

# FAMCO

هایپر صنعت

• [www.famcocorp.com](http://www.famcocorp.com)

GRUNDFOS X

**BMS**

BMS hs, BMS hp, BMST, BMSX

**PUMPS**

پمپ



Catalog 2020

• Symbol of the dynamism in industry

# BMS

BMS hs, BMS hp, BMST, BMSX

**Pressure boosting and reverse osmosis systems**

50/60 Hz



|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1. Product introduction</b>                         | <b>4</b>  |
| Grundfos BMS hs. ....                                  | 4         |
| Grundfos BMS hp ....                                   | 4         |
| <b>2. Performance range</b>                            | <b>5</b>  |
| BMS hs PM booster system. ....                         | 5         |
| BMS hs AC booster system. ....                         | 5         |
| BMS hp MG/MGE booster system. ....                     | 6         |
| <b>3. General description, BMS hs and BMS hp</b>       | <b>7</b>  |
| Type key ....                                          | 7         |
| Pumped liquids ....                                    | 7         |
| Curve conditions ....                                  | 7         |
| Parallel operation. ....                               | 7         |
| Flushing ....                                          | 7         |
| Filtration ....                                        | 7         |
| Automatic control devices ....                         | 8         |
| Automatic safety devices ....                          | 8         |
| <b>4. Grundfos BMS hs</b>                              | <b>9</b>  |
| Applications ....                                      | 9         |
| Standard pumps. ....                                   | 9         |
| Operating limits ....                                  | 9         |
| Operating conditions ....                              | 10        |
| Construction. ....                                     | 10        |
| Motor types ....                                       | 10        |
| Frequency converter for PM motor ....                  | 11        |
| <b>5. Grundfos BMS hp</b>                              | <b>15</b> |
| Applications ....                                      | 15        |
| Standard pumps. ....                                   | 15        |
| Operating limits ....                                  | 15        |
| Motor ....                                             | 16        |
| Operating conditions ....                              | 16        |
| <b>6. High pressure booster systems</b>                | <b>17</b> |
| BMS hs booster system. ....                            | 17        |
| BMS hp booster system. ....                            | 17        |
| <b>7. Reverse osmosis systems</b>                      | <b>18</b> |
| BMS hs system ....                                     | 18        |
| BMST system. ....                                      | 18        |
| BMSX system ....                                       | 19        |
| <b>8. Features and benefits</b>                        | <b>20</b> |
| BMS hs booster system. ....                            | 20        |
| BMS hp booster system. ....                            | 21        |
| <b>9. Product range</b>                                | <b>22</b> |
| BMS hs PM booster system and frequency converter. .... | 22        |
| BMS hs AC booster system. ....                         | 22        |
| BMS hp MG booster system 6" ....                       | 23        |
| BMS hp MG booster system 8" ....                       | 23        |
| BMS hp MGE booster system 6" ....                      | 24        |
| BMS hp MGE booster system 8" ....                      | 24        |
| <b>10. Performance curves</b>                          | <b>25</b> |
| BMS hs PM, 17-22. ....                                 | 25        |
| BMS hs PM, 30-26. ....                                 | 26        |
| BMS hs PM, 46-17. ....                                 | 27        |
| BMS hs PM, 60-17. ....                                 | 28        |
| BMS hs AC, 17-22. ....                                 | 29        |
| BMS hs AC, 30-14. ....                                 | 30        |
| BMS hs AC, 30-26. ....                                 | 31        |
| BMS hs AC, 46-17. ....                                 | 32        |

|                                                             |           |
|-------------------------------------------------------------|-----------|
| BMS hs AC, 60-17 . . . . .                                  | 33        |
| BMS hp, 17-3, 17-5 and 17-7 . . . . .                       | 34        |
| BMS hp, 30-3, 30-5 and 30-7 . . . . .                       | 35        |
| BMS hp, 46-2, 46-4 and 46-6A . . . . .                      | 36        |
| BMS hp, 60-2, 60-4 and 60-6 . . . . .                       | 37        |
| BMS hp, 77-2A and 77-3 . . . . .                            | 38        |
| BMS hp, 95-2 and 95-3 . . . . .                             | 39        |
| BMS hp, 125-1 and 125-2AA . . . . .                         | 40        |
| BMS hp, 160-1A, 160-1 and 160-2AA . . . . .                 | 41        |
| BMS hp, 215-1A and 215-1 . . . . .                          | 42        |
| <b>11. Dimensions and weight</b>                            | <b>43</b> |
| BMS hs PM booster system . . . . .                          | 43        |
| Frequency converter for PM motor . . . . .                  | 44        |
| Service connector . . . . .                                 | 44        |
| BMS hs AC booster system . . . . .                          | 45        |
| BMS hp MG booster system 6" . . . . .                       | 46        |
| BMS hp MG booster system 8" . . . . .                       | 47        |
| BMS hp MGE booster system 6" . . . . .                      | 48        |
| BMS hp MGE booster system 8" . . . . .                      | 49        |
| <b>12. Technical data</b>                                   | <b>50</b> |
| Material specification for BMS hs and BMS hp pump . . . . . | 50        |
| Material specification for thrust-bearing housing . . . . . | 51        |
| <b>13. Accessories</b>                                      | <b>52</b> |
| CUE frequency converter . . . . .                           | 52        |
| BMS hp . . . . .                                            | 55        |
| Customised BMS pumps . . . . .                              | 55        |
| <b>14. Grundfos Product Center</b>                          | <b>56</b> |

# 1. Product introduction

Reducing CO<sub>2</sub> emissions is one of the greatest challenges in connection with saving the environment. That is one of the reasons why Grundfos has developed the new booster systems, Grundfos BMS hs (high speed) and BMS hp (high-pressure inlet).

## Grundfos BMS hs

BMS hs is a range of booster systems for reverse osmosis and filtration applications. These booster systems offer higher efficiency than the previous ranges. The reason is a direct-coupled pump which is powered by a permanent-magnet high speed motor (PM) or an asynchronous high-speed motor (AC). The permanent-magnet motor is supplied with a special designed Emerson drive. The permanent-magnet solution is only suitable for 400 V. The asynchronous motor has to be controlled by a variable-frequency drive, to reach the high speed. The variable-frequency drive must fit motor voltages of 400 V and the mains supply at the installation site. Together with an improved design, this makes both maintenance and service easier than ever, and you have a winning concept.

The BMS hs pump is delivered with a built-in non return valve.

### Caution

*If you use an asynchronous motor in countries that use 460 V, make sure that the variable-frequency drive can convert from 460 V to 400 V.*



TM05 9569 4113 - TM05 9570 4113

Fig. 1 BMS hs booster system

## Grundfos BMS hp

BMS hp is especially used when a high inlet pressure is needed. BMS hp is a range of booster systems for reverse osmosis and filtration applications, offering higher efficiency than previous ranges.



TM06 1045 5115

Fig. 2 BMS hp booster system

## EuP ready

The BMS hp pumps are energy-optimised and comply with the EuP Directive (Commission Regulation (EC) No 547/2012) which became effective on 1 January 2013. As from this date, all pumps are classified and graduated in a new energy efficiency index (MEI).



Minimum Efficiency Index (MEI) is the dimensionless scale unit for hydraulic pump efficiency at best efficiency point, part load and overload.

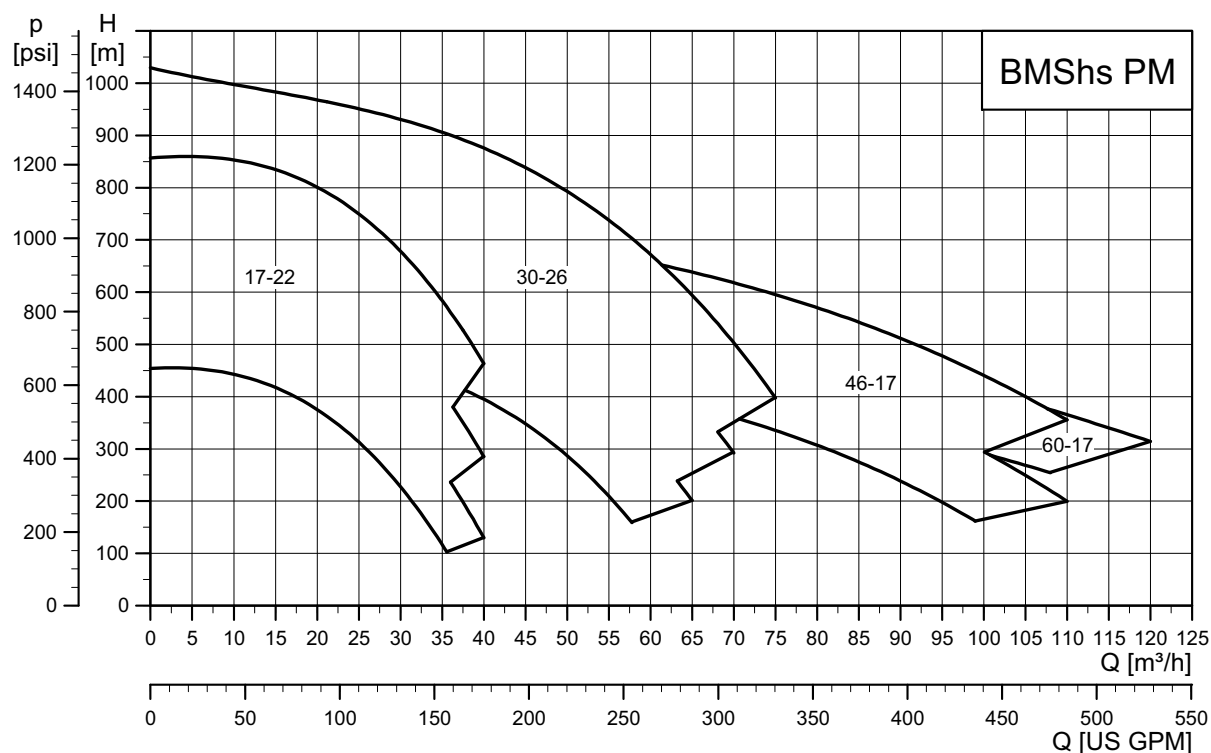
EU regulations set efficiency requirements to MEI  $\geq 0.1$  as from 1 January 2013 and MEI  $\geq 0.4$  as from 1 January 2015. An indicative benchmark for the best-performing water pumps available on the market in 2012 is MEI  $\geq 0.70$ .

## Efficiency and MEI index

| Pump type    | Efficiency [%] | MEI         |
|--------------|----------------|-------------|
| BMS hp 17-9  | 74             | $\geq 0.76$ |
| BMS hp 30-9  | 75             | $\geq 0.50$ |
| BMS hp 46-9  | 76             | $\geq 0.50$ |
| BMS hp 60-9  | 77             | $\geq 0.60$ |
| BMS hp 77-9  | 78             | $\geq 0.44$ |
| BMS hp 95-9  | 79             | $\geq 0.50$ |
| BMS hp 125-9 | 79             | $\geq 0.37$ |
| BMS hp 160-9 | 80             | $\geq 0.39$ |
| BMS hp 215-9 | 83             | $\geq 0.46$ |

## 2. Performance range

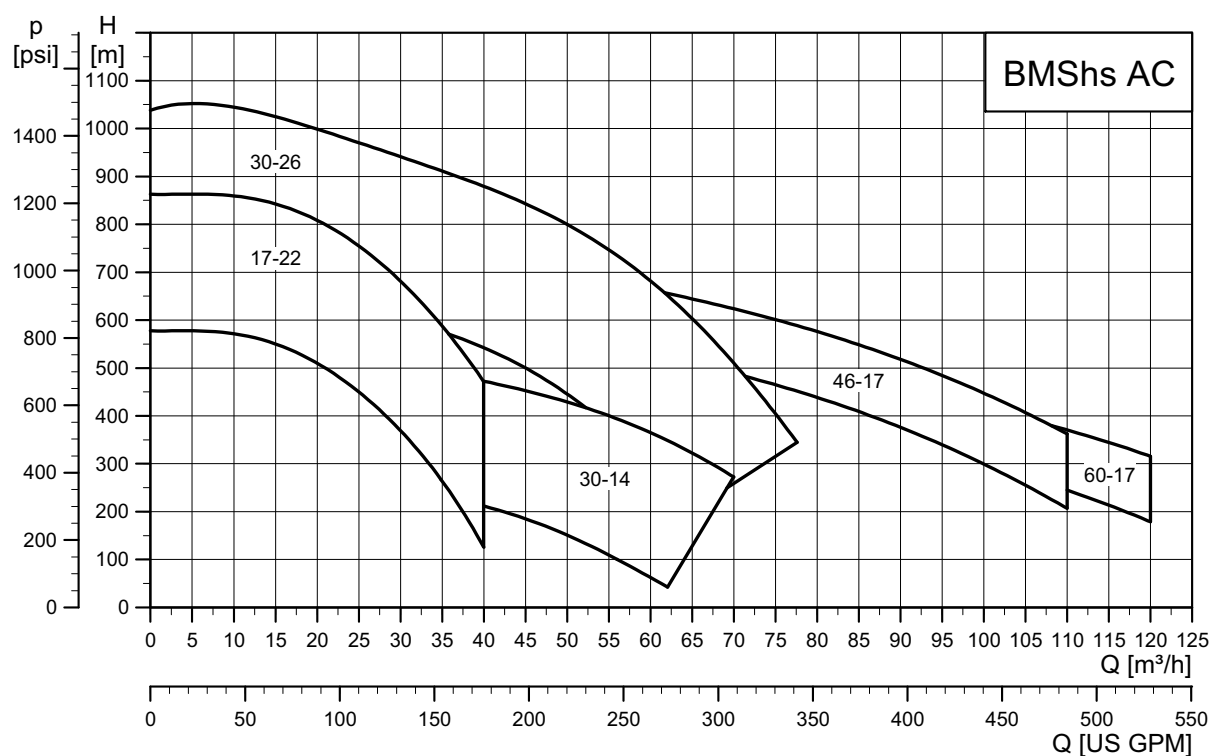
### BMS hs PM booster system



TM05 9198 1215

Fig. 3 Performance range, BMS hs, PM

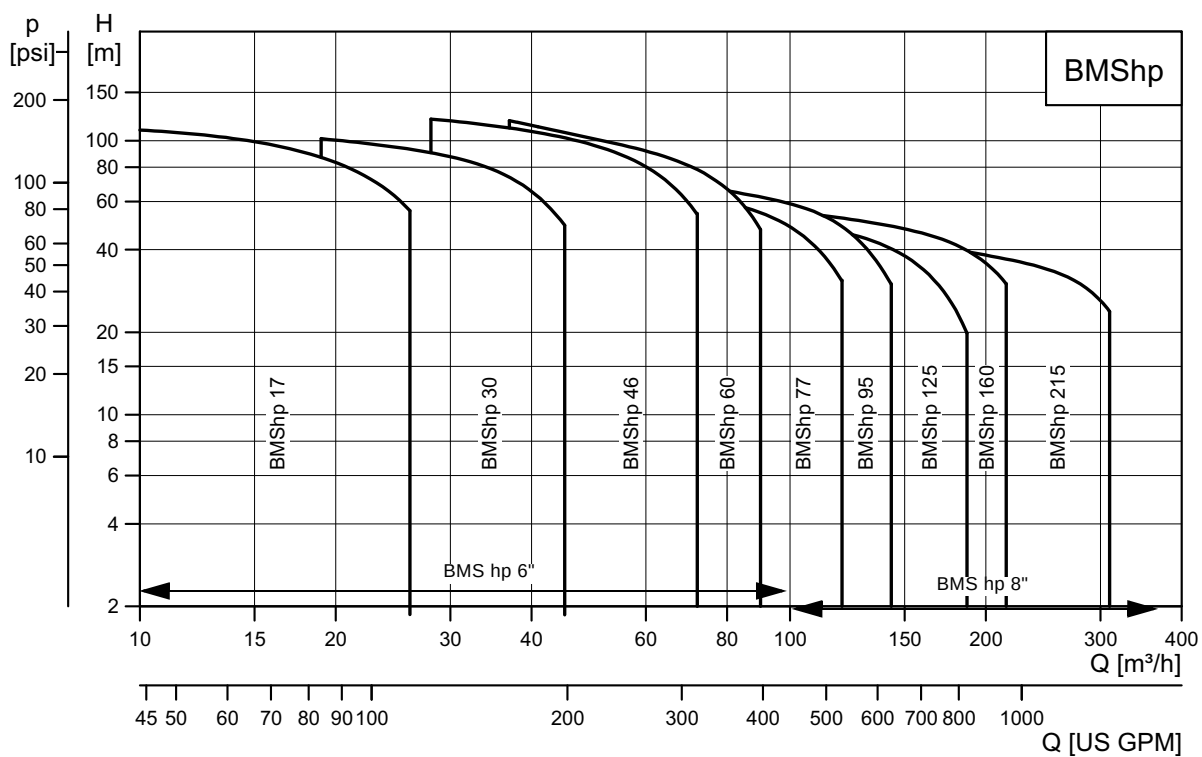
### BMS hs AC booster system



TM06 5614 1215

Fig. 4 Performance range, BMS hs AC

## BMS hp MG/MGE booster system



TM06 0729 4314

Fig. 5 Performance range, BMS hp MG/MGE, 60 Hz



### 3. General description, BMS hs and BMS hp

The sections below describe the common details for BMS hs and BMS hp.

#### Type key

| Example                                  |                                            | BMS | 30 | -26 | hs | -E | -C | -P | -A |
|------------------------------------------|--------------------------------------------|-----|----|-----|----|----|----|----|----|
| <b>Pump</b>                              |                                            |     |    |     |    |    |    |    |    |
| BMS                                      |                                            |     |    |     |    |    |    |    |    |
| BMSX                                     | Includes pressure exchanger and BM hp pump |     |    |     |    |    |    |    |    |
| BMST                                     | Includes BMT pump                          |     |    |     |    |    |    |    |    |
| <b>Rated flow rate [m<sup>3</sup>/h]</b> |                                            |     |    |     |    |    |    |    |    |
| <b>Number of stages</b>                  |                                            |     |    |     |    |    |    |    |    |
| <b>Type</b>                              |                                            |     |    |     |    |    |    |    |    |
| hs                                       | High-pressure pump with high speed         |     |    |     |    |    |    |    |    |
| hp                                       | Pump with high pressure inlet              |     |    |     |    |    |    |    |    |
| <b>Motor*</b>                            |                                            |     |    |     |    |    |    |    |    |
| A                                        | MG                                         |     |    |     |    |    |    |    |    |
| B                                        | MMG                                        |     |    |     |    |    |    |    |    |
| C                                        | MGE                                        |     |    |     |    |    |    |    |    |
| D                                        | MMGE                                       |     |    |     |    |    |    |    |    |
| E                                        | PM                                         |     |    |     |    |    |    |    |    |
| X                                        | No motor                                   |     |    |     |    |    |    |    |    |
| <b>Materials</b>                         | Pump                                       |     |    |     |    |    |    |    |    |
| C                                        | 1.4539/904L                                |     |    |     |    |    |    |    |    |
| <b>Code for rubber parts</b>             |                                            |     |    |     |    |    |    |    |    |
| P                                        | NBR                                        |     |    |     |    |    |    |    |    |
| V                                        | FKM                                        |     |    |     |    |    |    |    |    |
| <b>Shaft seal</b>                        |                                            |     |    |     |    |    |    |    |    |
| A                                        | Silicon carbide and carbon                 |     |    |     |    |    |    |    |    |

**Note:** \* Grundfos motors

Grundfos MG and MMG:

- With external frequency converter.

Grundfos PM (permanent-magnet motor):

- With external frequency converter.

Grundfos MGE and MMGE:

- With integrated frequency converter.

#### Pumped liquids

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 liquid containing substances that would remove the surface tension, e.g. soap. If you use this type of detergent to clean the system, lead the liquid around the pumps via a bypass.

If the density and/or viscosity of the pumped liquid is higher than that of water, it may be necessary to use motors with a higher output than the standard output stated.

BMS hs booster systems are designed for brackish water and seawater.

#### Maximum liquid temperature

40 °C (104 °F).

Contact Grundfos in case of higher temperatures.

#### Curve conditions

The guidelines below apply to the curves on the following pages.

- All curves are based on average values according to ISO 9906: 2012 3B.
- If a minimum performance is required, carry out individual measurements.
- The curves apply to a kinematic viscosity of 1 mm<sup>2</sup>/s (1 cSt).
- The power curve P2 (hp) shows pump input power per stage.
- The efficiency curve  $\eta$  shows pump efficiency, including BMS hs pump, motor and frequency converter.
- The performance tests have been made at a water temperature of 20 °C (68 °F).
- Test liquid: airless water.

The conversion between head H (m) and pressure p (kPa) has been made for water with a density of  $\rho = 1000 \text{ kg/m}^3$  (62.4 lb/ft<sup>3</sup>). If the density differs from this value, the created pressure will be proportional to the density.

**Note**

**BMS hs AC curves shown with slip compensation.**

#### Parallel operation

If a flow rate higher than that of a single module is required, several modules are connected in parallel. Find the resulting flow rate by adding the flow rate of each individual module. The pressure will be the same as for one pump.

#### Flushing

When the booster system is used in a reverse osmosis system or similar applications pumping seawater or aggressive water, install a flush pump to avoid corrosion. Flush the system with clean fresh water until the salinity is lower than 1000 ppm TDS in the entire system.

#### Filtration

BMS hs, BMS hp, BMST: Filter the raw water to maximum 30 microns.

BMSX: Filter the raw water to maximum 10 microns.

| Pump type          | Filter<br>[micron absolute] |
|--------------------|-----------------------------|
| BMS hs             |                             |
| BMS hp             | 30                          |
| BMST               |                             |
| Pressure exchanger | 10                          |



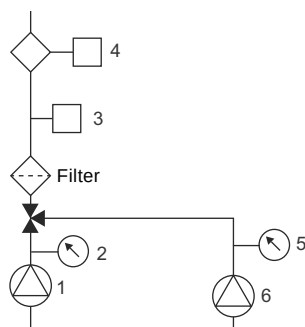


Fig. 6 Filtration

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

TM05 8862 2813

## Automatic control devices

To protect the pumps against dry running, fit the system with flow and pressure control devices.

A pressure switch on the inlet side is sized in accordance with the estimated inlet pressure. At a pressure lower than 1 bar (14.5 psi), an alarm is given and the pump will stop.

We recommend that you fit all outlet connections of the system with flow switches that will stop the system at the set minimum flow rate.

The control devices ensure a correct inlet pressure.

Flow switch cutting-in is adjusted for a minimum time delay corresponding to the maximum starting frequency of the system.

## Automatic safety devices

The safety devices below must be built into the system to protect the pump. See fig. 7.

- Flow switch and/or low-pressure switch to ensure a minimum flow of water and lubricate the thrust bearing and pump bearings.
- Flowmeter in each outlet pipe.
- Low-pressure switch on the booster system inlet sized in accordance with the estimated inlet pressure. At a pressure lower than 1 bar (14.5 psi), an alarm is given, and the pump will stop.
- High-pressure switch on the outlet pipe. The high-pressure switch will stop the pump at a set maximum pressure.

The above safety devices ensure a correct inlet pressure and a minimum flow for lubrication.

A minimum time delay equivalent to the maximum starting frequency of the system has been set for flow switch cutting-in.

