MAGNA

Series 2000 circulator pumps

50/60 Hz

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GRUNDFOS

Table of contents

1. Product introduction

The GRUNDFOS MAGNA circulator pumps are specially designed for the following systems:

- domestic hot-water systems (stainless-steel pump housing)
- air-conditioning systems (+2 °C) up to 265 kW (Δt 6 °C).

Duty range

Data	MAGNA (D)
Maximum flow, Q	11 m^3/h
Maximum head, H	10 m
Maximum system pressure	10 bar
Liquid temperature*	+2 to +95 °C

* 110 °C for short periods only. See *Liquid temperature*, page 8.

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Fig. 1 MAGNA pump range

Characteristic features

- $AUTO_{ADAPT}$.
- Proportional-pressure control.
- Constant-pressure control.
- Constant-curve duty.
- Max. or min. curve duty.
- Parallel connection of pumps with Control MPC Series 2000.
- No external motor protection required.
- Insulating shells are supplied with single-head MAGNA pumps for heating systems.

Benefits

- Low noise level.
- Safe selection.
- Simple installation.
- Low energy consumption. All MAGNA pumps comply with the EuP 2015 requirements.
- The $AUTO_{ADAPT}$ function ensures energy savings.
- Long life and no maintenance.
- External control and monitoring enabled via expansion modules.

Applications

Heating systems

- Main pump
- mixing loops
- heating surfaces
- air-conditioning surfaces.

The MAGNA circulator pumps are designed for circulating liquids in heating systems with variable flows where it is desirable to optimise the setting of the pump duty point, thus reducing energy costs. The pumps are also suitable for domestic hot-water systems.

To ensure correct operation, it is important that the sizing range of the system falls within the duty range of the pump.

The pump is especially suitable for installation in existing systems where the differential pressure across the pump is too high in periods with reduced flow demand. The pump is also suitable for new systems where automatic adjustment of pump head to actual flow demand is required without using expensive bypass valves or the like.

Furthermore, the pump is suitable for application in systems with hot-water priority as an external contact can immediately force the pump to operate according to the max. curve.

Pumped liquids

The pump is suitable for pumping thin, clean, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil.

If the pump is installed in a heating system, the water should meet the requirements of accepted standards on water quality in heating systems, for example the German standard VDI 2035.

In domestic hot-water systems, the pump should be used only for water with a degree of hardness lower than approx. 14 °dH.

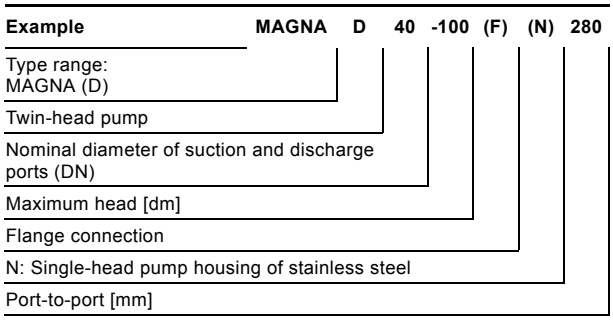
Do not use the pump for flammable liquids, such as diesel oil and petrol.

If the pump is not used during periods of frost, necessary steps must be taken to prevent frost bursts. Additives with a density and/or kinematic viscosity higher than those/that of water will reduce the hydraulic performance.

Whether a pump is suitable for a particular liquid, depends on a number of factors of which the most important are lime content, pH value, temperature, content of solvents and oils.

The pump can be used for pumping glycol-water mixtures up to 50 %. See *Operating conditions*, page 7. Please note that glycol will reduce the hydraulic performance.

Type key



Performance range

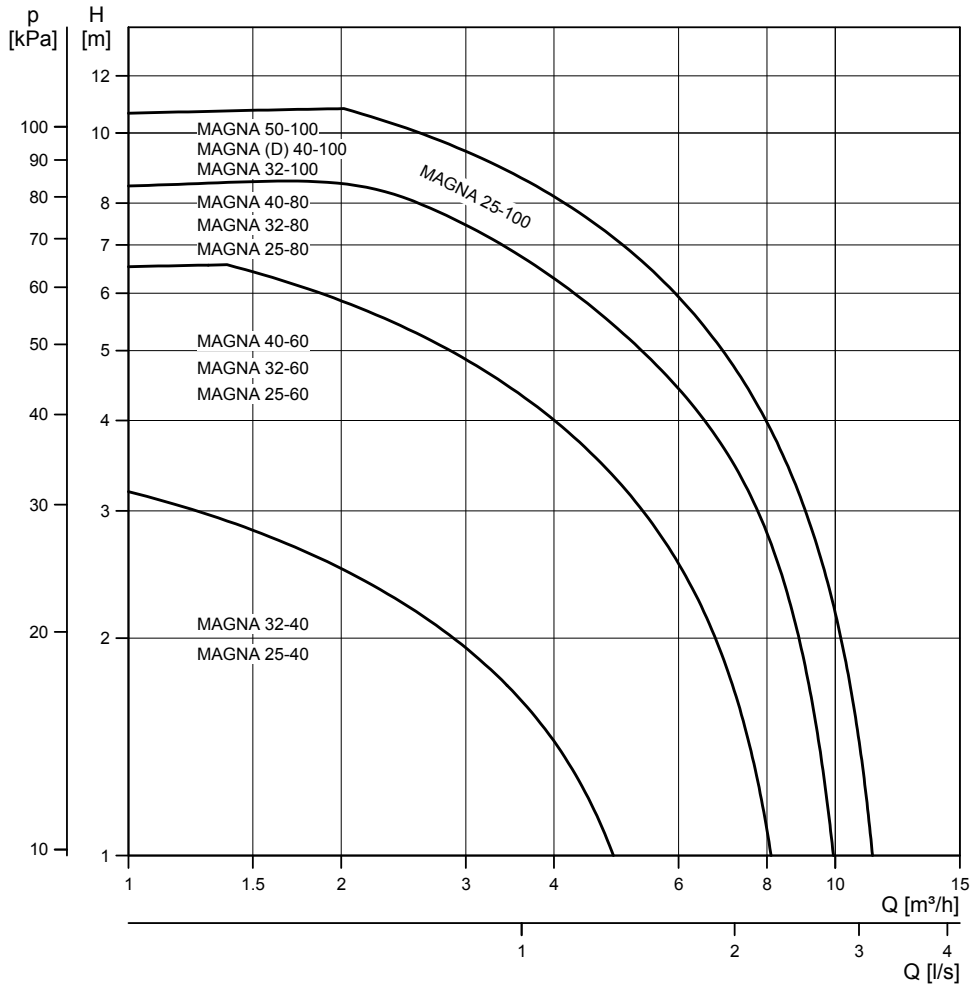


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Fig. 2 Performance range, MAGNA (D)

2. Product range

Product range

Pump type	Supply voltage 1 x 230-240 V	Port-to-port length [mm]	Pipe connection			Flange connection	Data sheet
			1"	1 1/2"	2"	PN 6 / PN 10	Page
Single-head pumps							
MAGNA 25-40	•	180		•			21
MAGNA 25-40 N	•	180		•			21
MAGNA 25-60	•	180		•			22
MAGNA 25-60 N	•	180		•			22
MAGNA 25-80	•	180		•			23
MAGNA 25-80 N	•	180		•			23
MAGNA 25-100	•	180		•			24
MAGNA 25-100 N	•	180		•			24
MAGNA 32-40	•	180			•		25
MAGNA 32-40 N	•	180			•		25
MAGNA 32-60	•	180			•		26
MAGNA 32-60 N	•	180			•		26
MAGNA 32-80	•	180			•		27
MAGNA 32-80 N	•	180			•		27
MAGNA 32-80 F	•	180				•	28
MAGNA 32-100	•	180			•		28
MAGNA 32-100 N	•	180			•		28
MAGNA 32-100 F	•	220				•	30
MAGNA 40-60 F	•	220				•	31
MAGNA 40-80 F	•	220				•	32
MAGNA 40-100 F	•	220				•	33
MAGNA 50-100 F	•	240				•	34
Twin-head pumps							
MAGNA D 40-100 F	•	220				•	35

Pump selection

Pump size

Selection of pump size should be based on

- required maximum flow
- maximum head loss in the system.

Refer to the system characteristics to determine the duty point. See fig. 3.

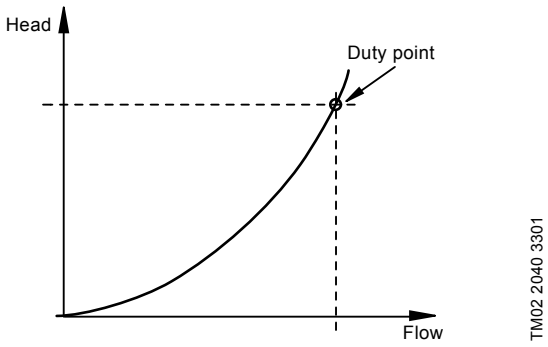

Fig. 3 System characteristic

Operating conditions

It should be checked whether the operating conditions are fulfilled, i.e.

- liquid temperature and ambient conditions
- minimum inlet pressure
- maximum operating pressure.

Control mode

General recommendation:

- the factory setting which is suitable for most installations
- proportional-pressure control in systems with relatively large head losses
- constant-pressure control in systems with relatively small head losses.

Communication

The requirements for external control or monitoring of the pump should be considered, such as access to the following:

- speed control of pump or change of setpoint
- reading of pump data
- start/stop, fault indication or forced control to max. or min. curve.

Note: The communication options depend on the pump type.

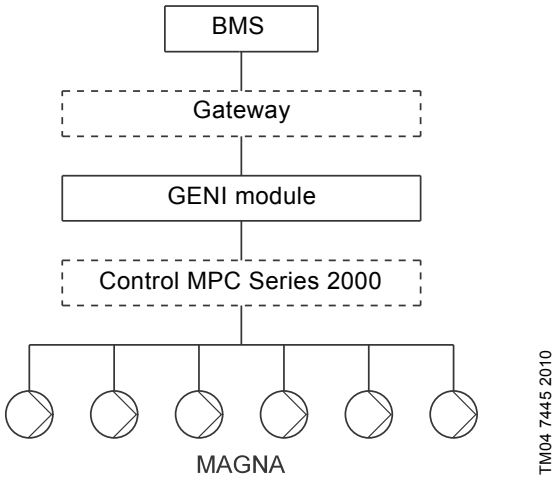

Fig. 4 Building management system with six pumps in parallel controlled via a Control MPC Series 2000

3. Operating conditions

General recommendations

Water in heating systems	Water quality according to local standards such as the German standard VDI 2035
Domestic hot water	Degree of hardness up to 14 °dH
Water containing glycol	Maximum viscosity = 15 mm^2/s (~ 50 % glycol at +2 °C)

Liquid temperature

Application	Operation	Liquid temperature
General	Short periods	+110 °C
	Continuously	+2 to +95 °C
Domestic hot-water systems	Continuously	+2 to +60 °C

Ambient conditions

Ambient temperature during operation	0 to +40 °C
Ambient temperature during storage/transport	-30 to +55 °C
Relative air humidity	Maximum 95 %.

Maximum operating pressure

10 bar.

Minimum inlet pressure

The following relative minimum inlet pressures must be available at the pump inlet during operation:

Pump type	Liquid temperature	
	75 °C	95 °C
	Inlet pressure [bar] / [MPa]	
All types	0.10 / 0.01	0.35 / 0.035

Note: Actual inlet pressure plus pump pressure against a closed valve must be lower than the maximum permissible system pressure.

Electrical data

Enclosure class	IP44 (IEC 85).
Insulation class	F.
External start/stop input	External potential-free switch.* Screened cable. Maximum contact load: 5 V, 10 mA.
Setpoint signals	GENI module.*
Signal output	Internal potential-free changeover contact.* Screened cable. Maximum contact load: 250 VAC, 2 A. Minimum contact load: 5 VDC, 1 mA.
Bus input	GENI module.* Grundfos Communication Interface Unit (CIU) for: LonWorks Profibus DP Modbus RTU GSM/GPRS GRM BACnet MS/TP.
Supply voltage	1 x 230-240 V - 10 %/+ 6 %, 50/60 Hz, PE.
	The pump requires no external motor protection.
Earth leakage current	I_{leak} < 3.5 mA. The leakage currents are measured in accordance with EN 60335-1.
EMC	EN 61800-3.

* Expansion module.

Sound pressure level

≤ 32 dB(A).

4. Functions

Functions	MAGNA
Control modes (factory setting)	
$AUTO_{ADAPT}$ *	●
Additional control and operating modes	
Proportional-pressure control	●
Constant-pressure control	●
Constant-curve duty	●
Max. or min. curve duty	●
Automatic night-time duty	●
Additional operating modes of twin-head pumps	
Alternating operation *	●
Standby operation	●
Readings and settings on the pump	
Operating indication	●
Flow indication	●
Setpoint	●
Control mode	●
Fault indication	●
Communication	
Wireless R100 remote control or Grundfos GO Remote	●
External digital input/output	❍
External analog input	❍
Bus via GENIbus protocol, RS-485	❍
Bus via LonTalk® protocol, FTT 10	■
Bus via Profibus DP	■
Bus via Modbus RTU	■
Bus via GSM/GPRS	■
Bus via GRM	■
Bus via BACnet MS/TP	■

* Not recommended for air-conditioning systems.
● Function incorporated.
❍ Expansion module required.
■ GENI module (page 38) and Communication Interface Unit (page 41) required.

Control modes

The pumps have been factory-set to

- AUTO$_{ADAPT}$.

The setpoint is factory-set to half of the maximum pump head.

The factory setting is suitable for most installations.

AUTO$_{ADAPT}$

During operation, the pump automatically reduces the factory-set setpoint and adjusts it to the actual system characteristic.

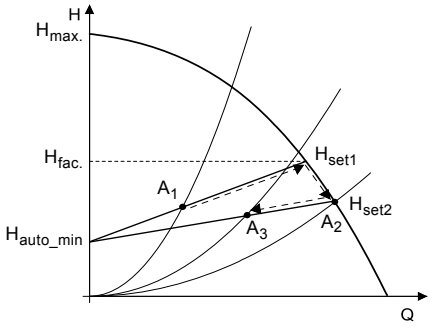

Fig. 5 AUTO$_{ADAPT}$ control

Note: Manual setting of the setpoint is not possible.

When the AUTO$_{ADAPT}$ control mode has been activated, the pump will start at H_{set1}, corresponding to 50 % of its maximum head, and then adjust its performance to A_1. See fig. 5.

When the pump registers a lower pressure on the max. curve, A_2, the AUTO$_{ADAPT}$ function automatically selects a correspondingly lower control curve, H_{set2}.

If the radiator valves close, the pump adjusts its performance to A_3.

A_1:	Original duty point.
A_2:	Lower registered pressure on the max. curve.
A_3:	New duty point after AUTO$_{ADAPT}$ control.
H_{set1}:	Original setpoint setting.
H_{set2}:	New setpoint after AUTO$_{ADAPT}$ control.
$H_{fac.}$:	MAGNA xx-40: 2.5 m MAGNA xx-60: 3.5 m MAGNA xx-80: 4.5 m MAGNA xx-100: 5.5 m.
H_{auto_min}:	A fixed value of 1.5 m.

The AUTO$_{ADAPT}$ control mode is a form of proportional-pressure control where the control curves have a fixed origin, H_{auto_min}.

The AUTO$_{ADAPT}$ control mode is developed specifically for heating applications and not recommended for air-conditioning systems.

Additional control and operating modes

We offer additional control and operating modes to meet specific demands.

The functions available depend on the pump type and the selected expansion module. See *4. Functions*, page 9.

Proportional-pressure control

The pump head is changed continuously in accordance with the flow demand in the system.

The head against a closed valve is half the setpoint.

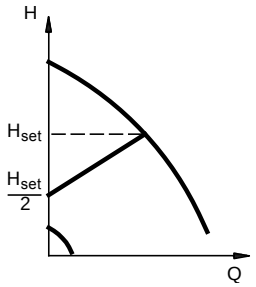

Fig. 6 Proportional-pressure control

The proportional-pressure control is recommended in systems with relatively large head losses.

