CME, CM

50/60 Hz

GRUNDFOS

Table of contents

1. Product introduction

The Grundfos CME and CM pumps are horizontal, multistage, end-suction centrifugal pumps. The pumps are of the close-coupled type and available as either self-priming or non-self-priming pumps. CM pumps are fitted with mains-operated motors whereas the motor for CME pumps has an integrated frequency converter. Both pumps have mechanical shaft seals.

The pumps are available in these three material versions:

- cast iron (ASTM A48 CL30 / EN-GJL-200)[1)]
- stainless steel (AISI 304 / EN 1.4301)
- stainless steel (AISI 316 / EN 1.4401).

1) The pump shaft, impeller, chamber and filling plugs are made of stainless steel (EN 1.4301/AISI 304).

CME

TM066197

Grundfos CME pump

The CME pumps are built on the basis of CM pumps.

CME pumps belong to the so-called E-pump family.

The difference between the CM and the CME pump ranges is the motor.

The CME pump motor is a Grundfos MGE motor designed to EN standards. The motor incorporates a frequency converter.

Frequency control enables continuously variable control of the motor speed, which makes it possible to set the pump to operation at any duty point. The aim of continuous variable control of the motor speed is to adjust the performance to a given requirement.

You can connect a pressure sensor to the built-in frequency converter on CME pumps. For further information, see the section on sensors.

The pump materials are identical to those of the CM pump range.

Related information

Sensors for CME, CM

Highest energy efficiency rating worldwide

CME pumps are fitted with the new-generation MGE motors which are permanent-magnet motors incorporating a high-efficiency frequency converter. This ensures an even higher efficiency of the pump.

The motor is energy efficiency class IE5 according to IEC 60034-30-2. In combination with the integrated frequency converter, the combined power drive system is efficiency class IES2 according to IEC 50598-2.

When to select an E-pump

Select an E-pump if the following is required:

- controlled operation, that is the consumption fluctuates
- constant pressure
- communication with the pump.

Adaptation of performance through frequency-controlled speed control offers obvious benefits, such as the following:

- energy savings
- increased comfort
- control and monitoring of the pump performance.

Related information

Control options

CM

TM078902

Grundfos CM pumps

Pos.	Description
1	Cast-iron version
2	Stainless-steel version

The CM pumps are unique products that have been developed to fulfil a wide variety of customer demands.

The CM pumps are available in various sizes and numbers of stages to provide the flow rate and pressure required.

The CM pumps consist of two main components: the motor and the pump unit. The motor is a Grundfos motor designed to EN and ANSI standards. The pump unit incorporates optimised hydraulics and offers various types of connections.

The pumps offer many advantages, some of which are listed below and described in detail in the section on features and benefits.

- compact design
- worldwide usage
- high reliability

- service friendly
- wide performance range
- low noise
- customised solutions.

Related information

3. Features and benefits

ErP compliant

The product is energy-optimized and complies with the ecodesign requirements for water pumps specified in the ErP Directive (Commission Regulation (EC) No 547/2012), which became effective on 1 January 2013. As from this date, all pumps are classified and graduated in the Minimum Efficiency Index (MEI).

Minimum efficiency index

Minimum efficiency index (MEI) means the dimensionless scale unit for hydraulic pump efficiency at best efficiency point (BEP), part load (PL) and overload (OL). The Commission Regulation (EU) sets efficiency requirements to MEI ≥ 0.10 as from 1 January 2013 and MEI ≥ 0.40 as from 1 January 2015. An indicative benchmark for best-performing water pump available on the market as from 1 January 2013 is determined in the Commission Regulation.

- The benchmark for most efficient water pumps is MEI ≥ 0.70.
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable-speed drive that matches the pump duty to the system.
- Information on benchmark efficiency is available at http://europump.eu/efficiencycharts.

Efficiency of CME and CM pumps

Pump type	MEI	Efficiency at best efficiency point [%]
CME, CM 1 A	0.70	37.1
CME, CM 1 I/G	0.68	36.4
CME, CM 3 A	0.70	50.6
CME, CM 3 I/G	0.70	49.3
CME, CM 5 A	0.70	53.3
CME, CM 5 I/G	0.70	52.1
CME, CM 10 A	0.70	62.2
CME, CM 10 I/G	0.52	57.9
CME, CM 15 A	0.70	67.5
CME, CM 15 I/G	0.59	63.1
CME, CM 25 A	0.70	68.3
CME, CM 25 I/G	0.41	63.8

2. Applications

Grundfos CME and CM pumps are designed for various applications, ranging from small domestic installations to large industrial systems. The pumps are suitable for various pumping systems where the performance and material of the pump must meet specific demands.

Some of the most typical applications are listed below:

- cooling of server racks, chiller units, laser weldings
- hygienic cleaning, car wash, industrial dishwashers, CIP (clean-in-place) units
- pressure boosting in industrial / CBS (commercial building services) / DBS (domestic building services) water supply systems
- level control in tank filling
- water treatment in smaller RO (reverse osmosis) units.

CME in selected applications

Electronic speed control pumps for single-phase or three-phase mains connection provide intelligent pump operations that always match system loads.

The industry uses a large number of pumps in many different applications. Speed control is necessary in many applications due to different pump performances and operation modes.

Maximum efficiency and minimum energy consumption are guaranteed. Furthermore, operating profiles can be customized.

CME pumps are suited for temperature control, washing and cleaning, pressure boosting and other industrial applications.

Temperature control

The pumps are used in applications where a heating or cooling liquid is circulated in a closed loop to optimize temperatures. The pumps are also used for the cooling of equipments, or food and beverages in the food production industry.

TM085312

Server cooling racks in a server cooling room

TM085310

Cooling for laser equipment

The pumps can be used in temperature control systems such as the following:

- electronic data processing
- laser equipment
- medical equipment
- industrial refrigeration
- heating and cooling in industrial processes
- moisturising and humidifying.

The pumps are designed to ensure safe and reliable operation in applications involving temperature control.

The pumps are suitable for the following typical applications:

- liquids at temperatures from -20 °C to +120 °C
- water, anti-cooling liquids, coolant, oil, solute chemicals.

When pumping liquids at different temperatures, pump parts need to be made of appropriate materials and have appropriate sealings, such as O-rings and shaft seals. Liquids with viscosity and density different from water will affect pump performance, including, for example, power consumption.

On top of the range of standard pumps available for washers, Grundfos also offers special pumps developed to handle different media. If the water contains oil, the shaft seal material must be able to withstand the specific liquid. Particularly aggressive detergents require that the pump material is also designed for handling such liquids.

For more information on pump selection, see the liquids section in Grundfos Product Center at www.grundfos.com.

Pumping high-temperature liquids

Pumping hot liquids such as water-based liquids up to 120 °C is hard on the pump parts, including shaft seals, rubber parts and sleeve versions.

Pumping high-viscous liquids

In applications where high-viscous liquids are pumped, the motor of the pump can get overloaded, which reduces the pump performance.

The viscosity of a pumped liquid depends on the liquid and its temperature.

Pumps with oversize motors meet the above requirements.

Related information

Ambient temperature

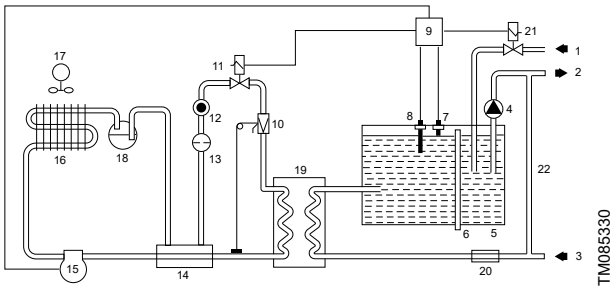
Maximum operating pressure and permissible liquid temperature

Operating range of the shaft seal

Viscosity

29. Grundfos Product Center

CME in temperature control systems



Temperature control system

Pos.	Description
1	Water inlet
2	Exit flow
3	Return flow
4	Pump
5	Tank
6	Overflow pipe
7	Level sensor
8	Temperature sensor
9	Microprocessor
10	Thermostatic expansion valve
11	Solenoid valve, R407C
12	Sight glass
13	Filter
14	Heat equalizer
15	Compressor
16	Air cooled condenser
17	Fan
18	Receiver
19	Evaporator
20	Flow control
21	Solenoid valve water intake
22	Bypass

CME offers professional control that adds additional value to the system. In applications where reliable temperature control is essential, an E-solution will guarantee optimum temperature to ensure optimum operating conditions. E-pumps with an integrated frequency converter offer pump-related functionalities that benefit most systems in terms of comfort, user-friendliness, process adaptability and operating economy. By regulating pump speed according to demand, energy consumption and operating costs are significantly reduced. Compared to fixed-speed pump solutions, E-solutions can save up to 50 % energy annually.

Additional benefits of E-solutions are as follows:

- **constant temperature:** keeps the temperature constant, regardless of the flow
- **automated derating:** ensures optimal tolerance of ambient temperatures
- **setpoint influence:** ensures reliable and precise regulation due to changes in parameters
- **standstill heating:** heats up the motor during standstill to avoid damaging condensation
- **fewer components:** pump, motor and converter are built into one unit to make installation, maintenance and service easier.
- communication with most SCADA systems

CME can be customised to meet specific requirements. For example, pump curves can be stretched, extra functions can be added and special operating panels can be included. If the standard optimisation is not enough, please contact Grundfos for customized solutions.

Washing and cleaning

CME and CM pumps can be used in washing and cleaning applications, which usually involve high liquid temperatures, many starts and stops, or mounting the pump on a trolly.

TM085308

Cleaning system in a dairy plant

TM085307

Cleaning system in a car wash

Typical washing and cleaning applications are as follows:

- degreasing and washing of production equipment in industrial environments such as the food and beverage industry
- washing machines
- vehicle-washing tunnels
- mobile-washing units
- units for CIP (clean-in-place).

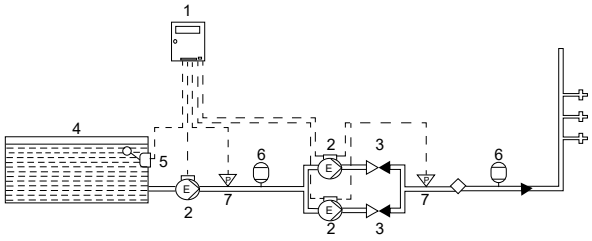
CME in washing and cleaning systems

Grundfos has many years of experience in the washing and cleaning business.

We offer a variety of dedicated solutions, for example, the following:

- vehicle washes
- wash-down systems
- parts washers.

Grundfos pumps include very compact pumps that save space without compromising on performance. Grundfos offers motors, speed control units and monitors that improve the performance of the system. If you are building a new washing and cleaning system, we recommend that you contact Grundfos early in the development process. Most of our pumps can be adjusted to match specific requirements and optimise the entire system.



Washing and cleaning system

Pos.	Description
1	Grundfos LC level controller
2	Pump
3	Valve
4	Tank
5	Level switch
6	Pressure tank
7	Pressure sensor

Grundfos pumps are suitable for parts washer applications in the industry, allowing pumps to be customised in terms of flow rate and pressure to accommodate individual demands.

Washing and cleaning systems operate with a variety of control principles: the idea is to keep the pump running to generate pressure throughout the washing process. Systems with a feeding pressure start on a flow signal from the flow switch or the flowmeter. They stop on pressure or a flow signal and operate without a tank or accumulation. Systems with a break tank require a small tank to maintain the pressure. They start on pressure but it can be combined with a flow signal. The stop signal comes from the flow or pressure signal.

The signal can be an analogue signal or a switch. The instrumentation can be used for monitoring and control.

Pressure boosting

The water you need – where and when you need it

Ensuring a sufficient and reliable water supply throughout an industrial facility or building requires an intelligent water supply system. The intelligent CME solutions provide adequate pressure boosting or liquid transport regardless of the application and the water consumption pattern.

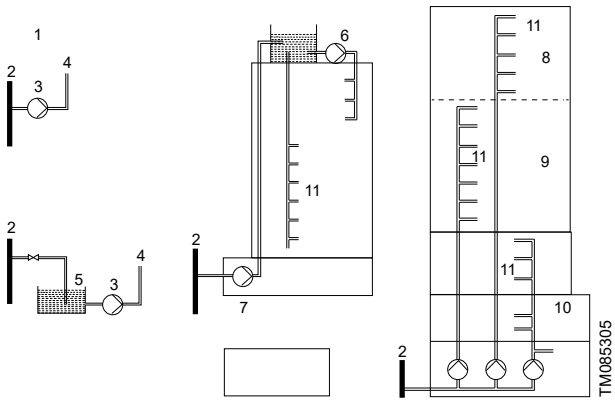
Pressure boosting for tap water

Pressure boosting in tall buildings

Typical pressure-boosting applications are as follows:

- pressure boosting and transfer of drinking water
- process-water systems.