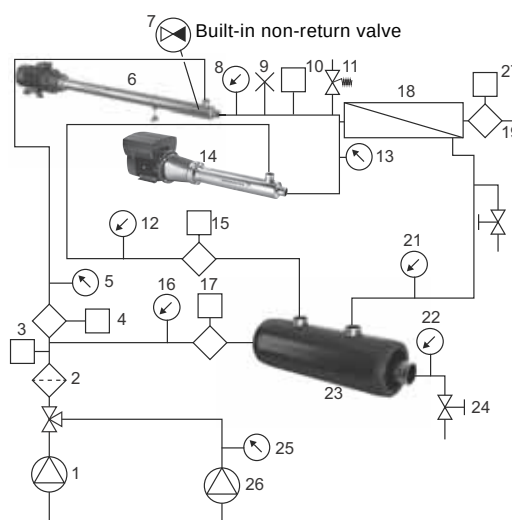


Fig. 7 Example of BMSX booster system

| Pos. | Description                                |
|------|--------------------------------------------|
| 1    | Raw-water feed pump                        |
| 2    | Filter                                     |
| 3    | Low-pressure switch                        |
| 4    | Flowmeter                                  |
| 5    | Pressure gauge (raw water)                 |
| 6    | BMS hs pump with built-in non-return valve |
| 7    | Non-return valve (built into BMS hs)       |
| 8    | Pressure gauge (BMS hs outlet pressure)    |
| 9    | Air vent                                   |
| 10   | High-pressure switch                       |
| 11   | Pressure relief valve                      |
| 12   | Pressure gauge (BMS hp inlet pressure)     |
| 13   | Pressure gauge (BMS hp outlet pressure)    |
| 14   | BMS hp pump                                |
| 15   | Flowmeter (high-pressure raw water)        |
| 16   | Pressure gauge (low-pressure raw water)    |
| 17   | Flowmeter (low-pressure raw water)         |
| 18   | Membrane filter                            |
| 19   | Permeate                                   |
| 20   | Cleaning flush valve                       |
| 21   | Pressure gauge (high-pressure concentrate) |
| 22   | Pressure gauge (low-pressure concentrate)  |
| 23   | Pressure exchanger                         |
| 24   | Concentrate valve                          |
| 25   | Pressure gauge (fresh-water)               |
| 26   | Fresh-water flush pump                     |
| 27   | Flowmeter for permeate                     |

TM05 9617 4213

## 4. Grundfos BMS hs



Fig. 8 BMS hs pump

### Applications

The BMS hs booster system is suitable for the following applications:

- water treatment plants
  - reverse osmosis in domestic water supply systems
  - hospitals, laboratories as well as chemical, electronics and metal industries
  - ultra-filtration in chemical and galvanic industries
  - painting workshops, metal and mineral industries
- pressure boosting
- liquid transfer.

### Reverse osmosis systems

Grundfos offers three different booster systems for reverse osmosis:

- Grundfos BMS hs
- Grundfos BMST
- Grundfos BMSX.

### Standard pumps

#### BMS hs booster system

The following standard pumps are used for the BMS hs booster system:

- SP 17-22
- SP 30-14
- SP 30-26
- SP 46-17
- SP 60-17.

**Note:** The pumps are supplied with non-return valves.

### 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.

#### BMS hs booster system

| Recommended flow rate at 25 °C (77 °F) |                     |  |            |  |  |  |
|----------------------------------------|---------------------|--|------------|--|--|--|
| Type                                   | [m <sup>3</sup> /h] |  | US [gpm]   |  |  |  |
| BMS hs 17-22                           | 4-40                |  | 17.6 - 176 |  |  |  |
| BMS hs 30-14                           | 7-70                |  | 31-308     |  |  |  |
| BMS hs 30-26                           | 7.5 - 75            |  | 33-330     |  |  |  |
| BMS hs 46-17                           | 11-110              |  | 48.2 - 482 |  |  |  |
| BMS hs 60-17                           | 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 17-22         |                |            |            |            |                 |            |
| BMS hs 30-14         |                |            |            |            |                 |            |
| BMS hs 30-26         | 1              | 14.5       | 35         | 507.6      | 82.7            | 1200       |
| BMS hs 46-17         |                |            |            |            |                 |            |
| BMS hs 60-17         |                |            |            |            |                 |            |

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

**Note:** Maximal permissible liquid temperature is 40 °C (104 °F). If you have an application for higher temperature, contact Grundfos.

## Operating conditions

### Sound pressure level

The sound pressure level of pumps with a 4500 rpm motor is lower than 80 dB(A).

The sound pressure level of pumps with a 5000 or 5500 rpm motor is lower than 85 dB(A).

## Construction

Modified standard submersible pumps are used for the BMS hs booster systems. The pumps are centred in the stainless-steel (Duplex) sleeve.

BMS hs pumps are supplied with a high speed motor which need to be controlled by a frequency converter. Inlet and outlet: 3" Victaulic couplings.

## Motor types

### Permanent-magnet high speed motor (PM)

The BMS hs PM booster system is supplied with a high-class synchronous permanent-magnet motor and a lightweight product. The weight is approx. 1/4 and the size 1/3 of a standard asynchronous motor.



Copyright Leroy-Somer 2013

TM05 9589 4113

**Fig. 9** Example of a permanent-magnet motor

The permanent-magnet motor is controlled by a frequency converter (POWERDRIVE MD or FX) and as standard protected by PTC sensors.

Enclosure class: IP55.

Power P2: 44-180 kW (59-241 HP).

Optional: PT100.

Optional: space heater/anti-condensation heater.

### Rated speed

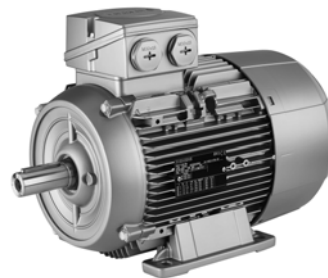
Normal operation: 4000-5500 min<sup>-1</sup>.

Flush operation: down to 1700 min<sup>-1</sup>.

The motor is controlled by factory-set ramp times.

### Asynchronous high speed motor (AC)

The BMS hs AC booster system is supplied with an asynchronous high speed motor. The motor is smaller and lighter than a standard asynchronous motor.



### Copyright

Publication and reproduction rights are reserved by Siemens AG. Image source "© Siemens AG 2015, All rights reserved".

TM06 6081 0616

**Fig. 10** Example of AC motor

The asynchronous high speed motor is controlled by a frequency converter and as standard protected by PT100 sensors.

Enclosure class: IP54.

Power P2: 44-180 kW (59-241 HP).

Certificate: cURus approval.

Optional: space heater/anti-condensation heater.

Other options on request

### Rated speed

Normal operation: 4000-5500 min<sup>-1</sup>.

Flush operation: down to 1700 min<sup>-1</sup>.

The motor is controlled by ramp times.

## Frequency converter for PM motor

Emerson POWERDRIVE MD and FX are user-friendly, UL-approved and compact frequency converters.



GR-1015353

**Fig. 11** Example of POWERDRIVE MD2

Providing high-performance control of induction or synchronous permanent-magnet motors, the frequency converters are ideal for any industrial or tertiary variable-speed application up to 5500 min<sup>-1</sup>.

### Temperature

Storage and transport temperature: -15 to 60 °C (-59 to 140 °F).

Operating temperature: -10 to 40 °C (-50 to 104 °F), up to 50 °C (122 °F) with derating.

### Humidity

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

### Altitude

0 to 4000 m, with derating of operating temperature of 0.6 °C (33 °F) per 100 m between 1000 and 4000 m.

### Voltage

FX: 400 V - 10 %/+ 6 %.

MD2MS: 400 V - 10 %/+ 5 %.

### Frequency

FX: 50-60 Hz ± 2 %.

MD2MS: 50-60 Hz ± 5 %.

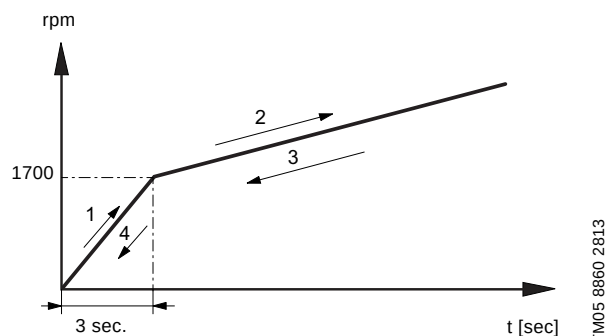
### Enclosure class

FX: IP54.

MD2MS: IP21 or optional IP54.

## Factory-set ramp times for PM motor

The ramp-up and ramp-down times ensure safe operation during startup, normal operation and shutdown. See fig. 12.



**Fig. 12** Ramp times

1. Ramp up: From 0 to 1700 rpm, maximum 3 seconds.
2. Ramp up: From 1700 rpm to maximum speed, 1500 rpm/min
3. Ramp down: From maximum speed to 1700 rpm, 1500 rpm/min
4. Ramp down: From 1700 to 0 rpm, maximum 3 seconds.

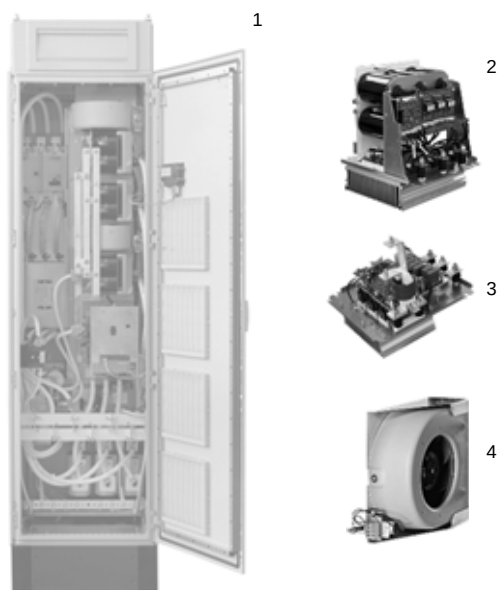
## Benefits

- Quick replacement of modules on site. You can change the power module in less than 1 hour.
- Each module is easy to access independently.
- The heaviest module weighs less than 20 kg.
- Reduced staff and equipment costs.

## Modularity

POWERDRIVE MD incorporates the following:

- inverter
- rectifier
- cooling module
- electronic control boards.

**POWERDRIVE MD cabinet**

Copyright Leroy-Somer 2013

**Fig. 13** Example of POWERDRIVE MD module

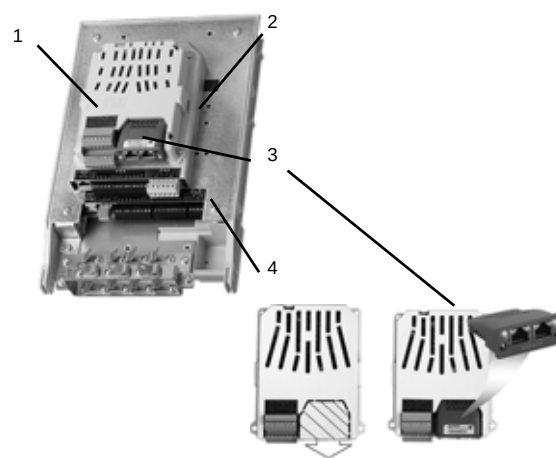
| Pos. | Description           |
|------|-----------------------|
| 1    | POWERDRIVE MD cabinet |
| 2    | Inverter module       |
| 3    | Rectifier module      |
| 4    | Cooling fan           |

TM05 9594 4113 - TM05 9591 4113 - TM05 9592 4113 - TM05 9593 4113

**Add-on modules**

- Fieldbus module
- IO module.

These modules are assembled on a frame or in a standard cabinet.



Copyright Leroy-Somer 2013

**Fig. 14** Example of assembled module

| Pos. | Description        |
|------|--------------------|
| 1    | Fieldbus module    |
| 2    | IO module          |
| 3    | CM fieldbus module |
| 4    | Control board      |

TM05 9609 4113 - TM05 9608 4113

**High-performance control**

POWERDRIVE MD and FX control induction motors according to different modes (fixed U/F ratio or U/F ratio with dynamic energy optimization, flux vector control, etc.). Thanks to a virtual sensor function (sensor-less), POWERDRIVE MD and FX also control machines with magnets with no additional sensors, thus offering substantial savings in terms of wiring and installation. The speed/position-feedback option is ideal for applications where torque control is essential at zero speed and applications requiring very high dynamic performance.

## User interface

The setup is very simple, using the colour touch screen on the front panel.



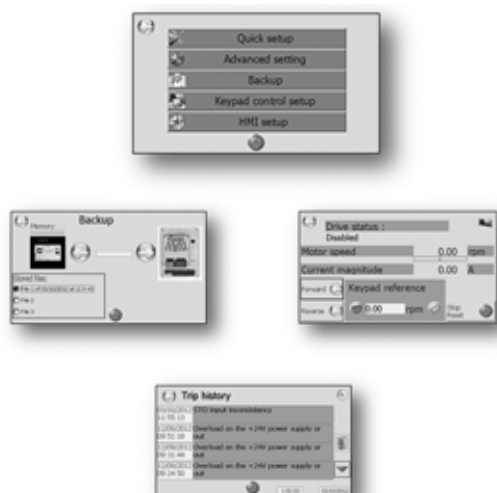
Copyright Leroy-Somer 2013

TM05 9600 4113

**Fig. 15** User interface

The user interface is easy to use and provides instant, intuitive access to parameters and operating data.

The status display which provides information on the drive status (stopped or running), trip history and backup is just one of the functions offered by this user-friendly user interface.



Copyright Leroy-Somer 2013

TM05 9604 4113 - TM05 9601 4113 - TM05 9602 4113 - TM05 9603 4113

**Fig. 16** Example of user interface

## Quick setup

When using the Quick setup menu, five interactive menus are available:

- basic control (Ctr)
- motor nameplate (Mtr)
- speeds and ramps (Spd)
- customer's interface (I/O)
- application parameters (Apl).

## Advanced setup

When using the advanced setup menu, you have access to all POWERDRIVE MD or FX menus.

## Backup

The backup function allows you to save up to three complete set of drive parameters without any additional storage media.

## Display

Operating conditions, modes and parameters are available to the operator.

## Diagnostics

To ensure reliable operation, a preventive self-test is performed at each startup.

Furthermore, POWERDRIVE MD and FX incorporate time-stamping of the latest ten trips and tracking of the electrical, mechanical and thermal physical values preceding the latest trip over a period of time:

- fault history of latest 10 trips
- timestamp
- operating conditions prior to latest trip memorised
- troubleshooting help.

## Commissioning software

Use the advanced parameter-setting software MDX-SOFT to start up your system. MDX-SOFT offers PC-guided setup and a good overview.



Copyright Leroy-Somer 2013

**Fig. 17** Commissioning software

## Features

- Parameter setting
- file export and comparison
- 4-channel scope function
- backup.

TM05 9607 4113 - TM05 9605 4113 - TM05 9606 4113

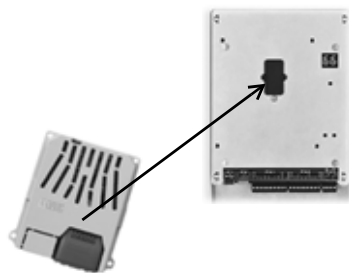
## Safety

POWERDRIVE MD and FX have a built-in safety function (Safe Torque Off) in accordance with the requirements of ISO 13849 and EN 62061.

## Communication

You can use the add-on fieldbus modules to adapt the drive to control/monitoring systems:

- MDX-Modbus
- MDX-PROFIBUS
- MDX-PROFINET
- MDX-Canopen.



Copyright Leroy-Somer 2013

TM05 9599 4113 - TM05 9597 4113

**Fig. 18** Example of CM fieldbus module

## Energy savings

POWERDRIVE MD and FX reduce energy costs while improving processes and productivity. The POWERDRIVE MD or FX and permanent-magnet motor solution creates the most powerful drive available on any market where energy efficiency is a priority.



## 5. Grundfos BMS hp



TM06 1045 4113

Fig. 19 BMS hp pump

### Applications

The Grundfos BMS hp booster system is suitable for industrial and water supply applications where the inlet pressure is high, up to 82.7 bar (1200 psi). The BMS hp booster systems are used to increase the system pressure up to 82.7 bar (1200 psi).

The BMS hp booster system is the optimum solution for applications requiring the following:

- pumps capable of coping with high system pressures
- a minimum of maintenance.

### Typical applications

BMS hp booster systems are suitable for the following typical applications:

- Water treatment where energy recovery devices (ERD), like pressure exchangers are used, such as:
  - reverse osmosis in domestic water supply systems
  - hospitals, laboratories as well as chemical, electronics and metal industries
  - ultra-filtration in chemical and galvanic industries
  - painting workshops, metal and mineral industries.
- Liquid transfer.
- Pressure boosting.
- Closed circulation systems with a high static pressure.

### Standard pumps

The following standard pumps are available for the BMS hp booster systems:

- SP 17-3, 17-5 and 17-7
- SP 30-3, 30-5 and 30-7
- SP 46-2, 46-4 and 46-6A
- SP 60-2, 60-4 and 60-6
- SP 77-2 and 77-3
- SP 95-2 and 95-3
- SP 125-1 and 125-2
- SP 160-1 and 160-2
- SP 215-1.

SP standard pumps are with a 6" sleeve in range 17-60 and 8" sleeve in range 77-215.

**Note:** The BMS hp booster systems come without non-return valves.

### 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.

### BMS hp

| Recommended flow rate at 25 °C (77 °F) |                     |  |             |  |  |  |
|----------------------------------------|---------------------|--|-------------|--|--|--|
| Type                                   | [m <sup>3</sup> /h] |  | US [gpm]    |  |  |  |
| BMS hp 17-3, 17-5 and 17-7             | 10-26               |  | 44 - 114.5  |  |  |  |
| BMS hp 30-3, 30-5 and 30-7             | 19-45               |  | 83.7 - 198  |  |  |  |
| BMS hp 46-2, 46-4 and 46-6A            | 28-72               |  | 123-317     |  |  |  |
| BMS hp 60-2, 60-4 and 60-6             | 37-90               |  | 163 - 396.3 |  |  |  |
| BMS hp 77-2 and 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 17-3, 17-5 and 17-7  | 1              | 14.5       | 80         | 1160       | 82.7            | 1200       |
| BMS hp 30-3, 30-5 and 30-7  | 1              | 14.5       | 80         | 1160       | 82.7            | 1200       |
| BMS hp 46-2, 46-4 and 46-6A | 1              | 14.5       | 80         | 1160       | 82.7            | 1200       |
| BMS hp 60-2, 60-4 and 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       |
| 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:** If there is a risk of exceeding the maximum inlet or outlet pressure, we recommend that you install a safety valve.

**Note:** Maximal permissible liquid temperature is 40 °C (104 °F). If you have an application for higher temperature, contact Grundfos.

### Construction

Modified standard submersible pumps are used for the BMS hp booster systems. The pumps are centred in the stainless-steel (Duplex) sleeve.

Inlet and outlet:

- BMS hp 6": 3" Victaulic couplings
- BMS hp 8": 6" Victaulic couplings.

## Motor

Asynchronous motor with integrated variable-frequency drive (Grundfos standard MG, MGE and Siemens motors).

### Motor type

You can fit BMS hp with a totally enclosed, fan-cooled, 2-pole Grundfos standard MG or MGE motor. The motor has principal dimensions according to EN standards and electrical tolerances according to EN 60034.

3 to 22 kW (4 to 30 hp): E-pumps with three-phase MGE motors.

Grundfos MGE 100, MGE 132, MGE 160 and MGE 180 motors offer these features:

- Three-phase mains connection.
- Three-phase, asynchronous squirrel-cage induction motors designed to IEC, DIN and VDE guidelines and standards. The motors incorporate a frequency converter and PI controller.
- Used for continuously variable-speed control of Grundfos E-pumps.

Note

**Motors without integrated variable-frequency drive require an external variable-frequency drive to obtain duty points as shown on performance curves**

### Voltages

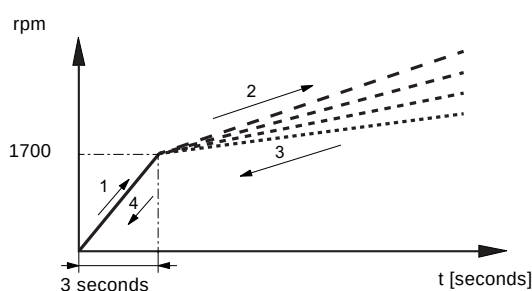
- 3 x 380-480 V.

### Enclosure class

- IP55 (IEC 34-5).

### Required ramp times

The ramp-up and ramp-down times ensure safe operation during startup, normal operation and shutdown.



TM06 1079 1614

**Fig. 20** Ramp up, BMS hp

1. Ramp up: From 0 to 1700 rpm, maximum 3 seconds.
2. Ramp up: From 1700 rpm to maximum speed, 1500 rpm/min
3. Ramp down: From maximum speed to 1700 rpm, 1500 rpm/min
4. Ramp down: From 1700 to 0 rpm, maximum 3 seconds.

## Operating conditions

### Sound pressure level

The sound pressure level of BMS hp 6" booster systems is below 72 dB(A) and the sound pressure level of BMS hp 8" booster systems is below 80 dB(A).

### Temperature

Storage and transport temperature: -40 to 60 °C (-104 to 140 °F).

Operating temperature: -20 to 40 °C (-68 to 104 °F), up to 50 °C (122 °F).

### Humidity

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

### Altitude

0 to 4000 m, with derating of operating temperature of 0.6 °C per 100 m between 1000 and 4000 m.

### Rated speed

60 Hz: 3500 min<sup>-1</sup>.

## 6. High pressure booster systems

The following subsections describe systems which are typically used for high-pressure booster applications.

### BMS hs booster system

You can use the BMS hs booster system in several different fresh-water applications.

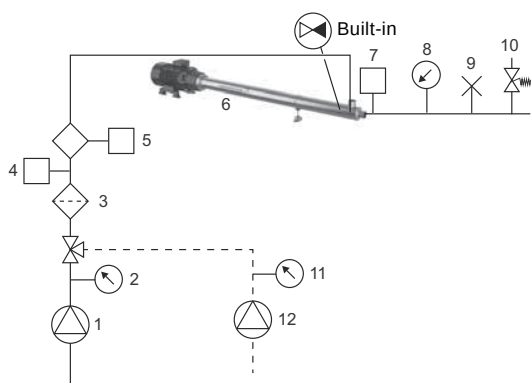


Fig. 21 Example of BMS hs booster system

| Pos. | Description                                 |
|------|---------------------------------------------|
| 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    | Air vent                                    |
| 10   | Pressure relief valve                       |
| 11   | Pressure gauge (fresh-water pump)           |
| 12   | Fresh-water flush pump*                     |

\* A fresh-water flush pump must be installed in applications for seawater desalination or similar applications.

### The function of a BMS hs booster system

The BMS hs pump creates the needed flow rate and pressure in the system. The frequency converter ensures low operating costs and safe ramp-up and ramp-down. The factory-set ramp times prevent damage due to water hammer.

### BMS hp booster system

You can use the BMS hp booster system in several different high pressure applications. Especially when you need a high inlet pressure.

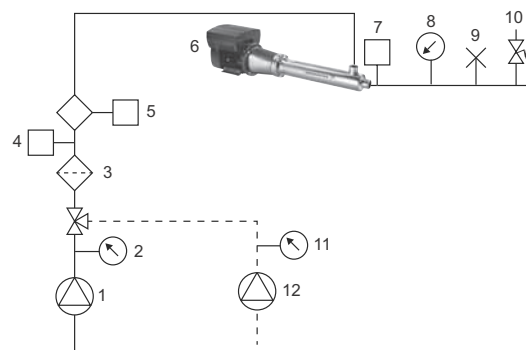


Fig. 22 Example of BMS hp booster system

| 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    | Air vent                                |
| 10   | Pressure relief valve                   |
| 11   | Pressure gauge (fresh-water pump)       |
| 12   | Fresh-water flush pump*                 |

\* A fresh-water flush pump must be installed in applications for seawater desalination or similar applications.

### The function of a BMS hp booster system

The BMS hp pump creates the needed flow rate and pressure in the system. The frequency converter ensures low operating costs and safe ramp-up and ramp-down. The factory-set ramp times prevent damage due to water hammer.

## 7. Reverse osmosis systems

The following subsections describe three systems typically used for the reverse osmosis process.

### BMS hs system

You can use the BMS hs booster system in reverse osmosis systems.

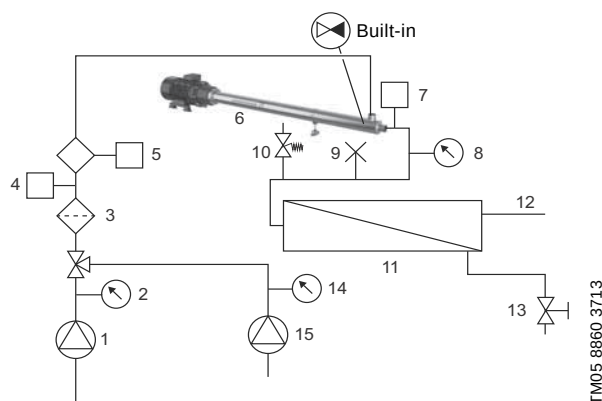


Fig. 23 Example of BMS hs booster system

| Pos. | Description                                |
|------|--------------------------------------------|
| 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    | Air vent                                   |
| 10   | Pressure relief valve                      |
| 11   | Membrane filter                            |
| 12   | Permeate                                   |
| 13   | Pressure control valve                     |
| 14   | Pressure gauge (fresh-water)               |
| 15   | Fresh-water flush pump                     |

### How does it work?

The BMS hs pump creates the needed flow rate and pressure through the membranes of the system. The frequency converter ensures low operating costs and safe ramp-up and ramp-down. The factory-set ramp times prevent damage due to water hammer.

