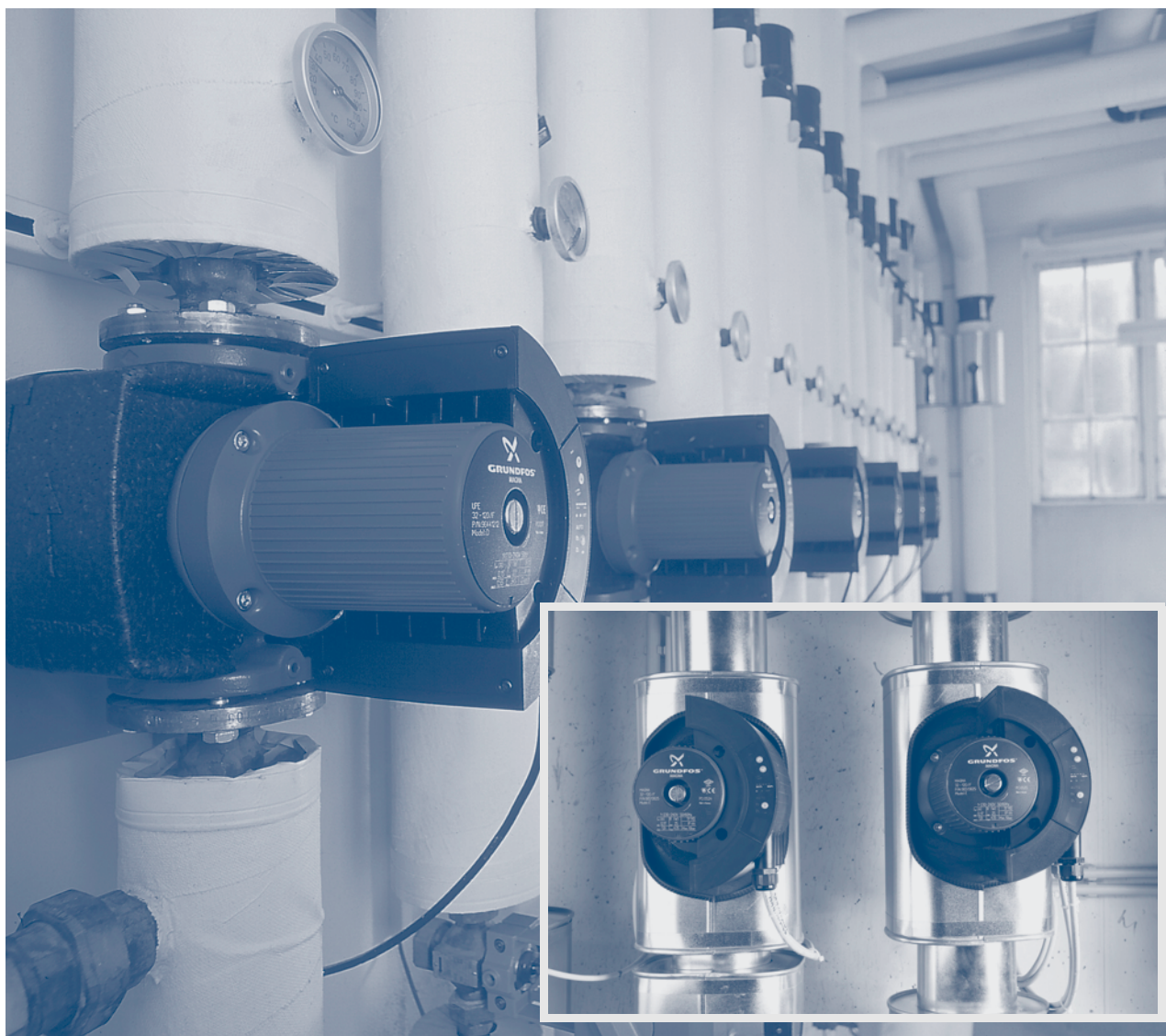


MAGNA, UPE

Series 2000 circulator pumps



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MAGNA and UPE

The MAGNA/UPE ranges of circulator pumps are specially designed for

- heating systems up to 2100 kW ($\Delta t = 20\text{ °C}$) and
- domestic hot-water systems (stainless-steel or bronze pump housing). Aircondition systems (+2°C) up to 350 kW ($\Delta t 6\text{ °C}$) (MAGNA only).

Duty range

Data	MAGNA	UPE
Maximum flow, Q	38 m ³ /h	90 m ³ /h
Maximum head, H	13 m	10.5 m
Maximum system pressure	10 bar	10 bar
Liquid temperature	+2 °C to +110 °C	+15 °C to +110 °C



Fig. 1 MAGNA/UPE pump ranges

Characteristic features

- AUTOADAPT
- proportional-pressure duty
- constant-pressure duty
- constant-curve duty
- max. or min. curve duty
- parallel connection of pumps with PMU 2000
- no external motor protection required.

Benefits

- low noise level
- safe selection
- simple installation
- low energy consumption, all MAGNA pumps are energy class "A"
- in addition to this, the AUTOADAPT function ensures energy savings for MAGNA pumps
- long life and no maintenance
- external control and monitoring enabled via expansion modules.

Applications

Heating systems

- Main pump
- Mixing loops
- Heating surfaces.
Aircondition surfaces (MAGNA only)

The MAGNA/UPE 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. 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 MAGNA/UPE is especially suitable for installation in existing systems where the differential pressure of 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

Thin, clean, non-aggressive and non-explosive liquids, not containing any 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, e.g. 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. The pump must **not** be used for the transfer of inflammable 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 and content of solvents, oils, etc.

GR6460

Type key

MAGNA (D), UPE(D)

Example	UP	E	D	80	-120	(F)	(N)	280
Type range								
UPE(D):								
MAGNA (D):								
Electronic control								
Twin-head pump								
Nominal diameter of suction and discharge ports (DN)								
Maximum head [dm]								
Flange connection								

N: Single-head pump housing of stainless steel
 B: Single-head pump housing of bronze
 A: Pump housing with air separator
 Port-to-port [mm]

Performance range, MAGNA (D) and UPE(D)

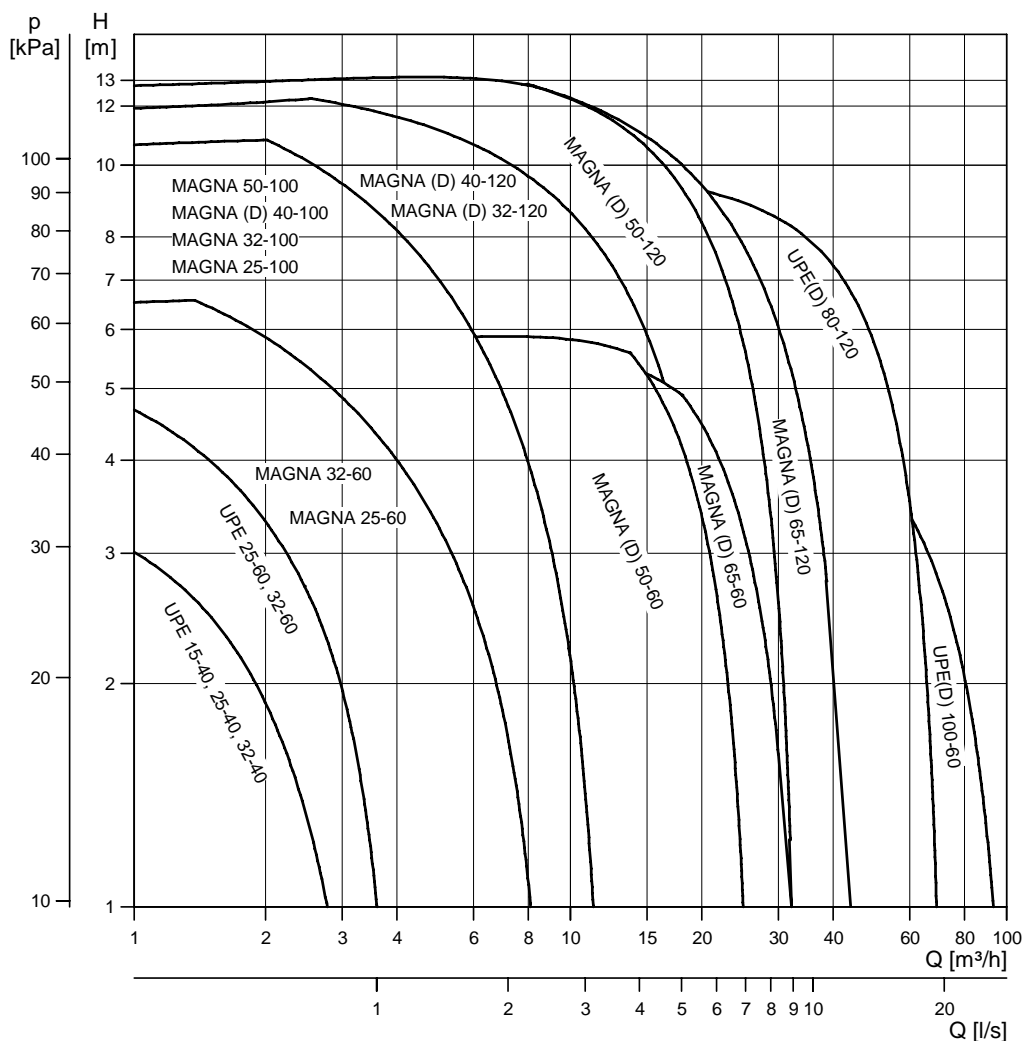


Fig. 2 Performance range

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Product range

Pump type	Supply voltage		Port-to-port length [mm]	Pipe connection			Flange connection		
	1 x 230-240 V	3 x 400-415 V		1"	1 1/2"	2"	PN 6/PN 10	PN 6	PN 10
MAGNA 25-60	•		180		•				
MAGNA 32-60	•		180			•			
MAGNA 25-100	•		180		•				
MAGNA 32-100 (N)	•		180			•			
MAGNA 32-100 F	•		220				•		
MAGNA (D) 40-100 F	•		220				•		
MAGNA 50-100 F	•		240				•		
UPE 15-40	•		130	•					
UPE 25-40 (B)	•		180		•				
UPE 25-40 A	•		180		•				
UPE 32-40	•		180			•			
UPE 25-60 (B)	•		130		•				
			180		•				
UPE 25-60 A	•		180		•				
UPE 32-60	•		180			•			
MAGNA (D) 32-120 F (N)	•		220				•		
MAGNA (D) 40-120 F (N)	•		250				•		
MAGNA (D) 50-60 F (N)	•		280				•		
MAGNA (D) 65-60 F (N)	•		340				•		
MAGNA (D) 50-120 F (N)	•		280				•		
MAGNA (D) 65-120 F (N)	•		340				•		
UPE(D) 80-120 F (B)		•	360					•	•
UPE(D) 100-60 F (B)		•	450					•	•

Pump selection

Pump size

Selection of pump size should be based on

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

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.

Communication

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

- 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.

Control mode

In general, Grundfos recommends

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

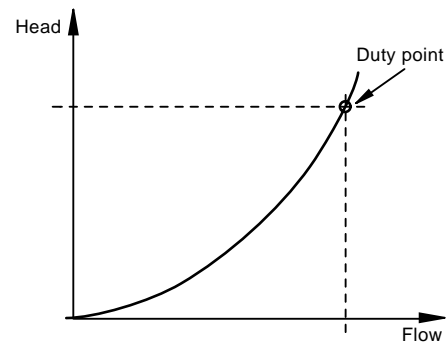


Fig. 3 Performance curve

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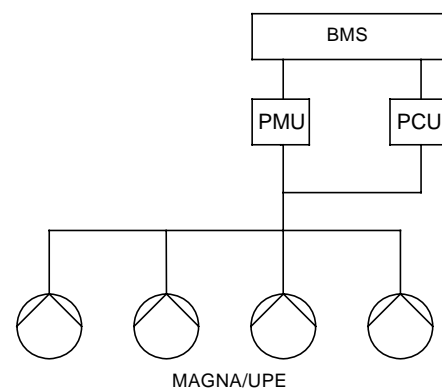


Fig. 4 Building management system with four pumps in parallel controlled via a PMU 2000 and a PCU 2000

TM02 2044 3301

Operating conditions

General recommendations

MAGNA/UPE	
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	Viscosity ≤10 mm ² /s

Liquid temperature

Application	Time	MAGNA	UPE
General	Short periods	+110 °C	+110 °C
	Continuously	+2 °C to +95 °C	+15 °C to +95 °C
Domestic hot-water systems	Continuously	+2 °C to +60 °C	+15 °C to +60 °C

To avoid condensation in the terminal box and the stator, the liquid temperature must always be higher than the ambient temperature.

Ambient conditions

Ambient temperature during operation:	0 °C to +40 °C
Ambient temperature during storage/transport:	-40 °C to +60 °C
Relative air humidity:	Maximum 95 %.

Maximum operating pressure

10 bar.

Minimum inlet pressure

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

Pump type	Liquid temperature		
	75 °C	90 °C	95 °C
	Inlet pressure [bar]		
MAGNA 25-60, 25-100, 32-60, 32-100, 40-100(D), 50-100	0.1	-	0.35
UPE 15-40, 25-40, 25-60, 32-60, 32-40	0.05	0.28	-
MAGNA (D) 32-120 F MAGNA (D) 40-120 F MAGNA (D) 50-60 F	0.15	0.45	-
MAGNA (D) 50-120 F	0.40	0.70	-
MAGNA (D) 65-60 F	0.15	0.45	-
MAGNA (D) 65-120 F	0.90	1.20	-
UPE(D) 80-120 F	1.60	1.90	-
UPE(D) 100-60 F	0.95	1.25	-

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

Electrical data

MAGNA/UPE

Pump type	Single-phase MAGNA 25-60, 25-100, 32-60, 32-100, 40-100(D), 50-100	Single-phase MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	Single-phase UPE	Three-phase UPE(D)
Enclosure class	IP 44 (IEC 85)	IP 44 (IEC 85)	IP 42	IP 42
Insulation class	F	F	H	H
External start/stop input	External potential-free switch. ★ Screened cable. Maximum contact load: 5 V, 10 mA.	External potential-free switch. Screened cable. Maximum contact load: 5 V, 10 mA.	MC 40/60 ★ MB 40/60 ★	External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA.
Setpoint signals	GENI module ★	GENI module ★	MC 40/60 ★ MB 40/60 ★	<ul style="list-style-type: none"> • Max. and min. curve input External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA. • Input for analog 0-10 V signal External signal: 0-10 VDC. Maximum contact load: 1 mA.
Signal output	Internal potential-free changeover contact. ★ Screened cable. Maximum contact load: 250 VAC, 2 A. Minimum contact load: 5 VDC, 1 mA.	Internal potential-free changeover contact. Screened cable. Maximum contact load: 250 VAC, 2 A. Minimum contact load: 5 VDC, 1 mA.	MC 40/60 ★	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 ★ LON via GENIbus and G10 modules	GENI module ★ LON module ★	MB 40/60 ★	Grundfos GENIbus protocol. Screened cable. Lead cross section: 0.25 - 1 mm ² . Maximum cable length: 1200 m.
Supply voltage	1 x 230-240 V – 10 %/+ 6 %, 50/60 Hz, PE	1 x 230-240 V – 10 %/+ 6 %, 50/60 Hz, PE	1 x 230-240 V – 10 %/+ 6 %, 50 Hz, PE	3 x 400-415 V ± 10 %, 50 Hz, PE
Earth leakage current	The pump requires no external motor protection.			
EMC	EN 61800-3.			

★ Expansion module

Sound pressure level

Pump type	Single-phase MAGNA 25-60, 25-100, 32-60, 32-100, 40-100(D), 50-100	Single-phase MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	Single-phase UPE	Three-phase UPE(D)
Sound pressure level	≤54 dB(A)	≤54 dB(A)	≤43 dB(A)	≤54 dB(A)

Functions

	Single-phase MAGNA 25-60, 25-100, 32-60, 32-100, 40-100(D), 50-100	Single-phase MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	Single-phase UPE	Three-phase UPE(D)
Control modes (factory setting)				
AUTO _{ADAPT} ★ ★	●	●		
Proportional-pressure control			●	●
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 remote control, R100	●	●	●	●
External digital input/output	○	○	○	●
External analog input	○	○	○	●
Bus via GENIbus protocol, RS-485	○	○	○	●
Bus via LonTalk® protocol, FTT 10	○★	○	○★	★

- Function incorporated.
- Expansion module required.
- ★ G10-LON interface required.
- ★★ Not recommended for aircondition systems.

Control modes (factory setting)

The pumps have been factory-set to

- *AUTOADAPT* (MAGNA).
- proportional-pressure control (UPE).

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

The factory setting is suitable for most installations.

AUTOADAPT

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

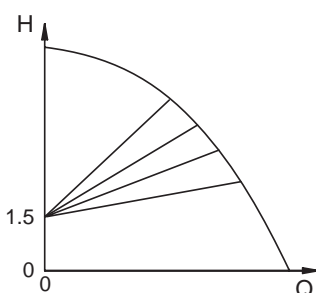


Fig. 5 *AUTOADAPT* control

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Note: Manual setting of the setpoint is not possible.

When the control mode *AUTOADAPT* 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. 6.

When the pump registers a lower pressure on the max. curve, A_2 , the *AUTOADAPT* 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 *AUTOADAPT* control.
- H_{set1} : Original setpoint setting.
- H_{set2} : New setpoint after *AUTOADAPT* control.
- $H_{fac.}$: MAGNA xx-60: 3.5 m.
MAGNA xx-100: 5.5 m.
- H_{auto_min} : A fixed value of 1.5 m.

The *AUTOADAPT* control mode is a form of proportional-pressure control where the control curves have a fixed origin, H_{auto_min} .

The *AUTOADAPT* control mode is developed specifically for heating applications and not recommended for air-condition systems.

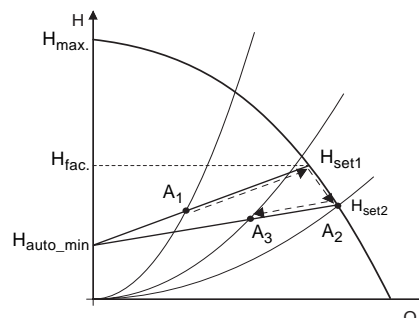


Fig. 6 *AUTOADAPT*

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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.

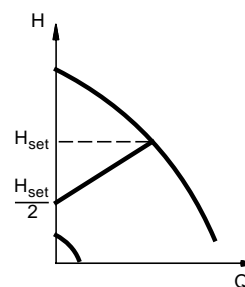


Fig. 7 Proportional-pressure control

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

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Additional control and operating modes

Grundfos offers additional control and operating modes to meet specific demands.

The functions available depend on the pump type and the expansion module chosen, see overview of functions on page 9.

Constant-pressure control

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

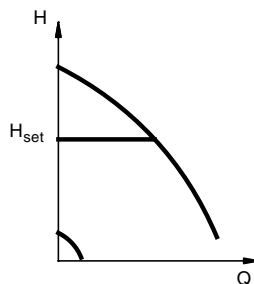


Fig. 8 Constant-pressure control

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

Constant-curve duty

Requires the use of an R100 remote control.

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.

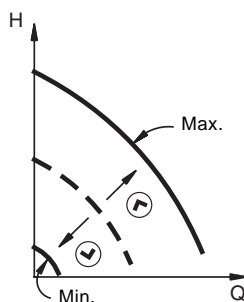


Fig. 9 Constant-curve duty

Max. or min. curve duty

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

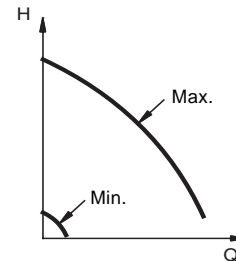


Fig. 10 Max. or min. curves

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.

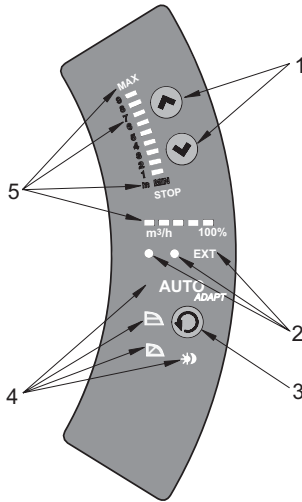
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Readings and settings on the pump

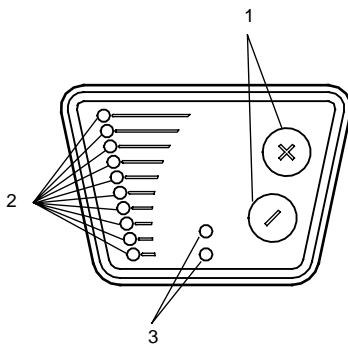
The control panel on the pump control box/terminal box incorporates the basic functions for readings and settings.



TM03 0379 5004

Fig. 11 MAGNA control panel

Pos.	Description
1	Buttons for setting of head
2	<ul style="list-style-type: none"> Indicator lights for operating and fault indication and symbol for indication of external control
3	Button for selection of control mode: <i>AUTOADAPT</i> , 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



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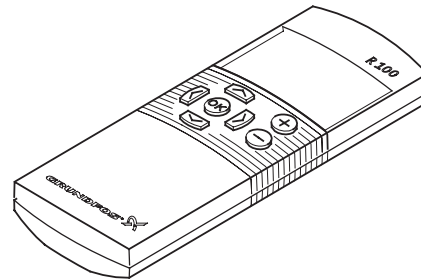
Fig. 12 UPE control panel

Pos.	Description
1	Buttons for start/stop of the pump, setting of setpoint, control mode, min. and max. curve
2	Light fields for indication of control mode and setpoint
3	Indicator lights for operating and fault indication

Communication

Depending on pump type, MAGNA/UPE enables communication via

- wireless remote control, R100
- connection to an external alarm device
- digital input/output
- analog input.



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Fig. 13 R100 remote control

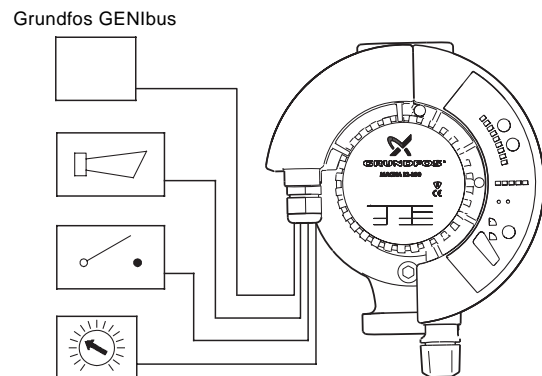
MAGNA/UPE is designed for wireless communication with the Grundfos R100 remote control.

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.

The MAGNA/UPE has various inputs and outputs for external signals for forced-control functions. Some functions may require an expansion module.



