

MAGNA, UPE

Series 2000 circulator pumps



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MAGNA and UPE

The MAGNA/UPE ranges of circulator pumps are specially designed for the following systems:

- heating systems up to 2100 kW ($\Delta t = 20\text{ °C}$)
- domestic hot-water systems (stainless-steel or bronze pump housing)
- air-conditioning systems (+2 °C) up to 265 kW ($\Delta t 6\text{ °C}$) (MAGNA only).

Duty range

Data	MAGNA (D)	UPE(D)
Maximum flow, Q	38 m ³ /h	100 m ³ /h
Maximum head, H	13 m	11.5 m
Maximum system pressure	10 bar	10 bar
Liquid temperature*	+2 °C to +95 °C	+2 °C to +95 °C

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



Fig. 1 MAGNA/UPE pump ranges

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Characteristic features

- AUTO_{ADAPT} (MAGNA pumps only).
- Proportional-pressure duty.
- Constant-pressure duty.
- Constant-curve duty.
- Max. or min. curve duty.
- Parallel connection of pumps with Control MPC Series 2000.
- No external motor protection required.
- Insulation shells are part of the single-head MAGNA pumps.

Benefits

- Low noise level.
- Safe selection.
- Simple installation.
- Low energy consumption, all MAGNA pumps are energy class "A".
- In addition to this, the AUTO_{ADAPT} 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.
Air-condition 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.

GRUNDFOS MAGNA pumps can be used for pumping glycol/water liquids up to 50 %, see *Operating conditions*. Please note that glycol will reduce the hydraulic performance.

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
 Z: UPE(D) model E and future models
 Port-to-port [mm]

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

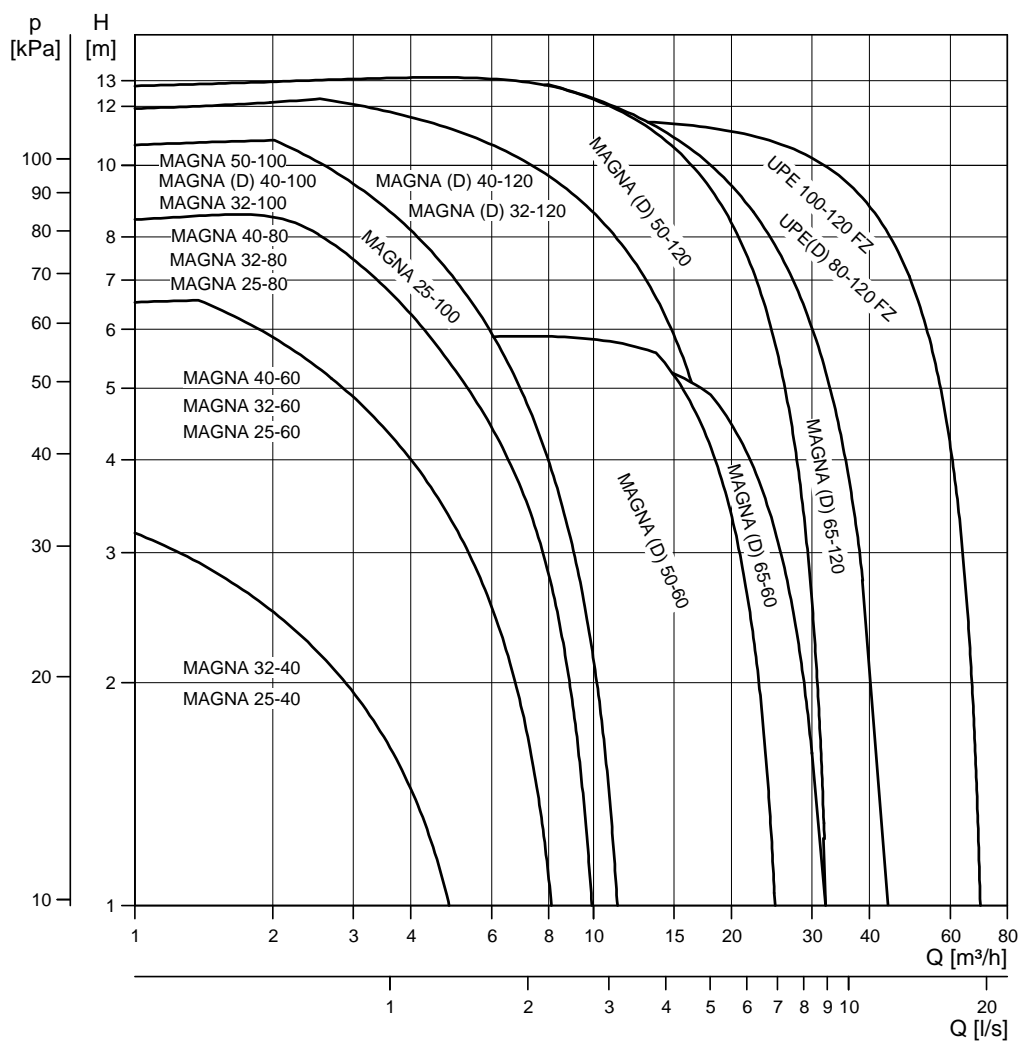


Fig. 2 Performance range

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Product range

Pump type	Supply voltage		Port-to-port length [mm]	Pipe connection			Flange connection			Data sheet
	1 x 230-240 V	1 x 230 V		1"	1 1/2"	2"	PN 6/PN 10	PN 6	PN 10	Page
Single-head pumps										
MAGNA 25-40	•		180	•						24
MAGNA 25-40 N	•		180	•						24
MAGNA 25-60	•		180	•						25
MAGNA 25-60 N	•		180	•						25
MAGNA 25-80	•		180	•						26
MAGNA 25-80 N	•		180	•						26
MAGNA 32-40	•		180			•				27
MAGNA 32-40 N	•		180			•				27
MAGNA 32-60	•		180			•				28
MAGNA 32-60 N	•		180			•				28
MAGNA 32-80	•		180			•				29
MAGNA 32-80 N	•		180			•				29
MAGNA 32-80 F	•		180				•			30
MAGNA 25-100	•		180		•					31
MAGNA 25-100N	•		180		•					31
MAGNA 32-100	•		180			•				32
MAGNA 32-100 N	•		180			•				32
MAGNA 32-100 F	•		220				•			33
MAGNA 40-60 F	•		220				•			34
MAGNA 40-80 F	•		220				•			35
MAGNA 40-100 F	•		220				•			36
MAGNA 50-100 F	•		240				•			37
MAGNA 32-120 F	•		220				•			38
MAGNA 32-120 FN	•		220				•			38
MAGNA 40-120 F	•		250				•			39
MAGNA 40-120 FN	•		250				•			39
MAGNA 50-60 F	•		280				•			40
MAGNA 50-60 FN	•		280				•			40
MAGNA 65-60 F	•		340				•			41
MAGNA 65-60 FN	•		340				•			41
MAGNA 50-120 F	•		280				•			42
MAGNA 50-120 FN	•		280				•			42
MAGNA 65-120 F	•		340				•			43
MAGNA 65-120 FN	•		340				•			43
UPE 80-120 FZ		•	360					•	•	44
UPE 100-120 FZ		•	450					•	•	45
Twin-head pumps										
MAGNA D 40-100 F	•		220				•			46
MAGNA D 32-120 F	•		220				•			47
MAGNA D 40-120 F	•		250				•			48
MAGNA D 50-60 F	•		280				•			49
MAGNA D 65-60 F	•		340				•			50
MAGNA D 50-120 F	•		280				•			51
MAGNA D 65-120 F	•		340				•			52
UPED 80-120 FZ		•	360					•	•	53

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.

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 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.

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.

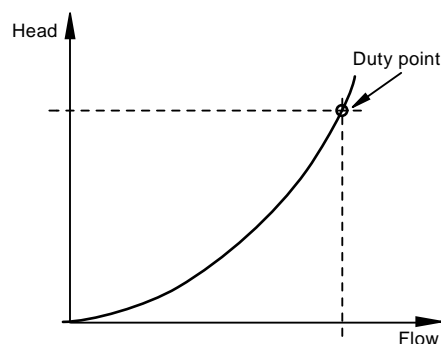


Fig. 3 System characteristic

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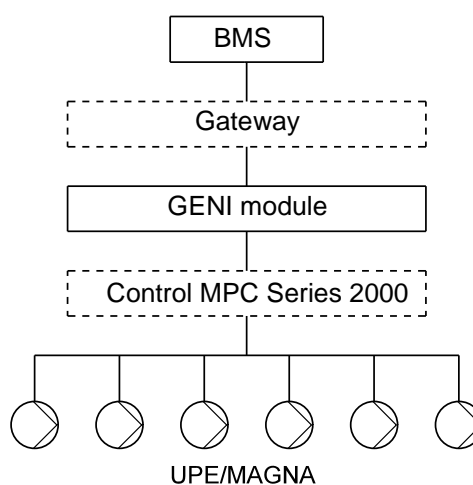


Fig. 4 Building management system with six pumps in parallel controlled via a Control MPC Series 2000

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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	Maximum viscosity = 15 mm ² /s (~ 50 % glycol at +2 °C)

Liquid temperature

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

Ambient conditions

Ambient temperature during operation: 0 °C to +40 °C

Ambient temperature during storage/transport: -30 °C to +55 °C, MAGNA (D)

-10 °C to +40 °C, UPE(D)

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	95 °C
	Inlet pressure [bar] / [MPa]	
MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100	0.10 / 0.01	0.35 / 0.035
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	0.90 / 0.09	1.20 / 0.12
UPE(D) 80-120 FZ	0.50 / 0.05	1.0 / 0.1
UPE 100-120 FZ	0.50 / 0.05	1.0 / 0.1

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	MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100	MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	UPE(D) FZ
Enclosure class	IP44 (IEC 85)	IP44 (IEC 85)	IP44 (IEC 85)
Insulation class	F	F	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.	External potential-free switch. Screened cable. Maximum contact load: 5 V, 0.5 mA.
Setpoint signals	GENI module ★	GENI module ★	<ul style="list-style-type: none"> • Min. curve input External potential-free switch. Screened cable. Maximum contact load: 5 V, 0.5 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.	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: <ul style="list-style-type: none"> • LON • Modbus RTU • BACnet MS/TP • GSM/GPRS • Profibus. 	GENI module ★ LON module ★ Grundfos Communication Interface Unit (CIU) for: <ul style="list-style-type: none"> • Modbus RTU • BACnet MS/TP • GSM/GPRS • Profibus. 	Grundfos GENIbus protocol. Screened cable. Lead cross section: 0.25 - 1 mm ² . Maximum cable length: 1200 m. Grundfos Communication Interface Unit (CIU) for: <ul style="list-style-type: none"> • LON • Modbus RTU • BACnet MS/TP • GSM/GPRS • Profibus.
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 V - 10 %/+ 6 %, 50/60 Hz, PE
Earth leakage current	The pump requires no external motor protection.		
EMC	EN 61800-3.		

★ Expansion module

Sound pressure level

Pump type	MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100	MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	UPE(D)
Sound pressure level	≤ 32 dB(A)	≤ 38 dB(A)	≤ 38 dB(A)

Functions

	MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100	MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120	UPE(D) FZ
Control modes (factory setting)			
AUTO <small>ADAPT</small> ★ ★	•	•	
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	■	★	□
Bus via BACnet MS/TP	■	■	□
Bus via Modbus RTU	■	■	□
Bus via GSM/GPRS	■	■	□
Bus via Profibus	■	■	□

- Function incorporated.
- Expansion module required.
- ★ MAGNA-LON interface required.
- ★ ★ Not recommended for air-conditioning systems.
- Communication Interface Unit (page 60) required.
- GENI module (page 57) or GENI module (page 59) and Communication Interface Unit (page 60) required.

Control modes (factory setting)

The pumps have been factory-set to

- $AUTO_{ADAPT}$ (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.

$AUTO_{ADAPT}$

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

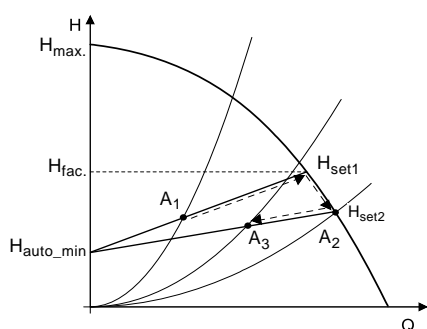


Fig. 5 $AUTO_{ADAPT}$ control

Note: Manual setting of the setpoint is not possible.

When the control mode $AUTO_{ADAPT}$ 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.

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.

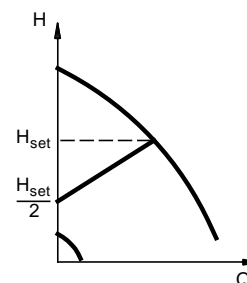


Fig. 6 Proportional-pressure control

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

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 10.

Constant-pressure control

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

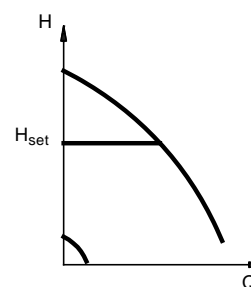


Fig. 7 Constant-pressure control

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

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TM00 4489 0995

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.

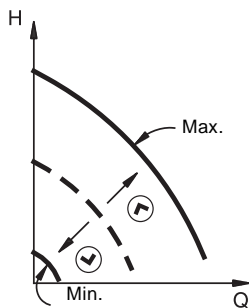


Fig. 8 Constant-curve duty

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Max. or min. curve duty

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

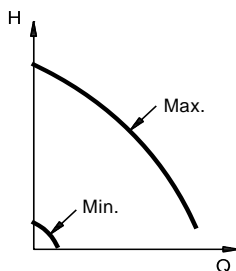


Fig. 9 Max. or min. curves

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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 duty.

Automatic night-time duty (MAGNA only)

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

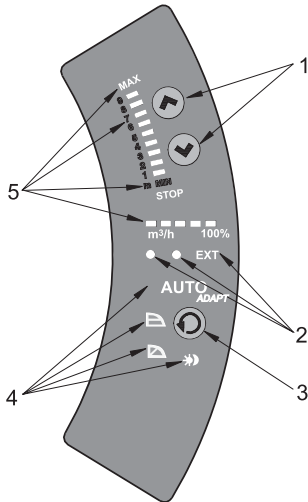
Pump operation alternates every 24 hours (UPE 25 hours). If the duty pump stops due to a fault, the other pump will start.

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

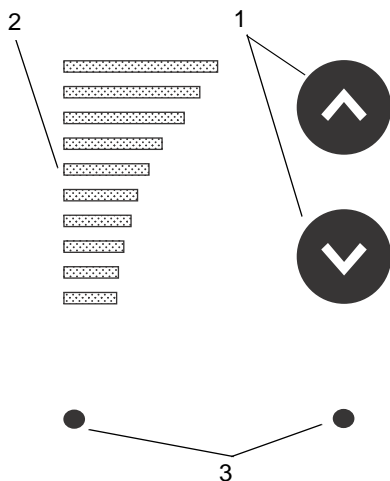
The control panel on the pump control box incorporates the basic functions for readings and settings.



TM03 0379 5004

Fig. 10 MAGNA (D) control panel

Pos.	Description
1	Buttons for setting of head.
2	<ul style="list-style-type: none"> 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.



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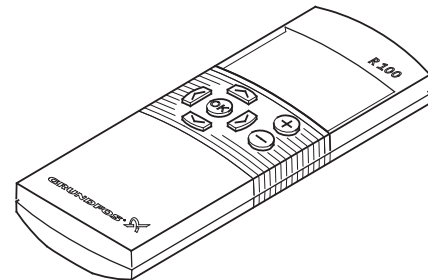
Fig. 11 UPE(D) control panel

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.



TM00 4496 2802

Fig. 12 R100 remote control

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

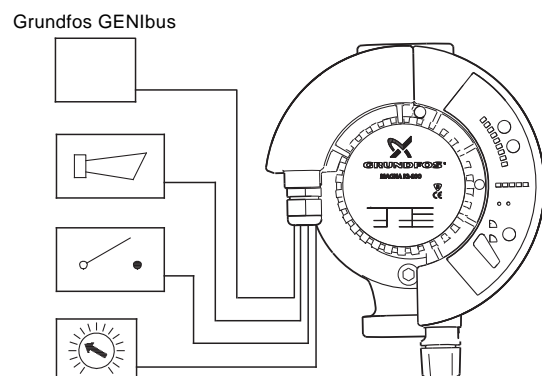
The R100 offers additional possibilities of setting and status displays for the pump.

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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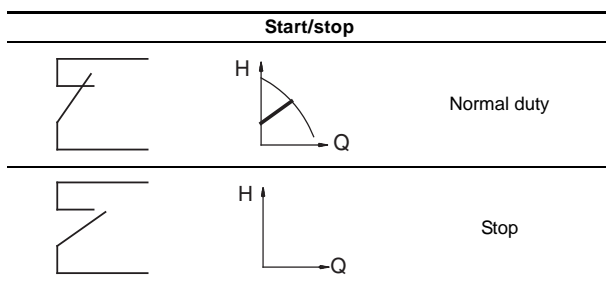
Fig. 13 MAGNA with expansion module

Digital input

The information on digital input applies to MAGNA pumps only.

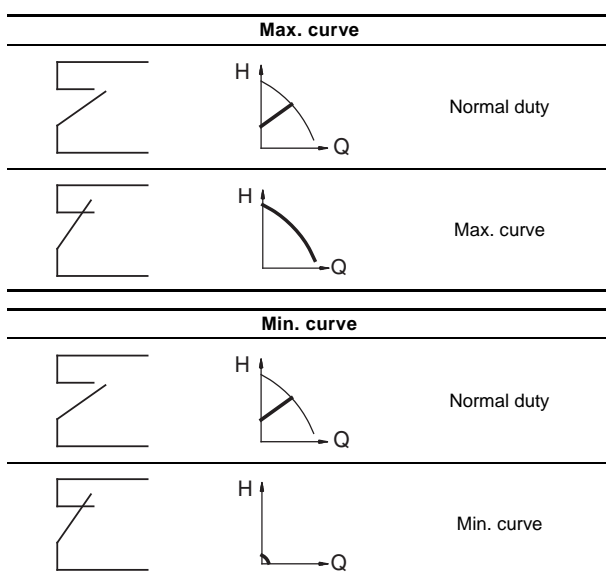
External start/stop

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 MAGNA pumps incorporate 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.

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

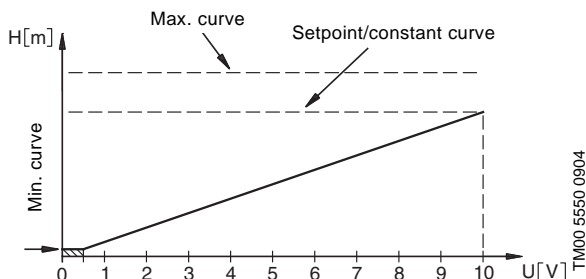


Fig. 14 Example of 0-10 V control

The analog input enables the following control modes:

MAGNA/UPE

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.

MAGNA

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

All MAGNA pumps can be fitted with a GENibus interface module which is based on the RS-485 platform. See *Accessories* on page 57.

UPE pumps have a built-in GENibus interface.

Bus communication enables control and monitoring of up to six single-head pumps operating in parallel from a building management system (BMS).

The options are shown below:

- UPE Series 2000 FZ. See fig. 15.
- Grundfos MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100. See fig. 16.
- Grundfos MAGNA (D) 32-120, 40-120, 50-60, 50-120, 65-60, 65-120. See fig. 17.

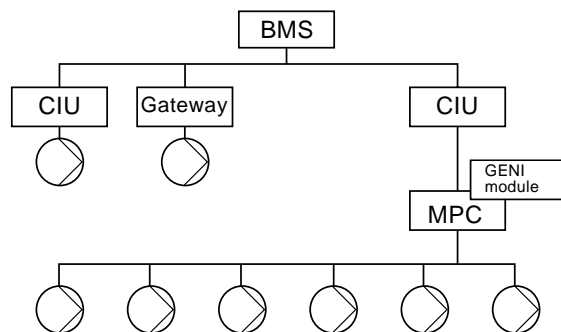


Fig. 15 UPE Series 2000 FZ in BMS systems

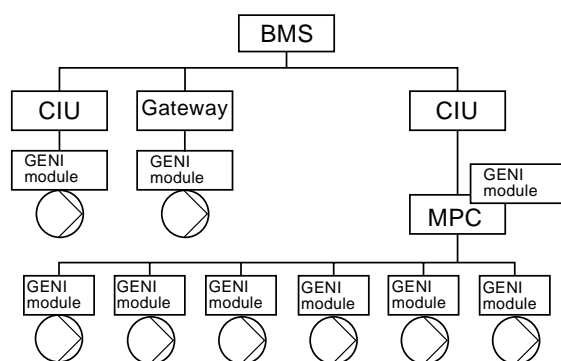


Fig. 16 MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100 in BMS systems

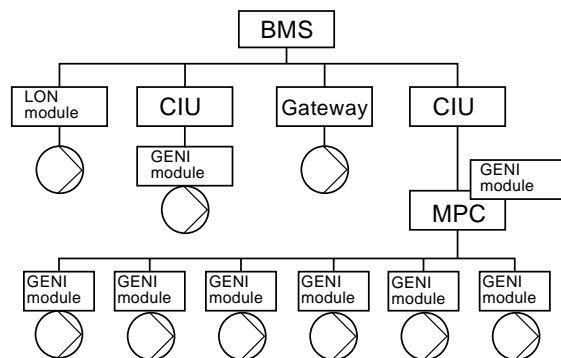


Fig. 17 MAGNA 32-120, 40-120, 50-60, 50-120, 65-60, 65-120 in BMS systems

In order to select the correct CIU unit for the application in question, see *Accessories* on page 60.

Functions of expansion modules

Pump type	Inputs/outputs incorporated	With expansion module	Function
MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-80, 32-60, 32-100, 40-60, 40-80, 40-100 (D), 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

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 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, stainless-steel or bronze pump housing, UPE(D) with cast-iron pump housing only
- twin-head versions
- 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.

The **single-phase UPE** pump incorporates a three-phase 2-pole asynchronous motor with integrated frequency converter.

A differential-pressure and temperature sensor forms an integral unit.

Pump connections

Threaded pump connections to ISO 228/1.

Flange dimensions to ISO 7005-2/BS4504.