### BMST system

A BMST booster system consists of a BMS hs pump and a BMT pump.

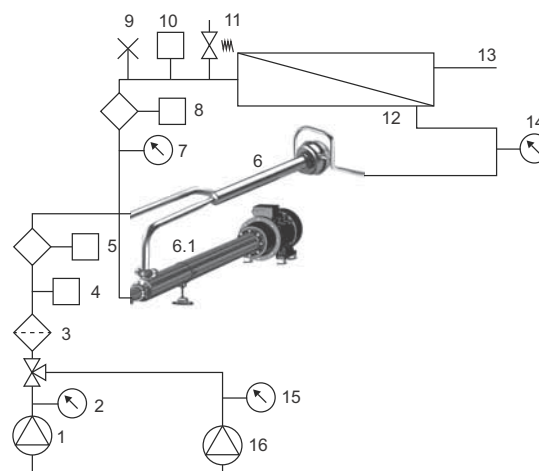


Fig. 24 Example of BMST booster system

| Pos. | Description                                |
|------|--------------------------------------------|
| 1    | Raw-water feed pump                        |
| 2    | Pressure gauge (raw water)                 |
| 3    | Filter                                     |
| 4    | Low-pressure switch                        |
| 5    | Flowmeter                                  |
| 6    | BMT pump                                   |
| 6.1  | BMS hs pump                                |
| 7    | Pressure gauge (BMST outlet pressure)      |
| 8    | Flowmeter                                  |
| 9    | Air vent                                   |
| 10   | High-pressure switch                       |
| 11   | Pressure relief valve                      |
| 12   | Membrane filter                            |
| 13   | Permeate                                   |
| 14   | Pressure gauge (high-pressure concentrate) |
| 15   | Pressure gauge (fresh-water)               |
| 16   | Fresh-water flush pump                     |

A BMST system makes it possible to deliver the same performance as with a standard centrifugal pump, but saves up to 35 % of the total power consumption.

### How does it work

The BMS hs pump creates the needed flow rate and pressure through the membranes of the system. 65 % of the energy needed are generated by the BMS hs pump, and the remaining 35 % are provided by the Pelton turbine. The turbine is driven by the high-pressure concentrate outlet. The BM pump driven by the Pelton turbine increases the inlet pressure of the BMS hs pump.

This makes it possible to save up to 35 % of the total power consumption.

## BMSX system

A BMSX booster system consists of a BMS hs pump (high speed) pump, a BM hp pump (high inlet pressure) pump and an isobaric pressure exchanger.

### High efficiency

The BMSX system has a unique design dedicated to desalination of seawater and brackish water. The isobaric pressure exchanger has an efficiency of up to 98 %, thus ensuring high energy recovery and low operating costs.

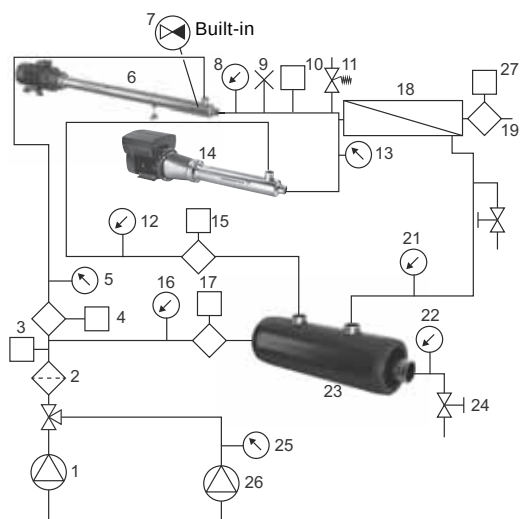


Fig. 25 Example of BMSX booster system

| Pos. | Description                                |
|------|--------------------------------------------|
| 1    | Raw-water feed pump                        |
| 2    | Filter                                     |
| 3    | Low-pressure switch                        |
| 4    | Flowmeter                                  |
| 5    | Pressure gauge (raw water)                 |
| 6    | BMS hs pump with built-in non-return valve |
| 7    | Non-return valve (built into BMS hs)       |
| 8    | Pressure gauge (BMS hs outlet pressure)    |
| 9    | Air vent                                   |
| 10   | High-pressure switch                       |
| 11   | Pressure relief valve                      |
| 12   | Pressure gauge (BMS hp inlet pressure)     |
| 13   | Pressure gauge (BMS hp outlet pressure)    |
| 14   | BMS hp pump                                |
| 15   | Flowmeter (high-pressure raw water)        |
| 16   | Pressure gauge (low-pressure raw water)    |
| 17   | Flowmeter (low-pressure raw water)         |
| 18   | Membrane filter                            |
| 19   | Permeate                                   |
| 20   | Cleaning flush valve                       |
| 21   | Pressure gauge (high-pressure concentrate) |
| 22   | Pressure gauge (low-pressure concentrate)  |
| 23   | Pressure exchanger                         |
| 24   | Concentrate valve                          |
| 25   | Pressure gauge (fresh-water)               |
| 26   | Fresh-water flush pump                     |
| 27   | Flowmeter                                  |

### How does it work

The BMS hs pump creates the needed flow rate and pressure through the membranes of the system. However, only 40 % of the energy needed are generated by the BMS hs pump. The remaining 60 % are provided by the pressure exchanger. The pressure exchanger transfers energy from the high-pressure concentrate outlet to the raw-water inlet, thus increasing the raw-water pressure from 2 bar to the system pressure.

This is what makes it possible to reach the high efficiency of up to 97 % for the pressure exchanger.

The pressure loss in the pressure exchanger is evened out by BMS hp and the frequency converter that maintain the desired pressure for the entire reverse osmosis process.

## 8. Features and benefits

### BMS hs booster system

The BMS hs booster system consists of a standard SP pump centred in a stainless-steel sleeve and a permanent-magnet high speed motor (PM) or a asynchronous high speed motor (AC). As the motor is directly coupled to the pump, it is easy to find a pump that suits your needs in Grundfos Product Center.

If the BMS hs booster system is to be used in a BMSX system, Grundfos has developed an easy-to-use selection tool. Fill in information about your needs, and the tool will tell you what to order.

#### BMS hs PM

##### Features:

- Motor controlled by variable-frequency drive.
- Built-in check valve.
- Speed range of 4000-5500 rpm.
- Set from factory.
- High-pressure booster up to 82.7 bar (1200 psi).
- Add-on module for external communication.
- Add-on module for input/output support - 6 digital and/or analog inputs/outputs.
- Remote control via the internet.

##### Benefits

- Built-in check valve
- easy-to-use selection tool
- log on anywhere via Internet connection
- plug and play, configured from factory
- small footprint
- low weight
- easy access to shaft seal and thrust bearing
- reduced maintenance
- only three tools for dismantling
- service connector
- automatic ramp-up/ramp-down
- variable-frequency drive self-test at startup
- built-in thrust bearing
- NBR pump bearings and seal rings
- ceramic/carbon thrust bearing
- silicon carbide/carbon shaft seal, especially designed for high pressure
- overload protection while running
- low downtime
- inlet and outlet pipes connected using Victaulic couplings, style 77DX
- high efficiency means energy savings
- easy maintenance and alignment
- extreme durability and reliability
- easy integration in any water treatment system
- designed for high flow rate and pressure.

### BMS hs AC

##### Features:

- Motor controlled by variable-frequency drive.
- Built-in check valve.
- Speed range of 4000-5500 rpm.
- Set BMS hs AC according to the installation and operating instructions.
- High-pressure booster up to 82.7 bar (1200 psi).

##### Benefits

- Built-in non-return valve
- easy-to-use selection tool
- easy access to shaft seal and thrust bearing
- reduced maintenance
- only three tools for dismantling
- service connector
- automatic ramp-up/ramp-down
- built-in thrust bearing
- NBR pump bearings and seal rings
- ceramic/carbon thrust bearing
- silicon carbide/carbon shaft seal, especially designed for high pressure
- overload protection while running
- low downtime
- inlet and outlet pipes connected using Victaulic couplings, style 77DX
- easy maintenance and alignment
- extreme durability and reliability
- easy integration in any water treatment system
- designed for high flow rate and pressure.

## BMS hp booster system

The BMS hp booster system consists of a standard SP pump with high inlet pressure and a MG, MGE or Siemens motor. If the BMS hp booster system is to be used in a BMSX system, Grundfos has developed an easy-to-use selection tool. Fill in information about your needs, and the tool will tell you what to order.

### BMS hp MG

#### Features

- Motor controlled by variable-frequency drive
- speed range of 1700-3500 rpm
- reduced system wear
- high inlet-pressure up to 82.7 bar (1200 psi).

#### Benefits

- Perfect process control
- easy-to-use selection tool
- small footprint
- low weight
- extreme durability and reliability
- easy integration in any water treatment system
- designed for high flow rate and pressure
- built-in check valve as option
- inlet and outlet pipes connected using Victaulic couplings, style 77DX.

## BMS hp MGE

#### Features

- Motor controlled by variable-frequency drive
- speed range of 1700-3500 rpm
- factory-set ramp times
- extra functions I/O functionality
- data collection
- reduced system wear
- high inlet-pressure up to 82.7 bar (1200 psi).

#### Benefits

- Perfect process control
- remote control, monitoring and data collection of the application and pump performance
- reduced installation and wiring costs
- easy-to-use selection tool
- small footprint
- low weight
- extreme durability and reliability
- easy integration in any water treatment system
- designed for high flow rate and pressure
- built-in check valve as option
- inlet and outlet pipes connected using Victaulic couplings, style 77DX.

## 9. Product range

### BMS hs PM booster system and frequency converter

| BMS hs booster       | Power P2 |      | Max. speed | Frequency converter | Efficiency | Product number |
|----------------------|----------|------|------------|---------------------|------------|----------------|
|                      | [kW]     | [hp] | [rpm]      |                     |            |                |
| BMS 17-22 HS-E-C-P-A | 70       | 94   | 5500       | FX 75T              | 41         | 98467174       |
| BMS 17-22 HS-E-C-P-A | 70       | 94   | 5500       | MD2MS 100T          | 63         | 98467175       |
| BMS 17-22 HS-E-C-P-A | 85       | 114  | 5500       | MD2MS 120T          | 68         | 98467176       |
| BMS 17-22 HS-E-C-P-A | 85       | 114  | 5500       | MD2MS 150T          | 58         | 98467177       |
| BMS 17-22 HS-E-C-P-A | 70       | 94   | 5000       | FX 75T              | 66         | 98467178       |
| BMS 17-22 HS-E-C-P-A | 70       | 94   | 5000       | MD2MS 100T          | 69         | 98467179       |
| BMS 17-22 HS-E-C-P-A | 44       | 59   | 4500       | FX 60T              | 68         | 98467180       |
| BMS 17-22 HS-E-C-P-A | 52       | 70   | 4500       | FX 75T              | 64         | 98467181       |
| BMS 30-26 HS-E-C-P-A | 140      | 188  | 5500       | MD2MS 180T          | 67         | 98467182       |
| BMS 30-26 HS-E-C-P-A | 160      | 215  | 5500       | MD2MS 220T          | 72         | 98467183       |
| BMS 30-26 HS-E-C-P-A | 140      | 188  | 5000       | MD2MS 180T          | 72         | 98467184       |
| BMS 30-26 HS-E-C-P-A | 100      | 134  | 4500       | MD2MS 120T          | 72         | 98467185       |
| BMS 46-17 HS-E-C-P-A | 180      | 241  | 5500       | MD2MS 220T          | 72         | 98467186       |
| BMS 46-17 HS-E-C-P-A | 140      | 188  | 5000       | MD2MS 180T          | 69         | 98467187       |
| BMS 46-17 HS-E-C-P-A | 160      | 215  | 5000       | MD2MS 220T          | 71         | 98467188       |
| BMS 60-17 HS-E-C-P-A | 180      | 241  | 5000       | MD2MS 220T          | 74         | 98467190       |

### Accessories (frequency converter)

| Add-on module                          | Part number |
|----------------------------------------|-------------|
| Base frame                             | 98477866    |
| MDX - PROFIBUS DP V1                   | 98536322    |
| MDX - PROFINET                         | 98574712    |
| MDX - Modbus                           | 98574713    |
| MDX - Canopen                          | 98574714    |
| LS MD2MS 100T RFI filter               | 98536323    |
| LS MD2MS 120T/150T RFI filter          | 98536325    |
| LS MD2MS 180T/220T RFI filter          | 98536326    |
| LS MDX OI module (internet connection) | 98536328    |
| LS Colour tactile HMI with cable       | 98536330    |

### BMS hs AC booster system

| BMS hs booster       | Power P2 |      | Max. speed | Efficiency | Product number |
|----------------------|----------|------|------------|------------|----------------|
|                      | [kW]     | [hp] | [rpm]      |            |                |
| BMS 17-22 HS-B-C-P-A | 52       | 70   | 5000       | 68         | 99022832       |
| BMS 17-22 HS-B-C-P-A | 70       | 94   | 5500       | 68         | 99022843       |
| BMS 17-22 HS-B-C-P-A | 85       | 114  | 5500       | 68         | 99022844       |
| BMS 30-14 HS-B-C-P-A | 85       | 114  | 5500       | 70         | 99022845       |
| BMS 30-26 HS-B-C-P-A | 120      | 161  | 4500       | 71         | 99022846       |
| BMS 30-26 HS-B-C-P-A | 140      | 188  | 5500       | 72         | 99022847       |
| BMS 30-26 HS-B-C-P-A | 160      | 215  | 5500       | 70         | 99022848       |
| BMS 46-17 HS-B-C-P-A | 160      | 215  | 5500       | 68         | 99022849       |
| BMS 46-17 HS-B-C-P-A | 180      | 241  | 5500       | 69         | 99059893       |
| BMS 60-17 HS-B-C-P-A | 180      | 241  | 5000       | 70         | 99022850       |



## BMS hp MG booster system 6"

| Type         | Motor output [P2] |      | Rated current      | Efficiency total | Length [L] |      | Weight [kg] |       | Ship. vol.        | Product number |
|--------------|-------------------|------|--------------------|------------------|------------|------|-------------|-------|-------------------|----------------|
|              | [kW]              | [hp] | I <sub>N</sub> [A] | η [%]            | [mm]       | [in] | Net         | Gross | [m <sup>3</sup> ] | R-version      |
| BMS 17-3 HP  | 3                 | 4.0  | 6.8 - 5.4          | 64               | 1281.0     | 50.4 | 96.1        | 186.1 | 0.962             | 98872087       |
| BMS 17-5 HP  | 5.5               | 7.5  | 10.6 - 9.3         | 66               | 1458.0     | 57.4 | 96.1        | 186.1 | 0.155             | 98872088       |
| BMS 17-7 HP  | 7.5               | 10.0 | 14.2 - 12.0        | 67               | 1567.0     | 61.7 | 135.2       | 225.2 | 0.155             | 98872090       |
| BMS 30-3 HP  | 5.5               | 7.5  | 10.6 - 9.3         | 66               | 1432.0     | 56.4 | 119.9       | 209.9 | 0.152             | 98872101       |
| BMS 30-5 HP  | 7.5               | 10.0 | 14.2 - 12.0        | 68               | 1624.0     | 63.9 | 136.1       | 226.1 | 0.160             | 98872102       |
| BMS 30-7 HP  | 11                | 15.0 | 20.8 - 17.2        | 68               | 2018.0     | 79.4 | 189.3       | 279.3 | 0.270             | 98872103       |
| BMS 46-2 HP  | 5.5               | 7.5  | 10.6 - 9.3         | 63               | 1382.0     | 54.4 | 118.5       | 208.5 | 0.148             | 98872104       |
| BMS 46-4 HP  | 11                | 15.0 | 20.8 - 17.2        | 66               | 1798.0     | 70.8 | 183.4       | 273.4 | 0.243             | 98872105       |
| BMS 46-6A HP | 15                | 20.0 | 28.0 - 22.4        | 67               | 2024.0     | 79.7 | 202.7       | 292.7 | 0.271             | 98872106       |
| BMS 60-2 HP  | 7.5               | 10.0 | 14.2 - 12.0        | 60               | 1370.0     | 53.9 | 128.7       | 218.7 | 0.137             | 98872107       |
| BMS 60-4 HP  | 11                | 15.0 | 20.8 - 17.2        | 66               | 1798.0     | 70.8 | 183.3       | 273.3 | 0.243             | 98872109       |
| BMS 60-6 HP  | 18.5              | 25.0 | 34.5 - 28.0        | 69               | 2068.0     | 81.4 | 215.9       | 305.9 | 0.277             | 98872110       |

On request, BMS hp MG is available for other voltages.

## BMS hp MG booster system 8"

| Type           | Motor output [P2] |      | Rated current      | Efficiency total | Length [L] |      | Weight [kg] |       | Ship. vol.        | Product number |
|----------------|-------------------|------|--------------------|------------------|------------|------|-------------|-------|-------------------|----------------|
|                | [kW]              | [hp] | I <sub>N</sub> [A] | η [%]            | [mm]       | [in] | Net         | Gross | [m <sup>3</sup> ] | R-version      |
| BMS 77-2A HP   | 11.0              | 15.0 | 20.8 - 17.2        | 64               | 1857.0     | 73.1 | 225.0       | 325.0 | 0.250             | 98872111       |
| BMS 77-3 HP    | 18.5              | 25.0 | 34.5 - 28.0        | 70               | 2029.0     | 79.9 | 256.0       | 356.0 | 0.272             | 98872112       |
| BMS 95-2 HP    | 15.0              | 20.0 | 28.0 - 22.4        | 69               | 1857.0     | 73.1 | 234.0       | 334.0 | 0.250             | 98872113       |
| BMS 95-3 HP    | 22.0              | 30.0 | 40.0 - 32.5        | 71               | 2055.0     | 80.9 | 270.0       | 370.0 | 0.311             | 98872116       |
| BMS 125-1 HP   | 18.5              | 25.0 | 34.5 - 28.0        | 68               | 1807.0     | 71.1 | 255.0       | 355.0 | 0.244             | 98872117       |
| BMS 125-2AA HP | 22.0              | 30.0 | 40.0 - 32.5        | 69               | 1988.0     | 78.3 | 281.0       | 381.0 | 0.302             | 98872119       |
| BMS 160-1A HP  | 15.0              | 20.0 | 28.0 - 22.4        | 62               | 1763.0     | 69.4 | 208.0       | 308.0 | 0.239             | 98872120       |
| BMS 160-1 HP   | 22.0              | 30.0 | 40.0 - 32.5        | 68               | 1833.0     | 72.2 | 271.0       | 371.0 | 0.280             | 98872121       |
| BMS 160-2 HP   | 30.0              | 41.0 | 56.0 - 50.0        | 76               | 2022.0     | 79.6 | 300.0       | 390.0 | 0.514             | 98494526       |
| BMS 215-1 HP   | 30.0              | 41.0 | 56.0 - 50.0        | 78               | 2005.0     | 78.9 | 300.0       | 390.0 | 0.510             | 98494527       |
| BMS 215-1 HP   | 37.0              | 50.0 | 68.0 - 61.0        | 79               | 2030.0     | 79.9 | 346.0       | 436.0 | 0.516             | 98494528       |

On request, BMS hp MG is available for other voltages.

## BMS hp MGE booster system 6"

| Type         | Motor output [P2] |      | Rated current<br>$I_N$ [A] | Efficiency total<br>$\eta$ [%] | Length [L] |      | Weight [kg] |       | Ship. vol.<br>[m <sup>3</sup> ] | Product number<br>R-version |
|--------------|-------------------|------|----------------------------|--------------------------------|------------|------|-------------|-------|---------------------------------|-----------------------------|
|              | [kW]              | [hp] |                            |                                | [mm]       | [in] | Net         | Gross |                                 |                             |
| BMS 17-3 hp  | 3                 | 4    | 6.2 - 5.00                 | 64                             | 1281       | 50.4 | 101.4       | 191.4 | 0.399                           | 98494496                    |
| BMS 17-5 hp  | 5.5               | 7.5  | 11.0 - 8.80                | 66                             | 1458       | 57.4 | 103.0       | 192.8 | 0.399                           | 98494497                    |
| BMS 17-7 hp  | 7.5               | 10   | 14.8 - 11.6                | 67                             | 1567       | 61.7 | 145.6       | 235.6 | 0.234                           | 98494498                    |
| BMS 30-3 hp  | 5.5               | 7.5  | 11.0 - 8.80                | 68                             | 1432       | 56.4 | 126.6       | 216.6 | 0.399                           | 98494499                    |
| BMS 30-5 hp  | 7.5               | 10.0 | 14.8 - 11.6                | 68                             | 1624       | 63.9 | 146.5       | 236.6 | 0.399                           | 98494500                    |
| BMS 30-7 hp  | 11.0              | 15   | 22.5 - 18.8                | 69                             | 2018       | 79.4 | 219.9       | 309.8 | 0.441                           | 98494511                    |
| BMS 46-2 hp  | 5.5               | 7.5  | 11.0 - 8.80                | 69                             | 1382       | 54.4 | 125.0       | 215.0 | 0.399                           | 98494512                    |
| BMS 46-4 hp  | 11.0              | 15   | 22.5 - 18.8                | 70                             | 1798       | 70.8 | 213.8       | 303.8 | 0.399                           | 98494513                    |
| BMS 46-6A hp | 15                | 20   | 30.0 - 26.0                | 71                             | 2024       | 79.7 | 235         | 325   | 0.442                           | 98494514                    |
| BMS 60-2 hp  | 7.5               | 10   | 14.8 - 11.6                | 70                             | 1370       | 53.9 | 139.0       | 229.1 | 0.399                           | 98494515                    |
| BMS 60-4 hp  | 11.0              | 15.0 | 22.5 - 18.8                | 71                             | 1798       | 70.8 | 213.7       | 303.7 | 0.399                           | 98494516                    |
| BMS 60-6 hp  | 18.5              | 25.0 | 29.9 - 35.7                | 72                             | 2068       | 81.4 | 248.3       | 338.3 | 0.500                           | 98494517                    |

On request, BMS hp MGE is available for other voltages.

