BMS

BMS hs, BMS xl, BMS hp, BMSX

Installation and operating instructions

BMS
Installation and operating instructions
Other languages
http://net.grundfos.com/qr/i/98567337

CRE, CRIE, CRNE, SPKE, MTRE, CME, BMS
Installation and operating instructions
Other languages
http://net.grundfos.com/qr/i/92898118

CRE, CRIE, CRNE, SPKE, MTRE, CME, BMS
Safety instructions
Other languages
http://net.grundfos.com/qr/i/92898130

GRUNDFOS

BMS

Original installation and operating instructions

Table of contents

1. General information

Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1.1 Related instructions

The below document is a supplement to the BMS installation and operating instructions. Further information in connection with MGE motors are available.

CRE, CRIE, CRNE, SPKE, MTRE, CME, BMS E-pumps with Model J, K motor

Publication number: 92898130

http://net.grundfos.com/qr/i/92898130

Publication number: 92898118

http://net.grundfos.com/qr/i/92898118

1.2 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:

SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.3 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.

Observe these instructions for explosion-proof products.

A blue or grey circle with a white graphical symbol indicates that an action must be taken.

A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

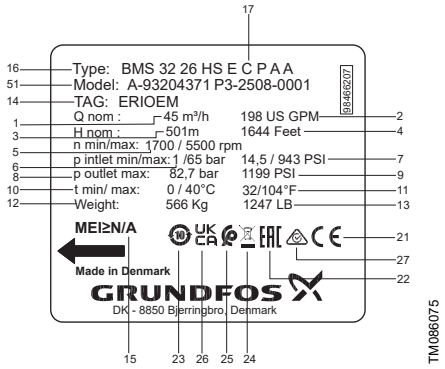
If these instructions are not observed, it may result in malfunction or damage to the equipment.

Tips and advice that make the work easier.

2. Product introduction

Grundfos BMS and BMSX booster systems are designed for high-pressure boosting, filtration and desalination of seawater or brackish water in the so-called SWRO systems (SWRO = Sea Water Reverse Osmosis). The design of the systems ensures a high energy recovery.

2.1 Nameplate



Nameplate

Pos.	Description
1	Rated flow rate (m^3/h)
2	Rated flow rate (US GPM)
3	Rated head (m)
4	Rated head (ft)
5	Rated speed
6	Minimum and maximum inlet pressure (bar)
7	Minimum and maximum inlet pressure (PSI)
8	Maximum outlet pressure (bar)
9	Maximum outlet pressure (PSI)
10	Minimum and maximum liquid temperature (°C)
11	Minimum and maximum liquid temperature (°F)
12	Net weight of booster module (Kg)
13	Net weight of booster module (LB)
14	Customer name
15	Minimum efficiency index
16	Type designation
17	Product variant

Pos.	Description
21	CE mark
22	Approval EAC
23	CN RoHS
24	WEEE marking
25	Morocco approval marking
26	UKCA approval marking
27	RCM approval marking
51	Model designation: • generation • product number • production code: - production site code - production year and week (YYWW) - serial number

2.2 Pumped liquids

The pumps are suitable for pumping thin, non-explosive liquids, not containing solid particles or fibres. The liquid must not chemically attack the pump materials. In case of doubt, contact Grundfos.

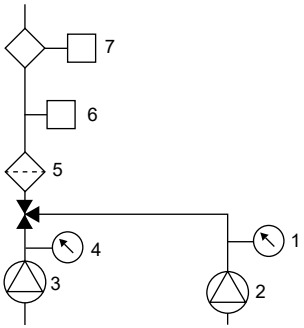
The pumps must never operate with water or liquid containing substances which would remove the surface tension, for example soap. If you use this type of detergent to clean the system, the water or liquid must be led around the pumps via a bypass.

Do not use the pumps for pumping flammable or combustible liquids such as diesel oil, petrol or similar liquids.

2.3 Filtration

Filter the raw water as described in the table below.

Pump type	Filter [micron absolute]
BMS hs	30
BMS hp	30
BMS xl	30
Pressure exchanger	
BMSX (≤ PX 180)	5
BMSX (> PX 180)	10



Filtration

Pos.	Description
1	Pressure gauge (fresh-water pump)
2	Fresh-water flush pump
3	Raw-water feed pump
4	Pressure gauge (raw water)
5	Filter
6	Flowmeter
7	Low-pressure switch

2.4 Flushing and salinity

When the booster system is stopped, it is very important to flush the system according to these guidelines.

Flush the pump to prevent stagnant seawater which can start corrosion inside the pump. When flushing, BMS 7-42 must operate at minimum speed. For bigger sizes operating at minimum speed is recommended.

See also periods of inactivity in the section on starting up after standstill.

Pump type	Fresh water p_{min} [bar]	Max. salinity [ppm TDS] [1]	Flushing time [min.]
BMS hs	1	1000	Depends on pressure, flow, water quality and system design and size.
BMS xl			
BMS hp			
Pressure exchanger of BMSX			

[1] TDS: Total dissolved solids

Related information

9. Starting up after standstill

3. Receiving the product

During delivery and storage, never preserve the pumps with glycerine or similar liquids which are aggressive to the pump materials.

3.1 Transporting the product

The pumps are supplied from the factory in proper packaging in which they must remain until installation.

3.2 Inspecting the product

1. Check that the pump has not been damaged during transportation.
2. Check that the type designation corresponds to the order. See the pump nameplate.
3. Compare the motor voltage and frequency details on the motor and frequency converter nameplates with the power supply available.

4. Installation requirements

4.1 Reading the guide

When installing the products, follow the steps below. Note that the steps might differ from product to product.

1. Mechanical installation.
2. Electrical connection.
3. Commissioning.

5. Mechanical Installation

The product must be installed in a place with access control to prevent unauthorized access to the product.

5.1 Foundation

Construct the foundation to safely support the booster system or pumps under all conditions. The pump and motor must be installed on the same level.

The foundation must be strong enough to support the weight of both units.

5.1.1 Vibration dampening

Use the vibration dampers supplied with the BMS hs pump.

5.2 BMS hs and BMS xl pumps

The pump can be mounted directly on the floor or on a base frame (accessory).

BMS hs pump

5.2.1 Location

To ensure sufficient cooling of the motor, leave a free space of minimum 100 mm behind the non-drive end of the motor.

5.2.2 Lifting and handling the motor

Use straps when lifting the motor, and lower it down slowly.

WARNING
Falling objects
Death or serious personal injury

- Observe local regulations concerning limits for manual lifting or handling.
- Use straps on the motor, and do not lift in the fan guard.
- Make sure that the crane is suitable for the job. Use certified and approved lifting equipment. See the nameplate.

TM059235

Example of how to lift the motor

If you do not follow these instructions, there is a risk of warping or crushing some of the equipment such as the terminal box, cover or drip cover.

5.2.3 Motor installation

Use vibration dampers.

The motor must be levelled. If there is a gap between the foundation and the motor, use a spirit level, a feeler gauge and shims to level the motor. Then secure the motor by means of suitable screws depending on the foundation.

5.2.4 Direction of rotation

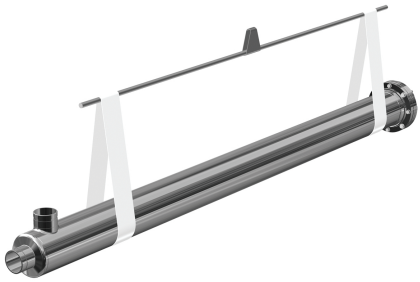
WARNING
Electric shock
Death or serious personal injury

- The electrical installation must be carried out by an authorised person in accordance with local regulations.

Connect the power supply, and check the direction of rotation. See the section on electrical connections. The direction of rotation must correspond to the direction under normal operation. See the installation and operating instructions for the motor.

5.2.5 Lifting and handling the bare-shaft pump

Hoist the bare-shaft pump into place, and lower it down slowly.



TM059236

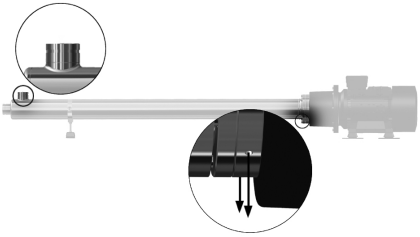
How to lift the pump

To make the pump fit the motor flange, fit the pump support foot delivered with the product. Lower the pump until the support foot reaches the floor.

5.2.6 Assembling the motor and the pump

When assembling the pump and the motor, make sure the inlet pipe points up towards position 12 o'clock and the drain holes point downwards. The spline couplings must be aligned when the pump and the motor are joined and the two parts must be connected gently and carefully.

If necessary, you can change the position of the inlet pipe later. See the section on the positions of the inlet pipe.



TM060964

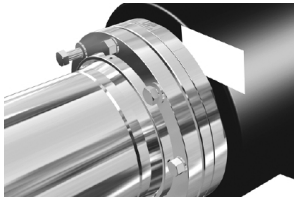
Position of inlet pipe (left) and drain holes (right). Note that BMS xl has no drain holes.

Assemble the motor and the pump before you tighten the screws. To ensure correct installation, follow this procedure.

1. Fit all four screws for motor and pump connection. Do not tighten the screws yet.

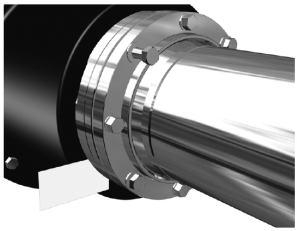
TM059234

2. Adjust the gap by means of a feeler gauge or similar tool. Tighten one screw by hand.



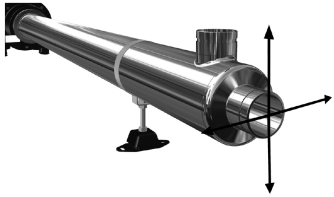
TM059232

3. Adjust the gap 180° opposite the screw you just tightened. Do not tighten the screw. Move the pump to adjust the gap.



TM059351

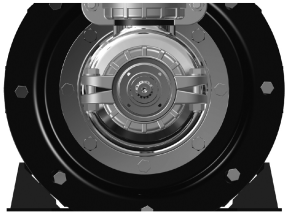
4. Move the pump, and adjust the gap by means of the feeler gauge. Tighten the screw by hand. If the inlet pipe has to be turned, see the section on the position of the inlet pipe.



TM059345

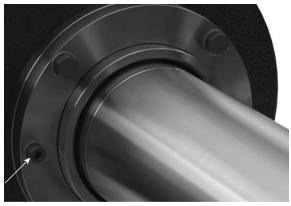
5.

a. All pumps, excluding BMS hs 7-42: when the gap has been adjusted, cross-tighten all screws to 33 Nm.



TM059346

b. BMS hs 7-42: tighten the M8 screw marked in the photo to 24 Nm and all other screws to 33 Nm.



TM077965

6. Fasten the support foot to the foundation.


TM081934

Make sure the support foot does not impose any tension on the pump.