CME in pressure boosting systems



Pressure boosting systems

Pos.	Description
1	Direct boosting
2	Water mains
3	Booster system
4	Exit flow to building
5	Break tank system
6	Pressure boosting from roof tank
7	Water transport to roof tank
8	Zone 3
9	Zone 2
10	Zone 1
11	Taps

Pressure boosting in large buildings is necessary if the public water supply is inadequate to supply the building due to low pressure or flow during peak consumption. The goal is to ensure a constant pressure throughout the building. Commercial buildings have predictable consumption variations during the day.

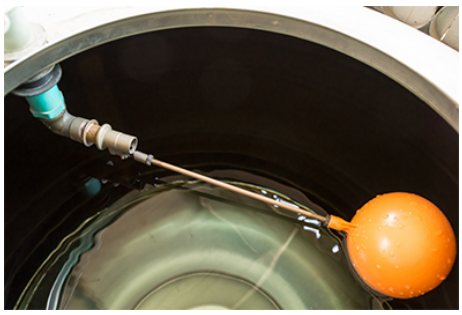
Level control

Easy pump control

One or two CME pumps, connected to Grundfos LC level controller, is the ideal system for emptying and filling small tanks in domestic and commercial buildings and industrial tank filling applications.

TM085306

Roof tanks

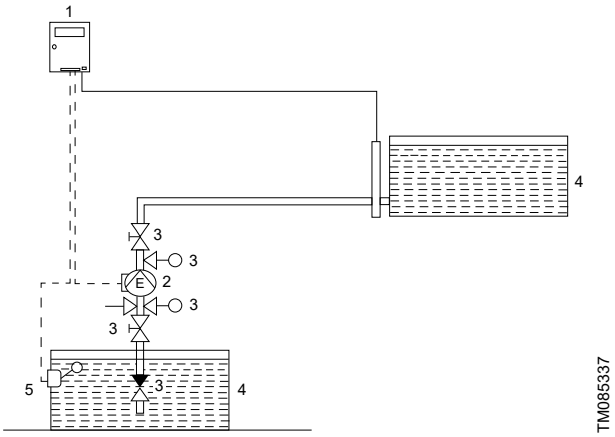


TM085309

Level control float switch

Typical level control applications

- Drainage and tank filling applications
- roof tank filling.



TM085337

Level control system

Pos.	Description
1	Grundfos LC level controller
2	Pump
3	Valve
4	Tank
5	Level switch

Consumption patterns are different between industries. Some require frequent use of water in smaller amounts while others need to fill or empty one or more large tanks quickly, or keep a constant level in the tanks. For constant level control, Grundfos offers P and PI control for filling and emptying applications. The full range of Grundfos pumps can be used for this application, depending on the specific demands.

The level can be controlled by a variety of sensors:

- pressure sensor
- differential pressure sensors
- capacitive sensors
- ultrasonic sensors
- float switches.

Filling requires direct regulation.

Emptying requires inverse regulation.

Related information

Sensors for CME, CM

Intended use in the United Kingdom

E-pumps fitted with motors that include Bluetooth or Ethernet connection, a radio module or a CIM 90, CIM 280, CIM 290, CIM 550, MI 301 interface module are not intended for use in any home appliance, home automation, home control system or consumer product in the UK.

3. Features and benefits

TM078910

CME and CM pumps

CME and CM pumps present the following features and benefits:

Compact design

Pump and motor are integrated in a compact and user-friendly design. The pump is fitted to a low-profile base plate, making it ideal for installation in systems where compactness is important.

Modular construction (customised solutions)

The modular construction of the pumps makes it easy to create many different variants based on standard factory parts. This means that it is possible to create pump variants that are customised for the application in question.

Energy-optimised pumps

CME and CM pumps are energy-optimised and comply with the ecodesign requirements for water pumps specified in the ErP Directive (Commission Regulation (EC) No 547/2012), in which pumps are classified and graduated in the Minimum Efficiency Index (MEI). See also the section on minimum efficiency index.

Worldwide usage

- With different voltage and frequency combinations, the CME and CM product ranges cover markets worldwide.
- The CME and CM product ranges have been approved and are marked for worldwide usage. See the section on approvals.

High reliability

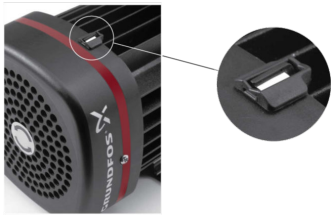
New state-of-the-art shaft-seal design and materials offer these benefits:

- high wear resistance and long operating life
- improved sticking and dry-running capabilities.

The pumps are less sensitive to impurities in the pumped liquid than similar pumps of the canned-rotor type.

Easy installation and commissioning

- An installation indicator fitted to three-phase CM pumps makes it easy to see if the electrical connection of the motor is correct. Based on the motor cooling air, it indicates the direction of rotation of the motor.



TM050870

Installation indicator

Service-friendly

- Service was in mind during the development.
- No special service tools are required.
- Spare parts are in stock for quick delivery.
- Service parts are available as kits, single parts or bulks.
- Service instructions and video make it simple to disassemble and assemble the pump.
- Service kit instructions are available where estimated necessary.

Additional features and benefits for self-priming pumps

The CM self-priming pump can create a suction lift of up to 8 metres in less than 5 minutes when installed and commissioned correctly.

- The pump is available in stainless steel AISI 304 / EN 1.4301 with EPDM or Viton O-rings.
- The pump is available for single-phase operation as standard and for three-phase operation on request.

Wide performance range

The pumps can be used in a wide range of applications, such as the following:

- temperature control
- pressure boosting
- washing and cleaning
- water treatment

See the product range in Grundfos Product Center at www.grundfos.com.

Low noise level

The pumps offer very silent operation.

High-performance hydraulics

Pump efficiency is optimized by the compact design of the hydraulic components and carefully crafted production technology.

Electrocoated cast-iron parts

- Optimised corrosion resistance
- better efficiency because of smooth surfaces.

Customised solutions

It is possible to create many different variants of the pumps. For further information, see the section on customisation.

- Motor adaptation
- pump modifications.

Grundfos motor

Grundfos motors are remarkably silent and highly efficient.

Grundfos motors are available with an integrated frequency converter designed for speed-controlled operation.

Data and literature about the pumps

All literature and technical data related to the pumps are available online in Grundfos Product Center at www.grundfos.com.

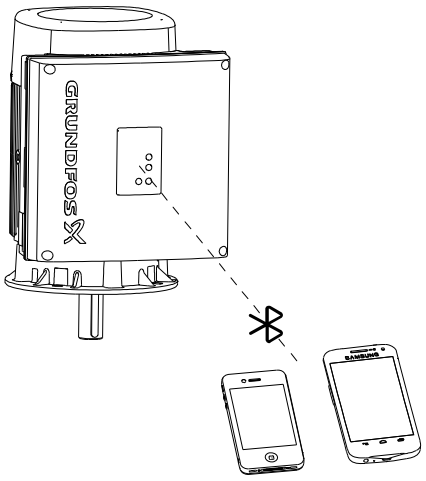
Related information

ErP compliant
Efficiency of CME and CM pumps
2. Applications
Temperature control
Washing and cleaning
Pressure boosting
cULus, pumps
27. Customisation
29. Grundfos Product Center

CME

Bluetooth

Via the built-in Bluetooth module, the product can communicate with Grundfos GO. Bluetooth communication can take place at distances up to 10 metres.



TM082930

Bluetooth information

Frequency of operation	2400 - 2483.5 MHz
Modulation type	GFSK
Data rate	2 Mbps
Transmit power	5 dBm EIRP with internal antenna

GLoWpan information

Frequency of operation	2405-2480 MHz
Modulation type	GP O-QPSK
Data rate	1 Mbps
Transmit power	5 dBm EIRP with internal antenna

Related information

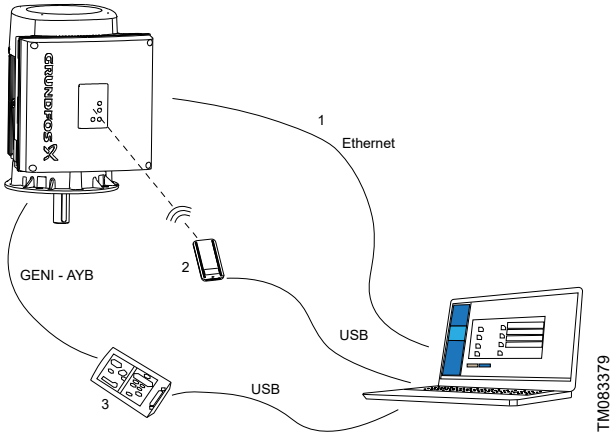
Grundfos GO

Grundfos GO Link

The product is designed for wired or wireless communication with Grundfos GO Link.

Grundfos GO Link enables you to set functions and gives you access to status overviews, configuration and current operating parameters.

Use Grundfos GO Link together with these interfaces:



TM083379

Grundfos GO Link setup

Pos.	Description
1	Ethernet cable: Standard Ethernet cable CAT5/CAT6.
2	Grundfos MI 301: Separate module enabling radio communication. Use the module together with a USB cable to connect to a laptop.
3	Grundfos PC Tool Link: Separate module enabling wired connection to the pump. Use the module together with a USB cable to connect to a laptop.

4. Identification

Type key

Example

CM 10-3 A-R-I-E-AVBE F-A-A-N

Code	Explanation
CM	Code for type range
10	Rated flow rate at 50 Hz [m^3/h]
3	Number of impellers
A	Code for pump version
R	Code for pipe connection
I	Code for materials in contact with pump media
E	Code for rubber parts in pump (excluding neck ring and shaft seal)
A	Code for shaft seal
V	Code for material of rotating seal face
B	Code for material of stationary seal face
E	Code for material of secondary seal
F	Code for supply voltage
A	Code for motor information
A	Code for mains plug
N	Code for sensor

Key to codes

Code	Description
Type range	
CME	Centrifugal Modular with integrated frequency converter
CM	Centrifugal Modular
Pump version	
A	Basic version
B	Oversize motor (one kW size larger)
D	Special nameplate
E	Pumps with certificates/ approvals
N	CME pump with pressure sensor
P	Undersize motor (one kW size smaller)
T	Oversize motor (two kW sizes larger)
O	Self-priming version (maximum suction lift 8 metres)
S	Self-priming version (maximum suction lift 4 metres)
X	Special pump
Note that two letters symbolise that two parameters have been combined.	
Pipe connection	
C	Tri-Clamp®
F	DIN/ANSI/JIS flange
P	Victaulic® coupling
R	Whitworth thread Rp (ISO 7/1)
S	Internal NPT thread
Materials in contact with pump media	

Code	Description	
A	Inlet and outlet parts	EN-GJL-200
	Pump shaft	EN 1.4301/AISI 304
	Impellers/chambers	EN 1.4301/AISI 304
G	Sleeve	EN 1.4401/AISI 316
	Pump shaft	EN 1.4401/AISI 316
	Impellers/chambers	EN 1.4401/AISI 316
I	Sleeve	EN 1.4301/AISI 304
	Pump shaft	EN 1.4301/AISI 304
	Impellers/chambers	EN 1.4301/AISI 304
X	Special version	
Rubber parts in pump (excluding neck ring and shaft seal)		
E	EPDM (ethylene propylene)	
K	FFKM (perflour)	
V	FKM (flour)	
Note that gaskets between chambers of cast-iron versions are always made of Klingersil C-4430 0.5		
Shaft seal		
A	O-ring seal with fixed driver	
R	O-ring seal with fixed driver and reduced seal face	
Material of rotating seal face		
Q	Silicon carbide (SIC)	
V	Aluminium oxide (AI203)	
U	Tungsten carbide	
Material of stationary seal face		
B	Carbon, resin-impregnated	
Q	Silicon carbide (SIC)	
U	Tungsten carbide	
Material of secondary seal		
E	EPDM (ethylene propylene)	
K	FFKM (perflour)	
V	FKM (flour)	
Supply voltage		
A	1 x 220 V, 60 Hz, with terminal board and thermal switch	
B	1 x 115/230 V, 60 Hz, with flying wire	
B1	1 x 115/230 V, 60 Hz, with terminal board	
B2	1 x 230 V, 60 Hz, with terminal board and thermal switch	
C1	1 x 220-230 V, 50 Hz, with terminal board and thermal switch	
E	3 x 208-230/440-480 V, 60 Hz, with flying wire	
E1	3 x 208-230/440-480 V, 60 Hz, with terminal board	
F	3 x 220-240/380-415 V, 50 Hz with terminal board	
G	3 x 200/346 V, 50 Hz; 200-220/346-380 V, 60 Hz with terminal board	
H	3 x 575 V, 60 Hz with flying wire	
J	3 x 380-415 V, 50 Hz; 440-480 V, 60 Hz with terminal board	
O	3 x 220-240/380-415 V, 50 Hz with terminal board; 3 x 220-255/380-440 V, 60 Hz	
S	3 x 380-500 V, 50/60 Hz (E-motor)	
T	3 x 440-480 V, 50/60 Hz (E-motor)	

Code	Description
U	1 x 200-240 V, 50/60 Hz (E-motor)
V	3 x 200-240 V, 50/60 Hz (E-motor)
X	Special voltage
Motor information	
A	Standard motor (IP55)
B	Phase-insulated motor for use with frequency converter
C	Condensing environments
D	Pt100 in stator
E	Angular contact bearing
F	Motor heater
G	Three-phase motor with overload protection
H	Single-phase motor with no protection
I	Radio communication not available
J	IPX5
Mains plug	
A	Prepared for cable glands
B	Harting plug
C	With cable
D	Cable gland included
Sensor	
N	No sensor

Note that the type key cannot be used for ordering as not all combinations are possible.