Constant-pressure control

The pump head is kept constant, independent of the water requirement.

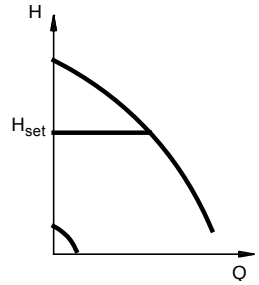

Fig. 7 Constant-pressure control

The constant-pressure control is recommended in systems with relatively small head losses.

Constant-curve duty

Requires the use of an R100 remote control or Grundfos GO Remote.

The pump can be set to operate according to a constant curve like an uncontrolled pump.

If an external controller is installed, the pump is able to change from one constant curve to another, depending on the value of the external signal.

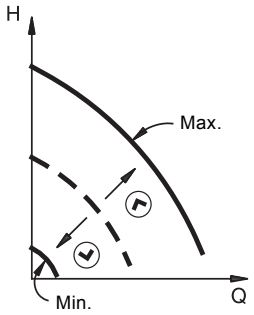

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Fig. 8 Constant-curve duty

Max. or min. curve duty

The pump can be set to operate according to the max. or min. curve, like an uncontrolled pump.

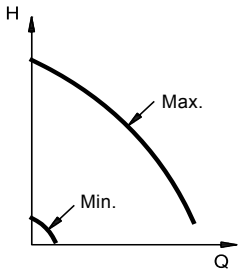

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Fig. 9 Max. or min. curves

The max. curve mode can be used in periods in which a maximum flow is required. This operating mode is for instance suitable for hot-water priority.

The min. curve mode can be used in periods in which a minimum flow is required. This operating mode is for instance suitable for manual night-time duty.

Automatic night-time duty

When automatic night-time duty has been selected, the pump will change automatically between normal duty and night-time duty. Changeover between normal duty and night-time duty takes place as a result of the flow-pipe temperature measured by an integrated temperature sensor.

The automatic changeover to night-time duty takes place when the temperature sensor registers a flow-pipe temperature drop of more than 10-15 °C within approx. 2 hours. The required temperature drop is a minimum of 0.1 °C/min.

Changeover to normal duty takes place without a time lag when the temperature has increased by approx. 10 °C.

Additional operating modes of twin-head pumps

The following operating modes are available for twin-head pumps:

Alternating operation

Pump operation alternates every 24 hours. If the duty pump stops due to a fault, the other pump will start.

Standby operation

One pump is operating continuously. In order to prevent seizing-up, the other pump will start at a fixed frequency (every 24 hours) and run for a short period. If the duty pump stops due to a fault, the other pump will start.

Readings and settings on the pump

The control panel on the pump control box incorporates the basic functions for readings and settings.

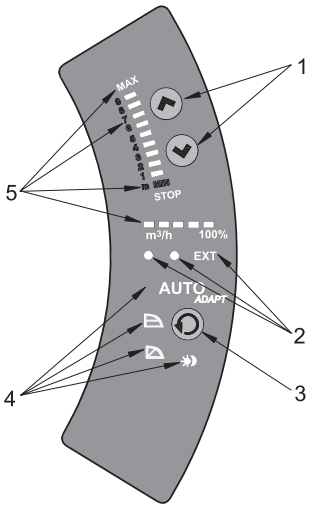

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Fig. 10 MAGNA (D) control panel

Pos.	Description
1	Buttons for setting of head.
2	• Indicator lights for operating and fault indication. • Symbol for indication of external control.
3	Button for selection of control mode: $AUTO_{ADAPT}$, proportional pressure, constant pressure and automatic night-time duty.
4	Light symbols for indication of control mode and night-time duty.
5	Light fields for indication of head, flow and operating mode.

Communication

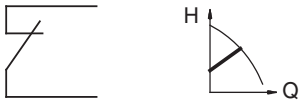
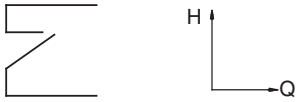
MAGNA enables communication via

- digital input
- digital output
- analog input
- wireless R100 remote control
- Grundfos GO Remote
- Grundfos Remote Management
- Bus communication via CIU unit

Digital input

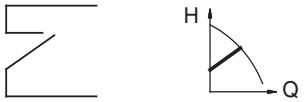
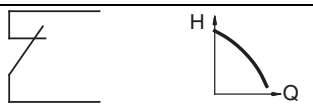
External start/stop

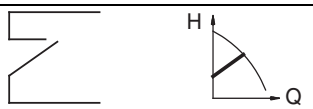
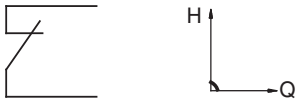
The pump can be started or stopped via the digital input.

Start/stop	
	Normal duty
	Stop

External forced max. or min curve

The pump can be forced to operate on the max. or min. curve via the digital input.

Max. curve	
	Normal duty
	Max. curve

Min. curve	
	Normal duty
	Min. curve

The function of the digital input is selected with the R100 remote control or Grundfos GO Remote.

Digital output

The pump incorporates a signal relay with a potential-free changeover contact for external fault indication.

The function of the signal relay can be changed from "Fault" to "Ready" or "Operating" mode with the R100 or Grundfos GO Remote.

Requires an expansion module.

The functions of the signal relay are as shown in the table below:

Signal relay	Fault signal
	Not activated: • The power supply has been switched off. • The pump has not registered a fault.
	Activated: • The pump has registered a fault.
Signal relay	**Ready signal**
	Not activated: • The pump has registered a fault and is unable to run.
	Activated: • The pump has been set to stop, but is ready to run. • The pump is ready to run or is running.
Signal relay	**Operating signal**
	Not activated: • The pump has been set to stop. • The pump has registered a fault and is unable to run.
	Activated: • The pump is running. • The pump has registered a fault, but is able to run.

Analog input

External analog control

Requires an expansion module.

Control of setpoint or speed via an external 0-10 V signal.

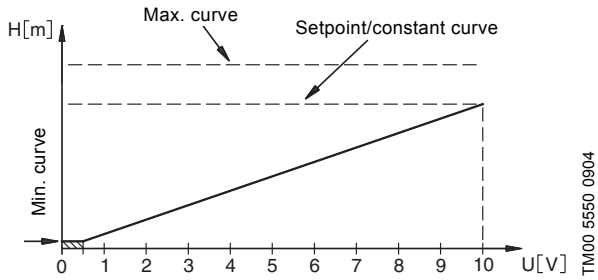


Fig. 11 Example of 0-10 V control

The analog input enables the following control modes:

In constant-curve mode, the pump is able to change from one constant curve to another depending on the value of the external signal.

The internal controller is inactive in this mode.

In pressure control mode, the setpoint can be set externally within the range from the setpoint to the min. curve.

The internal controller is active in this mode.

At an input voltage lower than 0.5 V, the pump will operate according to the min. curve.

R100 remote control

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Fig. 12 R100 remote control

The pump is designed for wireless communication with the Grundfos R100 remote control.

The R100 offers additional possibilities of setting and status displays for the pump.

The R100 can be used for the following functions:

- reading of operating data
- reading of fault indications
- setting of control mode
- setting of 0.1 m head increments
- selection of external setpoint signal
- allocation of pump number making it possible to distinguish between pumps in connection with parallel operation via bus
- selection of function for digital input.

Grundfos GO Remote

TM05 3886 1612

Fig. 13 Grundfos GO Remote

The MAGNA pump is designed for wireless communication with the Grundfos GO Remote.

For more details, see section *Grundfos GO remote* page 40.

The Grundfos GO Remote offers additional possibilities of setting and status displays for the pump.

The Grundfos GO Remote can be used for the following functions:

- Reading of operating data.
- Setting of control mode.
- Setting of setpoint.
- Allocation of pump number making it possible to distinguish between pumps that are connected via Grundfos GENIbus.
- Displaying relevant documentation.

Grundfos Remote Management

Grundfos Remote Management is an easy-to-install, low-cost solution for wireless monitoring and management of Grundfos products. It is based on a centrally hosted database and a web server with wireless data collection via GSM/GPRS modem. The system only requires an internet connection, a web browser, a GRM modem and an antenna as well as a contract with Grundfos allowing you to monitor and manage Grundfos pump systems.

You have wireless access to your account anywhere, anytime when you have an internet connection, for example via a smartphone, tablet PC, laptop or computer. Warnings and alarms can be sent by e-mail or SMS to your mobile phone or computer.

Bus communication via CIU unit

All pumps can be fitted with a GENIbus interface module which is based on the RS-485 platform. See *9. Accessories*, page 36.

Bus communication enables connection to Control MPC Series 2000, building management systems (BMS) or another type of external control system.

The options are shown in fig. 14.

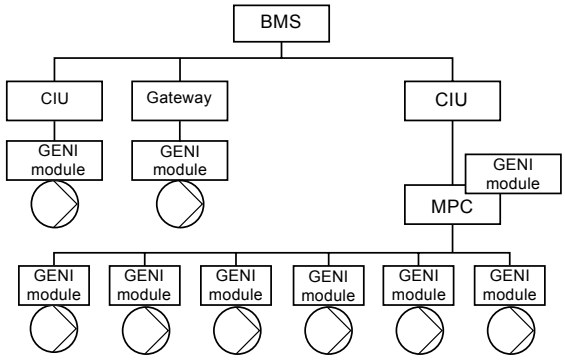

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Fig. 14 Examples of bus communication between pumps and BMS

In order to select the correct CIU unit for the application in question, see *9. Accessories*, page 36.

5. Construction

The MAGNA pump is of the canned-rotor type, i.e. pump and motor form an integral unit without shaft seal and with only two gaskets for sealing. The bearings are lubricated by the pumped liquid.

The pump is characterised by the following:

- controller integrated in the control box
- control panel on the control box
- control box prepared for optional modules
- differential-pressure and temperature detection
- cast-iron or stainless-steel pump housing
- twin-head version
- no external motor protection required.

Motor and electronic controller

The single-phase MAGNA pump incorporates a three-phase, 4- or 8-pole, synchronous, permanent-magnet motor (PM motor). This motor type is characterised by higher efficiency than a conventional asynchronous squirrel-cage motor.

Pump speed is controlled by an integrated frequency converter.

A differential-pressure and temperature sensor is incorporated in the pump.

Pump connections

Threaded pump connections to ISO 228/1.

Flange dimensions to ISO 7005-2/BS4504.

Surface treatment

The pumps are wet-varnished.
Colour: NCS40-50R.

Material specification

Pos.	Component	Material	EN
1	Control box	Composite PA66 or PC/ASA	
2	Stator housing	Aluminium AlSi 10Cu_2	
	O-rings	EPDM rubber	
3	Outer bearing ring	Aluminium oxide Al_2O_3	
	Rotor can	Stainless steel	1.4401
4	Shaft	Aluminium ceramics Al_2O_3	
5	Thrust bearing	Carbon MY 106	
6	Bearing plate	Stainless steel	1.4301
	Inner bearing ring	Aluminium ceramics Al_2O_3	
7	Impeller	Composite	
8	Pump housing	Cast iron GJL-200 or stainless steel	0.6020 1.4408
	Insulating shells*	EPP	

* Insulating shells for pumps in heating systems and air-conditioning systems are available as accessories. See *Insulating kits*, page 37.

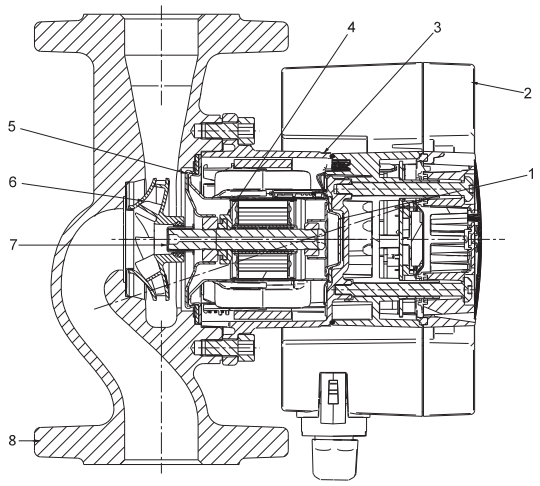

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Fig. 15 Sectional drawing of MAGNA pump

6. Installation

Mechanical installation

The MAGNA pump is designed for indoor installation. The pump must be installed with horizontal motor shaft.

The pump may be installed in horizontal as well as vertical pipes.

Arrows on the pump housing indicate the liquid flow direction through the pump. The liquid flow direction can be horizontal or vertical, depending on the control box position.

The control box can be turned to various positions, depending on pump type. This is described in the installation and operating instructions.

The pump must be installed in such a way that strain from the pipework is not transferred to the pump housing.

The pump may be suspended direct in the pipes, provided the pipework can support the pump. If not, the pump must be installed on a mounting bracket or base plate.

To ensure cooling of motor and electronics, the following must be observed:

- Install the pump in such a way that sufficient cooling is ensured.
- The temperature of the cooling air must not exceed 40 °C.

Insulating shells

The insulating shells supplied with the single-head MAGNA pumps are for heating applications and should be fitted as part of the installation.

Pump type	Insulating shells	
	For heating	For air-conditioning
MAGNA	Supplied with the pump	See *Pumps for air-conditioning systems*, page 37.

Note: Insulating shells are available for single-head pumps only.

Electrical connection

The electrical connection and protection should be carried out in accordance with local regulations.

- The pump must be connected to an external mains switch.
- The pump must always be correctly earthed.
- The pump requires no external motor protection. The motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).
- When the pump is switched on via the mains, the pump will start after approx. 5 seconds.

Note: The number of starts and stops via the power supply must not exceed four times per hour. If the pump starts and stops more frequently, it should be considered to install a relay module. See *Relay module*, page 39. If this solution is not possible, the speed should be decreased to max. 75 % of rated load.

The pump mains connection must be made as shown in the diagrams on the following pages.

Cables

Use screened cables (0.25 - 1.5 mm^2) for external on/off switch, digital input, sensor and setpoint signals.

- All cables used must be heat-resistant up to at least +85 °C.
- All cables used must be installed in accordance with EN 60204-1.

Wiring diagram

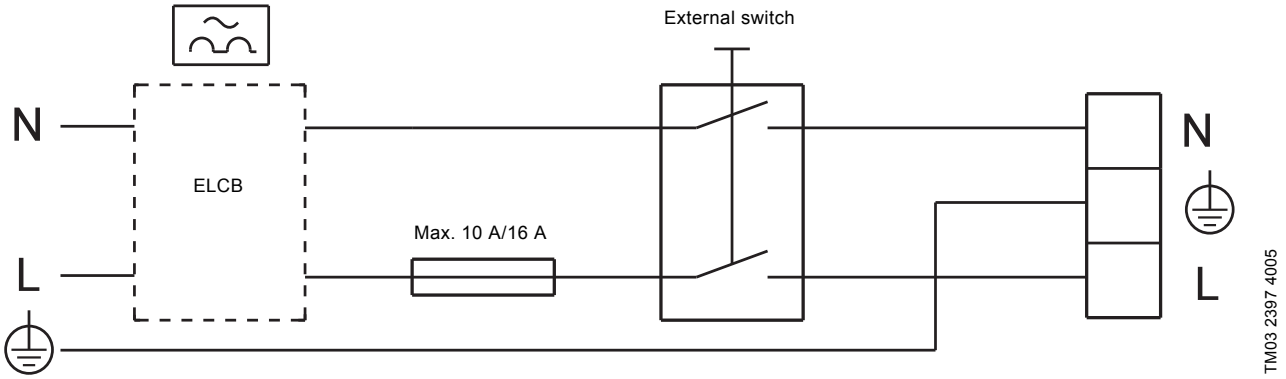


Fig. 16 1 x 230-240 V - 10 %/+ 6 %, 50/60 Hz

Additional protection

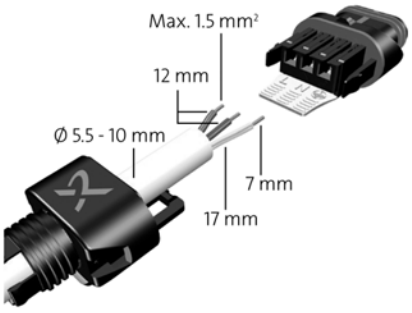
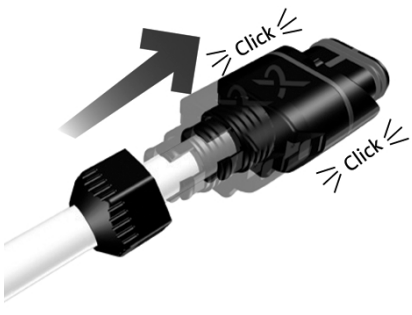
If the pump is connected to an electric installation where an earth-leakage circuit breaker (ELCB) is used as an additional protection, the earth-leakage circuit breaker must be marked with the following symbol.