Related information

5.2.7 Positioning the inlet pipe

5.2.7 Positioning the inlet pipe

Make sure that the installation steps 1-3 are done before the inlet pipe position is changed. See the section on assembling the motor and the pump.

To change the position of the pipe, follow this procedure.

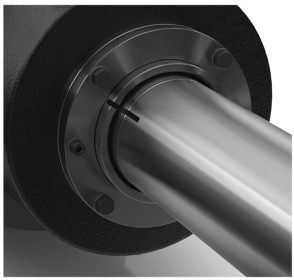
For BMS xl, follow the guide for BMS hp, and see the section on the position of the inlet pipe.

1.

a. All pumps, excluding BMS hs 7-42: mark up the pump sleeve and union nut, then loosen the screws.


TM059573

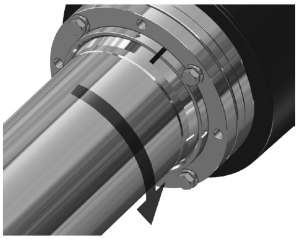
b. BMS hs 7-42: mark up the pump sleeve and union nut, then loosen the screws.


TM077904

2. Turn the inlet pipe to the required position, and make sure the union nut follows.


TM059343

3. Check that the markings are aligned.

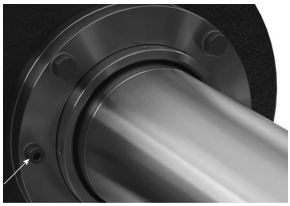

TM059342

4.

a. Fit all screws again. All pumps excluding BMS hs 7-42: tighten all screws to 33 Nm.


TM081933

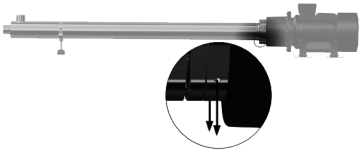
b. BMS hs 7-42: tighten the M8 screw marked in the photo to 24 Nm and all other screws to 33 Nm.


TM077965

5. Fasten the support foot to the foundation.

TM081934

6. Check that the drain holes are positioned correctly. Note that BMS hs 7-42 has no drain holes.



TM065336

Related information

5.2.6 Assembling the motor and the pump

5.3 BMS hp pump

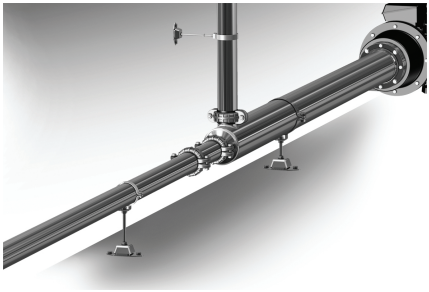
5.3.3 Positioning the inlet pipe

5.2.8 Flushing the system

To avoid impurities in the pump, flush the pipes before you connect the pump inlet and outlet pipes.

5.2.9 Pipe connection

Both the inlet and the outlet pipes are fitted with clamp liners for Victaulic couplings and must be supported close to the end of the pipe.

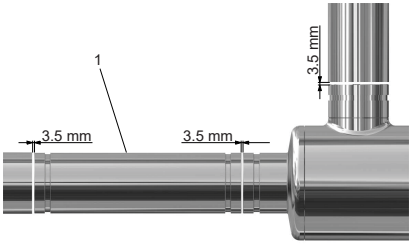


TM059230

Pipe support

WARNING
Pressurised system
Death or serious personal injury
- Avoid stress in the pipe system.

When fitting the Victaulic couplings, allow a gap of 3.5 mm between the two pipes.



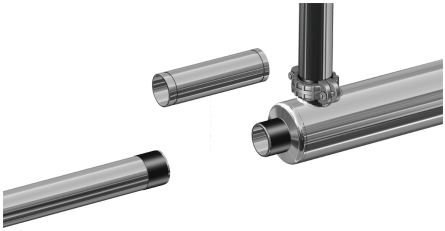
TM059344

Gap between the pipes and (1) service connector

5.2.10 Service connector installation

To facilitate service of the pump and motor, install the delivered service connector in the system. This is advantageous because with it, the pump can be pulled away from the motor and the thrust bearing and shaft seal can be changed without moving any other pipes or the motor.

1. Fit the two rubber parts.
2. Install the service connector.



TM059339

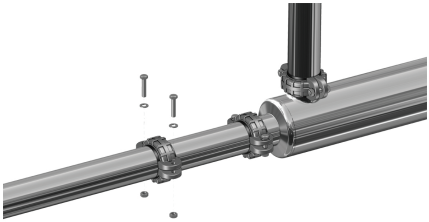
Position of rubber parts

3. Move the two rubber parts over the service connector.

TM059340

Position of service connector and rubber parts

4. Fit the Victaulic couplings and tighten the bolts to 33 Nm.



Victaulic couplings

In case of a BMS hs or BMS xl pump, you are now ready for electrical connection. See the section on the BMS hs and BMS xl pumps.

In case of a BMSX system, see the section on the BMS hp pump installation.

Related information

5.3 BMS hp pump

6.2 BMS hs and BMS xl pumps

5.3 BMS hp pump

BMS hp pump

5.3.1 Motor and pump installation

We recommend that you use vibration dampers.

The pump and the motor must be installed on the same level. If there is a gap between the foundation and the motor or the pump, use a spirit level, a feeler gauge and shims to level the motor. Then secure the motor and the pump by means of suitable screws (4 × M10) depending on the foundation.

5.3.2 Lifting and handling the pump

Hoist the pump into place.

WARNING
Falling objects
Death or serious personal injury

- Observe local regulations concerning limits for manual lifting or handling.
- Use straps for lifting the pump, and do not lift in the fan guard.
- Use certified and approved lifting equipment. See the nameplate.

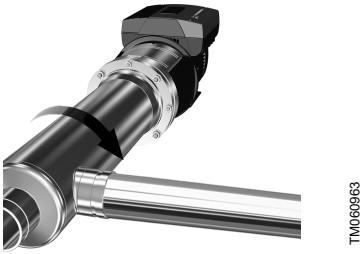
Example of how to lift the pump

5.3.3 Positioning the inlet pipe

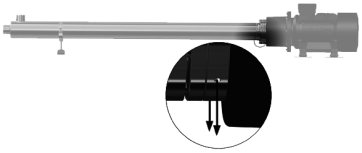
To change the position of the BMS hp or BMS xl pipe, follow this procedure.

1. Loosen all bolts in the flange.

2. Turn the inlet pipe to the required position. Tighten all screws to 33 Nm.



3. Check the position of the drain holes, they must point downwards. Note that BMS xl has no drain holes.

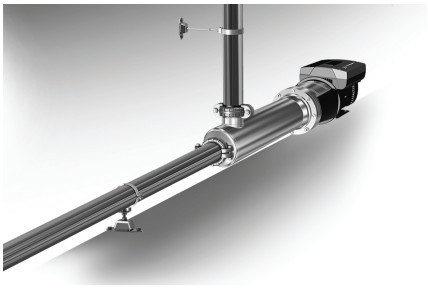


5.3.4 Flushing the system

To avoid impurities, flush the pipes before you connect the pump inlet and outlet pipes.

5.3.5 Pipe connection

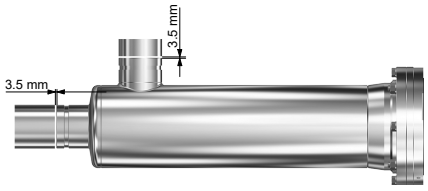
Both the inlet and the outlet pipe are fitted with clamp liners for Victaulic couplings and must be supported close to the end of the pipe.



Pipe support

WARNING
Pressurised system
Death or serious personal injury
- Avoid stress in the pipe system.

When fitting the Victaulic couplings, allow a gap of 3.5 mm between the two pipes.



Gap between the pipes

5.4 BMSX system

A BMSX system consists of a BMS hs or a BMS xl pump as a high-pressure pump and a BMS hp pump as a booster pump. The pressure exchanger of BMSX is installed in order to recover energy from the high-pressure concentrate.

BMSX system

For the installation of the BMS hs or the BMS xl pump, see the section on BMS hs and BMS xl pumps.

For the installation of the BMS hp pump, see the section on BMS hp pump.

Related information

5.2 BMS hs and BMS xl pumps

5.3 BMS hp pump

5.4.1 Lifting and handling the pressure exchanger of BMSX

Pressure exchanger of BMSX

WARNING
Falling objects
Death or serious personal injury
- Observe local regulations concerning limits for manual lifting or handling.
- Make sure that the crane is suitable for the job. Use certified and approved lifting equipment. See the nameplate.

Use suitable straps when lifting the unit. Carefully hoist the pressure exchanger into place, and lower it down. Secure the unit or units to a frame, and ensure a stress-free installation.

To avoid internal damage, do not lift the pressure exchanger by the ports or put undue strain on the port fittings.

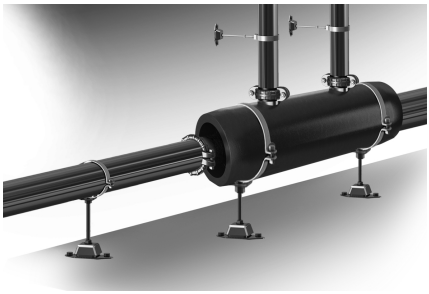
5.4.2 Flushing the system

Thoroughly flush associated pipes with water filtered to 5 microns before installing the PX unit. Foreign material may cause damage.

5.4.3 Pipe connection of the pressure exchanger

Low-pressure and high-pressure inlet and outlet pipes are fitted with clamp liners for Victaulic couplings. See the pipe location on the unit.

Both the inlet and outlet pipes must be supported close to the end of the pipes.



Horizontal and vertical support of pipes

WARNING
Pressurised system
Death or serious personal injury
- Avoid stress in the pipe system.

When fitting the Victaulic couplings, allow a gap of 3.5 mm between the two pipes. See the section on pipe connection.

The PX unit must not be supported by its pipe fittings nor must the PX unit be allowed to support pipes or manifolds.

Related information

5.3.5 Pipe connection

6. Electrical connection

DANGER
Electric shock
Death or serious personal injury
- Connect the pump to an external main switch placed close to the pump and to a motor-protective circuit breaker or a frequency converter.
- It must be possible to lock the main switch in OFF position (isolated). Type and requirements as specified in EN 60204-1, 5.3.2.
- The pump must be earthed.

DANGER
Electric shock
Death or serious personal injury
- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

The electrical connection must be carried out by an authorised electrician in accordance with local regulations and the wiring diagrams for the motor protection, starter and monitoring devices used. Make the electrical connections in the terminal box.

Wiring must be done according to the wiring diagram supplied with the Grundfos product.

6.1 Output filters

Output filters are used primarily to protect the motor against overvoltage and increased operating temperature. However, you can also use output filters to reduce acoustic noise from the motor.

Grundfos offers two types of output filter as accessories for CUE:

- dU/dt filters
- sine-wave filters.

An output filter must be used when the product is operated together with the CUE frequency converter.

