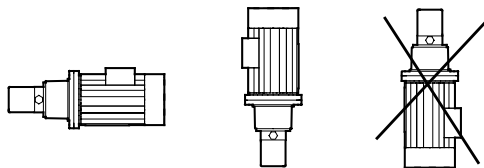


Fig. 1 Position of pump

The pump must be installed on a solid foundation by means of the bolt holes in the foot-mounted motor. It is recommended to use vibration-absorbing machine feet.

Dimensional sketches and dimensions, see pages 127 and 128.

### 5.2 Installation examples

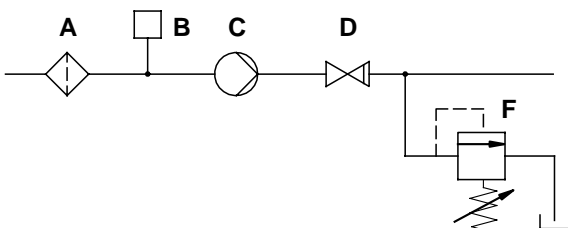


Fig. 2 System with one BMP pump

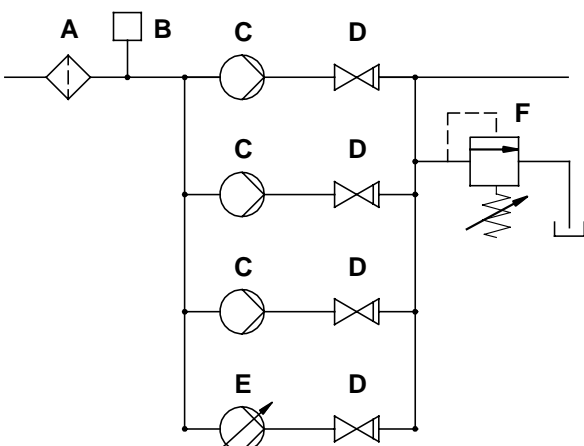


Fig. 3 System with three BMP pumps and one frequency-converter controlled BMPE pump

#### Key to the symbols in figures 2 and 3:

Pos.	Description
A	Prefilter, maximum 10 microns (abs. $\beta_{10} > 5000$ )
B	Low-pressure switch
C	BMP pump
D	Non-return valve
E	Frequency-converter controlled BMPE pump
F	Pressure relief valve (adjustable)

## 6. Pipe connection

The BMP pump has a threaded connection on the suction and discharge sides of the pump, see pages 127 and 128.

**Note:** BMP-R pumps with flows ranging from 5.1 to 10.2 m<sup>3</sup>/h are fitted with clamp liners for Victaulic/PJE clamp couplings on the suction and discharge sides.

**Note:** It is recommended to use flexible high-pressure hoses.

If the suction pipe connected to the pump suction port (I) is disconnected from the water supply, the pump will be emptied of water. When the pump is to be started again, the starting procedure in section 9. must be followed carefully.

## 7. Operating conditions

### 7.1 Inlet pressure

0 to 4 bar (1 bar abs. to 5 bar abs.).

It is recommended to install a low-pressure switch after the prefilter. The low-pressure switch must switch off the electricity supply to the pump if the inlet pressure falls outside the range from 0 to 4 bar.

### 7.2 Discharge pressure



To avoid any damage to the system, a pressure relief valve **must** be fitted on the discharge side. The pressure relief valve setting must not exceed the maximum permissible discharge pressure by more than 5%, see pump nameplate.

## 8. Electrical connection

The electrical connection must be carried out by a qualified electrician in accordance with local regulations.

Before removing the terminal box cover and before any removal/dismantling of the pump, make sure that the electricity supply has been switched off.



The pump must be connected to an external mains switch with a minimum contact gap of 3 mm in all poles.

The operating voltage and frequency are marked on the motor nameplate. Make sure that the motor is suitable for the electricity supply on which it will be used.

The motor must be connected to a motor starter.

Carry out the electrical connection as shown in the diagram inside the terminal box cover.

### 8.1 Frequency converter operation

#### Motors supplied by Grundfos:

All three-phase motors supplied by Grundfos can be connected to a frequency converter. The frequency converter must be set to operation with a constant torque.