Surface treatment

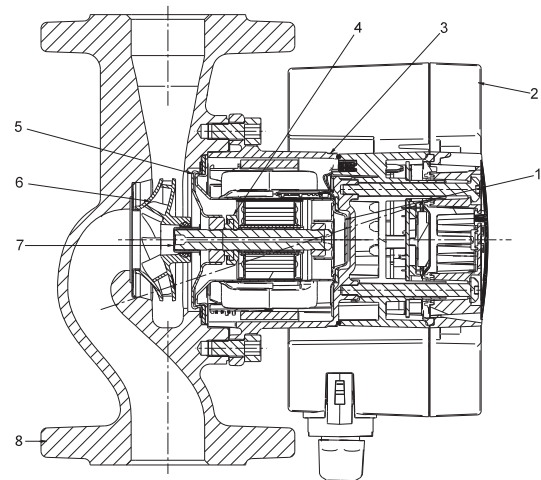
The pumps are wet-varnished.
Colour: NCS40-50R.

Material specification

MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100, 50-100

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 ₂ O ₃	
	Rotor can	Stainless steel	1.4401
4	Shaft	Aluminium ceramics Al ₂ O ₃	
5	Thrust bearing	Carbon MY 106	
	Bearing plate	Stainless steel	1.4301
6	Inner bearing ring	Aluminium ceramics Al ₂ O ₃	
7	Impeller	Composite	
8	Pump housing	Cast iron GJL-200 or stainless steel	0.6020 1.4408
	Insulation shells*	EPP	

* Insulation shells for heating applications and insulation shells for air-conditioning are available as accessories, see *Insulation shells* on page 56.



TM03 1955 3405

Fig. 18 MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100, 50-100

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

Pos.	Component	Material	EN
1	Control box	Composite	
2	Stator housing	Aluminium AlSi 10Cu ₂	
	O-rings	EPDM rubber	
3	Outer bearing ring	Aluminium oxide Al ₂ O ₃ /SiC	
	Rotor can	Stainless steel	1.4401
4	Shaft	Stainless steel	1.4304
5	Thrust bearing	Carbon MY 106	
6	Bearing plate	Stainless steel	1.4301
	Inner bearing ring	Aluminium oxide Al ₂ O ₃ /SiC	
7	Impeller	Stainless steel	1.4301
8	Pump housing	Cast iron or stainless steel	GJL250 1.4308
	Insulation shells*	EPP	

* Insulation shells for heating applications, see *Insulation shells* on page 56.

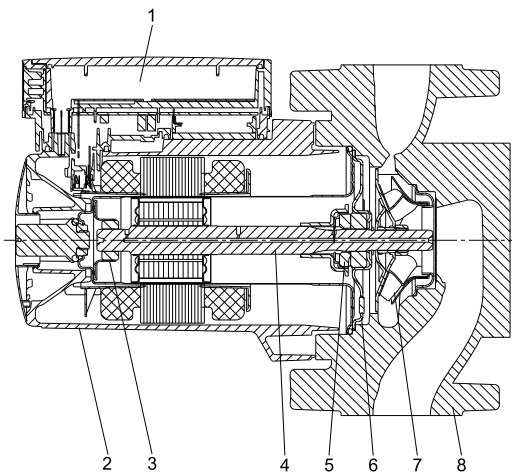


Fig. 19 MAGNA 32-120, 40-120, 50-60, 50-120, 65-60, 65-120

UPE XX-120 FZ

Pos.	Component	Material	EN
1	Control box	Composite PP/35 % glass	
2	Stator housing	Die cast aluminium, AlSi	
3	Rotor can	Stainless steel	1.4541
4	Shaft	Stainless steel	1.4534
5	Thrust bearing	Aluminium oxide Al ₂ O ₃	
6	Inner bearing ring	Carbon EC 943	
7	Impeller	Composite PES/30 % glass	
8	Pump housing	Cast iron	200 UNI ISO 185
9	Differential-pressure and temperature sensor		
10	Outer bearing ring	Carbon EC 943	
11	Air vent plug	Brass	
12	Bearing support	Cast iron	
	O-rings	EPDM rubber	
	Insulation shells*	EPP	

* Insulation shells for heating applications, see *Insulation shells* on page 56.

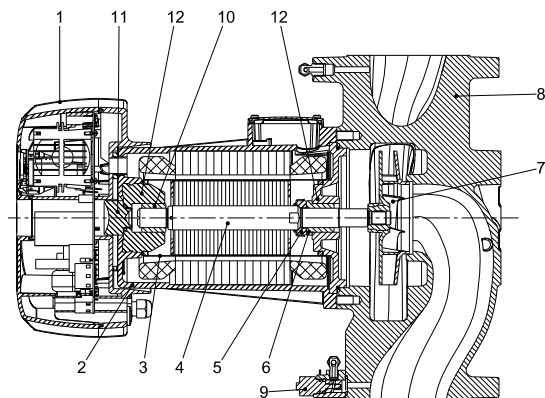


Fig. 20 UPE XX-120 FZ

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 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:

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

Insulation shells

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

Pump type	Insulation shells	
	For heating	For air-conditioning
MAGNA	Included on delivery	See <i>Insulation kits for MAGNA, air-conditioning</i>
UPE	Accessory	Not available

Note: Insulation shells are not available for twin-head pumps.

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.

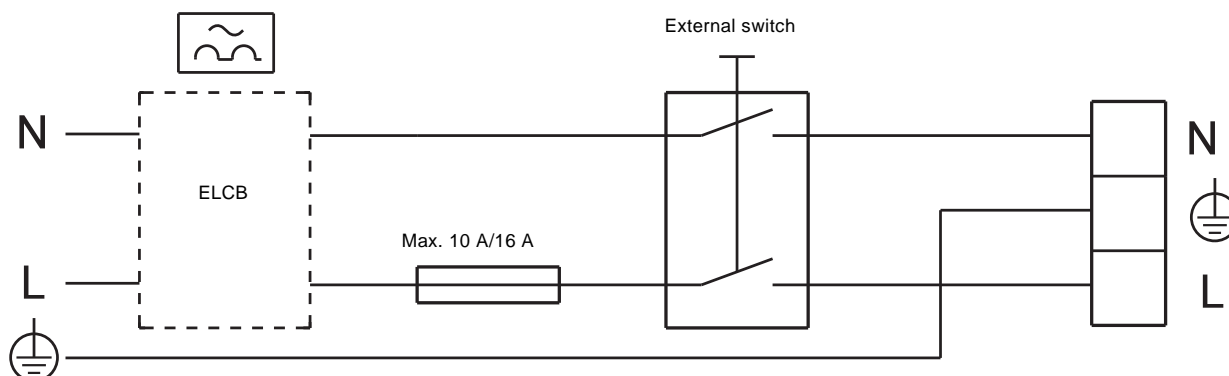
The pump mains connection must be made as shown in the diagrams on the following pages.

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



TM03 2397 4005

Fig. 21 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 symbols.



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

MAGNA

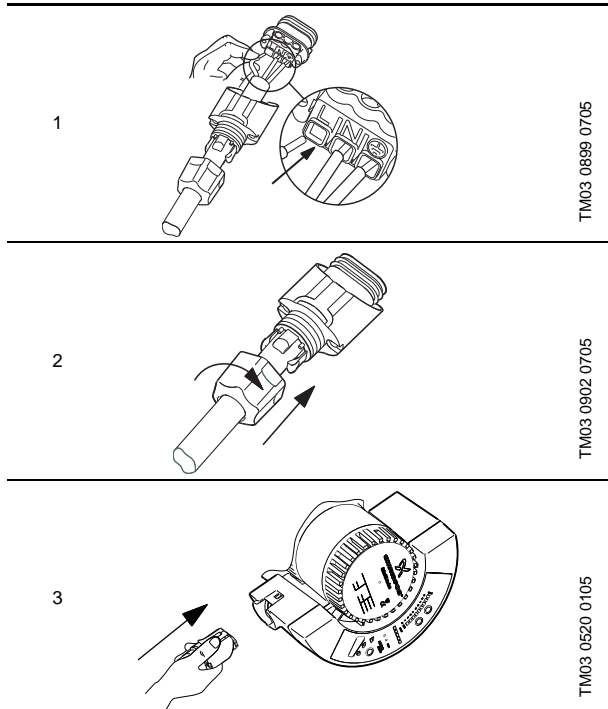


Fig. 22 MAGNA 25-40, 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 40-100(D), 50-100, mains connection with Alpha power plug

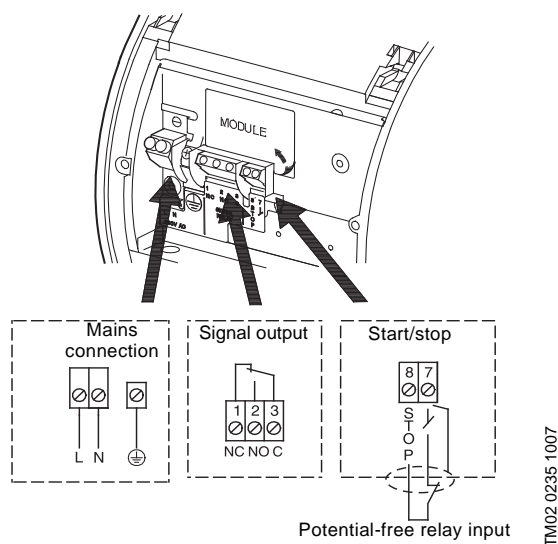


Fig. 23 MAGNA 32-120, 40-120, 50-120, 65-120, 50-60, 65-60, mains connection

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

UPE(D)

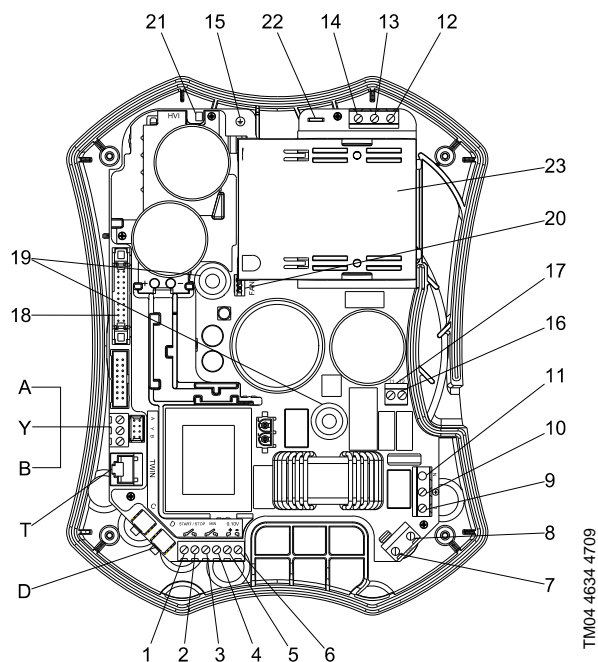


Fig. 24 UPE(D), terminals inside the control box

Pos.	Description
A, Y, B	Terminal block for GENibus
T	Terminal block for twin-head pump
D	Terminal block for pressure and temperature sensor on the pump (standard)
1, 2 (START/STOP)	Terminals for external start/stop (connect only contacts with no voltage)
3, 4 (MIN.)	Terminals for min. curve input (connect only contacts with no voltage)
5, 6 (0-10 V)	Terminals for external analog input 0-10 VDC Terminal 5 = +10 V Terminal 6 = 0 V
7, 8 (ALARM)	Terminal block for remote alarm contact. Maximum load: 250 VAC, 5 A.
9, 10, 11	Terminals for supply voltage, 1 x 230 V, 50-60 Hz Terminal 9 = Line (L) Terminal 10 = Earth (\oplus) Terminal 11 = Neutral (N)
12, 13, 14	Terminals for connection of motor cables Terminal 12 = brown lead Terminal 13 = grey lead Terminal 14 = black lead
15	Motor earthing screw
16, 17	Terminals for connection of motor protector, white lead (T1, T2)
18	Terminal for control panel
19	Control panel retaining screws
20	Terminal for fan
21	High-voltage indicator
22	Terminal for screened motor cable
23	Fan

Single-head pumps must be connected as shown above.

Twin-head pumps

Both pump heads must be connected to the mains.

Examples of connections

Connection to external controllers

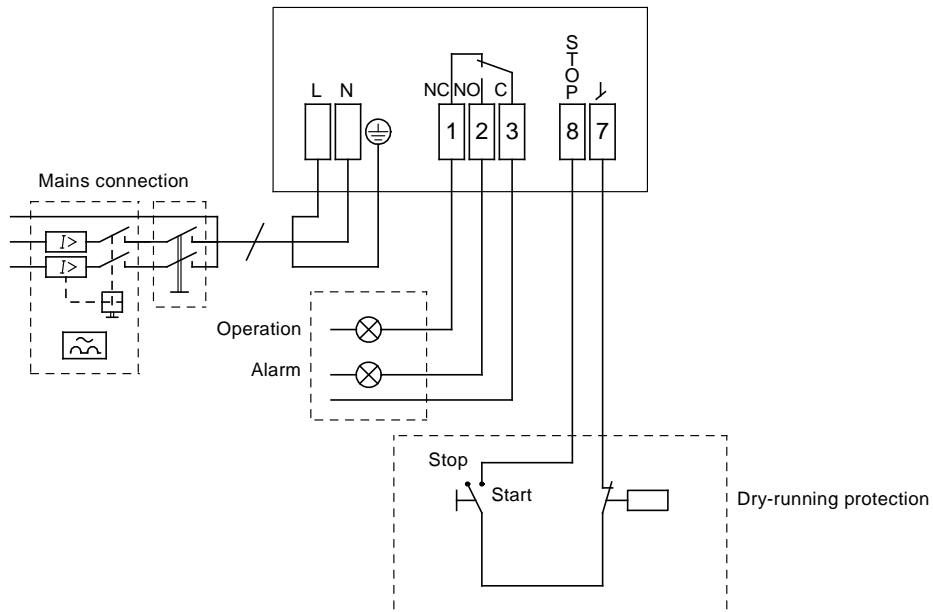


Fig. 25 Example of MAGNA pump

Connection to external controllers

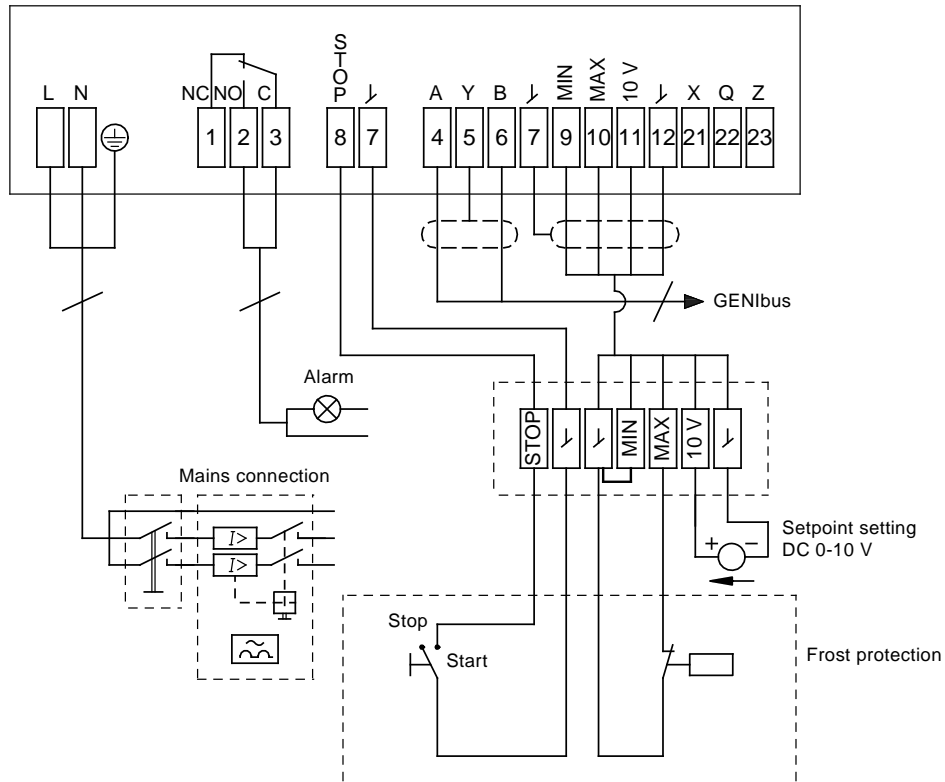


Fig. 26 Example of MAGNA pump with GENI module

TM02 1322 3601

TM02 1323 5101

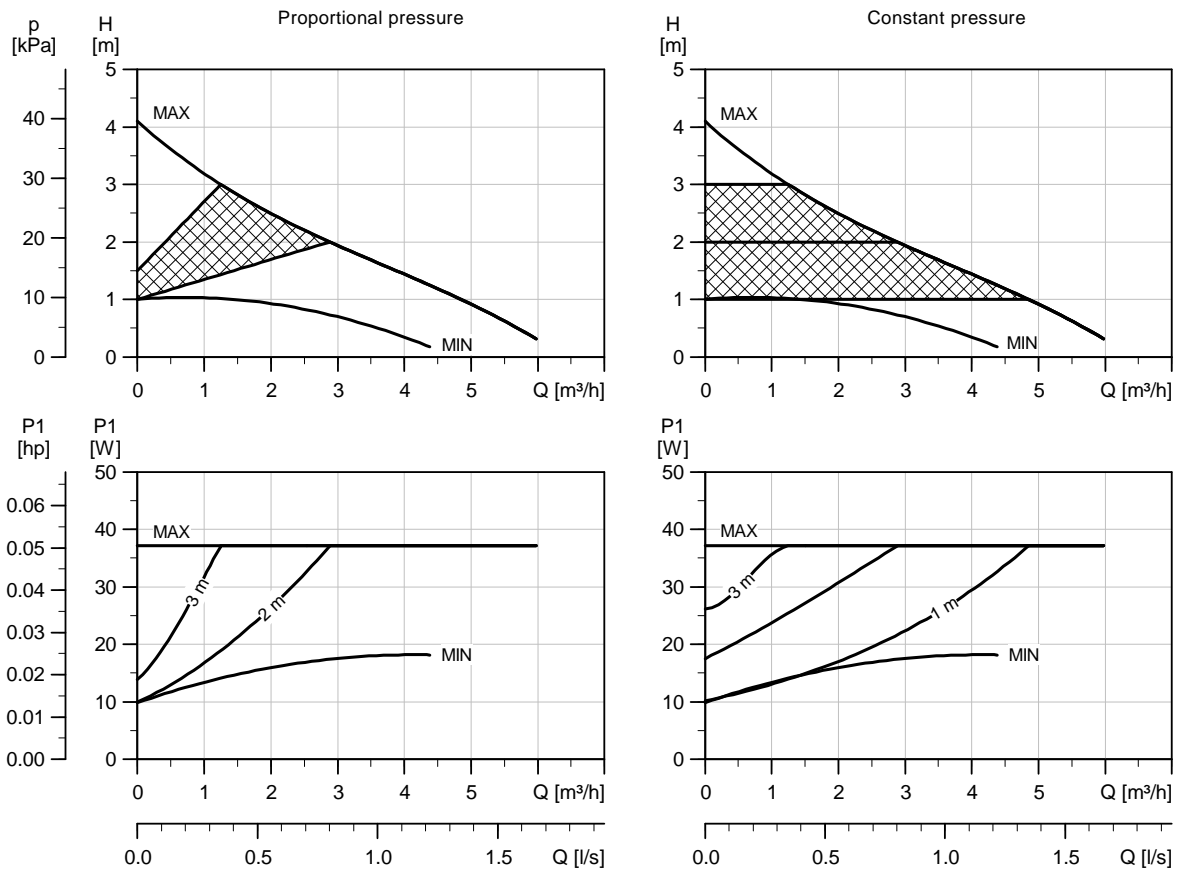
Curve conditions

The guidelines below apply to the performance curves on pages 24 to 53:

- 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 voltages are: 1 x 230 V, 50 Hz.

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.