## BMS hp MGE booster system 8"

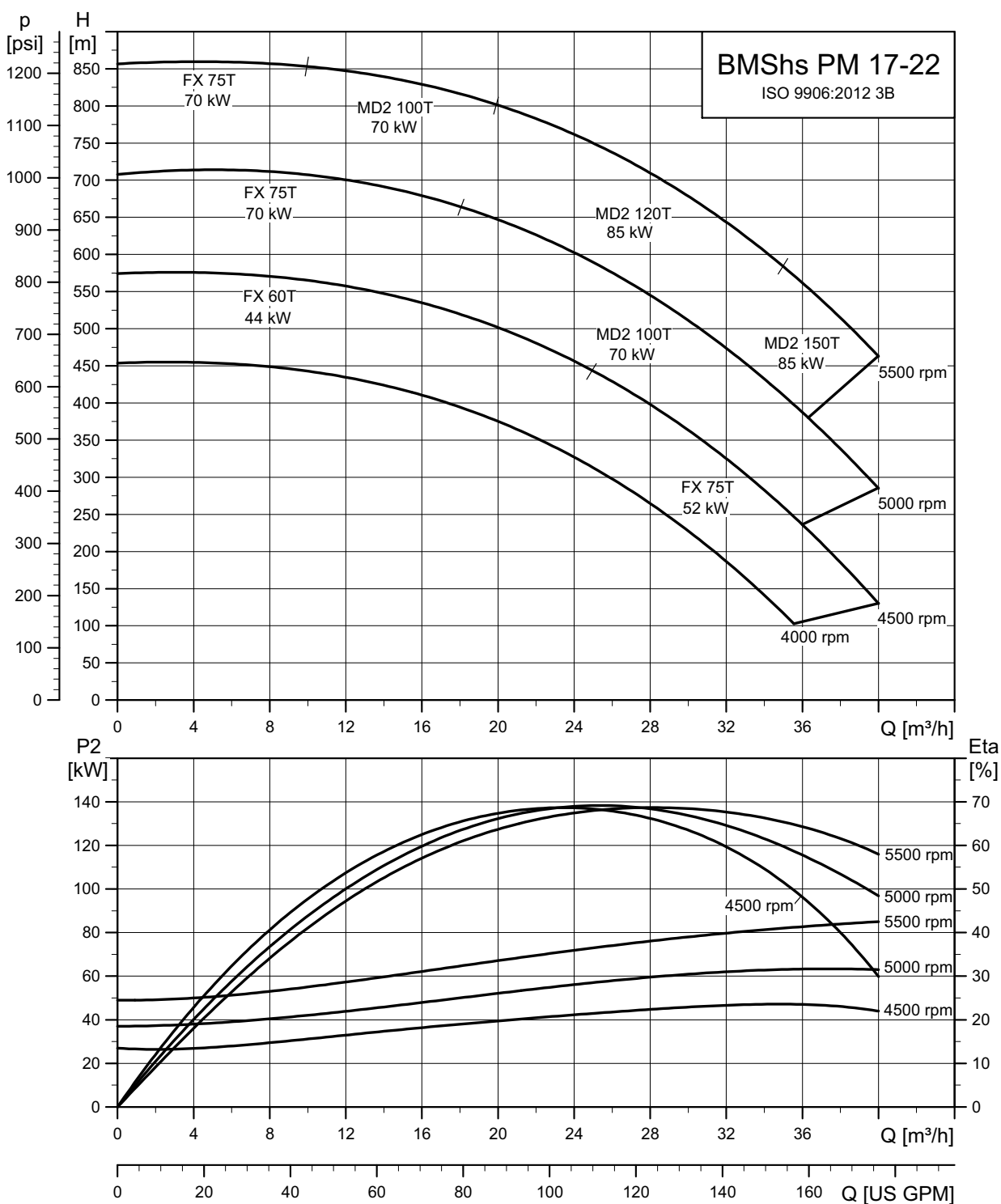
| Type         | Motor output [P2] |      | Rated current<br>$I_N$ [A] | Efficiency total<br>$\eta$ [%] | Length [L] |      | Weight [kg] |       | Ship. vol.<br>[m <sup>3</sup> ] | Product number<br>R-version |
|--------------|-------------------|------|----------------------------|--------------------------------|------------|------|-------------|-------|---------------------------------|-----------------------------|
|              | [kW]              | [hp] |                            |                                | [mm]       | [in] | Net         | Gross |                                 |                             |
| BMS 77-2 hp  | 11                | 15   | 22.5 - 18.8                | 70                             | 1.822      | 71.7 | 153         | 243   | 0.388                           | 98494518                    |
| BMS 77-3 hp  | 18.5              | 25   | 37-31                      | 71                             | 1.994      | 78.5 | 180         | 270   | 0.425                           | 98494519                    |
| BMS 95-2 hp  | 15                | 20   | 30-26                      | 72                             | 1.822      | 71.7 | 167         | 257   | 0.388                           | 98494520                    |
| BMS 95-3 hp  | 22                | 30   | 44-35                      | 72                             | 2.020      | 79.5 | 197         | 287   | 0.435                           | 98494521                    |
| BMS 125-1 hp | 18.5              | 25   | 37-31                      | 74                             | 1.771      | 69.7 | 180         | 270   | 0.378                           | 98494522                    |
| BMS 125-2 hp | 22                | 30   | 44-35                      | 74                             | 1.952      | 76.9 | 197         | 287   | 0.42                            | 98494523                    |
| BMS 160-1 hp | 15                | 20   | 30-26                      | 74                             | 1.727      | 67.9 | 167         | 257   | 0.368                           | 98494524                    |
| BMS 160-1 hp | 22                | 30   | 44-35                      | 75                             | 1.797      | 70.7 | 197         | 287   | 0.387                           | 98494525                    |

On request, BMS hp MGE is available for other voltages.

## 10. Performance curves

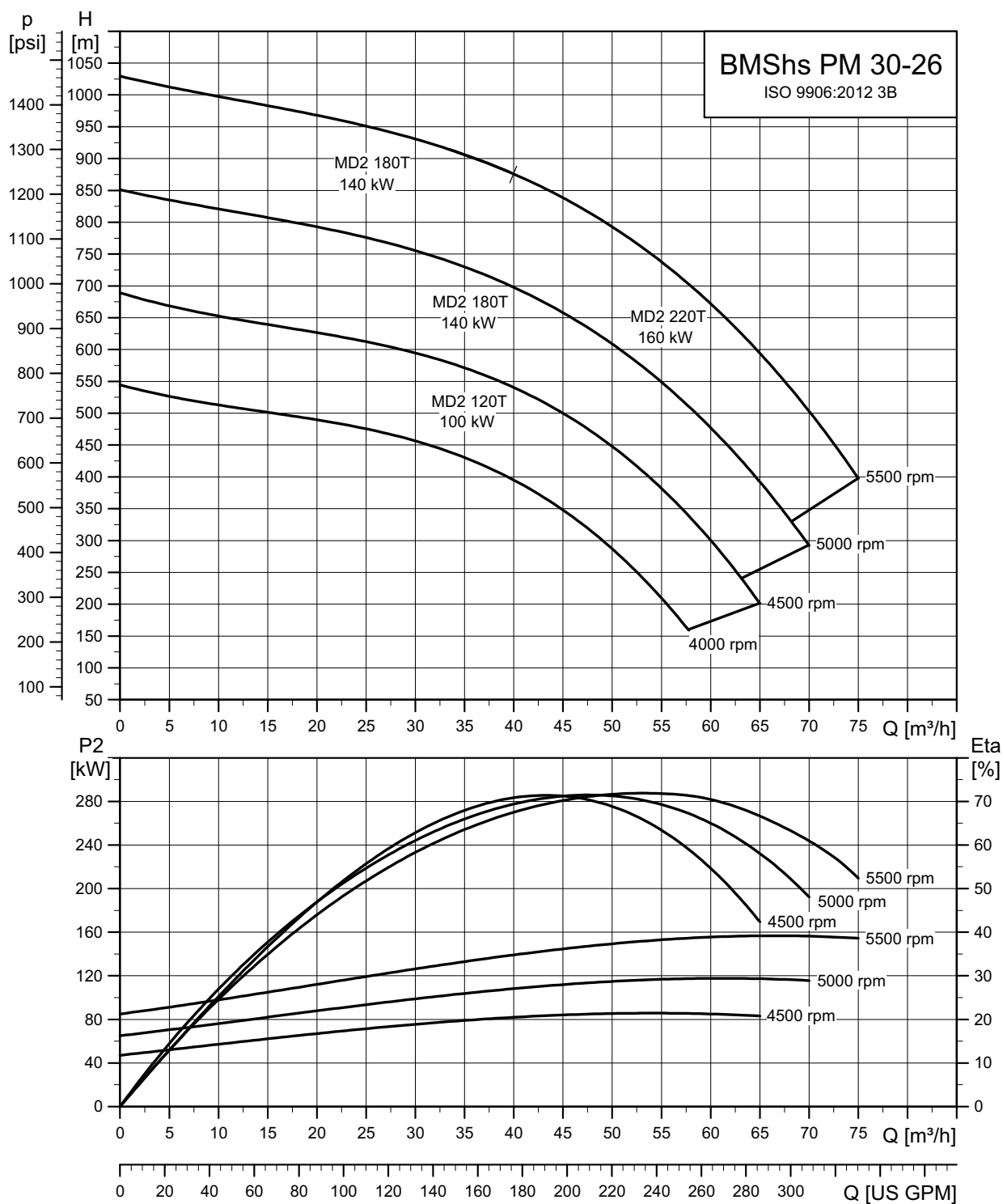
The power and efficiency curves for BMS hs with permanent-magnet motor displayed below include pump, motor and frequency converter (POWERDRIVE MD or FX). See section *Performance range* on page 5.