Dependent on the frequency converter type, this may cause increased acoustic noise from the motor. Furthermore, it may also cause the motor to be exposed to detrimental voltage peaks.

**Note:** Grundfos motors type MG 90 (1.5 kW, 2-pole), for supply voltages up to and including 440 V (see motor nameplate), must be protected against voltage peaks higher than 650 V (peak value) between the supply terminals.

It is recommended to protect all other motors against voltage peaks higher than 850 V.

The above disturbances, i.e. both increased acoustic noise and detrimental voltage peaks, can be eliminated by fitting an LC filter between the frequency converter and the motor.

For further details, please contact your frequency converter or motor supplier.

## 8.2 Motor protection

The pump must be connected to an effective motor starter which must protect the motor against damage from voltage drop, phase failure, overload and a locked rotor.

### 8.2.1 Setting of motor starter

For cold motors, the tripping time for the motor starter must be less than 10 seconds at 5 times the rated full-load current of the motor.

To ensure the best protection of the motor, the setting of the motor starter should be carried out as follows:

1. Set the starter overload to the rated full-load current ( $I_N$ ) of the motor.
2. Start the pump and let it run for half an hour at normal performance.
3. Slowly grade down the scale indicator until the motor starter trips out.
4. Increase the overload setting by 5%, but not higher than the full-load current ( $I_N$ ).

For motors wound for star-delta starting, the starter overload unit should be set as described above, but the maximum setting must not exceed the following:

Starter overload setting = Rated full-load current ( $I_N$ ) x 0.58.

In the case of frequency converter operation, follow the manufacturer's instructions.

## 8.3 Generator operation

In the case of generator operation, contact Grundfos.

## 9. Start-up

Before the pump is installed in the piping system, this should be flushed through with clean water to remove possible impurities from pipes, hoses, etc.

1. **Venting:** Before starting the pump, slacken the vent plugs "A", see fig. 4. When the water starts running out of the holes, the pump has been filled with water. Retighten the plugs.
2. **Direction of rotation:** Start the pump (for 1 sec. only) and check the direction of rotation. The correct direction of rotation is stated on the pump nameplate. If necessary, interchange any two of the incoming supply wires.  
**Note:** The pump must not run dry.
3. **Water supply:** When the suction pipe has been connected to the water supply or tank, start the pump with an open discharge port (O).
4. **Prefilter:** It is recommended to replace the filter element after 1 to 10 hours of operation after the first start-up.

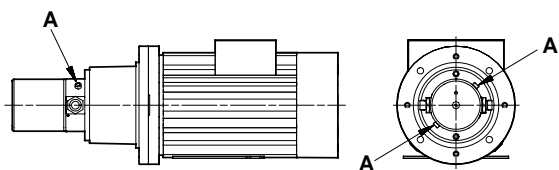


Fig. 4 Vent plugs

TM02 9336 2402

## 10. Operation

During operation the pump must always be connected to the water supply.

**Note:** Dry running will damage the pump.

### 10.1 Operation settings

The flow and discharge pressure of the pump should always be kept within the ranges for which the system was originally designed.

If the system requires flows and pressures outside the design range, please contact Grundfos.

## 11. Checking of operation

Check the following at suitable intervals:

- Flow and pressure.
- Current consumption.
- Pressure drop over the prefilter.  
Replace the filter element when "clogged filter" is indicated.
- Whether the motor ball bearings are worn.
- Whether the shaft seal is leaky.  
The shaft seal is lubricated by the pumped liquid. Small quantities of liquid are therefore drained via the drain hole in the coupling housing.
- Whether the noise level has changed.

It is recommended to write the operating data in the log book supplied with the pump. The data can be useful for maintenance purpose.

## 12. Maintenance

The BMP pump requires no periodic maintenance.

It is recommended to inspect the pump once a year.

## 13. Motor bearings

Under optimum operating conditions, the operating life of the motor ball bearings is approx. 20,000 operating hours. After that period, the bearings must be replaced. The new bearings must be filled with grease.

Grease type, see motor nameplate.

## 14. Automatic monitoring devices

### 14.1 Level switch

Systems supplied from a water tank must be fitted with a level switch which switches off the electricity supply to the pump if the water level gets too low.

### 14.2 Thermal sensor

It is recommended to install a thermal sensor which switches off the electricity supply to the pump if the water temperature exceeds 50°C (122°F).