MAGNA 25-40 (N)

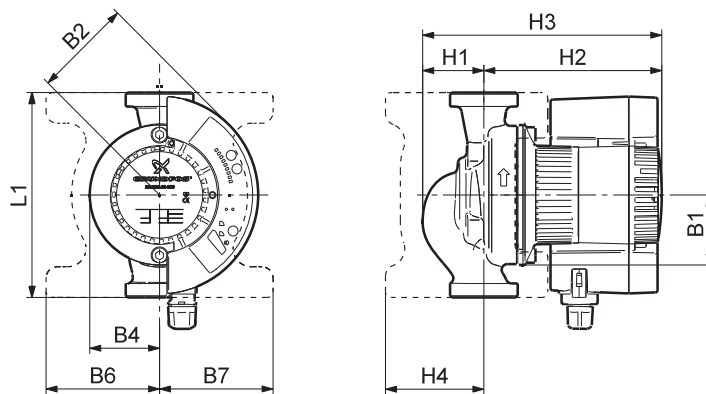


TM04 2339 2308

Electrical data

U_n [V]	P_1 [W]	$I_{1/n}$ [A]
1 x 230-240	Min.	10
	Max.	37

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

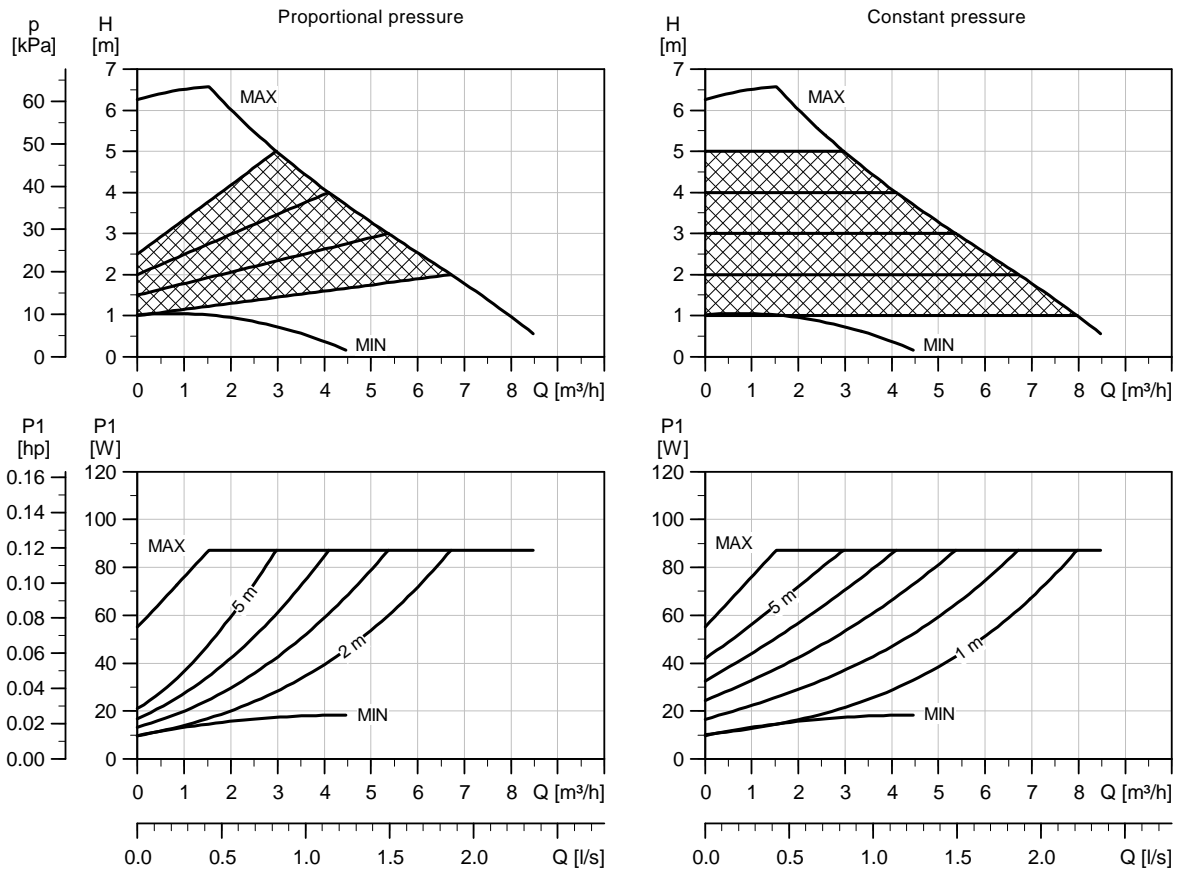


TM03 1234 1405

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 25-40 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 25-60 (N)

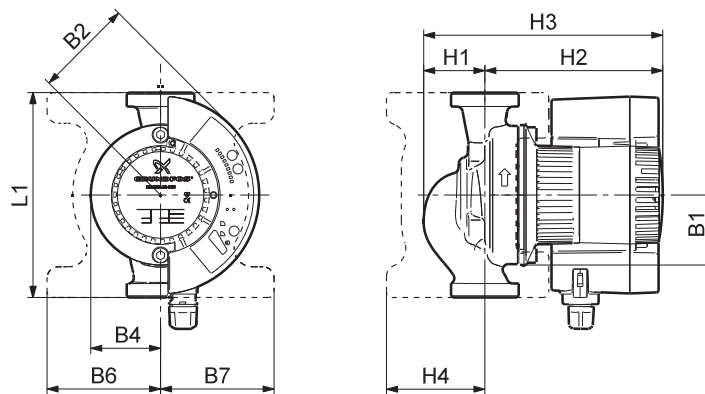


TM03 1469 2205

Electrical data

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

MAGNA 25-60 is also available with stainless-steel housing, type N.

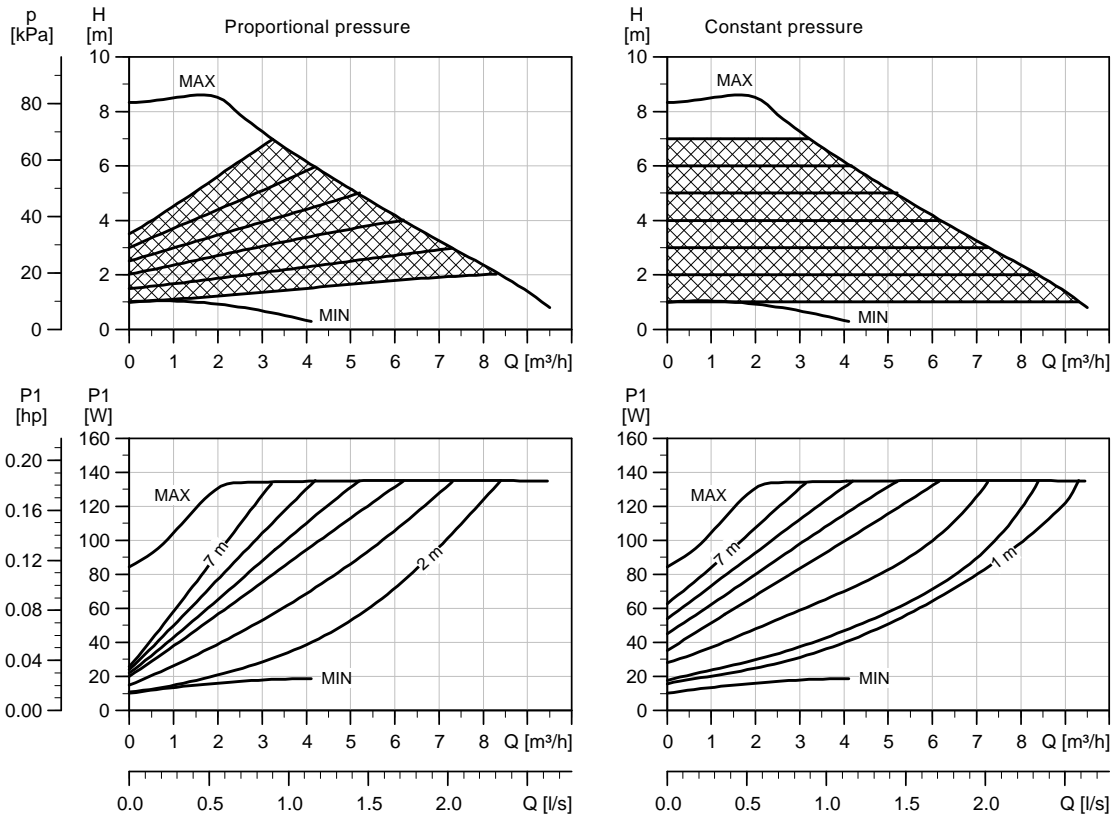


TM03 1234 1405

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 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 25-80 (N)

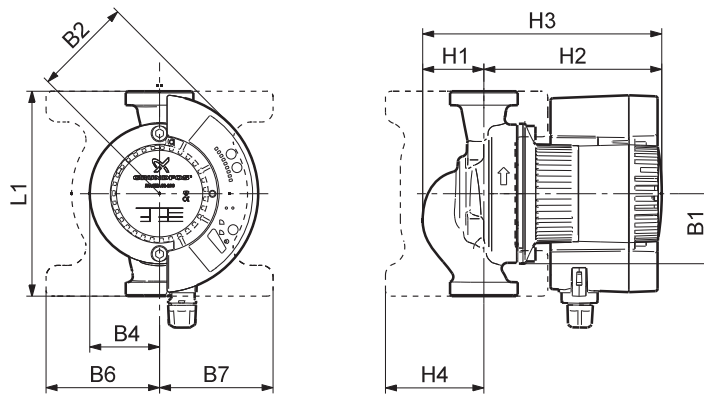


TM04 9110 4910

Electrical data

U_n [V]		P_1 [W]	$I_{1/I}$ [A]
1 x 230-240	Min.	10	0.10
	Max.	140	0.98

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

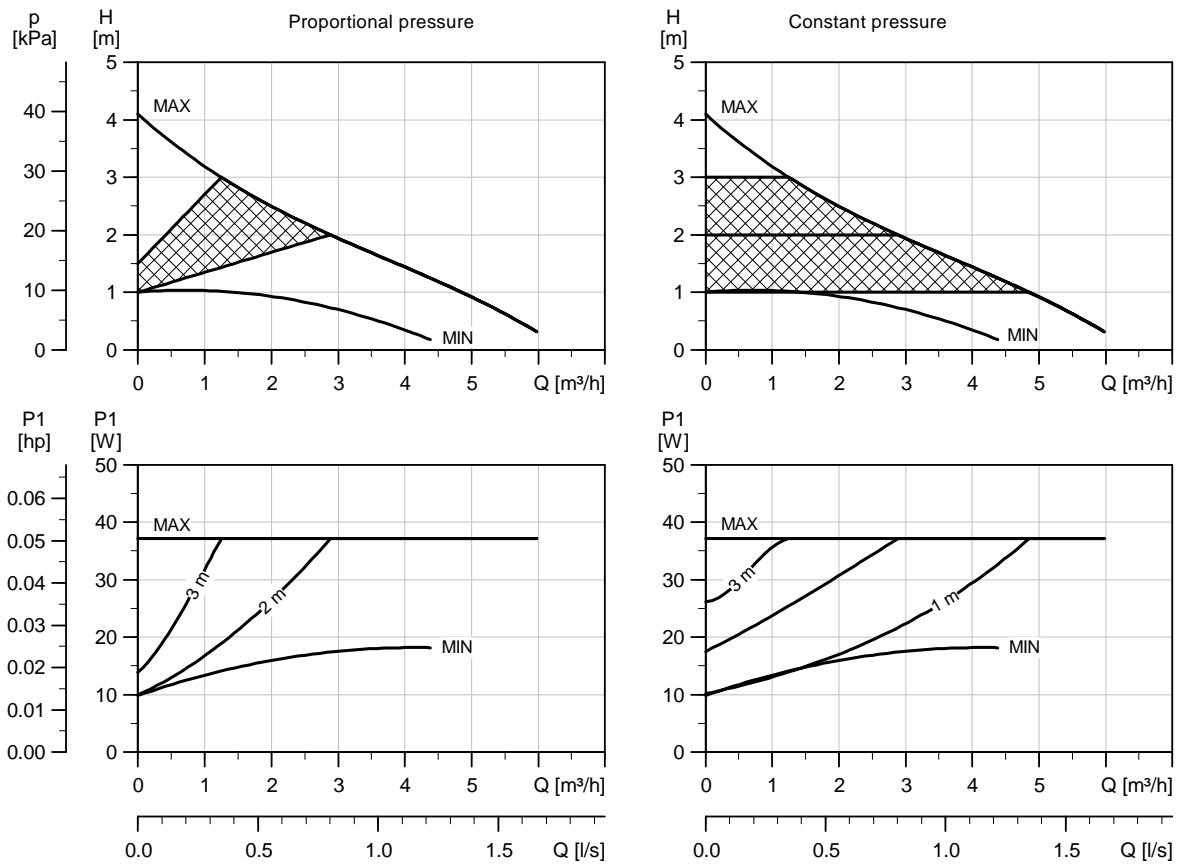


TM03 1234 1405

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 25-80 (N)	180	62	87	62	100	100	54	157	211	85	25	1 1/2	5.3	0.012

MAGNA 32-40 (N)

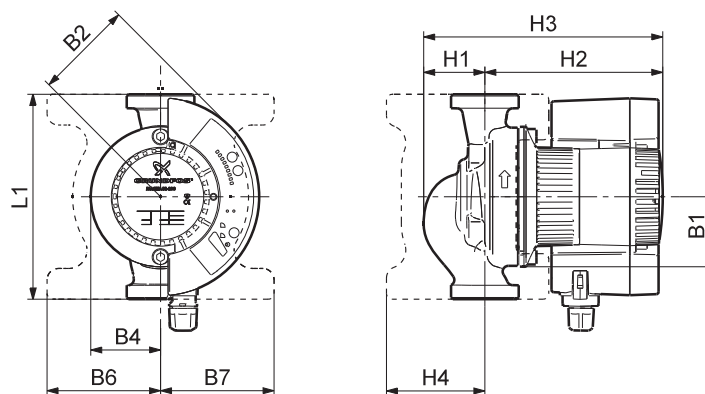


TM04 2339 2308

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	10	0.09
	Max.	37	0.28

MAGNA 32-40 is also available with stainless-steel housing, type N.

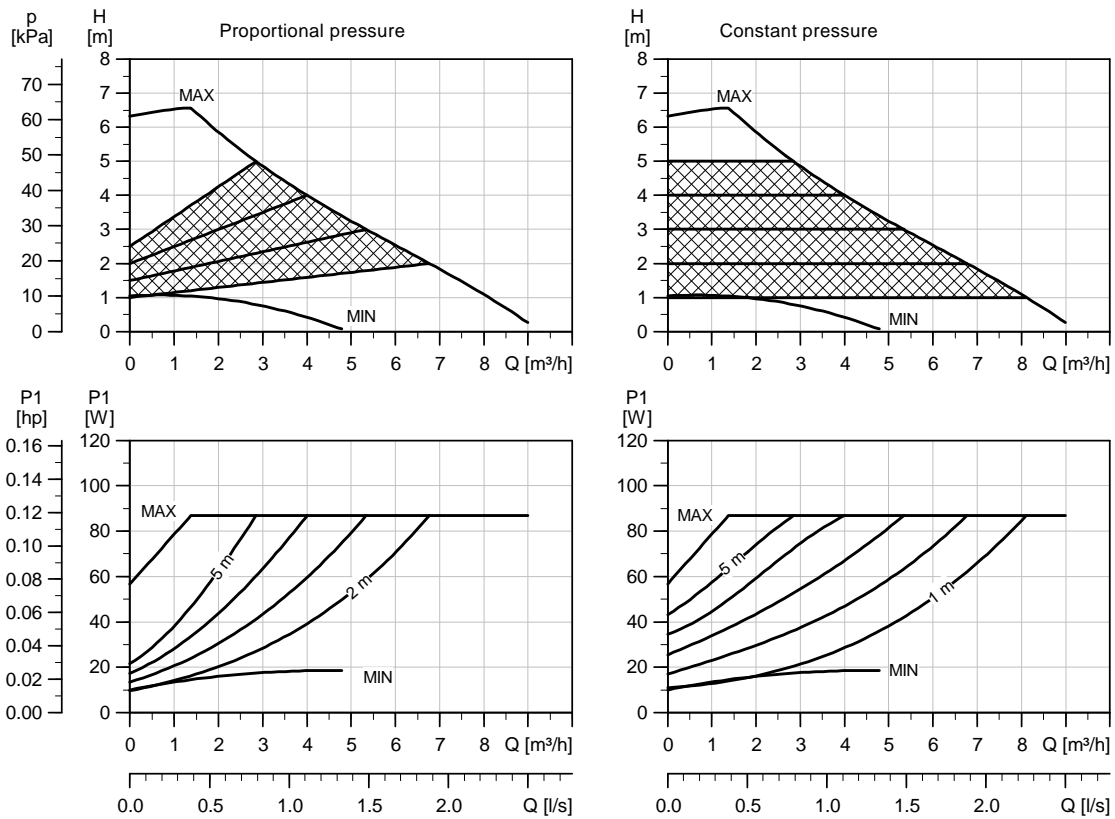


TM03 1234 1405

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]											Weight [kg]		Ship. vol. [m ³]
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	G	Gross	
MAGNA 32-40 (N)	180	62	87	62	100	100	54	157	211	85	32	2	5.5	0.012

MAGNA 32-60 (N)

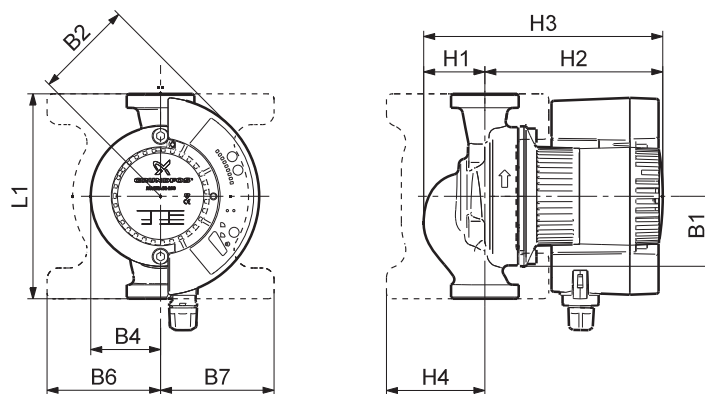


TM03 1848 3205

Electrical data

U_n [V]		P_1 [W]	$I_{1/n}$ [A]
1 x 230-240	Min.	10	0.09
	Max.	85	0.6

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

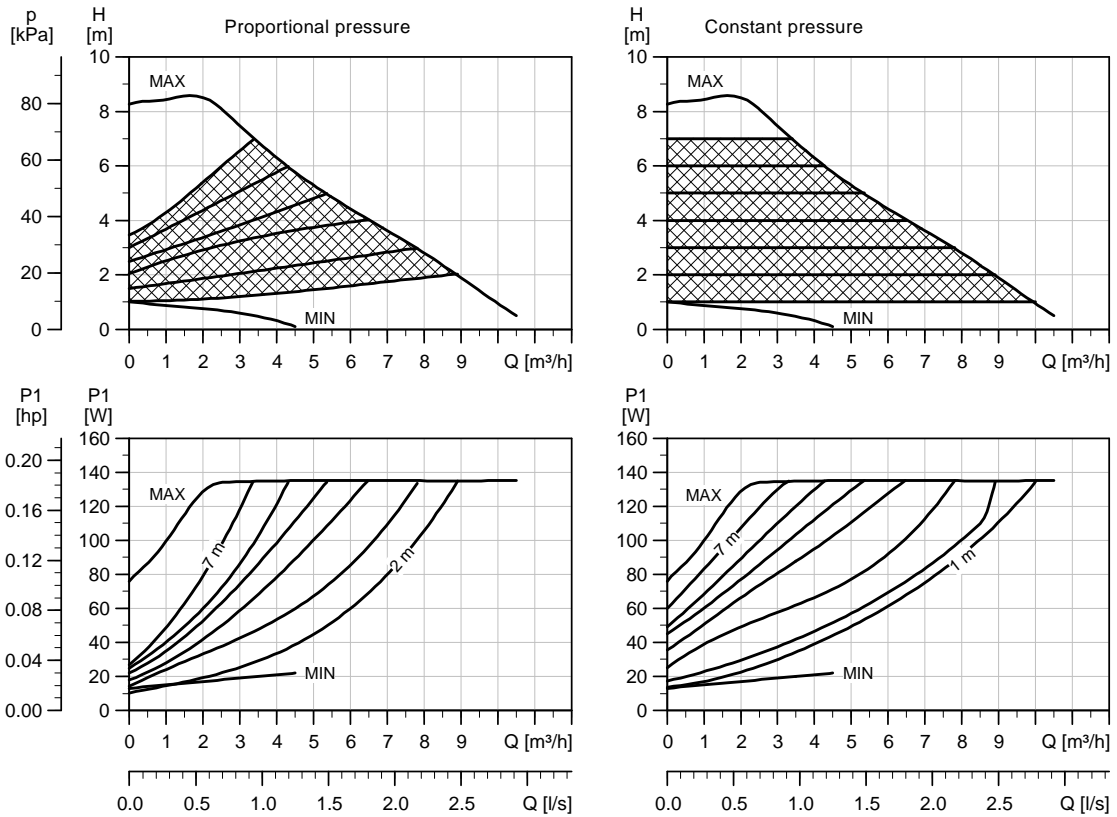


TM03 1234 1405

Dimensions and weights

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

MAGNA 32-80 (N)