The earth-leakage circuit breaker must trip out when earth fault currents with DC content (pulsating DC) occur.

Assembly and disassembly of plug

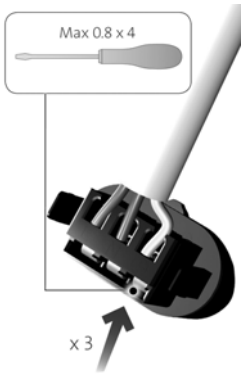
The figures below illustrates how the ALPHA power plug is assembled and disassembled.

Assembly

Step	Action
1	 TM05 5793 4012
2	 TM05 5794 4012
3	 TM05 5795 4012
4	 TM05 5796 4012
5	 TM05 5797 4012

Step	Action
6	 TM05 5798 4012

Disassembly

Step	Action
1	 TM05 5799 4012

Examples of connections

Connection to external controllers

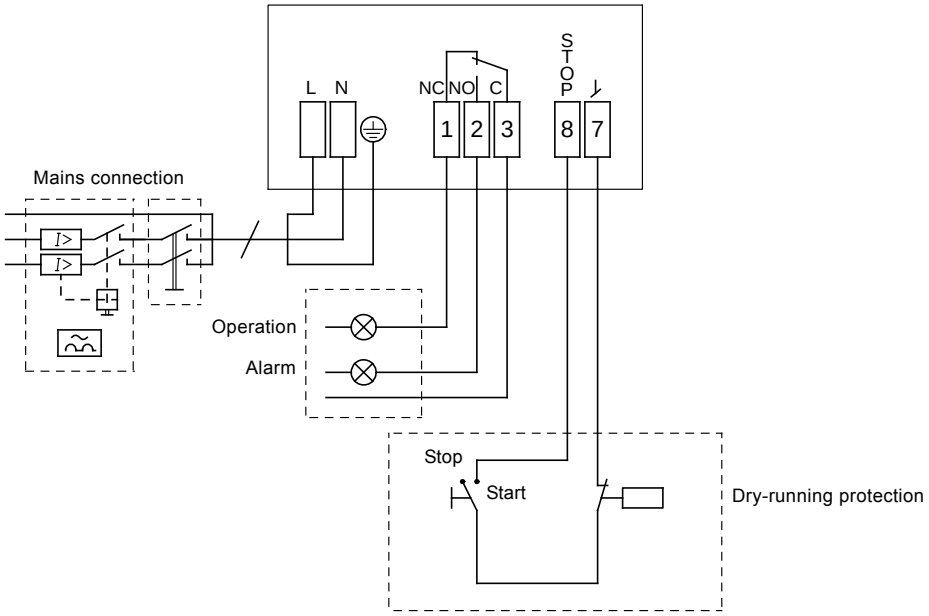


Fig. 17 Example of MAGNA pump

Connection to external controllers

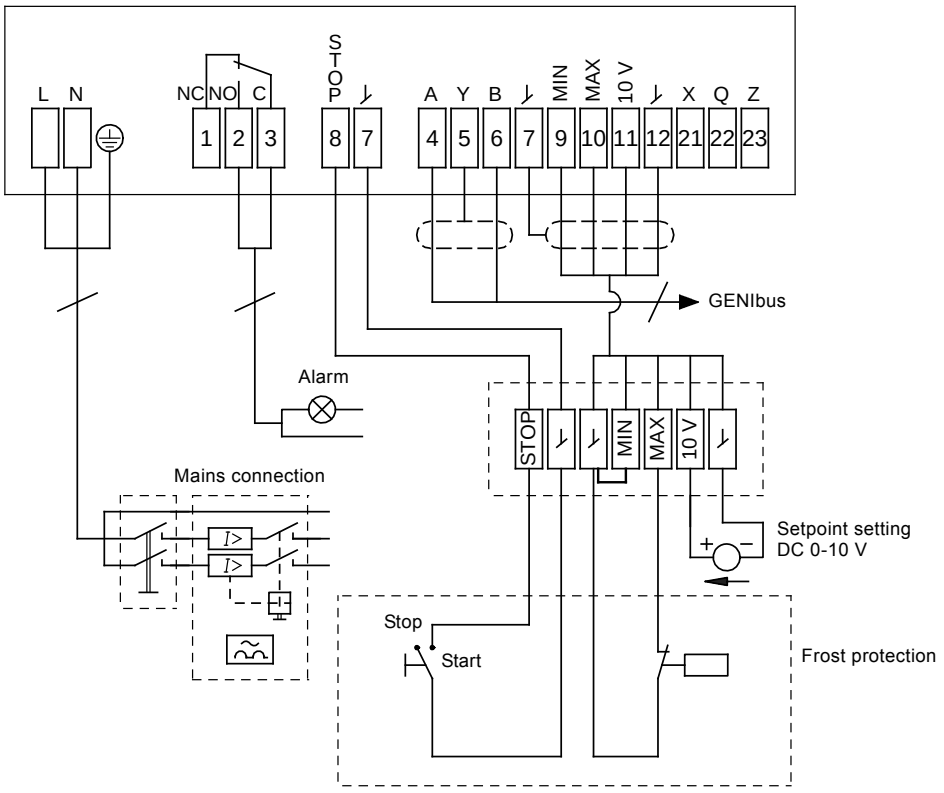


Fig. 18 Example of MAGNA pump with GENI module

7. Curve conditions

The guidelines below apply to the performance curves on pages 21 to 35:

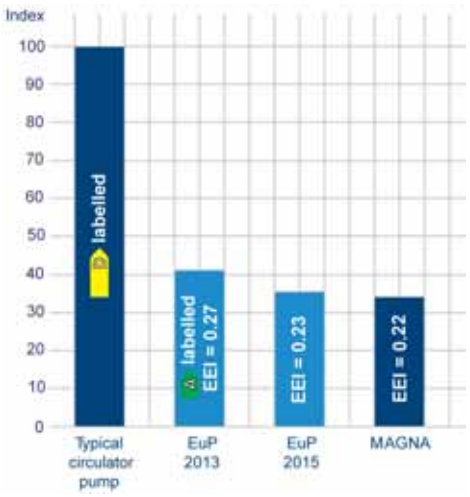
- Test liquid: airless water at 60 °C.
- All curves show average values and should not be used as guarantee curves. If a stated minimum performance is required, individual measurements must be made.
- The hatched areas show the pump duty range when the pump is set to controlled operation.
- Reference supply voltage: 1 x 230 V, 50 Hz.
- EEI obtained according to EN 16297.

Note: Within the MAGNA performance range, the constant- and proportional-pressure curves can be set in steps of 1 m head on the control panel and 0.1 m head with the R100 or Grundfos GO Remote.

EuP ready

The MAGNA pumps are energy-optimised and comply with the EuP Directive (Commission Regulation (EC) No 641/2009) which will be effective as from 1 January 2013.

Figure 19 shows the energy consumption index for a typical circulator pump compared to the various EEI limits. For MAGNA pumps, the average energy efficiency index (EEI) is 0.22 which is lower than the required energy efficiency index (EEI) by 2015.



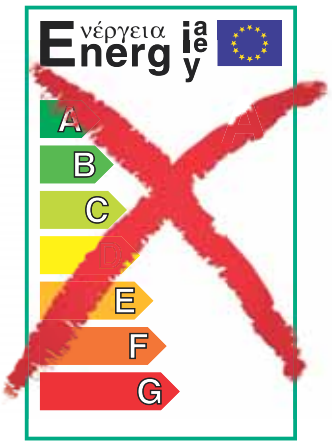
TM05 6553 4912

Fig. 19 Energy efficiency index

The energy efficiency index (EEI) of the pump is stated on the data sheet for the specific pump. See pages 21 to 35.

As from 1 January 2013, the old A to G energy label will be replaced by the new energy efficiency index (EEI).

Only the best of today's A-labelled circulator pumps will meet the new requirements.



TM05 3936 1712

Fig. 20 Old energy label

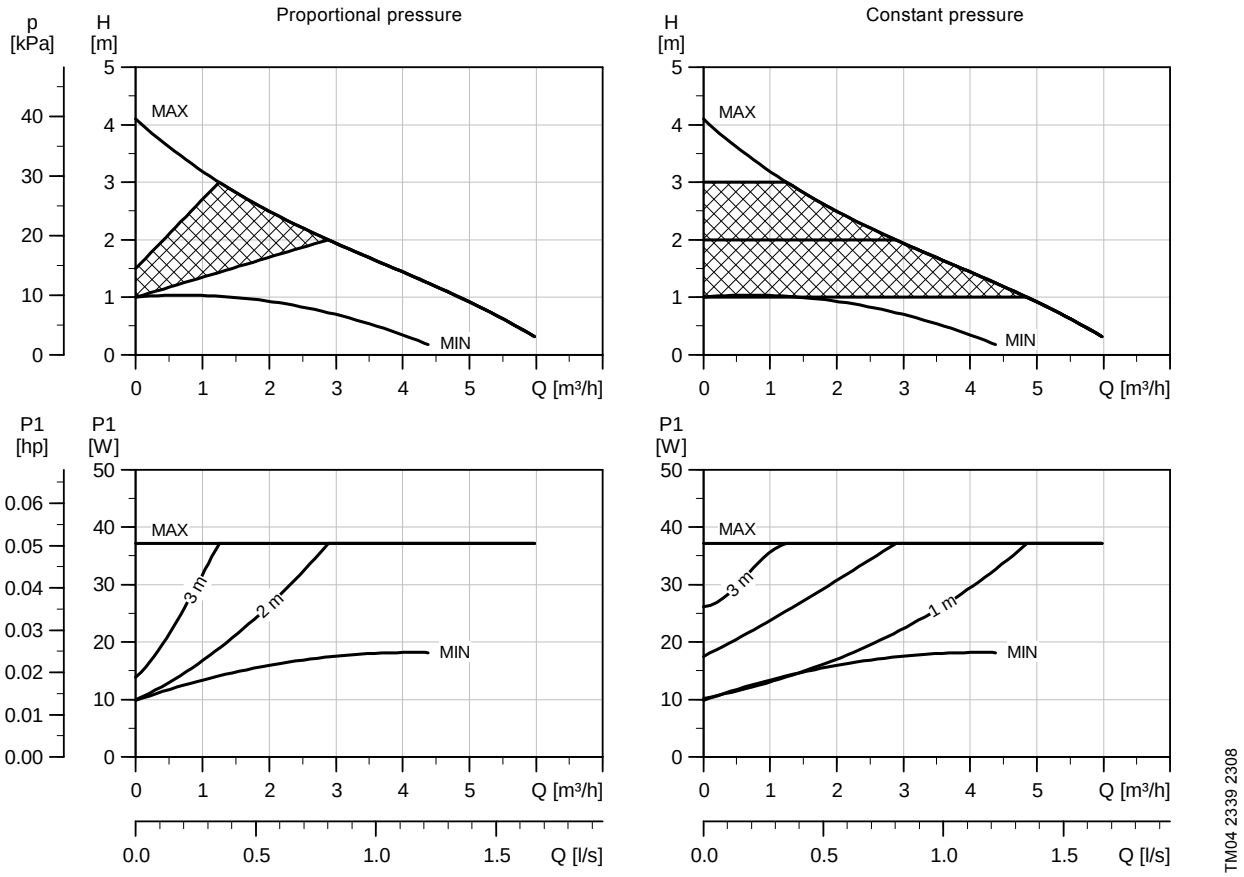
For more information about the new energy directive, please visit:

http://energy.Grundfos.com

TM05 2683 0412

8. Performance curves and technical data

MAGNA 25-40 (N)



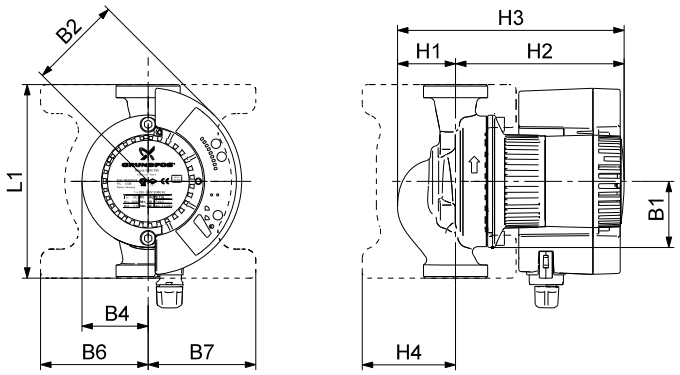
TM04 2339 2308

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	37	0.28	0.93

MAGNA 25-40 is also available with stainless-steel housing, type N.

Specific EEI: 0.22.

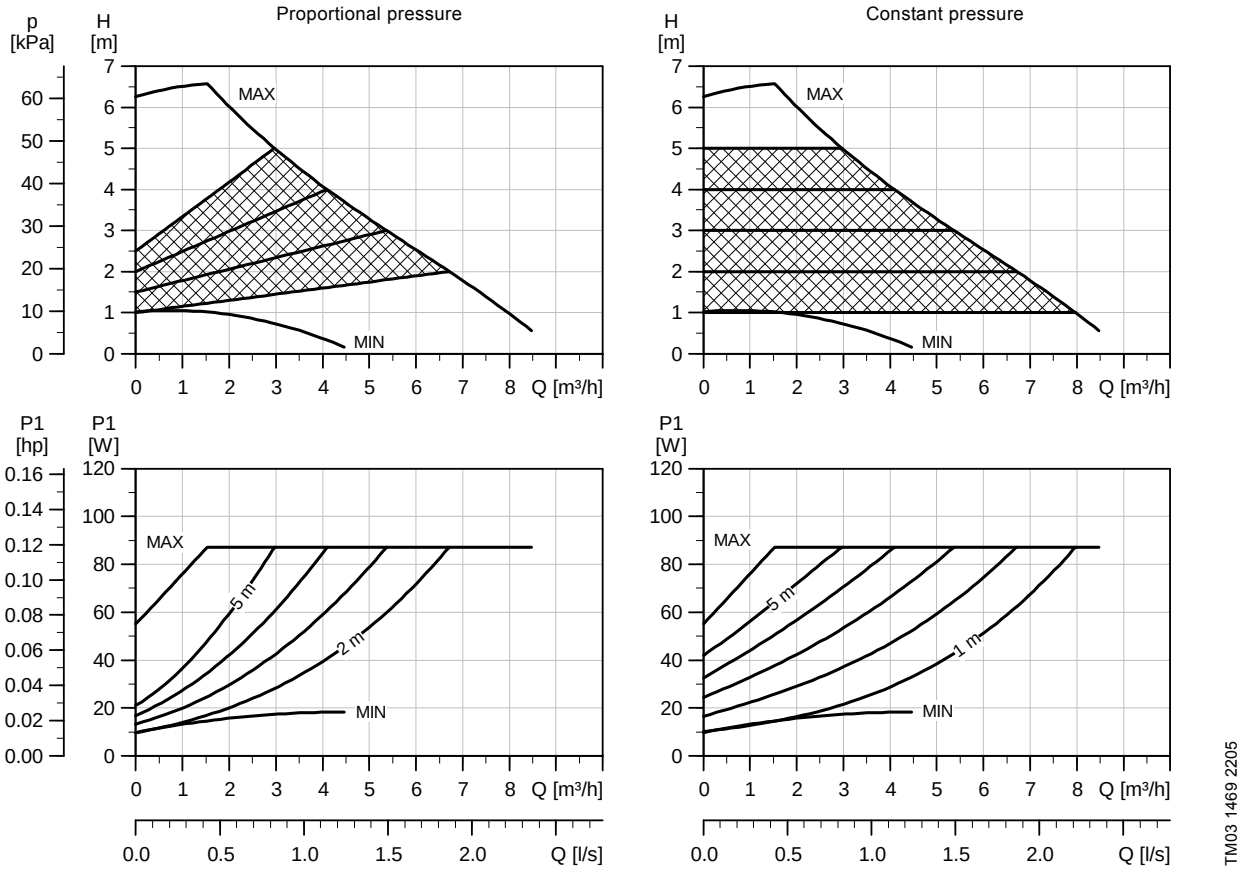


TM05 5741 3912

Dimensions and weights

Pump type	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 25-40 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 25-60 (N)

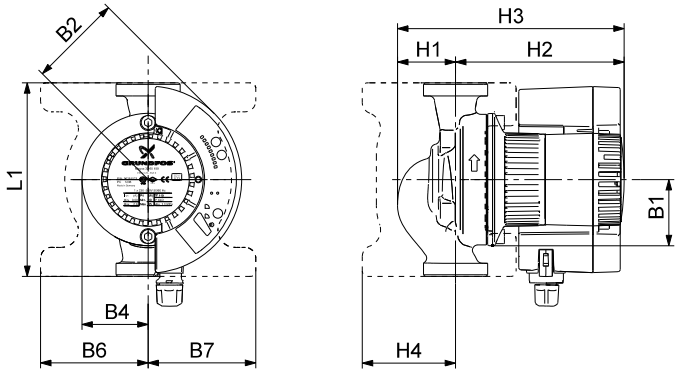


TM03 1469 2205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	85	0.60	0.98

MAGNA 25-60 is also available with stainless-steel housing, type N.
Specific EEI: 0.22.