## 15. Periods of inactivity

In the case of periods of inactivity exceeding

- 1 month for BMP and BMP-N and
- 6 hours for BMP-R,

it is important to flush the system through with clean fresh water.

**Note:** Fill the pump with Grundfos motor liquid, type SML-2, in periods of inactivity exceeding 1 month.

### 15.1 Flushing of pump

Disconnect the suction pipe from the water supply. The pump will be emptied through the suction pipe.

When the pump is to be started again, the venting procedure in section 9. *Start-up* must be followed carefully.

The pump must run during the flushing procedure.

Flushing can for instance be effected through small quick-couplings or gate valves (not supplied with the pump) fitted either side of the pump.

Flush the pump for at least 2 minutes.

### 15.2 Transport and storage

**Note:** During transportation and storage, the BMP pump must never be preserved with liquids which are aggressive to the pump materials.

In periods of inactivity exceeding one month, fill the pump with Grundfos motor liquid, type SML-2, to prevent corrosion. This liquid is frost-proof down to -20°C.

**Note:** Never just drain the pump!

For further information on anti-freeze liquids, please contact Grundfos.



### 15.3 Frost protection

Recommended procedure:

1. Disconnect the water supply to the pump/system.
2. Drain the pump by removing the lower drain plug. Fit and tighten the plug when the pump has been drained of liquid.
3. Connect the suction port (I) to a container with anti-freeze liquid. Connect one end of a hose to the discharge port (O) and the other to the container.
4. Briefly start and stop the pump.  
**Note:** The pump must not run dry.
5. Drain the pump of anti-freeze liquid by removing the lower drain plug. Fit and tighten the plug.

The pump is now protected against internal corrosion and frost.

#### Storage temperature:

–20°C to 70°C (–4°F to 158°F) (factory-filled with anti-freeze liquid).

### 17. Fault finding chart



Before starting work on the pump, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

Fault	Possible cause	Remedy
1. The pump stops during operation.	a) No water supply. The low-pressure switch has cut out. The level switch has cut out.	Check that the low-pressure switch functions normally and is adjusted correctly. Check that the minimum inlet pressure is correct. If not, check the feed pump. Check the water level in the water tank.
	b) The fuses are blown.	Check and replace the main fuses and/or fuses for control circuit, if necessary.
	c) The motor starter overload unit has tripped out.	Reset the starter overload, see also sections 8.2 <i>Motor protection</i> and 9. <i>Start-up</i> .
	d) The magnetic coil in the motor starter/contactors is defective (not cutting in).	Replace the coil. Check the coil voltage.
	e) The control circuit has cut out or is defective.	Check the control circuit and the contacts in the monitoring devices (low-pressure switch, level switch, etc.).
	f) The motor/supply cable is defective.	Check motor and cable, see section 8. <i>Electrical connection</i> .
2. The pump runs, but gives no water or develops any pressure.	a) No or insufficient water supply at the pump suction port.	Check that the inlet pressure during operation is at least 0 bar, see section 7.1 <i>Inlet pressure</i> . Restart the pump as described in section 9. <i>Start-up</i> .
	b) The piping system or pump is choked up.	Check the piping system and pump.
	c) The prefilter is clogged.	Clean the prefilter.
	d) The pump is worn.	Replace the wear parts. Contact Grundfos Service.
	e) Wrong direction of rotation.	See section 9. <i>Start-up</i> .
3. The pump runs at reduced capacity.	a) The pump is partly blocked by impurities.	Dismantle, clean and check the pump. Replace defective parts. Contact Grundfos Service.
	b) The pump is defective.	Replace defective parts. Contact Grundfos Service.
	c) The prefilter is clogged.	Clean the prefilter.
	d) The motor speed is too low.	Check the electricity supply. Contact the electricity supply authorities, if necessary. If a frequency converter is used, adjust the speed.

### 16. Service

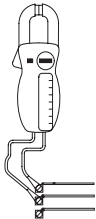
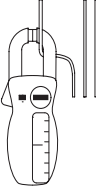
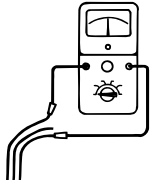
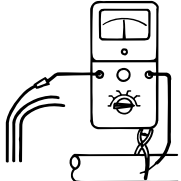
**Note:** If a pump has been used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.