6.1.1 Use of output filters

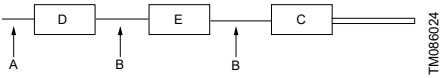
The motors used for the pumps are designed for a maximum supply voltage to the frequency converter of 480 V. If the supplied voltage is higher, we recommend installing an output filter between the frequency converter and the motor.

The selection depends on these factors:

- pump type
- motor cable length
- the required reduction of acoustic noise from the motor.

6.1.2 Cables used in CUE installations

We recommend using screened cables and output filters in EMC-sensitive sites when CUE is installed in connection with BMS pumps.



Example of an installation in EMC-sensitive sites

Pos.	Description
A	Mains cable, unscreened
B	Screened cable
C	BMS pump
D	CUE
E	Filter

Screened cables and output filters are required in those parts of the installation where the surroundings must be protected against EMC.

6.2 BMS hs and BMS xl pumps

Mains and signal cables

See the quick guide or installation and operating instructions for the drive or the motor.

In case of a BMS hs or BMS xl pump, you are now ready for commissioning.

Related information

7.2.1 Before startup

6.3 BMS hp pump

See the quick guide or installation and operating instructions supplied with the product.

See the nameplate to identify the motor type and type of control board.

Default settings for the BMS hp motor:

- minimum speed: 1700 rpm
- maximum speed: 3600 rpm
- setpoint input: 4-20 mA
- relay: alarm.

If not controlled by a 4-20 mA signal, the external setpoint input must be disabled by the remote control.

6.4 BMSX system

For electrical installation, see the sections on the BMS hs, BMS xl and BMS hp pumps.

Related information

6.2 BMS hs and BMS xl pumps

6.3 BMS hp pump

7. Commissioning the product

These commissioning guidelines concern both fresh-water installations and systems for desalination.

WARNING
High sound pressure level
Death or serious personal injury
- Use hearing protection.

WARNING
Pressurised system
Death or serious personal injury
- Be aware of pressurised pipe systems even after shutdown.

Commissioning of BMSX booster systems must be performed by Grundfos technicians or by audited partners acting as service suppliers for Grundfos.

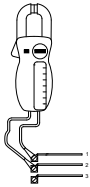
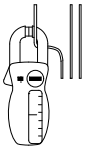
Furthermore, we recommend that the commissioning of BMS hs, BMS xl and BMS hp systems is performed by Grundfos technicians or audited partners.

Commissioning includes report and on-site training of the people who will be responsible for maintaining and monitoring the system.

Related information

5.4 BMSX system

7.1 Checking the power supply

1. Supply voltage  TM001371	Measure the voltage between the phases with a voltmeter. Connect the voltmeter to the terminals of the frequency converter.	When the motor is loaded, the voltage must be within ± 5 % of the rated voltage. If the voltage varies more than that, the motor may burn. If the voltage is constantly too high or too low, replace the motor with a motor that corresponds to the supply voltage. Large variations in the supply voltage indicate a poor power supply, and you must stop the pump until the defect has been found. It may be necessary to reset the frequency converter.
2. Current consumption  TM001372	Measure the current of each phase while the pump is operating at a constant outlet pressure, if possible at the performance where the motor is most heavily loaded. For information on the normal operating current, see the nameplate of the motor.	The difference between the current of the phase with the highest current consumption and the one with the lowest current consumption must not exceed 10 % of the lowest current consumption. If it does, or if the current exceeds the full-load current, check these possible faults: • A damaged pump is causing the motor to be overloaded. Pull the pump out of the sleeve for overhaul. • The motor windings are short-circuited or partly disjointed. The motor must be repaired. • Too high or too low supply voltage. • Poor connection in conductors. Weak cables. Replace cables if necessary.

In case a further motor check is required, proceed as follows:

- BMS hs or BMS xl with PM or AC motor: Disconnect the frequency converter and lock the shaft of the PM motor. Even unpowered, a motor with permanent magnets will generate voltage if rotated.
- BMS hp with MG or MGE motor: Follow the instructions in the installation and operating instructions for the MG or MGE motor.

7.2 BMS hs and BMS xl pumps

7.2.1 Before startup

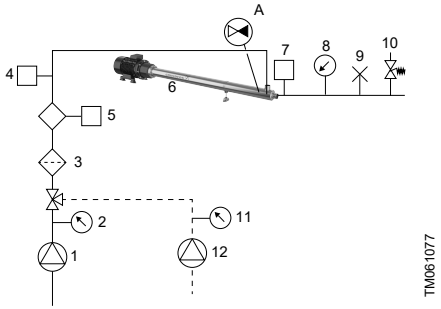
Follow these instructions to ensure correct startup of the BMS hs and BMS xl pumps.

WARNING
Description of hazard
Death or serious personal injury
- Make sure that the pump and the system are fully vented before startup.

For type, amount and interval of greasing, see the nameplate on the motor.

Check that the power supply is according to the nameplate.

Using a sine-wave filter is strongly recommended to avoid overheating and potential damage to the product.



Example of a BMS hs pump

Pos.	Description
A	Built-in non-return valve
1	Raw-water feed pump
2	Pressure gauge (raw water)
3	Filter
4	Low-pressure switch
5	Flowmeter
6	BMS hs pump with built-in non-return valve
7	High-pressure switch
8	Pressure gauge (BMS hs outlet pressure)
9	Vent
10	Pressure-relief valve
11	Pressure gauge (fresh-water pump)
12	Fresh-water flush pump

2) A fresh-water flush pump must be installed in systems for seawater desalination or similar systems.

Related information

6.1 Output filters

7.2.2 Startup

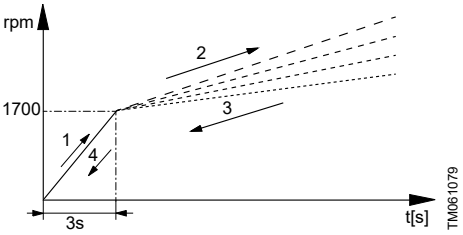
If an outlet valve is installed, we recommend that you open the valve 1/4 of a turn when starting the pump or system.

Do not operate pumps against a closed valve.

To start up a BMS hs or BMS xl pump, proceed as follows:

1. Start the feed pump (1), and check that the inlet pressure (2) of the pump (6) is higher than 1.0 bar and lower than 35.0 bar. Note that this limitation is only for the startup phase. Once the pump is running, the maximum inlet pressure can be higher. See the pump specific values in the section on product range.
2. Vent the pump (6).
3. Start the pump (6). Ramp up the pump (6) according to factory settings. See the figure below (1 and 2).

Ramp up from 0 to 1700 rpm within three seconds.



Ramping up, BMS hs or BMS xl

Ramp-up time:

- Ramp-up: from 0 to 1700 rpm, maximum 3 seconds.
- Ramp-up: from 1700 rpm to maximum speed, to be configured by the customer.
- Ramp-down: from maximum speed to 1700 rpm, to be configured by the customer.
- Ramp-down: from 1700 to 0 rpm, maximum 3 seconds.

4. Set the outlet pressure of the pump (8) to the desired value.
5. Check that the inlet pressure (2) of the pump is higher than 1.0 bar and lower than 35.0 bar. Note that this limitation is only for the startup phase. Once the pump is running, the maximum inlet pressure can be higher. See the pump specific values in the section on product range.

Make sure that the pump is protected against dry running.

Do not touch electrical connections if the pump has reverse flow.

Related information

7.2.1 Before startup

13.1.1 BMS hs PM booster system

7.2.3 Operating limits

We recommend that you always keep the capacity of the booster systems within the recommended flow rate and pressure range of each individual pump.

Note that if there is a risk of exceeding the maximum inlet or outlet pressure, we recommend that you install a safety valve.

BMS hs

Recommended flow rate at 25 °C (77 °F)		
Type	**[m^3/h]**	**US [gpm]**
BMS hs 7	5-15	22-66
BMS hs 18	6-40	17.6 - 176
BMS hs 32	7-75	31-330
BMS hs 46	11-110	48.2 - 482
BMS hs 60	12-120	53-530

Recommended pressure						
Type	**Inlet pressure**				**Outlet pressure**	
	Min. [bar]	**Min. [psi]**	**Max. [bar]**	**Max. [psi]**	**Max. [bar]**	**Max. [psi]**
BMS hs 7	1	14.5	20	290.1	82.7	1200
BMS hs 18	1	14.5	65	942	82.7	1200
BMS hs 32	1	14.5	65	942	82.7	1200
BMS hs 46	1	14.5	65	942	82.7	1200
BMS hs 60	1	14.5	65	942	82.7	1200

BMS xl

Recommended flow rate at 25 °C (77 °F)		
Type	**[m^3/h]**	**US [gpm]**
BMS xl 125	22-220	97-969
BMS xl 160	28-280	123-1233
BMS xl 215	40-400	176-1761

Recommended pressure						
Type	**Inlet pressure**				**Outlet pressure**	
	Min. [bar]	**Min. [psi]**	**Max. [bar]**	**Max. [psi]**	**Max. [bar]**	**Max. [psi]**
BMS xl 125	1	14.5	30	435	82.7	1200
BMS xl 160	1	14.5	30	435	82.7	1200
BMS xl 215	1	14.5	30	435	82.7	1200

Related information

13.2 Sound pressure level, inlet pressure and liquid temperatures

7.3 BMS hp pump

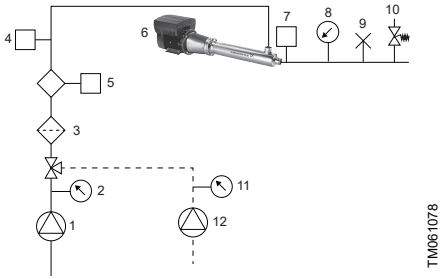
7.3.1 Before startup

Follow these instructions to ensure correct startup of the BMS hp pump.

WARNING
Description of hazard
Death or serious personal injury
- Make sure that the pump and the system are fully vented before startup.

For type, amount and interval of greasing, see the nameplate on the motor.

Check that the power supply is according to the nameplate.



Example of a BMS hp pump

Pos.	Description
1	Raw-water feed pump
2	Pressure gauge (raw water)
3	Filter
4	Low-pressure switch
5	Flowmeter
6	BMS hp pump
7	High-pressure switch
8	Pressure gauge (BMS hp outlet pressure)
9	Vent
10	Pressure-relief valve
11	Pressure gauge (fresh-water pump)
12	Fresh-water flush pump

3) A fresh-water flush pump must be installed in systems for seawater desalination or similar systems.

BMS hp pumps with the motor sizes mentioned below must have lower inlet pressure during startup.

The motor sizes and maximum inlet pressure during startup can be found below.

	Maximum inlet pressure during startup [bar]
MG motors size	
3.0 kW	60
MGE motors size	
3.0 kW	15
5.5 kW	30
7.5 kW	40
11.0 kW	55

7.3.2 Startup

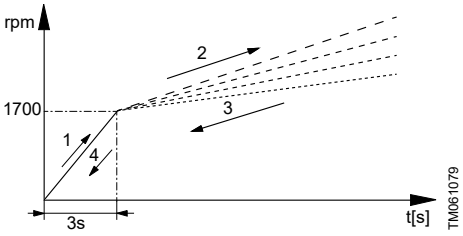
If an outlet valve is installed, we recommend that you open the valve 1/4 of a turn when starting the pump or the system.