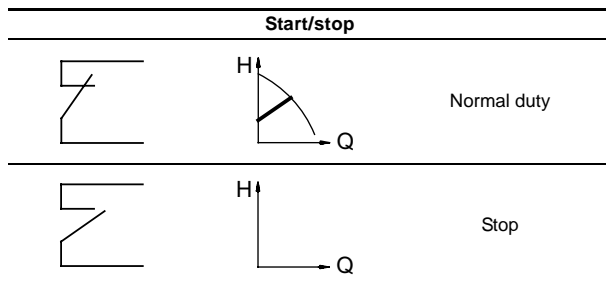
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Fig. 14 MAGNA with expansion module

Digital input

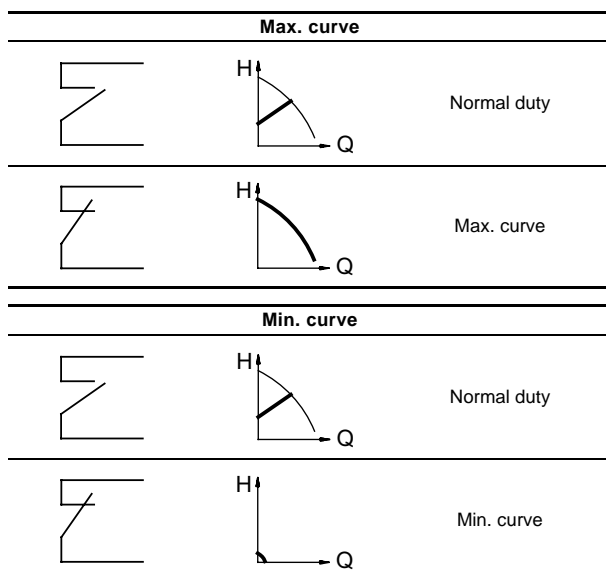
External start/stop

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



External forced max. or min curve

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



The function of the digital input is selected with the R100 remote control.

Digital output

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

MAGNA 25-60, 25-100, 32-60, 32-100, 40-100, 50-100

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

These pumps require expansion modules.

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

Signal relay	Fault signal
	Not activated: <ul style="list-style-type: none"> The electricity supply has been switched off. The pump has not registered a fault.

	Activated: <ul style="list-style-type: none"> The pump has registered a fault.
--	---

Signal relay	Operating signal
	Not activated: <ul style="list-style-type: none"> The pump has been set to stop. The pump has registered a fault and is unable to run.

	Activated: <ul style="list-style-type: none"> The pump is running. The pump has registered a fault, but is able to run.
--	---

Signal relay	Ready signal
	Not activated: <ul style="list-style-type: none"> The pump has been set to stop. The pump has registered a fault and is unable to run.

	Activated: <ul style="list-style-type: none"> The pump is ready to run or is running.
--	--

MAGNA 32-120, 40-120, 50-60, 50-120, 65-60, 65-120

The function of the signal relay can be changed from "Fault" to "Operating" mode with the R100.

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

Signal relay	Fault signal
	Not activated: <ul style="list-style-type: none"> The electricity supply has been switched off. The pump has not registered a fault.

	Activated: <ul style="list-style-type: none"> The pump has registered a fault.
--	---

Signal relay	Operating signal
	Not activated: <ul style="list-style-type: none"> The pump has been set to stop. The pump has registered a fault and is unable to run.

	Activated: <ul style="list-style-type: none"> 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.

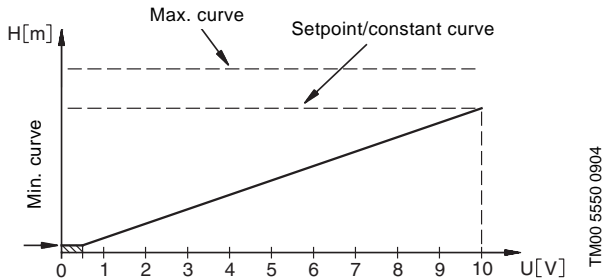


Fig. 15 Example of 0-10 V control

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.

Bus communication via GENIbus

The bus enables control and monitoring of the pumps from a GRUNDFOS Pump Management System 2000, to a building management system (BMS) or another external control system.

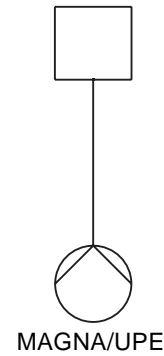


Fig. 16 Example of single-pump operation

Pump type	Requires	See section
MAGNA	GENI module	Accessories
UPE, single-phase	MB 40/60 module	
UPE, three-phase	-	

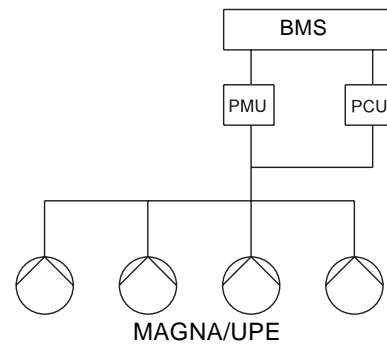
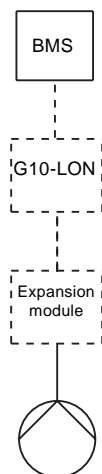


Fig. 17 Example of pumps operating in parallel

Pump type	Requires	See section
MAGNA	<ul style="list-style-type: none"> GENI module PMU 2000 or PCU 2000 	Accessories
UPE, single-phase	<ul style="list-style-type: none"> MB 40/60 module PMU 2000 or PCU 2000 	
UPE, three-phase	<ul style="list-style-type: none"> PMU 2000 or PCU 2000 	

Bus communication via LON

Via the bus input, the pump can be connected to a network based on LonWorks® technology, and thus be linked to other units based on this communication standard.



TM03 3041 0106

Fig. 18 Example of single-pump operation

Pump type	GENI module	LON module	G10-LON
MAGNA 25-60, 32-60, 25-100, 32-100, 40-100(D), 50-100	•		•
MAGNA (D) 50-60, 65-60, 32-120, 40-120, 50-120, 65-120		•	
UPE, single-phase			•
UPE, three-phase			•

Functions of expansion modules

Pump type	Inputs/outputs incorporated	With expansion module	Function
MAGNA 25-60, 25-100, 32-60, 32-100, 40-100, 50-100	-	Relay module	Start/stop Signal relay
		GENI module	Start/stop Max. curve Min. curve 0-10 V analog input Twin-head pump control GENIbus Signal relay
MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	Start/stop Signal relay	GENI module	Max. curve Min. curve 0-10 V analog input Twin-head pump control GENIbus
		LON module	LonTalk® protocol, FTT10
UPE, single-phase	-	MC 40/60	Start/stop Max. curve Min. curve 0-10 V analog input
		MB 40/60	Start/stop Max. curve Min. curve

The MAGNA/UPE 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

- controller integrated in the terminal box
- control panel on the terminal box
- terminal box prepared for optional modules
- differential-pressure and temperature detection
- cast-iron, stainless-steel or bronze or pump housing
- twin-head versions
- air separator pump housing, types UPE 25-40 A and UPE 25-60 A
- no external motor protection required.

Motor and electronic controller

The **single-phase MAGNA** motor is a 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.

The **single-phase UPE** motor is a 2-pole, asynchronous squirrel-cage motor with radio noise filter to VDE 0875. The terminal box and the motor-pump unit have been tested in accordance with VDE 0700.

The terminal box incorporates a controller. The pump speed is calculated via a built-in induction coil on the stator winding.

The **three-phase UPE** motor is a 2-pole, asynchronous squirrel-cage motor with integrated frequency converter.

A differential-pressure and temperature sensor forms an integral unit. The sensor is located inside the pump housing in a channel between suction and discharge sides. Twin-head pumps have two sensors.

Pump connections

Threaded pump connections to ISO 228/1.

Flange dimensions to ISO 7005-2/BS4504.

Surface treatment

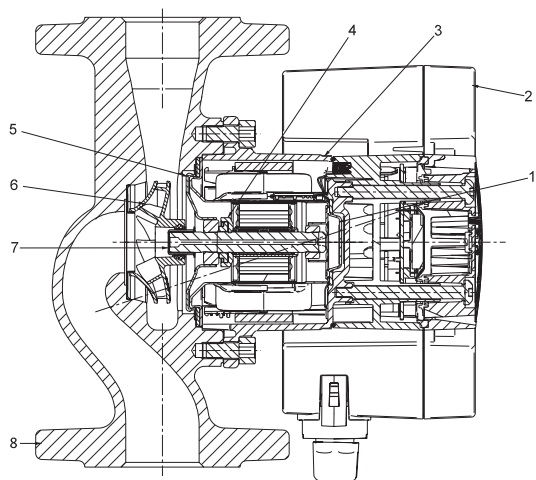
The pumps are wet-varnished.

Colour: NCS40-50R.

Material specification

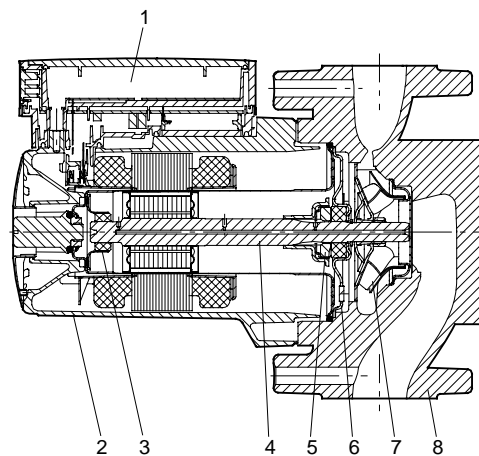
MAGNA/UPE

Pos.	Component	Material	EN/DIN
1	Terminal box	Aluminium/composite	
2	Stator housing	Aluminium AISi 10Cu ₂	
	O-rings	EPDM rubber	
	Outer bearing ring	Aluminium oxide Al ₂ O ₃	
3	Rotor can	Stainless steel	1.4301 or 1.4401
4	Shaft	Stainless steel or tungsten carbide or aluminium oxide	
5	Thrust bearing	Carbon MY 106	
	Bearing plate	Stainless steel	1.4301
6	Inner bearing ring	Aluminium oxide Al ₂ O ₃ or silicium carbide SiO	
7	Impeller	Stainless steel or composite	
8	Pump housing	Cast iron EN-GJL150/-200/-250, bronze or stainless steel	
9	Differential-pressure and temperature sensor	Composite PES	



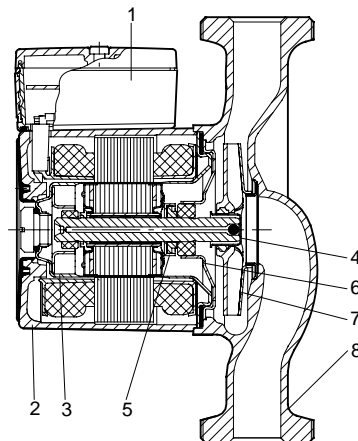
TM03 1955 3405

Fig. 19 MAGNA 25-60, 25-100, 32-60, 32-100, 40-100 and 50-100



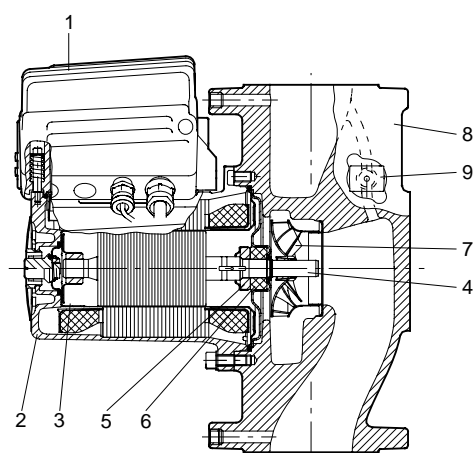
TM02 1256 0801

Fig. 20 MAGNA 32-120, 40-120, 50-60, 50-120, 65-60 and 65-120



TM02 1257 3801

Fig. 21 UPE 15-40, 25-40, 32-40, 25-60 and 32-60



TM02 1258 0603

Fig. 22 UPE 80-120 and 100-60

Mechanical installation

MAGNA/UPE is 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 terminal box position.

The terminal 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:

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

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 mains supply must not exceed 4 times per hour.

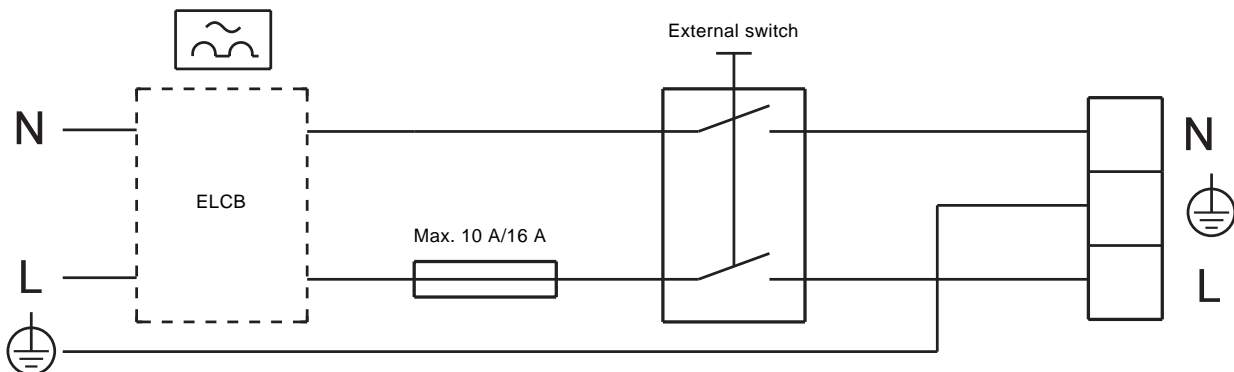
The pump mains connection must be made as shown in the diagrams on the following pages.

Cables

Use screened cables (0.25-1.5 mm²) 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.

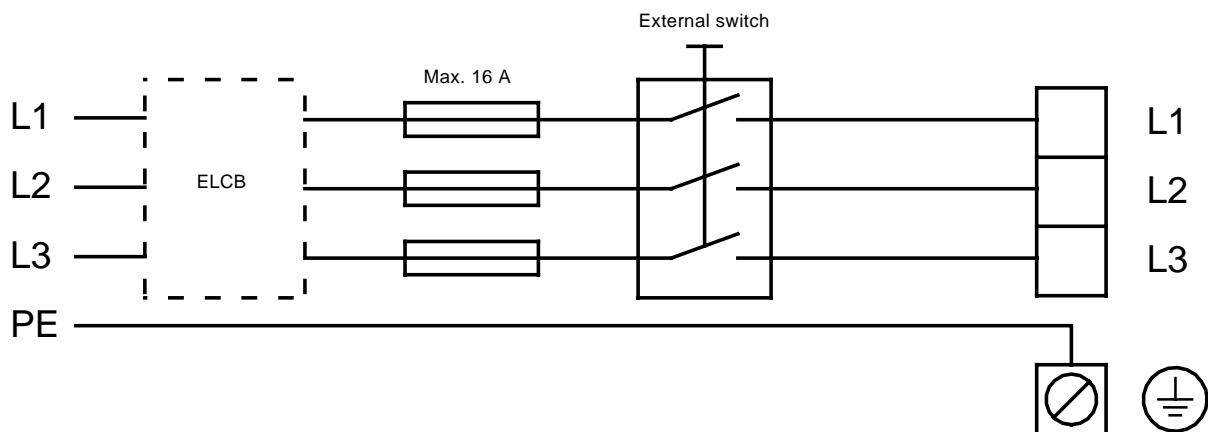
Wiring diagram, single-phase



TM03 2397 4005

Fig. 23 1 x 230-240 V $-10\%/+6\%$, 50/60 Hz

Wiring diagram, three-phase



TM00 9270 4696

Fig. 24 3 x 400-415 V $\pm 10\%$, 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 symbols.

Single-phase



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

Three-phase



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

Single-phase MAGNA

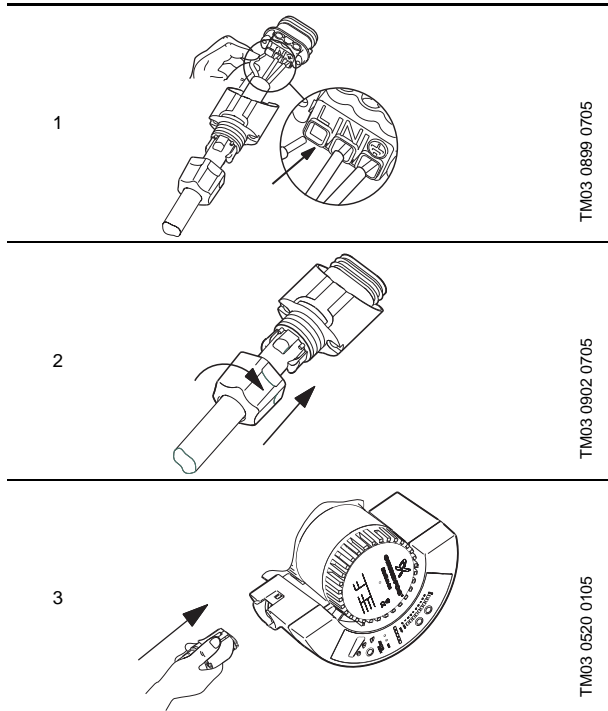


Fig. 25 MAGNA 25-60, 25-100, 32-60, 32-100, 40-100(D), 50-100, mains connection with Alpha power plug

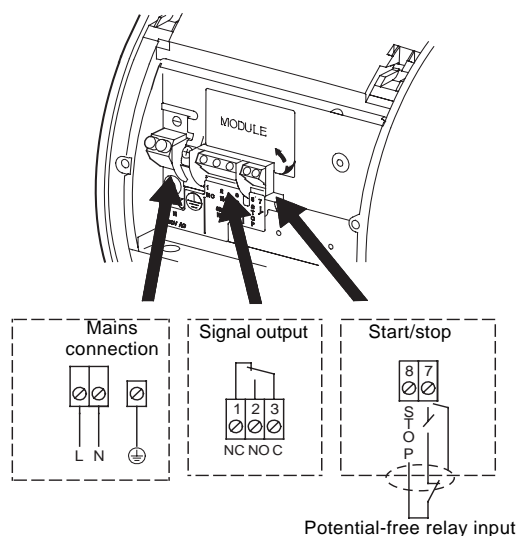


Fig. 26 MAGNA 32-120, 40-120, 50-120, 65-120, 50-60, 65-60, mains connection

Note: If no external on/off switch is connected, the connection across terminals STOP and \downarrow should be maintained.

Single-phase UPE

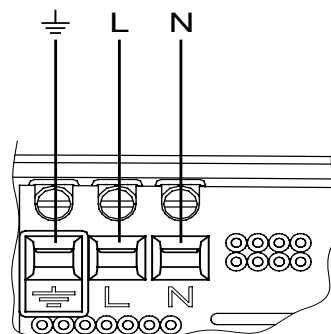


Fig. 27 Single-phase UPE mains connection

Three-phase UPE(D)

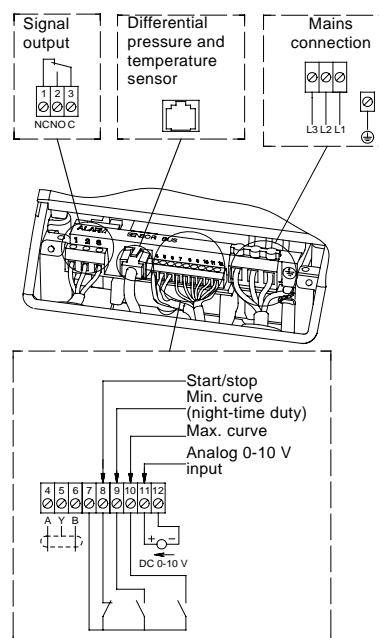


Fig. 28 Three-phase UPE(D) mains connection

Single-head pumps are connected as shown above.

- If no external on/off switch is connected, the connection across terminals 7 and 8 should be maintained.
- If the 0-10 V input is used (terminals 11 and 12), there must be a connection across terminals 7 and 9 (input for min. curve must be closed).

Twin-head pumps

Both pumps must be connected to the mains.

- A possible external controller is to be connected to the master pump (terminals 7 to 12).
- If the twin-head pump is to be connected to a PMU 2000 or PCU 2000, it must be set to single-pump operation. The bus connection between master and slave pumps can be removed. Both master and slave pumps must be connected to the bus system.