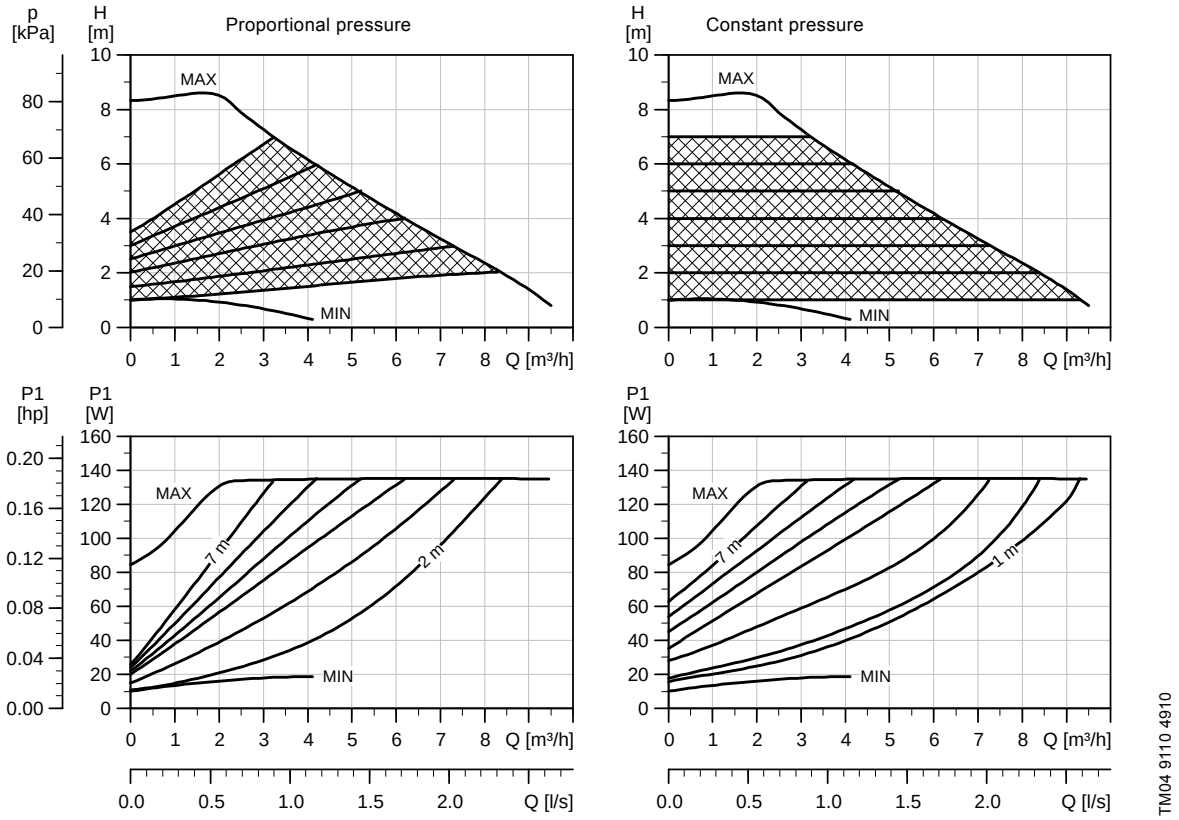


TM05 5741 3912

Dimensions and weights

Pump type	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 25-60 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 25-80 (N)

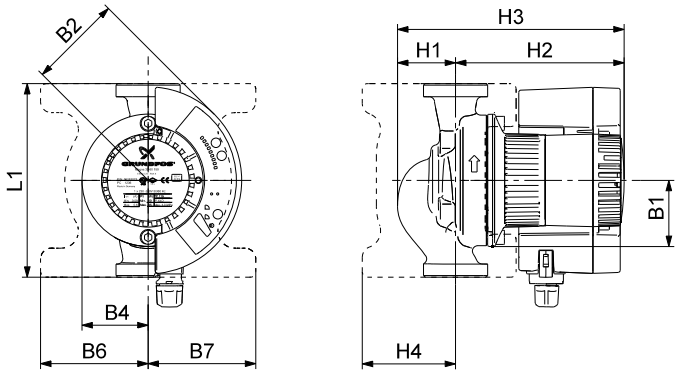


Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.10	0.90
	Max.	140	0.98	0.98

MAGNA 25-80 is also available with stainless-steel housing, type N.

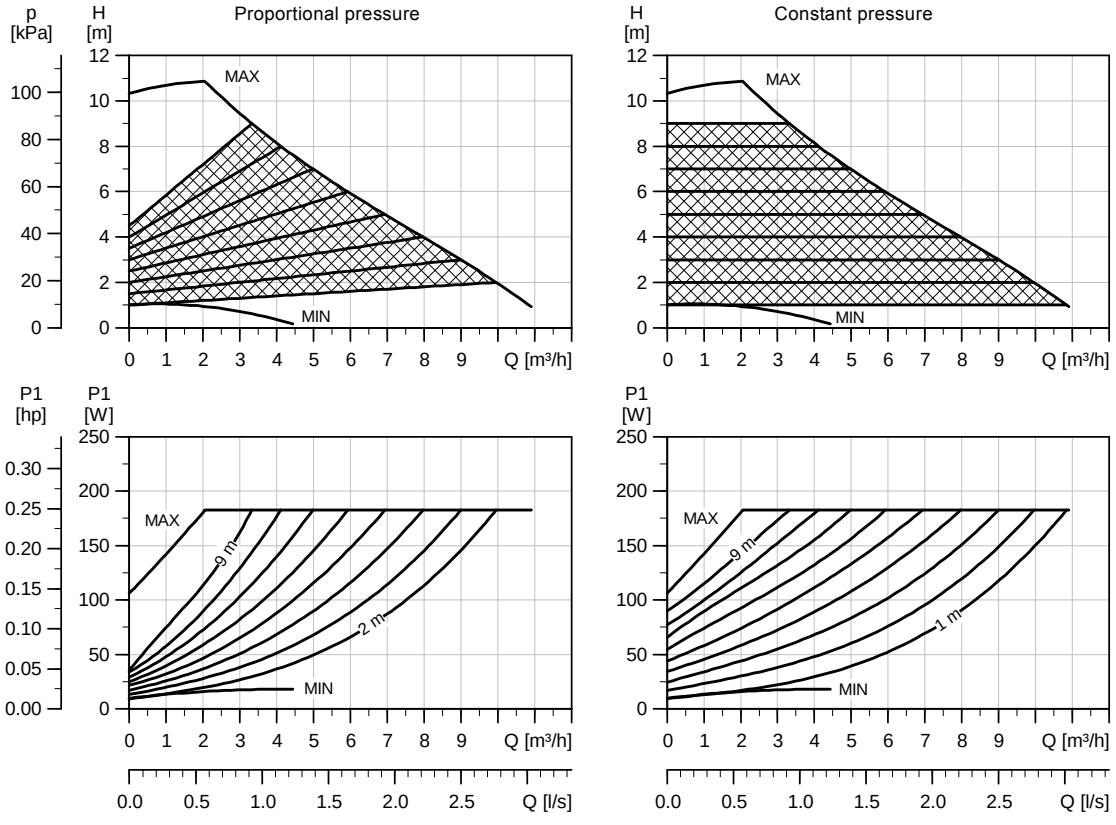
Specific EEI: 0.23.



Dimensions and weights

Pump type	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 25-80 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 25-100 (N)

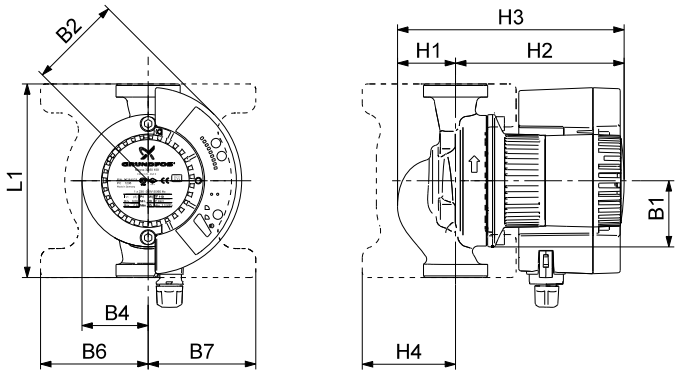


TM03 1470 2205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	185	1.25	0.98

MAGNA 25-100 is also available with stainless-steel housing, type N.
Specific EEI: 0.21.

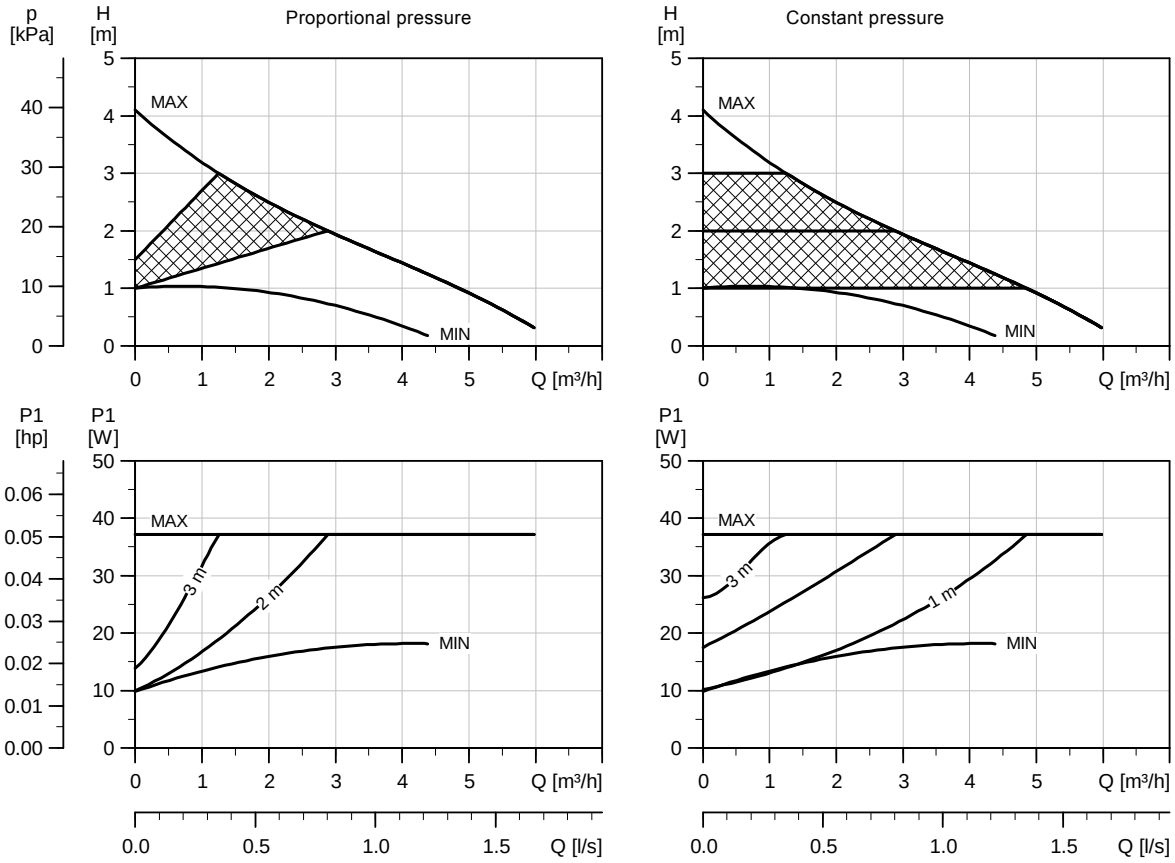


TM05 5741 3912

Dimensions and weights

Pump type	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 25-100 (N)	180	62	87	62	100	100	545	157	211	85	25	1 1/2	5.4	0.012

MAGNA 32-40 (N)

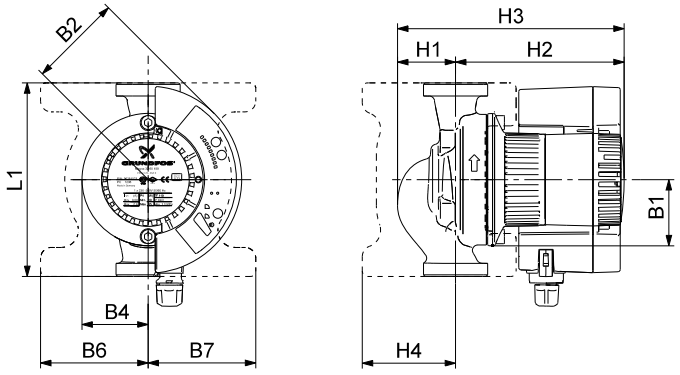


TM04 2339 2308

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	37	0.28	0.93

MAGNA 32-40 is also available with stainless-steel housing, type N.
Specific EEI: 0.21.