5. Product range

CME, CM

Pump type	50 Hz			60 Hz			Shaft seal			Mains-operated motor										Electronically speed-controlled motor			
										50 Hz		60 Hz					50/60 Hz						
	Material			Material						Voltage [V]		Voltage [V]					Voltage [V]			Voltage [V]			
	Cast iron EN-GJL-200 (CM-A)	Stainless steel EN 1.4301/AISI 304 (CM-I)	Stainless steel EN 1.4401/AISI 316 (CM-G)	Cast iron EN-GJL-200 (CM-A)	Stainless steel EN 1.4301/AISI 304 (CM-I)	Stainless steel EN 1.4401/AISI 316 (CM-G)	AVBE, AVBV	AQQE, AQQV, AQQK, AQBE, AQBV, AQBK	RUUE, RUUK, RUUV	1 x 220-240 V (supply voltage C1)	3 x 220-240/380-415 V (supply voltage F)	1 x 220 V (supply voltage A)	1 x 115/230 V (supply voltage B/B1) [2]	1 x 230 V (supply voltage B2) [2]	3 x 208-230/440-480 V (supply voltage E/E1) [2]	3 x 575 V (supply voltage H)	3 x 220-240/380-415 V, (50 Hz) / 3 x 220-255/380-440 V, (60 Hz) (supply voltage O)	3 x 380-415 V, (50 Hz) / 3 x 440-480 V, (60 Hz) (supply voltage J)	3 x 200 V/346 V, (50 Hz) / 3 x 200-220/346-380 V, (60 Hz) (supply voltage G)	3 x 200-240 V, 50/60 Hz (supply voltage V)	3 x 380-500 V, (50/60 Hz) (supply voltage S)	3 x 440-480 V, (50/60 Hz) (supply voltage T)	1 x 200-240 V, (50/60 Hz) (supply voltage U)
CM 1-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•
CM 1-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•
CM 1-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•
CM 1-5	•	•	•	•	•	•	•	•	• [3]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-6	•	•	•		•	•	•	•	• [3]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-7	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-8	•	•	•		•	•	• [3]	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-9		•	•		•	•	• [3]	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-10		•	•				• [3]	•		•	•												
CM 1-11		•	•					• [4]		•	•												
CM 1-12		•	•					• [4]		•	•												
CM 1-13		•	•					• [4]		•	•												
CM 1-14		•	•					• [4]		•	•												
CM 3-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•
CM 3-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-5	•	•	•	•	•	•	•	•	• [3]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-6	•	•	•		•	•	•	•	• [3]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-7	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-8	•	•	•		•	•	• [3]	•		•	•	•	•	•	•	•	•	•	•	•	•	•	
CM 3-9		•	•		•	•	• [3]	•		•	•				•	•	•	•	•	•	•	•	
CM 3-10		•	•				• [3]	•		•	•												
CM 3-11		•	•					• [4]		•	•												
CM 3-12		•	•					• [4]		•	•												
CM 3-13		•	•					• [4]		•	•												
CM 3-14		•	•					• [4]		•	•												
CM 5-2	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•
CM 5-3	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•
CM 5-4	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
CM 5-5	•	•	•	•	•	•	•	•	• [3]	•	•		•		•	•	•	•	•	•	•	•	
CM 5-6	•	•	•		•	•	•	•	• [3]	•	•				•	•	•	•	•	•	•	•	
CM 5-7	•	•	•		•	•	•	•		•	•				•	•	•	•	•	•	•	•	
CM 5-8	•	•	•		•	•	• [3]	•		•	•				•	•	•	•	•	•	•	•	

Pump type	50 Hz			60 Hz			Shaft seal			Mains-operated motor										Electronically speed-controlled motor			
										50 Hz		60 Hz					50/60 Hz						
	Material			Material						Voltage [V]		Voltage [V]					Voltage [V]			Voltage [V]			
	Cast iron EN-GJL-200 (CM-A)	Stainless steel EN 1.4301/AISI 304 (CM-I)	Stainless steel EN 1.4401/AISI 316 (CM-G)	Cast iron EN-GJL-200 (CM-A)	Stainless steel EN 1.4301/AISI 304 (CM-I)	Stainless steel EN 1.4401/AISI 316 (CM-G)	AVBE, AVBV	AQQE, AQQV, AQQK, AQBE, AQBV, AQBK	RUUE, RUUK, RUUV	1 x 220-240 V (supply voltage C1)	3 x 220-240/380-415 V (supply voltage F)	1 x 220 V (supply voltage A)	1 x 115/230 V (supply voltage B/B1) [2]	1 x 230 V (supply voltage B2) [2]	3 x 208-230/440-480 V (supply voltage E/E1) [2]	3 x 575 V (supply voltage H)	3 x 220-240/380-415 V, (50 Hz) / 3 x 220-255/380-440 V, (60 Hz) (supply voltage O)	3 x 380-415 V, (50 Hz) / 3 x 440-480 V, (60 Hz) (supply voltage J)	3 x 200 V/346 V, (50 Hz) / 3 x 200-220/346-380 V, (60 Hz) (supply voltage G)	3 x 200-240 V, 50/60 Hz (supply voltage V)	3 x 380-500 V, (50/60 Hz) (supply voltage S)	3 x 440-480 V, (50/60 Hz) (supply voltage T)	1 x 200-240 V, (50/60 Hz) (supply voltage U)
CM 5-9		•	•				• [3]	•		•	•												
CM 5-10		•	•				• [3]	•			•												
CM 5-11		•	•					• [4]			•												
CM 5-12		•	•					• [4]			•												
CM 5-13		•	•					• [4]			•												
CM 10-1	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
CM 10-2	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	
CM 10-3	•	•	•	•	•	•	•	•	• [3]	•	•				•	•	•	•	•	•	•	•	
CM 10-4	•	•	•		•	•	•	•			•				•	•	•	•	•	•	•	•	
CM 10-5	•	•	•		•	•	• [3]	•			•				•	•	•	•	•	•	•	•	
CM 10-6		•	•				• [3]	•			•												
CM 10-7		•	•					• [4]			•												
CM 10-8		•	•					• [4]			•												
CM 15-1	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	
CM 15-2	•	•	•	•	•	•	•	•	•		•				•	•	•	•	•	•	•	•	
CM 15-3	•	•	•	•	•	•	•	•	• [3]		•				•	•	•	•	•	•	•	•	
CM 15-4	•	•	•				• [3]	•			•												
CM 25-1	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	
CM 25-2	•	•	•	•	•	•	•	•	•		•				•	•	•	•	•	•	•	•	
CM 25-3	•	•	•				• [3]	•	• [3]		•												
CM 25-4	•	•	•				• [3]	•			•												

[2] Pumps with supply voltages B1, B2 and E1 are supplied with a terminal board inside the terminal box.

[3] Neither suitable for 60 Hz mains-operated pumps, nor for CME pumps running at 100 % speed.

[4] Not suitable for pumping liquids at temperatures above 90 °C.

CM self-priming

Pump type	Max. suction lift		Material	Shaft seal			Supply voltage									
							Mains-operated motor									
							50 Hz		60 Hz					50/60 Hz		
	4 metres	8 metres	Stainless steel EN 1.4301/AISI 304 (CM-I)	AVBE/AQQE/AQBE	AVBV/AQQV	RUUE	1 x 220-240 V (supply voltage C1)	3 x 220-240/380-415 V (supply voltage F)	1 x 220 V (supply voltage A)	1 x 115/230 V (supply voltage B/B1)	1 x 115/230 V (supply voltage B2)	3 x 208-230/440-480 V (supply voltage E/E1)	3 x 575 V (supply voltage H)	3 x 220-240/380-415 V (50 Hz) / 3 x 220-255/380-440 V (60 Hz) (supply voltage O)	3 x 380-415 V (50 Hz) / 3 x 440-480 V (60 Hz) (supply voltage J)	3 x 200 V/346 V (50 Hz) / 3 x 200-220/346-380 V (60 Hz) (supply voltage G)
CM 1-3	●	-	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 1-4	●	-	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 1-5	●	-	●	●	❍	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍
CM 1-6	●	-	●	●	❍	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍
CM 3-3	●	●	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 3-4	●	●	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 3-5	●	●	●	●	❍	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍
CM 3-6	●	●	●	●	❍	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍
CM 5-3	●	●	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 5-4	●	●	●	●	❍	●	●	❍	●	❍	❍	❍	❍	❍	❍	❍
CM 5-5	●	●	●	●	❍	●[5)]	●	❍	❍	❍	❍	❍	❍	❍	❍	❍
CM 5-6	●	●	●	●	❍	●[5)]	●	❍	-	-	-	❍	❍	❍	❍	❍
CM 5-7	●	●	●	●	❍	-	●	❍	-	-	-	❍	❍	❍	❍	❍

5) Neither suitable for 60 Hz mains-operated pumps, nor for CME pumps running at 100 % speed.

● Available as standard

❍ Available on request

- Not available

6. CME pumps

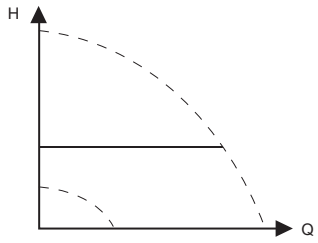
Control mode

E-pumps can be set to the following control modes:

- constant pressure
- constant temperature
- constant differential pressure
- constant differential temperature
- constant flow rate
- constant level
- constant other value
- constant curve.

Constant pressure

We recommend this control mode if the pump is to deliver a constant pressure, independently of the flow rate in the system. The pump maintains a constant pressure independently of the flow rate.



TM057901

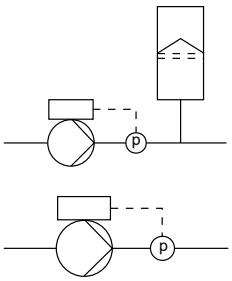
Constant pressure

This control mode requires an external pressure sensor as shown in the examples below.

The setting range is between 12.5 % and 100 % of the maximum head.

Example:

- One external pressure sensor

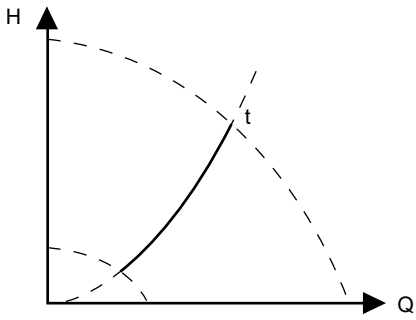


TM057881

TM057882

Constant temperature

This control mode ensures a constant temperature. Constant temperature is a comfort control mode that you can use in domestic hot-water systems to control the flow rate to maintain a constant temperature in the system.



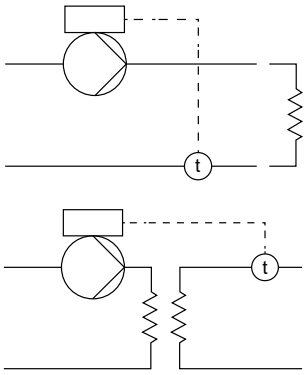
TM057900

Constant temperature

This control mode requires either an internal or external temperature sensor as shown in the examples below.

Example:

- One external temperature sensor

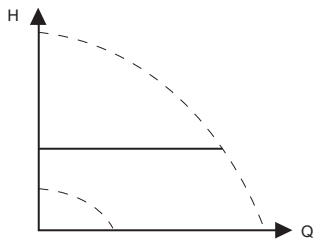


TM057884

TM057885

Constant differential pressure

The pump maintains a constant differential pressure, independently of the flow rate in the system. This control mode is primarily suitable for systems with relatively small pressure losses.



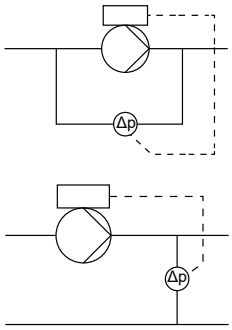
TM057901

Constant differential pressure

The setting range is between 12.5 % and 100 % of the maximum head. This control mode requires either an internal or external differential-pressure sensor or two external pressure sensors as shown in the examples below.