TM03 0899 0705

TM03 0902 0705

TM03 0520 0105

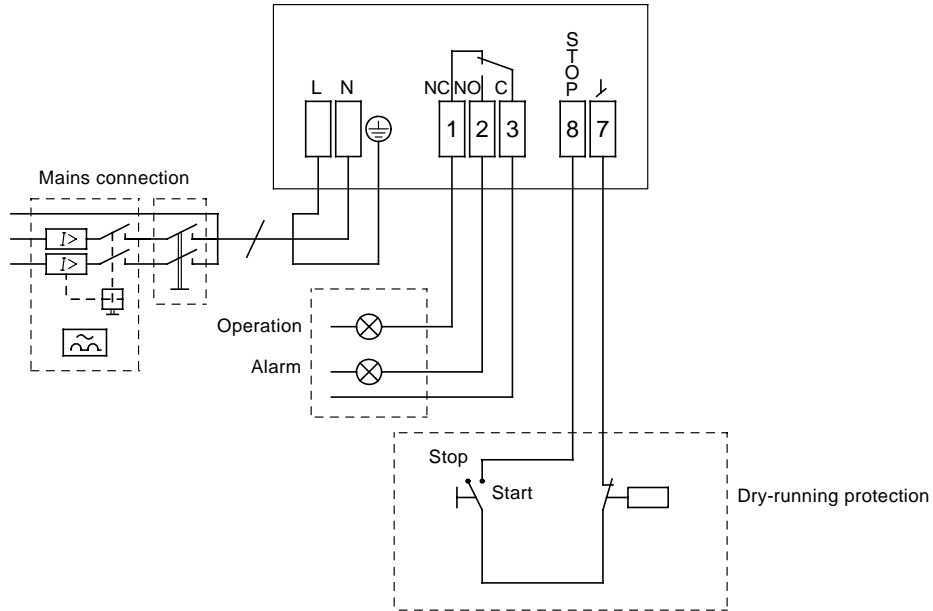
TM02 0235 1007

TM00 4449 3399

TM00 9120 3301

Examples of connections

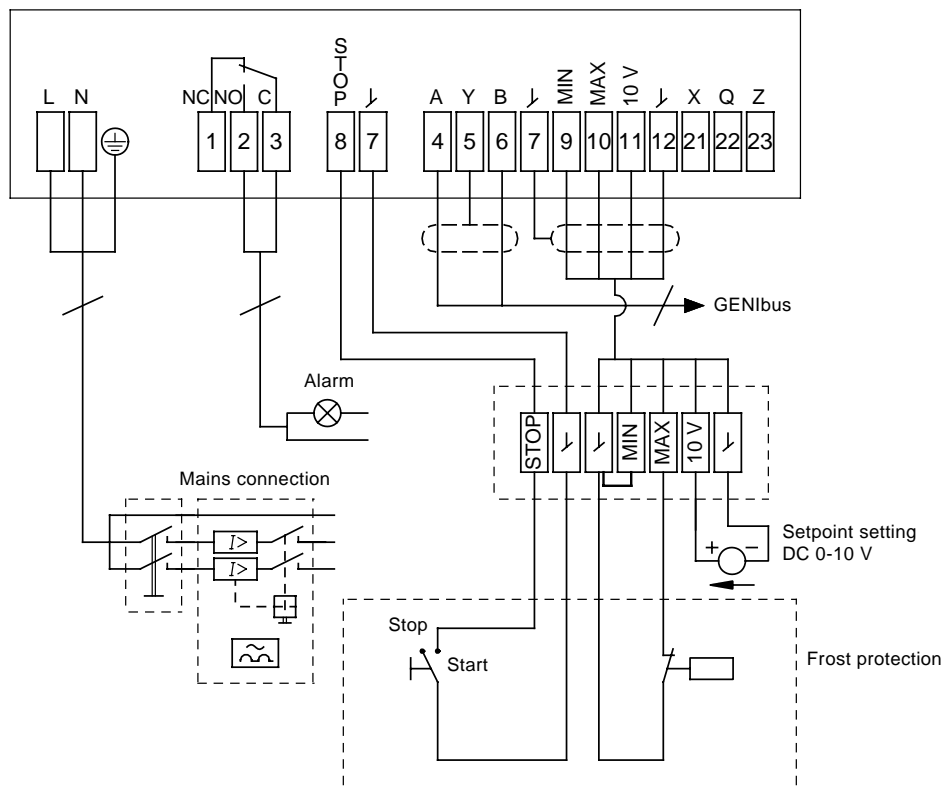
Connection to external controllers



TM02 1322 3601

Fig. 29 Example of MAGNA pump

Connection to external controllers



TM02 1323 5101

Fig. 30 Example of MAGNA pump with GENI module

Curve conditions

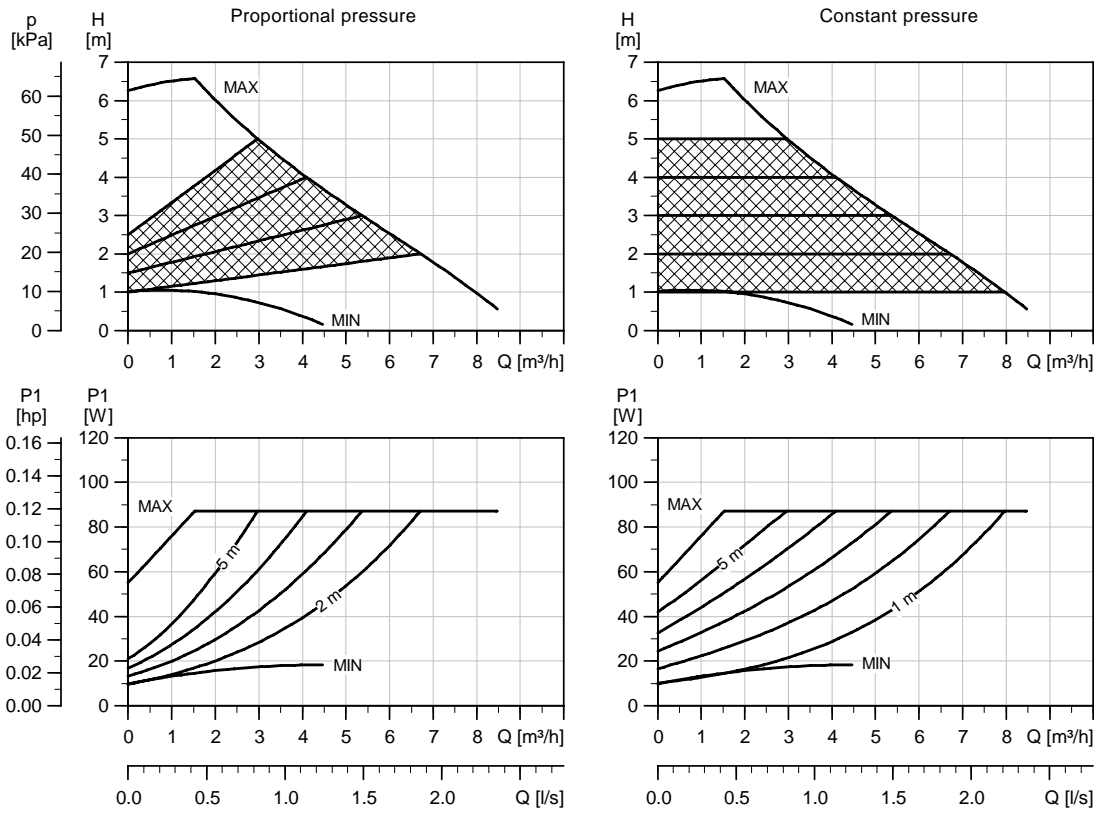
The guidelines below apply to the performance curves on pages 23 to 50:

- The **bold** parts of the curves show the **recommended** performance range.
- Test liquid: Airless water.
- 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.
- MAGNA (D) and UPE(D) have been tested at 60 °C. The conversion between head H [m] and pressure [kPa] has been made for water at 60 °C ($\rho = 983.2 \text{ kg/m}^3$). For liquids with other densities, e.g. hot water, the discharge pressure is proportional to the density.

The pumps should not be used at a minimum flow rate lying outside the areas indicated by the bold-faced curves due to danger of pump overheating.

Note: Within MAGNA's 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.

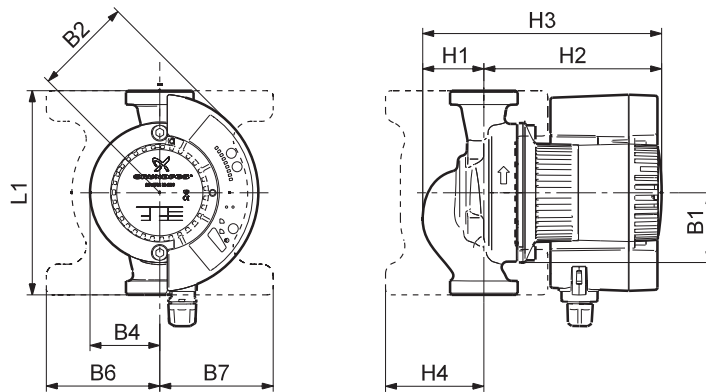
MAGNA 25-60



TM03 1469 2205

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	10
	Max.	85

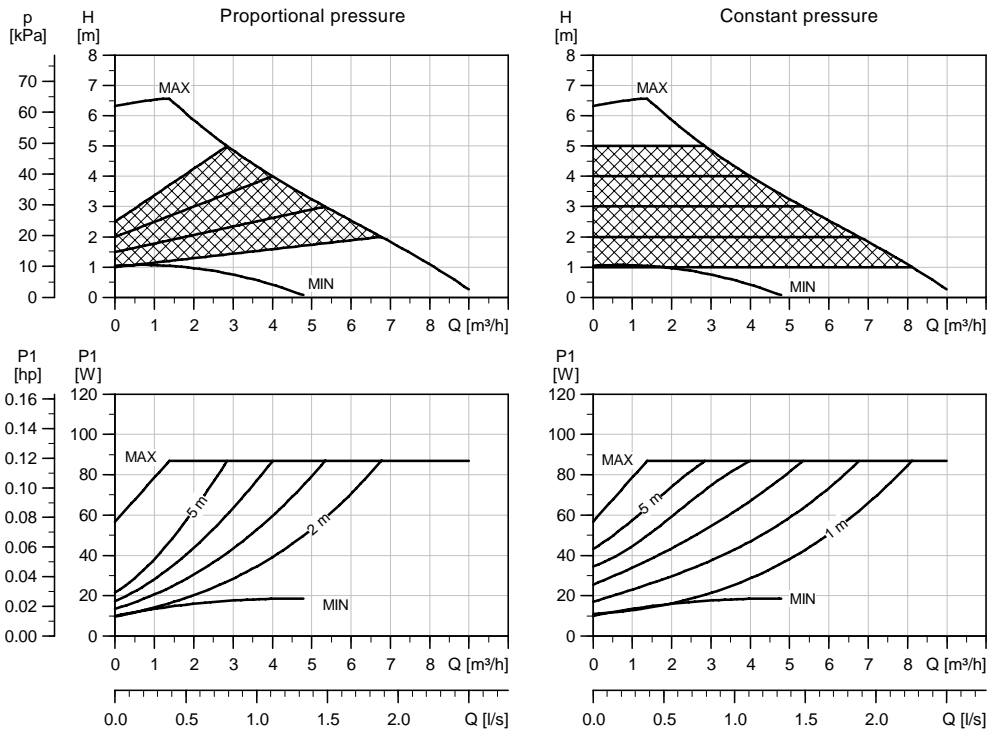


TM03 1234 1405

Dimensions and weights

Pump type	Dimensions [mm]											Weight [kg]		Ship. vol. [m³]
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	Gross	
MAGNA 25-60	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 32-60 (N)

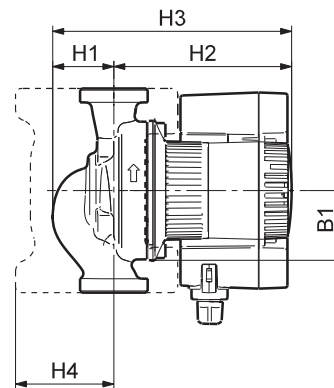
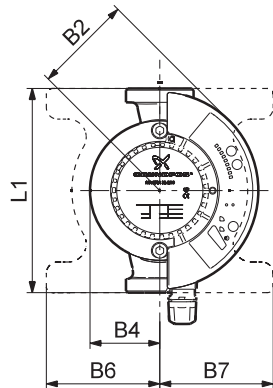


TM03 1848 3205

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	0.09
	Max.	0.6

MAGNA 50-60 F is also available with stainless-steel housing, type N.

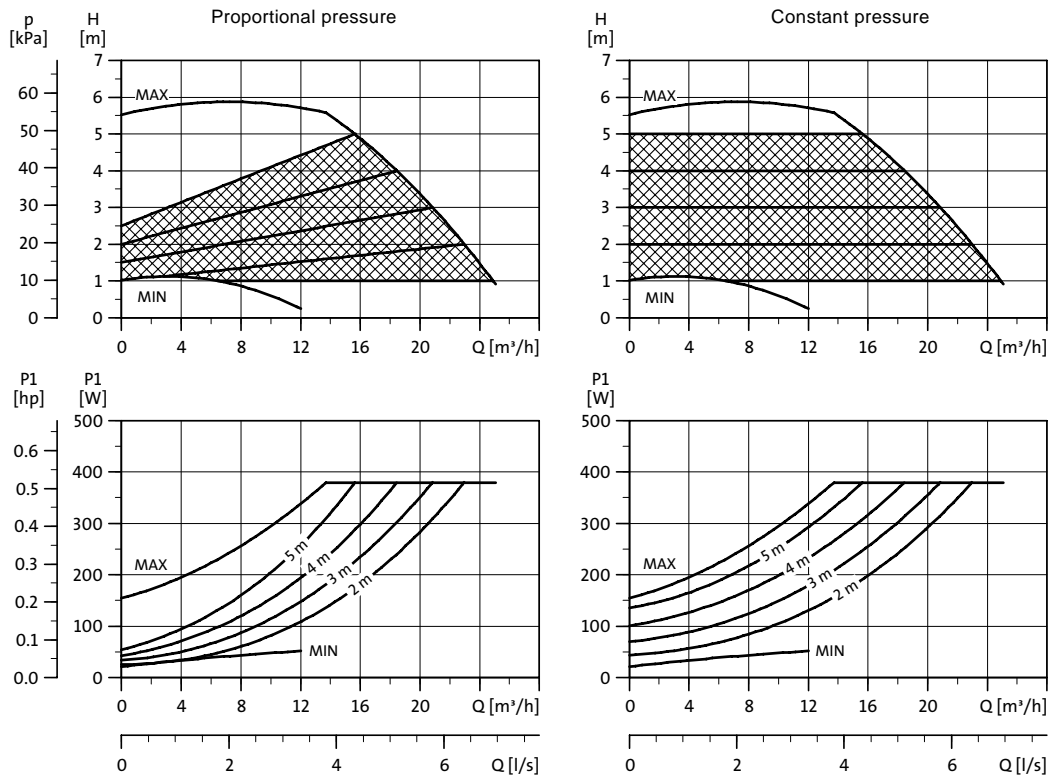


TM03 1234 1405

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]												Weight [kg]		Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	Gross	[m³]	
MAGNA 32-60	180	62	87	62	100	100	54	157	211	85	32	2	5.5	0.012	

MAGNA 50-60 F

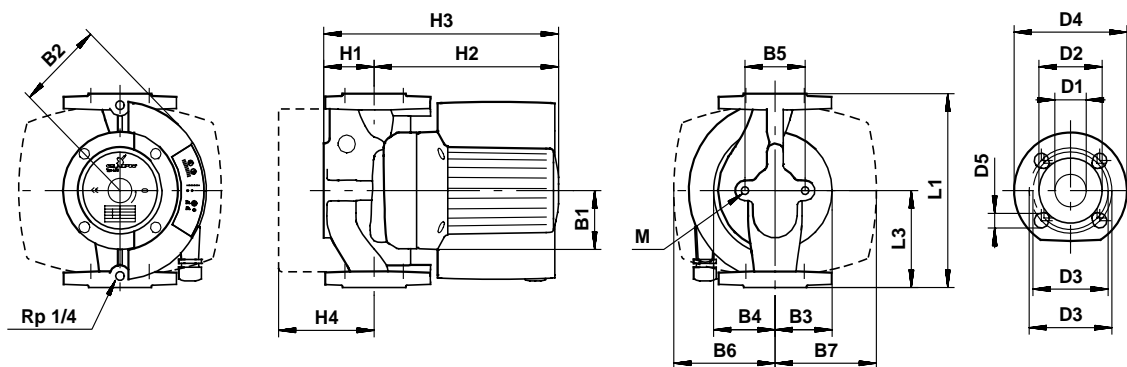


TM02 1912 2204

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	0.17
	Max.	1.7

MAGNA 50-60 F is also available with stainless-steel housing, type N.

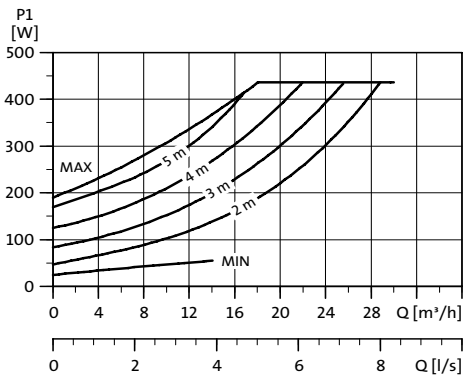
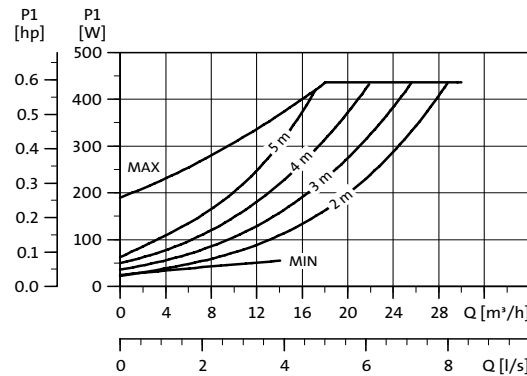
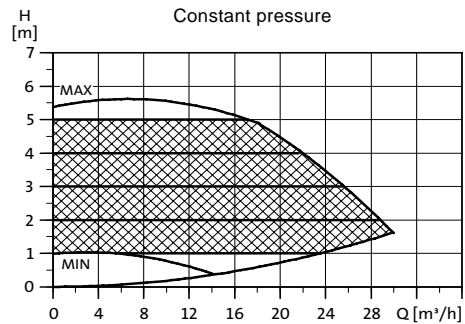
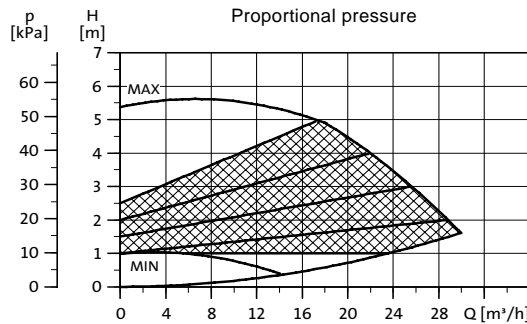


TM02 0239 5101

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m ³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 50-60 F	280	140	77	115	84	98	96	130	130	78	245	325	128	50	102	110/125	165	14/19	M12	18.5	20.5	0.043

MAGNA 65-60 F

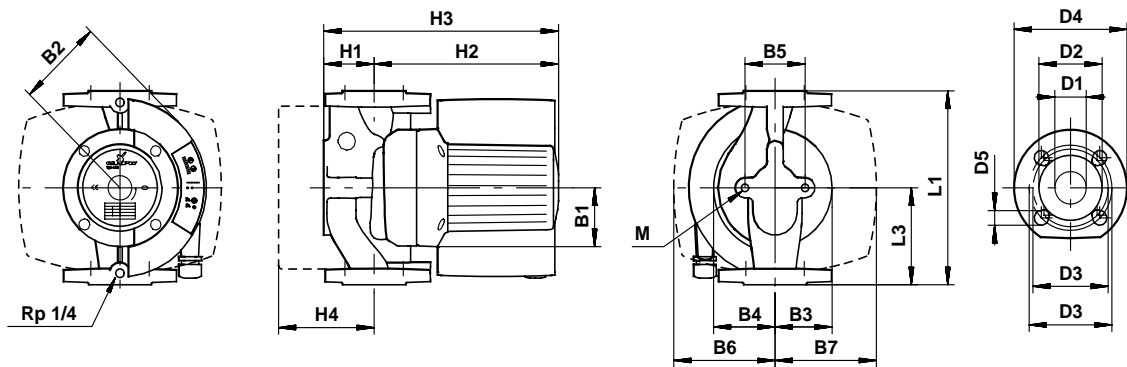


TM02 1913 2204

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	25	0.17
	Max.	450	2.0

MAGNA 65-60 F is also available with stainless-steel housing, type N.

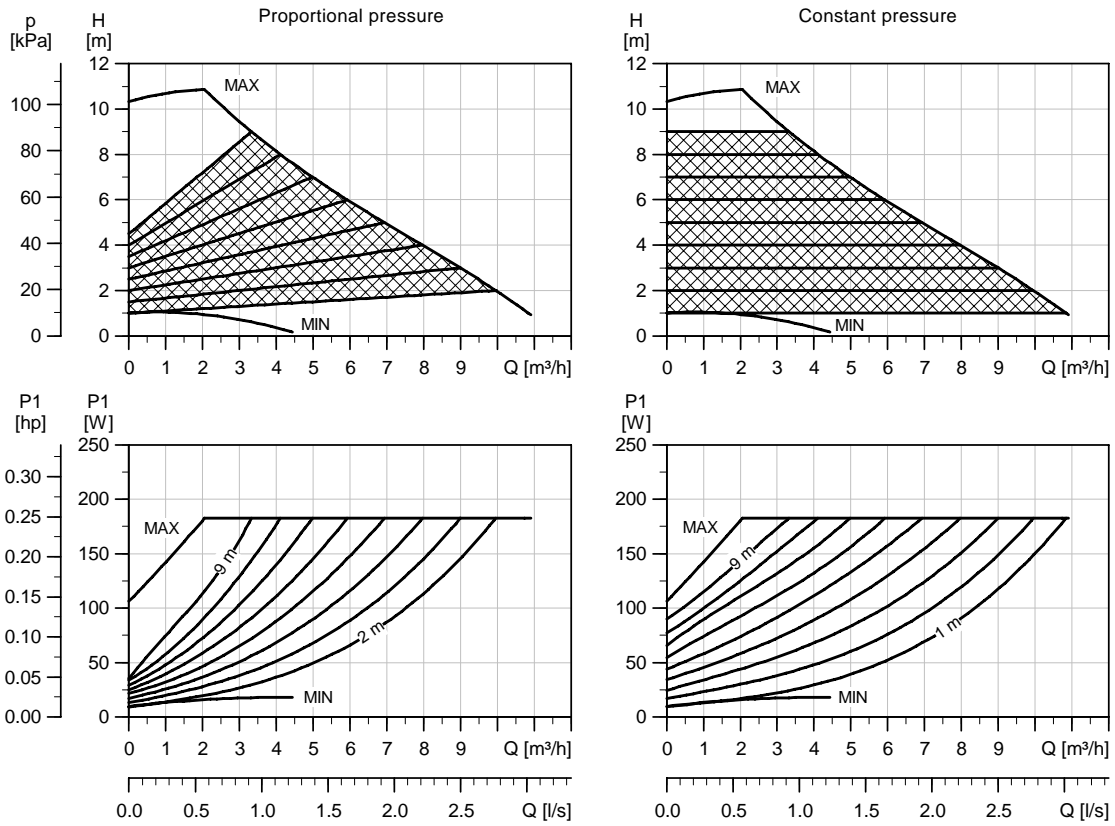


TM02 0239 5101

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m ³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 65-60 F	340	170	77	115	88	104	96	145	145	82	255	335	128	65	119	130/145	185	14/19	M12	22	24	0.043

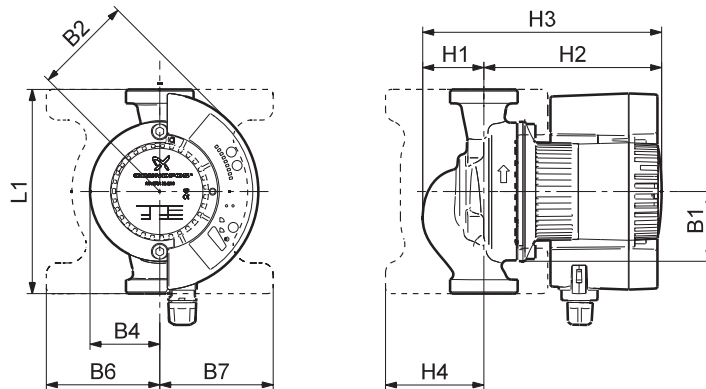
MAGNA 25-100



TM03 1470 2205

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	10
	Max.	185

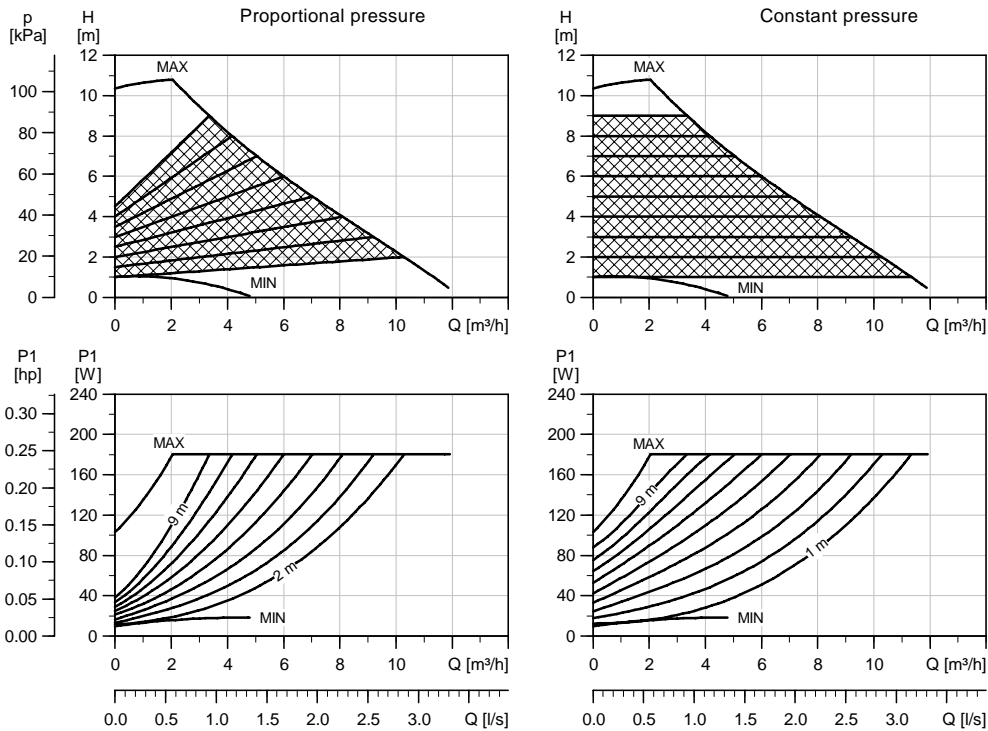


TM03 1234 1405

Dimensions and weights

Pump type	Dimensions [mm]												Weight [kg]		Ship. vol. [m³]
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	Gross		
MAGNA 25-100	180	62	87	62	100	100	545	157	211	85	25	1 1/2	5.4	0.012	