If Grundfos is requested to service the pump, Grundfos must be contacted with details about the pumped liquid, etc. *before* the pump is returned for service. Otherwise Grundfos can refuse to accept the pump for service.

Possible costs of returning the pump are paid by the customer.

However, any application for service (no matter to whom it may be made) must include details about the pumped liquid if the pump has been used for liquids which are injurious to health or toxic.

## 18. Checking of motor and cable

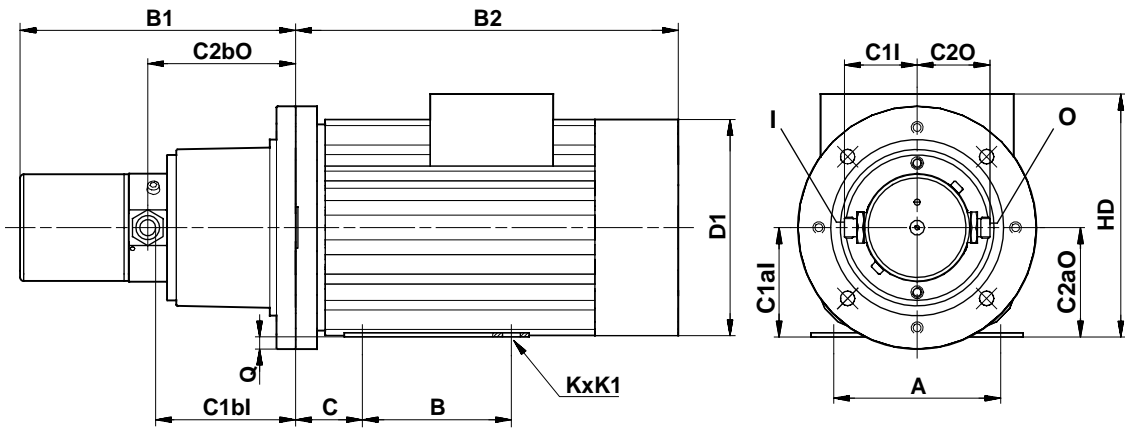
<p>1. Supply voltage</p>  <p style="text-align: right; font-size: small;">TM00 1371 3597</p>	<p>Measure the voltage between the phases by means of a voltmeter. Connect the voltmeter to the terminals at the mains connection.</p>	<p>The voltage should, <b>when the motor is loaded</b>, be within <math>\pm 5\%</math> of the rated voltage. The motor may burn if there are larger variations in voltage. If the voltage is constantly too high or too low, the motor must be replaced by one corresponding to the supply voltage. Large variations in voltage indicate poor electricity supply, and the pump should be stopped until the defect has been found. Resetting of the motor starter may be necessary.</p>
<p>2. Current consumption</p>  <p style="text-align: right; font-size: small;">TM00 1372 3597</p>	<p>Measure the current of each phase while the pump is operating at a constant discharge pressure (if possible at the capacity where the motor is most heavily loaded). The motor full-load current appears on the motor nameplate.</p>	<p>The difference between the current of the phase with the highest amp consumption and the one with the lowest amp consumption must not exceed 10% of the lowest amp consumption. If so, or if the current exceeds the full-load current, check the following possible faults:</p> <ul style="list-style-type: none"> <li>• Too high operating pressure which may overload the motor.</li> <li>• Too high speed which may overload the motor.</li> <li>• Damaged pump which may overload the motor.</li> <li>• The motor windings are short-circuited or partly disjointed.</li> <li>• Too high or too low supply voltage.</li> <li>• Poor connection in leads. Weak cables.</li> </ul>
<p>Points 3 and 4: Measurement not needed if supply voltage and current consumption are normal.</p>		
<p>3. Winding resistance</p>  <p style="text-align: right; font-size: small;">TM00 1373 3597</p>	<p>Disconnect the phase leads in the terminal box. Measure the winding resistance as shown on the drawing.</p>	<p>The highest value must not exceed the lowest value by more than 5%. If the deviation is higher, and the supply cable is OK, the motor should be overhauled.</p>
<p>4. Insulation resistance</p>  <p style="text-align: right; font-size: small;">TM00 1374 3597</p>	<p>Disconnect the phase leads in the terminal box. Measure the insulation resistance from each phase to earth (frame). (Make sure that the earth connection is made carefully.)</p>	<p>The insulation resistance for a new, cleaned or repaired motor must be approx. 10 M<math>\Omega</math> measured to earth. For a given motor the critical insulation resistance (<math>R_{crit}</math>) can be calculated as follows: <math>R_{crit} = U_N \text{ [kV]} \times 0.5 \text{ [M}\Omega\text{/kV]}</math>. If the measured insulation resistance is lower than <math>R_{crit}</math>, the motor must be overhauled.</p>