Do not operate pumps against a closed valve.

To start up a BMS hp pump, proceed as follows:

1. Start the feed pump (1), and check that the inlet pressure (2) of the BMS hp pump (6) is higher than 0.5 bar (6" BMS hp) or 1.0 bar (8" BMS hp).
2. Vent the pump.
3. Start the pump.
4. Ramp up the pump according to factory settings. See the figure below (1).

Ramp up from 0 to 1700 rpm within three seconds.



Ramping up, BMS hp

Ramp-up time:

- Ramp-up: from 0 to 1700 rpm, maximum 3 seconds.
- Ramp-up: from 1700 rpm to maximum speed, to be configured by the customer.
- Ramp-down: from maximum speed to 1700 rpm, to be configured by the customer.
- Ramp-down: from 1700 to 0 rpm, maximum 3 seconds.

5. Set the outlet pressure of the pump to the desired value.
6. Check that the inlet pressure of the pump is higher than 0.5 bar (6" BMS hp) or 1.0 bar (8" BMS hp) and lower than 82.7 bar.

Make sure that the BMS hp pump is protected against dry-running.

Related information

7.3.1 Before startup

7.3.3 Operating limits

We recommend that you always keep the capacity of the booster systems within the recommended flow rate and pressure range of each individual pump.

Note that if there is a risk of exceeding the maximum inlet or outlet pressure, we recommend that you install a safety valve.

BMS hp

Recommended flow rate at 25 °C (77 °F)		
Type	**[m^3/h]**	**US [gpm]**
BMS hp 18-3, 18-5, 18-7	10-26	44 - 114.5
BMS hp 32-3, 32-5, 32-7	19-45	83.7 - 198
BMS hp 46-2, 46-4, 46-6A	28-72	123-317
BMS hp 60-2, 60-4, 60-6	37-90	163 - 396.3
BMS hp 77-2, 77-3	47-120	207-528
BMS hp 95-3	57-143	251-629
BMS hp 125-2	75-187	330-823
BMS hp 160-2	90-215	396-946
BMS hp 215-1	115-310	506-1364

Recommended pressure						
Type	**Inlet pressure**				**Outlet pressure**	
	Min. [bar]	**Min. [psi]**	**Max. [bar]**	**Max. [psi]**	**Max. [bar]**	**Max. [psi]**
BMS hp 18-3, 18-5, 18-7	1	14.5	80	1160	82.7	1200
BMS hp 32-3, 32-5, 32-7	1	14.5	80	1160	82.7	1200
BMS hp 46-2, 46-4, 46-6A	1	14.5	80	1160	82.7	1200
BMS hp 60-2, 60-4, 60-6	1	14.5	80	1160	82.7	1200
BMS hp 77-3	1	14.5	80	1160	82.7	1200
BMS hp 95-3	1	14.5	80	1160	82.7	1200

Type	Recommended pressure					
	Inlet pressure				Outlet pressure	
	Min. [bar]	Min. [psi]	Max. [bar]	Max. [psi]	Max. [bar]	Max. [psi]
BMS hp 125-2	1	14.5	80	1160	82.7	1200
BMS hp 160-2AA	1	14.5	80	1160	82.7	1200
BMS hp 215-1	1	14.5	80	1160	82.7	1200

Note that higher pressure is available on request.

Related information

13.2 Sound pressure level, inlet pressure and liquid temperatures

7.4 BMSX system

7.4.1 Flow control and balancing

Flow rates and pressures in a typical BMSX system vary slightly over the life of the system due to temperature variations, membrane fouling and feed salinity variations. The rotor of the pressure exchanger is powered by the flow of fluid through the unit. The speed of the rotor is self-adjusting over the operating range of the pressure exchanger pump.

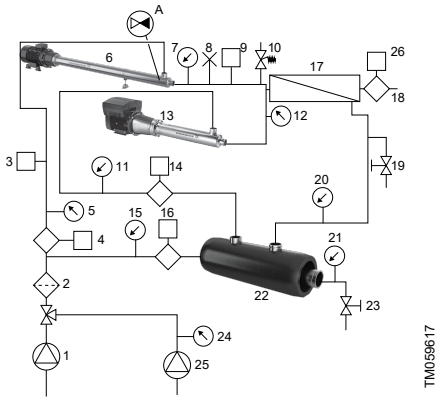
7.4.2 Before startup

Follow these instructions to ensure correct startup of the BMSX system.

WARNING
Description of hazard
Death or serious personal injury
- Make sure that the pump and the system are fully vented before startup.

1. See the sections on BMS hs pumps and BMS hp pumps.
2. Check that the installation corresponds to the diagram.

A pressure gauge must be installed near each pipe connection of the PX unit or PX unit array to facilitate monitoring of PX unit performance.



Example of a BMSX booster system

Pos.	Description
A	Built-in non-return valve
1	Raw-water feed pump
2	Filter
3	Low-pressure switch
4	Flowmeter
5	Pressure gauge (raw water)
6	BMS hs or xl pump with built-in non-return valve
7	Pressure gauge (BMS hs or xl outlet pressure)
8	Vent
9	High-pressure switch
10	Pressure relief valve
11	Pressure gauge (BMS hp inlet pressure)
12	Pressure gauge (BMS hp outlet pressure)
13	BMS hp pump
14	Flowmeter (high-pressure raw water)
15	Pressure gauge (low-pressure raw water)
16	Flowmeter (low-pressure raw water)
17	Membrane filter
18	Permeate
19	Cleaning flush valve
20	Pressure gauge (high-pressure concentrate)
21	Pressure gauge (low-pressure concentrate)
22	Pressure exchanger
23	Concentrate valve
24	Pressure gauge (fresh water)
25	Fresh-water flush pump
26	Flowmeter for permeate

Related information

5.2 BMS hs and BMS xl pumps

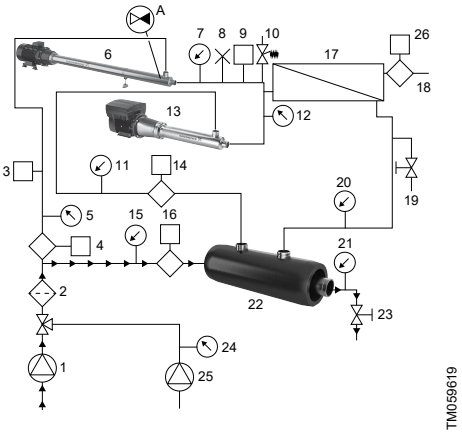
5.3 BMS hp pump

7.4.3 Startup

To start up a BMSX system, proceed as follows:

1. All valves must be in their normal operating positions.
2. Start the raw-water feed pump (1). When the raw-water feed pump is started, the system is filled with water. Make sure that the entire system is vented. The feed flow (14) through the pressure exchanger (22) may or may not cause the rotor to begin rotating. Rotation will be confirmed by a humming noise.
3. Adjust the flow rate and pressure within the maximum and minimum values stated on the PX nameplate.

Never operate the main high-pressure pump without the BMS hp pump. An interlock must be installed, so the high-pressure pump will automatically shut down if the booster pump shuts down.



Starting the seawater feed pump

See the description of the position numbers in the section on before startup.

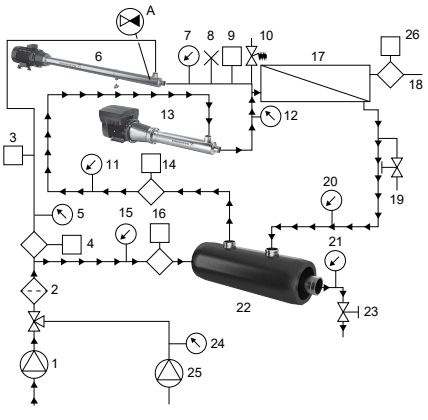
4. Adjust the concentrate valve (23) to the system flow.
5. Vent the system.
6. When you have filled the system with water and vented it, see the BMS hp startup procedure.

The maximum flow rate of the pressure exchanger must never be exceeded. See the nameplate of the pressure exchanger.

WARNING
Pressurized system
Death or serious personal injury

- The BMS hp pump must not run against a closed outlet valve for more than 5 seconds.
- Ensure a minimum liquid flow through the pump by connecting a bypass or drain to the outlet side of the pump. The drain can be connected to a tank.

7. Start the BMS hp pump (13). See the section on startup in the section on BMS hp pumps.



System pressure and flow, BMS hp

See the description of the position numbers in the section on before startup.

The rotor speed will increase, and remaining air will be released from the pressure exchanger. Vent any remaining air from the system.

Adjust the frequency converter of the BMS hp pump (13) on the outlet side of the pressure exchanger (22) until the low-pressure seawater inlet flow (16) equals the calculated seawater flow (14).

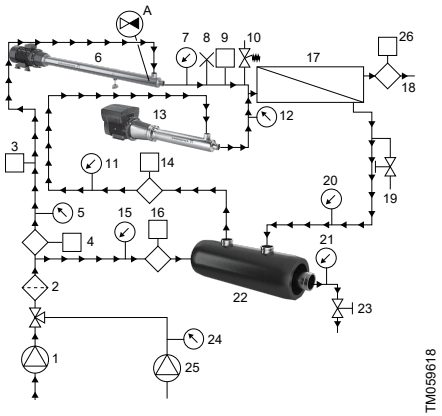
To achieve a balanced flow rate through the pressure exchanger (22), use the flowmeters installed on the low-pressure seawater inlet pipe (16) and the high-pressure seawater pipe (14). All flow rates in and out of the pressure exchanger (22) must be balanced to within 5 % for optimum operation.

Operating the pressure exchanger with unbalanced flow rates may result in contamination of the seawater feed by the concentrate and consequently lower efficiency.

A lower flow rate in the seawater inlet than the seawater outlet will result in lower permeate quality, increased feed pressure and higher energy consumption. We recommend that you use a slightly oversized BMS hp pump (13) to handle projected membrane concentrate flows, taking seasonal variations, membrane fouling and manifold losses into account. The flow rate and pressure of the BMS hp pump (13) must be controlled with a frequency converter.

Neither the low-pressure nor the high-pressure flow through the pressure exchanger must ever exceed the rated maximum flow rate. The only reliable way to determine the flow rates is to use a low-pressure flowmeter (16) or a high-pressure flowmeter (14), respectively.

To start up a BMS hs pump (6), proceed as follows: see the section on startup in the section on BMS hs pumps.



System in operation

See the description of the position numbers in the section on before startup.

The BMSX system pressure will increase. The sound pressure level from the pressure exchanger (22) will increase. Small variations in the sound pressure level and rotor speed are normal.