### BMS hs PM, 17-22



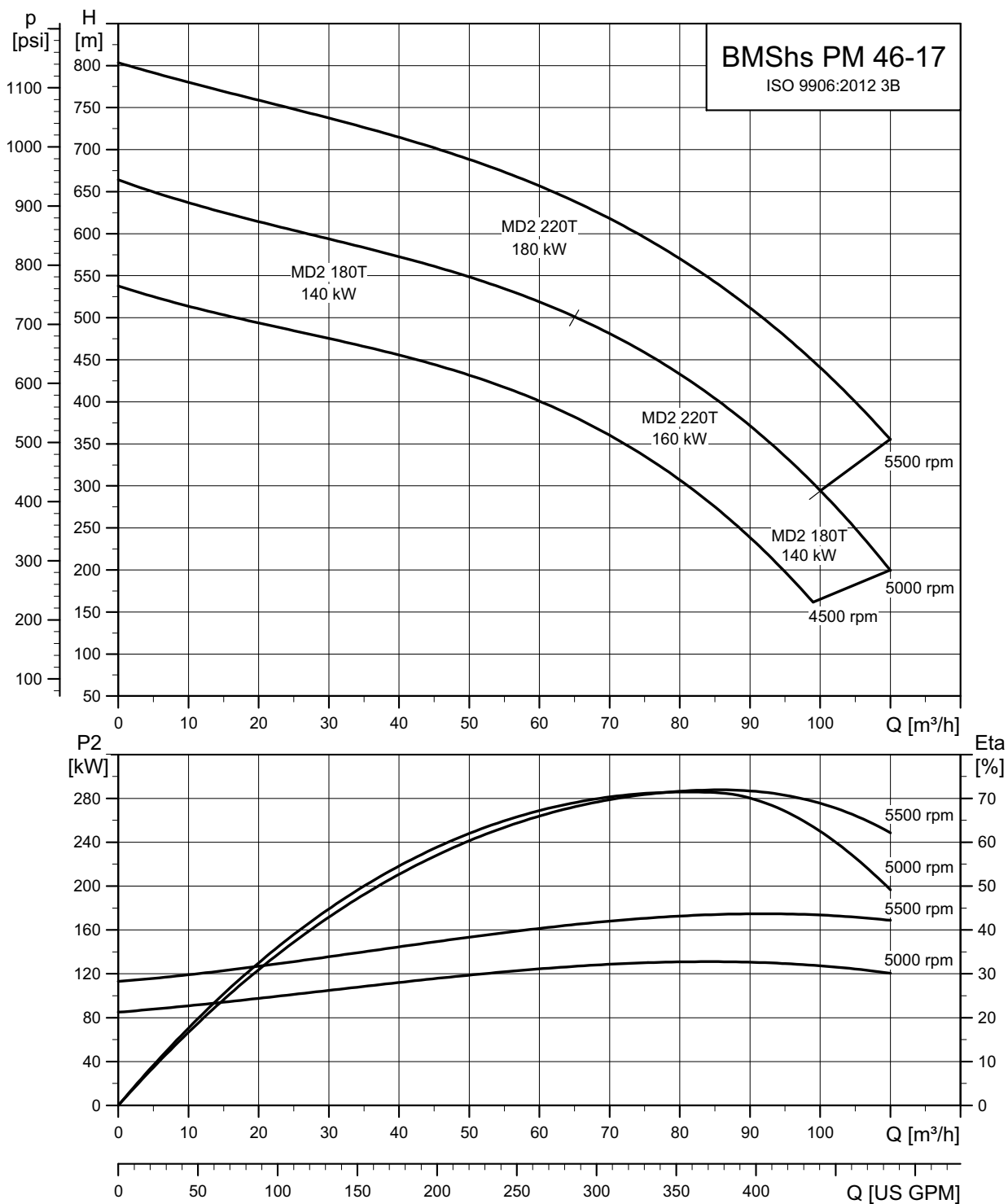
TMO5 8114 5115

## BMS hs PM, 30-26



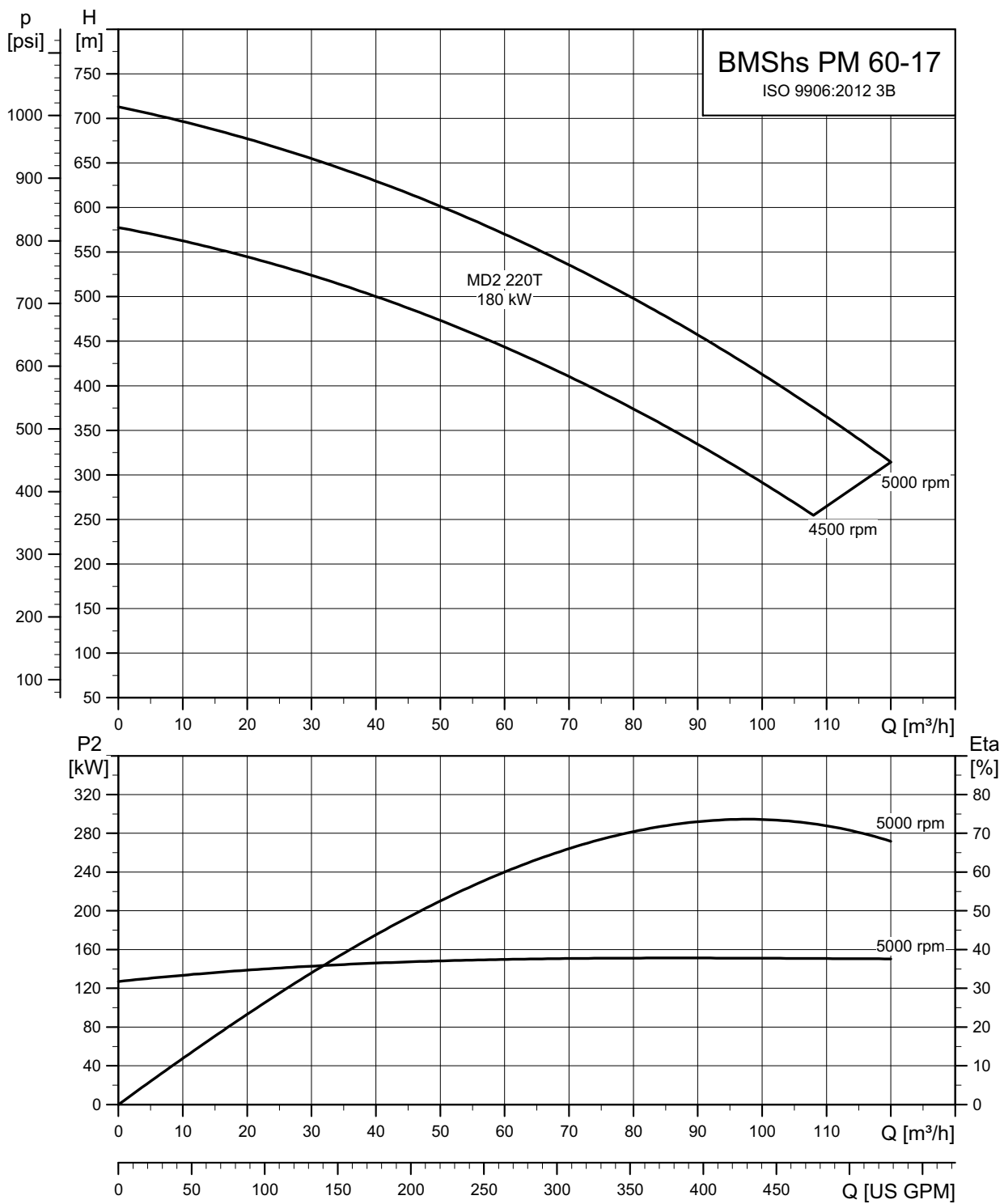
TM05 8237 5115

## BMS hs PM, 46-17



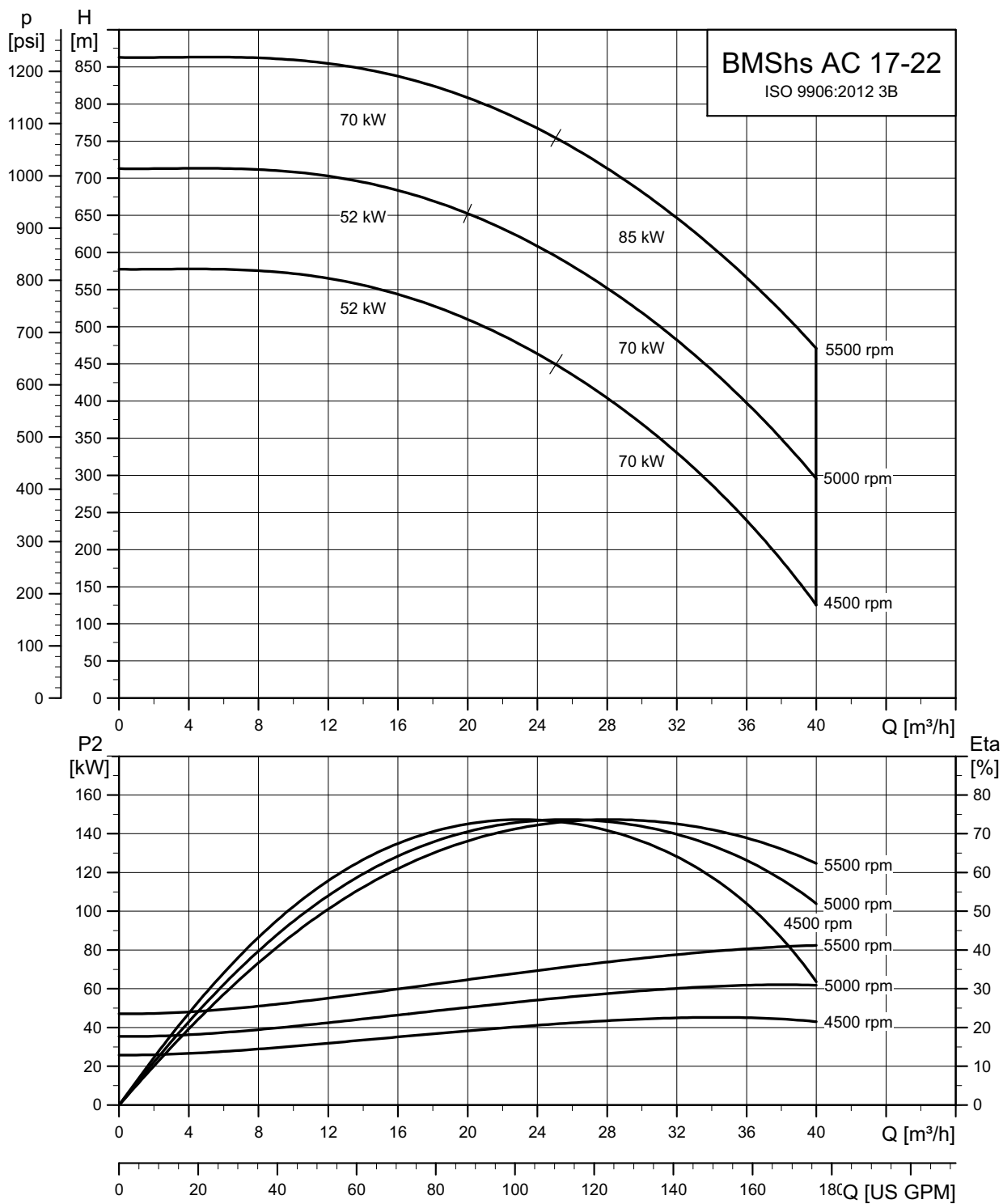
TM05 8238 5115

## BMS hs PM, 60-17



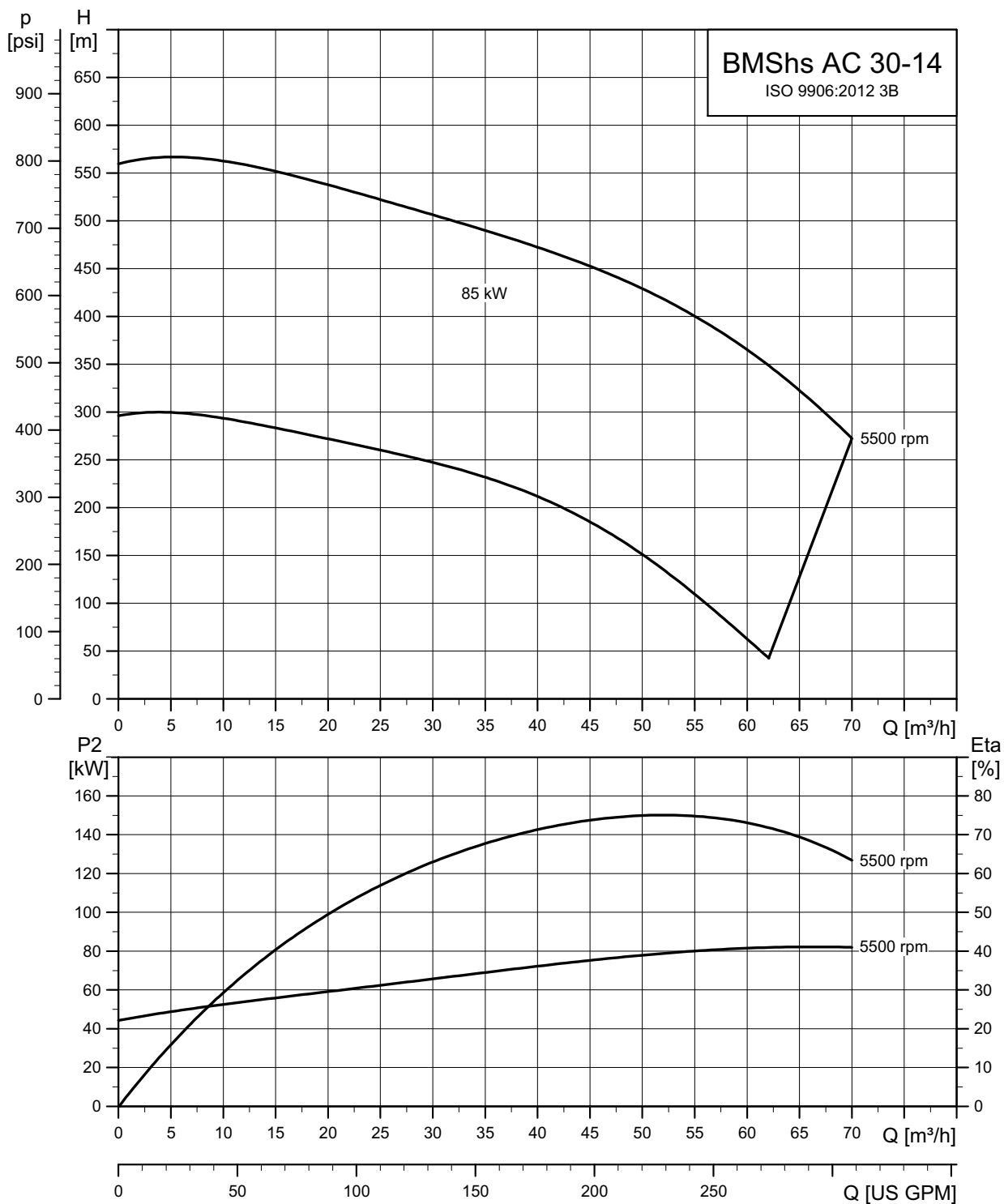
TM05 8239 5115

## BMS hs AC, 17-22



TM06 5600 5115

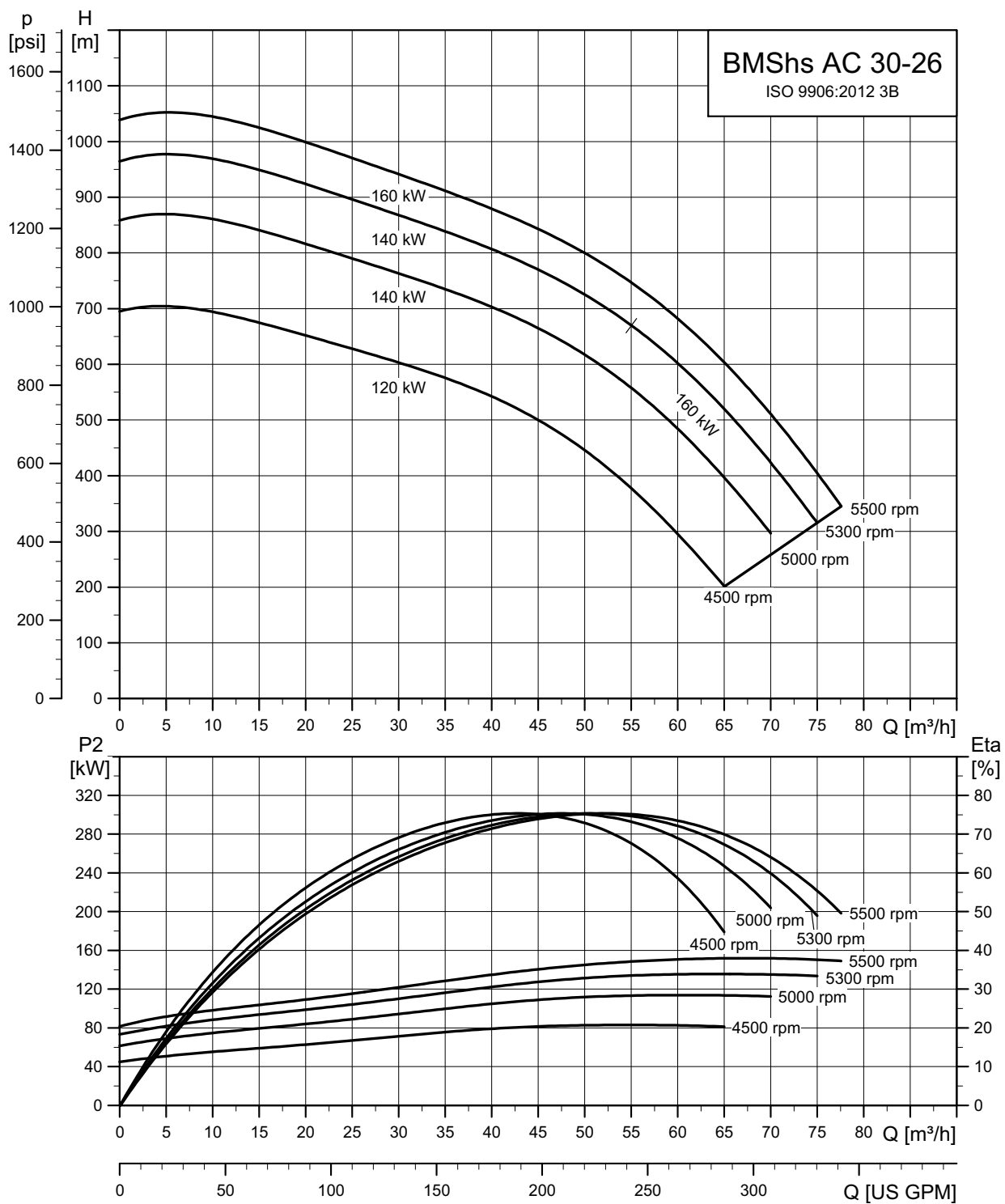
BMS hs AC, 30-14



TM06 5601 5115

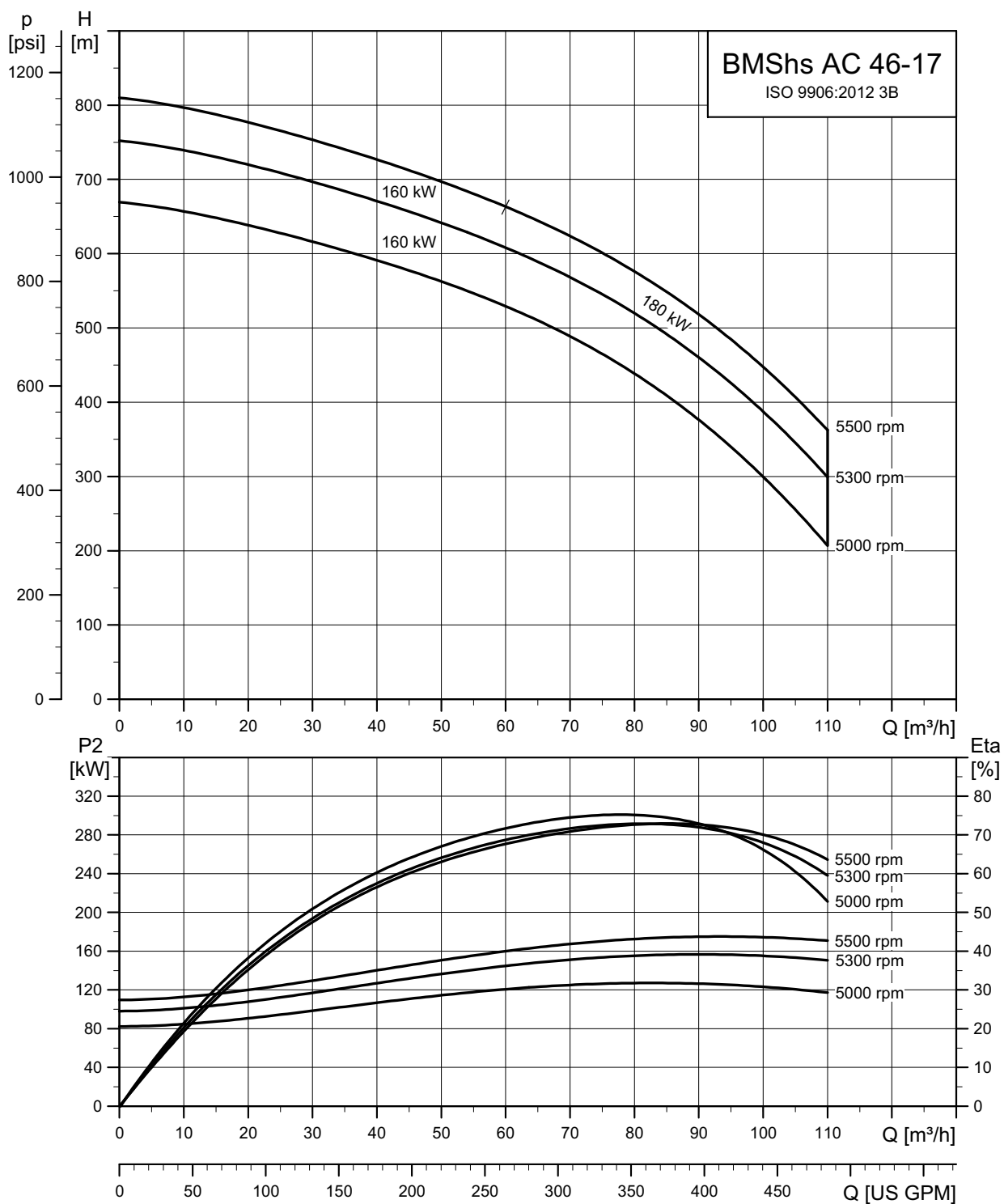


## BMS hs AC, 30-26



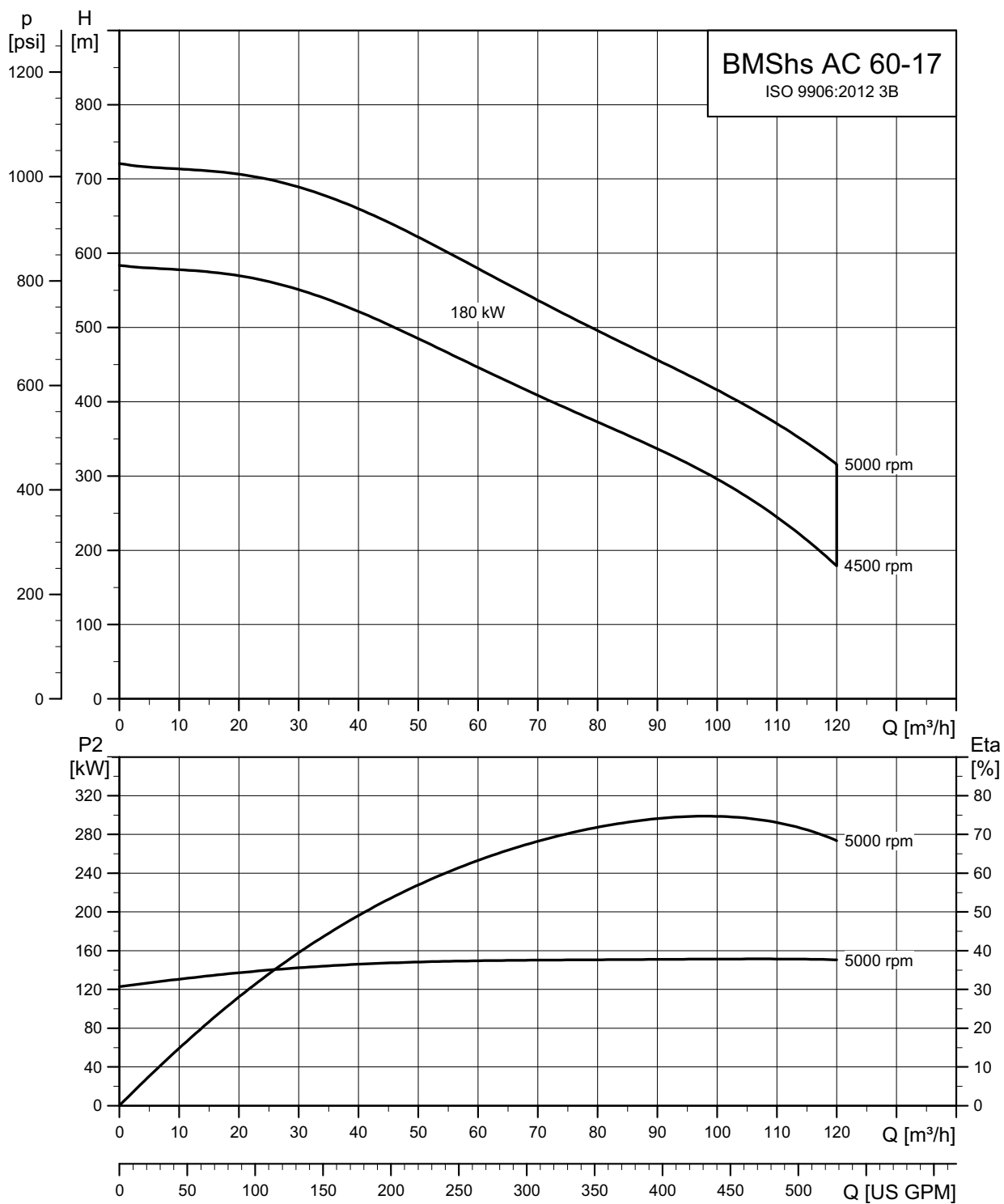
TM06 5602 5115

## BMS hs AC, 46-17



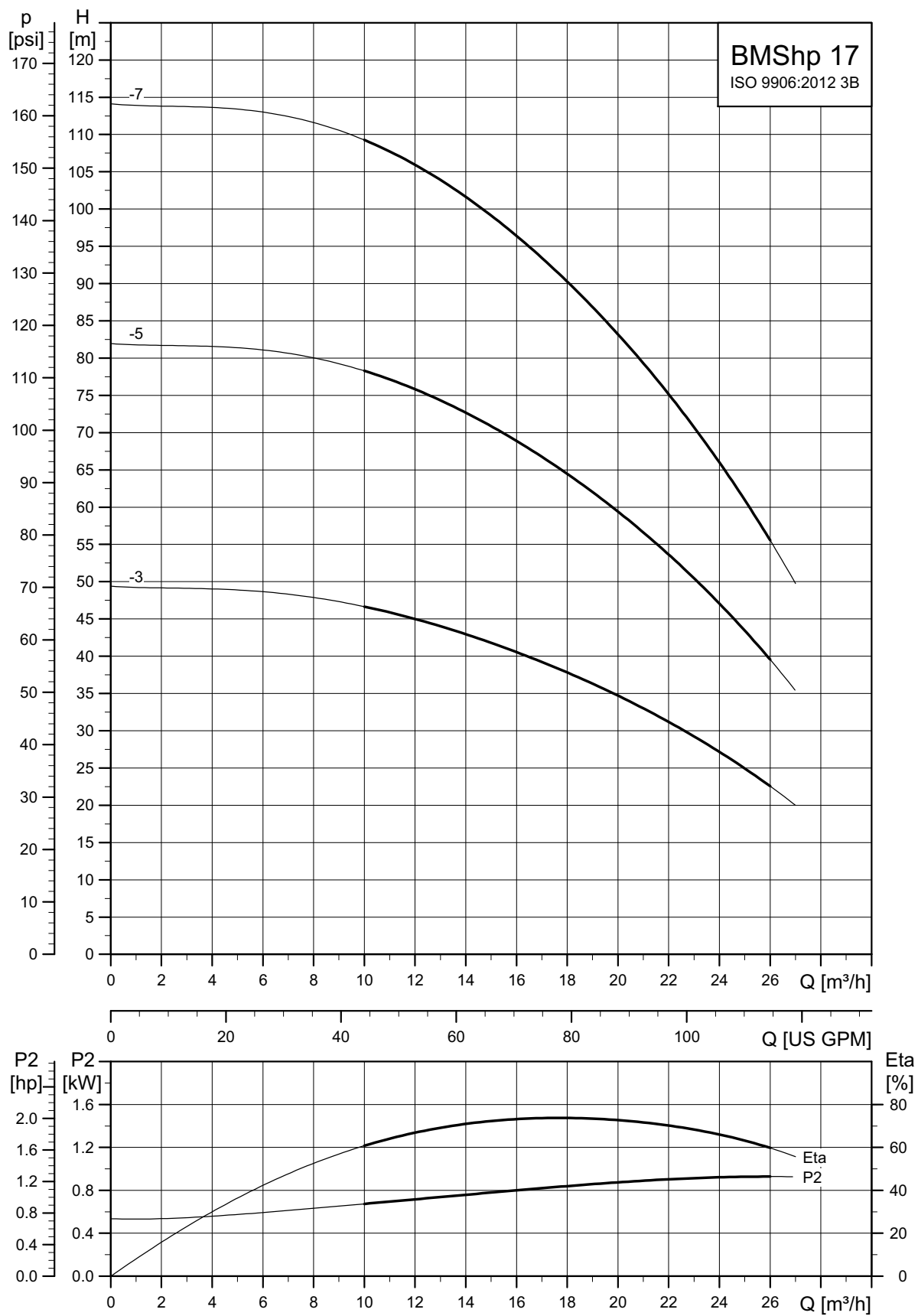
TM06 5603 5115

## BMS hs AC, 60-17



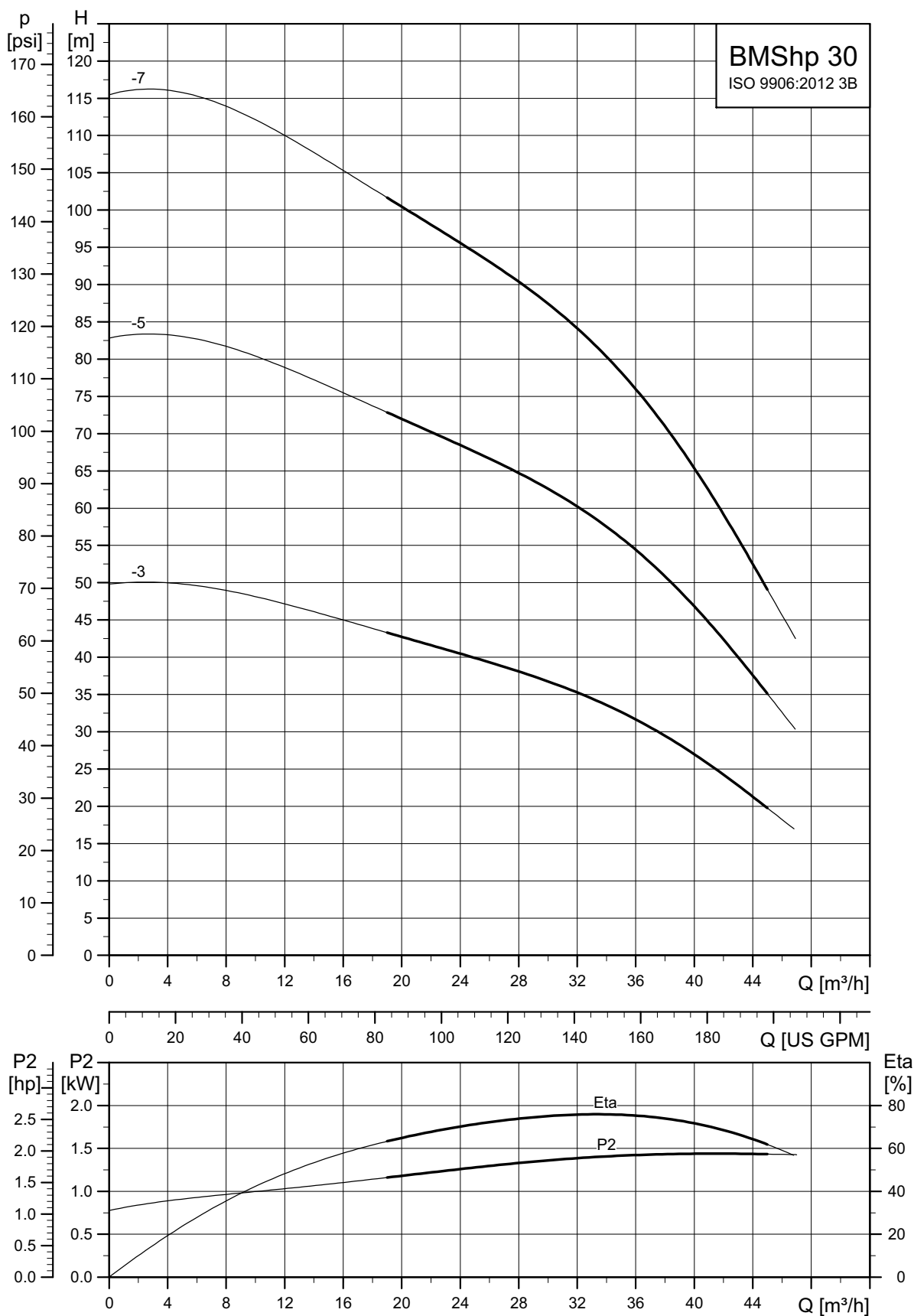
TM06 5604 5115

## BMS hp, 17-3, 17-5 and 17-7



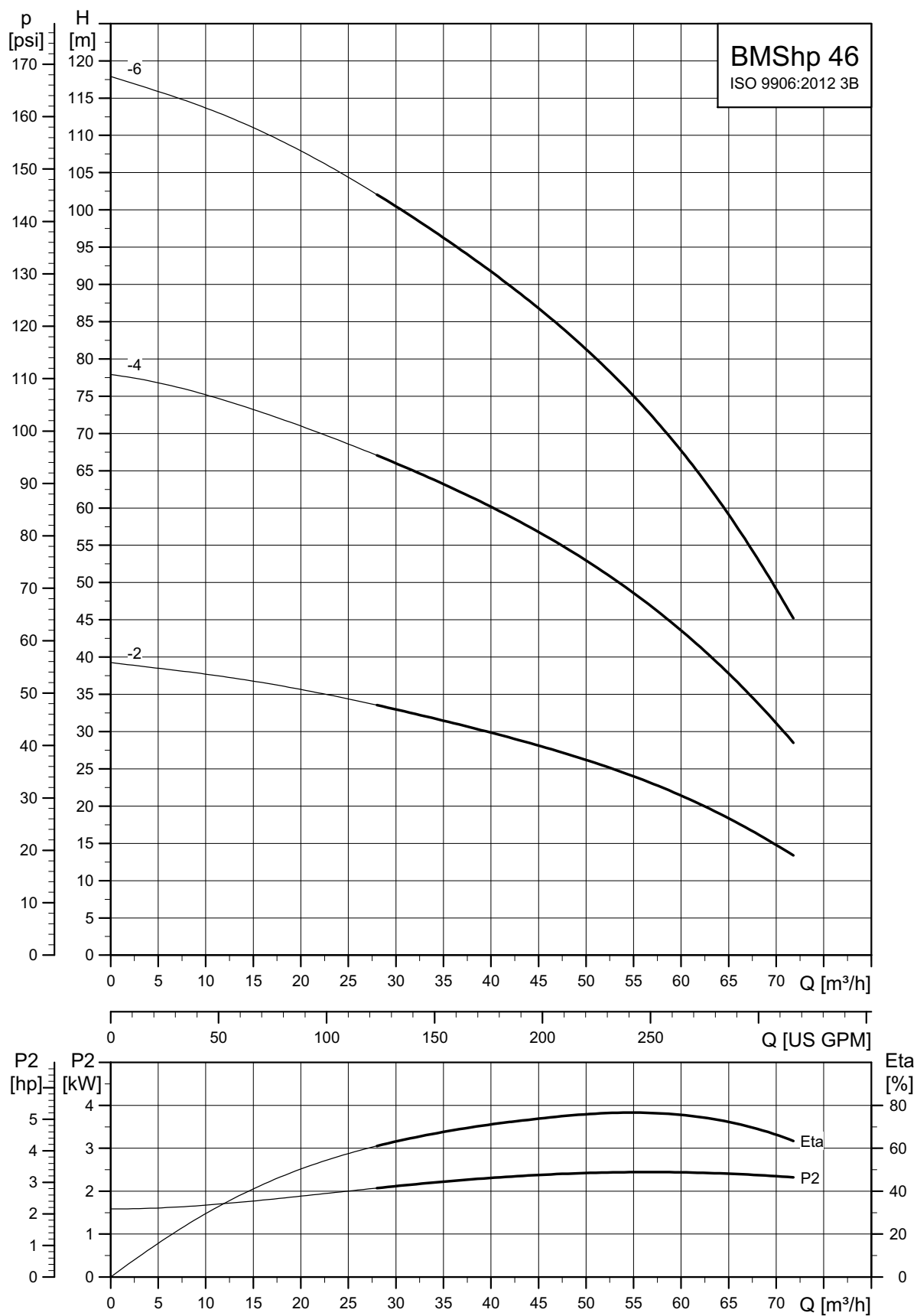
TM06 0725 0814

## BMS hp, 30-3, 30-5 and 30-7



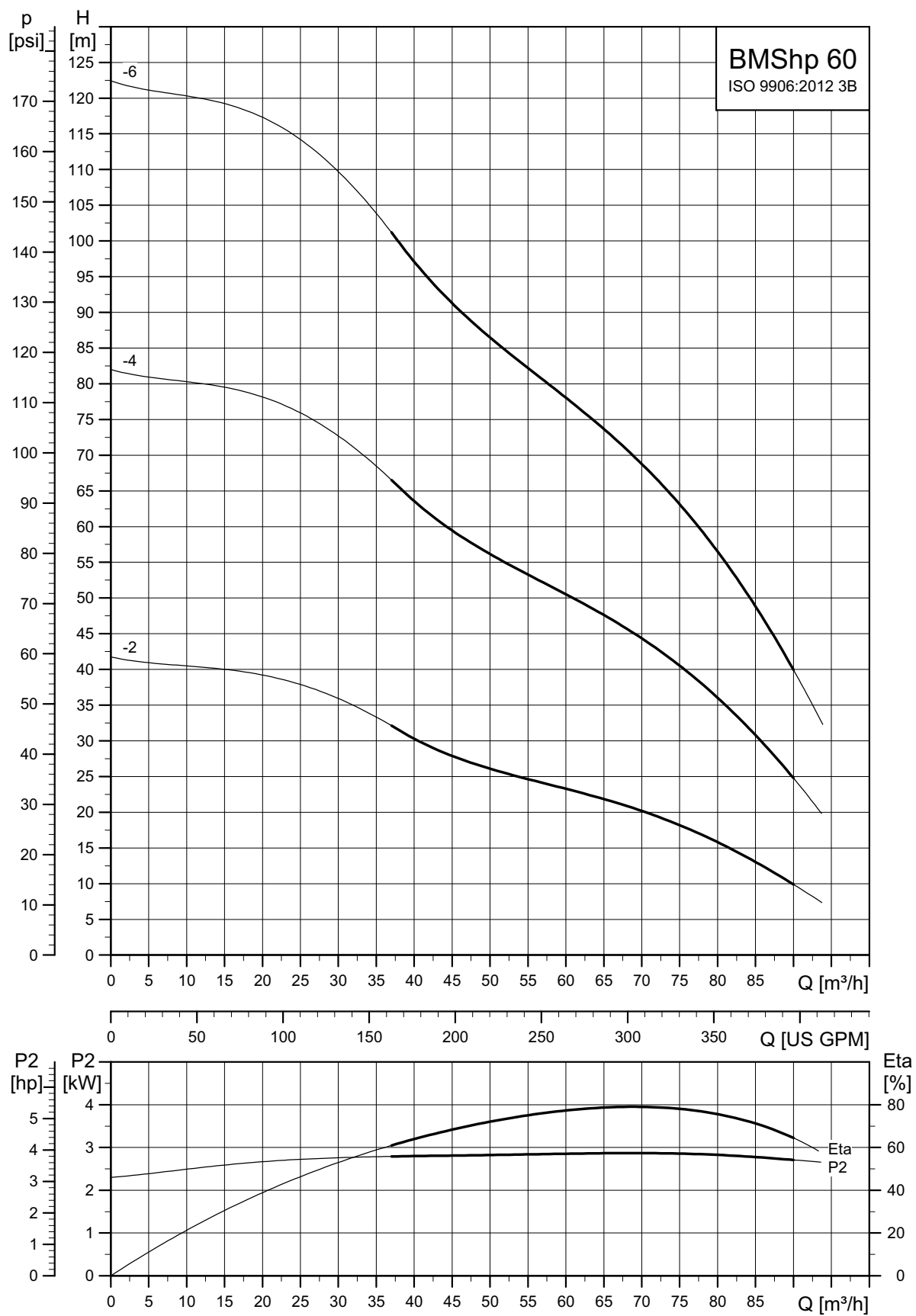
TM06 0726 0814

## BMS hp, 46-2, 46-4 and 46-6A



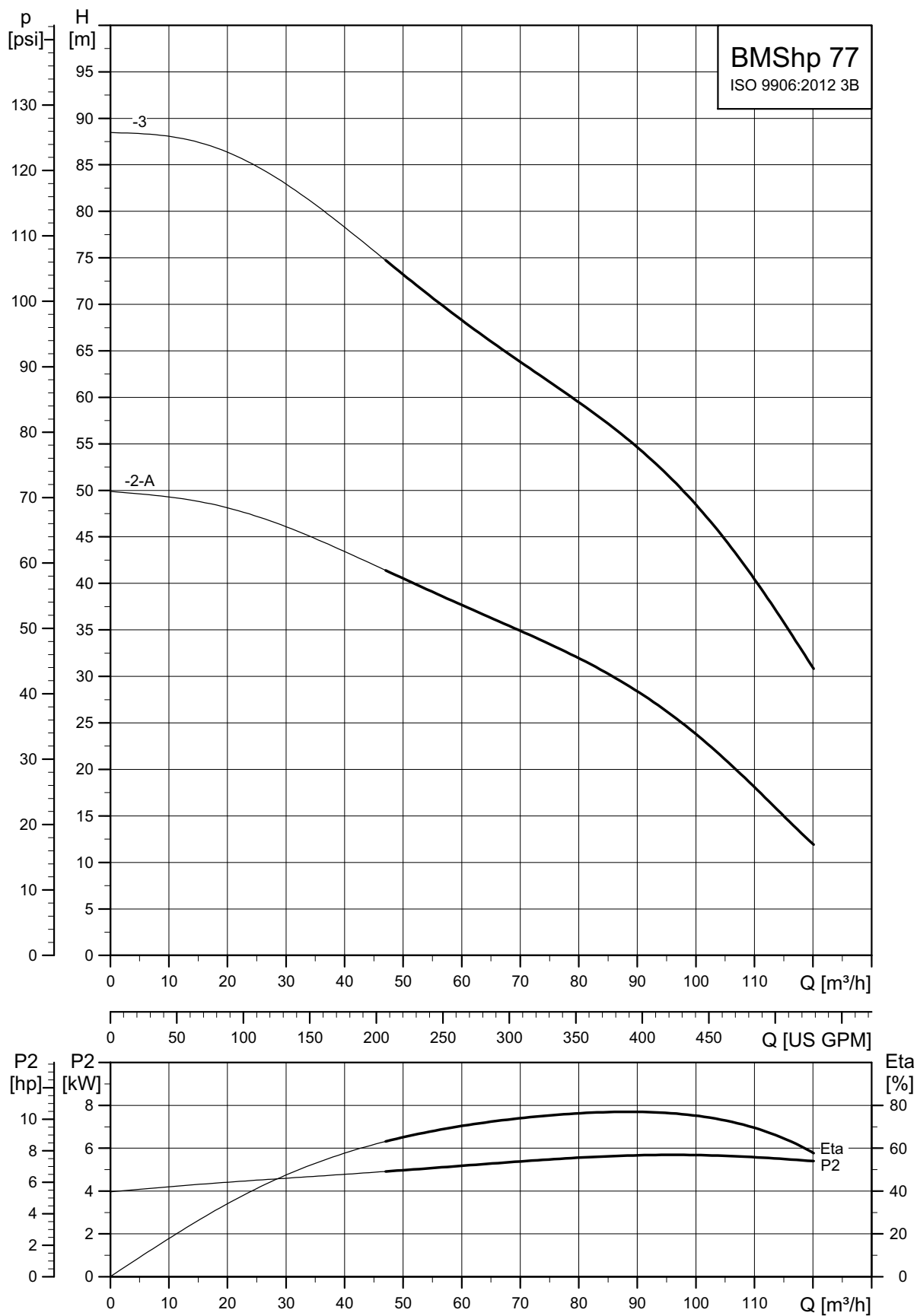
TM06 0727 0814

## BMS hp, 60-2, 60-4 and 60-6



TM06 0728 0814

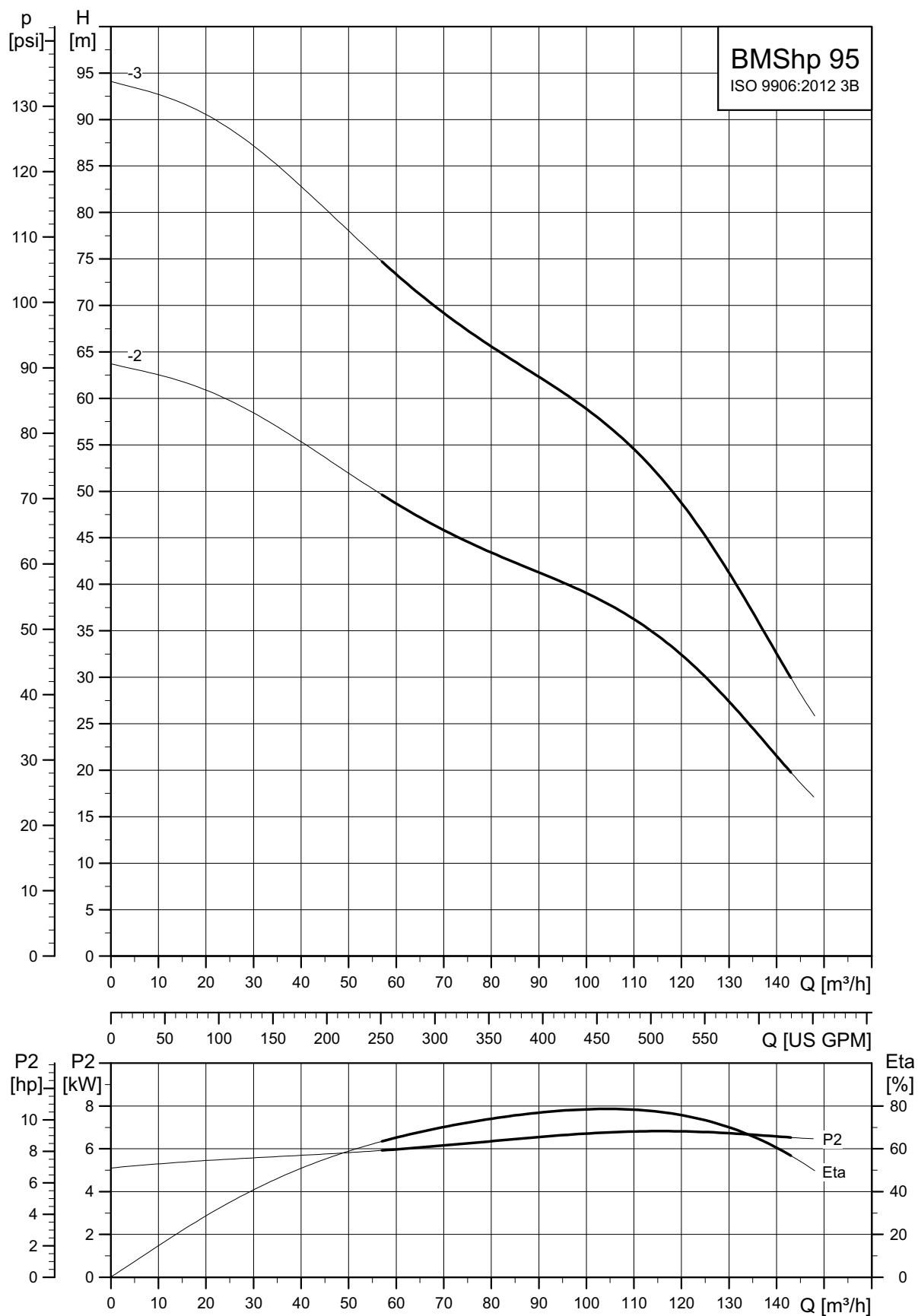
## BMS hp, 77-2A and 77-3



TM06 2412 4314

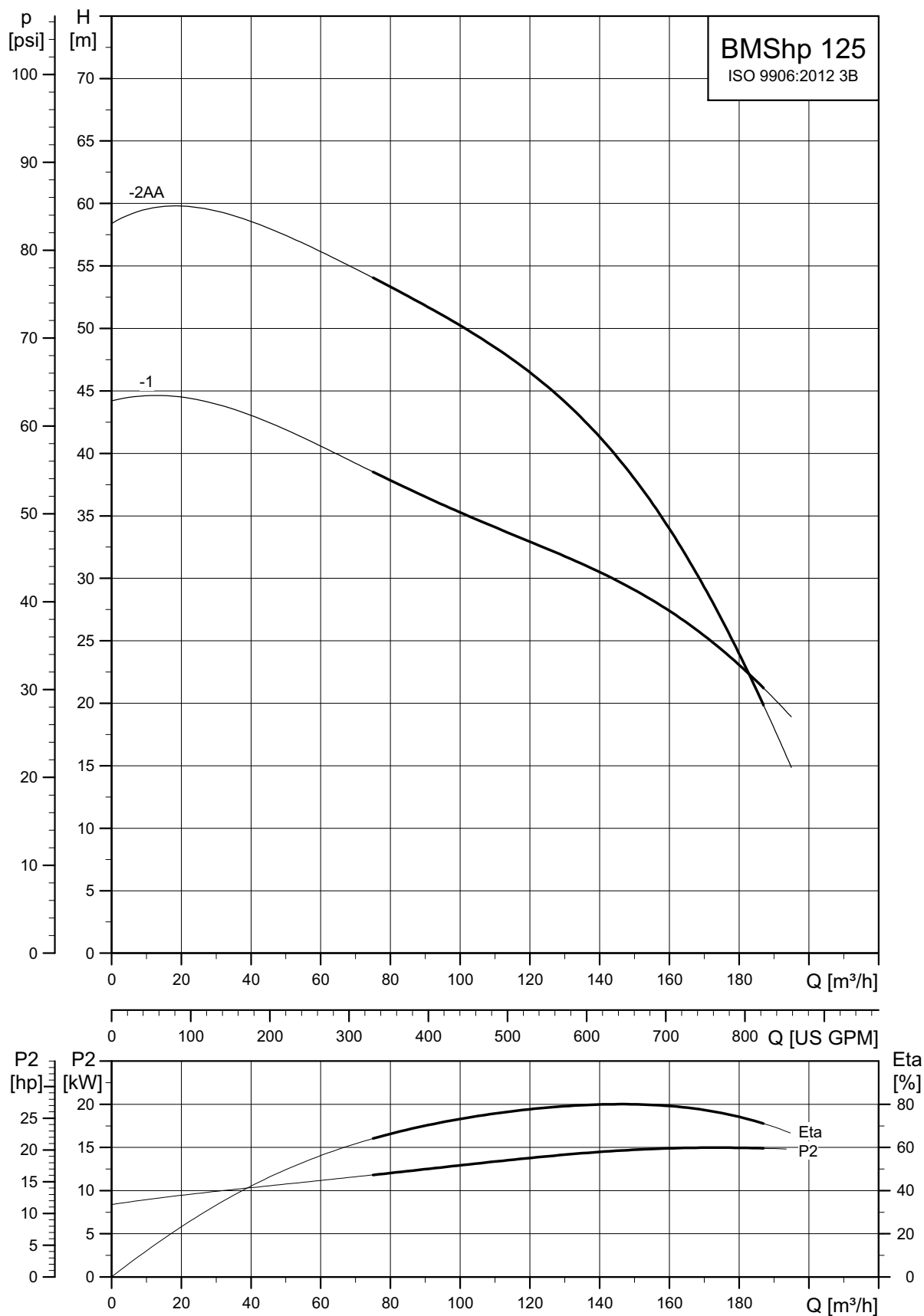


## BMS hp, 95-2 and 95-3



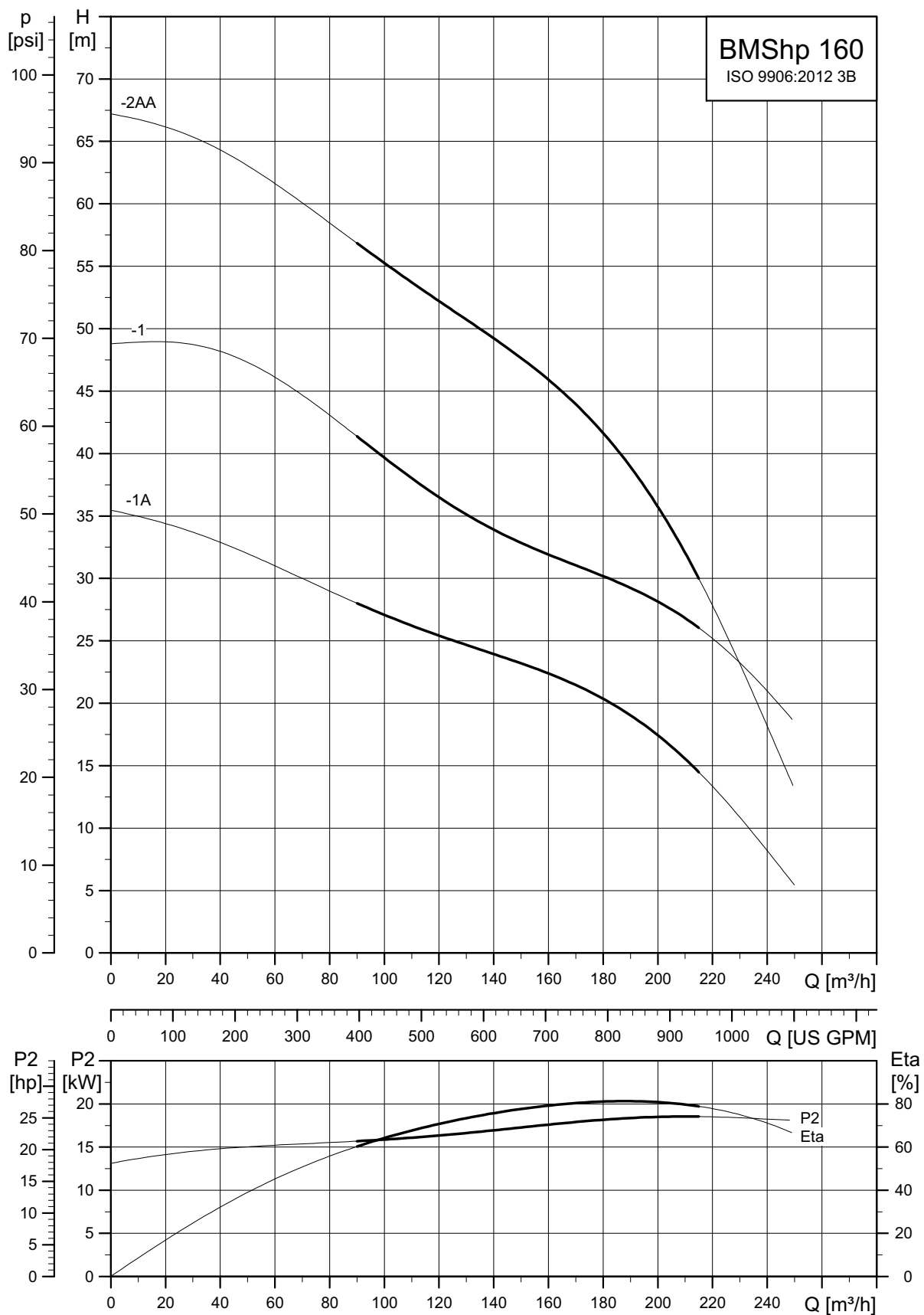
TM06 2412 4314

## BMS hp, 125-1 and 125-2AA



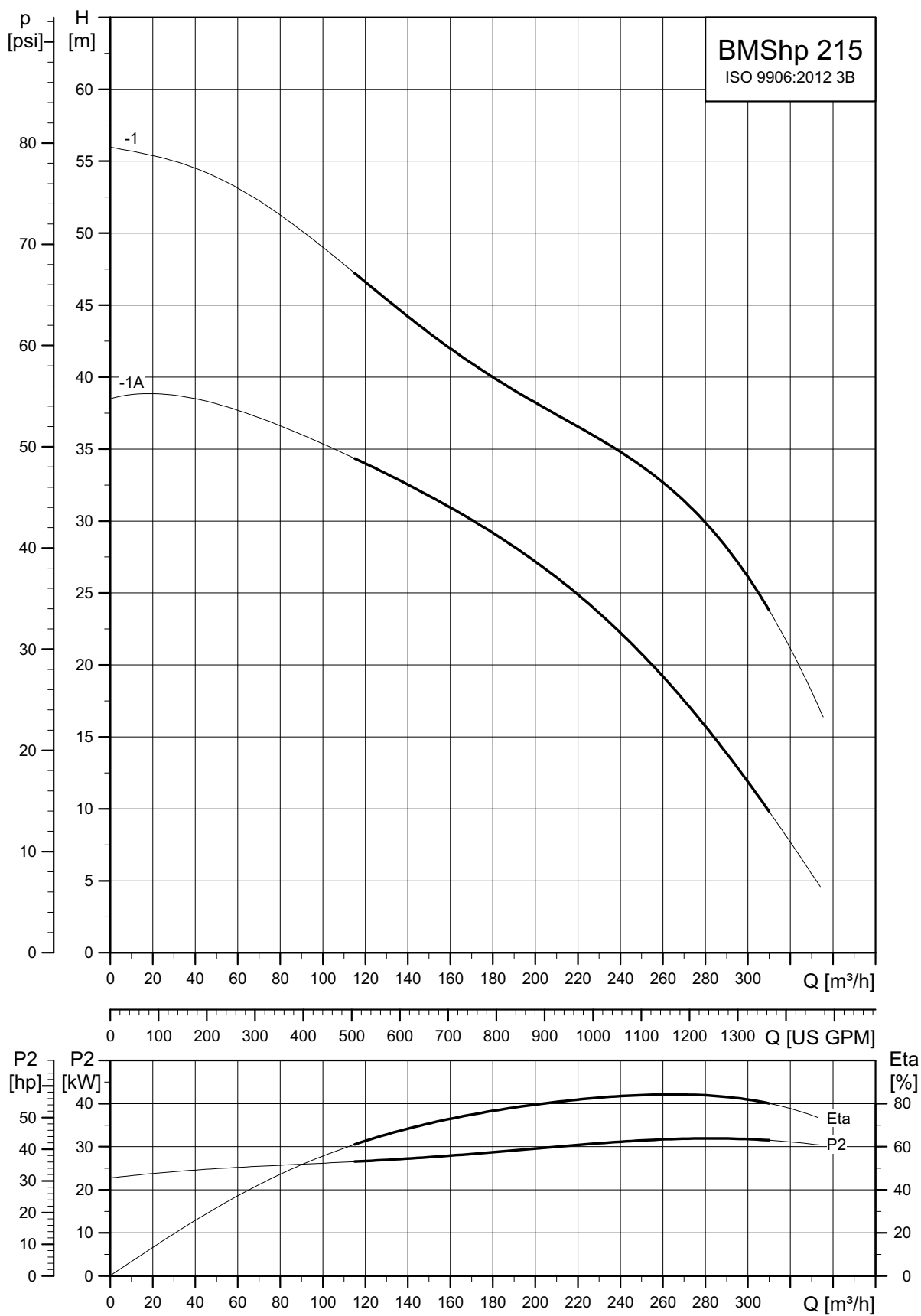
TM06 2414 4314

# BMS hp, 160-1A, 160-1 and 160-2AA



TM06 2415 4314

## BMS hp, 215-1A and 215-1



TM06 2416 4314

## 11. Dimensions and weight

### BMS hs PM booster system

| BMS hs booster type   | Product number | Frequency converter | Power P2 |       | Max. speed | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length** [E] |        | Motor dimension [F] |        |
|-----------------------|----------------|---------------------|----------|-------|------------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|--------------------|--------|---------------------|--------|
|                       |                | Type                | [kW]     | [hp]  | [rpm]      | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]               | [inch] | [mm]                | [inch] |
| BMS 17-22, HS-E-C-P-A | 98467174       | FX 75T              | 70       | 93.9  | 5500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467175       | MD2MS 100T          | 70       | 93.9  | 5500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467176       | MD2MS 120T          | 85       | 114   | 5500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467177       | MD2MS 150T          | 85       | 114   | 5500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467178       | FX 75T              | 70       | 93.9  | 5000       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467179       | MD2MS 100T          | 70       | 93.9  | 5000       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467180       | FX 60T              | 44       | 59    | 4500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
|                       | 98467181       | FX 75T              | 52       | 70    | 4500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 2737               | 107.8  | 305                 | 12     |
| BMS 30-26, HS-E-C-P-A | 98467182       | MD2MS 180T          | 140      | 187.7 | 5500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 3902               | 153.6  | 305                 | 12     |
|                       | 98467183       | MD2MS 220T          | 160      | 214.5 | 5500       | 170                         | 6.7    | 139                       | 5.5    | 275               | 10.8   | 168.3               | 6.6    | 4097               | 107.8  | 311                 | 12.2   |
|                       | 98467184       | MD2MS 180T          | 140      | 187.7 | 5000       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 3902               | 153.6  | 305                 | 12     |
|                       | 98467185       | MD2MS 120T          | 100      | 134   | 4500       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 3902               | 153.6  | 305                 | 12     |
| BMS 46-17, HS-E-C-P-A | 98467186       | MD2MS 220T          | 180      | 241.4 | 5500       | 170                         | 6.7    | 139                       | 5.5    | 275               | 10.8   | 168.3               | 6.6    | 3522               | 161.3  | 311                 | 12.2   |
|                       | 98467187       | MD2MS 180T          | 140      | 187.7 | 5000       | 170                         | 6.7    | 139                       | 5.5    | 250               | 9.8    | 168.3               | 6.6    | 3327               | 131.0  | 305                 | 12     |