## 19. Disposal

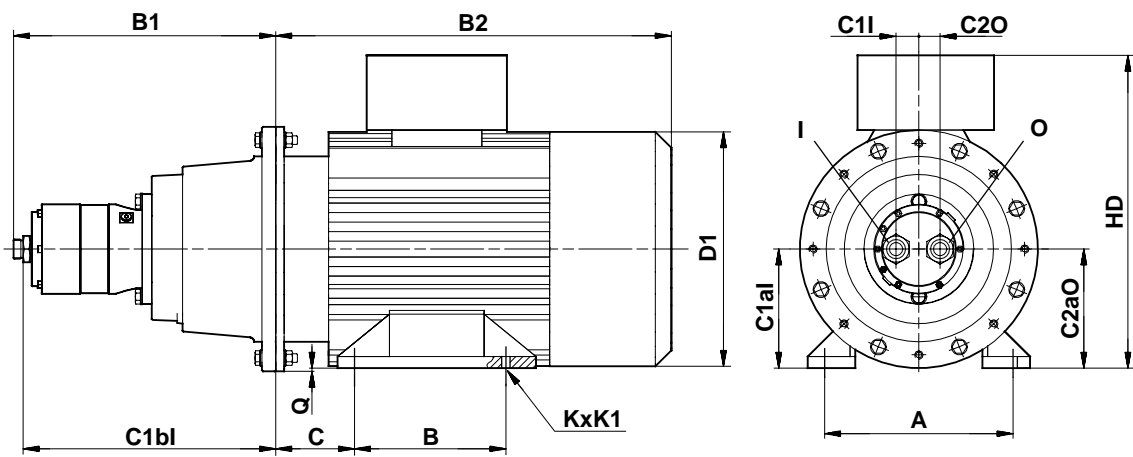
This product or parts of it must be disposed of in an environmentally sound way.

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

# Dimensional sketches



TM02 9103 1804



TM02 9209 2204

## Dimensions

Pump type	Dimensions [mm]															K x K1	I	O
	B1	B2	B1 + B2	C1I	C2O	C1aI	C2aO	C1bI	C2bO	D1	HD	A	B	C	Q			
BMP 0.2	230	281	511	55	56	73	110	122	128	180	238	140	125	56	10	ø8x15	GE 12	GE 12
BMP 0.4	230	335	565	55	56	83	120	122	128	196	255	160	140	63	25	ø10x17	GE 12	GE 12
BMP 0.6	250	372	622	55	56	95	132	142	148	225	283	190	140	70	13	ø10x19	GE 12	GE 12
BMP 1.0	304	391	695	64	65	114	153	169	172	276	330	216	178	89	18	ø10x14	GE 12	GE 12
BMP 1.2	304	391	695	64	65	114	153	169	172	276	330	216	178	89	18	ø10x14	GE 12	GE 12
BMP 2.5	419	547	966	29	32	160	160	402	402	335	410	254	254	108	15	ø12x14	GE 25	GE 25
BMP 3.2	435	602	1037	29	32	180	180	418	418	366	465	279	241	121	0	ø12x18	GE 25	GE 25
BMP 6.2	502	748	1250	40	43	225	225	488	485	463	585	256	286	149	0	ø16x16	GE 25	GE 25
BMP 7.0	502	748	1250	40	43	225	225	488	485	463	585	256	311	149	0	ø16x16	GE 25	GE 25
BMP 8.0	502	748	1250	40	43	225	225	488	485	463	585	256	311	149	0	ø16x16	GE 25	GE 25