MAGNA 32-100 (N)

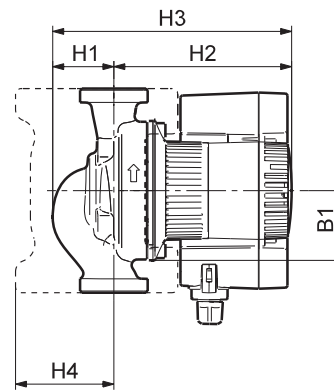
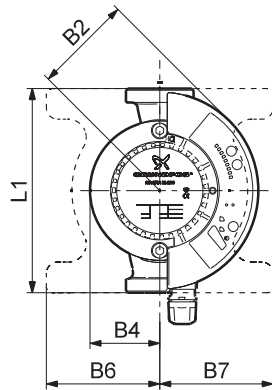


TM03 1849 3205

Electrical data

U_n [V]	P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	0.1
	Max.	1.23

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

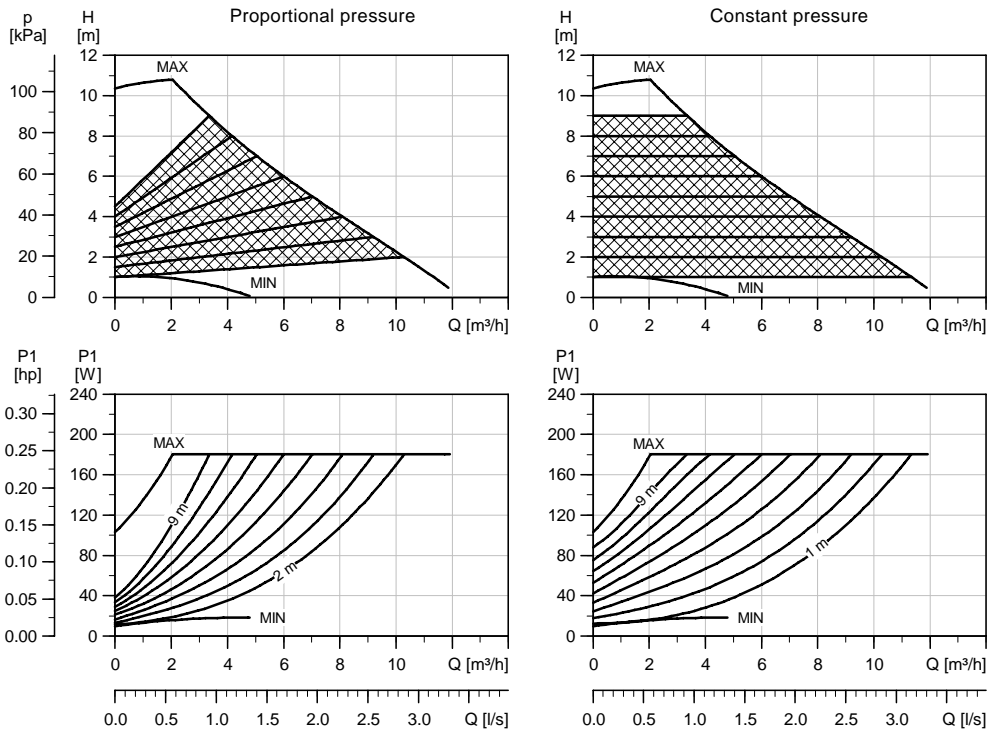


TM03 1234 1405

Dimensions and weights

Pump type	Dimensions [mm]											Weights [kg]		Ship. vol. [m³]	
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	Gross		
MAGNA 32-100 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.6	6.0 (N)	0.012

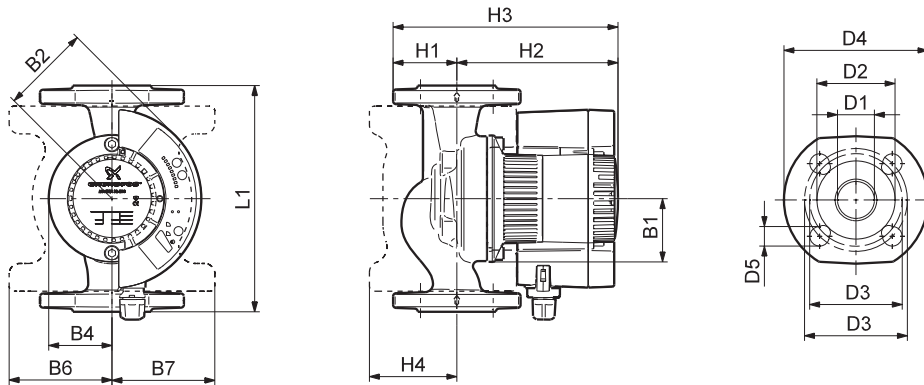
MAGNA 32-100 F



TM03 1849 3205

Electrical data

U_n [V]	P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	0.1
	Max.	1.23

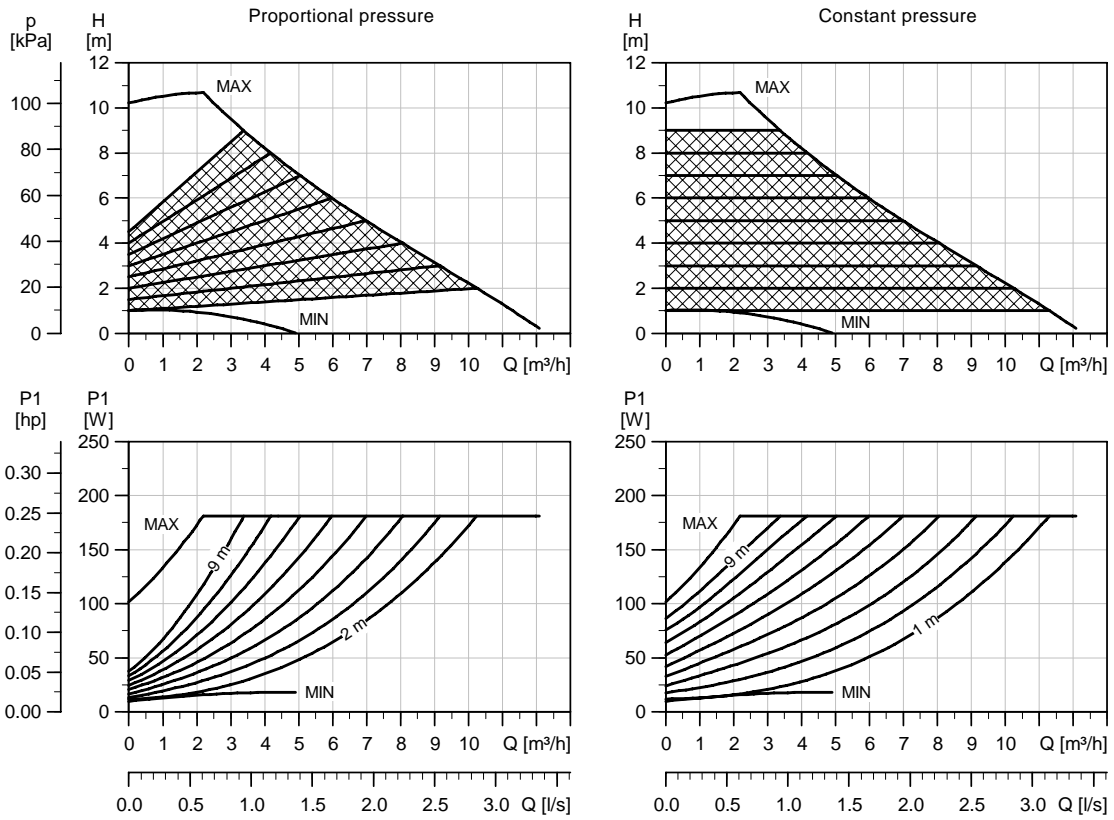


TM03 1233 1405

Dimensions and weights

Pump type	Dimensions [mm]															Weight [kg]		Ship. vol. [m³]
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	Gross	
MAGNA 32-100 F	220	62	87	62	100	100	54	157	211	85	32	76	90/100	140	19	6/10	8.2	0.014

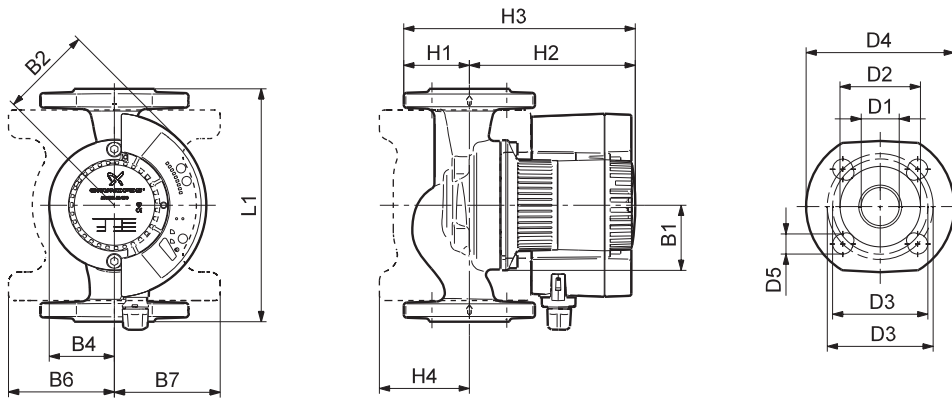
MAGNA 40-100 F



TM03 1566 2305

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	0.09
	Max.	1.26

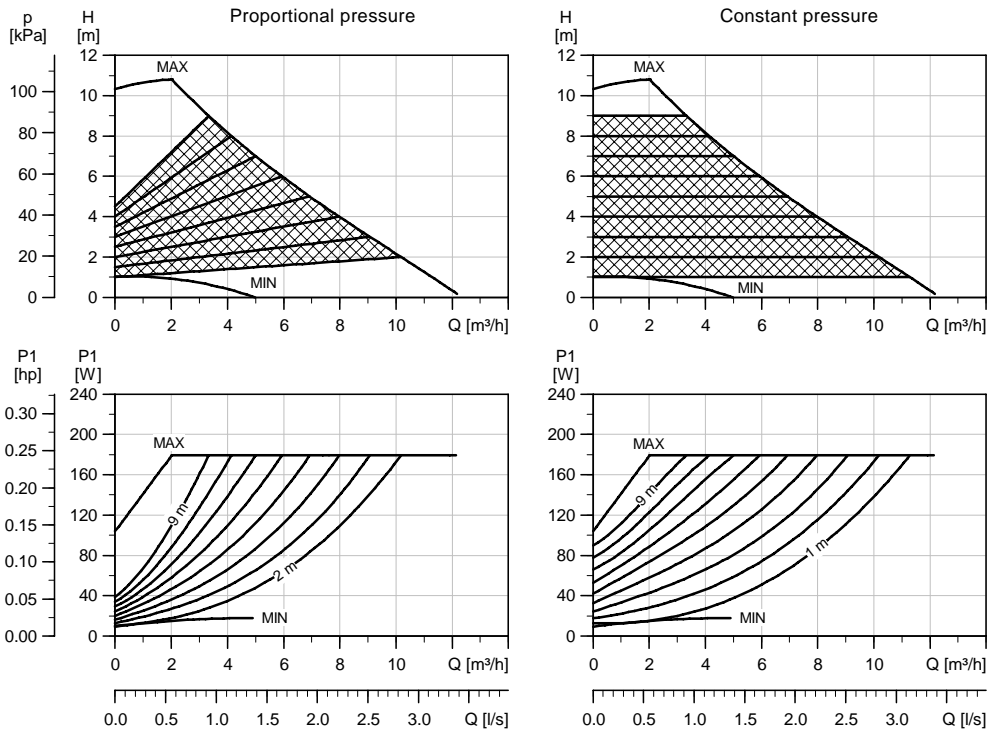


TM03 1233 1405

Dimensions and weights

Pump type	Dimensions [mm]																Weight [kg]		Ship. vol. [m³]
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	Gross		
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	

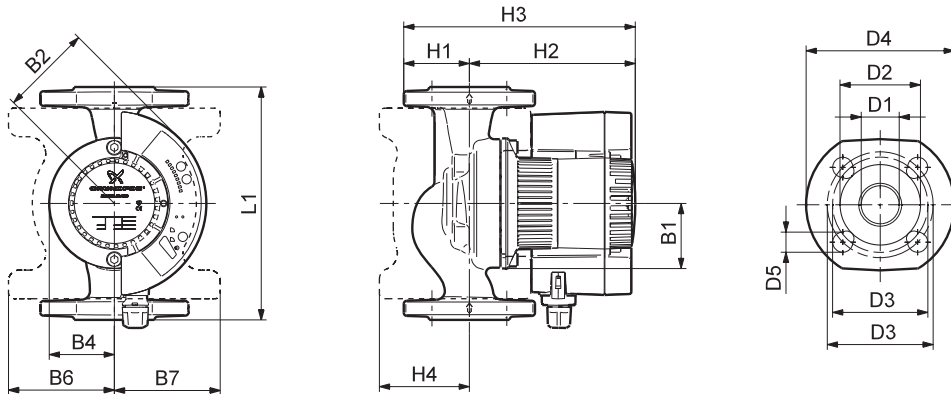
MAGNA 50-100 F



TM03 1850 3205

Electrical data

U_n [V]	P_1 [W]	$I_{1/n}$ [A]
1 x 230-240 V	Min.	0.1
	Max.	1.26

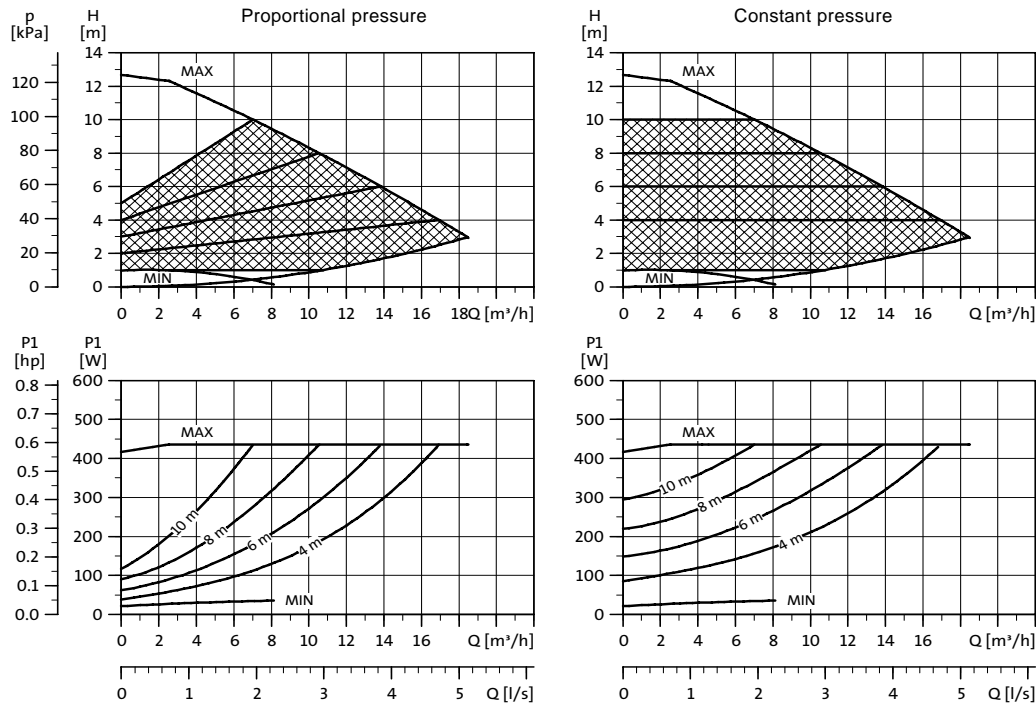


TM03 1233 1405

Dimensions and weights

Pump type	Dimensions [mm]														Weight [kg]		Ship. vol. [m³]	
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN		Gross
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 32-120 F

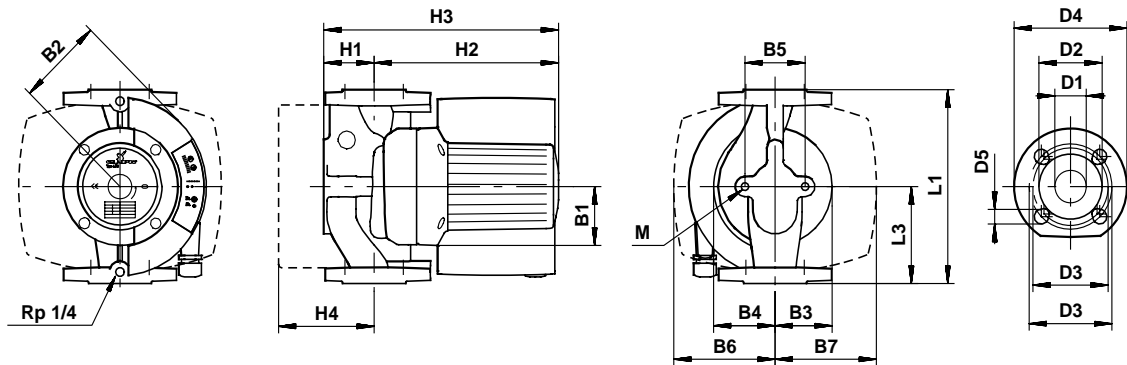


TM02 1910 2204

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	25
	Max.	430

MAGNA 32-120 F is also available with stainless-steel housing, type N.

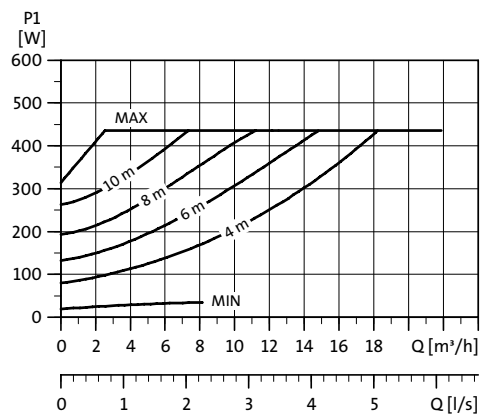
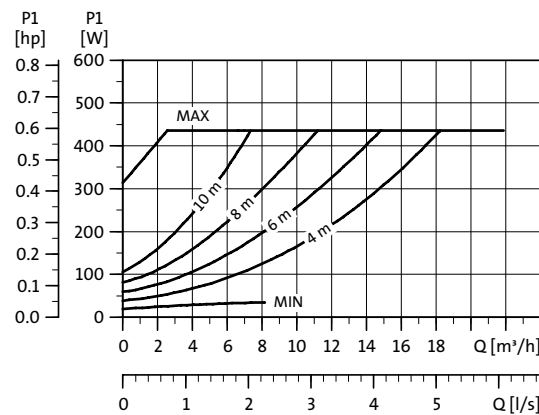
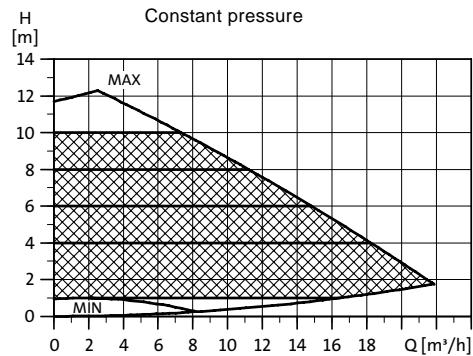
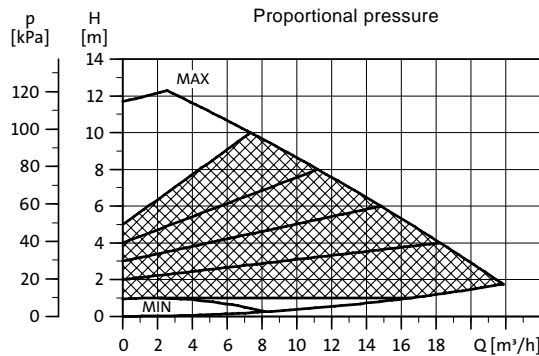


TM02 0239 5101

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 32-120 F	220	110	77	115	75	76	96	110	110	68	245	310	86	32	76	90/100	140	14/19	M12	15	17	0.034

MAGNA 40-120 F

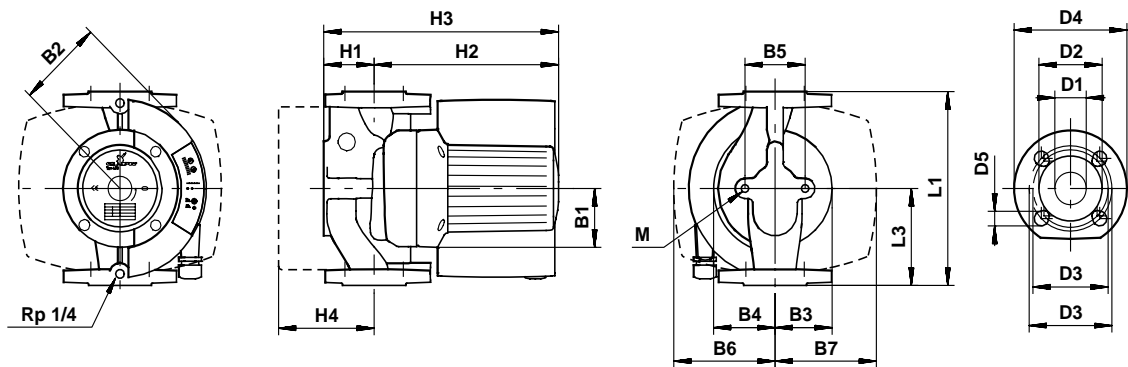


TM02 1911 2204

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	25
	Max.	450

MAGNA 40-120 F is also available with stainless-steel housing, type N.