Related information

7.2.2 Startup

7.3.2 Startup

7.4.2 Before startup

7.5 Low-pressure flow control

The concentrate valve (23) on the outlet side of the system must be adjusted to control the flow rate of the low-pressure seawater inlet (16) and low-pressure concentrate outlet (21) with a minimum back pressure of 1 bar. This valve (23) also adds back pressure on the pressure exchanger (22) required to prevent destructive cavitation. The low-pressure seawater inlet flow rate (16) equals the high-pressure concentrate inlet flow rate (14).

8. Servicing the product

DANGER
Magnetic field
Death or serious personal injury

- Dismantling of the PM motors used for the BMS HS-E-C-P-A pumps must not be carried out by people with pacemakers or any other implanted medical devices. The rotor contains a very powerful magnetic field, which can affect pacemakers or disturb digital devices.

Check the following at suitable intervals, preferably daily:

- flow rate and pressure
- noise level.

We recommend that you write the operating data in a log book as they may be useful in connection with maintenance to see any variation in the pump performance and be able to react to this.

Temperature variations can cause condensation inside the motor. We recommend that you remove the motor drain plug to let condensation water escape.

During prolonged storage or downtime, the interval between two greasing operations must never exceed 6 months.

8.1 Motor bearings

The pumps are factory-fitted with a manual motor-bearing greasing system. See the motor nameplate or the installation and operating instructions supplied with the motor for information such as greasing intervals.

8.1.1 Type of grease

See the motor nameplate.

Avoid mixing greases.

8.2 Preventive maintenance

The preventive maintenance tasks recommended in this section are common for all systems and for average operating conditions. In case the operating conditions are unfavourable, the maintenance tasks must be performed more frequently, and they can vary from installation to installation, for instance due to unexpected changes of the raw-water quality.

<table>
<tr><th></th><th>Check for leaks, noise or abnormal vibrations</th><th>Check thrust bearing and shaft seal</th><th>Lubricate motor bearings</th><th>Replace motor bearings</th></tr>
<tr><td>BMS hs (with PM motor)</td><td rowspan="4">Weekly</td><td rowspan="3">No preventive maintenance required</td><td colspan="2" rowspan="3">According to motor nameplate</td></tr>
<tr><td>BMS hs (with AC motor)</td></tr>
<tr><td>BMS xl</td></tr>
<tr><td>BMS hp</td><td colspan="3">No preventive maintenance required</td></tr>
<tr><td>Pressure exchanger of BMSX</td><td colspan="4">No preventive maintenance required</td></tr>
</table>

4) Use one gasket kit every time a pressure exchanger is opened for inspection.

For further information on maintenance and service, refer to the separate documents supplied for each component and to Grundfos Product Center.

9. Starting up after standstill

Follow the normal startup procedure step by step. For greasing of motor bearings, see the section on motor bearings.

Related information

8.1 Motor bearings

9.1 Frequency of starts and stops

We recommend the following frequency of starts and stops:

- minimum once per year
- maximum 5 times per hour
- maximum 20 times per day.

10. Taking the product out of operation

Before periods of inactivity, take various precautions to protect the system.

The specific precautions to be taken appear from the table:

Action	Period of inactivity	
	More than 6 hours	More than 1 month
Flush the pump.	x	x
Fill the pump with fresh water.	x	x
Preserve the pump. [5)]		x

5) Use the same solution that is used to preserve the membranes.

For more details, see the section on flushing and salinity.

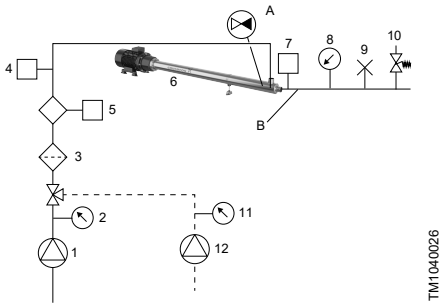
Flush the pumps to prevent stagnant seawater which can start corrosion inside the pump.

Related information

2.4 Flushing and salinity

10.1 BMS hs pump

This procedure describes how to shut down the BMS hs pump.

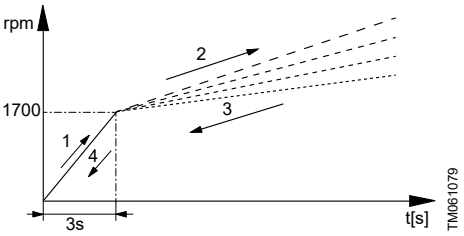


Example of a BMS hs pump

Pos.	Description
A	Built-in non-return valve
B	1000 ppm TDS

Procedure

1. Ramp down the BMS hs pump (6) according to the factory settings. See the figure below (3 and 4).



Ramp down

Ramp down from 1700 to 0 rpm in three seconds.

2. Stop the feed pump (1).
3. Start the fresh-water flush pump (12), and flush the system with fresh water (11), minimum 2 bar for flushing.
4. Flush the system until the salinity is lower than 1000 ppm TDS. When flushing, BMS 7-42 must operate at minimum speed. For bigger sizes operating at minimum speed is recommended.
5. Stop the fresh-water pump (12).
6. Close all valves to keep the fresh water in the system during the shutdown.

Only flush desalination systems pumping seawater or similar aggressive liquids.

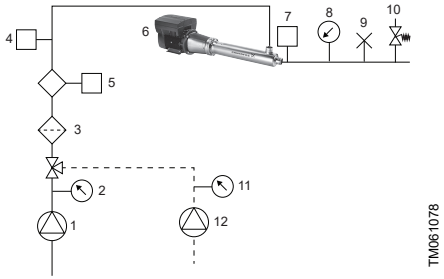
To flush the thrust bearing of the BMS hs pump, start the pump for 30 seconds to allow the fresh water to enter into the thrust bearing.

If the flushing takes more than 10 minutes, reduce the flow rate to maximum 10 % of the rated flow rate.

During periods of inactivity, fill the pump with clean fresh water.

10.2 BMS hp pump

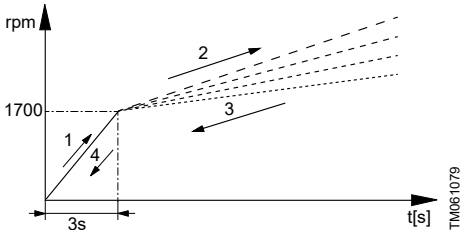
This procedure describes how to shut down the BMS hp pump.



Example of a BMS hp system

Procedure

1. Ramp down the BMS hp pump (6) according to the factory settings. See the figure below (3 and 4).



Ramp down

Ramp down from 1700 to 0 rpm in three seconds.

2. Stop the feed pump (1).
3. Start the fresh-water flush pump (12), and flush the system with fresh water (11), minimum 2 bar for flushing.
4. Flush the system until the salinity is lower than 1000 ppm TDS.
5. Stop the fresh-water pump (15).
6. Close all valves to keep the fresh water in the system during the shutdown.

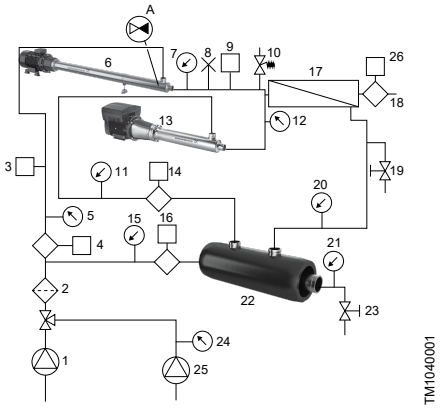
To flush the thrust bearing of the BMS hp pump, start the pump for 30 seconds to allow the fresh water to enter into the thrust bearing.

If the flushing takes more than 10 minutes, reduce the flow rate to maximum 10 % of the rated flow rate.

During periods of inactivity, fill the pump with clean fresh water.

10.3 BMSX system

This procedure describes how to shut down the BMSX system.



Example of a BMSX system

Pos.	Description
A	1000 ppm TDS

Procedure

1. Ramp down and stop the BMS hs pump (6).
2. Ramp down and stop the BMS hp pump (13).
3. Stop the seawater feed pump (1).
4. Depressurise the system by opening the valve (19).
5. Start the fresh-water flush pump (25), and flush the system with fresh water, minimum 2 bar for flushing.
6. Start the BMS hp pump (13), ramp it up to 1700 rpm and let it run until the salinity is lower than 1000 ppm TDS. To ensure efficient flushing of the system, open the valve (20).
7. Start the BMS hs pump (6) and ramp it up to minimum 1700 rpm or until the salinity is lower than 1000 ppm TDS.

To flush the thrust bearing and shaft seal of the BMS hs pump, start the pump to allow the fresh water to enter into the thrust bearing.

If the flushing takes more than 10 minutes, reduce the flow rate to maximum 10 % of the rated flow rate.

During periods of inactivity, fill the pump with clean fresh water.

8. Stop the BMS hs pump (6), the BMS hp pump (13) and the fresh-water flush pump (25).
9. Close all valves to keep the fresh water in the system during shutdown.
10. If the system is taken out of operation for a long period, take precautions to inhibit biological growth. The system units must be given a final flush with the same solution used to preserve the membranes.

Related information

10.1 BMS hs pump

10.4 Flushing

BMS pumps can be flushed in the flow direction.

Flushing of the booster pumps is very important, especially when the pumps are used for pumping seawater or water with chemicals.

If seawater is left in the pumps while they are stopped, there is a risk of crevice corrosion of the stainless steel.

If water containing chemicals is left in the pumps while they are stopped, the rubber parts of the pump or motor may be affected.

In case the cleaning solution contains chemicals which may affect the rubber in the pump and pressure exchanger of BMSX, install a bypass. A pressure exchanger must be isolated during chemical cleaning.

Flush the pumps to prevent stagnant seawater which can start corrosion inside the pump. When flushing, BMS 7-42 must operate at minimum speed. For bigger sizes operating at minimum speed is recommended.

11. Storage

If the pumps have to be stored, the location must be frost-free.

12. Fault finding

12.1 BMS hs

DANGER
Electric shock
Death or serious personal injury

- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

Related information

7.2.2 Startup
7.3.2 Startup

12.1.1 The pump stops or starts occasionally during operation

Cause	Remedy
No water supply. The low-pressure 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 if the feed pump is working and delivering the requested minimum pressure.

Related information

7.2.2 Startup

12.1.2 The pump stops during operation

Cause	Remedy
The fuses are blown.	After a cut-out, find the cause of a possible short circuit. If the fuses are hot when they are replaced, check that the load of the individual phases does not exceed the motor current during operation. Identify the cause of the load. If the fuses are not hot immediately after the cut-out, then identify the cause of a possible short circuit. Check all fuses in the control circuit and replace defective fuses.
The frequency converter has tripped.	Reset the frequency converter.
The motor or power cable is defective.	Check the motor and cable for defects.

12.1.3 The pump runs, but generates no pressure and delivers no water

Cause	Remedy
No or insufficient water supply to the pump.	Check that the inlet pressure during operation is at least 1 bar for BMS hs. If so, the water supply is OK. Stop and vent the system. Restart the pump as described in the sections on BMS hs pumps and startup. Check the functioning of the pump.
The pipe system or the pump is clogged.	Check the pipe system and the pump. Remove all obstacles.