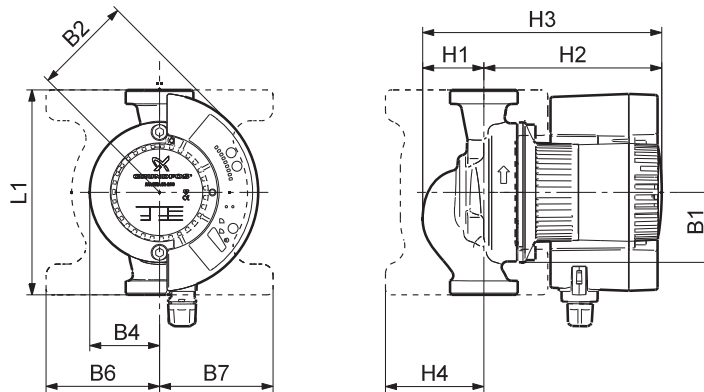


TM04 9111 4910

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	10	0.11
	Max.	140	1.01

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

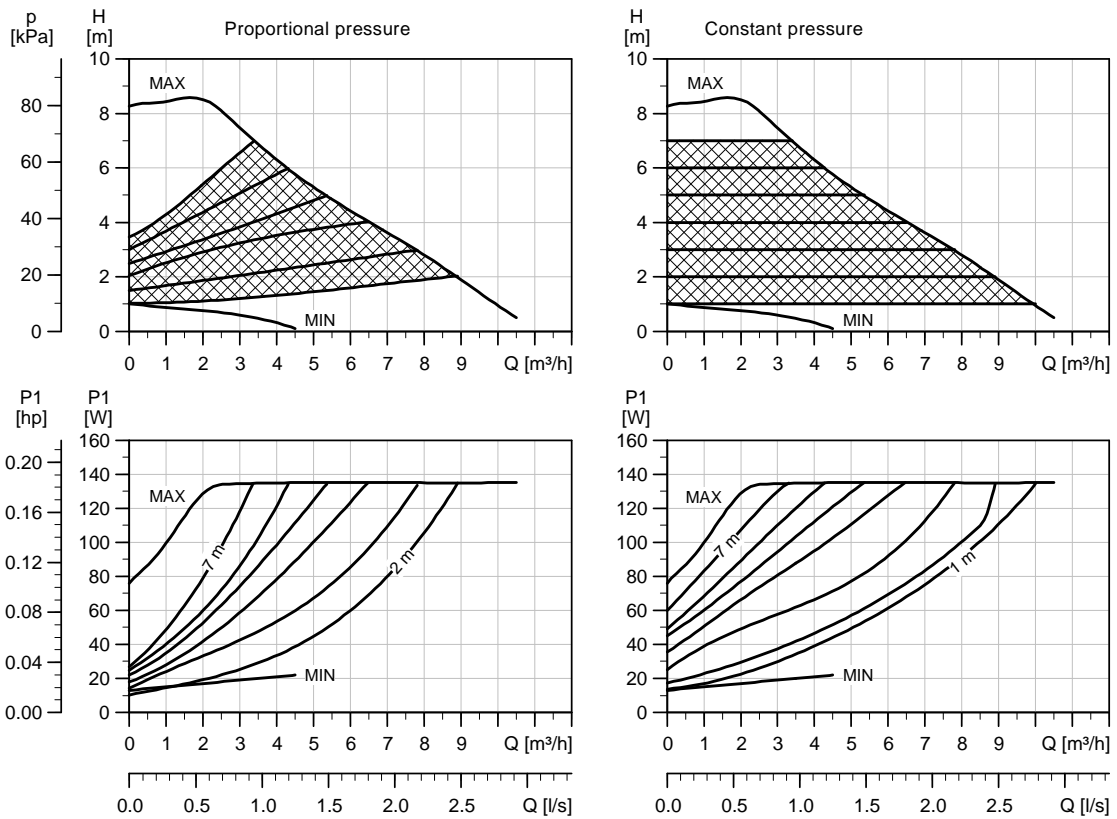


TM03 1234 1405

Dimensions and weights

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

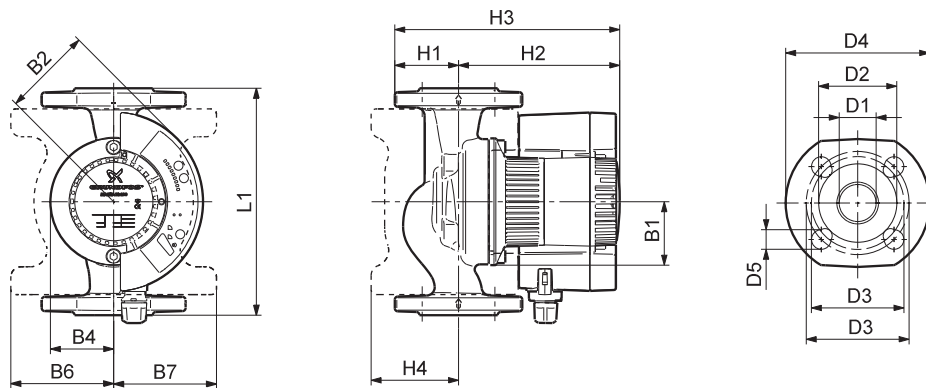
MAGNA 32-80 F



TM04 9111 4910

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	10	0.11
	Max.	140	1.01

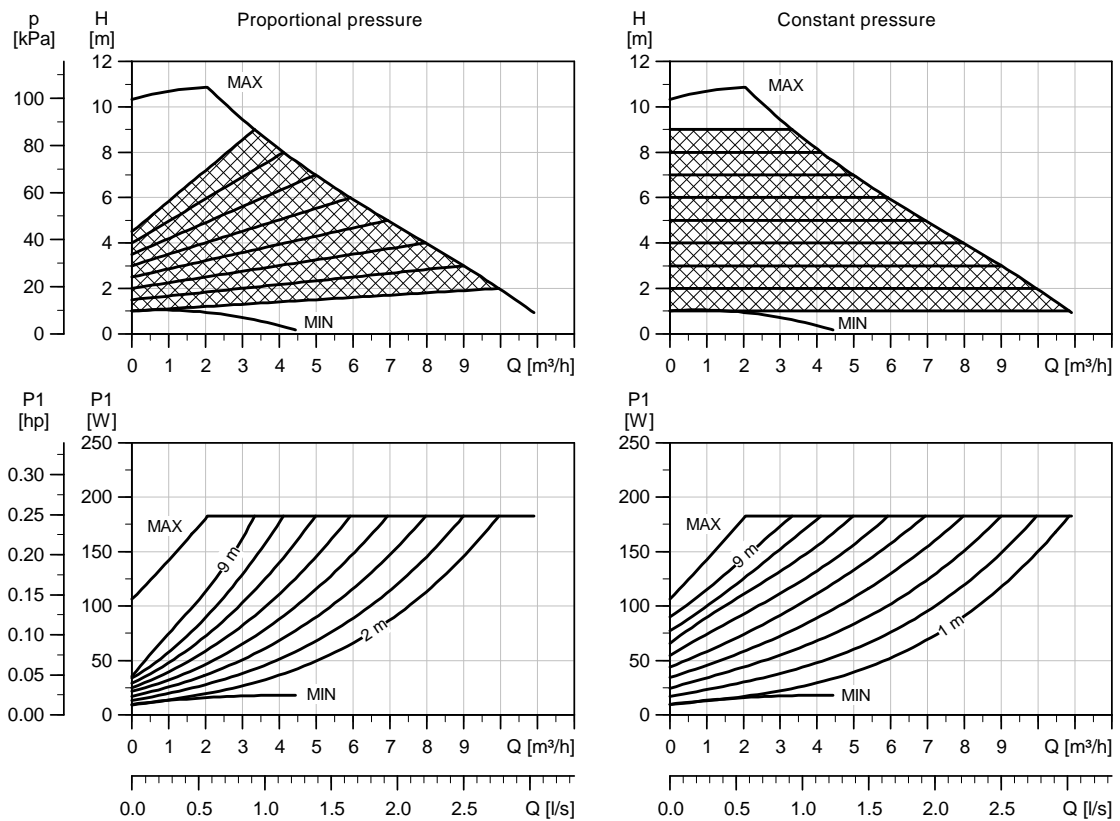


TM03 1233 1405

Dimensions and weights

Pump type	Dimensions [mm]															Weight [kg]		Ship. vol.
	L1	B1	B2	B4	B6	B7	H1	H2	H3	H4	D1	D2	D3	D4	D5	PN	Gross	[m³]
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 25-100 (N)

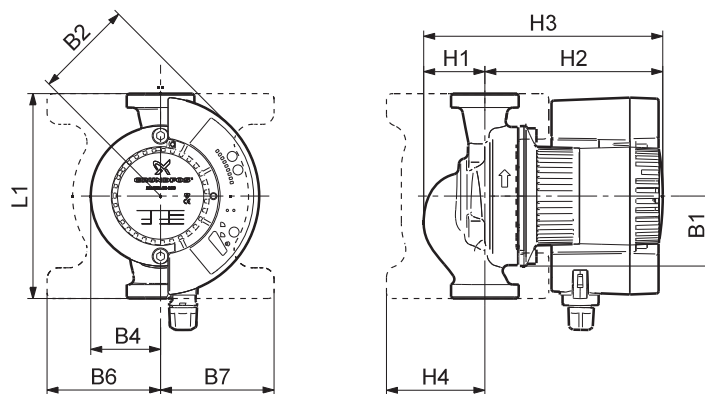


TM03 1470 2205

Electrical data

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

MAGNA 25-100 is also available with stainless-steel housing, type N.

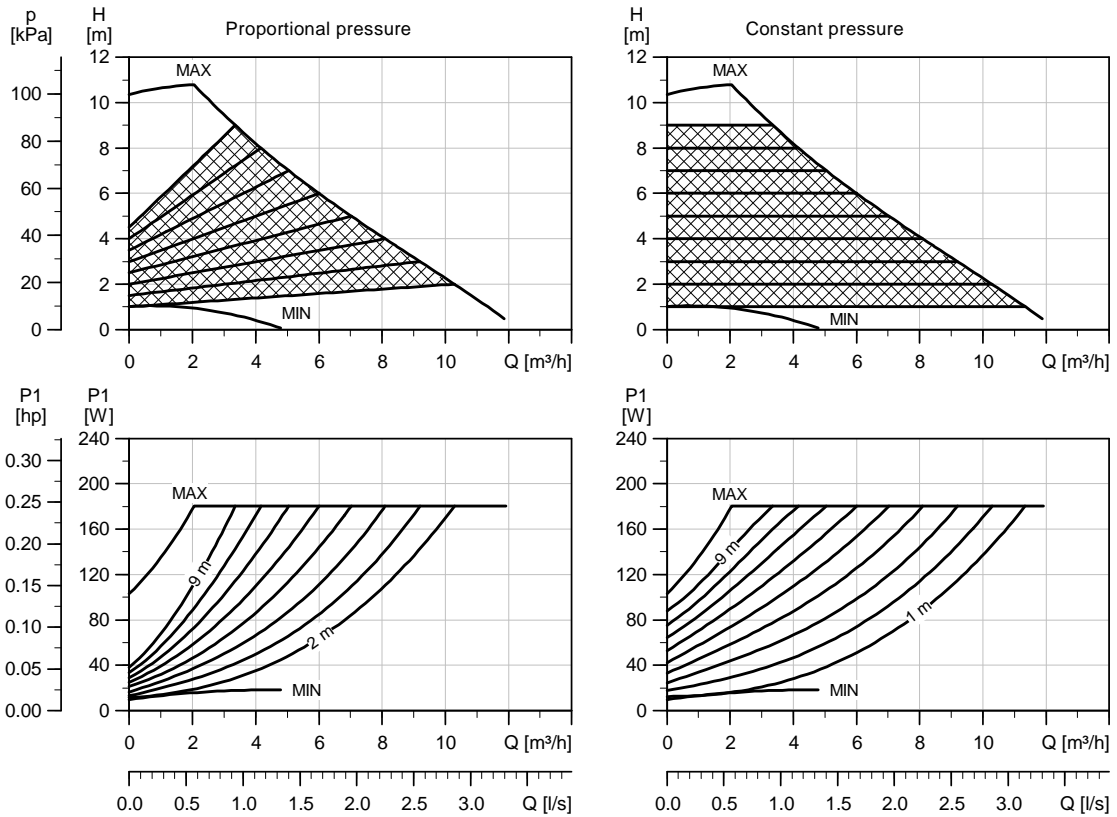


TM03 1234 1405

Dimensions and weights

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

MAGNA 32-100 (N)

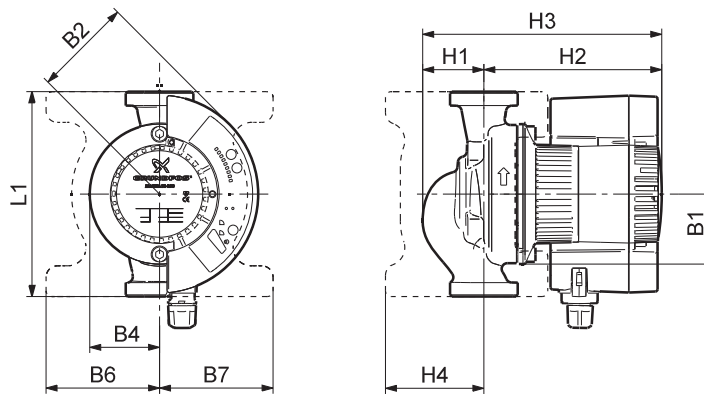


TM03 1849 3205

Electrical data

U_n [V]	P_1 [W]	I_{1N} [A]
1 x 230-240	Min.	10
	Max.	180

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

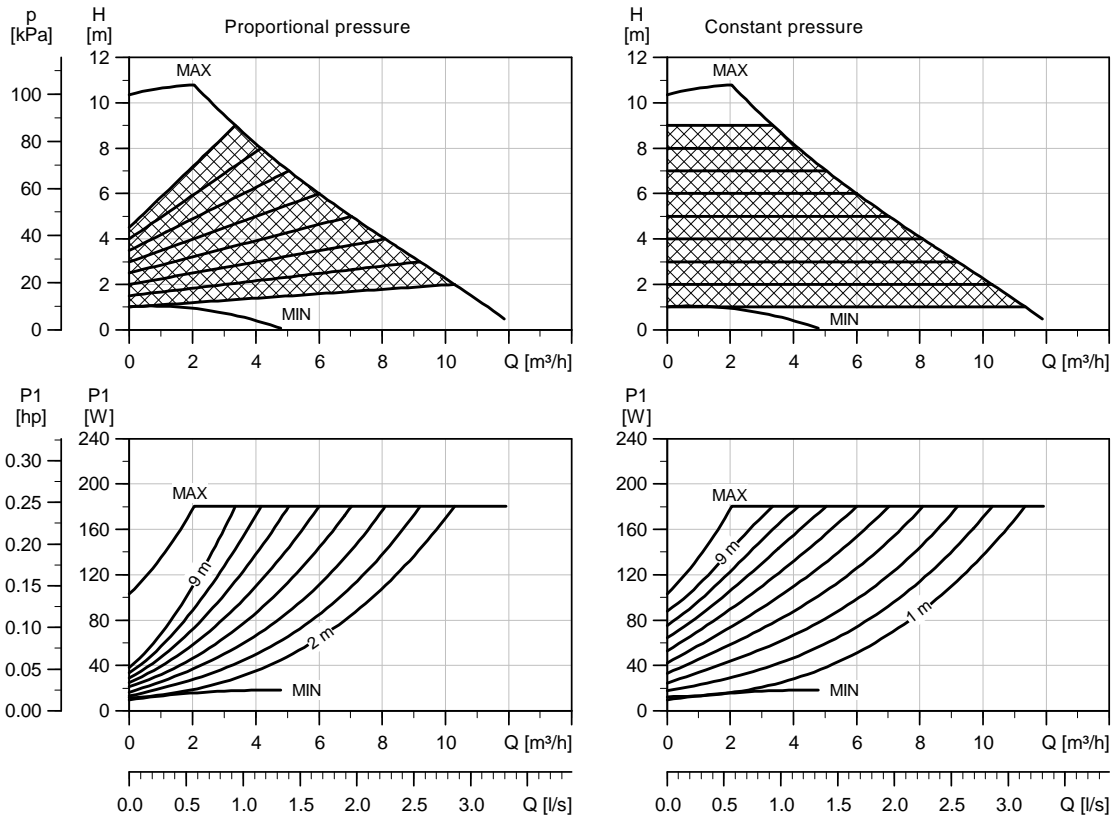


TM03 1234 1405

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		(N)
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)

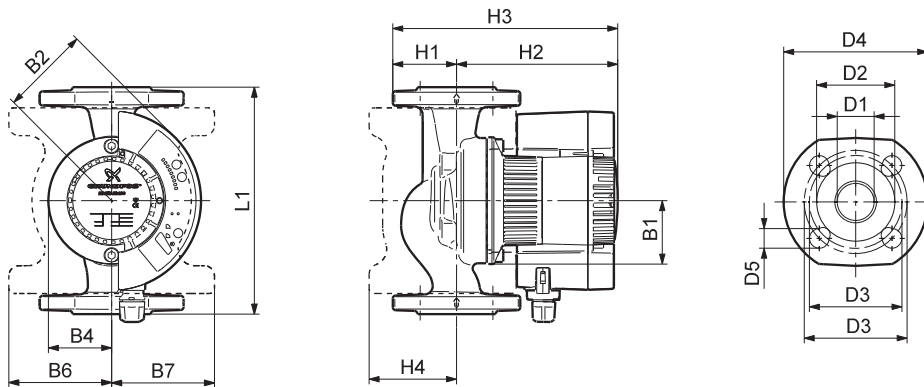


TM03 1849 3205

Electrical data

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

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

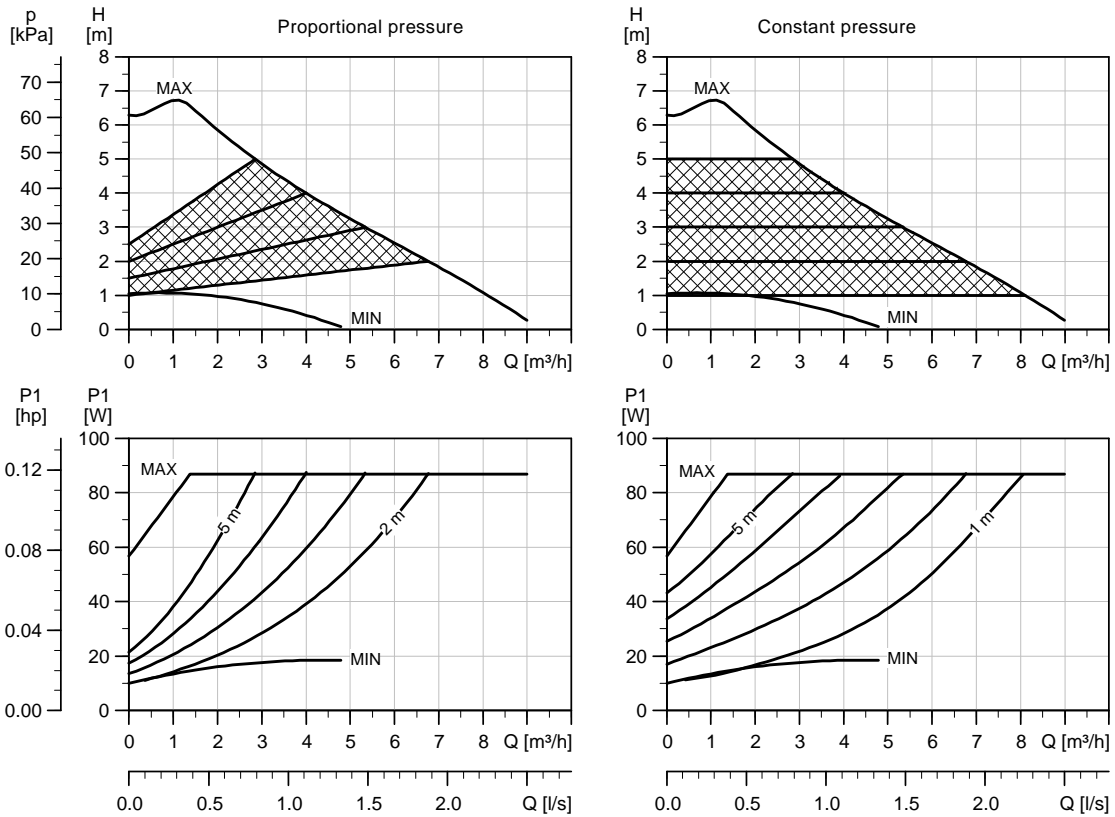


TM03 1233 1405

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 (N)	220	62	87	62	100	100	54	157	211	85	32	76	90/100	140	19	6/10	8.2	0.014

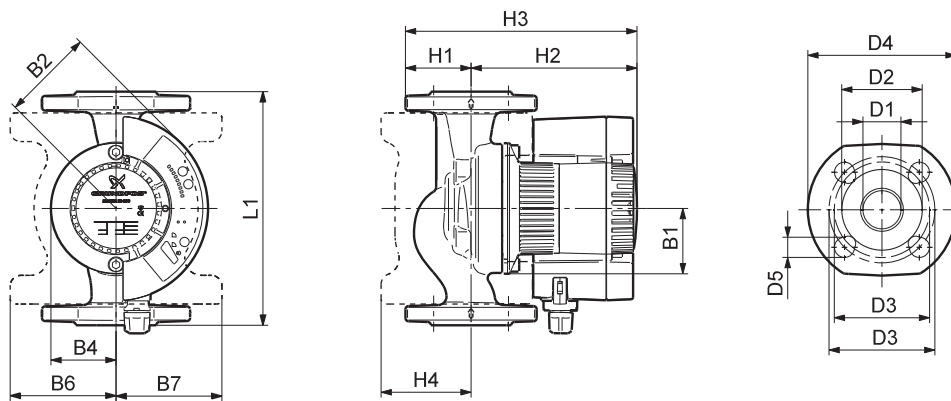
MAGNA 40-60 F



TM04 9113 4910

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	10	0.10
	Max.	90	0.67

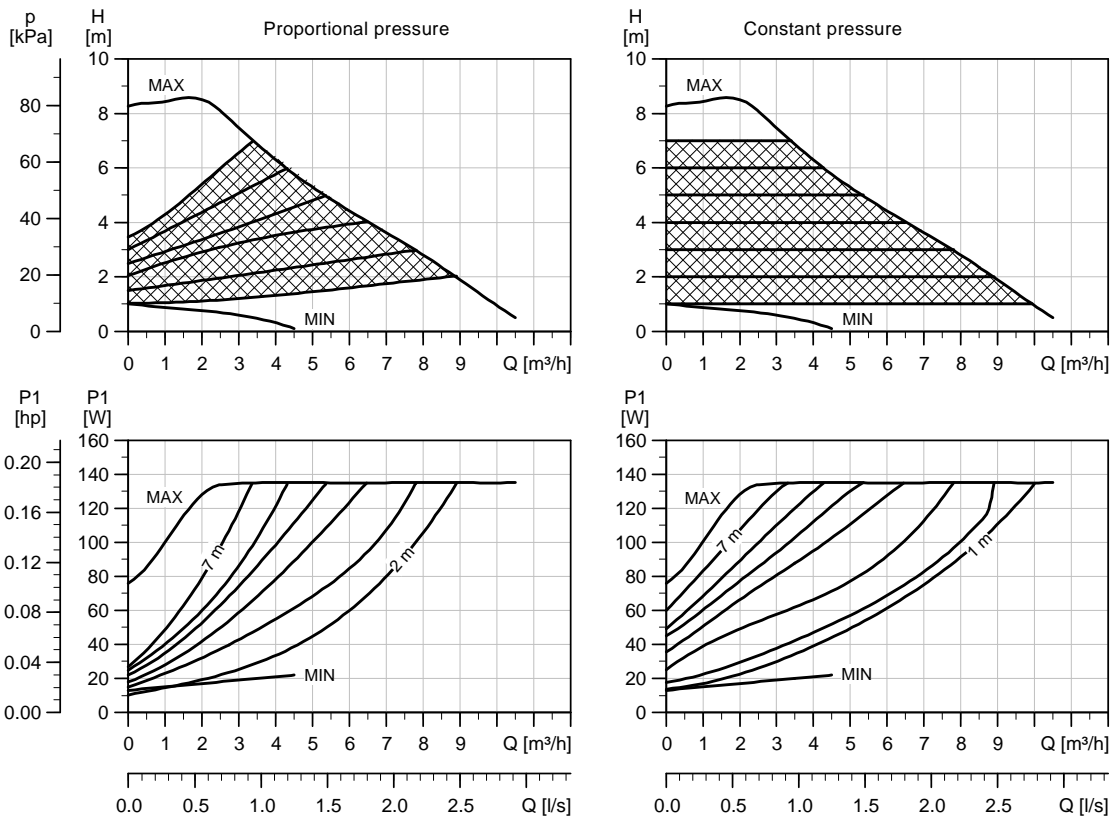


TM03 1233 1405

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 40-60 F	220	62	87	62	100	100	62	157	219	85	40	84	100/110	150	19	6/10	8.3	0.014