Examples:

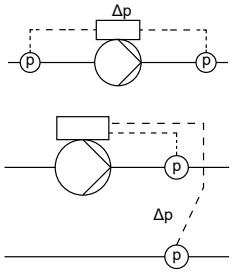
- One external differential-pressure sensor.
  The pump uses the input from the sensor to control the differential pressure.



TM057886

TM057887

- Two external pressure sensors.
  Constant differential-pressure control is achievable with two individual pressure sensors. The pump uses the inputs from the two sensors and calculates the differential pressure.

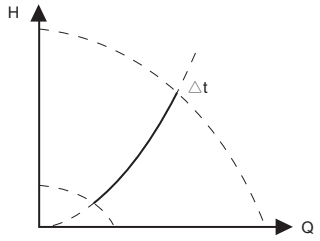


TM057888

TM057889

Constant differential temperature

The pump maintains a constant differential temperature in the system and the pump performance is controlled according to this.



TM057954

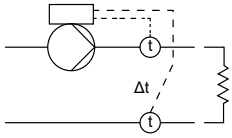
Constant differential temperature

This control mode requires either two temperature sensors or one external differential-temperature sensor. See the examples below.

The temperature sensors can either be analog sensors connected to two of the analog inputs or two Pt100/1000 sensors connected to the Pt100/1000 inputs, if these are available on the specific pump.

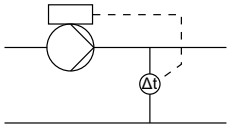
Examples:

- Two external temperature sensors.
  Constant differential-temperature control is achievable with two temperature sensors. The pump uses the inputs from the two sensors and calculates the differential temperature.



TM057894

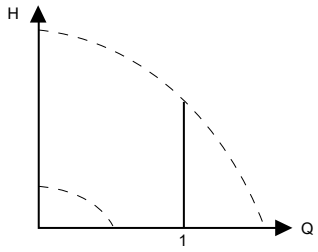
- One external differential-temperature sensor.
  The pump uses the input from the sensor to control the differential temperature.



TM057931

Constant flow rate

The pump maintains a constant flow rate in the system, independently of the head.



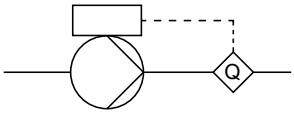
TM057955

Constant flow rate

This control mode requires an external flow sensor. See the example below.

Example:

- One external flow sensor.

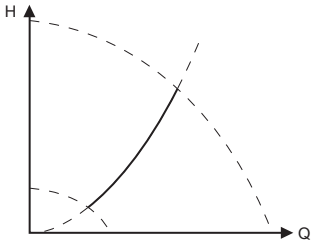


TM057895

Constant flow rate

Constant level

The pump maintains a constant level, independently of the flow rate.



TM057941

Constant level

This control mode requires an external level sensor.

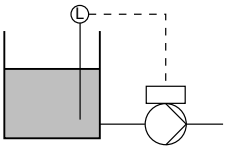
The pump can control the level in a tank in two ways (see the figure above):

- As an emptying function where the pump draws the liquid from the tank.
- As a filling function where the pump pumps the liquid into the tank.

The type of level control function depends on the setting of the built-in controller.

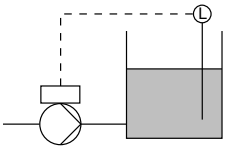
Examples:

- One external level sensor with emptying function.



TM057896

- One external level sensor with filling function.



TM057965

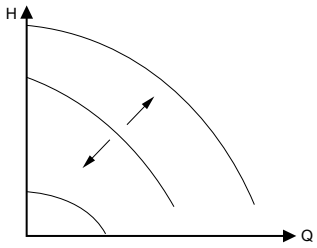
Constant other value

Use this control mode to control a value which is not available in the **Control mode** menu. To measure the controlled value, connect a sensor to one of the analog inputs. The controlled value is shown in percentage of the sensor range.

Constant curve

Use this control mode to control the motor speed.

You can set the desired speed in percentage of the maximum speed in the range from user-set minimum speed to user-set maximum speed.



TM057957

Control of E-pumps

Control options

It is possible to communicate with E-pumps via the following platforms:

- the operating panel on the pump
- Grundfos GO
- Grundfos GO Link
- the central management system.

The purpose of controlling an E-pump is to monitor and control the pressure, temperature, flow rate and liquid level of the system.

Operating panels

The operating panel on the E-pump terminal box makes it possible to change the setpoint settings manually. All settings are saved if the power supply is switched off.

The following operating panels are available as standard:

- HMI 100[6)]
- HMI 200[6)]
- HMI 300.[6)]

6) With an integrated radio module.

The following operating panels are available on request:

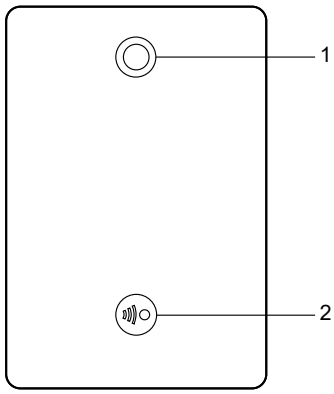
- HMI 101[7)]
- HMI 201[7)]
- HMI 301[7)].

7) Without an integrated radio module.

Related information

Basic operating panel, HMI 100 and HMI 101
Standard operating panel, HMI 200 and HMI 201
Advanced operating panel, HMI 300 and HMI 301

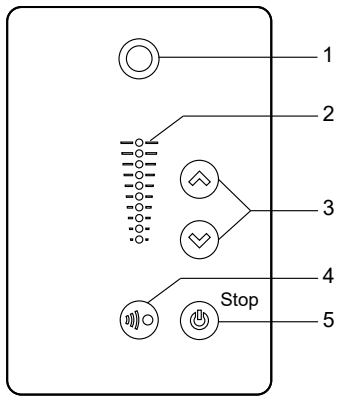
Basic operating panel, HMI 100 and HMI 101



TM054847

Pos.	Symbol	Description
1		**Grundfos Eye**: Indicator light to show the operating status of the product.
2		**Radio communication**: Button to enable radio communication with Grundfos GO.

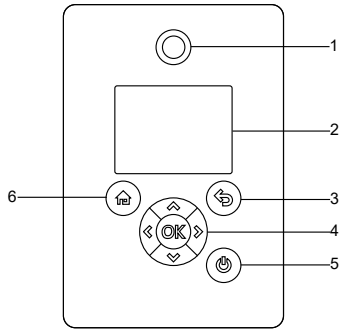
Standard operating panel, HMI 200 and HMI 201



TM054848

Pos.	Symbol	Description
1		**Grundfos Eye**: Indicator light to show the operating status of the product.
2	-	Light fields for indication of the setpoint.
3		**Up/Down**: Buttons to change the setpoint.
4		**Radio communication**: Button to enable radio communication with Grundfos GO.
5		**Start/Stop**: Button to start and stop the product.

Advanced operating panel, HMI 300 and HMI 301



TM054849

Pos.	Symbol	Description
1		**Grundfos Eye**: Indicator light to show the operating status of the product.
2	-	Graphical colour display.
3		**Back**: Button to go one step back.
4		**Left/Right**: Button to navigate between main menus, displays and digits.
		Up/Down: Buttons to navigate between submenus or change the value settings.
	OK	**OK**: Button to save changed values, reset alarms, expand the value field and to enable radio connection with Grundfos GO.
5		**Start/Stop**: Button to start and stop the product.
6		**Home**: Button to go to the Home menu.

Grundfos GO

Grundfos GO enables you to set functions and gives you access to status overviews, technical product information and current operating parameters.

Motor sizes and supply voltages (MGE 0.55 - 2.2 kW):

MGE 0.55 to 1.5 kW

1 x 200-240 V, 50/60 Hz (supply voltage U)

MGE 0.55 to 2.2 kW

3 x 380-500 V, 50/60 Hz (supply voltage S)

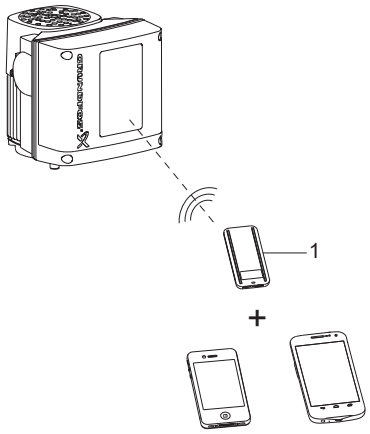
3 x 440-480 V, 50/60 Hz (supply voltage T)

MGE 1.10 to 1.5 kW

3 x 200-240 V, 50/60 Hz (supply voltage V)

The above products are designed for wireless radio or infrared communication with Grundfos GO.

Use Grundfos GO together with the Grundfos MI 301 mobile interface.



TM066256

Pos.	Description
1	Grundfos MI 301: It is a separate module enabling radio or infrared communication. Use the module together with an Android or iOS-based smart device via a Bluetooth connection.

Motor sizes and supply voltages (MGE 2.2 - 7.5 kW):

MGE 2.2 to 5.5 kW

3 x 200-240 V, 50/60 Hz (supply voltage V)

MGE 3.0 to 7.5 kW

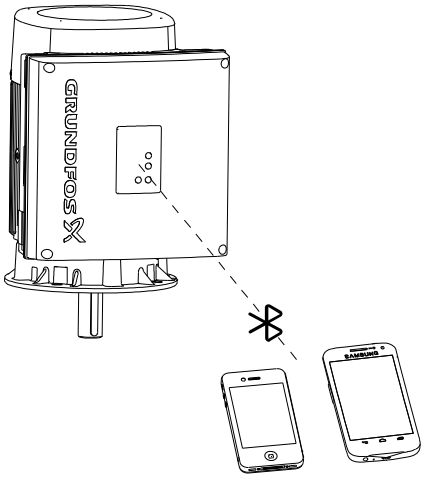
3 x 380-500 V, 50/60 Hz (supply voltage S)

MGE 3.7 to 7.5 kW

3 x 440-480 V, 50/60 Hz (supply voltage T)

The above products are designed for wireless communication with Grundfos GO using Bluetooth (BLE).

Via the built-in Bluetooth module, the product can communicate with Grundfos GO.

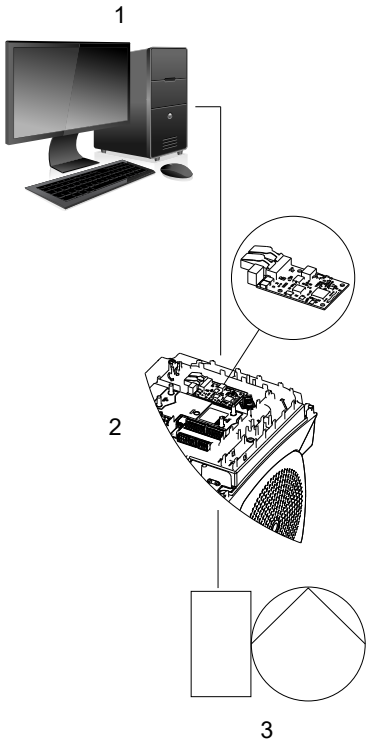


TM082930

Central management system

Communication with the E-pump is possible even if the operator is not present near the E-pump. Communication is enabled by connecting the E-pump to a central building management system. This allows the operator to monitor the pump and change control modes and setpoint settings.

Communication between E-pumps and a central building management system is enabled via a Grundfos Communication Interface Module (CIM).



Structure of a central management system

Pos.	Description
1	Central management system
2	CIM (See the section on Communication Interface Modules)
3	E-pump

Related information

Communication interface modules (CIM) for CME

Functional modules for CME

The functional modules are different types of add-on boards containing various types of input and output terminals for the user to connect different types of sensors, for example switches and relays. The product can only contain one functional module at a time.

Motor sizes and supply voltages (MGE 0.55 - 2.2 kW):

MGE 0.55 to 1.5 kW

1 x 200-240 V, 50/60 Hz (supply voltage U)

MGE 0.55 to 2.2 kW

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

MGE 1.10 to 1.5 kW

3 x 200-240 V, 50/60 Hz (supply voltage V)

These functional modules are available for the above motors:

- FM100 [8)]
- FM200 [8)] (standard)
- FM300 [8)]

8) Without Bluetooth (BLE).

Motor sizes and supply voltages (MGE 2.2 - 7.5 kW):

MGE 2.2 to 5.5 kW

3 x 200-240 V, 50/60 Hz (supply voltage V)

MGE 3.0 to 7.5 kW

3 x 380-500 V, 50/60 Hz (supply voltage S)

MGE 3.7 to 7.5 kW

3 x 440-480 V, 50/60 Hz (supply voltage T)

These functional modules are available for the above motors:

- FM110 [9)]
- FM310 [9)] (standard)
- FM311 [8) 10)]

9) Available with HMI 100, HMI 200 or HMI 300.