Cause	Remedy
The prefilter is clogged.	Clean the prefilter.

Related information

7.2.2 Startup

7.2.1 Before startup

12.1.4 The pump runs at reduced performance

Cause	Remedy
The valves on the outlet side are partly closed or blocked.	Check the valves. Put the valves in the correct position and remove all obstacles.
The outlet pipe is partly blocked by impurities.	Clean or replace the outlet pipe. Measure the outlet pressure and compare the value with the calculated data. See the technical specifications supplied with the system.
The pump is partly blocked by impurities.	Pull the pump out of the sleeve. Dismantle, clean and check the pump. Replace any defective parts.
The pump is defective.	Pull the pump out of the sleeve. Dismantle, clean and check the pump. Replace any defective parts.
The prefilter is clogged.	Clean the prefilter.

12.2 BMS hp

DANGER
Electric shock
Death or serious personal injury

- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

WARNING
Description of hazard
Death or serious personal injury

- Make sure that the coupling guard is mounted correctly before start.

Related information

6. Electrical connection

12.2.1 The pump stops occasionally during operation

Cause	Remedy
No or insufficient water supply. The pressure switch has cut out.	Check that the pressure switch functions normally, without delay, and is adjusted correctly. Check that the minimum inlet pressure is correct.
The capacity is too small. The flow switch has cut out.	The outlet pipe is totally or partly blocked due to incorrect adjustment of a manually operated valve or failure in the solenoid valve or the motor-operated valve. Check these valves. The flow switch is faulty or incorrectly adjusted. Check or adjust the switch.

12.2.2 The pump does not run

Cause	Remedy
The fuses are blown.	After a cut-out, the cause of a possible short circuit must be found. If the fuses are hot when they are replaced, check that the load of the individual phases does not exceed the motor current during operation. Identify the cause of the load. If the fuses are not hot immediately after the cut-out, then identify the cause of a possible short circuit. Check all fuses in the control circuit and replace defective fuses.
The frequency converter has tripped.	Reset the frequency converter.
The motor or power cable is defective.	Check the motor and cable.

Related information

6. Electrical connection

12.2.3 The pump runs, but generates no pressure and delivers no water

Cause	Remedy
No or insufficient water supply to the pump or air in the system.	Check that the inlet pressure during operation is at least 1 bar. If so, the water supply is OK. Stop and vent the system. If the BMS hp is a part of a system, see the section on BMSX system. If the pump is defective, dismantle and repair or replace it.
The inlet parts are blocked.	Pull the pump out of the sleeve and clean the inlet parts.

Related information

7.4.1 Flow control and balancing

12.2.4 The pump runs at reduced performance (flow and pressure)

Cause	Remedy
The valves on the outlet side are partly closed or blocked.	Check the valves. Put the valves in the correct position and remove all obstacles.
The outlet pipe is partly blocked by impurities.	Measure the outlet pressure and compare the value with the calculated data. Clean or replace the outlet pipe.
The pump is partly blocked by impurities.	Pull the pump out of the sleeve. Dismantle, clean and check the pump. Replace defective parts.
The pump is defective.	Pull the pump out of the sleeve. Dismantle, clean and check the pump. Replace defective parts.

12.3 Pressure exchanger of BMSX

DANGER
Electric shock
Death or serious personal injury
- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

Related information

10.3 BMSX system

12.3.1 Excessive sound pressure level

Cause	Remedy
The pressure exchanger is operating above the rated flow rates on the low-pressure side, high-pressure side or both.	Immediately reduce the flow rate by adjusting the BMS hp pump and the control valve (13). Balance the system as described in the section on BMSX system. To increase the system capacity, add one or more pressure exchanger pumps in parallel to the existing pumps.
The pressure exchanger pump is operating with little or no back pressure.	Increase the back pressure by adjusting the concentrate valve. Balance the system as described in the section on BMSX system.
Air in the system.	Vent the system.

Related information

7.4.1 Flow control and balancing

12.3.2 Excessively high recovery in the SWRO system

Cause	Remedy
The BMS hs or BMS xl pump is operating at a flow rate that is too high.	Check that the main BMS hs or BMS xl flow rate does not exceed the membrane array production capacity for a given temperature, salinity and fouling factor.
Increased salinity or raw-water temperature.	Adjust flow rates in the system.

Related information

10.3 BMSX system

12.3.3 High salinity in the high-pressure seawater feed stream

Cause	Remedy
Unbalanced system.	See the section on the BMSX system.
A jammed or stalled rotor short-circuits the high-pressure concentrate with the high-pressure feed water. No exchange occurs; no audible rotation.	See the fault about a stalled rotor (no audible rotation).

Related information

7.4.1 Flow control and balancing

12.3.4 The low-pressure flow is lower than the high-pressure flow which entails mixing and high feed-water salinity

Cause	Remedy
Operating pressure exchanger pumps below the rated flow rate results in low rotor rotation and increased mixing.	Increase and balance the flows through the pressure exchanger pump. Do not exceed the recommended maximum flow rates. To increase the system capacity, add one or more pressure exchanger pumps in parallel to the existing pumps. See the section on the BMSX system.
Malfunctioning or stalled BMS hp pump.	Check the rotation, operation, flow rates and pressures of the BMS hp pump.

12.3.5 Stalled rotor (no audible rotation)

Cause	Remedy
The system is operating above the rated pressure or below the rated flow capacity.	See the section on the BMSX system.
Debris or foreign particles in the device.	Contact Grundfos.
The system is not properly flow-balanced.	See the section on the BMSX system.

Related information

7.4.1 Flow control and balancing

12.3.6 Low concentrate flow

Cause	Remedy
Excessive pressure losses through the SWRO system.	Contact Grundfos.
Malfunctioning or stalled BMS hp pump.	Check the operation, flow rates and pressures of the BMS hp pump.

13. Technical data

13.1 Product range

13.1.1 BMS hs PM booster system

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [6]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 18-16	70 (94)	5500	29 (128)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 18-19	70 (94)	5500	29 (128)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 18-22	44 (59)	4500	24 (106)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 18-22	52 (70)	4500	24 (106)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 18-22	70 (94)	5500	27 (119)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 18-22	85 (114)	5500	30 (132)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [6]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 32-11	70 (94)	5500	53 (233)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 32-14	85 (114)	5500	55 (242)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 32-23	140 (188)	5500	53 (233)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 32-26	100 (134)	4500	42 (185)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 32-26	140 (188)	5500	50 (220)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 32-26	160 (215)	5500	51 (224)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-8	85 (114)	5500	70 (308)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-9	52 (70)	4500	70 (308)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-13	140 (188)	5500	87 (383)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-15	160 (215)	5500	87 (383)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-17	140 (188)	5000	78 (343)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-17	160 (215)	5000	78 (343)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 46-17	180 (241)	5500	85 (374)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 60-9	85 (114)	5000	98 (431)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 60-15	140 (188)	5000	98 (431)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)
BMS 60-17	180 (241)	5000	94 (414)	0 (32)	40 (104)	70 (158)	50 (122)	65 (943)

6) Contact Grundfos in case of higher temperatures.

Note that BMS hs PM pumps are supplied with Grundfos CUE frequency converters.

13.1.2 BMS hs AC booster system

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [7]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 7-42	30 (40)	5500	12 (53)	0 (32)	40 (104)	70 (158)	40 (104)	20 (290)
BMS 18-8	30 (40)	5500	29 (128)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-11	44 (59)	5500	29 (128)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-14	52 (70)	5500	29 (128)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-16	70 (94)	5500	29 (128)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-19	70 (94)	5500	29 (128)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-22	52 (70)	5000	24 (106)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-22	70 (94)	5500	27 (119)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 18-22	85 (114)	5500	27 (119)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-7	44 (59)	5500	53 (233)	0 (32)	40 (104)	70 (158)	40 (104)	65 (942)
BMS 32-11	70 (94)	5500	53 (233)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-14	85 (114)	5500	50 (220)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-17	100 (134)	5500	53 (233)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-20	120 (161)	5500	53 (233)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-23	140 (188)	5500	53 (233)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-26	120 (161)	4500	45 (198)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-26	140 (188)	5500	50 (220)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 32-26	160 (215)	5500	51 (224)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-8	85 (114)	5500	87 (383)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-9	100 (134)	5500	87 (383)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-11	120 (161)	5500	87 (383)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-13	140 (188)	5500	87 (383)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-15	160 (215)	5500	87 (383)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-17	160 (215)	5500	83 (365)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 46-17	180 (241)	5500	85 (374)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 60-9	85 (114)	5000	98 (431)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 60-11	100 (134)	5000	98 (431)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 60-13	120 (161)	5000	98 (431)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 60-15	140 (188)	5000	98 (431)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)
BMS 60-17	180 (241)	5000	94 (414)	0 (32)	40 (104)	70 (158)	40 (104)	65 (943)

7) Contact Grundfos in case of higher temperatures.

Note that the frequency converter must be purchased separately for BMS hs AC. We recommend the CUE frequency converter for the AC motor.

13.1.3 BMS hp MG booster system 6"

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [8]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 18-3	3 (4)	3490	20 (88)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 18-5	5.5 (7.5)	3530	20 (88)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 18-7	7.5 (10)	3500	20 (88)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 32-3	5.5 (7.5)	3530	36 (159)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 32-5	7.5 (10)	3500	36 (159)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 32-7	11 (15)	3540	36 (159)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 46-2	5.5 (7.5)	3530	55 (242)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 46-4	11 (15)	3540	55 (242)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 46-6A	15 (20)	3540	55 (242)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 60-2	7.5 (10)	3500	72 (317)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 60-4	15 (20)	3520	72 (317)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 60-6	18.5 (25)	3540	72 (317)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)

[8] Contact Grundfos in case of higher temperatures.

Grundfos can supply the customer with BMS hp MG pumps of any voltage required.

13.1.4 BMS hp MG booster system 8"

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [9]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 77-2A	11 (15)	3540	92 (405)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 77-3	18.5 (25)	3540	92 (405)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 95-2	15 (20)	3540	113 (498)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 95-3	22 (30)	3540	113 (498)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 125-1	18.5 (25)	3540	149 (656)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 125-2AA	22 (30)	3540	149 (656)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 160-1A	15 (20)	3540	192 (845)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)
BMS 160-1	22 (30)	3540	192 (845)	0 (32)	40 (104)	70 (158)	60 (140)	80 (1160)

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [9]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 160-2AA [10]	30 (41)	3540	192 (845)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 215-1A [10]	30 (41)	3540	256 (1127)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 215-1 [10]	37 (50)	3540	256 (1127)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)

9) Contact Grundfos in case of higher temperatures.

10) The pump is supplied with Innomotics MMG motor.

Grundfos can supply the customer with BMS hp MG pumps of any voltage required.