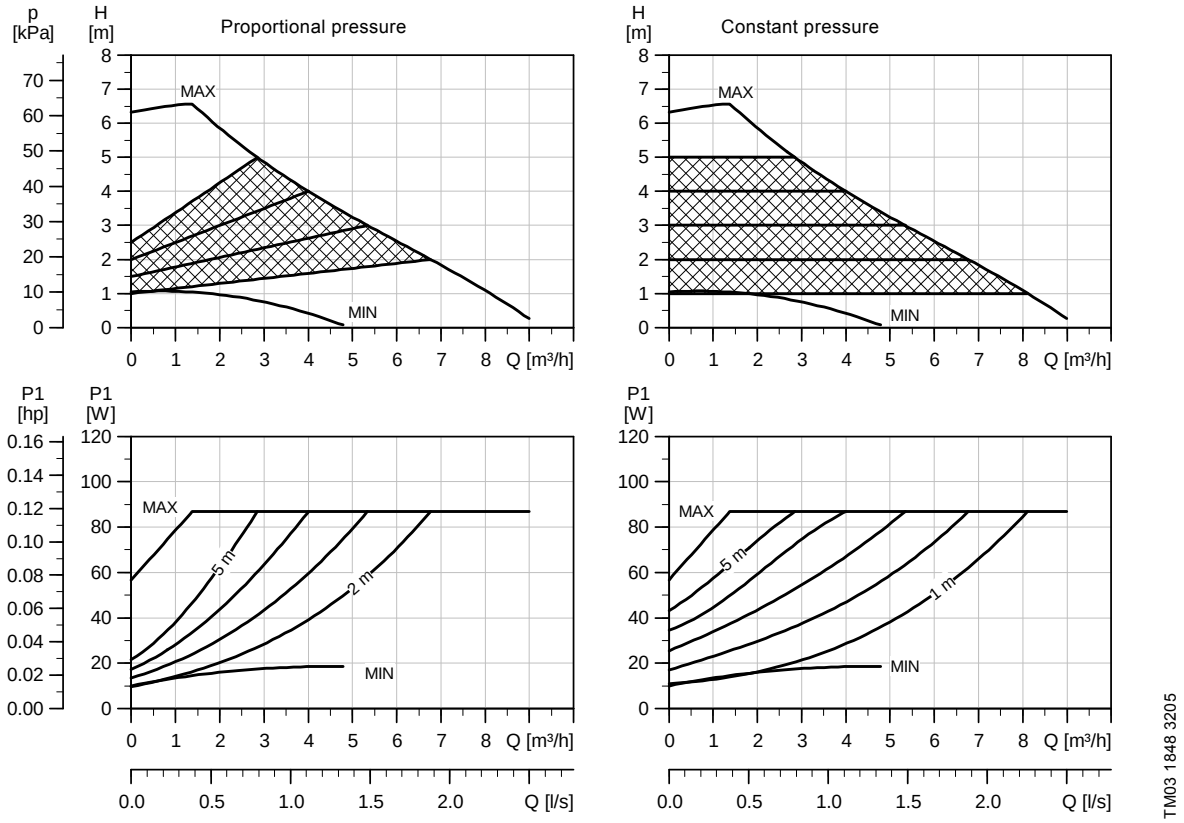


TM05 5741 3912

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m³]
MAGNA 32-40 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.5	0.012

MAGNA 32-60 (N)



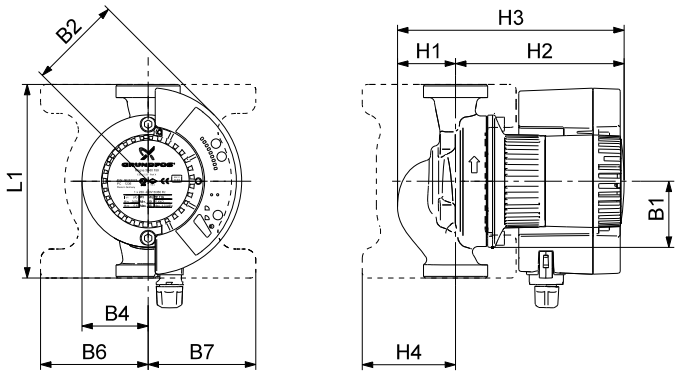
TM03 1848 3205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	85	0.6	0.98

MAGNA 32-60 is also available with stainless-steel housing, type N.

Specific EEI: 0.22.

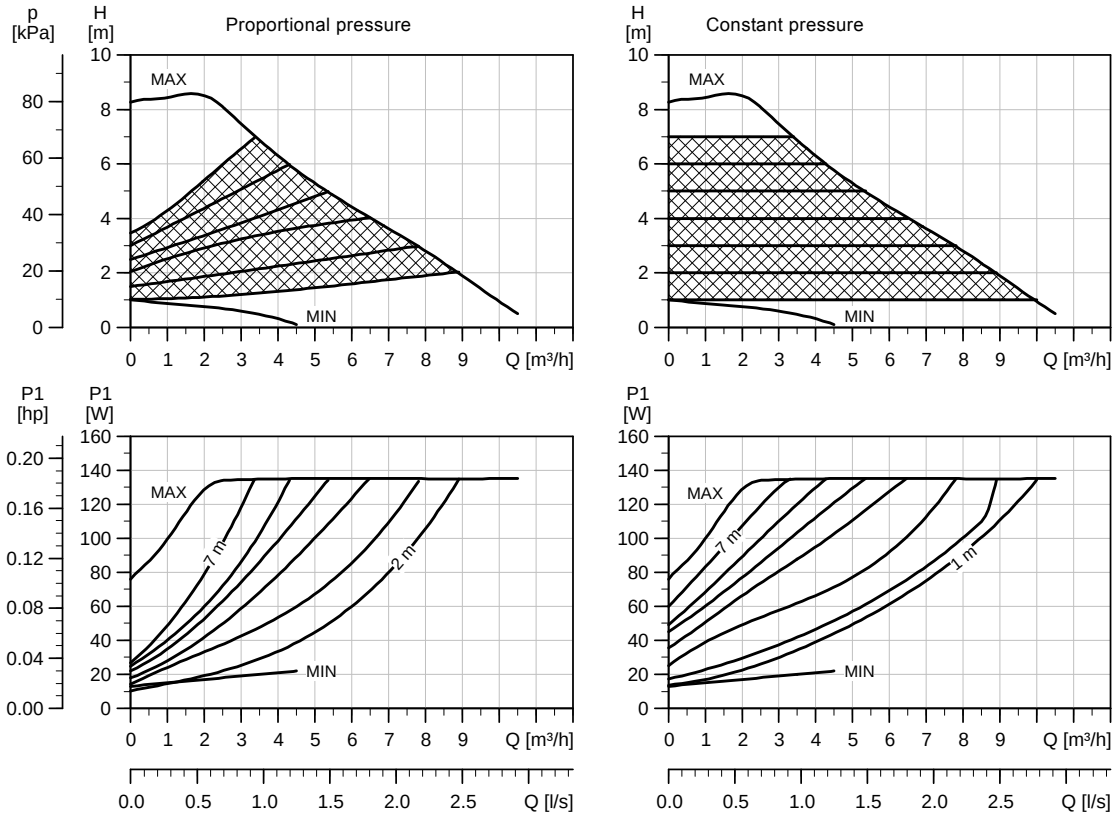


TM05 5741 3912

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 32-60 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.5	0.012

MAGNA 32-80 (N)



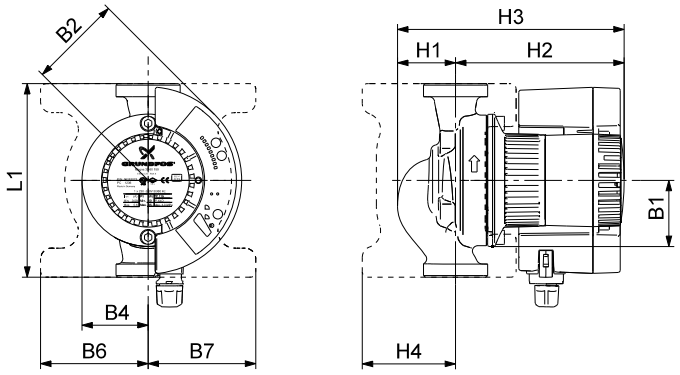
TM04 9111 4910

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.11	0.90
	Max.	140	1.01	0.98

MAGNA 32-80 is also available with stainless-steel housing, type N.

Specific EEI: 0.21.

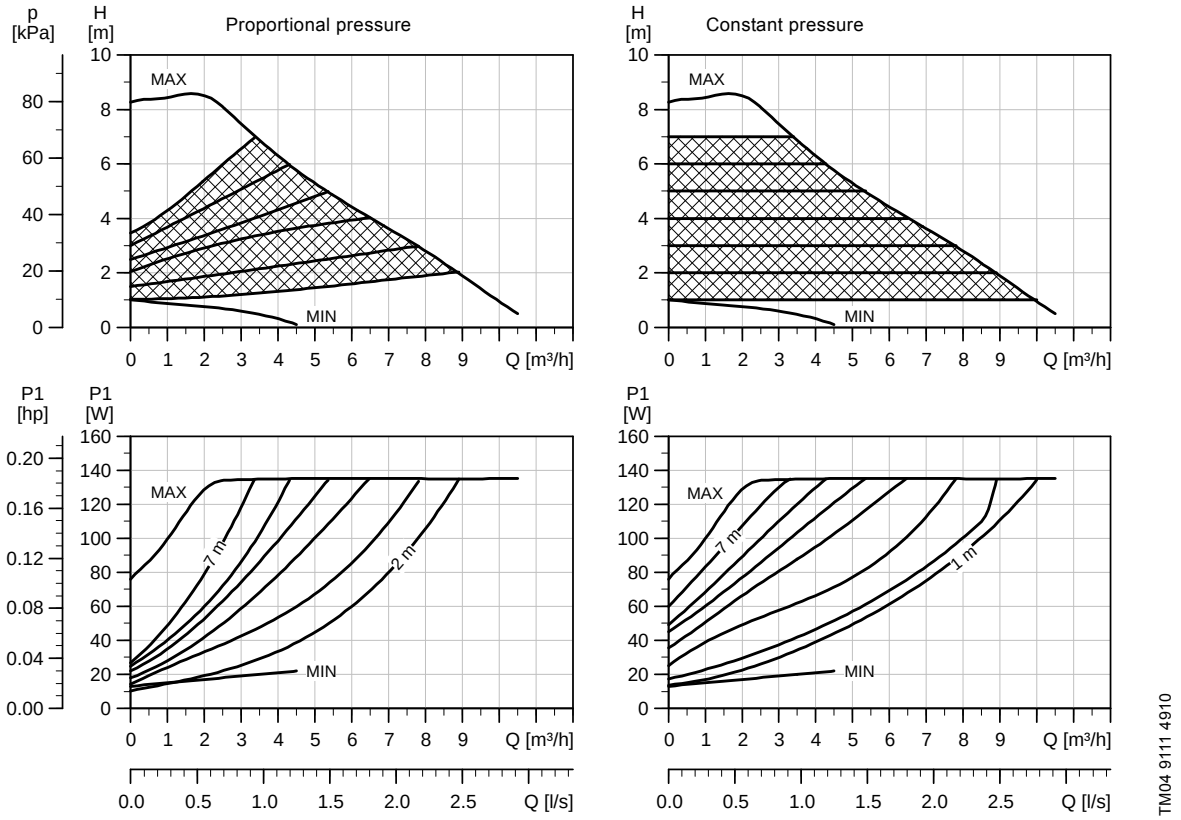


TM05 5741 3912

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]												Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]	[m^3]
MAGNA 32-80 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.5	0.012

MAGNA 32-80 F

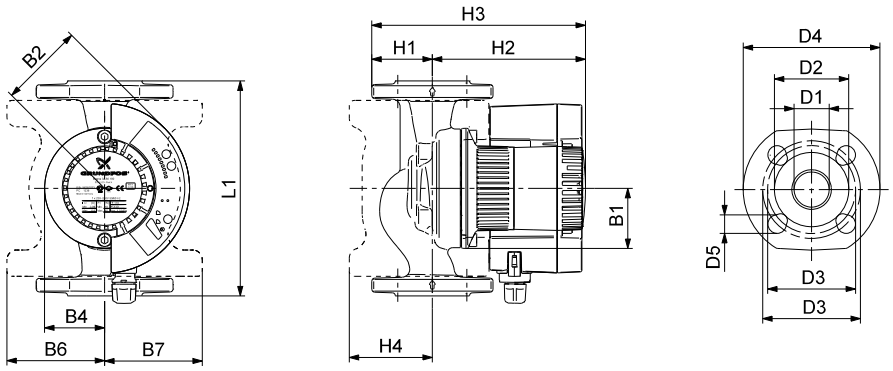


TM04 9111 4910

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.11	0.90
	Max.	140	1.01	0.98

Specific EEI: 0.22.

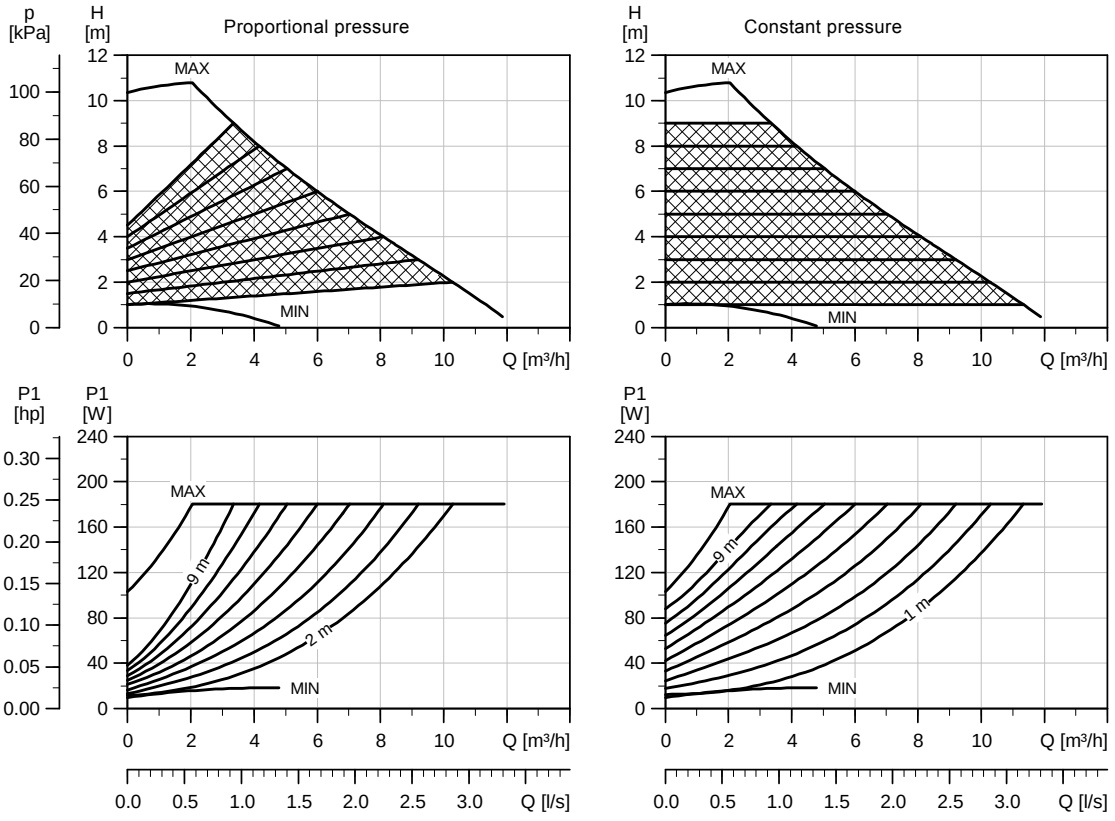


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]																Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 32-80 F	220	62	87	62	100	100	54	157	211	85	32	76	90/100	140	19	6/10	8.2	0.014

MAGNA 32-100 (N)



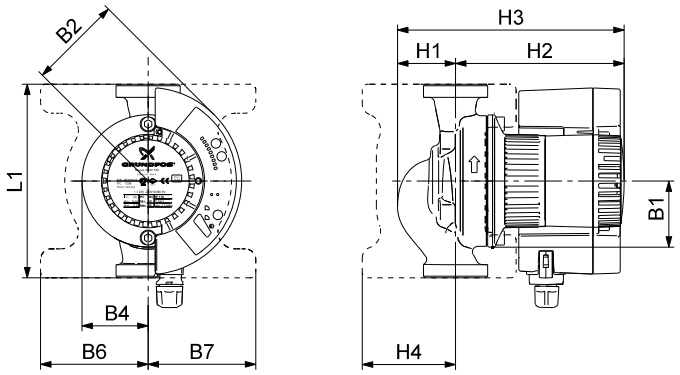
TM03 1849 3205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.1	0.90
	Max.	180	1.23	0.98

MAGNA 32-100 is also available with stainless-steel housing, type N.

Specific EEI: 0.22.