|                       | 98467188       | MD2MS 220T          | 160      | 214.5 | 5000       | 170                         | 6.7    | 139                       | 5.5    | 275               | 10.8   | 168.3               | 6.6    | 3522               | 138.7  | 311                 | 12.2   |
| BMS 60-17, HS-E-C-P-A | 98467190       | MD2MS 220T          | 180      | 241.4 | 5000       | 170                         | 6.7    | 139                       | 5.5    | 275               | 10.8   | 168.3               | 6.6    | 3522               | 138.7  | 311                 | 12.2   |

| BMS hs booster type   | Product number | Power P2 |       | Motor dimension [G] |        | Motor dimension [HD] |        | Dimension [H] |        | Dimension [I] |        | Dimension [J] |        | Dimension [K] |        | Dimension [L] |        | Width [W] |        | Weight* [kg] |
|-----------------------|----------------|----------|-------|---------------------|--------|----------------------|--------|---------------|--------|---------------|--------|---------------|--------|---------------|--------|---------------|--------|-----------|--------|--------------|
|                       |                | [kW]     | [hp]  | [mm]                | [inch] | [mm]                 | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]      | [inch] |              |
| BMS 17-22, HS-E-C-P-A | 98467174       | 70       | 93.9  | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 250          |
|                       | 98467175       | 70       | 93.9  | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 250          |
|                       | 98467176       | 85       | 114   | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 260          |
|                       | 98467177       | 85       | 114   | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 260          |
|                       | 98467178       | 70       | 93.9  | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 250          |
|                       | 98467179       | 70       | 93.9  | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 250          |
|                       | 98467180       | 44       | 59    | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 251          |
|                       | 98467181       | 52       | 70    | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 1779          | 70.0   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 251          |
| BMS 30-26, HS-E-C-P-A | 98467182       | 140      | 187.7 | 318                 | 12.5   | 621                  | 24.4   | 308.5         | 12.1   | 2944          | 115.9  | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 348          |
|                       | 98467183       | 160      | 214.5 | 356                 | 14     | 680                  | 26.8   | 308.5         | 12.1   | 2966          | 116.8  | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 480       | 18.9   | 485          |
|                       | 98467184       | 140      | 187.7 | 318                 | 12.5   | 621                  | 24.4   | 308.5         | 12.1   | 2944          | 115.9  | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 348          |
|                       | 98467185       | 100      | 134   | 318                 | 12.5   | 560                  | 22.0   | 308.5         | 12.1   | 2944          | 115.9  | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 336          |
| BMS 46-17, HS-E-C-P-A | 98467186       | 180      | 241.4 | 356                 | 14     | 680                  | 26.8   | 308.5         | 12.1   | 2391          | 94.1   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 480       | 18.9   | 478          |
|                       | 98467187       | 140      | 187.7 | 318                 | 12.5   | 621                  | 24.4   | 308.5         | 12.1   | 2369          | 93.3   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 393       | 15.5   | 341          |
|                       | 98467188       | 160      | 214.5 | 356                 | 14     | 680                  | 26.8   | 308.5         | 12.1   | 2391          | 94.1   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 480       | 18.9   | 478          |
| BMS 60-17, HS-E-C-P-A | 98467190       | 180      | 241.4 | 356                 | 14     | 680                  | 26.8   | 308.5         | 12.1   | 2391          | 94.1   | 140           | 5.5    | 13            | 0.5    | 400           | 15.7   | 480       | 18.9   | 478          |

\* Weight without frequency converter (POWERDRIVE MD or FX).