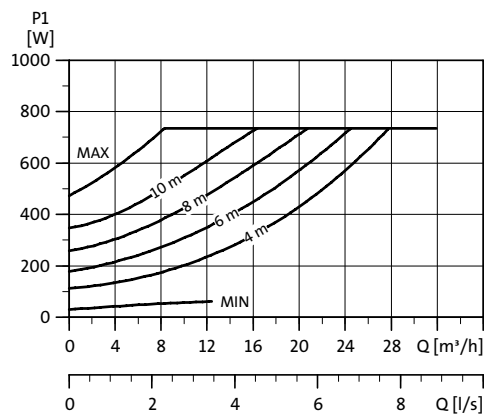
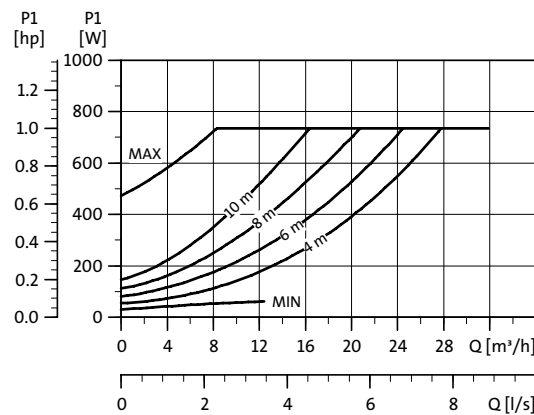
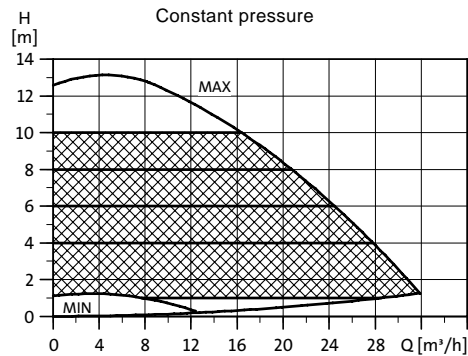
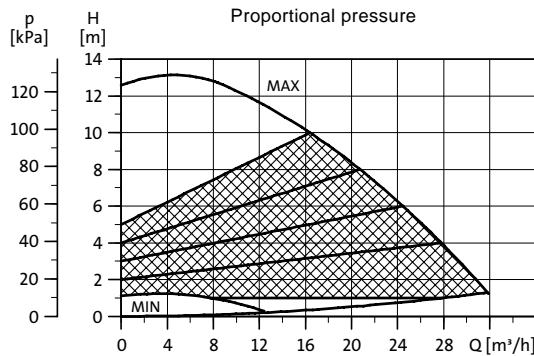


TM02 0239 5101

Dimensions and weights

Pump type	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 40-120 F	250	125	77	115	75	80	96	115	115	65	266	310	102	40	84	100/110	150	14/19	M12	15.5	17.5	0.034

MAGNA 50-120 F

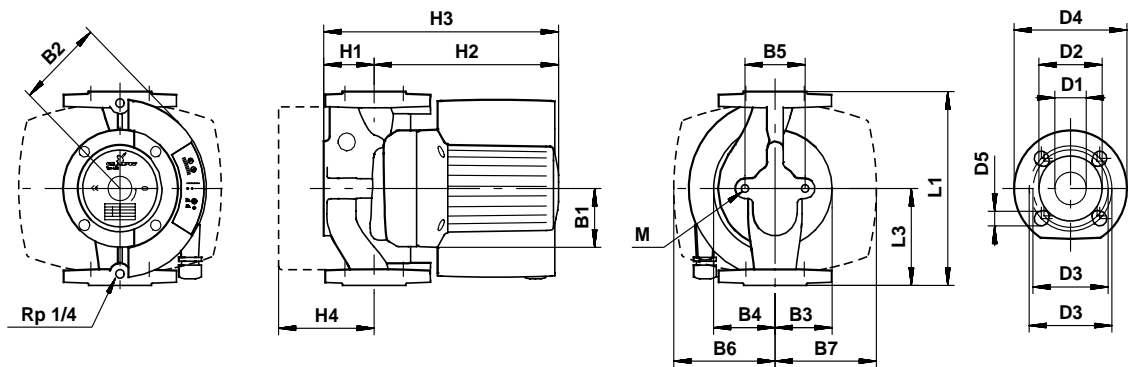


TM02 8814 2204

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	35
	Max.	800

MAGNA 50-120 F is also available with stainless-steel housing, type N.

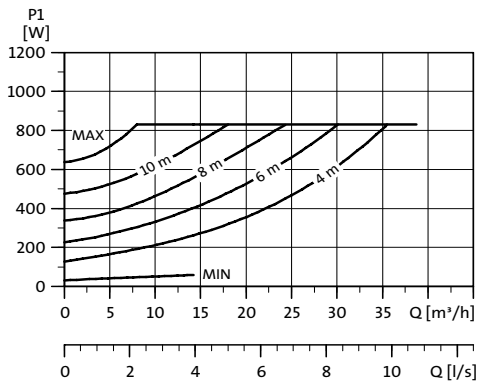
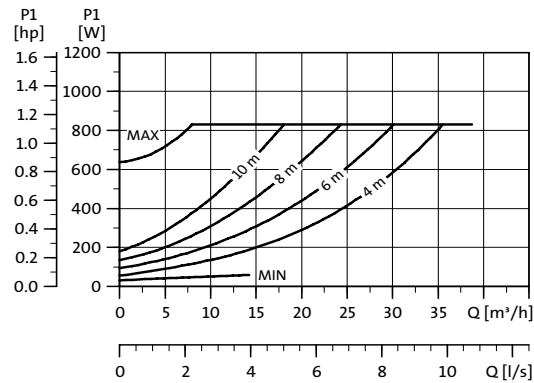
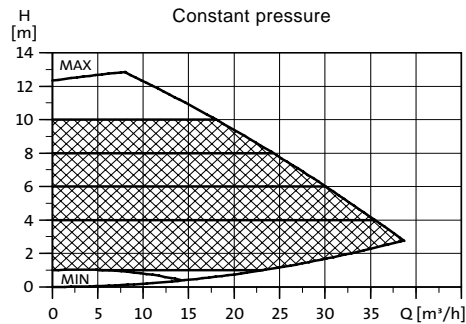
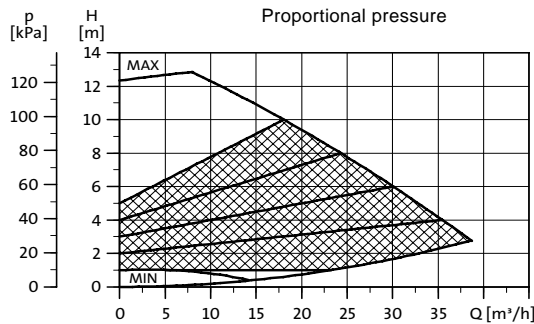


TM02 0239 5101

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m ³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 50-120 F	280	140	77	125	84	98	96	130	130	78	245	325	128	50	102	110/125	165	14/19	M12	22	24	0.043

MAGNA 65-120 F

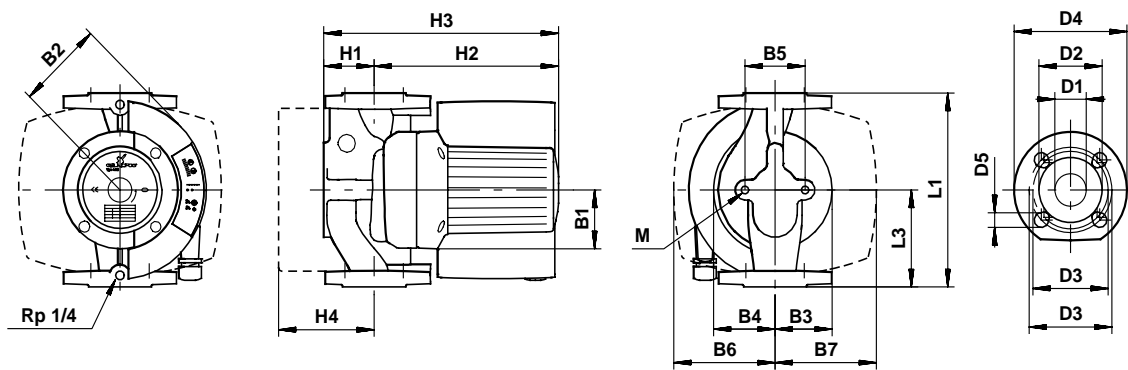


TM02 8815 2204

Electrical data

U_n [V]	P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	35
	Max.	900

MAGNA 65-120 F is also available with stainless-steel housing, type N.

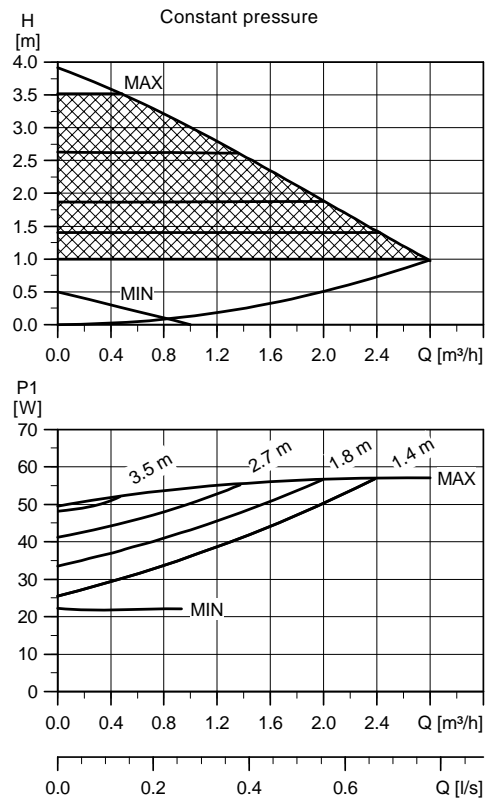
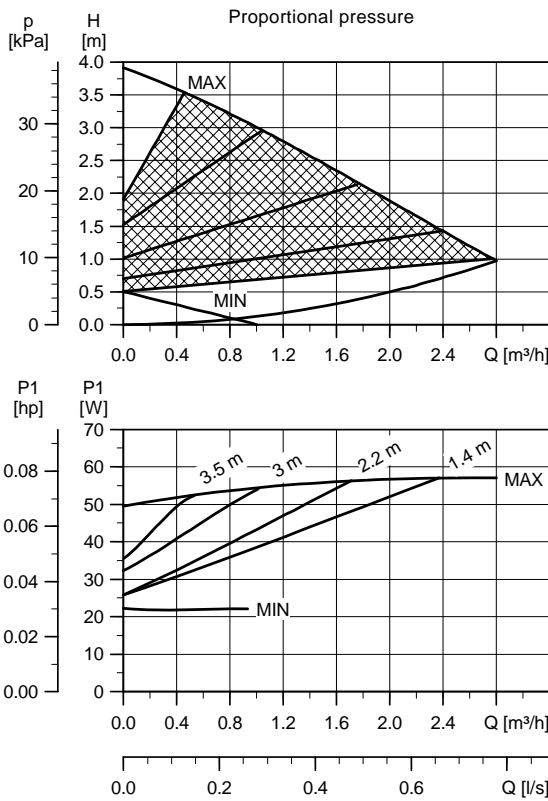


TM02 0239 5101

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m ³]		
	L1	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA 65-120 F	340	170	77	125	88	104	96	145	145	82	255	335	128	65	119	130/145	185	14/19	M12	25.5	27.5	0.043

UPE 15-40, UPE 25-40, UPE 32-40

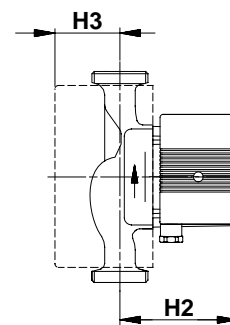
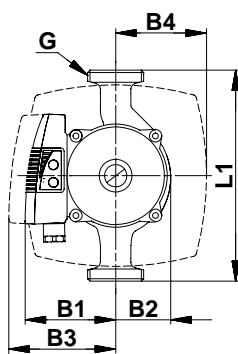


TM01 0595 2002

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	0.18
	Max.	0.26

UPE 25-40 is also available with bronze housing, type B.



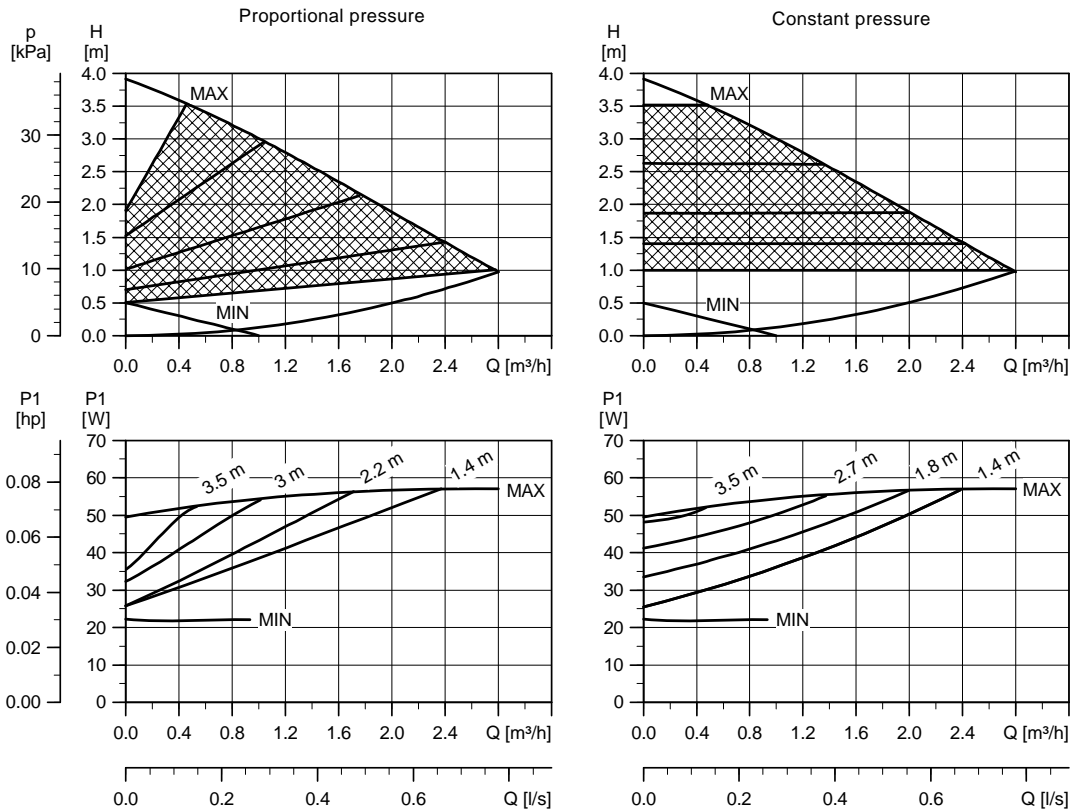
TM02 4361 0702

Dimensions and weights

Pump type	Dimensions [mm]								Weights [kg]★		Ship. vol. [m³]
	L1	B1	B2	B3	B4	H2	H3	G	Net	Gross	
UPE 15-40	130	85	47	105	77	102	57	1	3.0	3.8	0.0061
UPE 25-40	180	85	47	105	77	102	57	1 1/2	3.0	3.8	0.0061
UPE 32-40	180	85	47	105	77	102	57	2	2.7	3.5	0.0061

★ Weights of bronze versions are approx. 10 % higher.

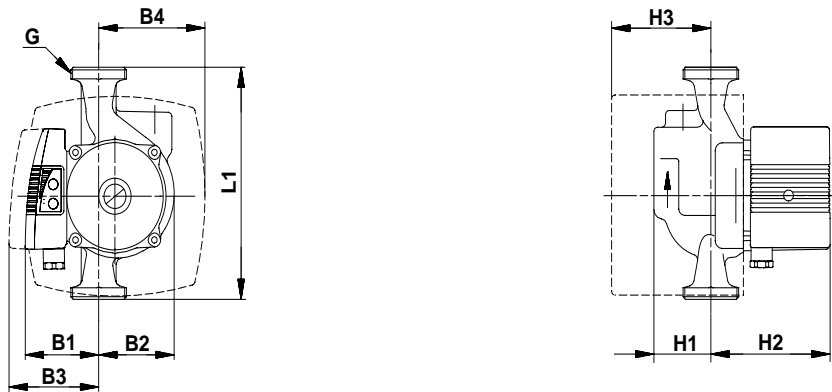
UPE 25-40 A



TM01 0595 2002

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	20	0.18
	Max.	60	0.26

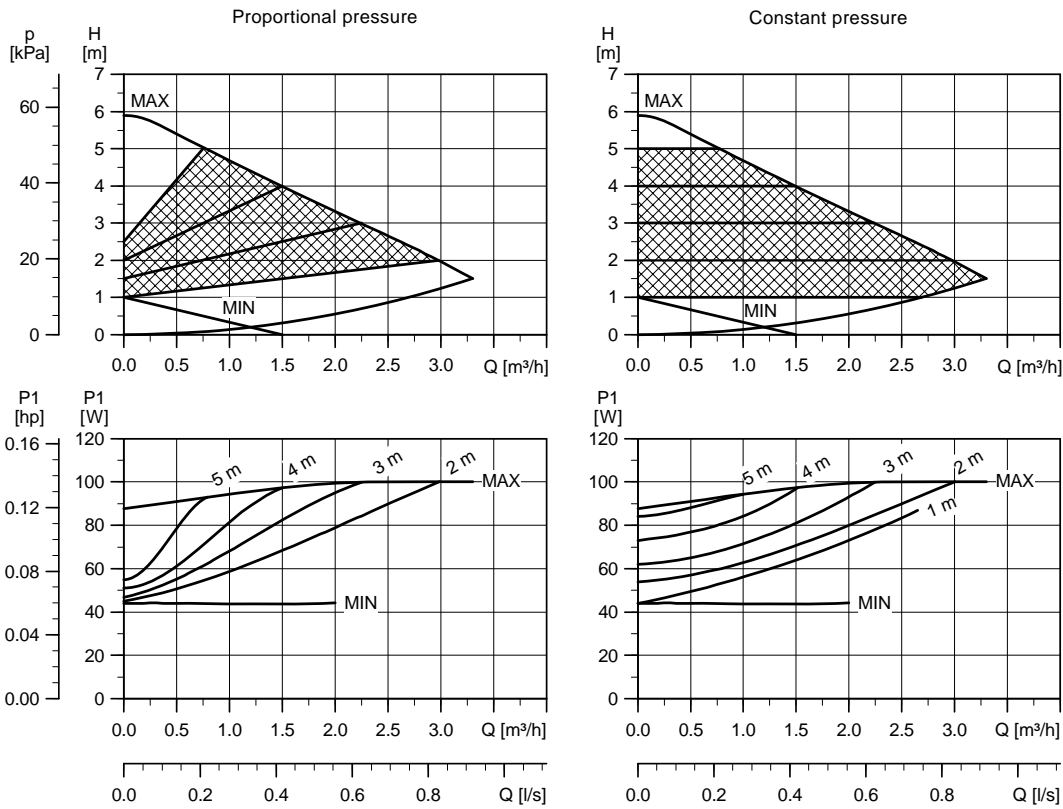


TM00 4472 3402

Dimensions and weights

Pump type	Dimensions [mm]									Weights [kg]		Ship. vol. [m³]
	L1	B1	B2	B3	B4	H1	H2	H3	G	Net	Gross	
UPE 25-40 A	180	72	65	91	92	49	112	80	1 1/2	3.5	4.3	0.0061

UPE 25-60, UPE 32-60

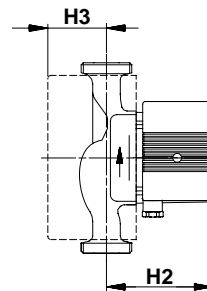
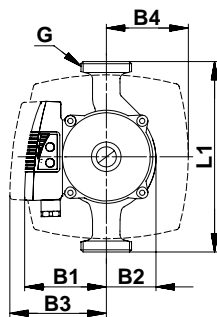


TM00 4545 2002

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	40
	Max.	100

UPE 25-60 is also available with bronze housing, type B.



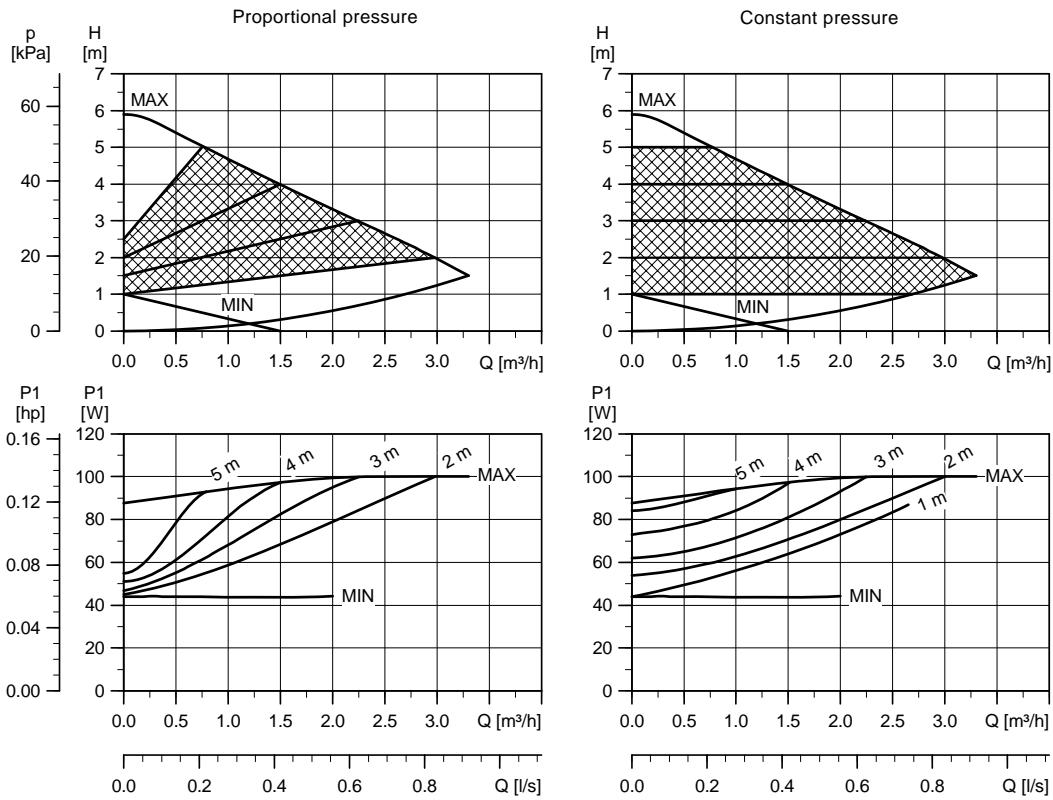
TM02 4361 0702

Dimensions and weights

Pump type	Dimensions [mm]								Weights [kg]★		Ship. vol. [m³]
	L1	B1	B2	B3	B4	H2	H3	G	Net	Gross	
UPE 25-60	130	85	47	105	77	102	57	1 1/2	2.4	2.6	0.0061
	180	85	47	105	77	102	57	1 1/2	2.6	3.0	0.0061
UPE 32-60	180	85	47	105	77	102	57	2	2.7	3.1	0.0061

★ Weights of bronze versions are approx. 10 % higher.