13.1.5 BMS hp MGE booster system 6"

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [11]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 18-3	3 (4)	3490	20 (88)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 18-5	5.5 (7.5)	3530	20 (88)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 18-7	7.5 (10)	3500	20 (88)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 32-3	5.5 (7.5)	3530	36 (159)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 32-5	7.5 (10)	3500	36 (159)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 32-7	11 (15)	3540	36 (159)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 46-2	5.5 (7.5)	3530	55 (242)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 46-4	11 (15)	3540	55 (242)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 46-6A	15 (20)	3540	55 (242)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 60-2	7.5 (10)	3500	72 (317)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 60-4	15 (20)	3540	72 (317)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 60-6	18.5 (25)	3540	72 (317)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)

[11] Contact Grundfos in case of higher temperatures.

Grundfos can supply the customer with BMS hp MGE pumps of any voltage required.

13.1.6 BMS hp MGE booster system 8"

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [12]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 77-2A	11 (15)	3540	92 (405)	0 (32)	40 (104)	70 (158)	50 (122)	80 (1160)
BMS 77-3	18.5 (25)	3540	92 (405)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 95-2	15 (20)	3540	113 (498)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 95-3	22 (30)	3540	113 (498)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 125-1	18.5 (25)	3540	149 (656)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 125-2AA	22 (30)	3540	149 (656)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 160-1A	15 (20)	3540	192 (845)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)
BMS 160-1	22 (30)	3540	192 (845)	0 (32)	40 (104)	70 (158)	40 (104)	80 (1160)

[12] Contact Grundfos in case of higher temperatures.

Grundfos can supply the customer with BMS hp MGE pumps of any voltage required.

13.1.7 BMS xl AC booster system

Pump type	Motor power P2 [kW (hp)]	Max. speed [rpm]	Flow rate [m^3/h (US gpm)]	Min. liquid temperature [°C (°F)]	Max. liquid temperature [°C (°F)] [13]		Max. ambient temperature [°C (°F)]	Max. inlet pressure [bar (psi)]
					Corrosive	Non-aggressive		
BMS 125-9	160 (215)	3550	150 (660)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 125-12	200 (268)	3550	150 (660)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 125-15	250 (335)	3550	150 (660)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 160-10	250 (335)	3550	190 (837)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 160-12	250 (335)	3550	190 (837)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 215-5	200 (268)	3550	270 (1189)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 215-7	250 (335)	3550	270 (1189)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 215-9	315 (422)	3550	270 (1189)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)
BMS 215-11	355 (476)	3500	270 (1189)	0 (32)	40 (104)	70 (158)	40 (104)	30 (435)

[13] Contact Grundfos in case of higher temperatures.

Grundfos can supply the customer with BMS xl AC pumps of any voltage required.

Note that the frequency converter must be purchased separately for BMS hs AC. We recommend the CUE frequency converter for the AC motor.

13.2 Sound pressure level, inlet pressure and liquid temperatures

Pump type	Sound pressure level [dB(A)]	Inlet pressure [bar]		Max. liquid temperature for corrosive liquids [°C]	Max. liquid temperature for non-aggressive liquids [°C]
		Min.	Max.		
BMS hs 7	90	1	20	40	70
BMS hs 18	83-90	1	65		
BMS hs 32	83-90				
BMS hs 46	83-95				
BMS hs 60	90				

Pump type	Sound pressure level [dB(A)]	Inlet pressure [bar]		Max. liquid temperature for corrosive liquids [°C]	Max. liquid temperature for non-aggressive liquids [°C]
		Min.	Max.		
BMS hp, 6"	< 72	0.5	82.7	40	70
BMS hp, 8"	< 80	1	82.7		
Pressure exchanger of BMSX	76-91	Low pressure	High pressure		
		2-7	80		

Pump type	Sound pressure level [dB(A)]	Inlet pressure [bar]		Max. liquid temperature for corrosive liquids [°C]	Max. liquid temperature for non-aggressive liquids [°C]
		Min.	Max.		
BMS xl 125	79-84	1	30	40	70
BMS xl 160	84	1	30		
BMS xl 215	79-88	1	30		

13.2.1 Ambient temperature and installation altitude

Storage and transport temperature: -40 to +60 °C (-40 to +140 °F)

Operating temperature: -20 to +40 °C (-68 to +104 °F)

See the sections on product range for maximum ambient temperature.

Humidity

Relative humidity in accordance with IEC 60068-2-56: lower than 90 % non-condensing.

Installation altitude

0 to 4000 m (13,123 ft), with derating of motor power at altitudes higher than 1000 m (3,280 ft).

Related information

13.1.1 BMS hs PM booster system

13.1.2 BMS hs AC booster system

13.1.3 BMS hp MG booster system 6"

13.1.4 BMS hp MG booster system 8"

13.1.5 BMS hp MGE booster system 6"

13.1.6 BMS hp MGE booster system 8"

13.1.7 BMS xl AC booster system

13.3 Accessories

The following are the communication interface modules intended for use with the product:

Protocol	Communication interface module
GENIbus	CIM 050
LonWorks (Single)	CIM 100
PROFIBUS DP	CIM 150
Modbus RTU	CIM 200
BACnet MS/TP	CIM 300
Modbus TCP, BACnet IP, PROFINET, GiC/GRM IP, EtherNet IP	CIM 500
LonWorks (Multi)	CIM 110

Installing a communication interface module not listed above might affect the compliance level of the product.

14. Disposing of the product

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.

The crossed-out wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at *www.grundfos.com/product-recycling*.

15. Document quality feedback

To provide feedback about this document, use your smart device to scan the QR code.

Click here to submit your feedback

1. 中国 RoHS

产品中有害物质的名称及含有信息表

部件名称	有害物质									
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBBs)	多溴二苯醚 (PBDEs)	邻苯二甲酸二正丁酯（DBP）	邻苯二甲酸二异丁酯 (DIBP)	邻苯二甲酸丁基苄酯（BBP）	邻苯二甲酸二（2-乙基）己酯（DEHP）
泵壳	X	O	O	O	O	O	O	O	O	O
印刷电路板	X	O	O	O	O	O	O	O	O	O
紧固件	X	O	O	O	O	O	O	O	O	O
管件	X	O	O	O	O	O	O	O	O	O
定子	X	O	O	O	O	O	O	O	O	O
转子	X	O	O	O	O	O	O	O	O	O

注 1：O：表示该有害物质在该部件所有均质材料中的含量均不超出电器电子产品有害物质限制使用国家标准要求。
X：表示该有害物质至少在该部件的某一均质材料中含量超出电器电子产品有害物质限制使用国家标准要求。
注 2：以上未列出的部件，表明其有害物质含量均不超出电器电子产品有害物质限制使用国家标准要求。

Declaration of conformity

GB: EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the products BMS hs, BMS xl, BMS hp, BMSX, to which the declaration below relates, are in conformity with the Council Directives listed below on the approximation of the laws of the EU member states.

DE: EU-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt BMS hs, BMS xl, BMS hp, BMSX, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-/EU-Mitgliedsstaaten übereinstimmt.

DK: EU-overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produkterne BMS hs, BMS xl, BMS hp, BMSX som erklæringen nedenfor omhandler, er i overensstemmelse med Rådets direktiver der er nævnt nedenfor, om indbyrdes tilnærmelse til EU-medlemsstaternes lovgivning.

ES: Declaración de conformidad UE

Grundfos declara, bajo su exclusiva responsabilidad, que los productos a los que concierne la presente declaración, marcados con la denominación BMS hs, BMS xl, BMS hp, BMSX, son conformes con las Directivas del Consejo que figuran a continuación, basadas en la aproximación de las legislaciones correspondientes de los Estados miembros de la UE.

FR : Déclaration de conformité UE

Nous, Grundfos, déclarons sous notre entière responsabilité que les produits BMS hs, BMS xl, BMS hp, BMSX auxquels la déclaration ci-dessous fait référence, sont conformes aux directives du Conseil répertoriées ci-dessous, concernant le rapprochement des législations des États membres de l'UE.

GR: Δήλωση συμμόρφωσης ΕΕ

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα BMS hs, BMS xl, BMS hp, BMSX, στα οποία αναφέρεται η παρακάτω δήλωση, συμμορφώνονται με τις παρακάτω Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ.

IT: Dichiarazione di conformità UE

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti BMS hs, BMS xl, BMS hp, BMSX, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri UE.

NL: EC Conformiteitsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat de producten BMS hs, BMS xl, BMS hp, BMSX, waarop de onderstaande verklaring betrekking heeft, in overeenstemming zijn met de onderstaande Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgeving van de EU-lidstaten.

PT: Declaração de conformidade UE

A Grundfos declara sob sua única responsabilidade que os produtos BMS hs, BMS xl, BMS hp, BMSX, aos quais diz respeito a declaração abaixo, estão em conformidade com as Diretivas do Conselho sobre a aproximação das legislações dos Estados Membros da UE.

TR: AB uygunluk beyanı

Grundfos olarak, aşağıdaki bildirim konusu olan BMS hs, BMS xl, BMS hp, BMSX ürünlerinin, AB üye ülkelerinin direktiflerinin yakınlaştırılmasıyla ilgili aşağıdaki Konsey Direktifleriyle uyumlu olduğunu ve bununla ilgili olarak tüm sorumluluğun bize ait olduğunu beyan ederiz.

CN:欧盟符合性声明

我们，格兰富，在我们的全权责任下声明，产品 BMS hs, BMS xl, BMS hp, BMSX，即本声明所指之产品，符合欧盟使其成员国法律趋于一致的以下理事会指令。

JP:EU 適合宣言

グルンドフォスは、その責任の下に、製品 BMS hs, BMS xl, BMS hp, BMSX が EU 加盟諸国の法規に関連する、以下の理事会指令に適合していることを宣言します。

AR: إقرار مطابقة الاتحاد الأوروبي (EU)

نقر نحن، جروندفوس، بمقتضى مسؤوليتنا الفردية بأن المنتجات BMS hs, BMS xl, BMS hp, BMSX التي يختص بها الإقرار أدناه تكون مطابقة لتوجيهات المجلس المذكورة أدناه بشأن التقريب بين قوانين الدول أعضاء الاتحاد الأوروبي (EU).

- Machinery Directive (2006/42/EC)
  Standard used: EN 809:1998+A1:2009
- RoHS Directives: 2011/65/EU and 2015/863/EU
  Standard used: EN IEC 63000:2018
- Ecodesign Directive (2009/125/EC)

BBMShs type HS-E-C-P-A, BMSX and BMST (see pump nameplate)

- EMC Directive (2014/30/EU)
  Standards used: EN 61000-6-2:2005, EN 61000-6-3:2007+A1:2012

BMS hp type HP-C-C-P-A 3 to 11 kW (see pump nameplate)

The declaration of conformity for the motor is enclosed in the safety instructions for the motor (publication number 98247034)

- Radio Equipment Directive (2014/53/EU and (EU) 2022/30)
  Standard used: EN 18031-1:2024

BMS hp type HP-C-C-P-A 15 to 22 kW (see pump nameplate)

- EMC Directive (2014/30/EU)
  Standard used: EN 61800-3:2004+A1:2012
- Radio Equipment Directive (2014/53/EU and (EU) 2022/30)
  Standard used: EN 18031-1:2024

Part of the Grundfos installation and operating instructions (publication number 96780071)

This EC/EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication number 98567337)

Bjerringbro, 28 May 2025

Mikkel Boel Nørgaard Essenbæk
Head of PD Multistage
Grundfos Holding A/S
Poul Due Jensens Vej 7
8850 Bjerringbro, Denmark
www.grundfos.com

Person authorised to compile technical file and empowered to sign the EU declaration of conformity.