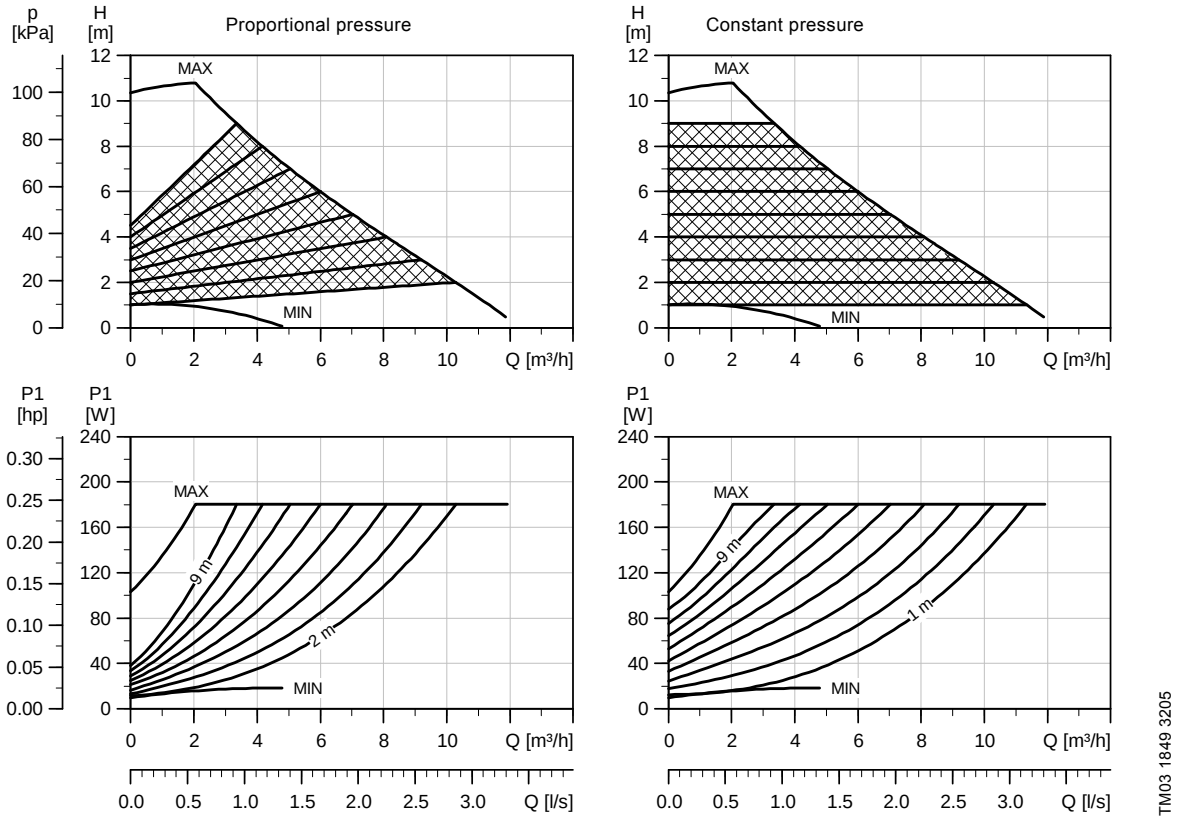


TM05 5741 3912

Dimensions and weights

Pump type	Dimensions [mm]												Gross weight		Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	[kg]		[m^3]
MAGNA 32-100 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.6	5.7 (N)	0.012

MAGNA 32-100 F (N)



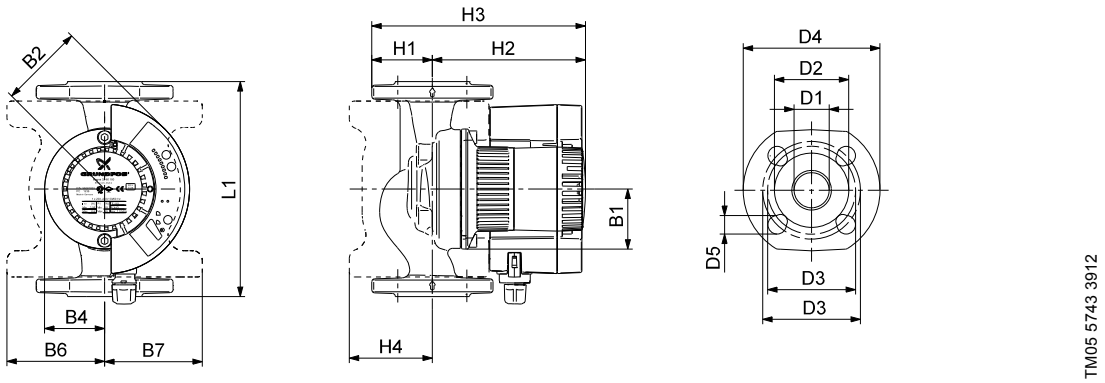
TM03 1849 3205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.1	0.90
	Max.	180	1.23	0.98

MAGNA 32-100 is also available with stainless-steel housing, type N.

Specific EEI: 0.22.

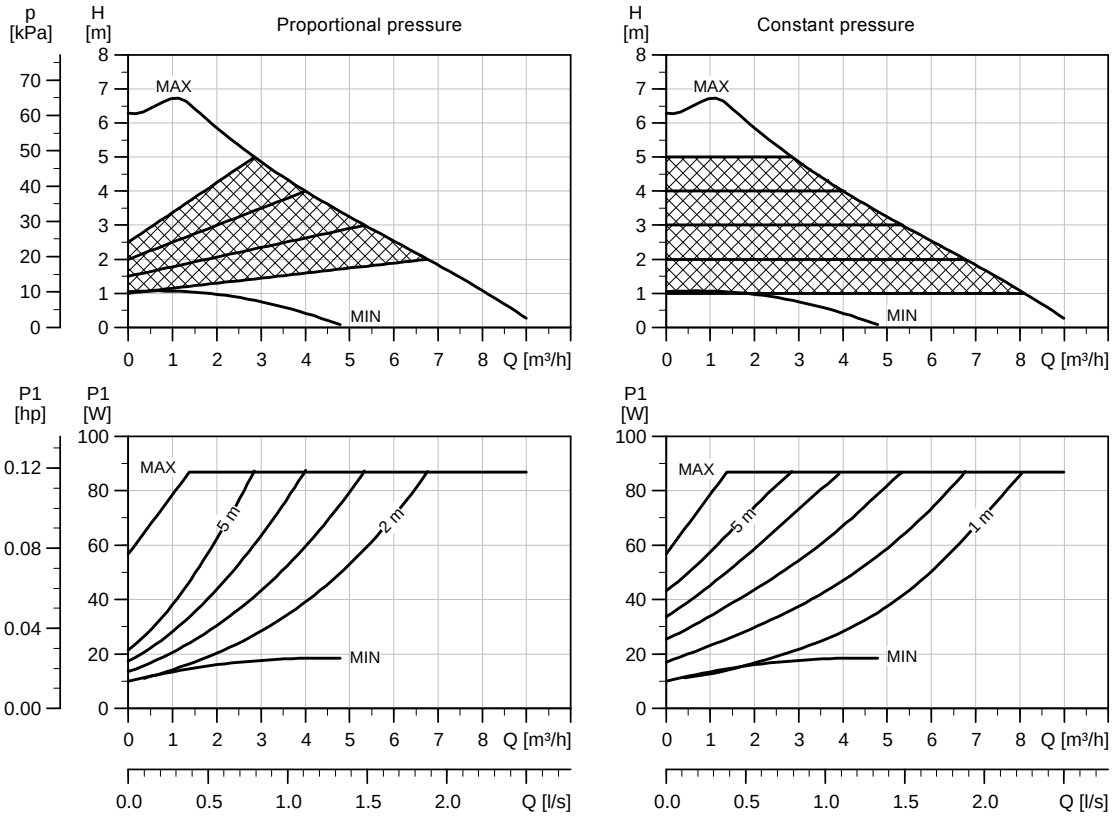


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]																Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 32-100 F (N)	220	62	87	62	100	100	54	157	211	85	32	76	90/100	140	19	6/10	8.2	0.014

MAGNA 40-60 F

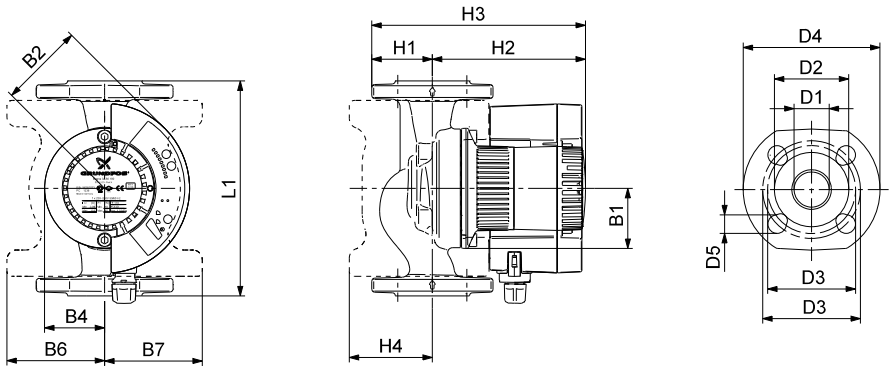


TM04 9113 4910

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.10	0.90
	Max.	90	0.67	0.98

Specific EEI: 0.22.

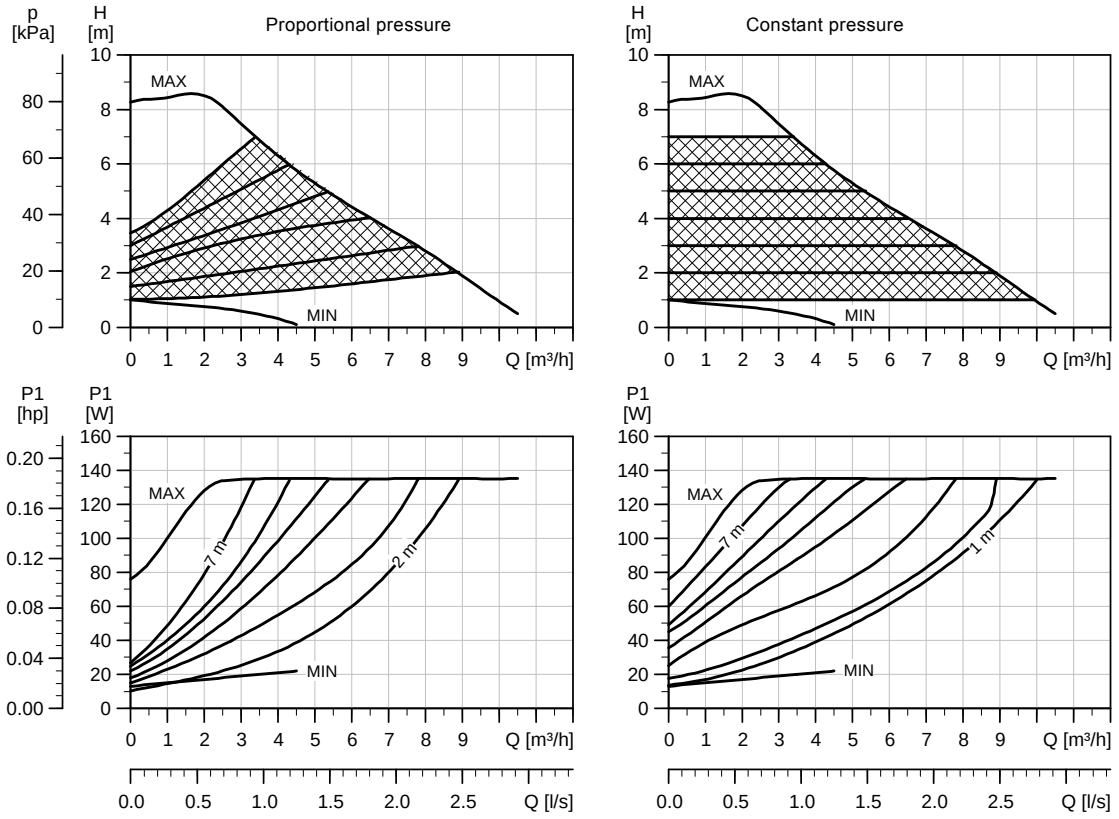


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]															Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 40-60 F	220	62	87	62	100	100	62	157	219	85	40	84	100/110	150	19	6/10	8.3	0.014

MAGNA 40-80 F

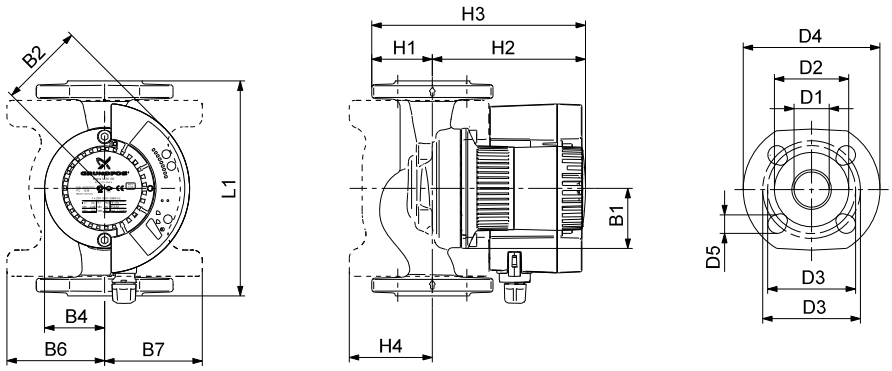


TM04 9112 4910

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.10	0.90
	Max.	136	1.00	0.98

Specific EEI: 0.22.

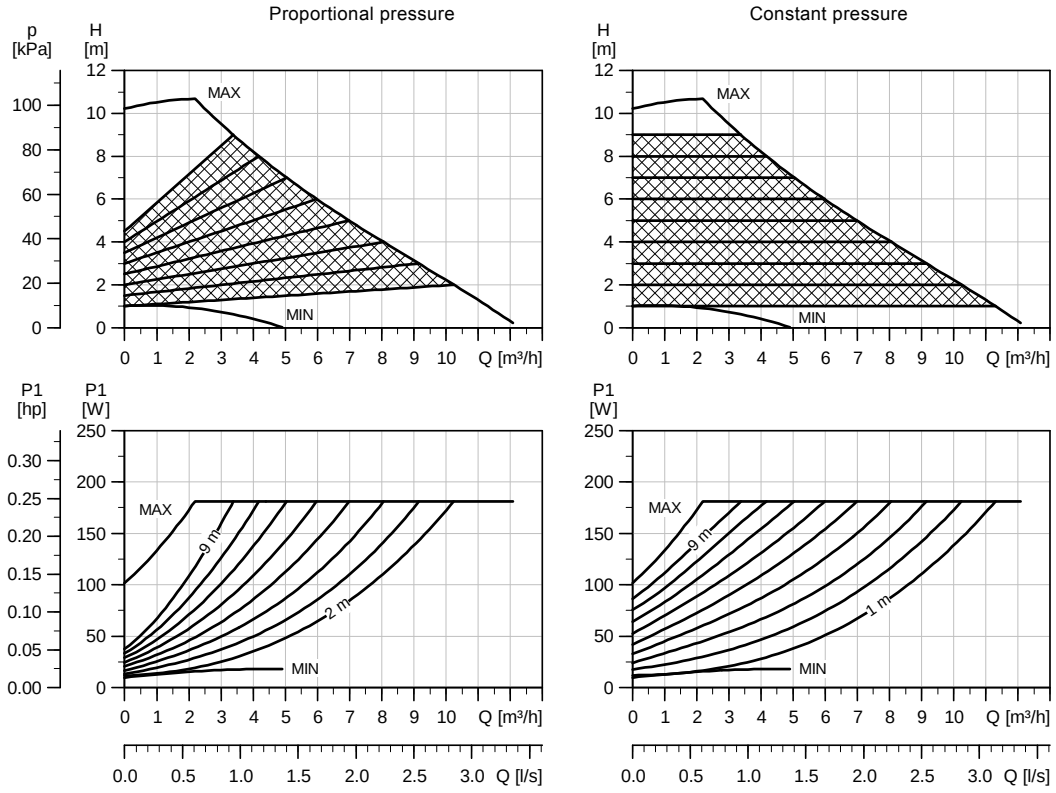


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]																Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 40-80 F	220	62	87	62	100	100	62	157	219	85	40	84	100/110	150	19	6/10	8.3	0.014

MAGNA 40-100 F

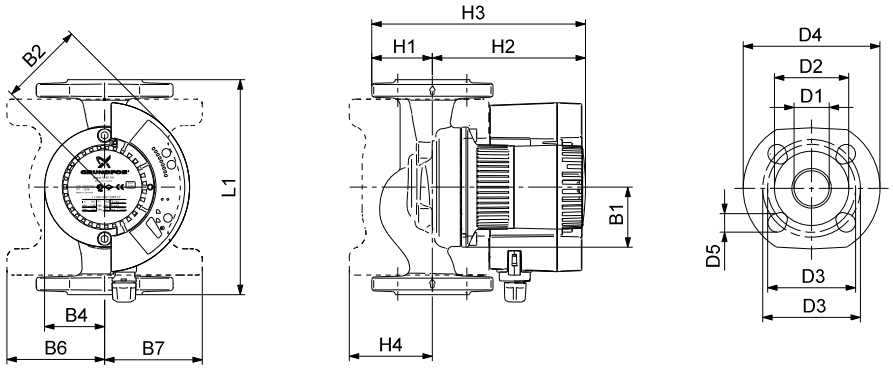


TM03 1566 2305

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	180	1.26	0.98

Specific EEI: 0.22.