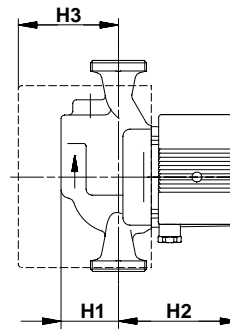
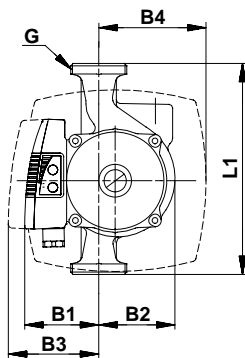
UPE 25-60 A



TM00 4545 2002

Electrical data

U_n [V]		P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	40	0.28
	Max.	100	0.44

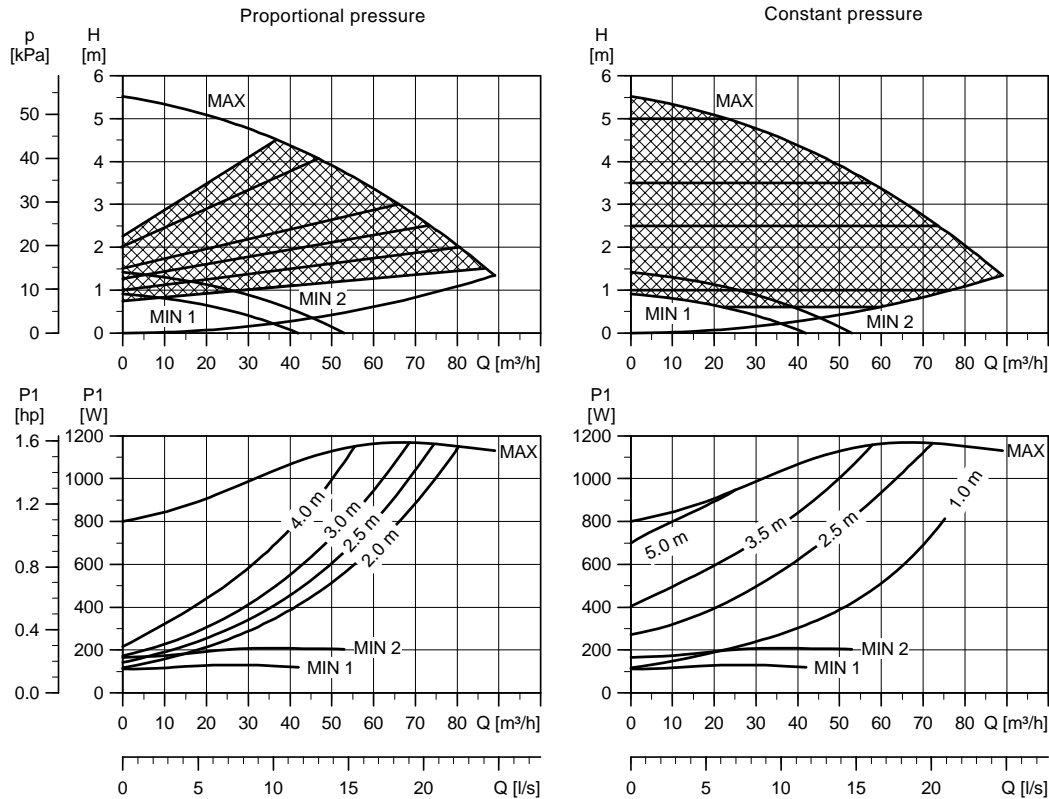


TM00 4472 3402

Dimensions and weights

Pump type	Dimensions [mm]									Weights [kg]		Ship. vol. [m³]
	L1	B1	B2	B3	B4	H1	H2	H3	G	Net	Gross	
UPE 25-60 A	180	72	65	91	92	49	112	80	1 1/2	3.6	4.0	0.0061

UPE 100-60 F

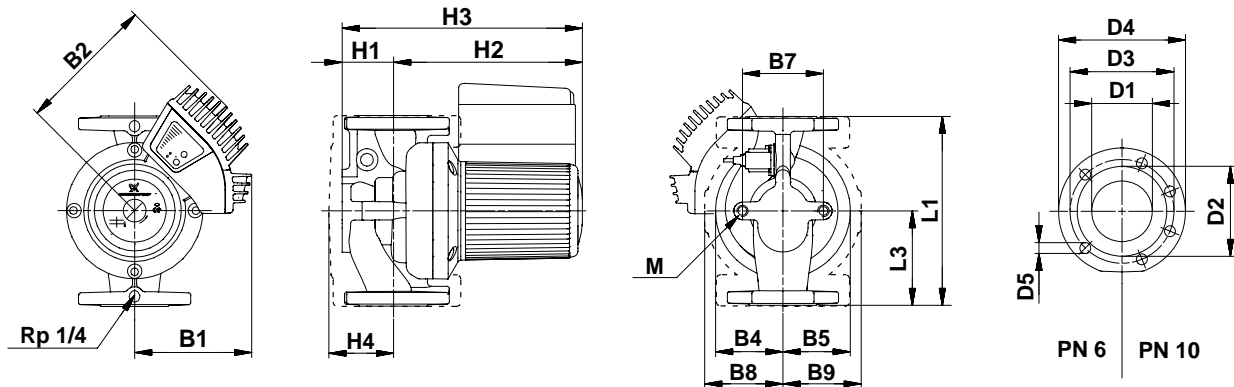


TM00 9410 2002

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
3 x 400-415 V	Min.	0.27
	Max.	2.13

UPE 100-60 F is also available with bronze housing, type B.



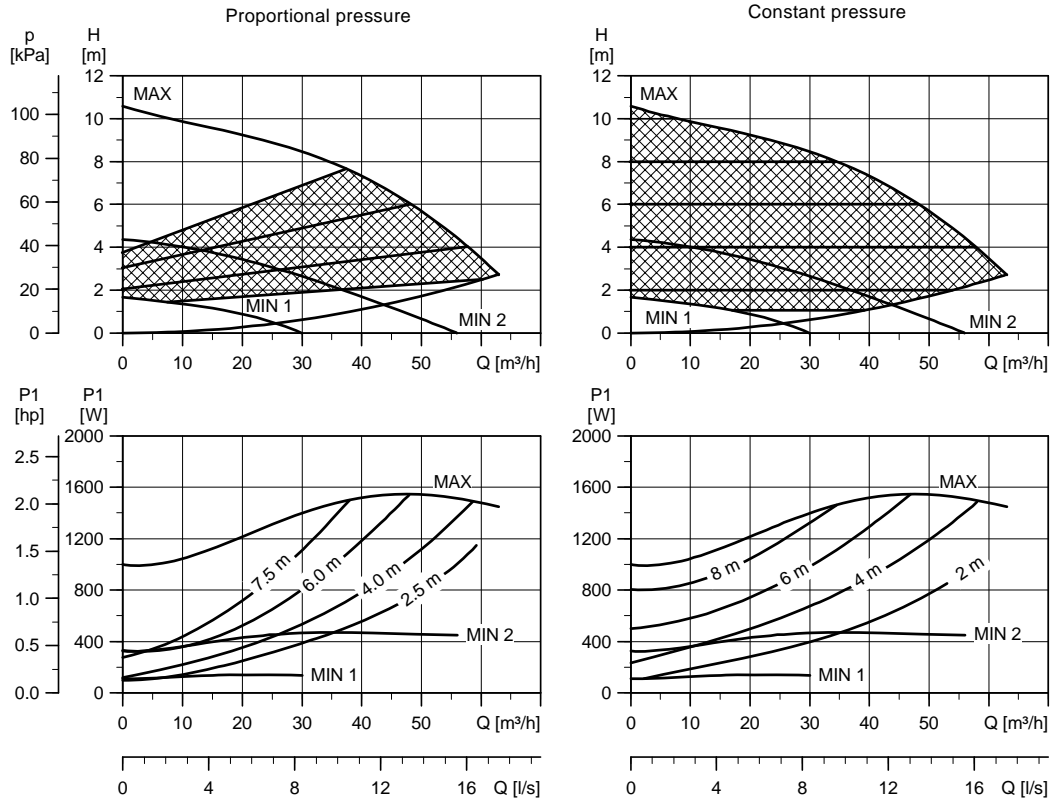
TM02 0697 5000

Dimensions and weights

Pump type	Dimensions [mm]																Weights [kg]★		Ship. vol. [m ³]				
	L1	L2	L3	B1	B2	B4	B5	B7	B8	B9	H1	H2	H3	H4	D1	D2	D3	D4		D5	M	Net	Gross
UPE 100-60 F (PN 6)	450	-	225	170	205	175	125	200	217	173	122	313	435	186	100	158	170	220	19	M16	51.7	53.9	0.071
UPE 100-60 F (PN 10)	450	-	225	170	205	175	125	200	217	173	122	313	435	186	100	158	180	220	19	M16	49.2	51.4	0.071

★ Weights of bronze versions are approx. 10 % higher.

UPE 80-120 F

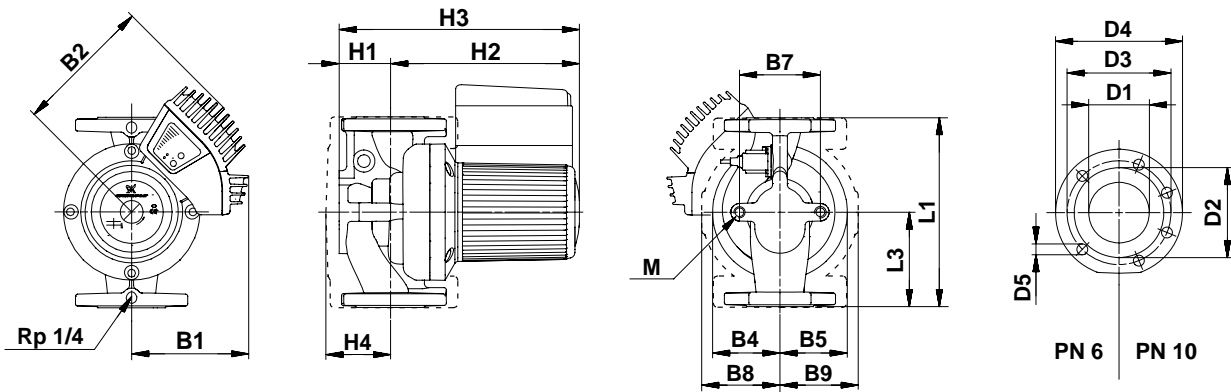


TM00 9409 2002

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
3 x 400-415 V	Min.	110
	Max.	1550

UPE 80-120 F is also available with bronze housing, type B.



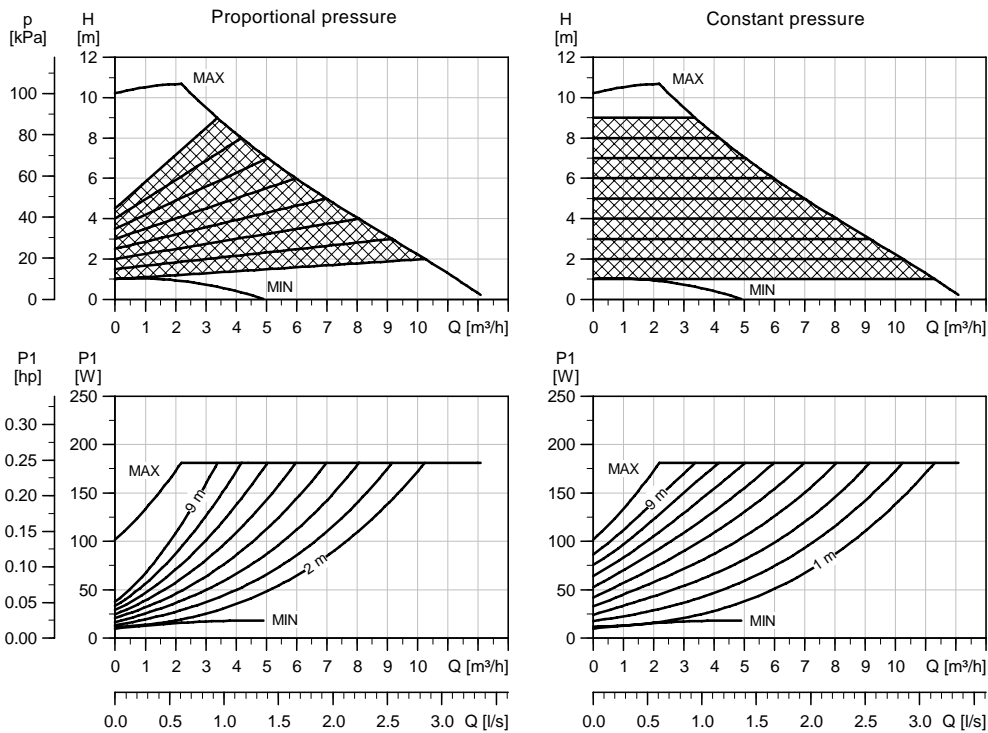
TM02 0697 5000

Dimensions and weights

Pump type	Dimensions [mm]																			Weights* [kg]		Ship. vol. [m³]	
	L1	L2	L3	B1	B2	B4	B5	B7	B8	B9	H1	H2	H3	H4	D1	D2	D3	D4	D5	M	Net		Gross
UPE 80-120 F (PN 6)	360	-	180	170	205	125	100	160	180	152	97	294	391	160	80	138	150	200	19	M16	41.7	43.3	0.043
UPE 80-120 F (PN 10)	360	-	180	170	205	125	100	160	180	152	97	294	391	160	80	138	160	200	19	M16	40.2	41.8	0.043

* Weights of bronze versions are approx. 10 % higher.

MAGNA D 40-100 F

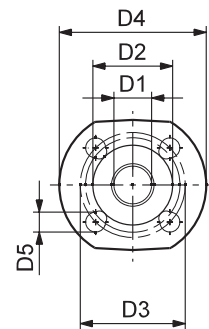
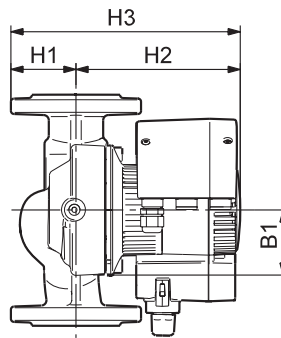
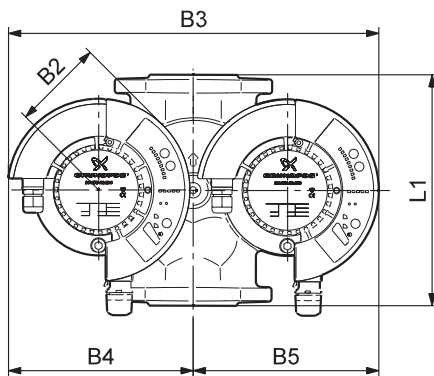


TM031566 2305

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230-240 V	Min.	0.09
	Max.	1.26

Curves and electrical data apply to one operating pump head.

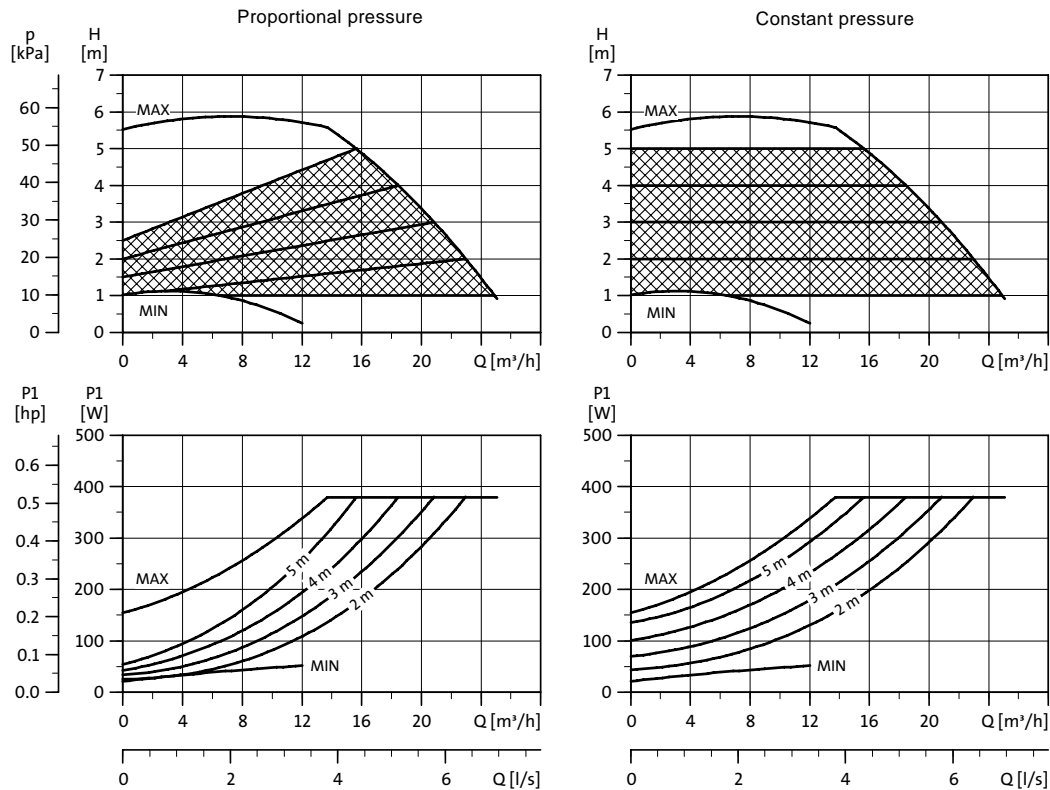


TM03 1024 1405

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]															Weight [kg]		Ship. vol. [m³]
	L1	B1	B2	B3	B4	B5	H1	H2	H3	D1	D2	D3	D4	D5	PN	Gross		
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	

MAGNA D 50-60 F

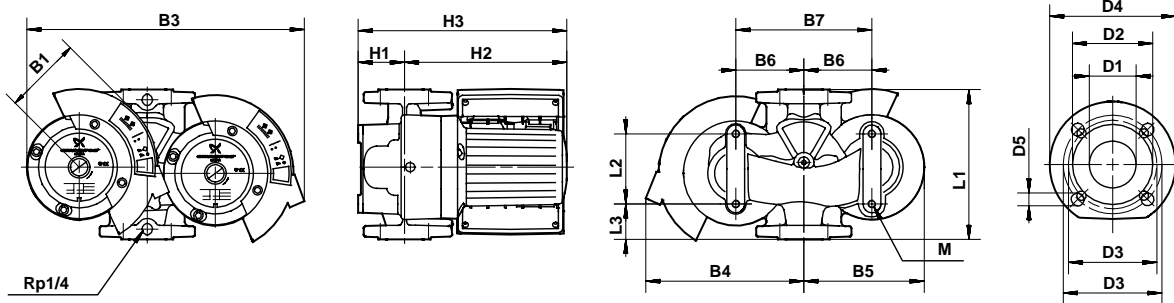


TM02 1912 2204

Electrical data

U_n [V]		P_1 [W]	$I_{1/I}$ [A]
1 x 230-240 V	Min.	25	0.17
	Max.	400	1.7

Curves and electrical data apply to one operating pump head.

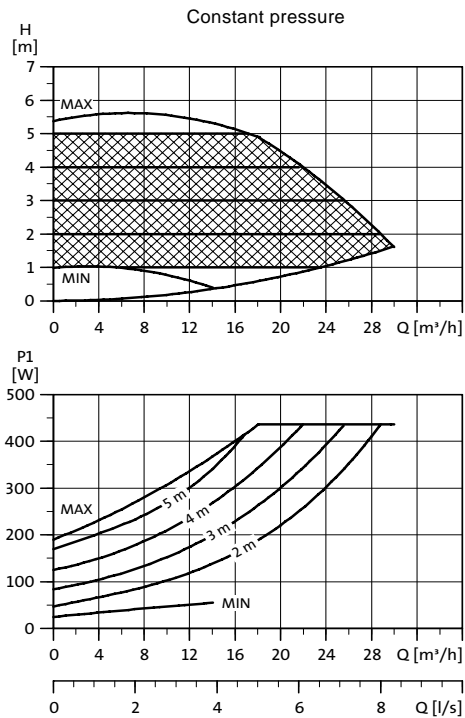
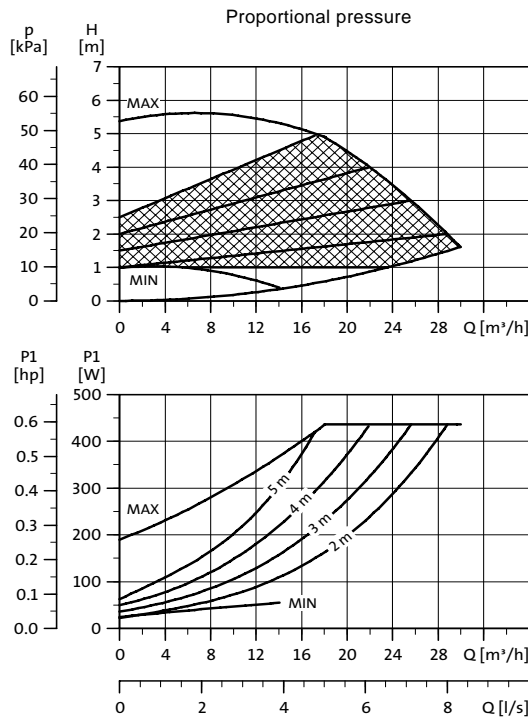


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m ³]	
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M	Net		Gross
MAGNA D 50-60 F	280	126	60	115	485	270	215	120	240	88	234	322	50	102	110/125	165	14/19	M12	36	43.5	0.13

MAGNA D 65-60 F

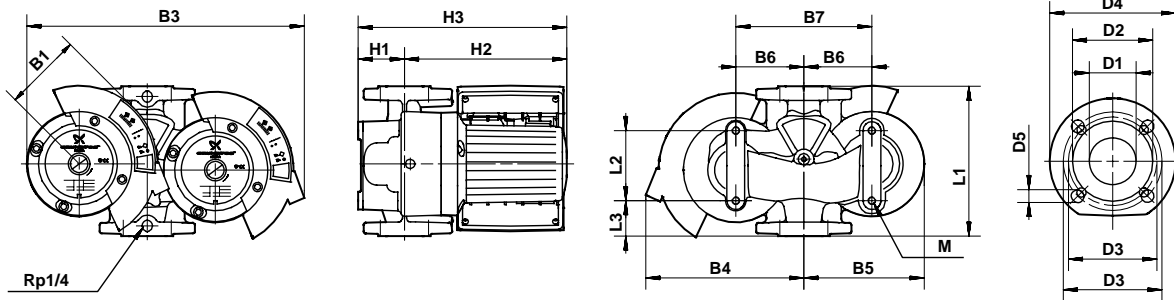


TM02 1913 2204

Electrical data

U_n [V]	P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	25
	Max.	450

Curves and electrical data apply to one operating pump head.