Pump type	Dimensions [mm]															K x K1	I	O
	B1	B2	B1 + B2	C1I	C2O	C1aI	C2aO	C1bI	C2bO	D1	HD	A	B	C	Q			
BMP 0.3 N	230	281	511	55	56	73	110	122	128	180	238	140	100	56	10	ø8x15	GE 12	GE 12
BMP 0.6 N	250	281	531	55	56	73	110	142	148	180	238	140	125	56	10	ø8x15	GE 12	GE 12
BMP 1.0 N	250	372	622	55	56	95	132	142	148	225	283	190	140	70	13	ø10x19	GE 12	GE 12
BMP 1.7 N	364	503	867	64	65	142	181	229	232	335	410	254	210	108	15	ø12x14	GE 12	GE 12
BMP 2.1 N	364	503	867	64	65	142	181	229	232	335	410	254	210	108	15	ø12x14	GE 12	GE 12
BMP 3.4 N	398	547	945	29	32	160	160	381	381	335	410	254	254	108	15	ø12x14	GE 25	GE 25
BMP 4.4 N	414	602	1016	29	32	180	180	397	381	366	465	279	279	121	0	ø12x18	GE 25	GE 25
BMP 6.2 N	502	748	1250	40	43	225	225	488	485	463	585	356	286	149	0	ø16x16	GE 25	GE 25
BMP 7.0 N	502	748	1250	40	43	225	225	488	485	463	585	356	286	149	0	ø16x16	GE 25	GE 25
BMP 8.0 N	502	748	1250	40	43	225	225	488	485	463	585	356	311	149	0	ø16x16	GE 25	GE 25

Pump type	Dimensions [mm]															K x K1	I	O
	B1	B2	B1 + B2	C1I	C2O	C1aI	C2O	C1bI	C2bO	D1	HD	A	B	C	Q			
BMP 0.6 R	230	281	511	55	55	90	90	116	116	180	238	140	125	56	10	ø8x15	GE 12	GE 12
BMP 1.0 R	250	335	585	55	55	100	100	146	146	196	255	160	140	63	25	ø10x17	GE 12	GE 12
BMP 1.8 R	306	391	697	64	64	132	132	163	165	276	330	216	140	89	18	ø10x14	GE 12	GE 12
BMP 2.2 R	306	391	697	64	64	132	132	163	165	276	330	216	140	89	18	ø10x14	GE 12	GE 12
BMP 5.1 R	497 <sup>a</sup>	547	1044 <sup>a</sup>	42 <sup>a</sup>	43 <sup>a</sup>	160	-	-	-	335	410	254	254	108	15	ø12x14	1½" PJE	1½" PJE
BMP 6.5 R	497 <sup>a</sup>	602	1099 <sup>a</sup>	42 <sup>a</sup>	43 <sup>a</sup>	180	-	-	-	366	465	279	241	121	0	ø12x18	1½" PJE	1½" PJE
BMP 7.2 R	497 <sup>a</sup>	602	1099 <sup>a</sup>	42 <sup>a</sup>	43 <sup>a</sup>	180	-	-	-	366	465	279	279	121	0	ø12x18	1½" PJE	1½" PJE
BMP 8.2 R	497 <sup>a</sup>	602	1099 <sup>a</sup>	42 <sup>a</sup>	43 <sup>a</sup>	180	-	-	-	366	465	279	279	121	0	ø12x18	1½" PJE	1½" PJE
BMP 10.2 R	497 <sup>a</sup>	669	1166 <sup>a</sup>	42 <sup>a</sup>	43 <sup>a</sup>	200	-	-	-	405	541	318	305	133	0	ø16x16	1½" PJE	1½" PJE

a. Victaulic/PJE

# LOG BOOK

<b>Product No.:</b>	<b>Installation date:</b>	<b>Company/your ref.:</b>
		<b>Country:</b>
<b>Type:</b>	<b>Start of operation:</b>	<b>City:</b>
		<b>VFD/Softstart: Brand:</b>

Date	Amb. temp.	Liquid temp.	Inlet pressure	Discharge pressure	Flow	Current [A]	Voltage [V]	Comments



**System sketch**





L-BMP-IO-01 05/06 (US)  
Subject to alterations

<b>96552823</b> 0406	<b>220</b>
Repl. 96552823 0704	