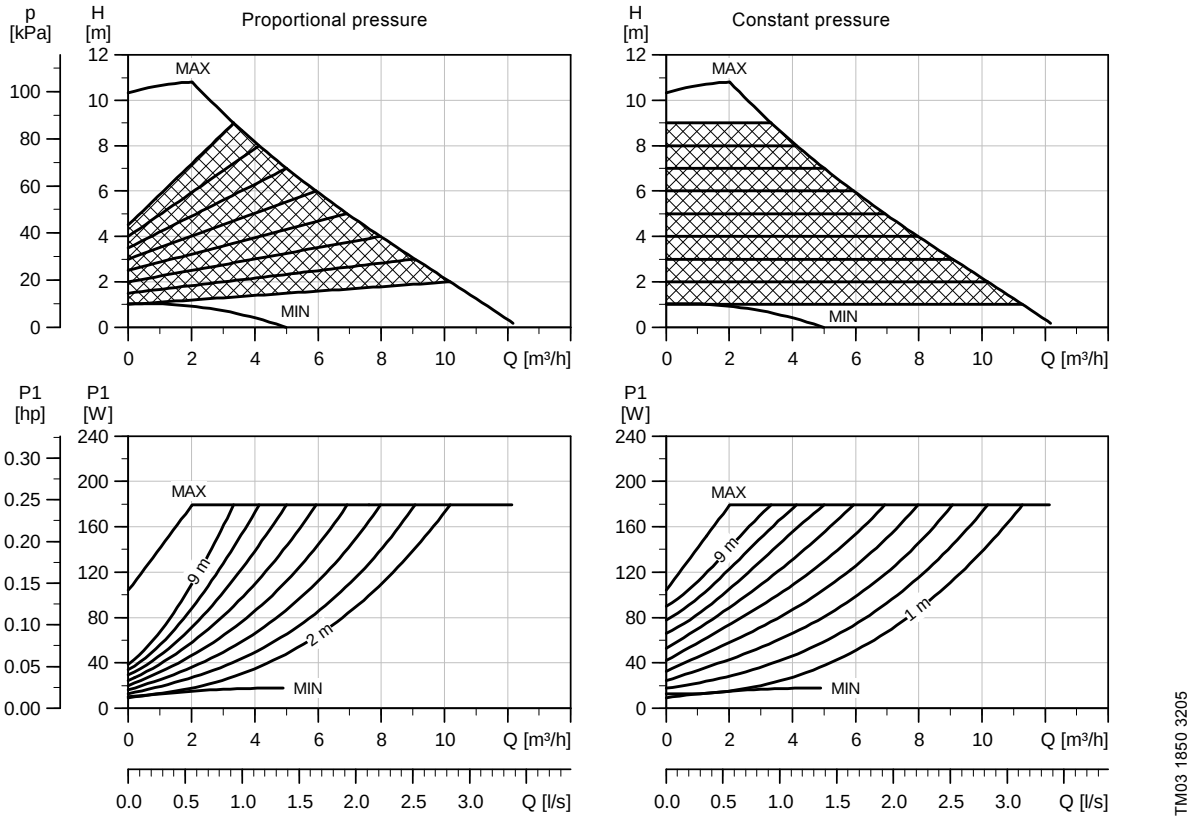


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]																Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 40-100 F	220	62	87	62	100	100	62	157	219	85	40	84	100/110	150	19	6/10	8.3	0.014

MAGNA 50-100 F

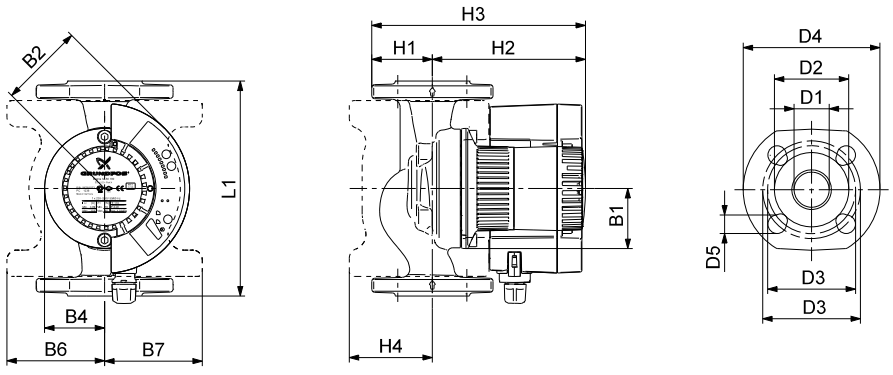


TM03 1850 3205

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.1	0.90
	Max.	180	1.26	0.98

Specific EEI: 0.22.

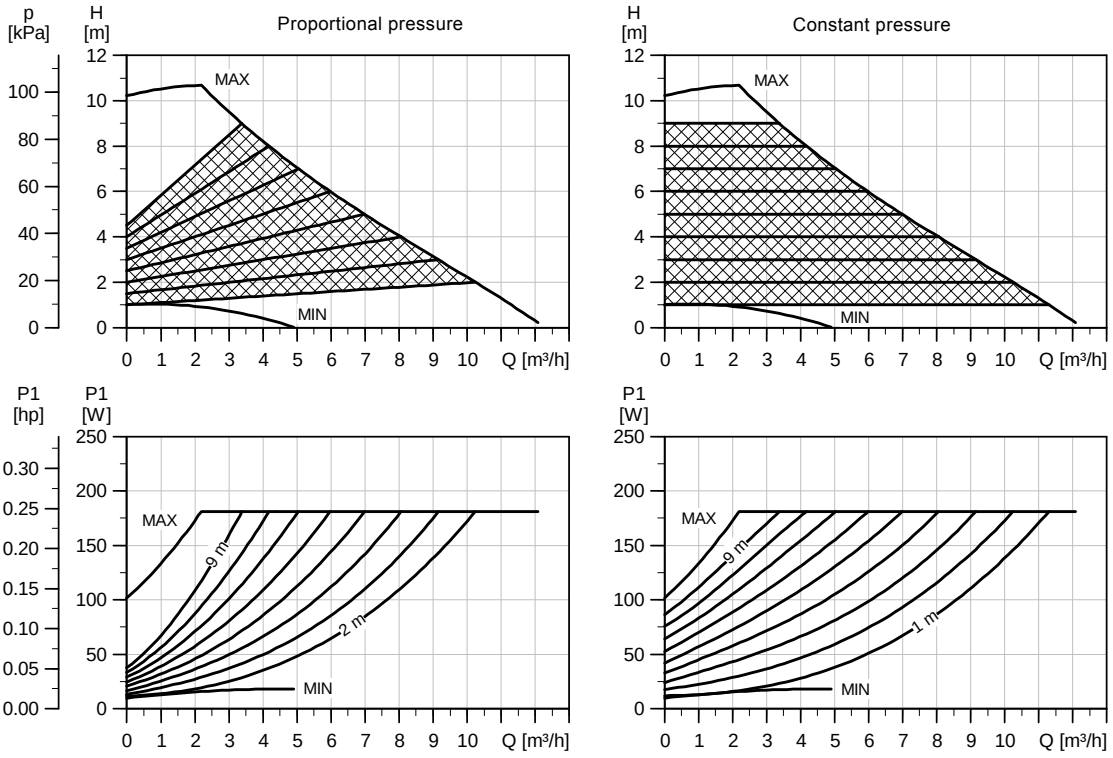


TM05 5743 3912

Dimensions and weights

Pump type	Dimensions [mm]																Gross weight	Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA 50-100 F	240	62	87	62	104	104	73	1637	140	88	50	99	100/125	165	19	6/10	10.2	0.017

MAGNA D 40-100 F



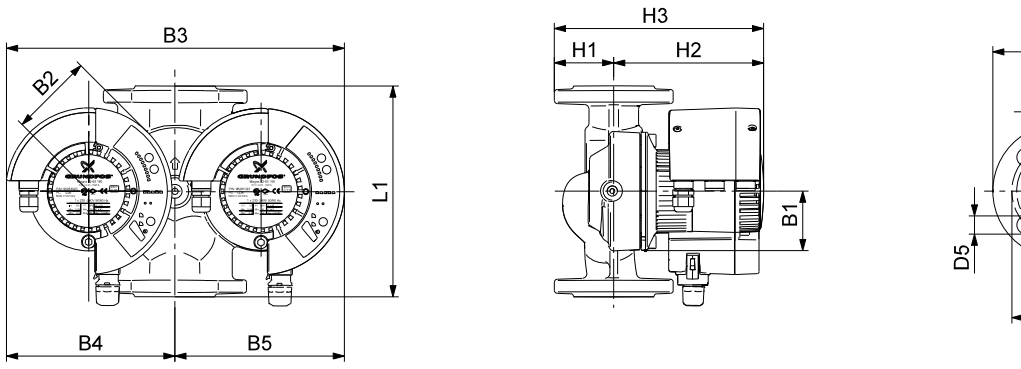
TM031566 2305

Electrical data

U_n [V]		P1 [W]	$I_{1/1}$ [A]	Cos φ
1 x 230-240	Min.	10	0.09	0.90
	Max.	180	1.26	0.98

Curves and electrical data apply to one operating pump head.

Specific EEI: 0.22.



TM05 5742 3912

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]															Gross weight	Ship. vol.
	L1	B1	B2	B3	B4	B5	H1	H2	H3	D1	D2	D3	D4	D5	PN	[kg]	[m^3]
MAGNA D 40-100 F	220	62	87	354	177	177	62	157	219	40	84	100/110	150	19	6/10	16.3	0.030

9. Accessories

Base plates

Base plates including hexagon screws are available on request.

Pump type	Hexagon screws	Product number
MAGNA 50-60 F, 65-60 F	2 x M12 x 20 mm	495035
MAGNA 50-60 FN, 65-60 FN		485031

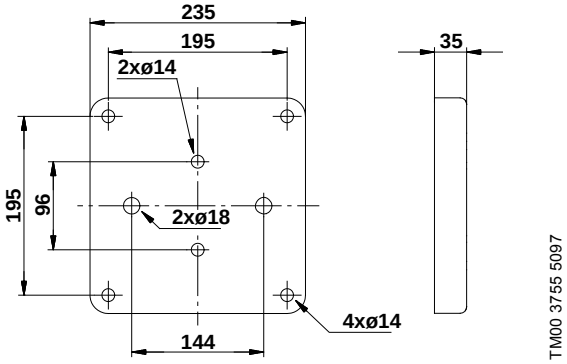


Fig. 21 Base plate

Adapter

The adapter is to be used when you replace pumps with different port-to-port lengths.

Material: Steel, S235JR (EN 10025).

Pressure	DN	Thickness	Inner diameter	Outer diameter	Product number
PN 6	40	28	45	82	96281076
PN 10	40	28	45	88	96608515
PN 6	50	38	55	90	96281077
PN 10	50	38	55	102	96608516

Union and valve kits

Union kits

Pump type	Pressure stage	Size	Product number
MAGNA 25	PN 10	Rp 3/4	529921
		Rp 1	529922
		Rp 1 1/4	529724
MAGNA 32		Rp 1	509921
		Rp 1 1/4	509922

Valve kits

Pump type	Pressure stage	Size	Product number
MAGNA 25	PN 10	Rp 3/4	519805
		Rp 1	519806
		Rp 1 1/4	519807
MAGNA 32		Rp 1 1/4	505539

Counter-flanges

The flange kit consist of:

- two flanges with internal thread (ISO sealing pipe thread) or two flanges for welding/soldering
- two gaskets
- bolts and nuts.

Counter-flanges for cast-iron pump housing			
Pump type	**Pressure stage**	**Size**	**Product number**
MAGNA (D) 32	PN 10	Rp 1 1/4	539703
		32 mm	539704
MAGNA (D) 40		Rp 1 1/2	539701
		40 mm	539702
MAGNA (D) 50		Rp 2	549801
		50 mm	549802
Counter-flanges for bronze or stainless-steel pump housing			
MAGNA 32 (N)	PN 10	Rp 1 1/4	96427029
		32 mm	96427030
MAGNA 40 (N)		Rp 1 1/2	539711
		40 mm	539712
MAGNA 50 (N)		Rp 2	549811
		50 mm	549812

Rp: Flange with internal thread (ISO sealing pipe thread).

mm: Flange for welding/soldering.

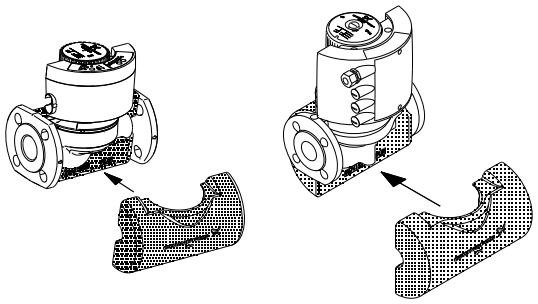
Counter-flanges according to ISO 7005-1.

Insulating kits

Pumps for heating systems

Insulating shells for single-head pumps in heating systems are included from factory.

A kit consists of two shells.



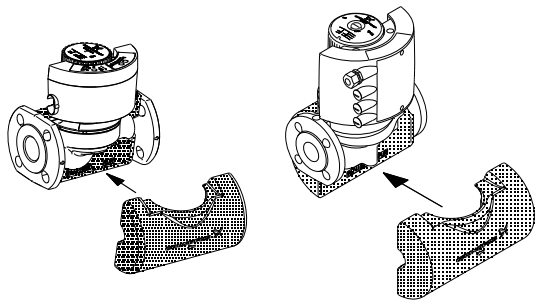
TM04 0469 0708 - TM04 0456 0708

Fig. 22 Fitting the insulating shells to a MAGNA pump

Pump type	Product number
MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 32-100 F, 40-60 F, 40-80 F, 40-100 F	97518225
MAGNA 50-100 F	97518228

Pumps for air-conditioning systems

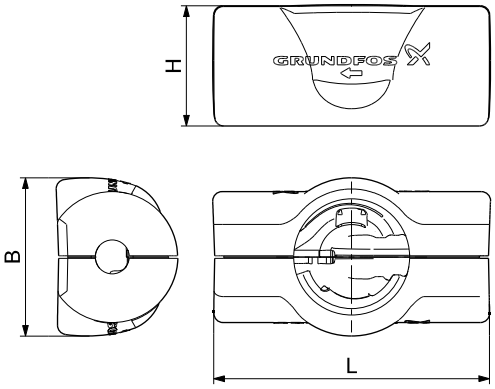
Single-head MAGNA pumps can be fitted with insulating shells for air-conditioning applications. A kit consists of two shells made of polyurethane (PUR) and a self-adhesive seal to ensure tight assembly.



TM04 0469 0708 - TM04 0456 0708

Fig. 23 Fitting the insulating shells to a MAGNA pump

Note: The dimensions of the insulating shells for air-conditioning applications are different from the dimensions of the insulating shells for heating applications. See the dimensions below.



TM04 0147 4907

Fig. 24 Dimensional sketches, insulating shells

Pump type	Dimensions			Product number
	L	B	H	
MAGNA 25-40, 25-60, 25-60 N, 25-80, 25-80 N, 25-100, 25-100 N, 32-40, 32-40 N, 32-60, 32-60 N, 32-80, 32-80 N, 32-100	301	173	130	96763566
MAGNA 32-100 F, 40-60 F, 40-80 F, 40-100 F	184	186	140	96741524
MAGNA 50-100 F	196	186	160	96741525

Expansion modules

MAGNA pumps can be fitted with an expansion module enabling communication via external signals (signal transmitters).