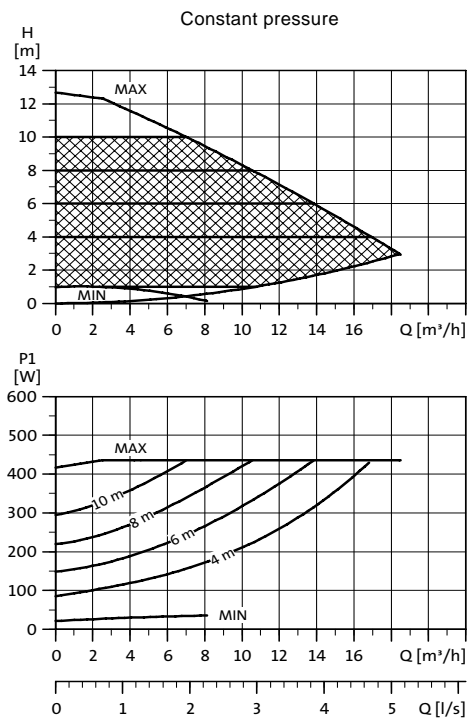
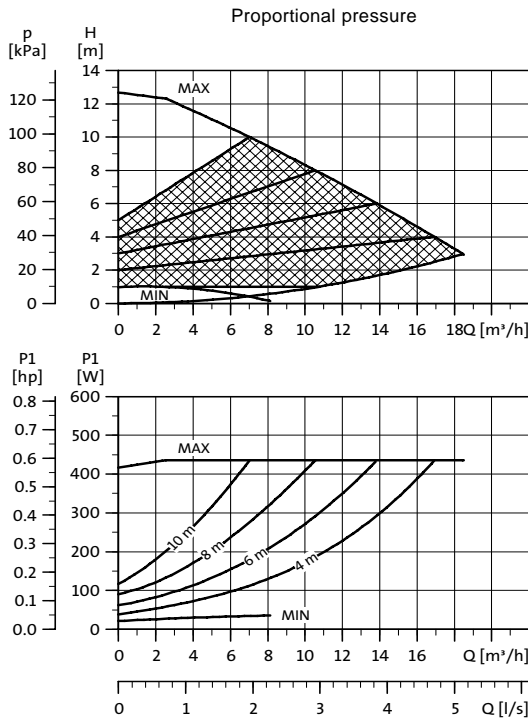


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]	
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M	Net		Gross
MAGNA D 65-60 F	340	126	60	115	480	270	215	120	240	88	242	330	65	119	130/145	185	14/19	M12	42	49	0.13

MAGNA D 32-120 F

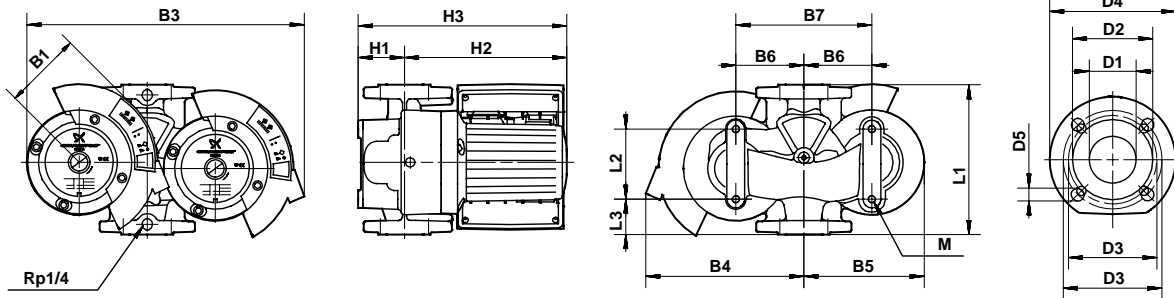


TM02 1910 2204

Electrical data

U_n [V]	P_1 [W]	$I_{l/1}$ [A]
1 x 230-240 V	Min.	25
	Max.	430

Curves and electrical data apply to one operating pump head.

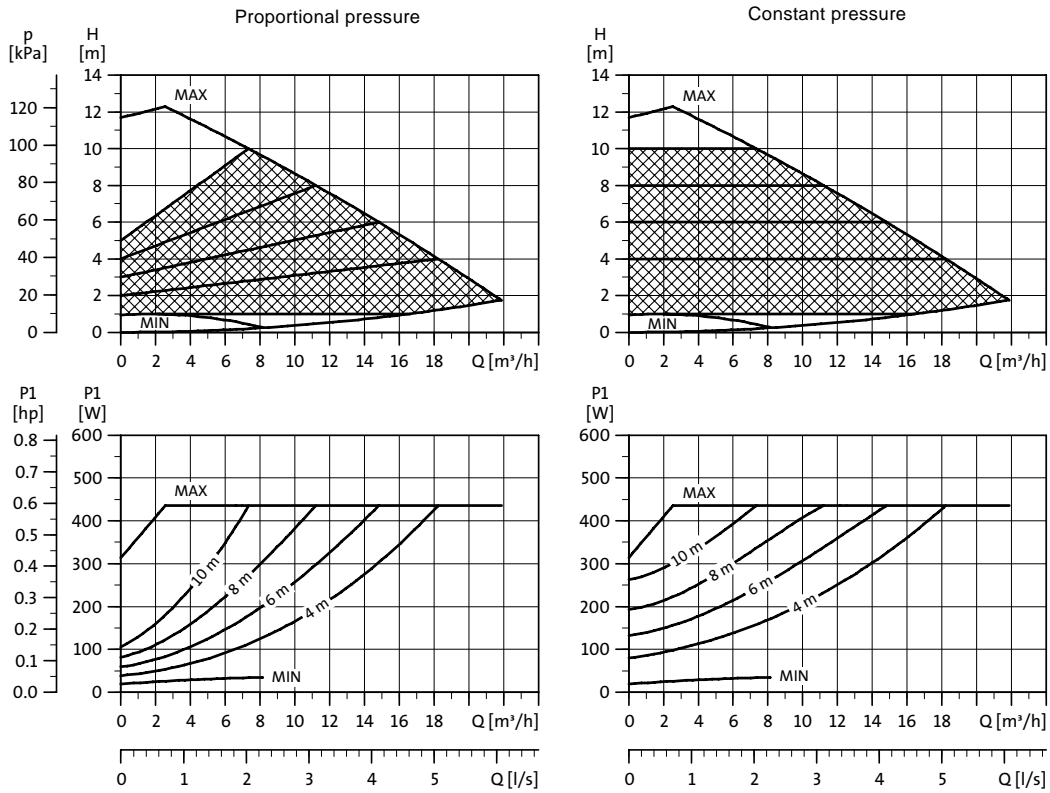


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																Weights [kg]		Ship. vol. [m³]		
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA-D 32-120 F	220	103	52	115	465	260	190	100	200	85	240	325	32	76	90/100	140	14/19	M12	38	43	0.057

MAGNA D 40-120 F

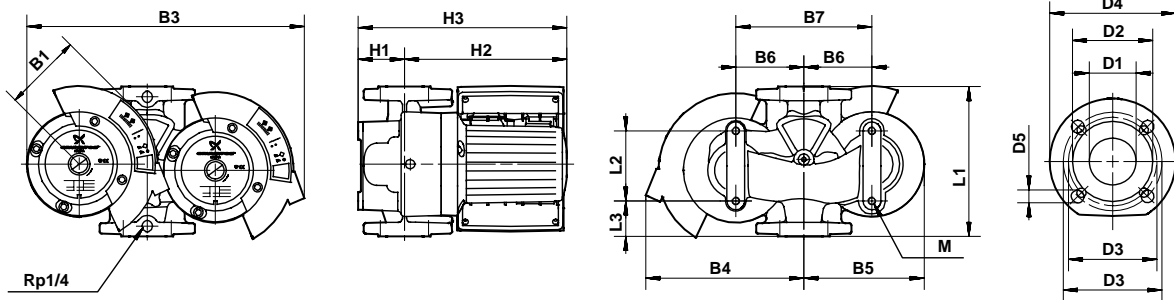


TM02 1911 2204

Electrical data

U_n [V]		P_1 [W]	$I_{1/M}$ [A]
1 x 230-240 V	Min.	25	0.17
	Max.	450	2.0

Curves and electrical data apply to one operating pump head.

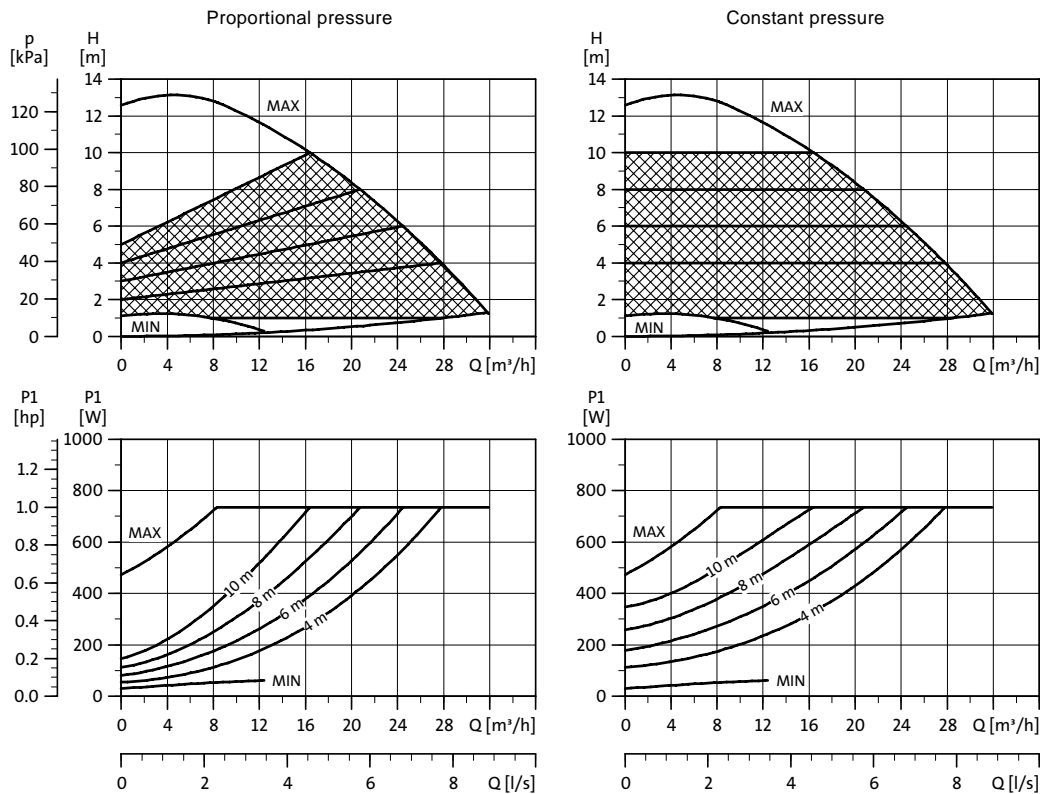


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]	
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M	Net		Gross
MAGNA D 40-120 F	250	125	45	115	465	260	187	100	200	87	234	321	40	84	100/110	150	14/19	M12	40	45	0.057

MAGNA D 50-120 F

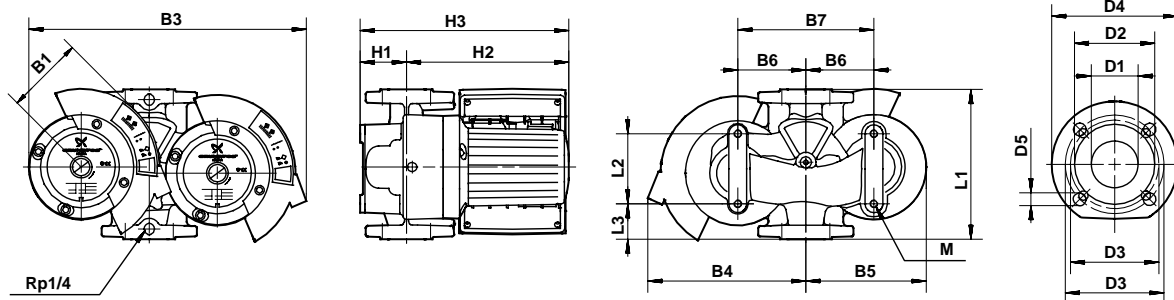


TM02 8814 2204

Electrical data

U_n [V]	P_1 [W]	I_{l1} [A]
1 x 230-240 V	Min.	35
	Max.	800

Curves and electrical data apply to one operating pump head.

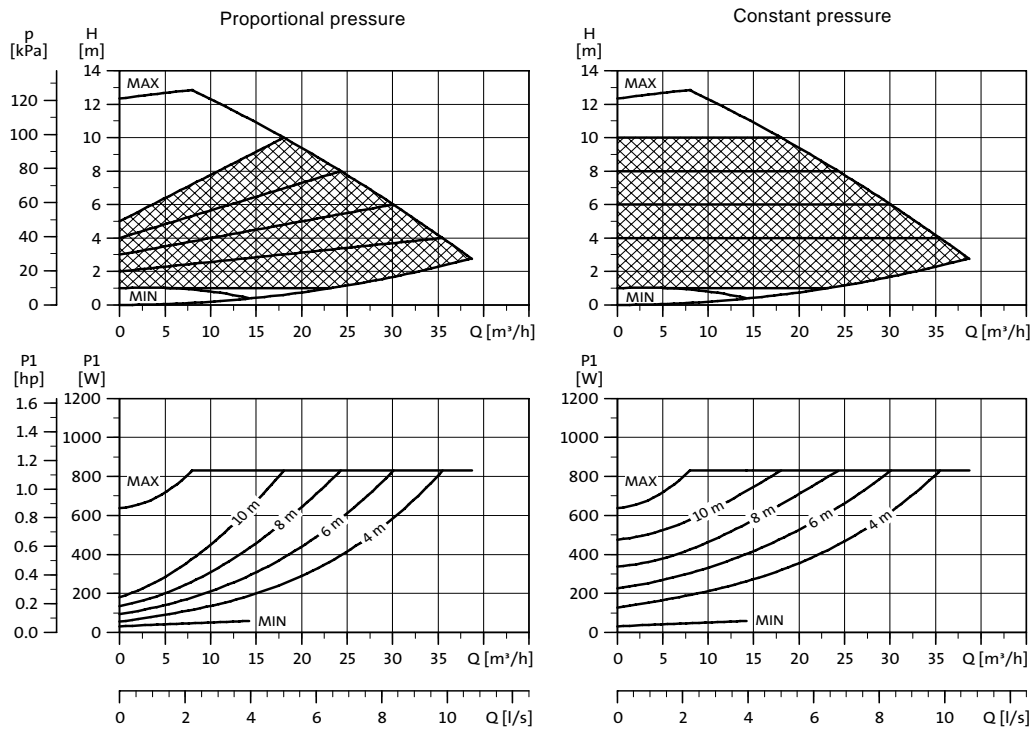


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																Weights [kg]		Ship. vol. [m ³]		
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA D 50-120 F	280	126	60	125	490	275	215	120	240	88	234	322	50	102	110/125	165	14/19	M12	43	50.5	0.13

MAGNA D 65-120 F

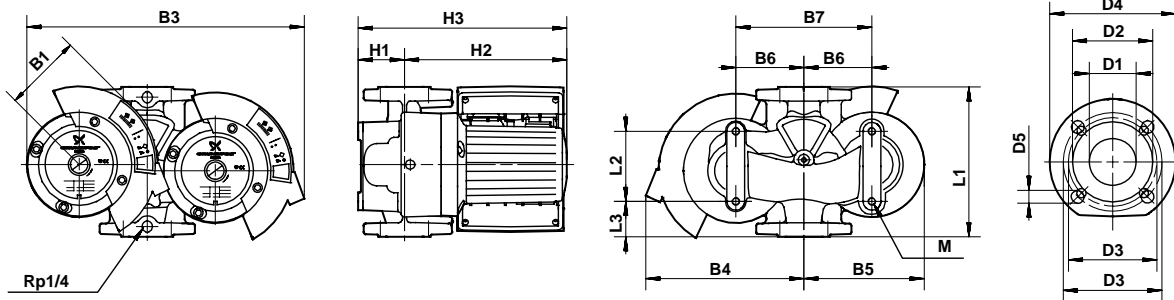


TM02 8815 2204

Electrical data

U_n [V]	P_1 [W]	I_{M1} [A]
1 x 230-240 V	Min.	35
	Max.	900

Curves and electrical data apply to one operating pump head.

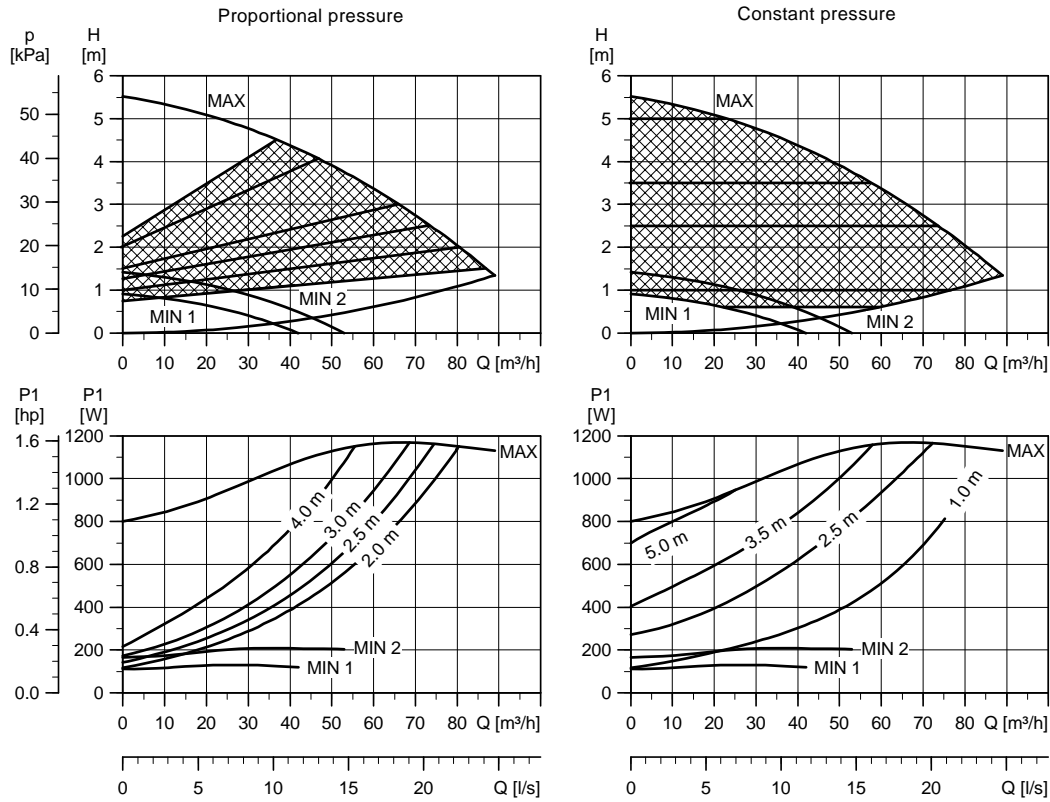


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																Weights [kg]		Ship. vol. [m ³]		
	L1	L2	L3	B1	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M		Net	Gross
MAGNA D 65-120 F	340	126	60	125	490	275	215	120	240	88	242	330	65	119	130/145	185	14/19	M12	49	56	0.13

UPED 100-60 F

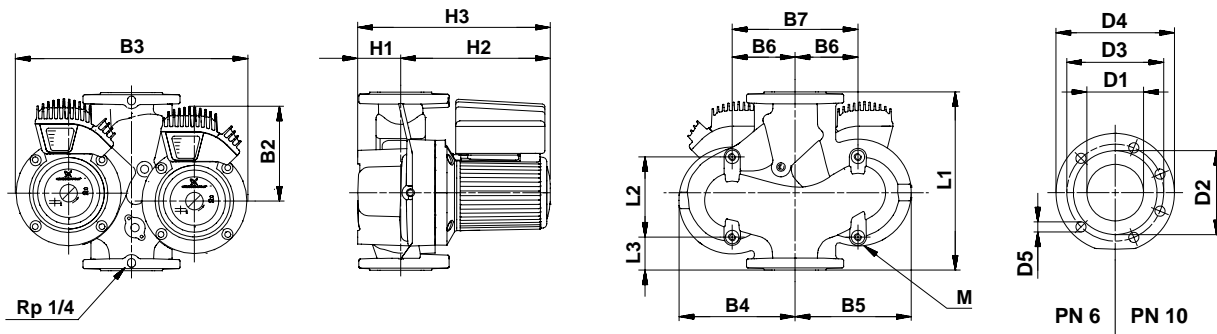


TM00 9410 2002

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
3 x 400-415 V	Min.	110	0.27
	Max.	1160	2.13

Curves and electrical data apply to one operating pump head.

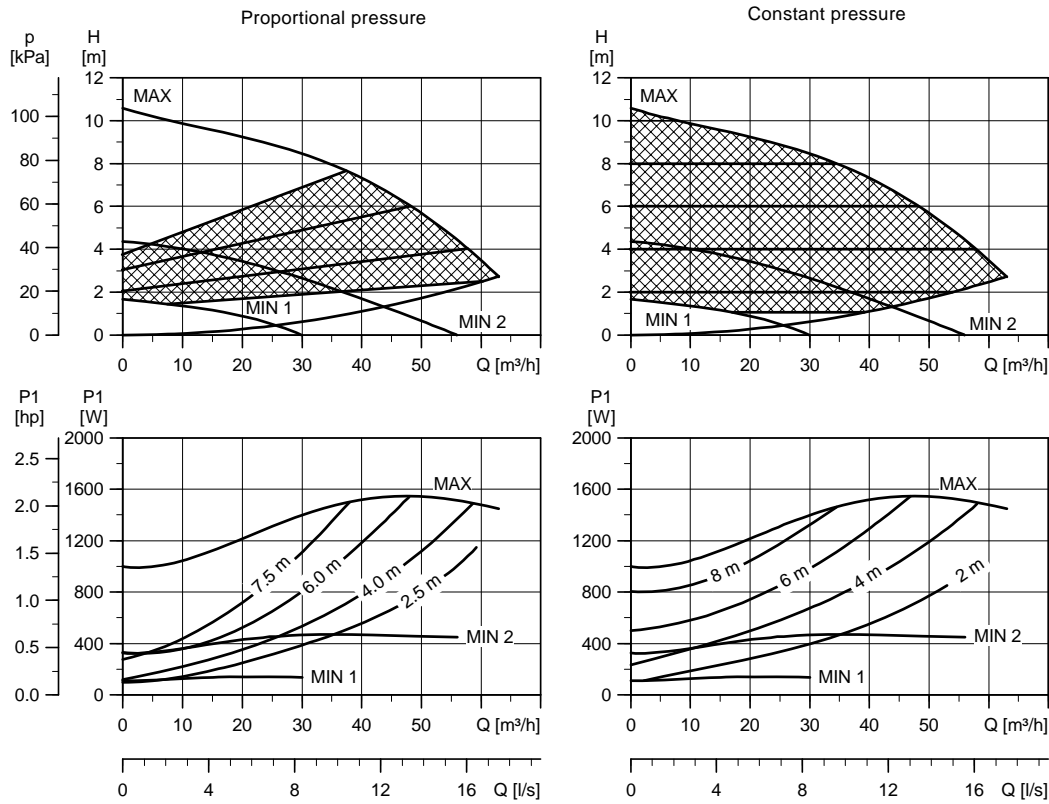


TM02 0695 5000

Dimensions and weights

Pump type	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]		
	L1	L2	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M		Net	Gross
UPED 100-60 F (PN 6)	450	221	83	-	205	595	280	315	140	280	122	313	435	100	158	170	220	19	M16	92.4	96.4	0.112
UPED 100-60 F (PN 10)	450	221	83	-	205	595	280	315	140	280	122	313	435	100	158	180	220	19	M16	91.9	95.9	0.112

UPED 80-120 F

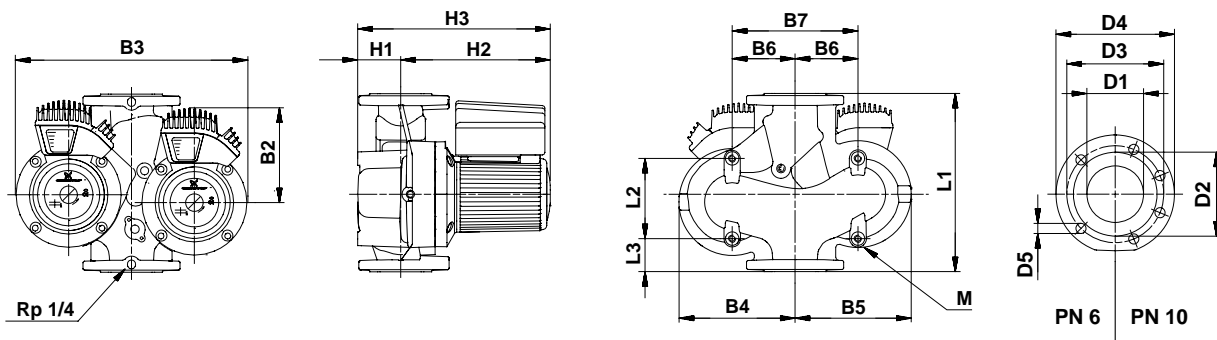


TM00 9409 2002

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
3 x 400-415 V	Min.	110	0.27
	Max.	1550	2.56

Curves and electrical data apply to one operating pump head.