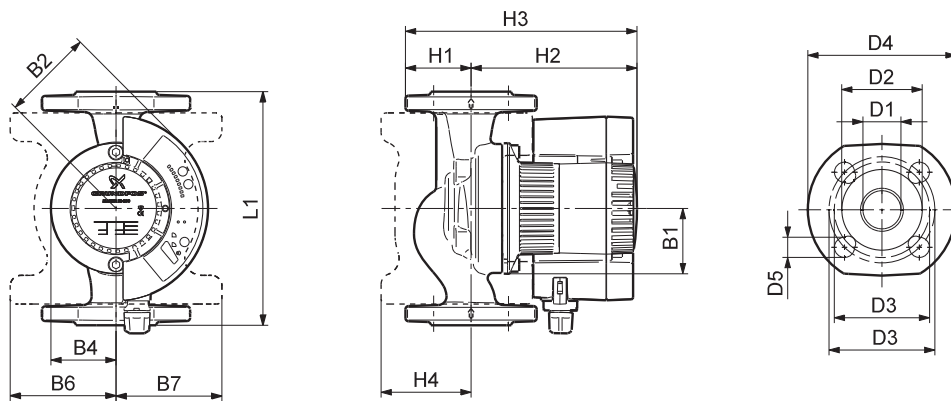
MAGNA 40-80 F



TM04 9112 4910

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	10	0.10
	Max.	136	1.00

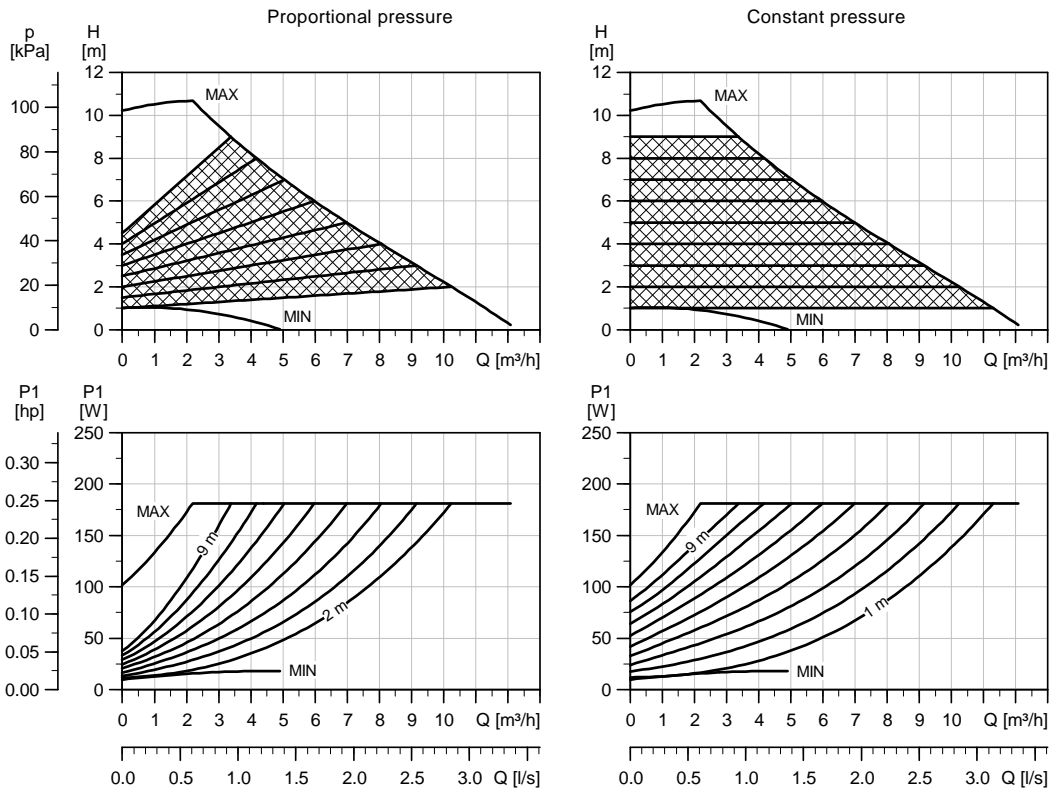


TM03 1233 1405

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 40-80 F	220	62	87	62	100	100	62	157	219	85	40	84	100/110	150	19	6/10	8.3	0.014

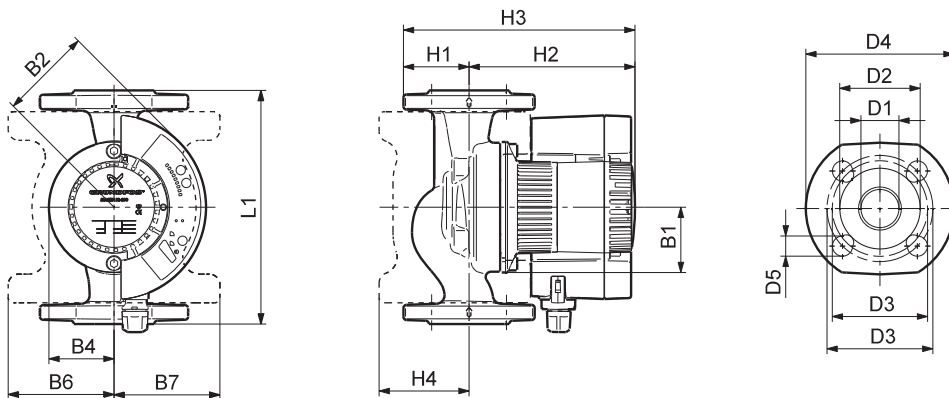
MAGNA 40-100 F



TM03 1566 2305

Electrical data

U_n [V]		P_1 [W]	I_{M1} [A]
1 x 230-240	Min.	10	0.09
	Max.	180	1.26

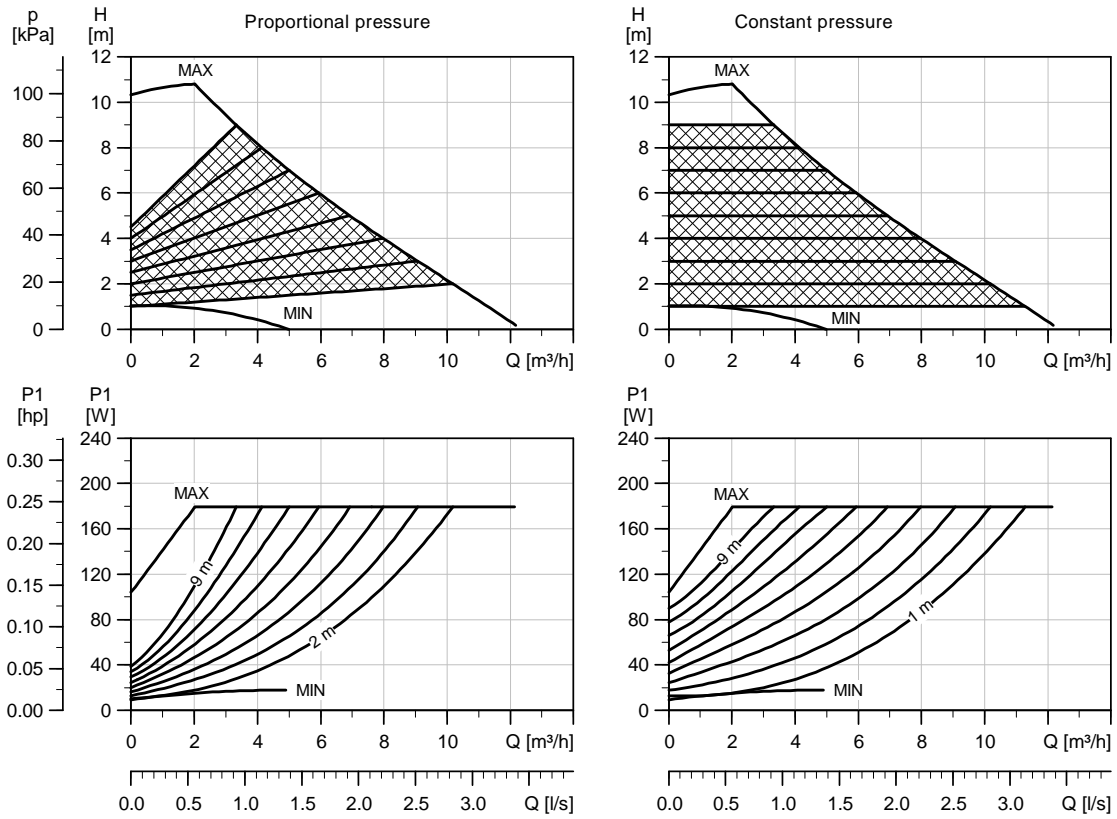


TM03 1233 1405

Dimensions and weights

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

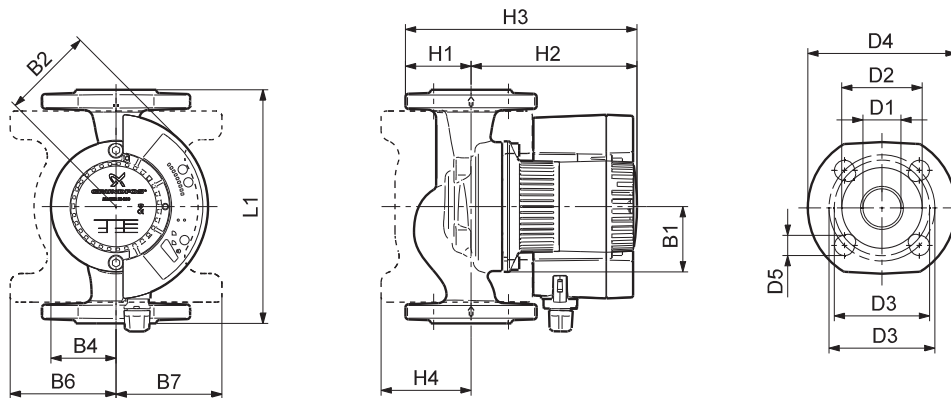
MAGNA 50-100 F



TM03 1850 3205

Electrical data

U_n [V]		P_1 [W]	$I_{1/f}$ [A]
1 x 230-240	Min.	10	0.1
	Max.	180	1.26

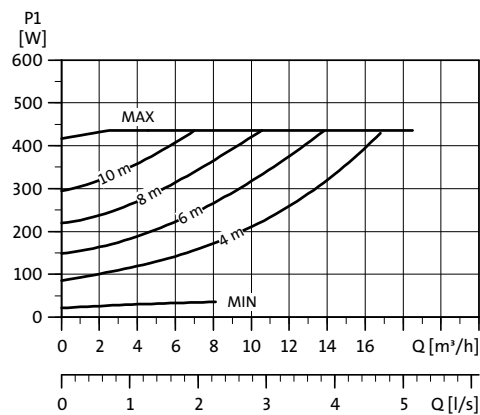
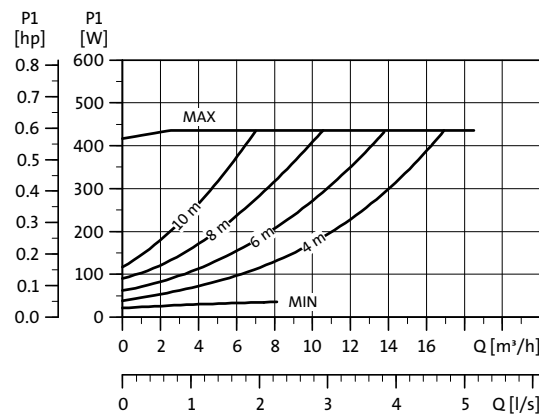
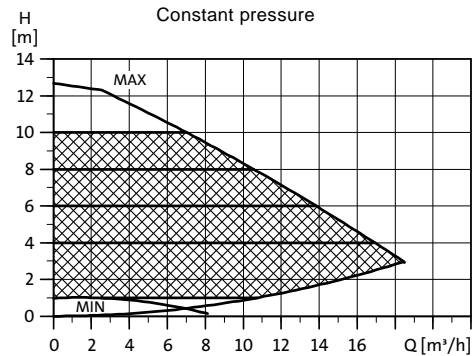
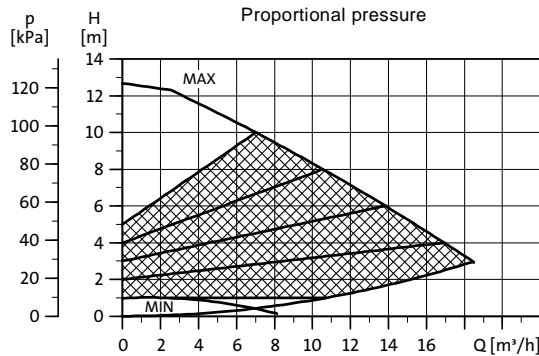


TM03 1233 1405

Dimensions and weights

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

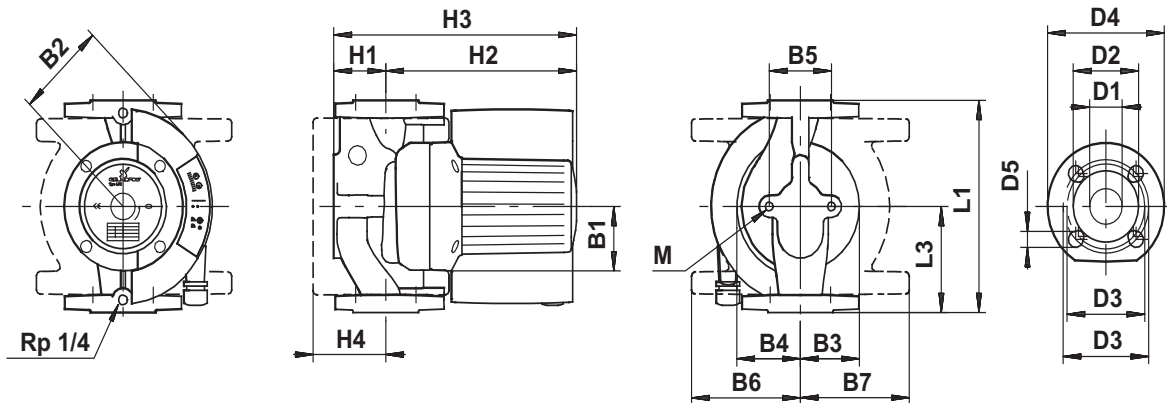


TM02 1910 2204

Electrical data

U_n [V]		P_1 [W]	$I_{1/1}$ [A]
1 x 230-240	Min.	25	0.17
	Max.	430	1.8

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

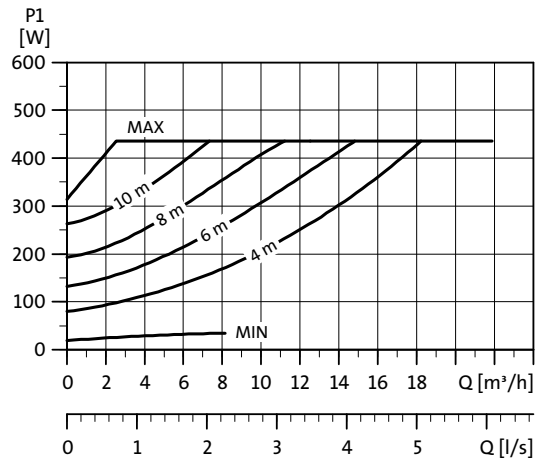
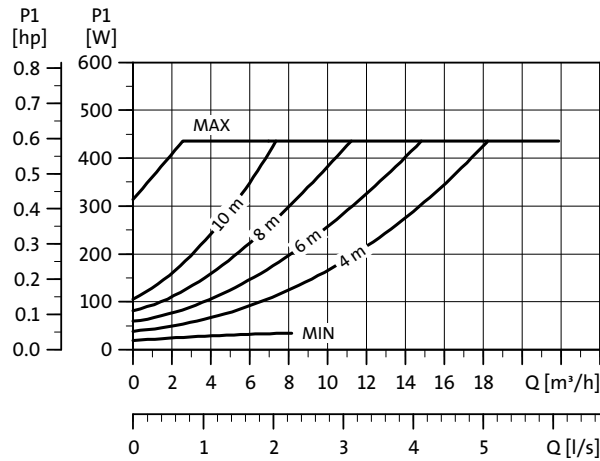
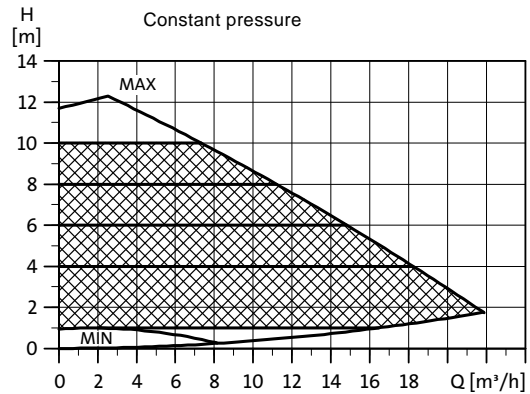
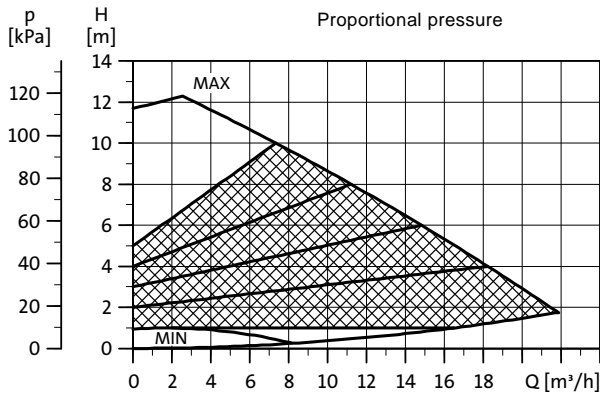


TM02 0239 3608

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 32-120 F (N)	220	110	77	115	75	76	96	140	110	68	245	310	98	32	76	90/100	140	14/19	M12	15	17	0.034

MAGNA 40-120 F (N)

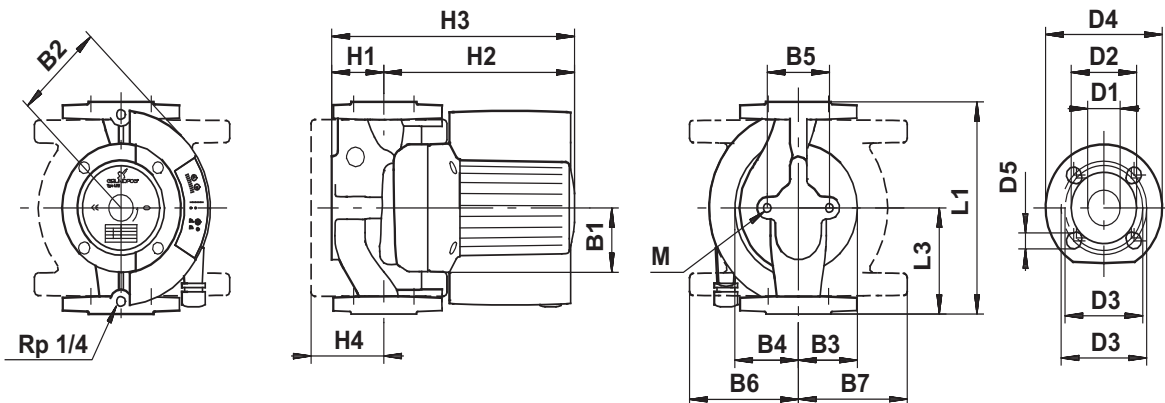


TM02 1911 2204

Electrical data

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

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

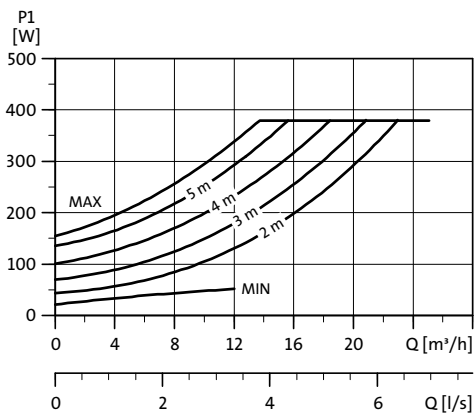
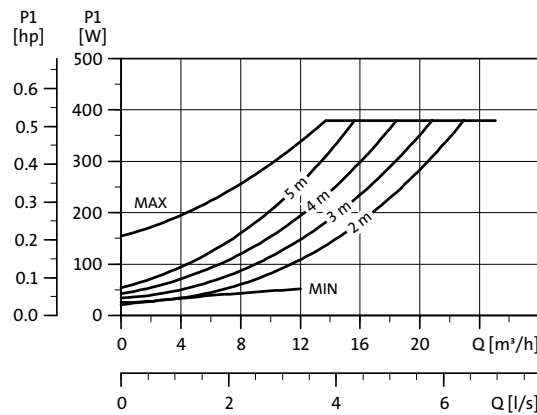
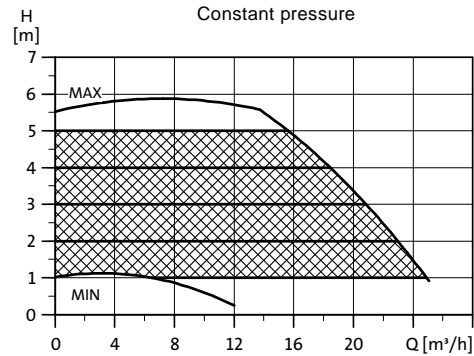
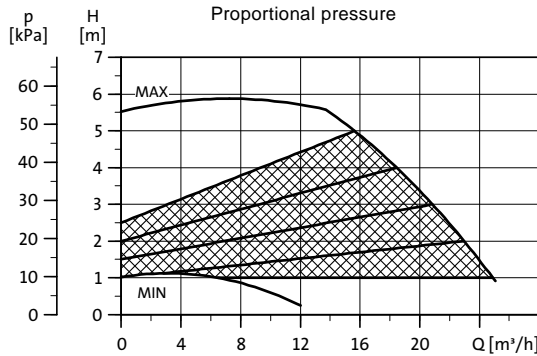


TM02 0239 3608

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 40-120 F (N)	250	125	77	115	75	80	96	140	112	65	266	310	94	40	84	100/110	150	14/19	M12	15.5	17.5	0.034

MAGNA 50-60 F (N)