10) Available with HMI 101, HMI 201 or HMI 301.

The selection of module depends on the application and the required number of inputs and outputs.

Related information

FM100
FM200
FM300
FM110
FM310 and FM311
Operating panels

FM100

Inputs and outputs

The module has these connections:

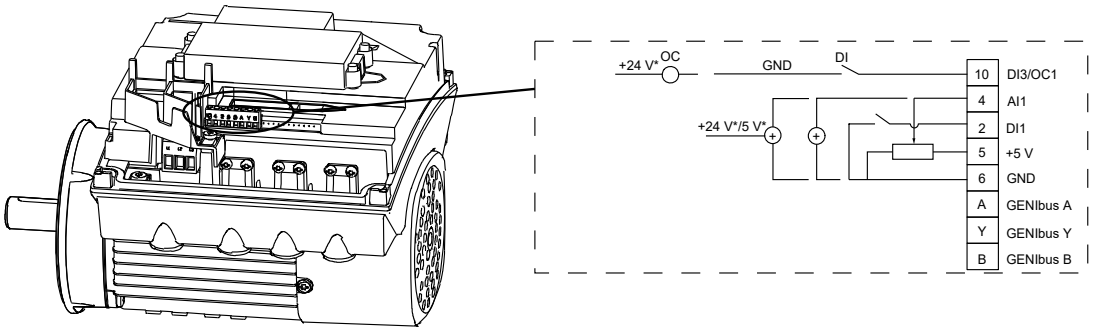
- one analog input
- two digital inputs or one digital input and one open-collector output
- GENIbus connection.

The inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits. All control terminals are supplied with protective extra-low voltage (PELV), ensuring protection against electric shock.

Connection terminals for the mains supply

Phases	Terminals
Single-phase	N, PE, L
Three-phase	L1, L2, L3, PE

Connection terminals for inputs and outputs



TM053511

Terminal	Type	Function
10	DI3/OC1	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
4	AI1	Analog input: 0.5 - 3.5 V, 0-5 V or 0-10 V
2	DI1	Digital input, configurable

Terminal	Type	Function
5	+5 V	Power supply to a potentiometer or sensor
6	GND	Protective earth
A	GENIbus, A	GENIbus, A (+)
Y	GENIbus, Y	GENIbus, Y (GND)
B	GENIbus, B	GENIbus, B (-)

FM200

Inputs and outputs

The module has these connections:

- two analog inputs
- two digital inputs or one digital input and one open-collector output
- Grundfos Digital Sensor input and output
- two signal relay outputs
- GENIbus connection.

The inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits. All control terminals are supplied with protective extra-low voltage (PELV), ensuring protection against electric shock.

Signal relay 1

LIVE: You can connect supply voltages up to 250 VAC to the output.

PELV: The output is galvanically separated from other circuits. Therefore, you can connect the supply voltage or protective extra-low voltage to the output as desired.

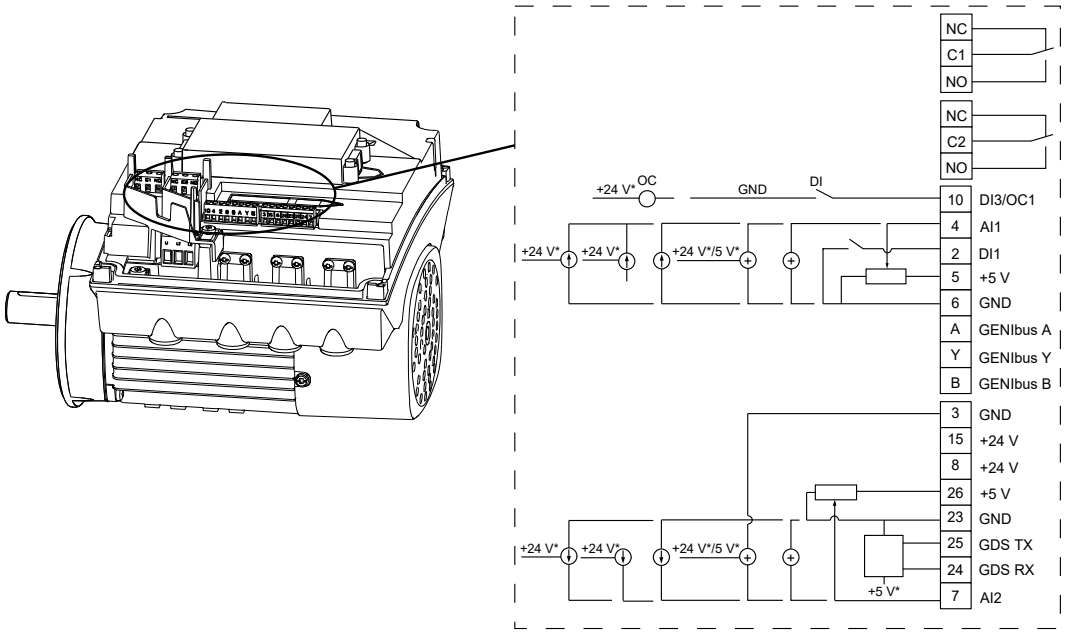
Signal relay 2

PELV: The output is galvanically separated from other circuits. Therefore, you can connect the supply voltage or protective extra-low voltage to the output as desired.

Connection terminals for the mains supply

Phases	Terminals
Single-phase	N, PE, L
Three-phase	L1, L2, L3, PE

Connection terminals for inputs and outputs



Terminal	Type	Function
NC	Normally closed contact	Signal relay 1. LIVE or PELV
C1	Common	
NO	Normally open contact	
NC	Normally closed contact	Signal relay 2. PELV only
C2	Common	
NO	Normally open contact	

Terminal	Type	Function
10	DI3/OC1	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
4	AI1	Analog input: 0-20 mA or 4-20 mA 0.5 - 3.5 V, 0-5 V or 0-10 V
2	DI1	Digital input, configurable
5	+5 V	Power supply to a potentiometer or sensor
6	GND	Protective earth
A	GENIbus, A	GENIbus, A (+)
Y	GENIbus, Y	GENIbus, Y (GND)
B	GENIbus, B	GENIbus, B (-)
3	GND	Protective earth
15	+24 V	Power supply
8	+24 V	Power supply
26	+5 V	Power supply to a potentiometer or sensor
23	GND	Protective earth
25	GDS TX	Grundfos Digital Sensor output
24	GDS RX	Grundfos Digital Sensor input
7	AI2	Analog input: 0-20 mA or 4-20 mA 0.5 - 3.5 V, 0-5 V or 0-10 V

FM300

The module has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required.

Inputs and outputs

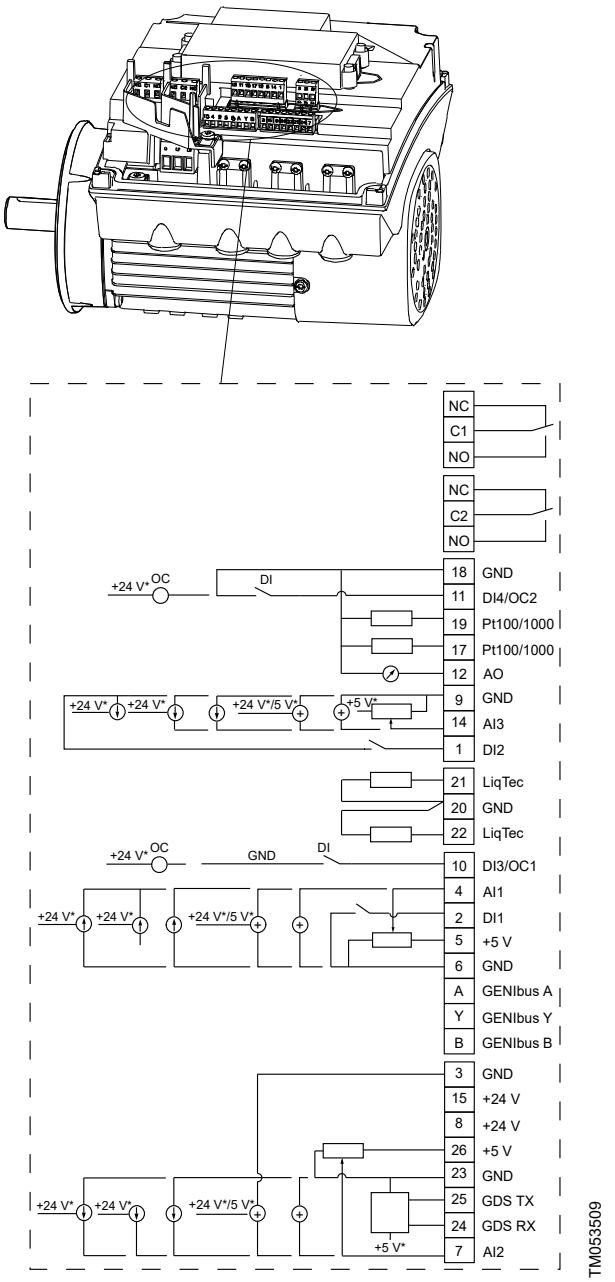
The module has these connections:

- three analog inputs
- one analog output
- two dedicated digital inputs
- two configurable digital inputs or open-collector outputs
- Grundfos Digital Sensor input and output
- two Pt100/1000 inputs
- two LiqTec sensor inputs
- two signal relay outputs
- GENIbus connection.

Connection terminals

All inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits. All control terminals are supplied with protective extra-low voltage (PELV), thus ensuring protection against electric shock.

- Signal relay outputs
  - Signal relay 1:
    LIVE:
    Power supply voltages up to 250 VAC can be connected to this output.
    PELV:
    The output is galvanically separated from other circuits. Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.
  - Signal relay 2:
    PELV:
    The output is galvanically separated from other circuits. Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.
- **Power supply** (terminals N, PE, L or L1, L2, L3, PE)



* If an external supply source is used, there must be a connection to GND.

Connection terminals, FM300 functional module

Terminal	Type	Function
NC	Normally closed contact	Signal relay 1: LIVE or PELV
C1	Common	
NO	Normally open contact	
NC	Normally closed contact	Signal relay 2: PELV only
C2	Common	
NO	Normally open contact	
18	GND	Signal ground
110.5 - 3.5 V or 0-5 V or 0-10 V	DI4/OC2	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
19	Pt100/1000 input 2	Pt100/1000 sensor input 2
17	Pt100/1000 input 1	Pt100/1000 sensor input 1
12	AO	Analog output: • 0-20 mA or 4-20 mA • 0-10 V
9	GND	Signal ground

Terminal	Type	Function
14	AI3	Analog input: • 0-20 mA or 4-20 mA • 0-10 V
1	DI2	Digital input, configurable
21	LiqTec sensor input 1	LiqTec sensor input 1 White conductor
20	GND	Signal ground Brown and black conductors
22	LiqTec sensor input 2	LiqTec sensor input 2 Blue conductor
10	DI3/OC1	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
4	AI1	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
2	DI1	Digital input, configurable
5	+5 V	Power supply to a potentiometer and sensor
6	GND	Signal ground
A	GENIbus, A	GENIbus, A (+)
Y	GENIbus, Y	GENIbus, GND
B	GENIbus, B	GENIbus, B (-)
3	GND	Signal ground
15	+24 V	Power supply
8	+24 V	Power supply
26	+5 V	Supply to potentiometer and sensor
23	GND	Signal ground
25	GDS TX	Grundfos Digital Sensor output
24	GDS RX	Grundfos Digital Sensor input
7	AI2	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V

FM110

Inputs and outputs

The module has these connections:

- two analog inputs
- two digital inputs or one digital input and one open-collector output
- Grundfos Digital Sensor input and output
- one signal relay output
- GENIbus/Modbus connection
- two Safe Torque Off (STO) inputs [11)]
- Bluetooth (BLE) connection.

11) Safe Torque Off (STO) is a safety function with the purpose to stop the motor from turning without actively braking it. It follows the definition by EN 61800-5-2.