Declaration of conformity

UK declaration of conformity

We, Grundfos, declare under our sole responsibility that the products to which the declaration below relates, are in conformity with UK regulations, standards and specifications to which conformity is declared, as listed below:

Valid for Grundfos products:

BMShs, BMShp, BMSxl, BMSX

- Supply of Machinery (Safety) Regulations 2008.
  Standard used: EN 809:1998, A1:2009.
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2019.
  Standard used: EN IEC 63000:2018
- The Ecodesign for Energy-Related Products and Energy Information Regulations 2019 and 2021.

BMS hs type HS-E-C-P-A, BMSX and BMST

- Electromagnetic Compatibility Regulations 2016
  Standard used: EN 61000-6-2:2005, EN61000-6-3:2007+A1:2012

BMS hp type HP-C-C-P-A 15 to 22 kW (see pump nameplate)

- Electromagnetic Compatibility Regulations 2016
  Standard used: EN 61800-3:2004 + A1:2012

This UK declaration of conformity is only valid when accompanying Grundfos instructions.

UK Importer: Grundfos Pumps ltd. Grovebury Road, Leighton Buzzard, LU7 4TL.

Bjerringbro, 5 October 2023

Jimm Feldborg
Head of PD IND
Grundfos Holding A/S
Poul Due Jensens Vej 7
8850 Bjerringbro, Denmark
www.grundfos.com

Manufacturer and person empowered to sign the UK declaration of conformity.

10000339568

Declaration of conformity

GB: Moroccan declaration of conformity

We, Grundfos, declare under our sole responsibility that the products to which the declaration below relates, are in conformity with Moroccan laws, orders, standards and specifications to which conformity is declared, as listed below:

Valid for Grundfos products:

BMS hs, BMS hp, BMS xl, BMSX, BMST

Law No 24-09, 2011 Safety of products and services and the following orders:

Order No 2573-14, 2015 Safety Requirements for Low Voltage Electrical Equipment

Standards used: NM EN 809+A1:2015

For BMSX, BMST and BMS hs pumps type HS-E-C-P-A see pump nameplate.

Order No 2574-14, 2015 Electromagnetic Compatibility

Standards used: NM EN 61000-6-2:2015, NM EN 61000-6-3:2015

For BMS hp pumps type HP-C-C-P-A see pump nameplate.

Order No 2574-14, 2015 Electromagnetic Compatibility

Standards used: NM EN 61800-3:2018

This Moroccan declaration of conformity is only valid when accompanying Grundfos instructions.

FR : Déclaration de conformité marocaine

Nous, Grundfos, déclarons sous notre seule responsabilité que les produits auxquels se réfère la déclaration ci-après sont conformes aux lois, arrêtés, normes et spécifications marocains pour lesquels la conformité est déclarée, tels qu'énumérés ci-dessous :

Valable pour les produits Grundfos :

BMS hs, BMS hp, BMS xl, BMSX, BMST

Loi n° 24-09 de 2011 relative à la sécurité des produits et des services et les arrêtés suivants :

Arrêté n° 2573-14 de 2015 relatif au matériel électrique destiné à être utilisé dans certaines limites de tension

Normes utilisées : NM EN 809+A1:2015

Pour les pompes BMSX, BMST et BMS hs, type HS-E-C-P-A, voir plaque signalétique de la pompe.

Arrêté n° 2574-14 de 2015 relatif à la compatibilité électromagnétique des équipements

Normes utilisées : NM EN 61000-6-2:2015, NM EN 61000-6-3:2015

Pour les pompes BMS hp, type HP-C-C-P-A, voir plaque signalétique de la pompe.

Arrêté n° 2574-14 de 2015 relatif à la compatibilité électromagnétique des équipements

Normes utilisées : NM EN 61800-3:20185

Cette déclaration de conformité marocaine est uniquement valide lorsqu'elle accompagne les notices Grundfos.

بريطانيا العظمى: إقرار المطابقة المغربي

نقر نحن، جروندفوس، بمقتضى مسؤوليتنا وحدنا بأن المنتجات التي يتعلق بها الإقرار أدناه، تتوافق مع القوانين والقرارات والمعايير والمواصفات المغربية التي تم إقرار المطابقة بشأنها، كما هو موضح أدناه:

سارٍ على منتجات جروندفوس:

BMS hs, BMS hp, BMS xl, BMSX, BMST

قانون رقم 24-09، 2011 بشأن سلامة المنتجات والخدمات والقرارات التالية:

القرار رقم 2573-14، 2015 بشأن متطلبات السلامة للمعدات الكهربائية ذات الجهد المنخفض

المعايير المستخدمة: NM EN 809+A1:2015

بالنسبة للمضخات BMSX وBMST وBMS hs من نوع HS-E-C-P-A، راجع لوحة بيانات المضخة.

القرار رقم 2574-14، 2015 بشأن التوافق الكهرومغناطيسي

المعايير المستخدمة: NM EN 61000-6-2:2015, NM EN 61000-6-3:2015

بالنسبة للمضخات BMS hp من نوع HP-C-C-P-A، راجع لوحة بيانات المضخة.

القرار رقم 2574-14، 2015 بشأن التوافق الكهرومغناطيسي

المعايير المستخدمة: NM EN 61000-6-3:2015

يكون إقرار المطابقة المغربي هذا صالحًا فقط عند إرفاق تعليمات جروندفوس.

Bjerringbro, 5 October 2023

Jimm Feldborg
Head of PD IND
Grundfos Holding A/S
Poul Due Jensens Vej 7
8850 Bjerringbro, Denmark
www.grundfos.com

GB: Manufacturer and person empowered to sign the Moroccan declaration of conformity.

FR : Fabricant et personne habilitée à signer la Déclaration de conformité marocaine.

بريطانيا العظمى: الجهة المصنعة والشخص المفوض بتوقيع إقرار المطابقة المغربي.

10000270346

RUS

BMS

Руководство по эксплуатации

Руководство по эксплуатации на данное изделие является составным и включает в себя несколько частей:
Часть 1: настоящее «Руководство по эксплуатации».
Часть 2: электронная часть «Паспорт. Руководство по монтажу и эксплуатации» размещенная на сайте компании Грундфос. Перейдите по ссылке, указанной в конце документа.
Часть 3: информация о сроке изготовления, размещенная на фирменной табличке изделия.
Сведения о сертификации:
Бустерные насосы (насосы повышения давления), тип BMS и системы на их основе, тип BMSX, BMST декларированы на соответствие требованиям Технических регламентов Таможенного союза: ТР ТС 004/2011 «О безопасности низковольтного оборудования»; ТР ТС 010/2011 «О безопасности машин и оборудования»; ТР ТС 020/2011 «Электромагнитная совместимость технических средств».

KAZ

BMS

Пайдалану бойынша нұсқаулық

Атаулы өнімге арналған пайдалану бойынша нұсқаулық құрамалы болып келеді және келесі бөлімдерден тұрады:
1 бөлім: атаулы «Пайдалану бойынша нұсқаулық»
2 бөлім: Грундфос компаниясының сайтында орналасқан электронды бөлім «Төлқұжат, Құрастыру және пайдалану бойынша нұсқаулық». Құжат соңында көрсетілген сілтеме арқылы өтіңіз.
3 бөлім: өнімнің фирмалық тақташасында орналасқан шығарылған уақыты жөніндегі мәлімет
Сертификаттау туралы ақпарат:
Күштік насостар (қысымды көтеретін сорғылар), BMS типі және оларға негізделген жүйелер, BMSX, BMST типі Кеден одағының Техникалық регламенттерінің талаптарына сәйкестігі үшін декларацияланған: TR CU 004/2011 «Төмен вольтты жабдықтың қауіпсіздігі туралы»; TR CU 010/2011 «Машиналар мен жабдықтардың қауіпсіздігі туралы»; TR CU 020/2011 «Техникалық жабдықтың электромагниттік үйлесімділігі».

KG

BMS

Пайдалануу боюнча колдонмо

Аталган жабдууну пайдалануу боюнча колдонмо курамдык жана өзүнө бир нече бөлүкчөнү камтыйт:
1-Бөлүк: «Пайдалануу боюнча колдонмо»
2-Бөлүк: «Паспорт. Пайдалануу жана монтаж боюнча колдонмо» электрондук бөлүгү Грундфос компаниянын сайтында жайгашкан. Документтин аягында көрсөтүлгөн шилтемеге кайрылыңыз.
3-Бөлүк: жабдуунун фирмалык тактасында жайгашкан даярдоо мөөнөтү тууралуу маалымат.
Шайкештик жөнүндө декларация
Күчөткүч насостор (басымды көтөрүүчү насостор), BMS түрү жана алардын негизиндеги тутумдар, BMSX, BMST түрлөрү Бажы бирлигинин Техникалык регламентинин талаптарына шайкештиги жөнүндө декларацияланган: TR CU 004/2011 "Төмөн чыңалуудагы шаймандардын коопсуздугу жөнүндө"; TR CU 010/2011 "Машиналардын жана жабдуулардын коопсуздугу жөнүндө"; TR CU 020/2011 "Техникалык шаймандардын электромагниттик шайкештиги".

ARM

BMS

Շահագործման ձեռնարկ

Տվյալ սարքավորման շահագործման ձեռնարկը բաղկացած է մի քանի մասերից.
Մաս 1. սույն «Շահագործման ձեռնարկ»:
Մաս 2. էլեկտրոնային մաս. այն է՝ «Անձնագիր: Մոնտաժման և շահագործման ձեռնարկ» տեղադրված «Գրունդֆոս». Անցեք փաստաթղթի վերջում նշված հղումով.
Մաս 3. տեղեկություն արտադրման ամսաթվի վերաբերյալ՝ նշված սարքավորման պիտակի վրա:

Տեղեկություններ հավաստագրման մասին՝
Ամրապնդող պոմպեր (ճնշման բարձրացման պոմպեր), BMS տիպը և դրանց վրա հիմնված համակարգերը, BMSX տիպը, BMST տիպը հայտարարվում են Մաքսային միության Տեխնիկական կանոնակարգերի պահանջներին համապատասխանելու համար. TR CU 004/2011 «voltageածր լարման սարքավորումների անվտանգության մասին». TR CU 010/2011 «Մեքենաների և սարքավորումների անվտանգության մասին»; TR CU 020/2011 «Տեխնիկական սարքավորումների էլեկտրամագնիսական համատեղելիություն»:

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