\*\* Length [E] without service connector.

### Dimensional sketch

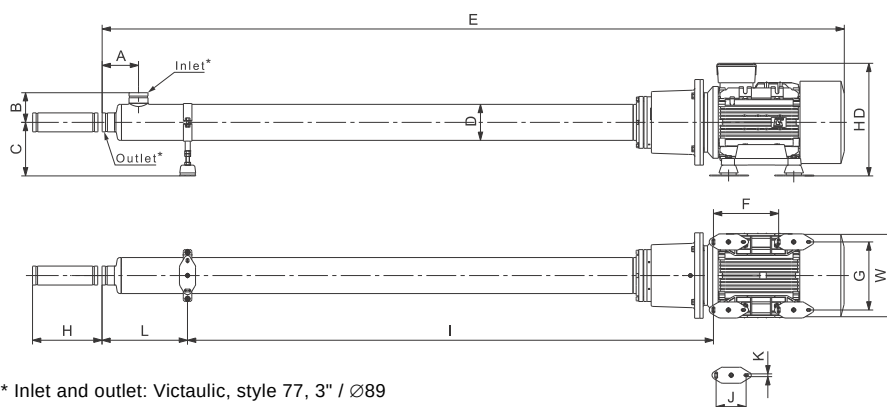


Fig. 26 BMS hs PM booster system with service connector

TM05 9244 3613

## Frequency converter for PM motor

| Type       | Dimensions |        |      |        |      |        | Weight<br>[kg] |
|------------|------------|--------|------|--------|------|--------|----------------|
|            | H          |        | W    |        | D    |        |                |
|            | [mm]       | [inch] | [mm] | [inch] | [mm] | [inch] |                |
| FX 60T     | 1200       | 47.2   | 600  | 23.6   | 500  | 19.7   | 49             |
| FX 75T     | 1200       | 47.2   | 600  | 23.6   | 500  | 19.7   | 50             |
| MD2MS 100T | 1200       | 47.2   | 480  | 18.9   | 560  | 22     | 225            |
| MD2MS 120T | 1200       | 47.2   | 480  | 18.9   | 560  | 22     |                |
| MD2MS 150T | 1200       | 47.2   | 480  | 18.9   | 560  | 22     |                |
| MD2MS 180T | 1710       | 67.3   | 480  | 18.9   | 560  | 22     |                |
| MD2MS 220T | 1710       | 67.3   | 480  | 18.9   | 560  | 22     | 260            |



1015093



Gr-1015353

## Service connector

Use the service connector to ensure easy access for maintenance. The length of the service connector is 312 mm.



TM05 9766 4413

**Fig. 27** Service connector

## BMS hs AC booster system

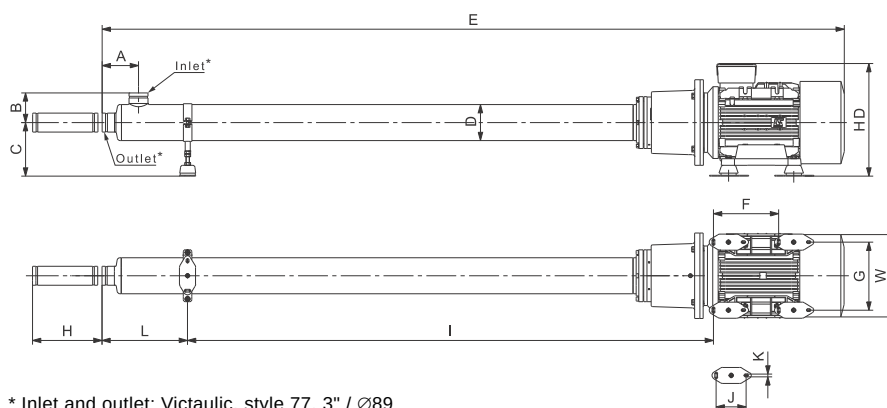
| BMS hs booster type     | Product number | Power P2 |       |       | Max. speed |        | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length** [E] |        | Motor dimension [F] |        | Motor dimension [G] |        |
|-------------------------|----------------|----------|-------|-------|------------|--------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|--------------------|--------|---------------------|--------|---------------------|--------|
|                         |                | [kW]     | [hp]  | [rpm] | [mm]       | [inch] | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]               | [inch] | [mm]                | [inch] | [mm]                | [inch] |
| BMS 17-22<br>HS-B-C-P-A | 99022832       | 52       | 69.7  | 5000  | 170        | 6.7    | 139                         | 5.5    | 250                       | 9.8    | 168.3             | 6.6    | 2752                | 108.3  | 305                | 12     | 318                 | 12.5   |                     |        |
|                         | 99022843       | 70       | 93.9  | 5500  | 170        | 6.7    | 139                         | 5.5    | 275                       | 10.8   | 168.3             | 6.6    | 2768                | 109.0  | 311                | 12.2   | 356                 | 14     |                     |        |
|                         | 99022844       | 85       | 114   | 5500  | 170        | 6.7    | 139                         | 5.5    | 275                       | 10.8   | 168.3             | 6.6    | 2768                | 109.0  | 311                | 12.2   | 356                 | 14     |                     |        |
| BMS 30-14<br>HS-B-C-P-A | 99022845       | 85       | 114   | 5500  | 170        | 6.7    | 139                         | 5.5    | 275                       | 10.8   | 168.3             | 6.6    | 2781                | 109.5  | 311                | 12.2   | 356                 | 14     |                     |        |
| BMS 30-26<br>HS-B-C-P-A | 99022846       | 120      | 160.9 | 4500  | 170        | 6.7    | 139                         | 5.5    | 275                       | 10.8   | 168.3             | 6.6    | 3993                | 157.2  | 311                | 12.2   | 356                 | 14     |                     |        |
|                         | 99022847       | 140      | 187.7 | 5500  | 170        | 6.7    | 139                         | 5.5    | 275                       | 10.8   | 168.3             | 6.6    | 4073                | 160.4  | 311                | 12.2   | 356                 | 14     |                     |        |
|                         | 99022848       | 160      | 214.6 | 5500  | 170        | 6.7    | 139                         | 5.5    | 300                       | 11.8   | 168.3             | 6.6    | 4135                | 162.8  | 349                | 13.7   | 406                 | 16     |                     |        |
| BMS 46-17<br>HS-B-C-P-A | 99022849       | 160      | 214.6 | 5500  | 170        | 6.7    | 139                         | 5.5    | 300                       | 11.8   | 168.3             | 6.6    | 3560                | 140.2  | 349                | 13.7   | 406                 | 16     |                     |        |
|                         | 99059893       | 180      | 241.4 | 5500  | 170        | 6.7    | 139                         | 5.5    | 300                       | 11.8   | 168.3             | 6.6    | 3560                | 140.2  | 349                | 13.7   | 406                 | 16     |                     |        |
| BMS 60-17<br>HS-B-C-P-A | 99022850       | 180      | 241.4 | 5000  | 170        | 6.7    | 139                         | 5.5    | 300                       | 11.8   | 168.3             | 6.6    | 3560                | 140.2  | 349                | 13.7   | 406                 | 16     |                     |        |

| BMS hs booster type     | Product number | Power P2 |       |      | Motor dimension [HD] |       | Dimension [H] |      | Dimension [I] |      | Dimension [J] |      | Dimension [K] |      | Dimension [L] |      | Width [W] |      | Weight* |
|-------------------------|----------------|----------|-------|------|----------------------|-------|---------------|------|---------------|------|---------------|------|---------------|------|---------------|------|-----------|------|---------|
|                         |                | [kW]     | [hp]  | [mm] | [inch]               | [mm]  | [inch]        | [mm] | [inch]        | [mm] | [inch]        | [mm] | [inch]        | [mm] | [inch]        | [mm] | [inch]    | [kg] |         |
| BMS 17-22<br>HS-B-C-P-A | 99022832       | 52       | 69.7  | 565  | 22.2                 | 308.5 | 12.1          | 1779 | 69.7          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 393  | 15.5      | 389  |         |
|                         | 99022843       | 70       | 93.9  | 683  | 26.9                 | 308.5 | 12.1          | 1801 | 70.9          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 431  | 17        | 437  |         |
|                         | 99022844       | 85       | 114   | 683  | 26.9                 | 308.5 | 12.1          | 1801 | 70.9          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 431  | 17        | 442  |         |
| BMS 30-14<br>HS-B-C-P-A | 99022845       | 85       | 114   | 683  | 26.9                 | 308.5 | 12.1          | 1814 | 71.4          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 431  | 17        | 440  |         |
| BMS 30-26<br>HS-B-C-P-A | 99022846       | 120      | 160.9 | 683  | 26.9                 | 308.5 | 12.1          | 2966 | 116.8         | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 431  | 17        | 511  |         |
|                         | 99022847       | 140      | 187.7 | 683  | 26.9                 | 308.5 | 12.1          | 2966 | 116.8         | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 431  | 17        | 606  |         |
|                         | 99022848       | 160      | 214.6 | 802  | 31.6                 | 308.5 | 12.1          | 3016 | 118.7         | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 481  | 18.9      | 643  |         |
| BMS 46-17<br>HS-B-C-P-A | 99022849       | 160      | 214.6 | 802  | 31.6                 | 308.5 | 12.1          | 2441 | 96.1          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 481  | 18.9      | 636  |         |
|                         | 99059893       | 180      | 241.4 | 802  | 31.6                 | 308.5 | 12.1          | 2441 | 96.1          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 481  | 18.9      | 646  |         |
| BMS 60-17<br>HS-B-C-P-A | 99022850       | 180      | 241.4 | 802  | 31.6                 | 308.5 | 12.1          | 2441 | 96.1          | 140  | 5.5           | 13   | 0.5           | 400  | 15.7          | 481  | 18.9      | 646  |         |

\* Weight without frequency converter (POWERDRIVE MD or FX).

\*\* Length [E] without service connector.

### Dimensional sketch



\* Inlet and outlet: Victaulic, style 77, 3" / Ø89

Fig. 28 BMS hs AC booster system with service connector

TM05 9244 3613

## BMS hp MG booster system 6"

| BMS hp                  | Product number | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length [E] |        | Motor dimension [F] |        |
|-------------------------|----------------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|------------------|--------|---------------------|--------|
|                         |                | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]             | [inch] | [mm]                | [inch] |
| BMS 17-3<br>HP-A-C-P-A  | 98872087       | 170                         | 6.7    | 139.0                     | 5.5    | 100               | 3.9    | 168.3               | 6.6    | 1281             | 50.4   | 140                 | 5.5    |
| BMS 17-5<br>HP-A-C-P-A  | 98872088       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1458             | 57.4   | 140                 | 5.5    |
| BMS 17-7<br>HP-A-C-P-A  | 98872090       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1567             | 61.7   | 140                 | 5.5    |
| BMS 30-3<br>HP-A-C-P-A  | 98872101       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1432             | 56.4   | 140                 | 5.5    |
| BMS 30-5<br>HP-A-C-P-A  | 98872102       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1624             | 63.9   | 140                 | 5.5    |
| BMS 30-7<br>HP-A-C-P-A  | 98872103       | 170                         | 6.7    | 139.0                     | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2018             | 79.4   | 210                 | 8.3    |
| BMS 46-2<br>HP-A-C-P-A  | 98872104       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1382             | 54.4   | 140                 | 5.5    |
| BMS 46-4<br>HP-A-C-P-A  | 98872105       | 170                         | 6.7    | 139.0                     | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 1798             | 70.8   | 210                 | 8.3    |
| BMS 46-6A<br>HP-A-C-P-A | 98872106       | 170                         | 6.7    | 139.0                     | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2024             | 79.7   | 210                 | 8.3    |
| BMS 60 -2<br>HP-A-C-P-A | 98872107       | 170                         | 6.7    | 139.0                     | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1370             | 53.9   | 140                 | 5.5    |
| BMS 60 -4<br>HP-A-C-P-A | 98872109       | 170                         | 6.7    | 139.0                     | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 1798             | 70.8   | 210                 | 8.3    |
| BMS 60 -6<br>HP-A-C-P-A | 98872110       | 170                         | 6.7    | 139.0                     | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2068             | 81.4   | 254                 | 10.0   |

| BMS hp                  | Product number | Motor dimension [G] |        | Motor dimension [HD] |        | Dimension [K] |        | Dimension [M] |        | Width [W] |        | Weight [kg] |
|-------------------------|----------------|---------------------|--------|----------------------|--------|---------------|--------|---------------|--------|-----------|--------|-------------|
|                         |                | [mm]                | [inch] | [mm]                 | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]      | [inch] |             |
| BMS 17-3<br>HP-A-C-P-A  | 98872087       | 160                 | 6.3    | 255                  | 10.0   | 12            | 0.5    | 135           | 5.3    | 270       | 10.6   | 96          |
| BMS 17-5<br>HP-A-C-P-A  | 98872088       | 216                 | 8.5    | 284                  | 11.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 96          |
| BMS 17-7<br>HP-A-C-P-A  | 98872090       | 216                 | 8.5    | 309                  | 12.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 135         |
| BMS 30-3<br>HP-A-C-P-A  | 98872101       | 216                 | 8.5    | 284                  | 11.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 120         |
| BMS 30-5<br>HP-A-C-P-A  | 98872102       | 216                 | 8.5    | 309                  | 12.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 136         |
| BMS 30-7<br>HP-A-C-P-A  | 98872103       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 189         |
| BMS 46-2<br>HP-A-C-P-A  | 98872104       | 216                 | 8.5    | 284                  | 11.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 119         |
| BMS 46-4<br>HP-A-C-P-A  | 98872105       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 183         |
| BMS 46-6A<br>HP-A-C-P-A | 98872106       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 203         |
| BMS 60 -2<br>HP-A-C-P-A | 98872107       | 216                 | 8.5    | 309                  | 12.2   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 129         |
| BMS 60 -4<br>HP-A-C-P-A | 98872109       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 183         |
| BMS 60 -6<br>HP-A-C-P-A | 98872110       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 216         |

## Dimensional sketch

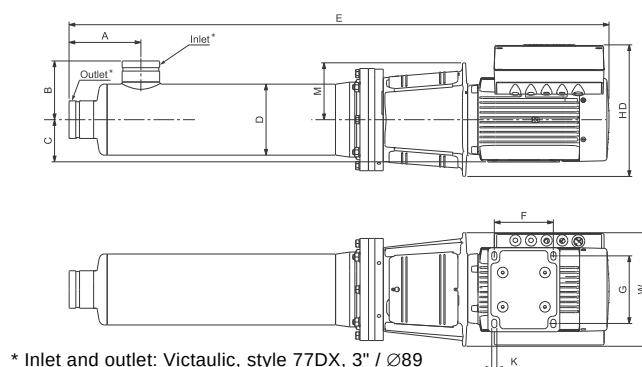


Fig. 29 BMS hp booster system

TM06 0941 5114

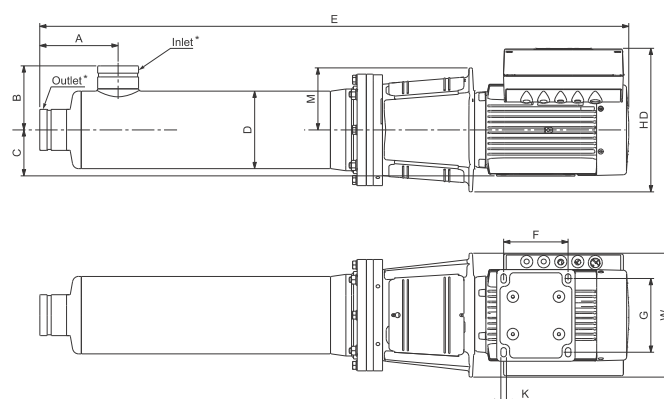


## BMS hp MG booster system 8"

| BMS hp                     | Product number | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length [E] |        | Motor dimension [F] |        |
|----------------------------|----------------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|------------------|--------|---------------------|--------|
|                            |                | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]             | [inch] | [mm]                | [inch] |
| BMS 77 -2A<br>HP-A-C-P-A   | 98872111       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273.0               | 10.7   | 1857             | 73.1   | 210                 | 8.3    |
| BMS 77 -3<br>HP-A-C-P-A    | 98872112       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273.0               | 10.7   | 2029             | 79.9   | 254                 | 10.0   |
| BMS 95 -2<br>HP-A-C-P-A    | 98872113       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273.0               | 10.7   | 1857             | 73.1   | 210                 | 8.3    |
| BMS 95 -3<br>HP-A-C-P-A    | 98872116       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273.0               | 10.7   | 2055             | 80.9   | 241                 | 9.5    |
| BMS 125 -1<br>HP-A-C-P-A   | 98872117       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273.0               | 10.7   | 1807             | 71.1   | 254                 | 10.0   |
| BMS 125 -2AA<br>HP-A-C-P-A | 98872119       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273.0               | 10.7   | 1988             | 78.3   | 241                 | 9.5    |
| BMS 160 -1A<br>HP-A-C-P-A  | 98872120       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273.0               | 10.7   | 1763             | 69.4   | 210                 | 8.3    |
| BMS 160 -1<br>HP-A-C-P-A   | 98872121       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273.0               | 10.7   | 1833             | 72.2   | 241                 | 9.5    |
| BMS 160 -2AA<br>HP-A-C-P-A | 98494526       | 275                         | 10.8   | 206.5                     | 8.1    | 200               | 7.9    | 273.0               | 10.7   | 2058             | 81.0   | 305                 | 12.0   |
| BMS 215 -1A<br>HP-A-C-P-A  | 98494527       | 275                         | 10.8   | 206.5                     | 8.1    | 200               | 7.9    | 273.0               | 10.7   | 2041             | 80.4   | 305                 | 12.0   |
| BMS 215 -1<br>HP-A-C-P-A   | 98494528       | 275                         | 10.8   | 206.5                     | 8.1    | 200               | 7.9    | 273.0               | 10.7   | 2066             | 81.3   | 305                 | 12.0   |

| BMS hp                     | Product number | Motor dimension [G] |        | Motor dimension [HD] |        | Dimension [K] |        | Dimension [M] |        | Width [W] |        | Weight [kg] |
|----------------------------|----------------|---------------------|--------|----------------------|--------|---------------|--------|---------------|--------|-----------|--------|-------------|
|                            |                | [mm]                | [inch] | [mm]                 | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]      | [inch] |             |
| BMS 77 -2A<br>HP-A-C-P-A   | 98872111       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 225         |
| BMS 77 -3<br>HP-A-C-P-A    | 98872112       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 256         |
| BMS 95 -2<br>HP-A-C-P-A    | 98872113       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 234         |
| BMS 95 -3<br>HP-A-C-P-A    | 98872116       | 279                 | 11.0   | 384                  | 15.1   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 270         |
| BMS 125 -1<br>HP-A-C-P-A   | 98872117       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 255         |
| BMS 125 -2AA<br>HP-A-C-P-A | 98872119       | 279                 | 11.0   | 384                  | 15.1   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 281         |
| BMS 160 -1A<br>HP-A-C-P-A  | 98872120       | 254                 | 10.0   | 379                  | 14.9   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 240         |
| BMS 160 -1<br>HP-A-C-P-A   | 98872121       | 279                 | 11.0   | 384                  | 15.1   | 15            | 0.6    | 175           | 6.9    | 350       | 13.8   | 271         |
| BMS 160 -2AA<br>HP-A-C-P-A | 98494526       | 318                 | 12.5   | 515                  | 20.3   | 19            | 0.7    | 200           | 7.9    | 400       | 15.7   | 392         |
| BMS 215 -1A<br>HP-A-C-P-A  | 98494527       | 318                 | 12.5   | 515                  | 20.3   | 19            | 0.7    | 200           | 7.9    | 400       | 15.7   | 391         |
| BMS 215 -1<br>HP-A-C-P-A   | 98494528       | 318                 | 12.5   | 515                  | 20.3   | 19            | 0.7    | 200           | 7.9    | 400       | 15.7   | 416         |

### Dimensional sketch



\* Inlet and outlet: Victaulic, style 77DX, 6" / Ø168

Fig. 30 BMS hp booster system

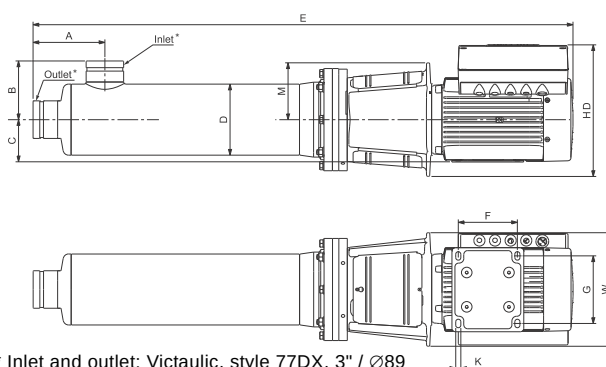
TM06 0941 5114

## BMS hp MGE booster system 6"

| BMS hp                  | Product number | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length [E] |        | Motor dimension [F] |        |
|-------------------------|----------------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|------------------|--------|---------------------|--------|
|                         |                | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]             | [inch] | [mm]                | [inch] |
| BMS 17-3<br>HP-C-C-P-A  | 98494496       | 170                         | 6.7    | 139                       | 5.5    | 100               | 3.9    | 168.3               | 6.6    | 1281             | 50.4   | 140                 | 5.5    |
| BMS 17-5<br>P-C-C-P-A   | 98494497       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1458             | 57.4   | 140                 | 5.5    |
| BMS 17-7<br>HP-C-C-P-A  | 98494498       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1567             | 61.7   | 140                 | 5.5    |
| BMS 30-3<br>HP-C-C-P-A  | 98494499       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1432             | 56.4   | 140                 | 5.5    |
| BMS 30-5<br>HP-C-C-P-A  | 98494500       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1624             | 63.9   | 140                 | 5.5    |
| BMS 30-7<br>HP-C-C-P-A  | 98494511       | 170                         | 6.7    | 139                       | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2018             | 79.4   | 210                 | 8.3    |
| BMS 46-2<br>HP-C-C-P-A  | 98494512       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1382             | 54.4   | 140                 | 5.5    |
| BMS 46-4<br>HP-C-C-P-A  | 98494513       | 170                         | 6.7    | 139                       | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 1798             | 70.8   | 210                 | 8.3    |
| BMS 46-6A<br>HP-C-C-P-A | 98494514       | 170                         | 6.7    | 139                       | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2024             | 79.7   | 210                 | 8.3    |
| BMS 60-2<br>HP-C-C-P-A  | 98494515       | 170                         | 6.7    | 139                       | 5.5    | 132               | 5.2    | 168.3               | 6.6    | 1370             | 53.9   | 140                 | 5.5    |
| BMS 60-4<br>HP-C-C-P-A  | 98494516       | 170                         | 6.7    | 139                       | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 1798             | 70.8   | 210                 | 8.3    |
| BMS 60-6<br>HP-C-C-P-A  | 98494517       | 170                         | 6.7    | 139                       | 5.5    | 160               | 6.3    | 168.3               | 6.6    | 2068             | 81.4   | 254                 | 10     |

| BMS hp                  | Product number | Motor dimension [G] |        | Motor dimension [HD] |        | Dimension [K] |        | Dimension [M] |        | Width [W] |        | Weight [kg] |
|-------------------------|----------------|---------------------|--------|----------------------|--------|---------------|--------|---------------|--------|-----------|--------|-------------|
|                         |                | [mm]                | [inch] | [mm]                 | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]      | [inch] |             |
| BMS 17-3<br>HP-C-C-P-A  | 98494496       | 160                 | 6.3    | 312                  | 12.2   | 12            | 0.5    | 135           | 5.3    | 270       | 10.6   | 101         |
| BMS 17-5<br>P-C-C-P-A   | 98494497       | 216                 | 8.5    | 338                  | 13.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 103         |
| BMS 17-7<br>HP-C-C-P-A  | 98494498       | 216                 | 8.5    | 363                  | 14.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 146         |
| BMS 30-3<br>HP-C-C-P-A  | 98494499       | 216                 | 8.5    | 338                  | 13.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 127         |
| BMS 30-5<br>HP-C-C-P-A  | 98494500       | 216                 | 8.5    | 363                  | 14.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 147         |
| BMS 30-7<br>HP-C-C-P-A  | 98494511       | 254                 | 10     | 483                  | 19     | 15            | 0.6    | 175           | 6.7    | 420       | 16.5   | 220         |
| BMS 46-2<br>HP-C-C-P-A  | 98494512       | 216                 | 8.5    | 338                  | 13.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 125         |
| BMS 46-4<br>HP-C-C-P-A  | 98494513       | 254                 | 10     | 483                  | 19     | 15            | 0.6    | 175           | 6.7    | 420       | 16.5   | 214         |
| BMS 46-6A<br>HP-C-C-P-A | 98494514       | 254                 | 10     | 483                  | 19     | 15            | 0.6    | 175           | 6.7    | 420       | 16.5   | 235         |
| BMS 60-2<br>HP-C-C-P-A  | 98494515       | 216                 | 8.5    | 363                  | 14.3   | 12            | 0.5    | 150           | 5.9    | 300       | 11.8   | 139         |
| BMS 60-4<br>HP-C-C-P-A  | 98494516       | 254                 | 10     | 483                  | 19     | 15            | 0.6    | 175           | 6.7    | 420       | 16.5   | 214         |
| BMS 60-6<br>HP-C-C-P-A  | 98494517       | 254                 | 10     | 483                  | 19     | 15            | 0.6    | 175           | 6.7    | 420       | 16.5   | 248         |