Signal relay 1

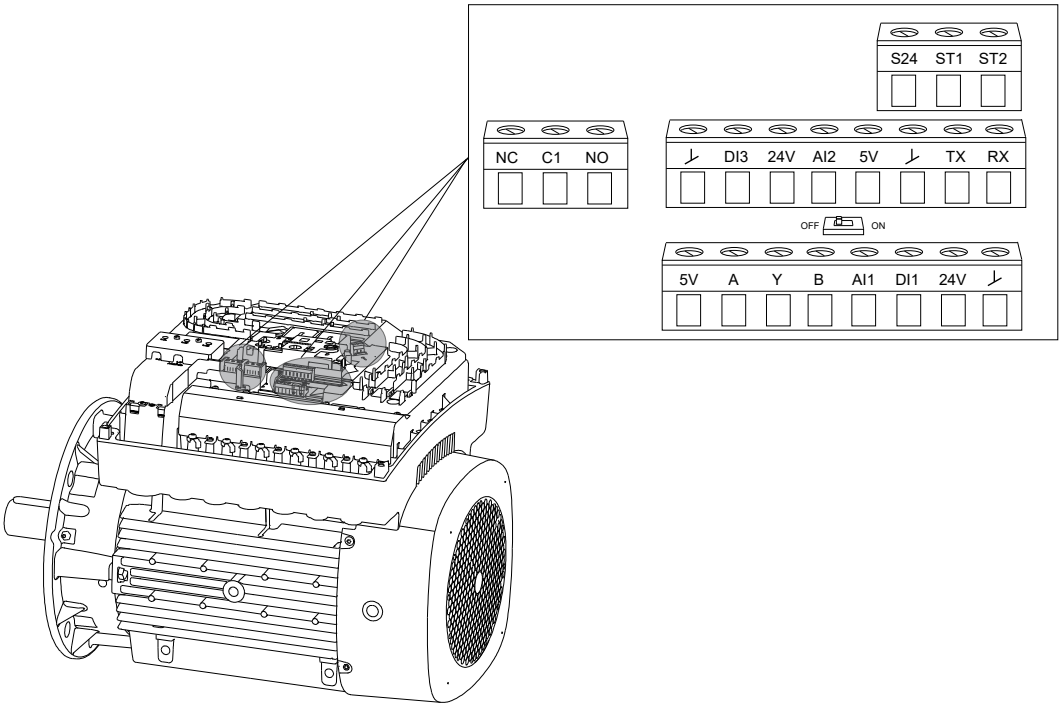
LIVE: You can connect supply voltages up to 250 VAC to the output.

SELV: The output is galvanically separated from other circuits. Therefore, you can connect the supply voltage or safety extra-low voltage to the output as desired.

The inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits. All control terminals are supplied with safety extra-low voltage (SELV), ensuring protection against electric shock.

Cables for the relays must be double insulated or reinforced and rated at least 250V/2A.

The Ethernet cable must be rated at least Cat5e/Cat6 with screening.



TM082861

Terminal	Type	Function
NC	Normally closed contact	Signal relay 1: LIVE or SELV
C1	Common	
NO	Normally open contact	
GND	GND	Signal ground
DI3	DI3/OC1	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
24V	+24 V	Power supply
AI2	AI2	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
5V	+5 V	Power supply to a potentiometer or sensor
GND	GND	Signal ground
TX	GDS TX	Grundfos Digital Sensor output
RX	GDS RX	Grundfos Digital Sensor input
5V	+5 V	Power supply to a potentiometer or sensor
A	GENIbus, A	GENIbus, A (+) / Modbus, D1 (+)
Y	GENIbus, Y	GENIbus, GND / Modbus, GND
B	GENIbus, B	GENIbus, B (-) / Modbus, D0 (-)
AI1	AI1	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
DI1	DI1	Digital input, configurable
24V	+24 V	Power supply
GND	GND	Signal ground
S24	+24 V (STO)	Power supply to the Safe Torque Off inputs
ST1	STO1	Safe Torque Off - Input 1
ST2	STO2	Safe Torque Off - Input 2

FM310 and FM311

Inputs and outputs

Note that the FM311 functional module does not include Bluetooth connection.

The module has these connections:

- three analog inputs
- one analog output
- two dedicated digital inputs
- two configurable digital inputs or open-collector outputs

- Grundfos Digital Sensor input and output
- two Pt100/1000 inputs
- two LiqTec sensor inputs
- two signal relay outputs
- GENIbus/Modbus connection
- two Safe Torque Off (STO) inputs [12)]
- Ethernet connection
- Bluetooth (BLE) connection. [13)]

12) Safe Torque Off (STO) is a safety function with the purpose to stop the motor from turning without actively braking it. It follows the definition by EN 61800-5-2.

13) FM311 is without Bluetooth.

Connection terminals

All control terminals are supplied with safety extra-low voltage (SELV), ensuring protection against electric shock.

The inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits.

Cables for the relays and the Ethernet cable must be rated at least 250V/2A.

The relays are approved for overvoltage category II, whether power is supplied from a transformer or the power supply.

Signal relay outputs

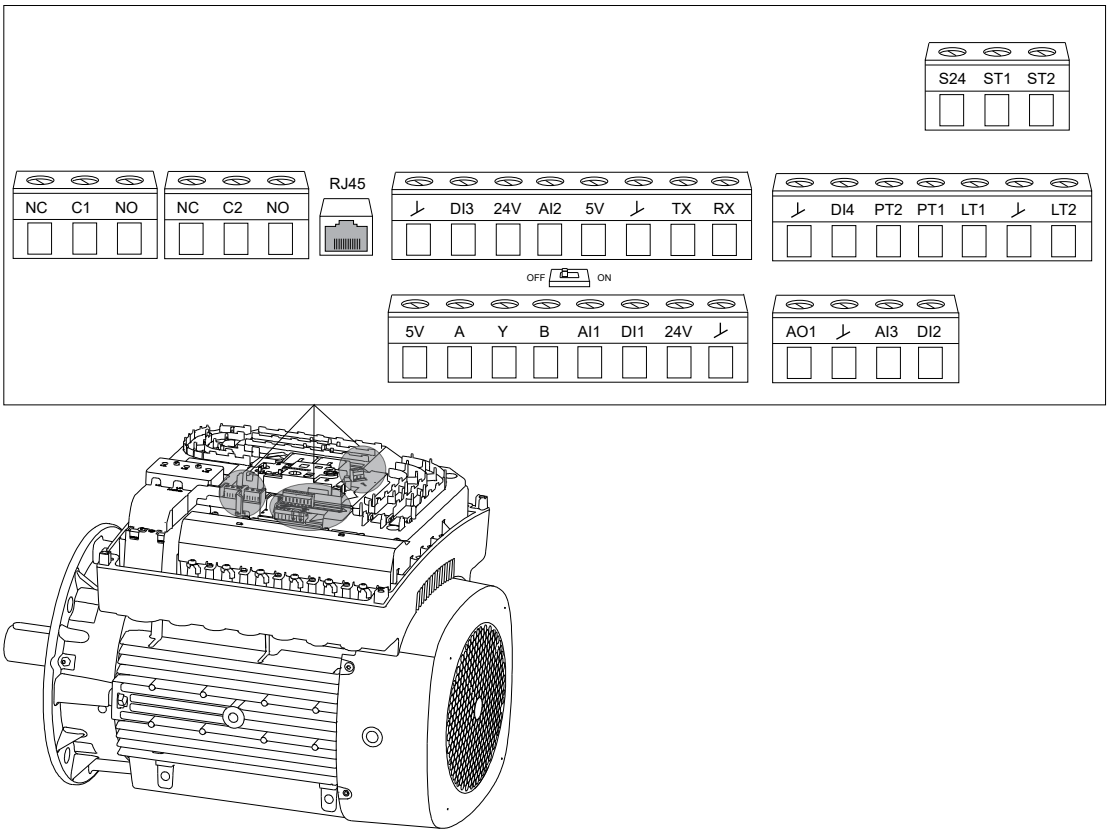
Signal relay 1

LIVE: You can connect supply voltages up to 250 VAC to the output.

SELV: The output is galvanically separated from other circuits. Therefore, you can connect the supply voltage or safety extra-low voltage to the output as desired.

Signal relay 2

SELV: The output is galvanically separated from other circuits. Therefore, you can connect the supply voltage or safety extra-low voltage to the output as desired.



TM082862

Terminal	Type	Function
NC	Normally closed contact	Signal relay 1: LIVE or SELV
C1	Common	
NO	Normally open contact	
NC	Normally closed contact	Signal relay 2: SELV only
C2	Common	
NO	Normally open contact	
RJ45	Ethernet	Ethernet communication
GND	GND	Signal ground
DI3	DI3/OC1	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive

Terminal	Type	Function
24V	+24 V	Power supply
AI2	AI2	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
5V	+5 V	Power supply to a potentiometer or sensor
GND	GND	Signal ground
TX	GDS TX	Grundfos Digital Sensor output
RX	GDS RX	Grundfos Digital Sensor input
GND	GND	Signal ground
DI4	DI4/OC2	Digital input/output, configurable Open collector: Maximum 24 V resistive or inductive
PT2	Pt100/1000 input 2	Pt100/1000 sensor input 2
PT1	Pt100/1000 input 1	Pt100/1000 sensor input 1
LT1	LiqTec sensor input 1	LiqTec sensor input 1 White conductor
GND	GND	Signal ground Brown and black conductors
LT2	LiqTec sensor input 2	LiqTec sensor input 2 Blue conductor
5V	+5 V	Power supply to a potentiometer or sensor
A	GENIbus, A	GENIbus, A (+) / Modbus, D1 (+)
Y	GENIbus, Y	GENIbus, GND / Modbus, GND
B	GENIbus, B	GENIbus, B (-) / Modbus, D0 (-)
AI1	AI1	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
DI1	DI1	Digital input [14], configurable
24V	+24 V	Power supply
GND	GND	Signal ground
AO1	AO	Analog output: • 0-20 mA or 4-20 mA • 0-10 V
GND	GND	Signal ground
AI3	AI3	Analog input: • 0-20 mA or 4-20 mA • 0.5 - 3.5 V, 0-5 V or 0-10 V
DI2	DI2	Digital input, configurable
S24	+24 V (STO)	Power supply to the Safe Torque Off inputs
ST1	STO1	Safe Torque Off - Input 1
ST2	STO2	Safe Torque Off - Input 2

[14] Digital input 1 is factory-set to be start or stop input where an open circuit results in stop. A jumper has been factory-fitted between terminals DI1 and GND. Remove the jumper if digital input 1 is to be used as external start or stop or any other external function.

Speed control of CME pumps

Affinity equations

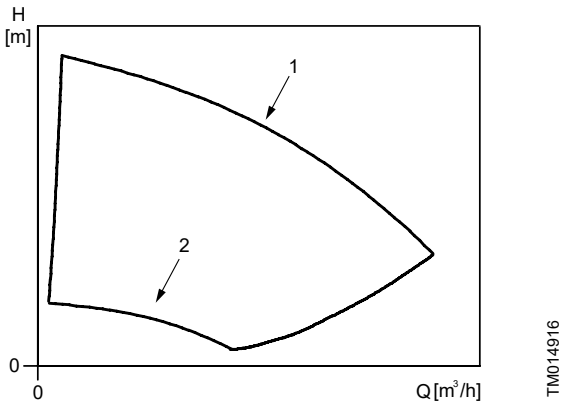
Normally, speed-regulated pumps are used in applications characterized by a variable flow rate. Consequently, you cannot select a pump that is constantly operating at its optimum efficiency.

To achieve optimum operating economy, select the pump on the basis of the following criteria:

- The maximum duty point must be as close to the QH curve of the pump as possible.
- The required duty point must be positioned so that P2 is close to the maximum point of the QH curve.

The flow rate of the required duty point must be close to the optimum efficiency (eta) for most operating hours.

Between the minimum and maximum performance curves, speed-regulated pumps have an infinite number of performance curves, each representing a specific speed. You may therefore not be able to select a duty point close to the maximum curve.



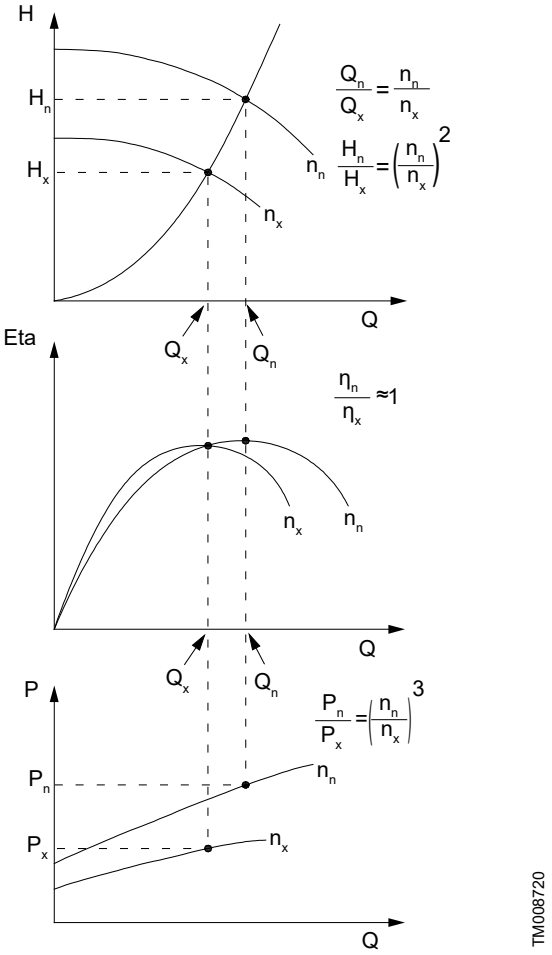
Maximum (1) and minimum (2) performance curves

In situations where you cannot select a duty point close to the maximum curve, use the affinity equations below. The head (H), the flow rate (Q) and the input power (P) are the appropriate variables for calculating the motor speed (n).