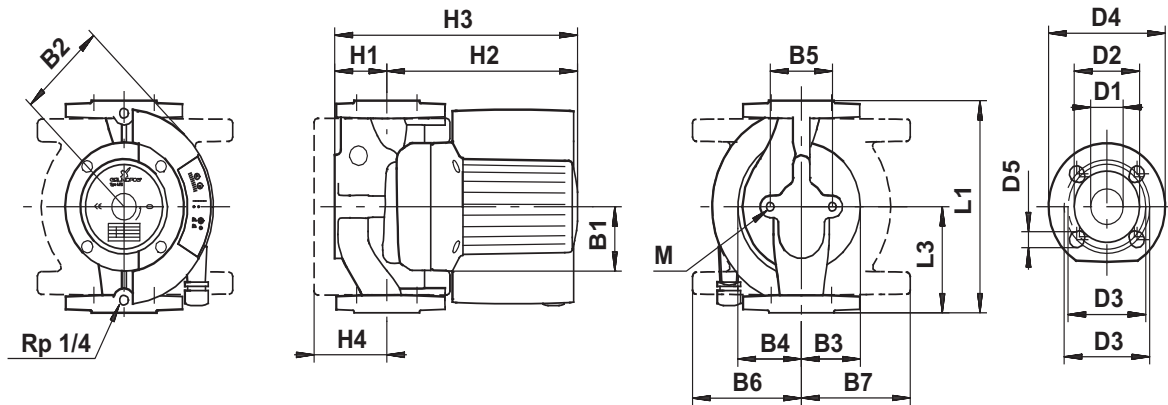


TM02 1912 2204

Electrical data

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

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

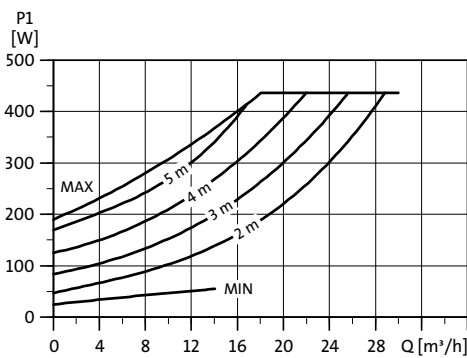
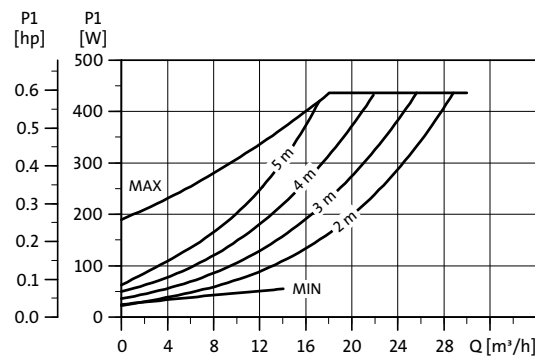
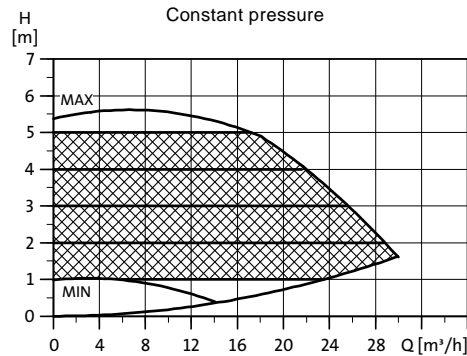
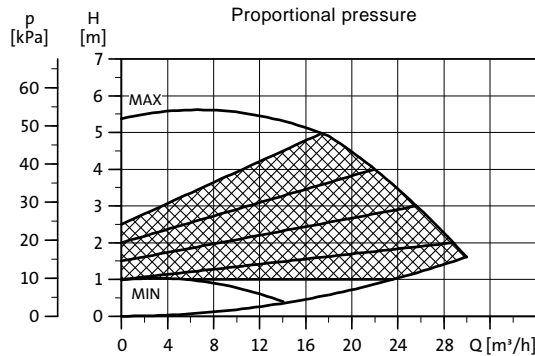


TM02 0239 3608

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 50-60 F (N)	280	140	77	115	84	98	96	141	121	78	245	325	103	50	102	110/125	165	14/19	M12	18.5	20.5	0.043

MAGNA 65-60 F (N)

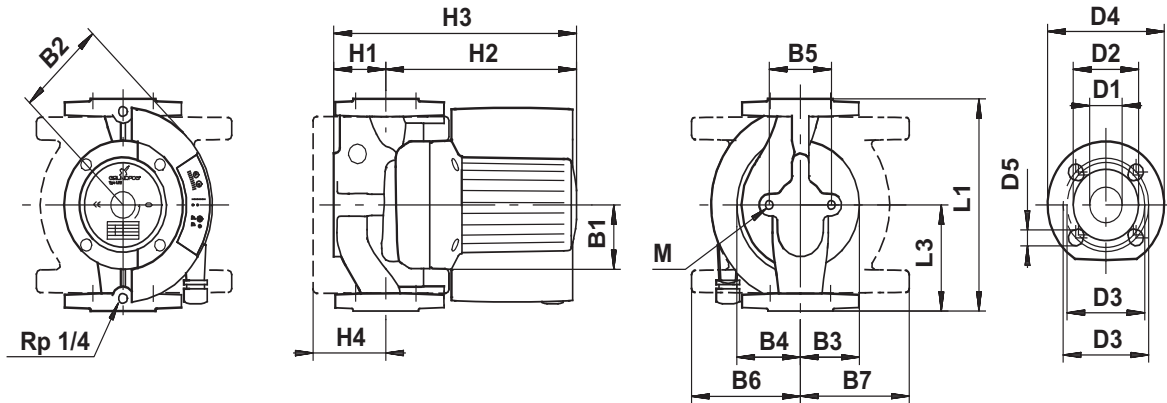


TM02 1913 2204

Electrical data

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

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

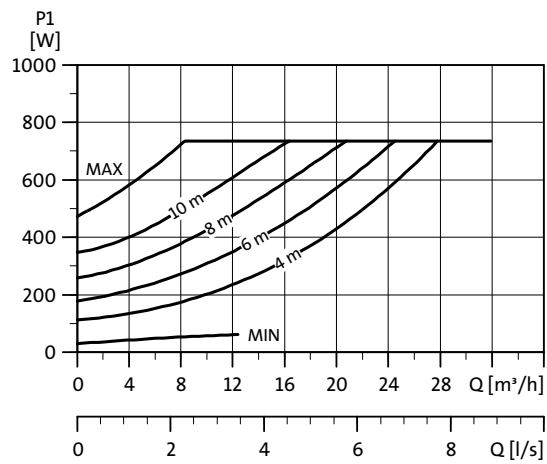
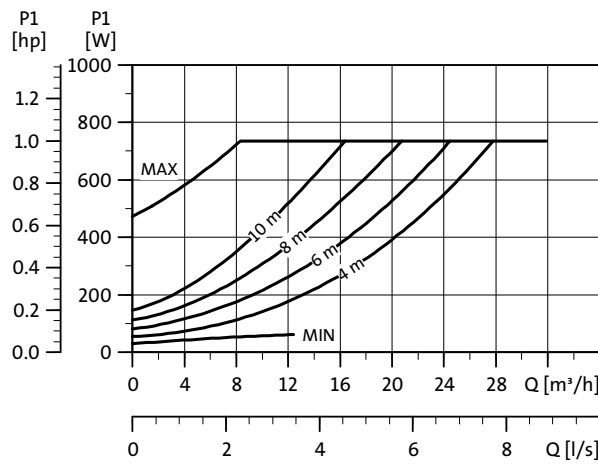
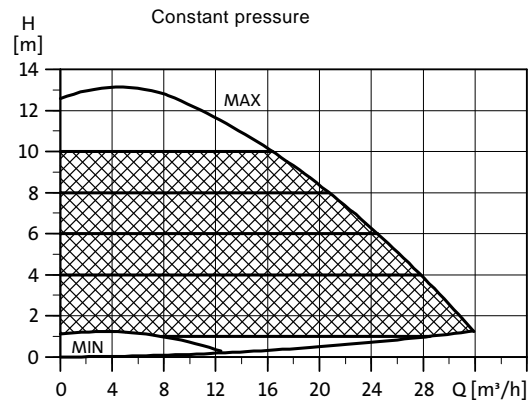
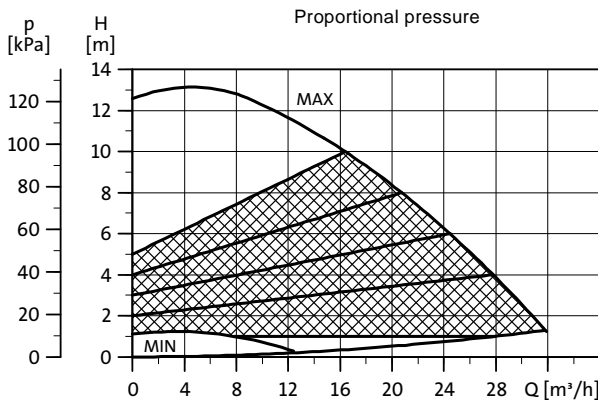


TM02 0239 3608

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 (N)	340	170	77	115	88	104	96	141	121	82	255	335	107	65	119	130/145	185	14/19	M12	22	24	0.043

MAGNA 50-120 F (N)

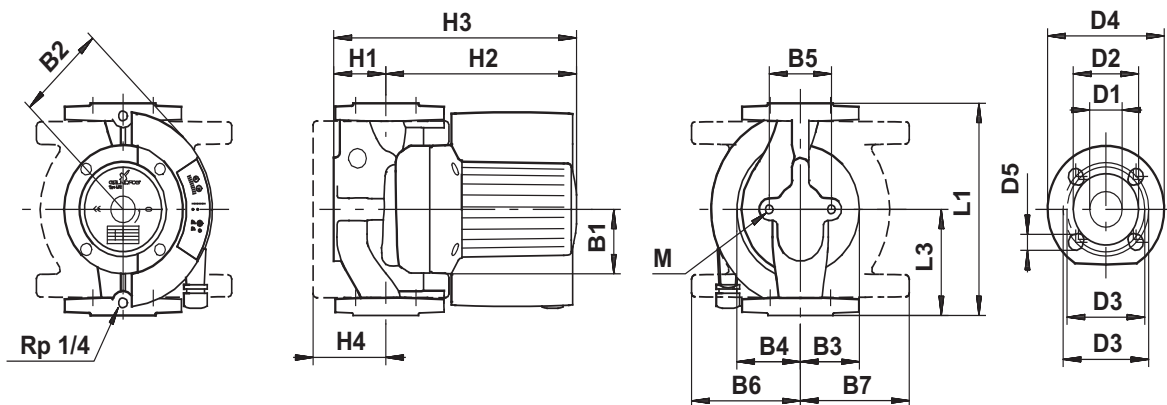


TM02 8814 2204

Electrical data

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

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

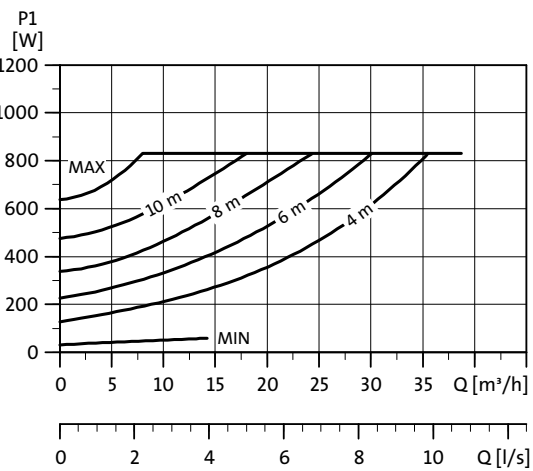
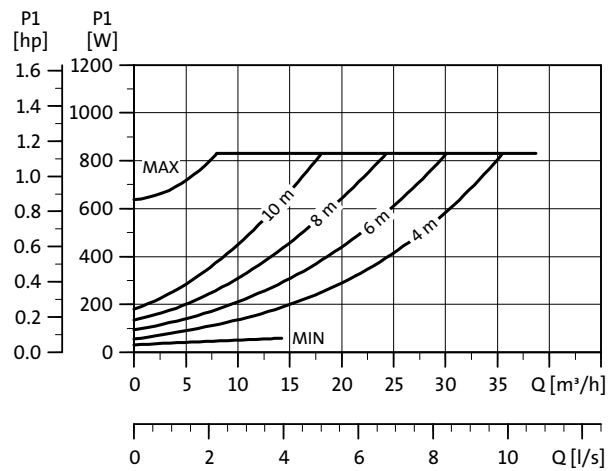
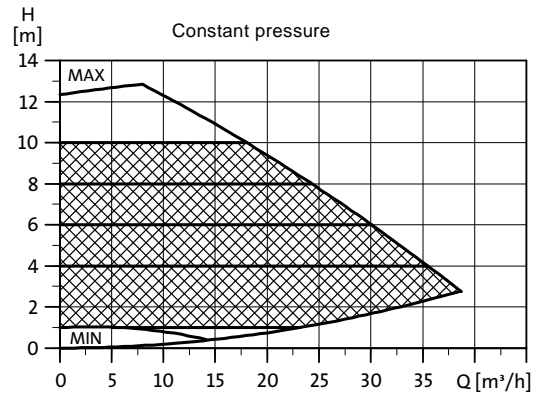
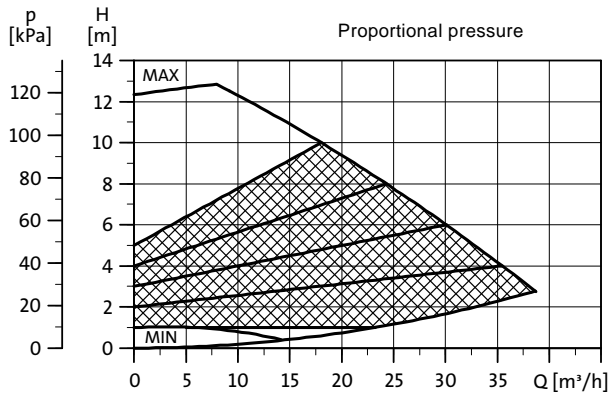


TM02 0239 3608

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 50-120 F (N)	280	140	77	125	84	98	96	141	121	78	245	325	103	50	102	110/125	165	14/19	M12	22	24	0.043

MAGNA 65-120 F (N)

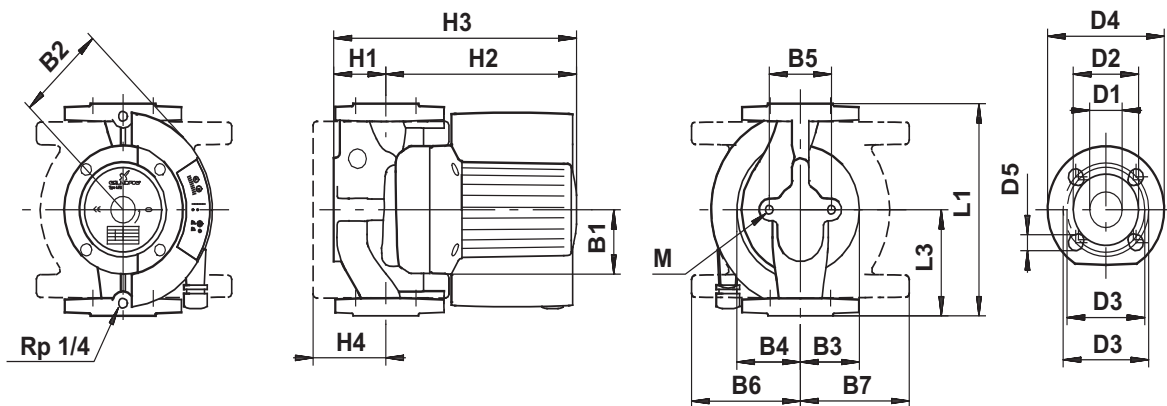


TM02 8815 2204

Electrical data

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

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

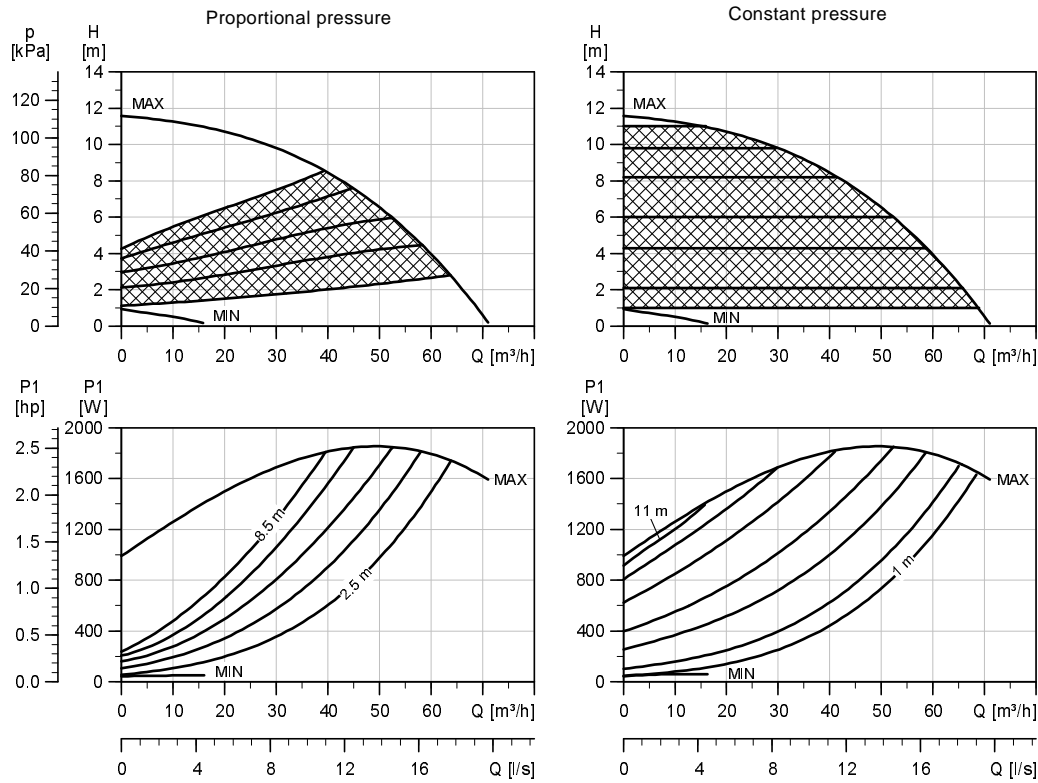


TM02 0239 3608

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 65-120 F (N)	340	170	77	125	88	104	96	141	121	82	255	335	107	65	119	130/145	185	14/19	M12	25.5	27.5	0.043

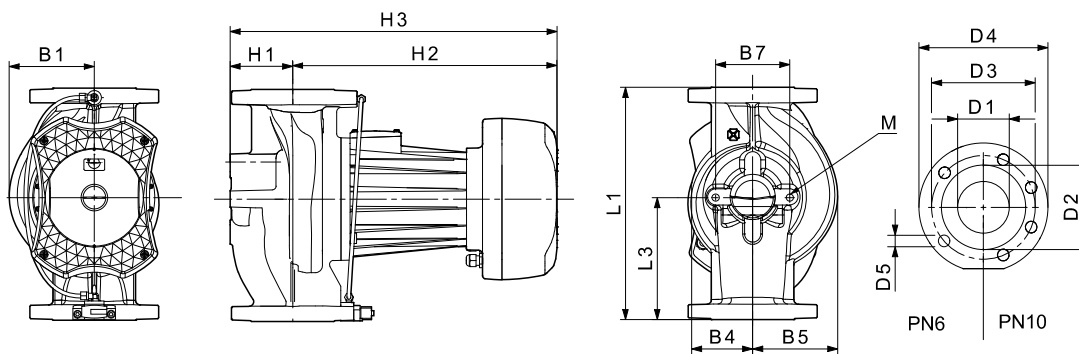
UPE 80-120 FZ



TM04 6855 1010

Electrical data

U_n [V]	P_1 [W]	$I_{1/1}$ [A]
1 x 230	Min.	60
	Max.	1900

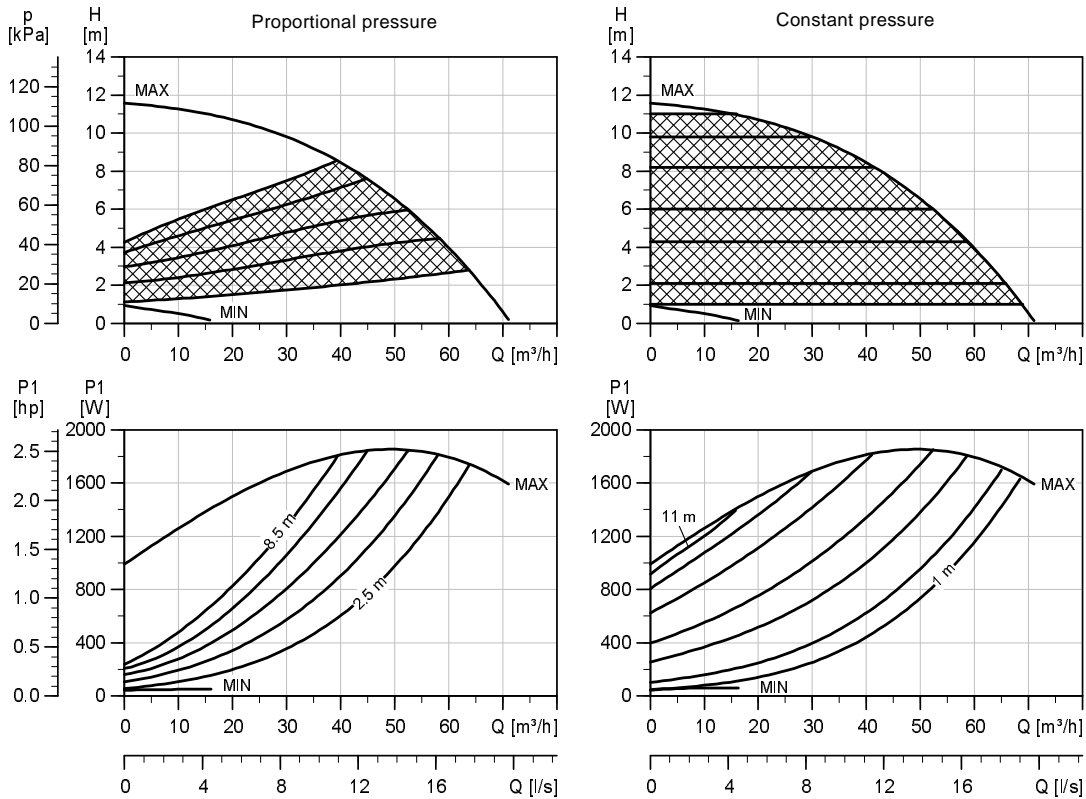


TM04 5955 4509

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 FZ (PN 6)	360	-	180	131	-	100	131	115	-	-	98	402	500	-	80	128	150/ 160	200	18	M12	43	47.8	0.091
UPE 80-120 FZ (PN 10)	360	-	190	131	-	100	131	115	-	-	98	402	500	-	80	128	160	200	18	M12	43	47.8	0.091