Two types of expansion module are available:

- GENI module
- Relay module.

Product	Product number
GENI module	96236335
Relay module	96236336

GENI module

The GENI module offers the following functions:

External start/stop

The GENI module incorporates a digital input for an external contact. The pump can be started and stopped via this input.

When started, the pump will operate with the setpoint set on the control panel or with the R100 or Grundfos GO Remote.

External forced control

The GENI module incorporates inputs for external signals for the forced-control functions:

- Max. curve duty
- Min. curve duty.

External analog 0-10 V control

The GENI module has an input for an external 0-10 VDC analog signal transmitter. Via this input, the pump can be controlled by an external controller if the pump has been set to one of the following control modes:

- **Constant curve**
  The external analog signal will control the pump curve within the range from the min. curve to the constant curve selected according to the characteristic.
- **Proportional- or constant-pressure control**
  The external analog signal will control the setpoint for the pump head between the setpoint corresponding to the min. curve and the setpoint selected according to the characteristic.

Fault, ready and operating indication via signal relay

The function of the signal relay can be set with the R100 or Grundfos GO Remote.

Possible functions:

- Fault
- Ready
- Operation.

Fault indication

The signal relay is activated in case of

- Pump blocked
- Internal fault
- Undervoltage.

Ready indication

The signal relay is active when the pump is in operation or ready for operation.

Operating indication

The signal relay is active as long as the pump is operating. If the pump is stopped on the control panel, with the R100 or Grundfos GO Remote or because of a fault, the signal relay is deactivated and consequently gives a signal to an external control system, for example a building management system.

Control of twin-head pumps

When fitted with two GENI modules, a twin-head pump functions fully automatically.

A GENI module must be fitted on the control box of each pump head and the modules must be connected using a cable.

Both pump heads must be connected to the power supply.

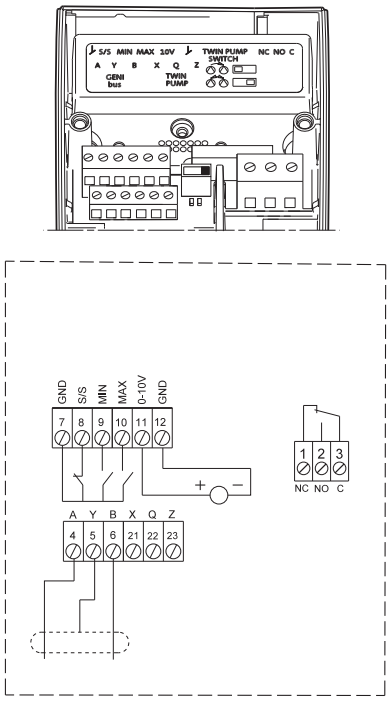
Bus communication via GENIbus

The GENI module enables serial communication via a RS-485 input. The communication is carried out according to the Grundfos bus protocol, GENIbus, and enables connection to the Control MPC Series 2000, a building management system or another type of external control system.

Via the bus signal, it is possible to set pump operating parameters, such as desired setpoint, temperature influence and operating mode.

At the same time, the pump can provide status information about important parameters, such as actual head, actual flow, power input, fault indications, etc.

Inputs for max. and min. curves and start/stop	External potential-free contact. Contact load: 5 V, 1 mA. Screened cable. Loop resistance: Maximum 130 Ω.
Input for analog 0-10 V signal	External signal: 0-10 VDC. Maximum load: 1 mA. Screened cable.
Input for control of twin-head pumps	Screened cable. Wire cross-section: 0.25 - 1 mm^2. Cable length: Maximum 1 m.
Bus input	Grundfos GENIbus protocol, RS-485. Screened cable. Wire cross-section: 0.25 - 1 mm^2. Cable length: Maximum 1200 m.
Output for signal relay	Potential-free changeover contact. 400 VAC, 6 A AC1. 30 VDC, 6 A.



TM03 0878 0905

Fig. 25 Connection of GENI module

Relay module

The relay module offers the following functions:

External start/stop

The relay module incorporates a digital input for an external contact. The pump can be started and stopped via this input.

When started, the pump will operate with the setpoint set on the control panel or with the R100 or Grundfos GO Remote.

Fault, ready and operating indication via signal relay

The function of the signal relay can be set with the R100 or Grundfos GO Remote.

Possible functions:

- Fault
- Ready
- Operation.

Fault indication

The signal relay is activated in case of

- Pump blocked
- Internal fault
- Undervoltage.

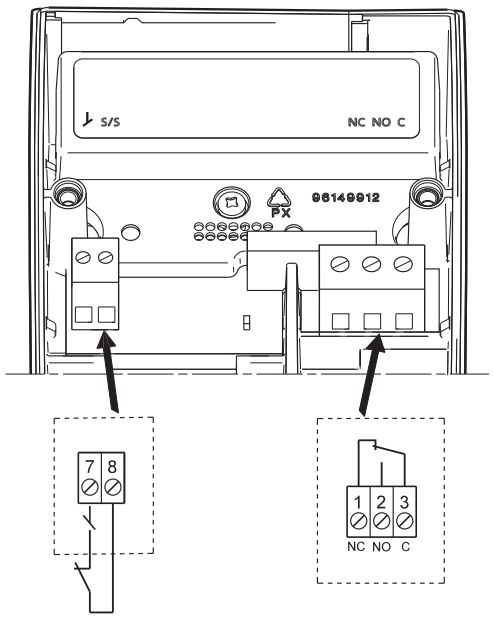
Ready indication

The signal relay is active when the pump is in operation or ready for operation.

Operating indication

The signal relay is active as long as the pump is operating. If the pump is stopped on the control panel, with the R100 or Grundfos GO Remote or because of a fault, the signal relay is deactivated and consequently gives a signal to an external control system, for example a building management system.

Input for start/stop	External potential-free contact. Contact load: 5 V, 1 mA. Screened cable. Loop resistance: Maximum 130 Ω.
Output for signal relay	Potential-free changeover contact. 400 VAC, 6 A AC1. 30 VDC, 6 A.



TM03 0877 0705

Fig. 26 Connection of relay module

R100 remote control

The R100 is designed for wireless communication with the pump. The R100 communicates with the pump via infrared light.

Product	Product number
R100	96615297

Grundfos GO remote

The pump is designed for wireless communication with the Grundfos GO Remote app which communicates with the pump via radio communication.

Note: The radio communication between the pump and the Grundfos GO Remote is encrypted to protect against misuse.

The Grundfos GO Remote app is available from Apple App Store and Android market.

The Grundfos GO Remote app must be used in conjunction with one of the following Mobile Interface devices:

Mobile interface	Product number
Grundfos MI 201	98140638
Grundfos MI 202	98046376
Grundfos MI 301	98046408

The Grundfos GO Remote concept replaces the Grundfos R100 remote control. This means that all products supported by the R100 are supported by the Grundfos GO Remote.

For function and connection to the pump, see separate installation and operating instructions for the desired type of Grundfos GO Remote setup.

Mobile interface

The three mobile interface devices are described in the following.

MI 201

The MI 201 is a complete solution, consisting of an Apple iPod touch 4G and a Grundfos cover for infrared and radio communication with Grundfos pumps or systems.

TM05 3886 1612

Fig. 27 MI 201

Supplied with the product:

- Apple iPod touch 4G incl. accessories
- Grundfos MI 201 cover
- battery charger
- quick guide.

MI 202

The MI 202 is an add-on module with built-in infrared and radio communication. The MI 202 can be used in conjunction with Apple iPod touch 4G, iPhone 4G or later.

TM05 3887 1612

Fig. 28 MI 202

Supplied with the product:

- Grundfos MI 202
- quick guide.

MI 301

The MI 301 is a module with built-in infrared and radio communication. The MI 301 must be used in conjunction with an Android or iOS-based Smartphone with a Bluetooth connection. The MI 301 has a rechargeable Li-ion battery that must be charged separately.

TM05 3887 1612

Fig. 29 MI 301

Supplied with the product:

- Grundfos MI 301
- battery charger
- quick guide.

Supported units

Make	Model	Operating system	MI 201	MI 202	MI 301
Apple	iPod touch 4G	iOS 5.0 or later	●	●	●
	iPhone 4G, 4GS		-	●	●
HTC	Desire S	Android 2.3.3 or later	-	-	●
	Sensation	Android 2.3.4 or later	-	-	●
Samsung	Galaxy S II		-	-	●

Note: Similar Android and iOS-based devices may work as well, but are not supported by Grundfos.

Control MPC Series 2000

Control MPC Series 2000 is a pump controller designed for the control and monitoring of up to six MAGNA Series 2000 pumps. All pumps must be of the same pump type and size.

Control MPC Series 2000 is used for controlling circulator pumps in heating and air-conditioning applications.

Control MPC Series 2000 ensures optimum adaptation of the performance to the demand by closed-loop control of

- proportional differential pressure
- constant differential pressure.

By means of an external sensor Control MPC Series 2000 can also ensure optimum adaptation of the performance to the demand by closed-loop control of

- differential pressure (external)
- flow
- temperature
- temperature difference.

Product	Number of pumps	Product number
Control MPC Series 2000*	1	96781391
	2	96781412
	3	96781413
	4	96781414
	5	96781416
	6	96781417

* An external GENIbus module, product number 96020339, and a suitable gateway must be added if used in a BMS system.

Communication Interface Units (CIU)

GrA 6118

Fig. 30 Grundfos CIU unit

The CIU units enable communication of operating data, such as measured values and setpoints, between pumps and a building management system. The CIU unit incorporates a 24-240 VAC/VDC power supply module and a CIM module (Communication Interface Module). It can either be mounted on a DIN rail or on a wall.

We offer the following CIU units:

CIU 100

For communication via LON.

CIU 150

For communication via Profibus.

CIU 200

For communication via Modbus RTU.

CIU 250

For wireless communication via SMS/GSM/GPRS.

CIU 270

For wireless communication via GRM.

CIU 300

For communication via BACnet MS/TP.

Product numbers

Description	Fieldbus protocol	Product number
CIU 100	LON	96753735
CIU 150	Profibus	96753081
CIU 200	Modbus RTU	96753082
CIU 250	GSM/GPRS	96787106
CIU 270	GRM	98176136
CIU 300	BACnet MS/TP	96893769

For further information about data communication via CIU units and fieldbus protocols, see the CIU documentation available in WebCAPS.

10. Product numbers

MAGNA, cast iron

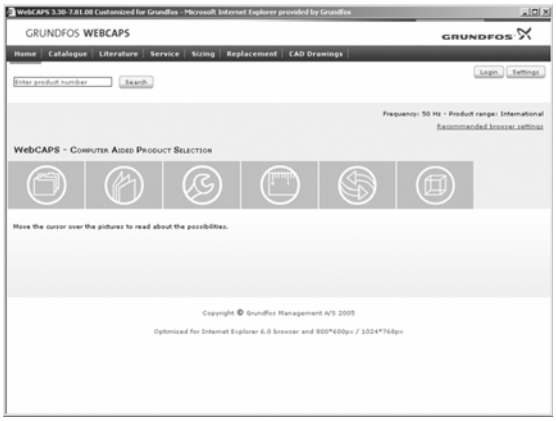
Pump type	Product number		
	Pipe connection		Flange connection
	1 1/2"	2"	PN 6 / PN 10
Single-head pumps			
MAGNA 25-40	96817929	-	-
MAGNA 25-60	96281022	-	-
MAGNA 25-80	97691265	-	-
MAGNA 32-40	-	96817952	-
MAGNA 32-60	-	96281023	-
MAGNA 32-80	97691270	-	-
MAGNA 32-80 F	-	-	97691276
MAGNA 40-60 F	-	-	97691280
MAGNA 40-80 F	-	-	97711652
MAGNA 25-100	96281015	-	-
MAGNA 32-100	-	96281016	-
MAGNA 32-100 F	-	-	96281018
MAGNA 40-100 F	-	-	96281019
MAGNA 50-100 F	-	-	96281020
Twin-head pumps			
MAGNA D 40-100 F	-	-	96281021

MAGNA, stainless steel

Pump type	Product number	
	Pipe connection	
	G 1 1/2	G 2
MAGNA 25-40 N	96943201	-
MAGNA 32-40 N	-	96817954
MAGNA 25-60 N	96943223	-
MAGNA 32-60 N	-	96700323
MAGNA 25-80 N	97691268	-
MAGNA 32-80 N	-	97691272
MAGNA 25-100 N	96943224	-
MAGNA 32-100 N	-	96281017

11. Further product information

WebCAPS

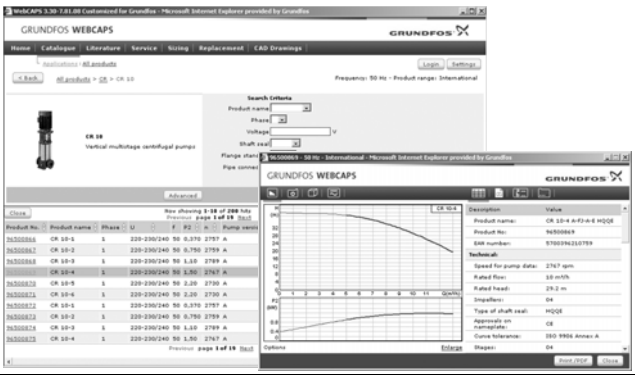


WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

WebCAPS contains detailed information on more than 220,000 Grundfos products in more than 30 languages.

Information in WebCAPS is divided into six sections:

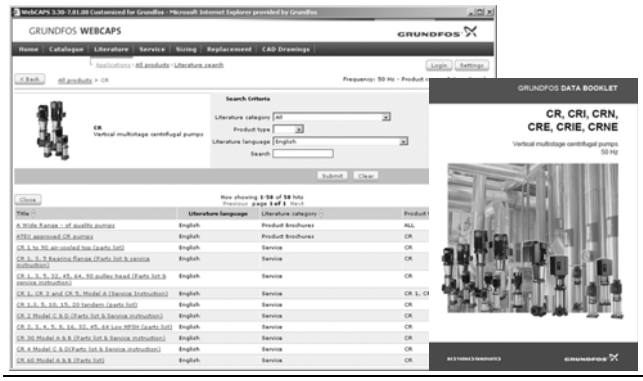
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

Based on fields of application and pump types, this section contains the following:

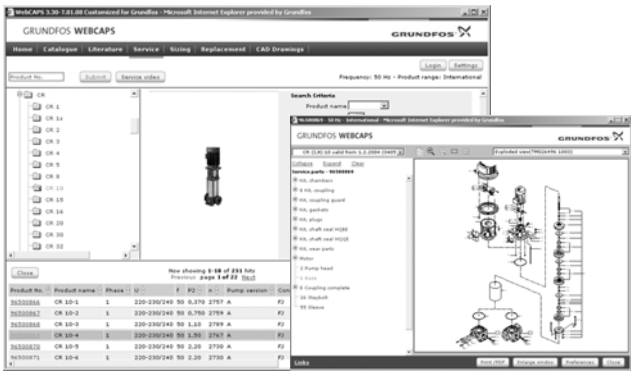
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

This section contains all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.
Furthermore, the section contains service videos showing you how to replace service parts.

Sizing

This section is based on different fields of application and installation examples and gives easy step-by-step instructions in how to size a product:

- Select the most suitable and efficient pump for your installation.
- Carry out advanced calculations based on energy, consumption, payback periods, load profiles, life cycle costs, etc.
- Analyse your selected pump via the built-in life cycle cost tool.
- Determine the flow velocity in wastewater applications, etc.

Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.
The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.

CAD drawings

In this section, it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS

Fig. 31 WinCAPS DVD

WinCAPS is a **Win**dows-based **C**omputer **A**ided **P**roduct **S**election program containing detailed information on more than 220,000 Grundfos products in more than 30 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no internet connection is available.

WinCAPS is available on DVD and updated once a year.

GO CAPS

Mobile solution for professionals on the GO!

CAPS functionality on the mobile workplace.

Available on the App Store

be think innovate

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ECM: 1108886

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