Note that the approximated formulas apply on condition that the system characteristic remains unchanged for n_n and n_x, and that it is based on the formula $H = k \times Q^2$ where k is a constant.

The power equation implies that the pump efficiency is unchanged at the two speeds. In practice, this is not quite correct.

To obtain a precise calculation of the power savings resulting from a reduction of pump speed, take into account the efficiencies of the frequency converter and the motor.



Affinity equations

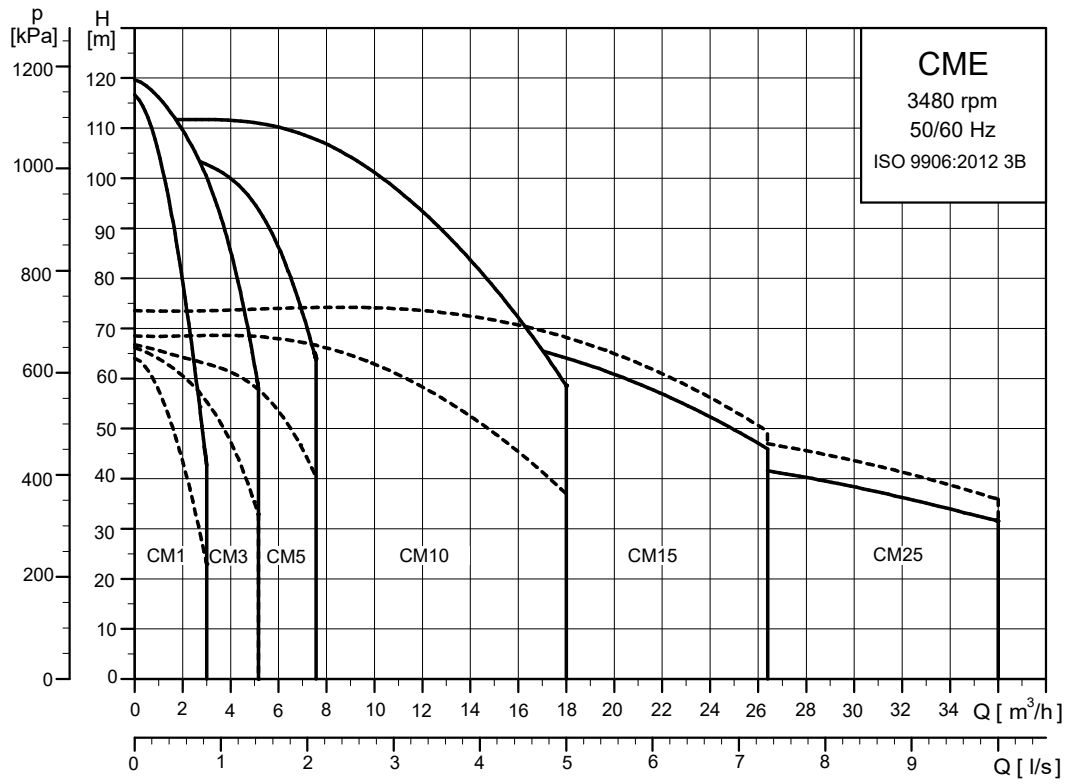
Legend

H_n	Rated head [m]
H_x	Current head [m]
Q_n	Rated flow rate [m^3/h]
Q_x	Current flow rate [m^3/h]
n_n	Rated motor speed [rpm]
n_x	Current motor speed [rpm]
η_n	Rated efficiency [%]
η_x	Current efficiency [%]
P_n	Rated power [kW]
P_x	Current power [kW]

7. Performance range

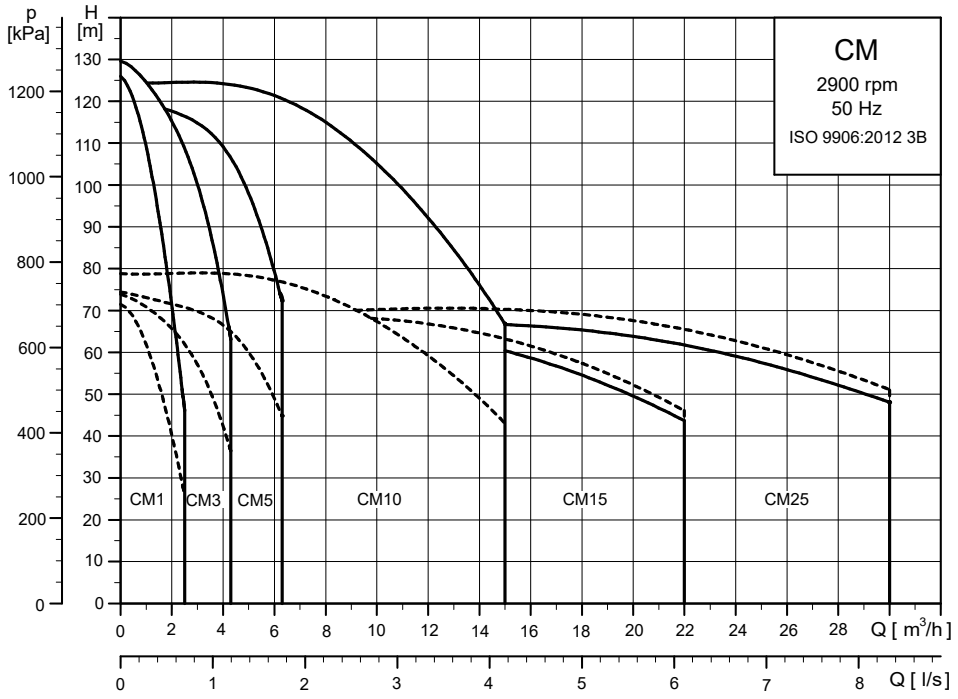
CME, 50/60 Hz

Supply voltages S, T, U



TM043568

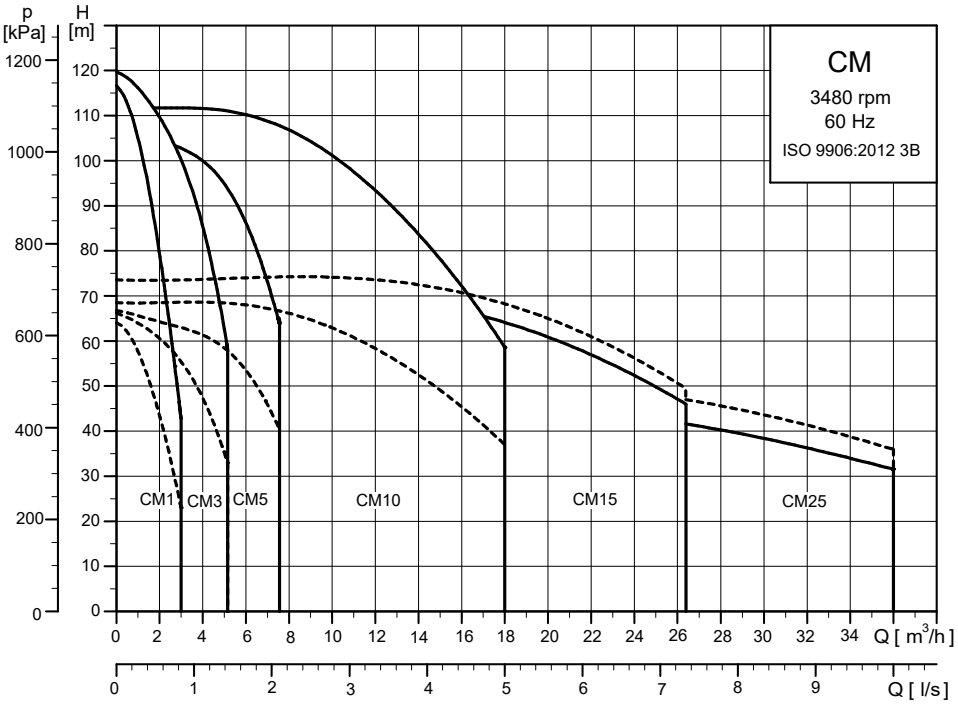
CM, 50 Hz



TM043340

------ CM-A
—— CM-I/G

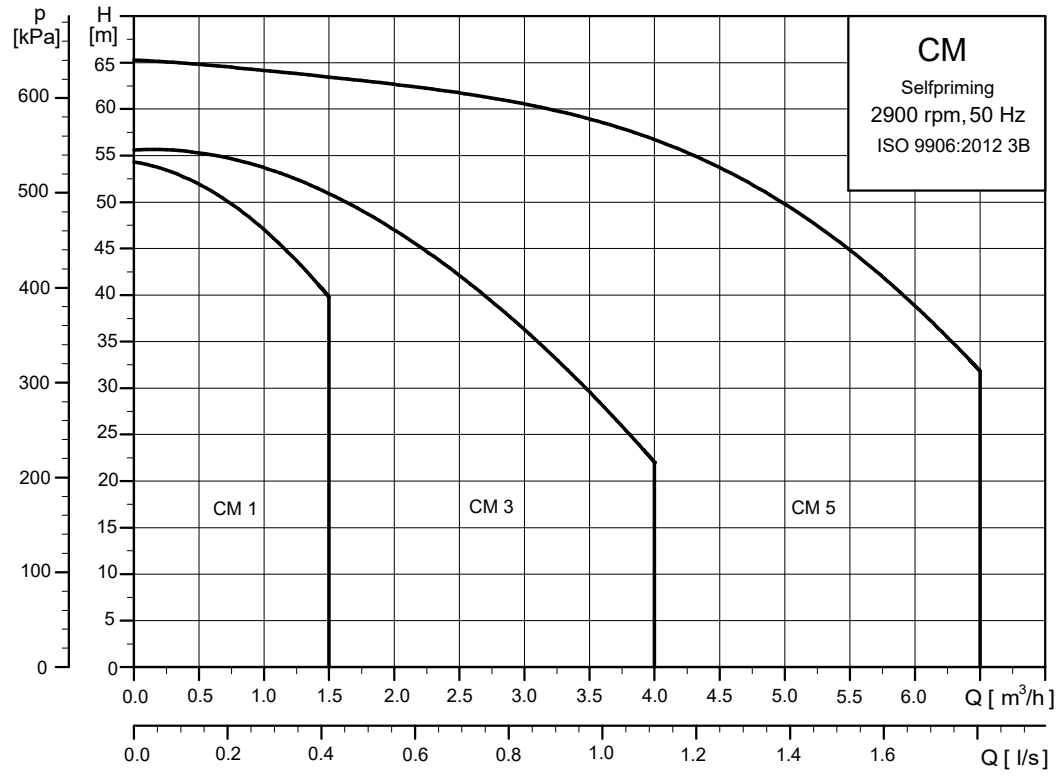
CM, 60 Hz



TM043369

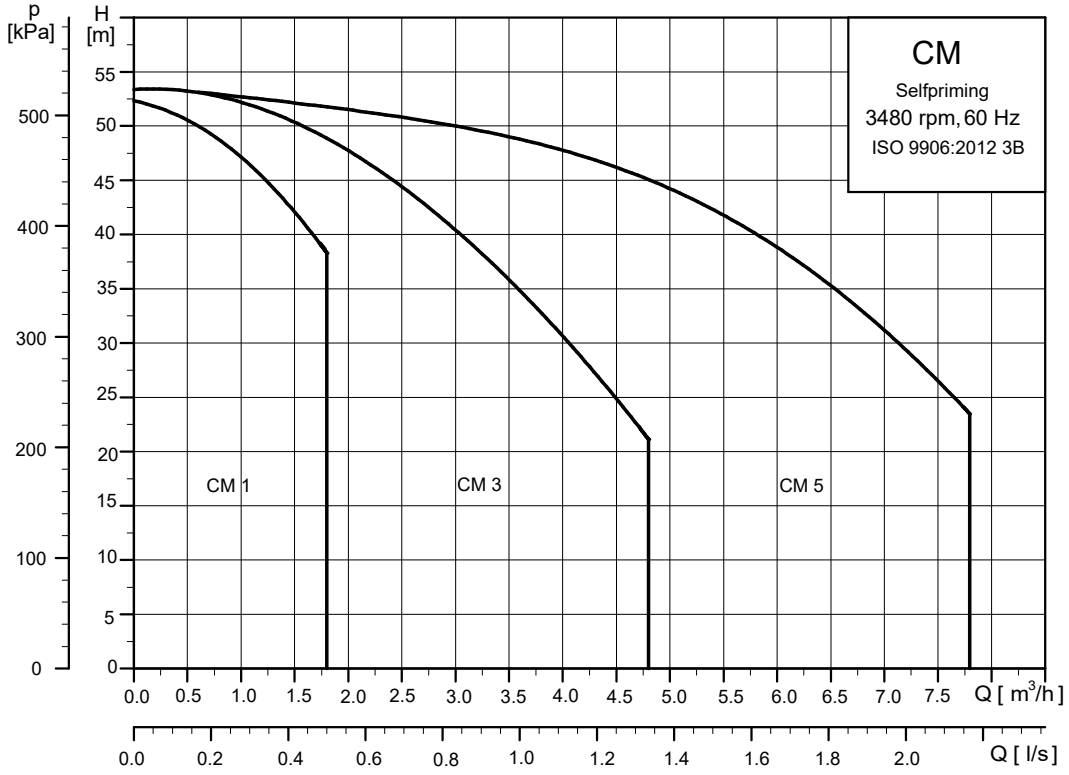
------ CM-A
—— CM-I/G

CM self-priming, 50 Hz



TM058834

CM self-priming, 60 Hz



TM058835

8. Operating conditions

Ambient temperature

The maximum ambient temperature depends on the liquid temperature. The table below shows the temperature limits of CME and CM pumps.