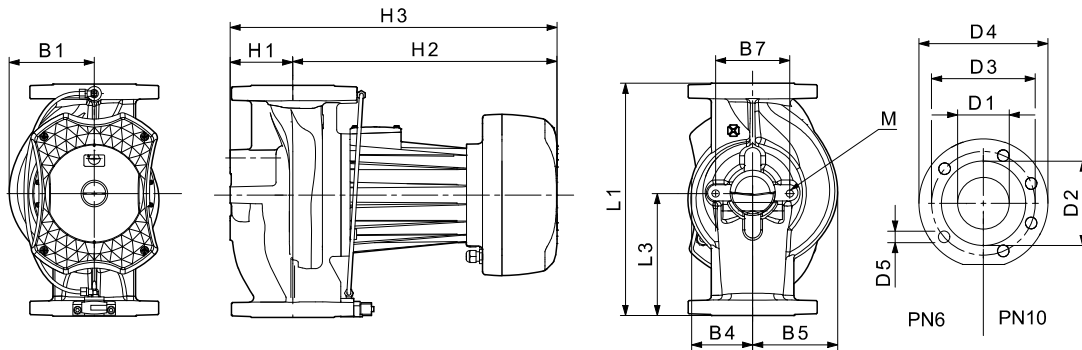
UPE 100-120 FZ



TM04 6855 1010

Electrical data

U_n [V]		P_1 [W]	$I_{1/n}$ [A]
1 x 230	Min.	60	0.6
	Max.	1900	13.2

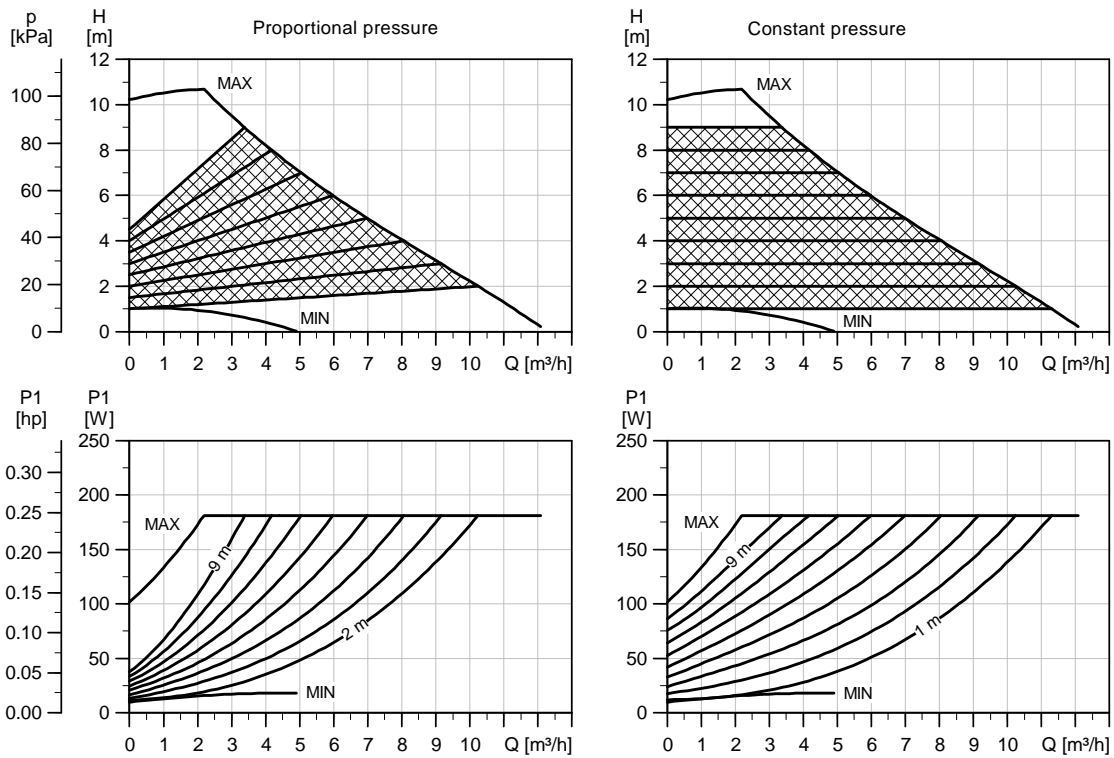


TM04 5955 4509

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 100-120 FZ (PN 6)	450	-	225	135	-	100	135	115	-	-	120	410	530	-	100	160	170	220	18	M12	50	56.8	0.13
UPE 100-120 FZ (PN 10)	450	-	235	135	-	100	135	115	-	-	120	410	530	-	100	160	180	220	18	M12	50	56.8	0.13

MAGNA D 40-100 F

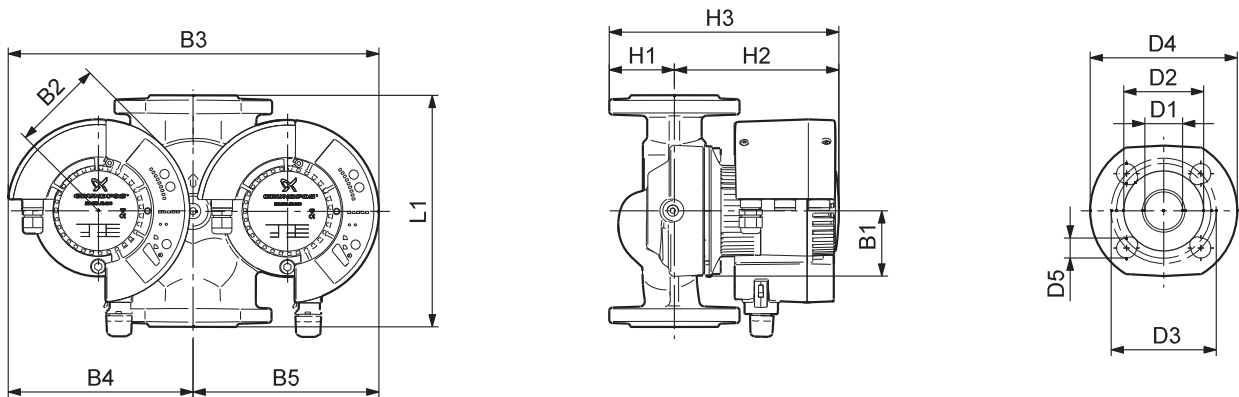


TM031566 2305

Electrical data

U_n [V]	P_1 [W]	$I_{1/n}$ [A]
1 x 230-240	Min.	10
	Max.	180

Curves and electrical data apply to one operating pump head.

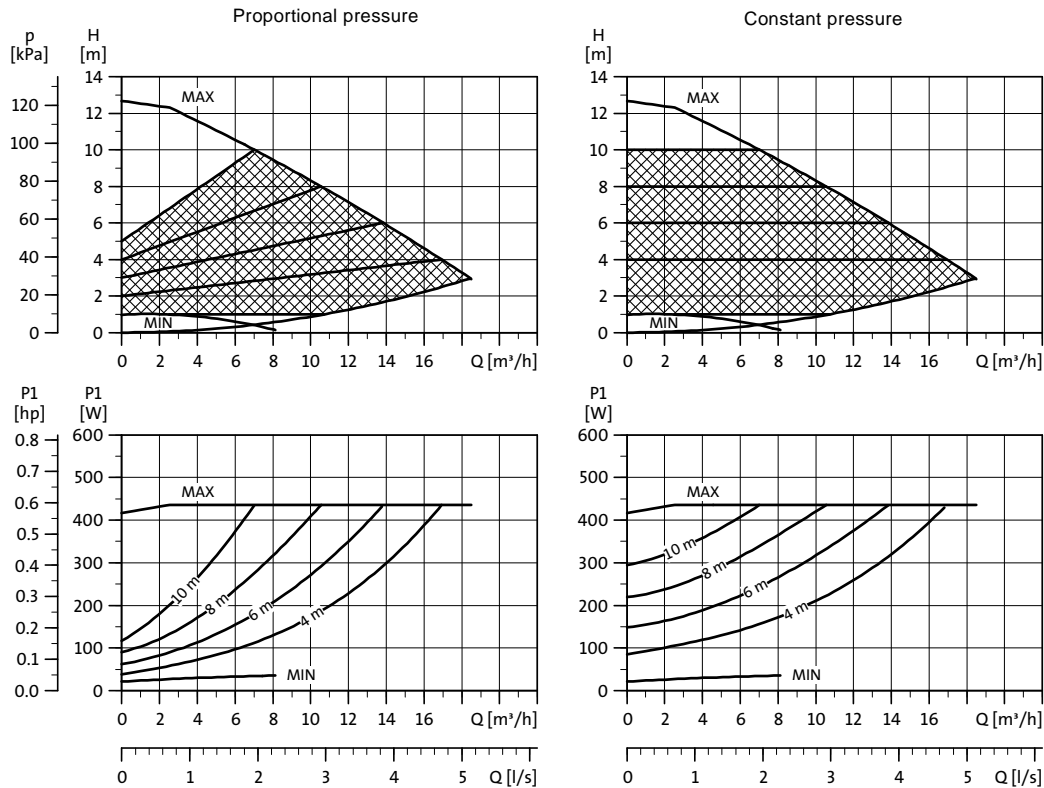


TM03 1024 1405

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]														Weight [kg]		Ship. vol. [m ³]
	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 32-120 F

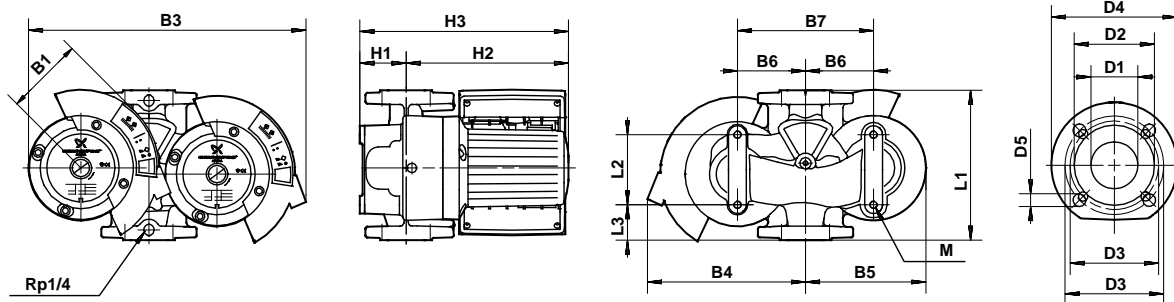


TM02 1910 2204

Electrical data

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

Curves and electrical data apply to one operating pump head.

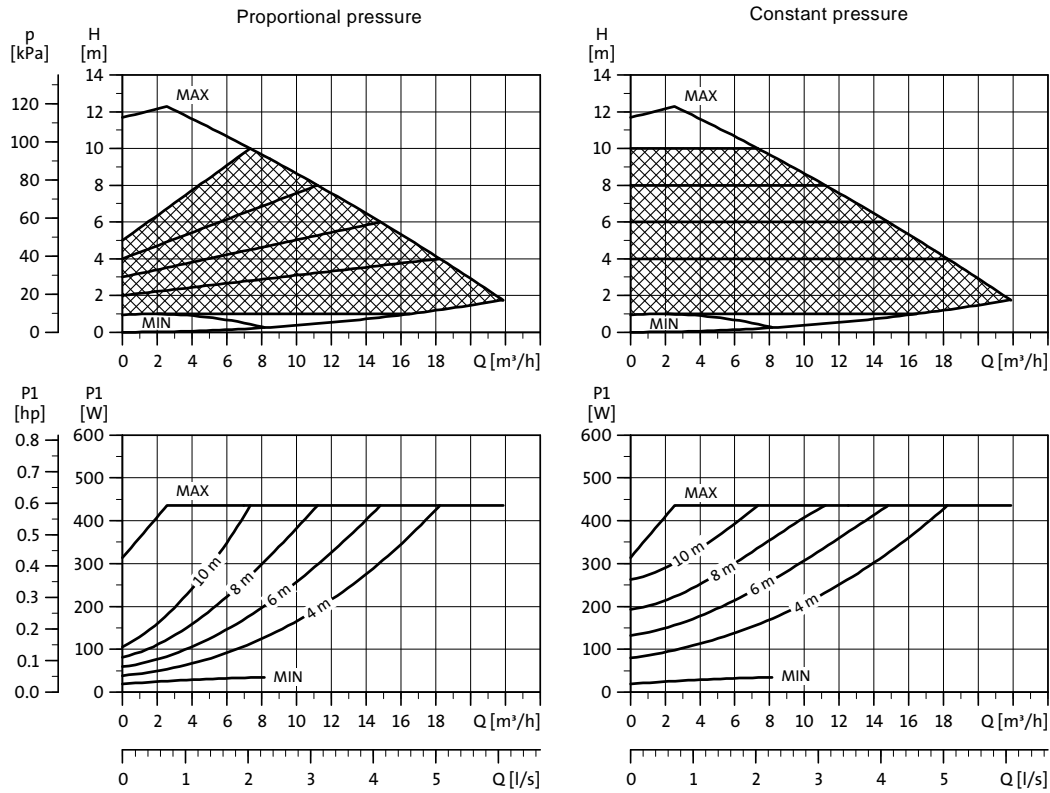


TM02 0790 2601

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

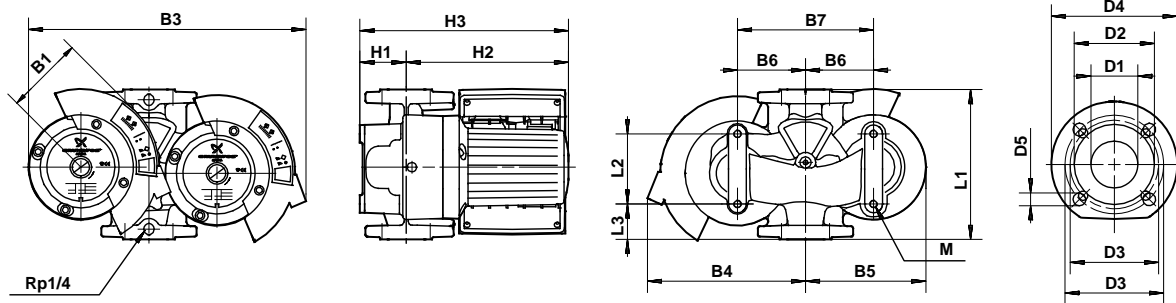


TM02 1911 2204

Electrical data

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

Curves and electrical data apply to one operating pump head.

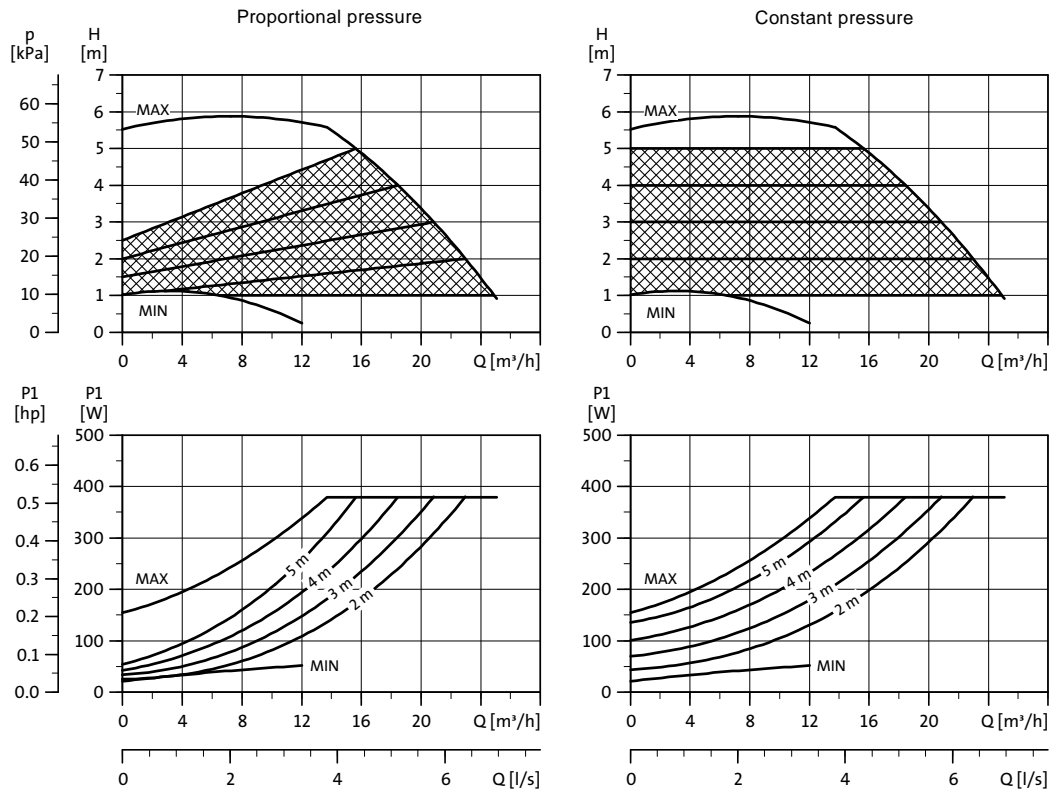


TM02 0790 2601

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 50-60 F

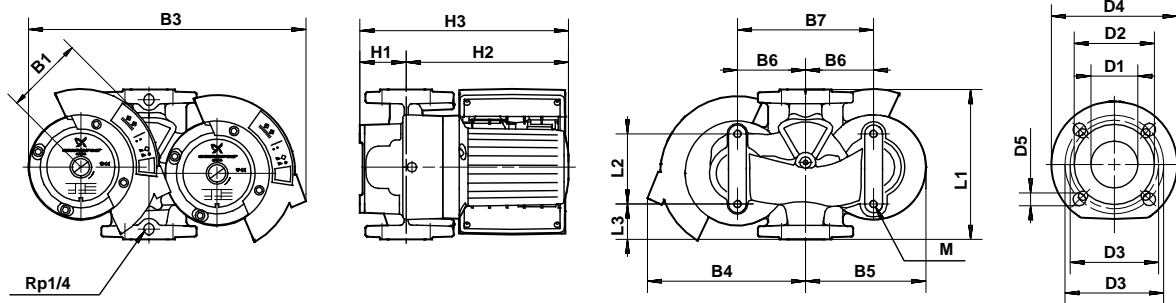


TM02 1912 2204

Electrical data

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

Curves and electrical data apply to one operating pump head.

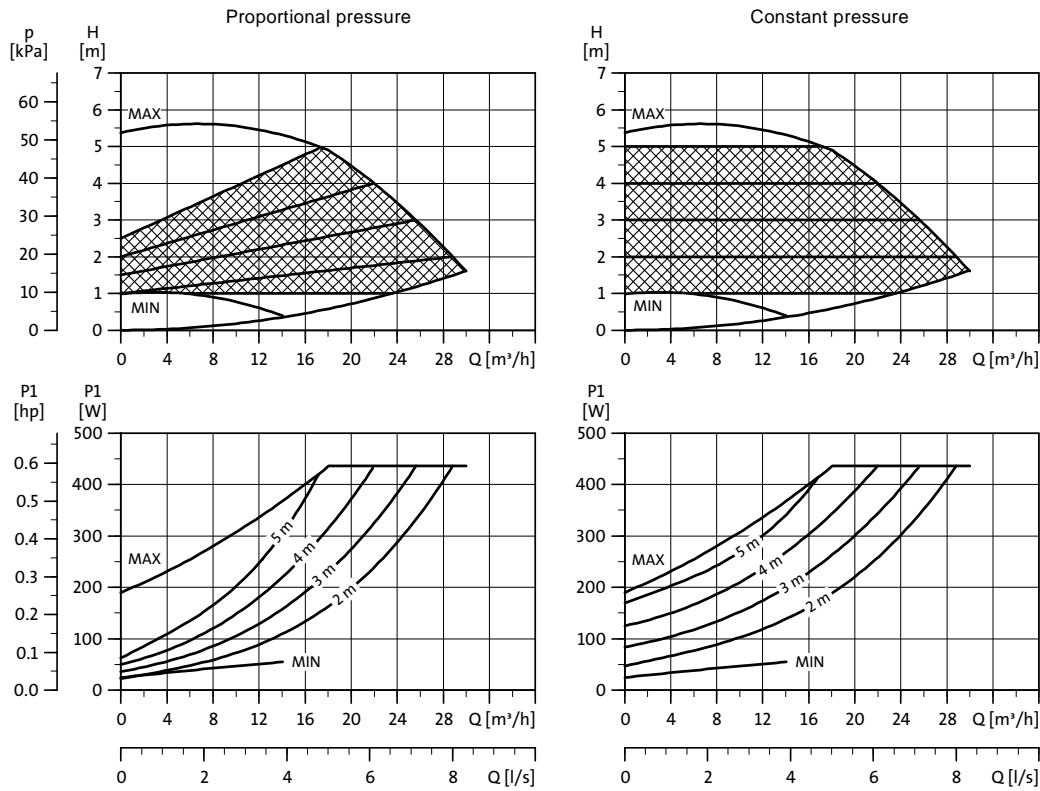


TM02 0790 2601

Dimensions and weights

Pump type PN 6 / PN 10	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]	
	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

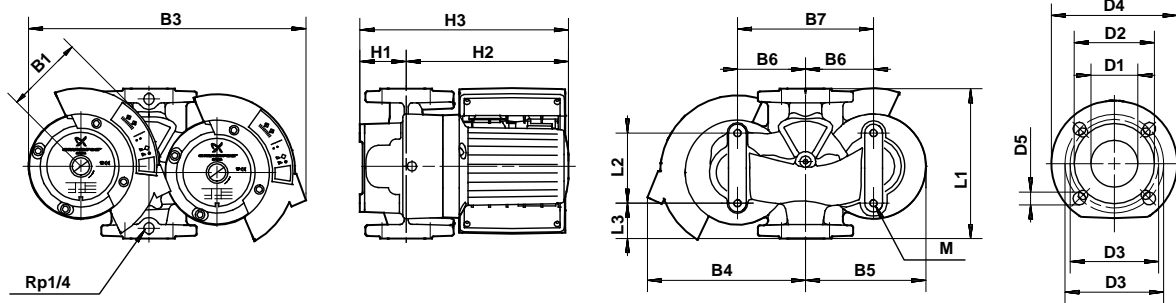


TM02 1913 2204

Electrical data

U_n [V]		P_1 [W]	I_{M1} [A]
1 x 230-240	Min.	25	0.17
	Max.	450	2.0

Curves and electrical data apply to one operating pump head.