## Dimensional sketch



\* Inlet and outlet: Victaulic, style 77DX, 3" / Ø89

Fig. 31 BMS hp booster system

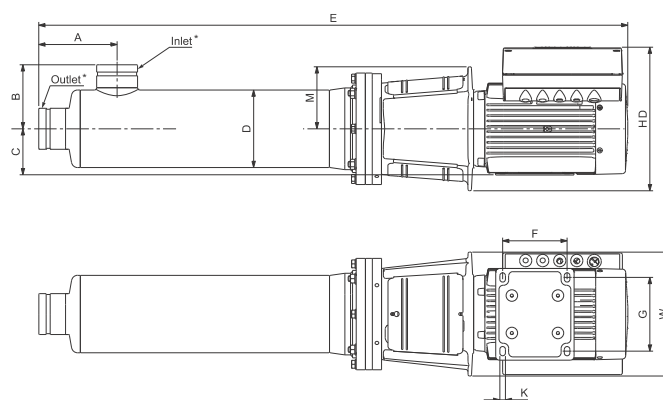
TM06 0941 5114

## BMS hp MGE booster system 8"

| BMS hp                     | Product number | Inlet/outlet horizontal [A] |        | Inlet/outlet vertical [B] |        | Centre height [C] |        | Sleeve diameter [D] |        | Total length [E] |        | Motor dimension [F] |        |
|----------------------------|----------------|-----------------------------|--------|---------------------------|--------|-------------------|--------|---------------------|--------|------------------|--------|---------------------|--------|
|                            |                | [mm]                        | [inch] | [mm]                      | [inch] | [mm]              | [inch] | [mm]                | [inch] | [mm]             | [inch] | [mm]                | [inch] |
| BMS 77 -2A<br>HP-C-C-P-A   | 98494518       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273                 | 10.7   | 1852             | 72.9   | 210                 | 8.3    |
| BMS 77 -3<br>HP-C-C-P-A    | 98494519       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273                 | 10.7   | 2024             | 79.7   | 254                 | 9.9    |
| BMS 95 -2<br>HP-C-C-P-A    | 98494520       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273                 | 10.7   | 1852             | 72.9   | 210                 | 8.3    |
| BMS 95 -3<br>HP-C-C-P-A    | 98494521       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273                 | 10.7   | 2050             | 80.7   | 241                 | 9.5    |
| BMS 125 -1<br>HP-C-C-P-A   | 98494522       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273                 | 10.7   | 1802             | 70.9   | 254                 | 9.9    |
| BMS 125 -2AA<br>HP-C-C-P-A | 98494523       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273                 | 10.7   | 1983             | 78.1   | 241                 | 9.5    |
| BMS 160 -1A<br>HP-C-C-P-A  | 98494524       | 275                         | 10.8   | 206.5                     | 8.1    | 160               | 6.3    | 273                 | 10.7   | 1758             | 69.2   | 210                 | 8.3    |
| BMS 160 -1<br>HP-C-C-P-A   | 98494525       | 275                         | 10.8   | 206.5                     | 8.1    | 180               | 7.1    | 273                 | 10.7   | 1828             | 72.0   | 241                 | 9.5    |

| BMS hp                     | Product number | Motor dimension [G] |        | Motor dimension [HD] |        | Dimension [K] |        | Dimension [M] |        | Width [W] |        | Weight [kg] |
|----------------------------|----------------|---------------------|--------|----------------------|--------|---------------|--------|---------------|--------|-----------|--------|-------------|
|                            |                | [mm]                | [inch] | [mm]                 | [inch] | [mm]          | [inch] | [mm]          | [inch] | [mm]      | [inch] |             |
| BMS 77 -2A<br>HP-C-C-P-A   | 98494518       | 254                 | 9.9    | 483                  | 19     | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 255         |
| BMS 77 -3<br>HP-C-C-P-A    | 98494519       | 254                 | 9.9    | 483                  | 19     | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 288         |
| BMS 95 -2<br>HP-C-C-P-A    | 98494520       | 254                 | 9.9    | 483                  | 19     | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 267         |
| BMS 95 -3<br>HP-C-C-P-A    | 98494521       | 279                 | 11.0   | 488                  | 19.2   | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 302         |
| BMS 125 -1<br>HP-C-C-P-A   | 98494522       | 254                 | 9.9    | 483                  | 19     | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 287         |
| BMS 125 -2AA<br>HP-C-C-P-A | 98494523       | 279                 | 11.0   | 488                  | 19.2   | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 314         |
| BMS 160 -1A<br>HP-C-C-P-A  | 98494524       | 254                 | 9.9    | 483                  | 19     | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 274         |
| BMS 160 -1<br>HP-C-C-P-A   | 98494525       | 279                 | 11.0   | 488                  | 19.2   | 15            | 0.6    | 175           | 6.9    | 420       | 16.5   | 303         |

### Dimensional sketch



\* Inlet and outlet: Victaulic, style 77DX, 6" / Ø168

Fig. 32 BMS hp booster system

TM06 0941 5114

## 12. Technical data

### Material specification for BMS hs and BMS hp pump

| Pos. | Component                    | Materials                      | R-version |          |      |
|------|------------------------------|--------------------------------|-----------|----------|------|
|      |                              |                                | DIN       | AISI     | PREN |
| 1    | Top chamber                  | Stainless steel                | 1.4539    | 904L     | 34   |
| 2    | Top bearing                  | Stainless steel/NBR            | 1.4539    | 904L     | 34   |
| 3    | Bearing                      |                                |           |          |      |
| 4    | Neck ring                    | NBR/PPS                        | -         | -        | -    |
| 5    | Intermediate bearing         | NBR                            | -         | -        | -    |
| 6    | Spacing washer for stop ring | Carbon/graphite, PTFE          | -         | 904L     | 34   |
| 8    | Chamber                      | Stainless steel                | 1.4539    | 904L     | 34   |
| 10   | Nut for split cone           | Stainless steel                | 1.4539    | 904L     | 34   |
| 12   | Split cone                   | Stainless steel                | 1.4539    | 904L     | 34   |
| 13   | Impeller                     | Stainless steel                | 1.4539    | 904L     | 34   |
| 14   | Inlet interconnector         | Stainless steel                | 1.4539    | 904L     | 34   |
| 16   | Shaft                        | Stainless steel                | 1.4462    | SAF 2205 | 34   |
| 17   | Strap                        | Stainless steel                | 1.4539    | 904L     | 34   |
| 18   | Nut for strap                | Stainless steel                | 1.4539    | 904L     | 34   |
| 19   | Coupling                     | Stainless steel                | 1.4462    | SAF 2205 | 34   |
| 20   | Wear ring                    | Stainless steel                | 1.4539    | 904L     | 34   |
| 21   | Check valve*                 | Stainless steel                | 1.4539    | 904L     | 34   |
| 22   | Sleeve                       | Stainless steel                | 1.4462    | SAF 2205 | 34   |
| 23   | Inlet                        | Super duplex stainless steel** | 1.4410    | SAF 2507 | 43   |
| 24   | Outlet                       | Super duplex stainless steel** | 1.4410    | SAF 2507 | 43   |

\* Optional for BMS hp

\*\*The super duplex material is used in areas with stagnant water to reduce the risk of crevice corrosion.

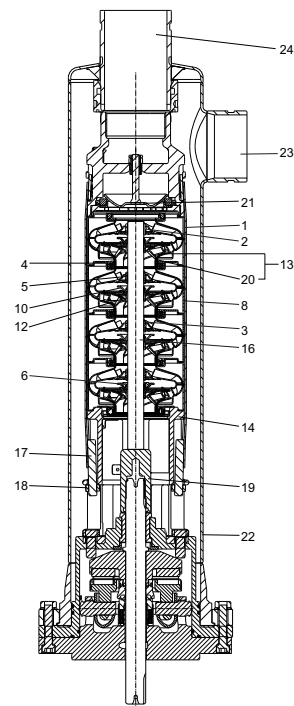


Fig. 33 BMS hp

TM06 1190 1814

## Material specification for thrust-bearing housing

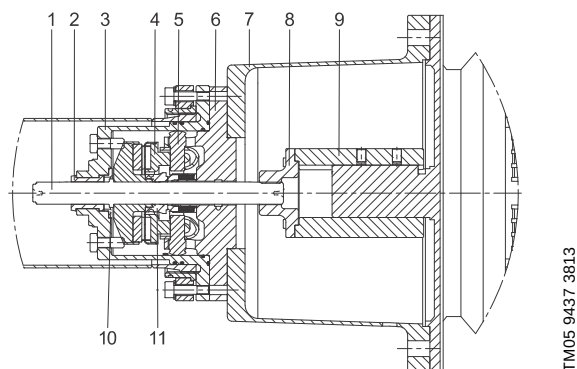


Fig. 34 Sectional drawing for BMS hs

| Pos. | Component                         | Materials*                    | R-version            |                      |          |
|------|-----------------------------------|-------------------------------|----------------------|----------------------|----------|
|      |                                   |                               | DIN                  | AISI                 | PREN     |
| 1    | Shaft with thrust bearing for BMS | Stainless steel/ceramic       | 1.4462/1.4539        | SAF 2205/904L        | 34       |
| 2    | Bearing                           | NBR                           | -                    | -                    | -        |
| 3    | Housing for thrust bearing        | Super Duplex stainless steel* | 1.4410               | SAF 2507             | 43       |
| 4    | Thrust bearing CPL                | Stainless steel/carbon        | 1.4547/1.4462/1.4539 | 254SMO/SAF 2205/904L | 43/34/34 |
| 5    | Pin                               | Super Duplex stainless steel* | 1.4410               | SAF 2507             | 43       |
| 6    | Housing for shaft seal            | Super Duplex stainless steel* | 1.4410               | SAF 2507             | 43       |
| 7    | Housing for bell, GG-RV           | Cast iron GG25                | 0.6025               | -                    | -        |
| 8    | Coupling spline for BMS           | Impax Supreme                 | -                    | -                    | -        |
| 9    | Shaft bushing D55                 | CK45                          | CK45                 | 1045                 | -        |
| 10   | Axial bearing                     | Acoflon 214G                  | -                    | -                    | -        |
| 11   | Shaft seal Roten SGR5             | Ceramic/silicon carbide       | -                    | -                    | -        |

\* The super duplex material is used in areas with stagnant water to reduce the risk of crevice corrosion.

## 13. Accessories

### CUE frequency converter

Grundfos CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps.

When CUE is installed, the motor requires no further motor protection.

CUE offers quick and easy setup and commissioning compared to a standard frequency converter because of the startup guide. Simply key in application-specific variables such as motor data, pump family, control function (e.g. constant pressure), sensor type, and setpoint, and CUE will automatically set all necessary parameters.

CUE enables gentle pumping and thereby protects the water reservoir and the rest of the distribution system, as water hammer can be avoided by adjusting ramp times up and down.

#### Overview of the CUE range

| Supply voltage<br>[V] | Power range<br>[kW] |      |     |     |    |        |
|-----------------------|---------------------|------|-----|-----|----|--------|
|                       | 0.55                | 0.75 | 1.1 | 7.5 | 11 | 45 250 |
| 3 x 525-690           |                     |      |     |     |    |        |
| 3 x 525-600           |                     |      |     |     |    |        |
| 3 x 380-500           |                     |      |     |     |    |        |
| 3 x 200-240           |                     |      |     |     |    |        |
| 1 x 200-240           |                     |      |     |     |    |        |

CUE is available in two enclosure classes:

- IP20/21
- IP54/55.

Note: The maximum CUE frequency is 120 Hz.

#### RFI filters

To meet the EMC requirements, CUE comes with the following types of built-in radio frequency interference filter (RFI).

| Voltage<br>[V] | Typical shaft<br>power, P2<br>[kW] | RFI filter type | Application           |
|----------------|------------------------------------|-----------------|-----------------------|
| 1 x 200-240    | 1.1 - 7.5                          | C1              | Domestic              |
| 3 x 200-240    | 0.75 - 45                          | C1              |                       |
|                | 0.55 - 90                          | C1              |                       |
| 3 x 380-500    | 110-250                            | C2              | Domestic/<br>industry |
| 3 x 525-600    | 0.75 - 7.5                         | C3              | Industry              |
| 3 x 525-690    | 11-25                              | C3              |                       |



GrA4404

Fig. 35 The CUE range

#### Functions

CUE has a wide range of pump-specific functions, such as

- constant pressure
- constant level
- constant flow rate
- constant temperature
- constant curve.

#### CUE features

- Startup guide  
CUE incorporates an innovative startup guide for the general setting of CUE including the setting of the correct direction of rotation. The startup guide is started the first time when CUE is connected to the power supply.
- Check of direction of rotation.
- Duty/standby operation.
- Dry-running protection.
- Low-flow stop function.

### Inputs and outputs

CUE incorporates various inputs and outputs:

- one RS-485 GENIbus connection
- one analog input, 0-10 V, 0/4-20 mA
  - external setpoint
- one analog input, 0/4-20 mA
  - sensor input, feedback sensor
- one analog output, 0-20 mA
- four digital inputs
  - start/stop and three programmable inputs
- two signal relays (C/NO/NC)
  - programmable.

### Accessories for CUE

Grundfos offers various accessories for CUE.

#### MCB 114 sensor input module

MCB 114 offers additional analog inputs for CUE:

- one analog input, 0/4-20 mA
- two inputs for Pt100 and Pt1000 temperature sensors.

### 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.

### Floor-mounting option

CUE is as standard installed on the wall. You can also install the enclosures D1 and D2 on the floor on a pedestal designed for that purpose.

For information about enclosures, see the product-specific documentation for CUE.

### IP21/NEMA1 option

You can upgrade an IP20 enclosure to IP21/NEMA1 by using the IP21/NEMA1 option. The power terminals (mains and motor) will be covered.

### Sensors

You can use the following sensors in connection with CUE. All sensors are with 4-20 mA output signal:

- pressure sensors, up to 25 bar
- temperature sensors
- differential-pressure sensors
- differential-temperature sensors
- flowmeters
- potentiometer box for external setpoint setting.

### Gateways

CUE has a standard RS-485 GENIbus interface. Gateways to convert to other bus standards are available as accessories.

The CIU family (CIU = Communication Interface Units) can convert from GENIbus to the most common fieldbuses in the world:

- CIU 100 converts from GENIbus to LonWorks.
- CIU 150 converts from GENIbus to Profibus DP.
- CIU 200 converts from GENIbus to Modbus RTU.
- CIU 250 is a GSM modem which can send SMS messages in case of alarms, etc.

### Control MPC

Control MPC, a multipump control system for the control of parallel-connected CUE pump solutions.

### Use of output filters

The table below shows in which cases an output filter is required. From the table, you can see if a filter is required, and which type to use.

The selection depends on these factors:

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

| Pump type                  | Typical shaft power P <sub>2</sub> | dU/dt filter | Sine-wave filter |
|----------------------------|------------------------------------|--------------|------------------|
| SP with 380 V motor and up | Up to 7.5 kW                       | -            | 0-300 m          |
|                            | 11 kW and up                       | 0-150 m      | 150-300 m        |

The lengths stated apply to the motor cable.

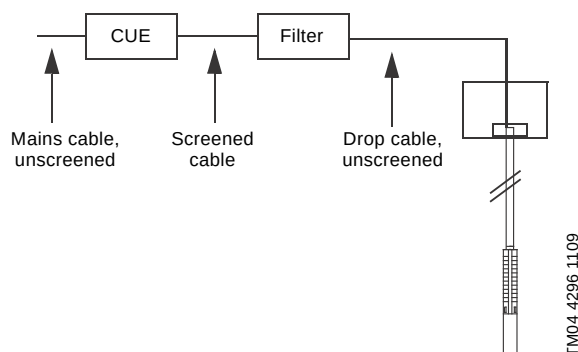
### Cables used in CUE installations

**Note:** When CUE is installed in connection with SP pumps, we distinguish between two types of installation:

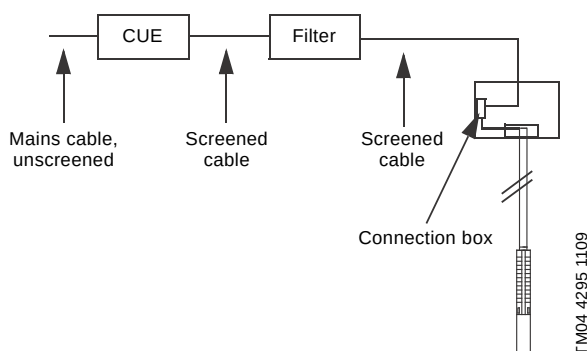
- installation in EMC-insensitive sites. See fig. 36.
- installation in EMC-sensitive sites. See fig. 37.

The two types of installation are different when it comes to the use of screened cable.

**Note:** Drop cables are always unscreened.



**Fig. 36** Example of installation in EMC-insensitive sites



**Fig. 37** Example of installation in EMC-sensitive sites

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

CUE is the right choice of frequency converter in SP installations as it meets all basic issues. CUE has a pre-installed startup guide that takes the installer through all the necessary settings.

The table below shows the different issues to be considered when using frequency converters in SP installations.

| Issues to be considered                                                                                                          | Explanation                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ramp (up and down): Maximum 3 seconds.                                                                                           | Lubricate the journal bearings in order to limit wear and overheating of windings.                                                                                                                         |
| Use temperature monitoring by Pt sensor.                                                                                         | Overheating of the motor => low insulation resistance => sensitive to voltage peaks.                                                                                                                       |
| Reduce peak voltages (maximum 800 V peaks).                                                                                      | Never exceed peak voltages of 850 V at motor leads.                                                                                                                                                        |
| For MS and MMS, we recommend that you use motors with 10 % extra in given duty point. For MMS, always use motors (PE2-PA-wound). | CUE with output filter is a safe solution.                                                                                                                                                                 |
| Remember output filter.                                                                                                          | Cables act as an amplifier => measure peaks at the motor.                                                                                                                                                  |
| Limit the rise time (dU/dt) to a maximum of 1000 V/μs. Determined by the equipment in CUE.                                       | Time between switches is an expression of losses, so in the future, we might have to exceed the limit of 1000 V/μs. The solution is not higher insulation of the motor, but filter in the output from CUE. |
| Minimum 30 Hz. Use a 60 Hz motor for larger range.                                                                               | Too low speed => no lubrication of journal bearings.                                                                                                                                                       |
| Size the CUE in respect of the current, not the power output.                                                                    | Can end up with a too small CUE.                                                                                                                                                                           |
| Size cooling provision for stator tube at duty point with lowest flow rate.                                                      | Consider a flow minimum along the stator housing.                                                                                                                                                          |
| Ensure that the pump is used within the range of the pump curve.                                                                 | Focus on the outlet pressure and sufficient NPSH, as vibrations will damage the motor.                                                                                                                     |



## BMS hp

| Parts                                                                             | Description                                                                                            | Specification           | Product number |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------|----------------|
|  | TM00 3712 0894<br>Victaulic coupling in stainless steel<br>3": Ø89<br>4": Ø114<br>5": Ø139<br>6": Ø168 | NBR seal 3", style 77DX | 97758517       |
|                                                                                   |                                                                                                        | NBR seal 4", style 77DX | 97758346       |
|                                                                                   |                                                                                                        | NBR seal 5", style 489  | 97758342       |
|                                                                                   |                                                                                                        | NBR seal 6", style 77DX | 97758320       |
|  | TM00 3709 0894<br>Victaulic coupling liner for welding                                                 | R-version 3"            | 00140968       |
|                                                                                   |                                                                                                        | R-version 4"            | 96986570       |
|                                                                                   |                                                                                                        | R-version 5"            | 96785838       |
|                                                                                   |                                                                                                        | R-version 6"            | 96230662       |

## Customised BMS pumps

We offer customised variants of the BMS type for a variety of applications.

Please contact your local Grundfos supplier.

## 14. Grundfos Product Center

Online search and sizing tool to help you make the right choice.



**SIZING** enables you to size a pump based on entered data and selection choices.

**REPLACEMENT** enables you to find a replacement product. Search results will include information on

- the lowest purchase price
- the lowest energy consumption
- the lowest total life cycle cost.

The screenshot shows the Grundfos Product Center website. At the top, there's a navigation bar with the Grundfos logo and 'PRODUCT CENTER'. Below it, a search bar is labeled 'FIND PRODUCTS AND SOLUTIONS'. The main content area has four large buttons: 'SIZING' (with a pump icon), 'CATALOGUE' (with a book icon), 'REPLACEMENT' (with a double arrow icon), and 'LIQUIDS' (with a liquid drop icon). Below these, the 'QUICK SIZING' section is visible, featuring input fields for 'Flow (Q)\*' and 'Head (H)\*', and radio buttons for 'Size by application', 'Size by pump design', and 'Size by pump family'. A 'START SIZING' button is also present. Callout lines connect descriptive text boxes to these specific features.

**www.grundfos.com** Login

**GRUNDFOS** | PRODUCT CENTER

Product range: United Kingdom | 50 Hz | Language: English  
Change settings

HOME FIND PRODUCT COMPARE YOUR PROJECTS SAVED ITEMS HELP 1.4.23

**FIND PRODUCTS AND SOLUTIONS**

Input product number or a whole or partial product name

**SIZING**  
Enter pump sizing

**CATALOGUE**  
Products and services

**REPLACEMENT**  
Replace an old pump with a new

**LIQUIDS**  
Find pump by liquid

**QUICK SIZING**

Enter duty point:

Flow (Q)\*  m<sup>3</sup>/h   
Head (H)\*  m

Select what to size by:

☐ Size by application  
☐ Size by pump design  
☐ Size by pump family

**START SIZING**

ADVANCED SIZING: ☐ Advanced sizing by application ☐ Guided selection

**CATALOGUE** gives you access to the Grundfos product catalogue.

**LIQUIDS** enables you to find pumps designed for aggressive, flammable or other special liquids.

### All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

### Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

Subject to alterations.







|               |
|---------------|
| 98567333 0316 |
| ECM: 1180323  |



The Symbol of Dynamism  
in Industry

Tel: ۰۲۱ - ۴۸۰۰۰۰۴۹ (خط ۱۲۰)  
E-mail: [info@famco.co.ir](mailto:info@famco.co.ir)  
[www.famcocorp.com](http://www.famcocorp.com)

تهران - کیلومتر ۲۱ جاده مخصوص کرج - روبروی  
پالایشگاه نفت پارس، پلاک ۱۲

نماد پویایی در صنعت