TM02 0695 5000

Dimensions and weights

Pump type	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]		
	L1	L2	L3	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	D1	D2	D3	D4	D5	M		Net	Gross
UPED 80-120 F (PN 6)	360	173	53	-	205	460	225	235	120	240	97	294	391	80	138	150	200	19	M16	65.4	69.4	1.112
UPED 80-120 F (PN 10)	360	173	53	-	205	460	225	235	120	240	97	294	391	80	138	160	200	19	M16	64.9	68.9	0.12

Base plates

Base plates including hexagon screws are available on request.

Pump type	Hexagon screws	Product number
MAGNA 50-60 F, 65-60 F MAGNA 32-120 F, 50-120 F MAGNA 40-120 F, 65-120 F	2 x M12 x 20 mm	495035
MAGNA 32-120 FN, 40-120 FN MAGNA 50-60 FN, 65-60 FN MAGNA 50-120 FN, 65-120 FN	2 x M12 x 20 mm	485031

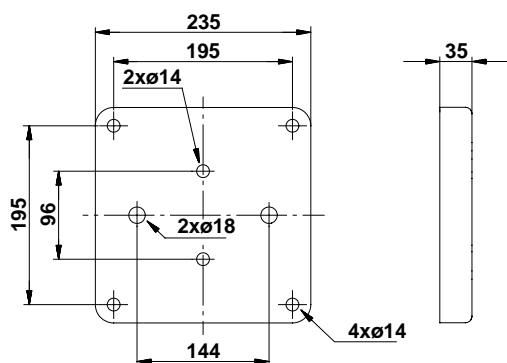


Fig. 31 Base plate for MAGNA

Pump type	Hexagon screws	Product number
UPE 100-60 F UPE 80-120 F	2 x M16 x 30 mm	96405914

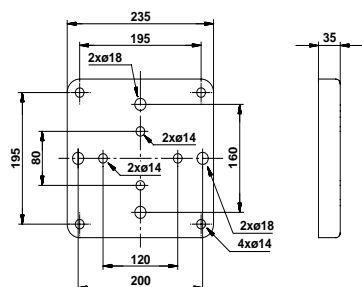


Fig. 32 Base plate for UPE

Adapter flanges

Pump type	Pressure stage	Size	Product number
MAGNA 32	PN 10	Rp 1 1/4	539703
		32 mm	539704
MAGNA 40	PN 10	Rp 1 1/2	539701
		40 mm	539702
MAGNA 50	PN 10	Rp 2	549801
		50 mm	549802

Rp: Flange with internal thread (ISO seal thread).

mm: Flange for welding/soldering.

Counter flanges for pumps with cast-iron pump housing

Pump type	Pressure stage	Size	Product number
MAGNA, UPE(D) 32	PN 10	Rp 1 1/4	539703
		32 mm	539704
MAGNA, UPE(D) 40	PN 10 PN 16	Rp 1 1/2	539701
		40 mm	539702
MAGNA, UPE(D) 50	PN 10	Rp 2	549801
		50 mm	549802
MAGNA, UPE(D) 65	PN 10	Rp 2 1/2	559801
		65 mm	559802
UPE(D) 80	PN 6	Rp 3	569902
		80 mm	569901
	PN 10	Rp 3	569802
		80 mm	569801
UPE(D) 100	PN 6	Rp 4	579901
		100 mm	579902
	PN 10	Rp 4	579801
		100 mm	579802

One set consists of two flanges including gaskets and bolts.

Counter flanges according to ISO 7005-1.

Counter flanges for pumps with bronze pump housing

Pump type	Pressure stage	Size	Product number
UPE 80	PN 6	Rp 3	96405735
		80 mm	569911
UPE 80	PN 10	Rp 3	569812
		80 mm	569811
UPE 100	PN 6	Rp 4	96405737
		PN 10	Rp 4

One set consists of two flanges including gaskets and bolts.

Counter flanges according to ISO 7005-1.

Blanking flanges

Pump type	Product number
MAGNA (D) 32-120 F MAGNA (D) 40-120 F MAGNA (D) 50-60 F MAGNA (D) 50-120 F MAGNA (D) 65-60 F MAGNA (D) 65-120 F	545048
UPED 80-120 F UPED 100-60 F	565055

Union and valve kits

Union kits

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

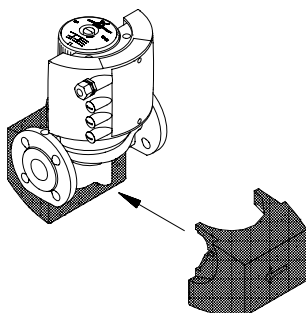
Valve kits

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

Insulation kits

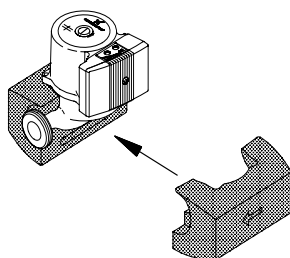
MAGNA/UPE single-head pumps can be fitted with insulating shells. A kit consists of two shells.

All MAGNA are all delivered with insulating shells for heating applications. Insulation shells are optional for UPE pumps.



TM02 1136 0501

Fig. 1 Fitting the insulating shells to a MAGNA pump



TM00 4509 3494

Fig. 2 Fitting the insulating shells to a UPE pump

Insulating shells for aircondition applications

Pump type	Product number
MAGNA 32-120 F	96515226
MAGNA 40-120 F	96515227
MAGNA 50-60 F	96515228
MAGNA 50-120 F	96515228
MAGNA 65-60 F	96515229
MAGNA 65-120 F	96515229

Insulating shells for UPE

Pump type	Product number
UPE 15-40, 25-40, 32-40, 25-60, 32-60	505821
UPE 25-40 A, 25-60 A	505822
UPE 80-120 F	96434645
UPE 100-60 F	96434646

Expansion modules for MAGNA 25-60, 32-60, 25-100, 32-100, 40-100(D), 50-100

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.

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.

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 because of a fault, the signal relay is deactivated and consequently gives a signal to an external control system, e.g. 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 mounted 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 electricity supply.

Bus communication via GENIbus

The GENI module enables serial communication via an RS-485 input. The communication is carried out according to the Grundfos bus protocol, GENIbus, and enables connection to the GRUNDFOS Pump Management System 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, operating mode, etc.

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.

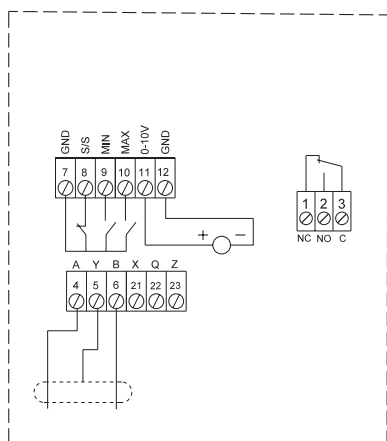
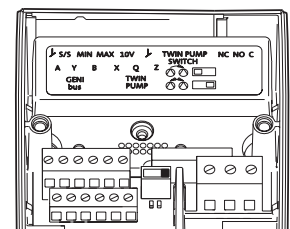


Fig. 3 Connection of GENI module

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.

Fault, ready and operating indication via signal relay

The function of the signal relay can be set with the R100.

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 because of a fault, the signal relay is deactivated and consequently gives a signal to an external control system, e.g. 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.

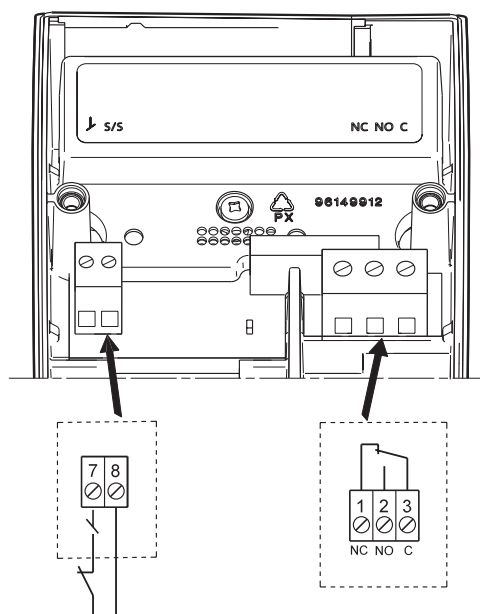


Fig. 4 Connection of relay module

TM03 0878 0905

TM03 0877 0705

Expansion modules for MAGNA (D) 50-60, 65-60, 32-120, 40-120, 50-120, 65-120

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
- LON module.

The expansion module is fitted by opening the terminal box cover and placing the module inside the terminal box.

Product	Product number
GENI module	605945
LON module	605809

GENI module

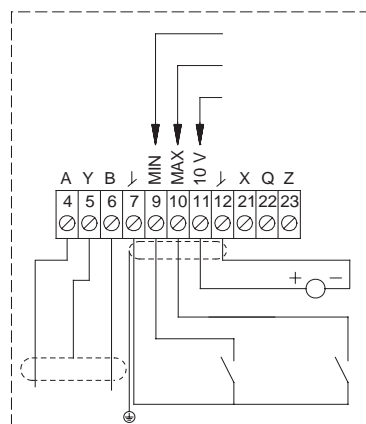
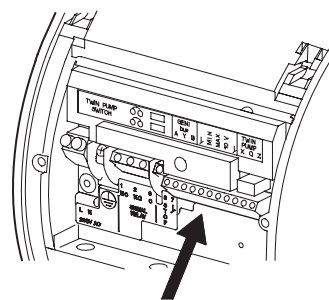
The GENI module has an input for an external 0-10 VDC analog signal transmitter (terminal 10 V and \downarrow). Via this input, the pump can be controlled by an external controller if the pump has been set to one of the following control modes:

- Constant curve
- Proportional- or constant-pressure control.

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

- Max. curve duty
- Min. curve duty.

Input signals	
Setpoint signals	<ul style="list-style-type: none"> • Max. and min. curve input External potential-free switch. Maximum contact load: 5 V, 1 mA. Screened cable. • Input for analog 0-10 V signal External signal: 0-10 VDC. Maximum load: 0.1 mA. Screened cable.
Bus input	Grundfos GENIbus protocol, RS-485. Screened cable. Lead cross section: 0.25 - 1 mm ² . Maximum cable length: 1200 m.



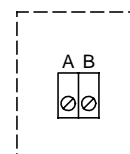
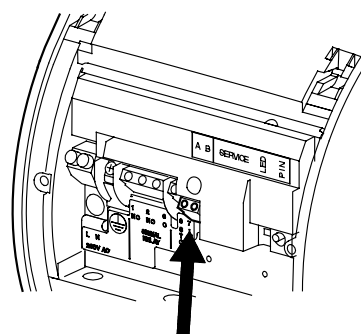
TM02 0236 1007

Fig. 5 Connection of GENI module

LON module

The LON module offers the possibility of connecting the pump to a LonWorks® network. The module is used for data transmission between a network and the MAGNA pump.

Input signals	
Bus input	LonTalk® protocol, FTT 10. Non-screened, twisted-pair cable. Lead cross section: 0.25 - 1 mm ² .



TM02 0237 0904

Fig. 6 Connection of LON module

Expansion modules for single-phase UPE

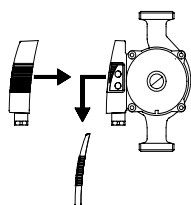
UPE single-phase pumps can be fitted with an expansion module.

Two types of expansion module are available:

- Fault signal module (MC 40/60)
- Bus module (MB 40/60).

The expansion module is fitted to the terminal box by removing the existing terminal box cover and fitting the new cover incorporating the module to the terminal box.

The new cover increases the height of the terminal box by approx. 20 mm.



TM00 4463 3494

Fig. 7 Fitting a module to a UPE pump

Pump type	Fault signal module		Bus module	
	Type	Product number	Type	Product number
UPE xx-40 (A)	MC 40/60	605663	MB 40/60	605518
UPE xx-60 (A)				

Fault signal module MC 40/60

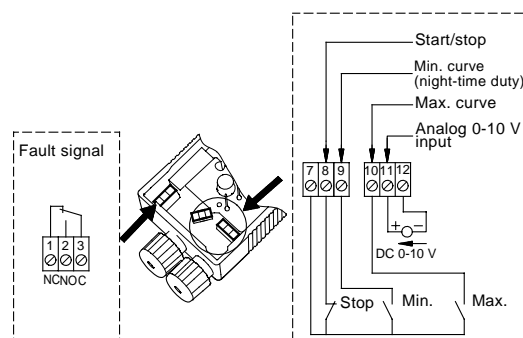
Via an internal relay, the fault signal module gives access to a potential-free fault signal.

In addition to this fault signal output, the module has four inputs for external signals for

- start/stop of pump
- max. curve duty
- min. curve duty (night-time duty)
- analog 0-10 V input.

Input and output signals

External start/stop input	External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA.
Setpoint signals	<ul style="list-style-type: none"> • Max. and min. curve input External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA. • Input for analog 0-10 V signal External signal: 0-10 VDC. Maximum contact load: 0.1 mA.
Signal output	Internal potential-free changeover contact. Screened cable. Maximum contact load: 250 VAC, 2 A. Minimum contact load: 5 VDC, 1 mA.



TM02 2050 3301

Fig. 8 Connection of MC 40/60

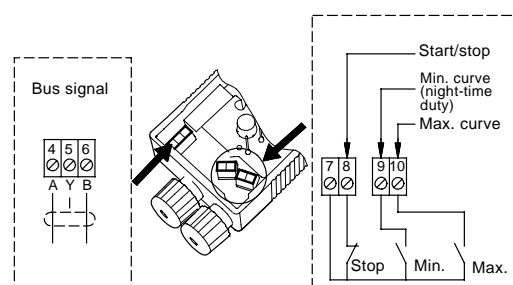
Bus module MB 40/60

The bus module enables serial communication with the pump via an RS-485 input. In addition to the bus input, the bus module has three inputs for external signals for

- start/stop of pump
- max. curve duty
- min. curve duty (night-time duty).

Input signals

External start/stop input	External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA.
Setpoint signals	Max. and min. curve input External potential-free switch. Screened cable. Maximum contact load: 5 V, 2.7 mA.
Bus input	Grundfos GENibus protocol, RS-485. Screened cable. Lead cross section: 0.25 - 1 mm ² . Maximum Cable length: 1200 m.



TM02 2052 3301

Fig. 9 Connection of MB 40/60

R100

The R100 is designed for wireless communication with the pump. The 100 communicates with the pump via infra-red light.

Product	Product number
R100	625333

PMU 2000

The PMU 2000 is used for communication via bus, enabling

- parallel connection of up to eight pumps
- cascade control
- central reading out of various status information.

Product	Description	Product number
PMU 2000, IP 42	Max. 8 pumps	62572847
PMU 2000, IP 00	Max. 8 pumps	62572837

PCU 2000

The PCU 2000 is used for communication via bus, enabling

- fault indication for each pump
- external setpoint influence
- start/stop of system.

Product	Description	Product number
PCU 2000, IP 42	Max. 2 pumps	62552241
PCU 2000, IP 00	Max. 2 pumps	62552231
PCU 2000, IP 42	Max. 4 pumps	62552441
PCU 2000, IP 00	Max. 4 pumps	62552431
Expansion modules	For 2 pumps	62500211

G10-LON interface

The G10-LON interface is used in connection with data transmission between a LonWorks® network and electronically controlled Grundfos pumps applying the Grundfos GENIbus protocol.

Product	Product number
G10-LON interface	605726

Prefilter

A prefilter must be installed if classification of the UPE pump to overvoltage property class 1 or 2 in accordance with VDE 0160/12.90 is required.

Three-phase UPE pumps require three prefilters.

Product	Product number
Prefilter	62582200

MAGNA/UPE, cast iron

Pump type	Product number					
	Pipe connection			Flange connection		
	1"	1 1/2"	2"	PN 6/PN 10	PN 6	PN 10
Single-head pumps						
MAGNA 25-60	-	96281022	-	-	-	-
MAGNA 32-60	-	-	96281023	-	-	-
MAGNA 50-60 F	-	-	-	96513627	-	-
MAGNA 65-60 F	-	-	-	96513628	-	-
MAGNA 25-100	-	96281015	-	-	-	-
MAGNA 32-100	-	-	96281016	-	-	-
MAGNA 32-100 F	-	-	-	96281018	-	-
MAGNA 40-100 F	-	-	-	96281019	-	-
MAGNA 50-100 F	-	-	-	96281020	-	-
MAGNA 32-120 F	-	-	-	96513625	-	-
MAGNA 40-120 F	-	-	-	96513626	-	-
MAGNA 50-120 F	-	-	-	96504872	-	-
MAGNA 65-120 F	-	-	-	96504873	-	-
UPE 15-40	59504519	-	-	-	-	-
UPE 25-40	-	59544092	-	-	-	-
UPE 32-40	-	-	59584406	-	-	-
UPE 25-40 A	-	59544094	-	-	-	-
UPE 25-60 130	-	59526544	-	-	-	-
UPE 25-60 180	-	59546574	-	-	-	-
UPE 32-60	-	-	59586505	-	-	-
UPE 25-60 A	-	59566507	-	-	-	-
UPE 100-60 F	-	-	-	-	96402616	96402618
UPE 80-120 F	-	-	-	-	96402442	96402443
Twin-head pumps						
MAGNA D 50-60 F	-	-	-	96513641	-	-
MAGNA D 65-60 F	-	-	-	96513642	-	-
MAGNA D 40-100 F	-	-	-	96281021	-	-
MAGNA D 32-120 F	-	-	-	96513629	-	-
MAGNA D 40-120 F	-	-	-	96513640	-	-
MAGNA D 50-120 F	-	-	-	96504874	-	-
MAGNA D 65-120 F	-	-	-	96504875	-	-
UPED 100-60 F	-	-	-	-	96405833	96405834
UPED 80-120 F	-	-	-	-	96403133	96403134

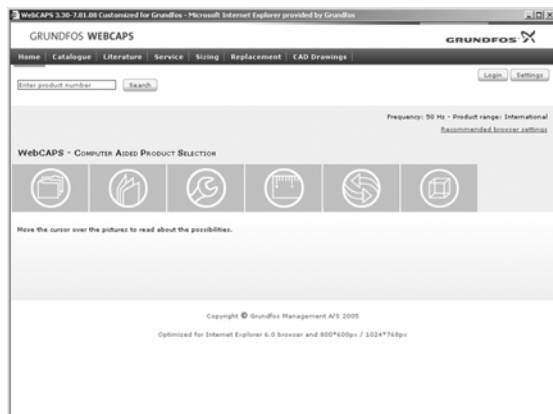
MAGNA, stainless steel

Pump type	Product number	
	Pipe connection	Flange connection
	G 2	PN 6/PN 10
MAGNA 32-60 N	96700323	-
MAGNA 32-100 N	96281017	-
MAGNA 32-120 FN	-	96513643
MAGNA 40-120 FN	-	96513644
MAGNA 50-60 FN	-	96513645
MAGNA 65-60 FN	-	96513646
MAGNA 50-120 FN	-	96504876
MAGNA 65-120 FN	-	96504877

UPE, bronze

Pump type	Product number		
	Pipe connection	Flange connection	
	1 1/2"	PN 6	PN 10
UPE 25-40 B	59544093	-	-
UPE 25-60 B	59736517	-	-
UPE 80-120 F B	-	96405829	96402446
UPE 100-60 F B	-	96405830	96405832

WebCAPS

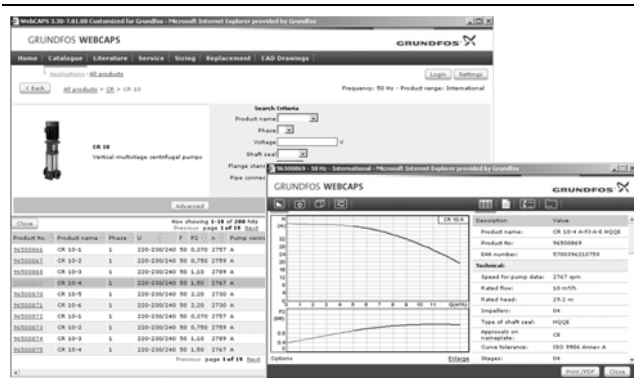


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WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

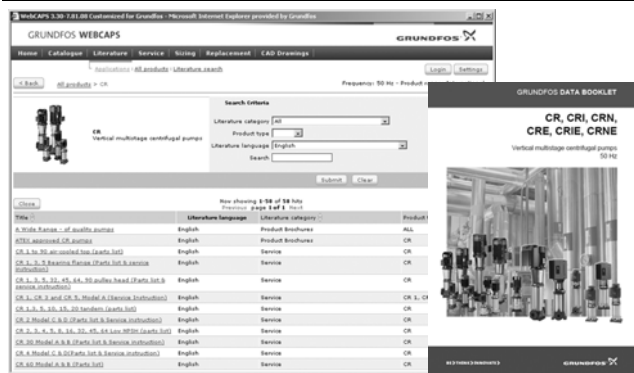
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

This section is based on fields of application and pump types, and contains

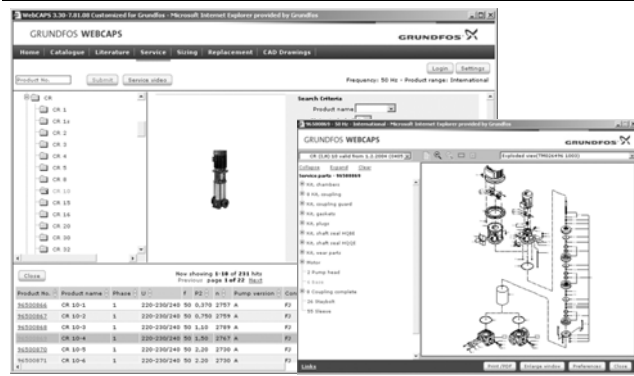
- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access 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, this 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

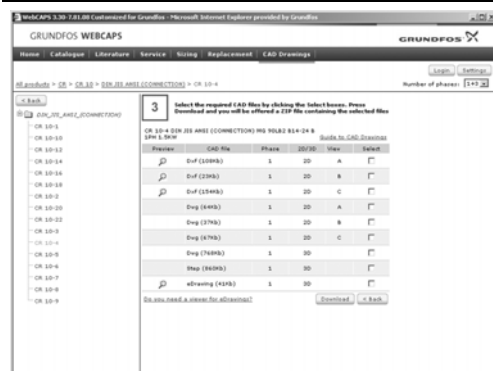
- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, 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. 10 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 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 CD-ROM and updated once a year.

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Subject to alterations.