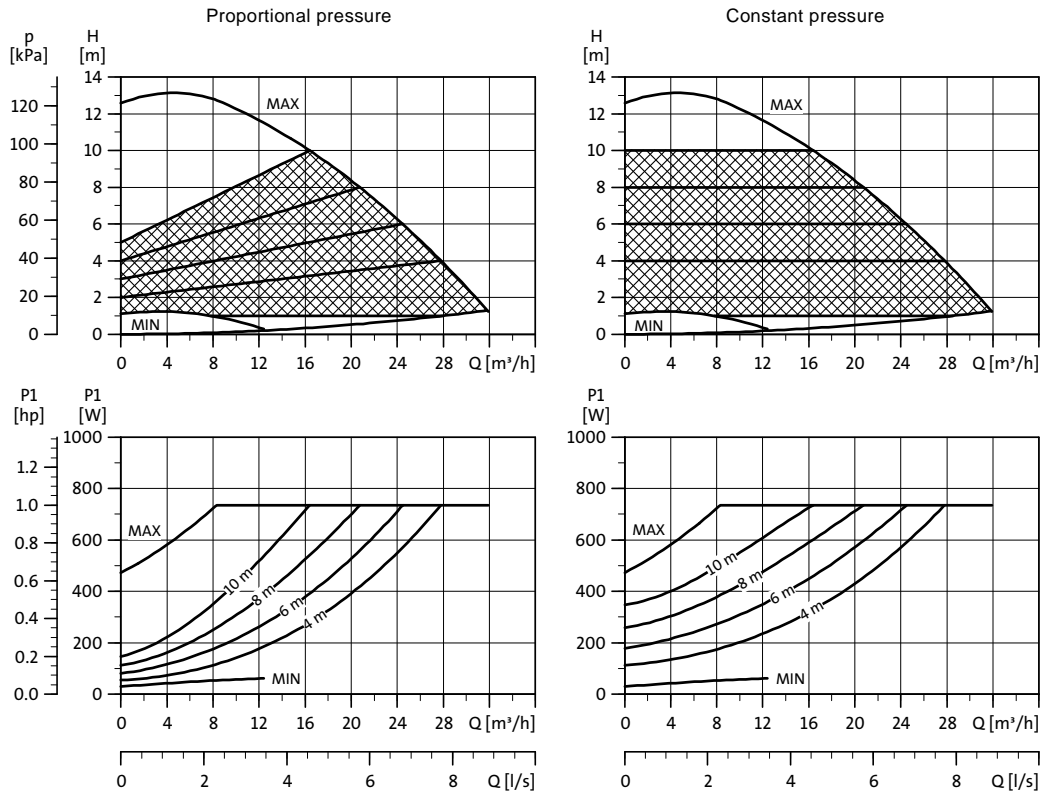


TM02 0790 2601

Dimensions and weights

Pump type	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 50-120 F

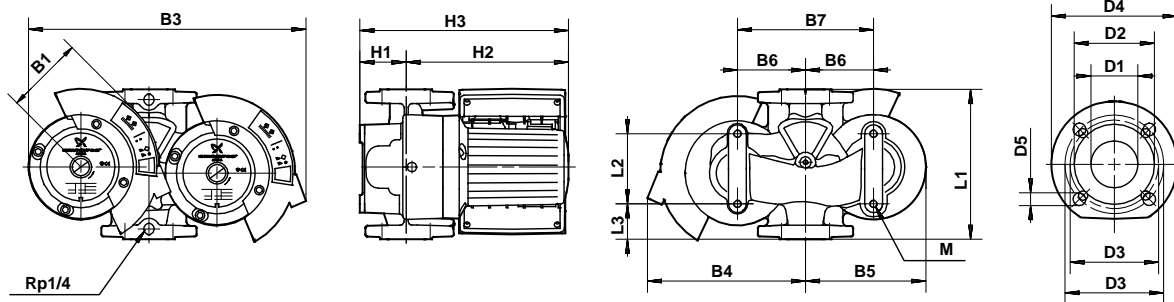


TM02 8814 2204

Electrical data

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

Curves and electrical data apply to one operating pump head.

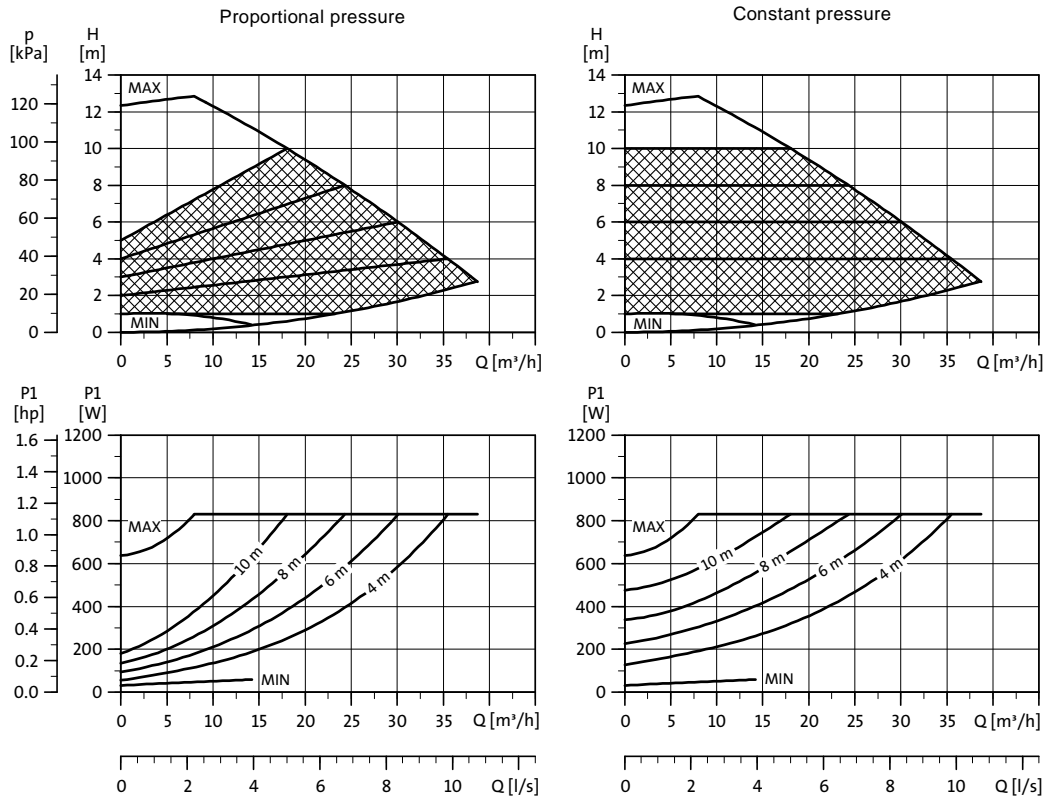


TM02 0790 2601

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

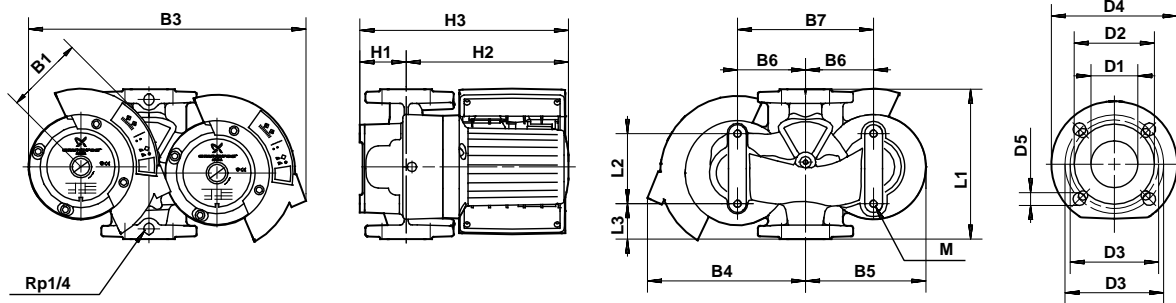


TM02 8815 2204

Electrical data

U_n [V]	P_1 [W]	$I_{1/M}$ [A]
1 x 230-240	Min.	0.28
	Max.	3.9

Curves and electrical data apply to one operating pump head.

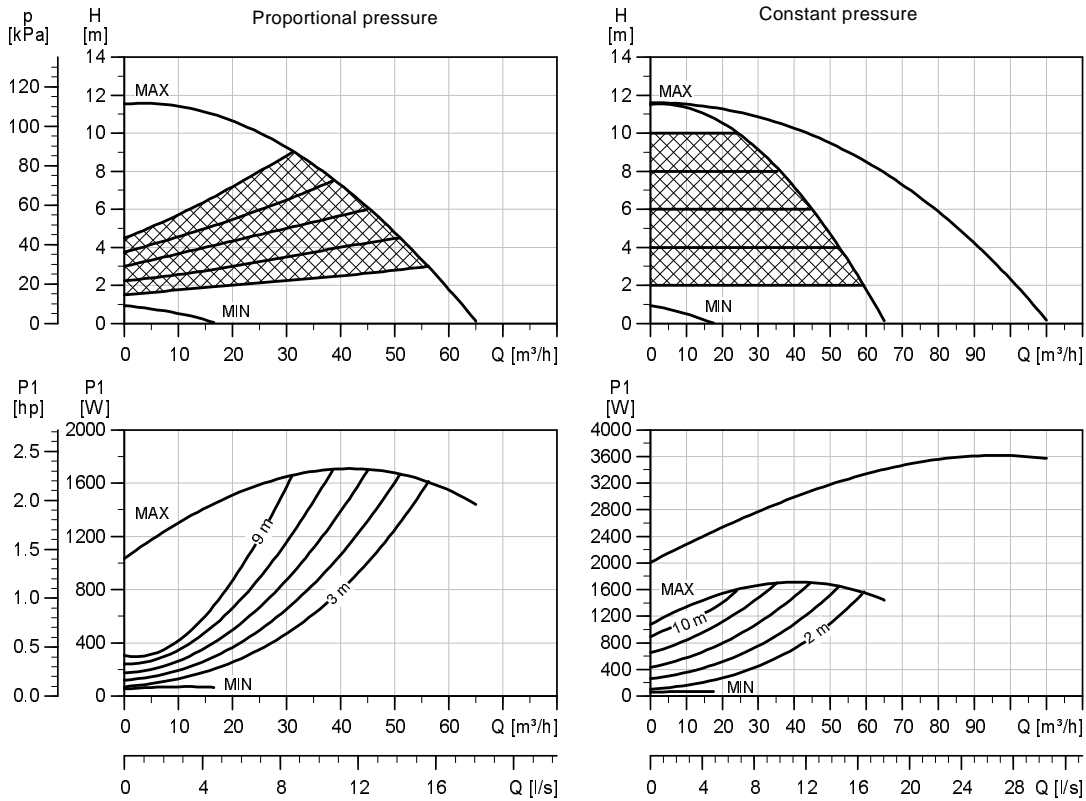


TM02 0790 2601

Dimensions and weights

Pump type	Dimensions [mm]																	Weights [kg]		Ship. vol. [m³]	
	L1	L2	L3	B2	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 80-120 FZ

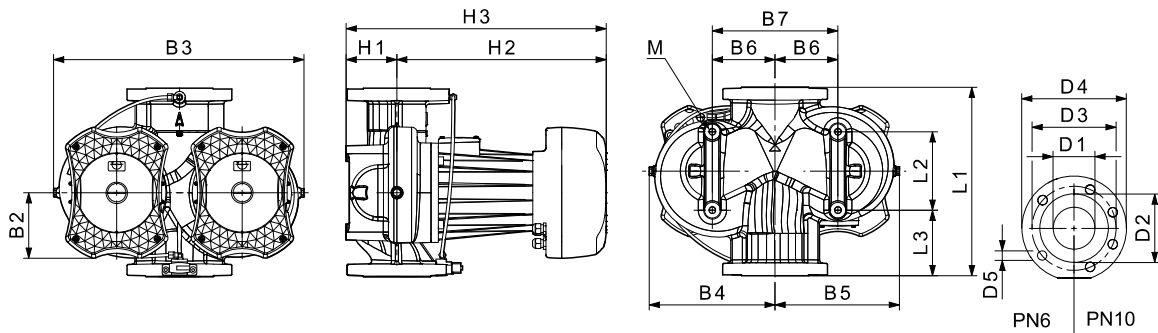


TM04 6619 0610

Electrical data

U_n [V]		P_1 [W]	$I_{1/n}$ [A]
1 x 230	Min.	60	0.6
	Max.	1820	12.5

Electrical data apply to one operating pump head.



TM04 5956 4509

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 FZ (PN 6)	360	150	85	-	125	476	235	241	120	240	98	402	500	80	128	150	200	18	M14	78	87.6	0.154
UPED 80-120 FZ (PN 10)	360	150	85	-	125	476	235	241	120	240	98	402	500	80	128	160	200	18	M14	78	87.6	0.154

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

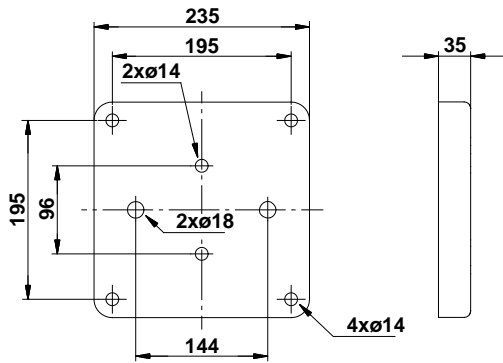


Fig. 27 Base plate for MAGNA

TM00 3755 5097

Adapter

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

Material: Steel, S235JR (EN 10025).



TM03 2460 4305

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

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

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	PN 10	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	PN 10	Rp 1 1/4	505539

Counter flanges

The flange kit comprises:

- 2 flanges with internal thread (ISO sealing pipe thread) or 2 flanges for welding/soldering
- 2 gaskets
- bolts.

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	PN 10	Rp 1 1/2	539701
		40 mm	539702
MAGNA (D) 50	PN 10	Rp 2	549801
		50 mm	549802
MAGNA (D) 65	PN 10	Rp 2 1/2	559801
		65 mm	559802
UPE(D) 80 FZ	PN 6	Rp 3	569902
		80 mm	569901
	PN 10	Rp 3	569802
		80 mm	569801
UPE 100 FZ	PN 6	Rp 4	579901
	PN 10	100 mm	579902
	PN 10	Rp 4	579801
		100 mm	579802
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)	PN 10	Rp 1 1/2	539711
		40 mm	539712
MAGNA 50 (N)	PN 10	Rp 2	549811
		50 mm	549812
MAGNA 65 (N)	PN 10	Rp 2 1/2	559811
		65 mm	559812

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

mm: Flange for welding/soldering.

Counter flanges according to ISO 7005-1.

Insulation kits for UPE, heating

Single-head UPE pumps can be fitted with insulation shells for heating applications.

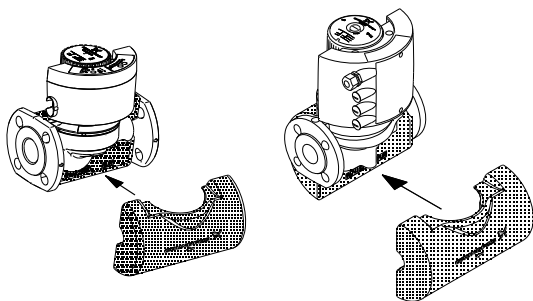
A kit consists of two shells.

Pump type	Product number
UPE 80-120 FZ, PN 6/PN 10	97525627
UPE 100-120 FZ, PN 6/PN 10	97525628

Insulation kits for MAGNA, heating

Insulation shells for heating applications for single-head MAGNA pumps are included from factory.

A kit consists of two shells.



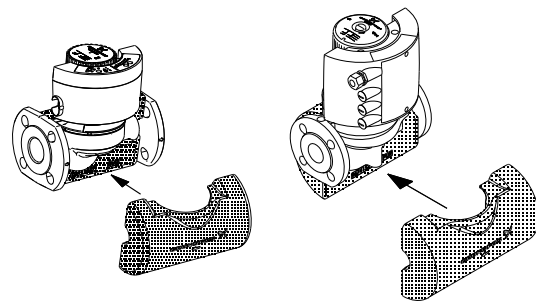
TM04 0469 0708 - TM04 0456 0708

Fig. 28 Fitting the insulation 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
MAGNA 32-120 F	97518230
MAGNA 40-120 F	97518241
MAGNA 50-60 F, 50-120 F	97518242
MAGNA 65-60 F, 65-120 F	97518243

Insulation kits for MAGNA, air-conditioning

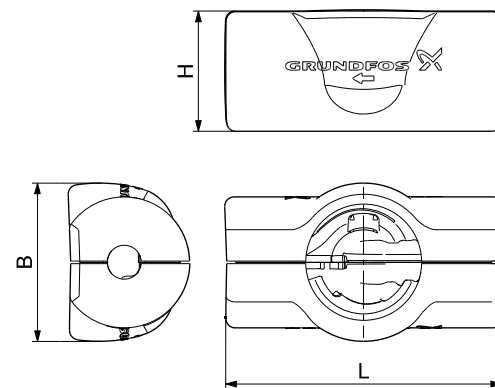
Single-head MAGNA pumps can be fitted with insulation shells for air-conditioning applications. A kit consists of two shells made of polyurethane (PUR) and a self-adhesive seal to ensure tight assembly.



TM04 0469 0708 - TM04 0456 0708

Fig. 29 Fitting the insulation shells to a MAGNA pump

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



TM04 0147 4907

Fig. 30 Dimensional sketch, insulation shells

Pump type	Dimensions			Product number
	L	B	H	
MAGNA 25-40, 25-60, 25-100, 32-40, 32-60, 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
MAGNA 32-120 F	370	205	215	96741526
MAGNA 40-120 F	395	210	210	96741527
MAGNA 50-60 F, 50-120 F	434	243	232	96741528
MAGNA 65-60 F, 65-120 F	490	263	252	96741529

Expansion modules for MAGNA 25-40 25-60, 25-80, 25-100, 32-40, 32-60, 32-80, 32-100, 40-60, 40-80, 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 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, 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.

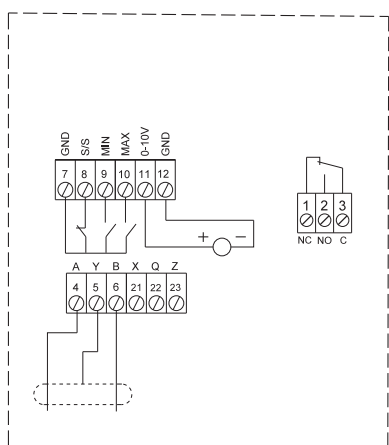
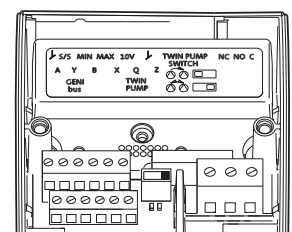


Fig. 31 Connection of GENI module

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.

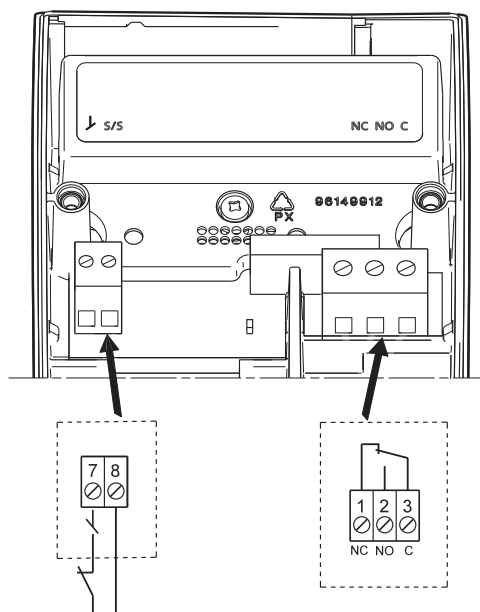


Fig. 32 Connection of relay module

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 control box cover and placing the module inside the control 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 ↘). 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.
	<ul style="list-style-type: none"> • 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. Wire cross-section: 0.25 - 1 mm ² . Maximum cable length: 1200 m.

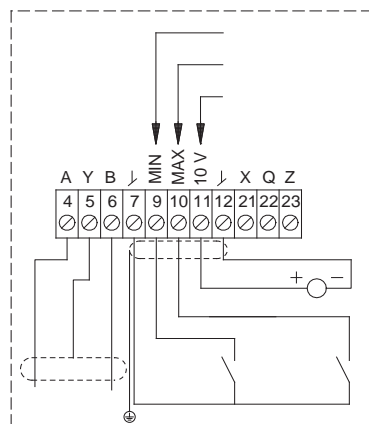
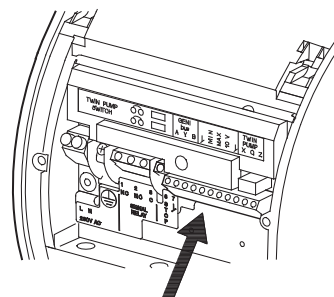


Fig. 33 Connection of GENI module

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. Wire cross-section: 0.25 - 1 mm ² .

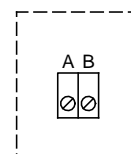
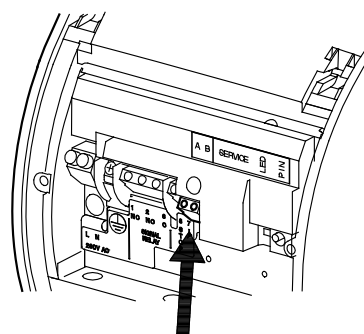


Fig. 34 Connection of LON module

TM02 0236 1007

TM02 0237 0904

R100

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

Product	Product number
R100	96615297

Control MPC Series 2000

Control MPC Series 2000 is a pump controller designed for the control and monitoring of up to six MAGNA/UPE 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 (remote)
- flow
- temperature
- temperature difference.

Product	Number of MAGNA/UPE 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. 35 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 300

For communication via BACnet MS/TP.

Description	Fieldbus protocol	Product number
CIU 100	LON	96753735
CIU 150	Profibus	96753081
CIU 200	Modbus RTU	96753082
CIU 250	GSM/GPRS	96787106
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.

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 25-40	-	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 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 80-120 FZ	-	-	-	-	96988410	96988412
UPE 100-120 FZ	-	-	-	-	96988414	96988415
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 80-120 FZ	-	-	-	-	96988411	96988413

MAGNA, stainless steel

Pump type	Product number		
	Pipe connection		Flange connection
	G 1 1/2	G 2	PN 6/PN 10
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	-
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



Sizing

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

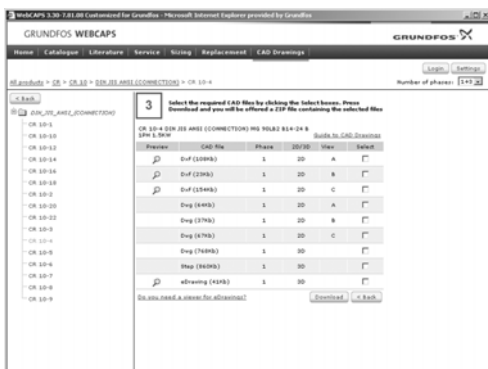
- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, 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. 36 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.

Subject to alterations.

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