Note that the maximum permissible liquid temperature for CM-A and CME-A is 90 °C.

Minimum ambient temperature [°C]	Maximum ambient temperature [°C]	Liquid temperature [°C]	Pump type		
			CM	CM self-priming	CME [15]
-20 °C	55 °C	60 °C	•	•	-
	55 °C	90 °C	•	-	-
	50 °C	100 °C [15]	•	-	•
	45 °C	110 °C [15]	•	-	•
	40 °C	120 °C [15]	•	-	•

[15] CME (supply voltages S, T, U)

[16] Pumps for ambient temperatures below -20 °C are available on request.

CME speed-controlled motors

The electronics incorporated in the CME pumps are limiting the maximum ambient temperature. The maximum ambient temperature must not be exceeded. If the pump is operated at temperatures exceeding the maximum ambient temperature, the motor life will be reduced.

Maximum ambient temperature

CME, supply voltages S, T, U:

50 °C.

CME 0.37 to 7.5 kW, supply voltage V:

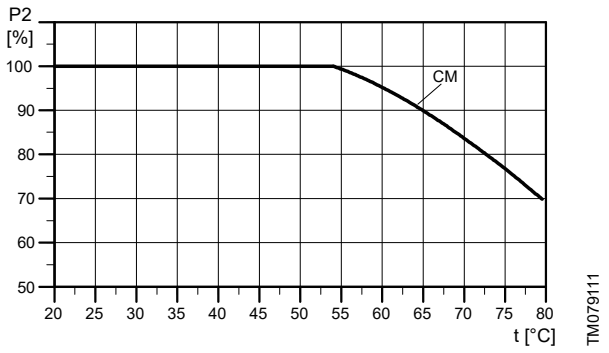
40 °C.

Note that you can operate the new-generation CME pumps at 60 °C as well. In such case, contact Grundfos for further information.

CM mains-operated motors

If the ambient temperature for CM pumps exceeds 55 °C, the motor must not be fully loaded due to the risk of overheating.

In such cases, it may be necessary to derate the motor output or use an oversize motor with higher rated output. The CM pumps can be derated in relation to ambient temperature without consequence. Contact Grundfos for further information.



Derating of CM pump, in relation to ambient temperature

Storage and transport temperature

-30 to +60 °C.

Maximum operating pressure and permissible liquid temperature

The maximum operating pressure and the permissible liquid temperature depend on the pump material, the type of shaft seal and the pumped liquid.

CME, CM pumps

Material variant	Shaft seal	Permissible liquid temperature [°C]	Maximum operating pressure [bar]
Cast iron (EN-GJL-200)	AVBx	-20 - +40	10
		-20 - +90	6
	AQQx/AQBx	-20 - +90	10
	RUUx	-20 - +60	6
Stainless steel (EN 1.4301 / AISI 304)	AVBx	-20 - +40	10
		-20 - +90	6
	AQQx/AQBx	-20 [18] - +90	16
		-20 - +120	10
	AUQX	-20 [18] - +90	16
	RUUx	-20 - +60	6
Stainless steel (EN 1.4401 / AISI 316)	AVBx	-20 - +40	10
		-20 - +90	6
	AQQx/AQBx	-20 [18] - +90	16
		-20 - +120	10
	AUQX	-20 [18] - +90	16
	RUUx	-20 - +60	6

[17] At liquid temperatures below 0 °C (32 °F), higher motor outputs may be needed due to increased viscosity, for instance if glycol has been added to the water.

[18] CM-I, -G and CME-I, -G pumps for liquid temperatures below -20 °C are available on request. Please contact Grundfos.

CM self-priming pumps

Material variant	Shaft seal	Permissible liquid temperature [°C]	Max. operating pressure [bar]
Stainless steel (EN 1.4301 / AISI 304)	AVBx	0-40	10
		0-60	6
	AQQx/AQBx	0-60	16
	RUUx	0-60	6

[19] At liquid temperatures below 0 °C (32 °F), higher motor outputs may be needed due to increased viscosity, for instance if glycol has been added to the water.

Maximum liquid-temperature-change gradient

Cast-iron pumps (CM-A, CME-A) must not be used in applications where rapid temperature changes of more than 45 °C may occur. If exposed to such rapid temperature changes, a cast-iron pump may leak.

Under such operating conditions, we recommend to use stainless-steel pumps (CM-I, -G and CME-I, -G).

Liquid temperature range

O-ring material/liquid	Permissible liquid temperature [°C]
EPDM	-20 - +120
FFKM	0 - +120
FKM/liquids containing water	-20 - +90
FKM/oil without water	-20 - +120

Frequency of starts and stops

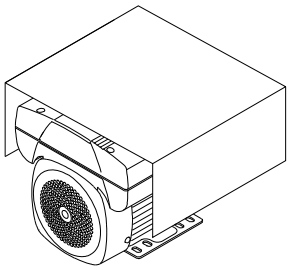
Maximum 100 per hour.

Operation in condensing environments

If the liquid temperature becomes lower than the ambient temperature, condensation may form in the motor during inactivity. In such cases, a motor suited for condensing environments must be used, for example, an IPX5 motor, available from Grundfos.

Alternatively, you can open the bottom drain hole in the motor flange by removing the plug. The enclosure class of the motor is then reduced to IPX5. Removing the plug helps prevent condensation in the motor as it will make the motor self-venting and allow water and humid air to escape.

When installing CME and CM pumps outdoors, provide them with a suitable cover to protect them from buildup of condensed water. See the figure below.



TM045799

CME pump with protective cover

Motors in outdoor installations radiate heat to and absorb heat from their surroundings. By day, a stopped motor will absorb more heat than it radiates; by night, especially clear nights, radiation from a stopped motor may be so high that the surface temperature drops a few degrees below the air temperature. This may cause the formation of condensation. Condensation on the inner surfaces may result in moisture on the electronic components, including the printed-circuit boards, which means a risk of failure or even destruction of the motor and electronics.

Furthermore, the cover protects the motor against direct sunlight.

Environmental rating

Single-phase and three-phase CME motors hold a UL NEMA 3R environmental rating.

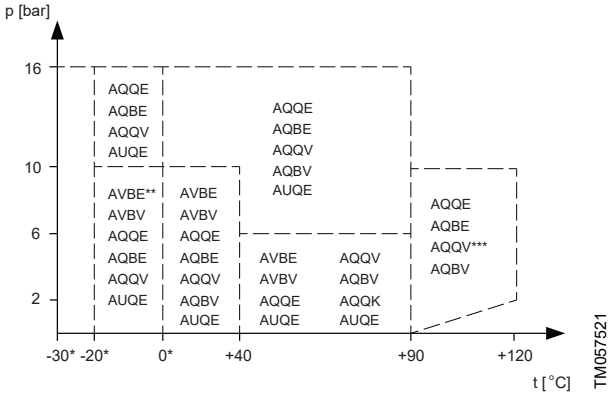
All motors are IP55.

Operating range of the shaft seal

The operating range of the shaft seal depends on the operating pressure, the type of shaft seal and the liquid temperature.

Below figure shows which shaft seals are suitable at a given temperature and pressure. The curve applies to clean water. For ultra pure water with a conductivity lower than 2 µS/cm, use an AUQE instead of an AQQE seal face combination.

For other pumped liquids, concentrations and temperatures, see the liquids section in Grundfos Product Center at www.grundfos.com.

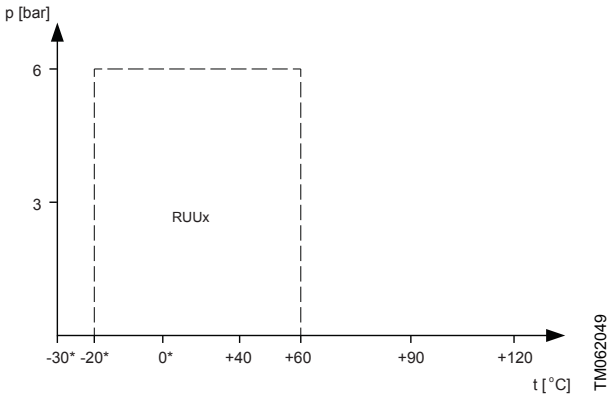


Curve for the selection of AQQx, AQBx and AVBx shaft seals

* Antifreeze must be added at liquid temperatures below 0 °C.

** CME and CM pumps for liquid temperatures below -20 °C are available on request. Please contact Grundfos.

*** AQQV/AQBV above 90 °C only in media not containing water.



Curve for RUUx shaft seal

Related information

29. Grundfos Product Center

Shaft seal run-in

The seal faces are lubricated by the pumped liquid, meaning that there may be a certain amount of leakage from the shaft seal.

When the pump is started up for the first time, or when a new shaft seal is installed, a certain run-in period is required before the leakage is reduced to an acceptable level. The time required for this depends on the operating conditions, that is every time the operating conditions change, a new run-in period will be started.

Under normal conditions, the leaking liquid will evaporate. As a result, no leakage will be detected.

However, liquids such as kerosene will not evaporate. The leakage may therefore be seen as a shaft-seal failure.

Viscosity

Pumping liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

For instance at liquid temperatures below 0 °C (32 °F), higher motor outputs may be needed due to increased viscosity if glycol has been added to the water.

In such situations, the pump must be fitted with a larger motor. If in doubt, contact Grundfos or visit Grundfos Product Center at www.grundfos.com.

Related information

Selection of pumps

Sound pressure level

The sound pressure values in the tables below apply for CM pumps. If the motor output (P2) for a given pump is not found in the table, use the nearest rounded-up value. The values for sound pressure include a tolerance of 3 dB(A) according to EN ISO 4871.

Single-phase motors

P_2 [kW]	50 Hz
	L_{pA} [dB(A)]
0.3	54
0.5	53.5
0.67	54
0.9	54
1.3	59
1.7	59

Three-phase motors

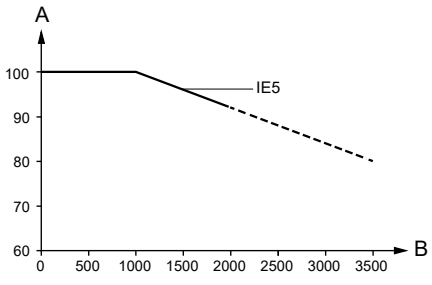
P_2 [kW]	50 Hz	60 Hz
	L_{pA} [dB(A)]	L_{pA} [dB(A)]
0.37	50	54
0.55	49	53
0.75	49	54
1.1	54	59
1.5	54	59
2.2	56	60
3.0	55	60
4.0	59	64
5.5	59	64
7.5	60	65

The audible noise from CM pumps is primarily noise from the motor fan. The selection of CME pumps will reduce the noise at partial load, as the motor and, consequently, the motor fan run at a lower speed. Possible flow noise from control valves is also reduced at partial load in the case of the CME pump.

9. Installation

Installation altitude for CME

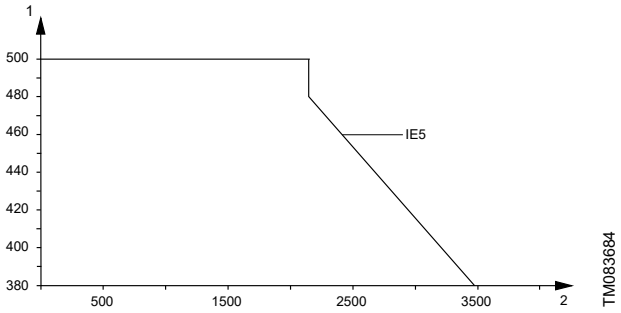
Installation altitude is the height above sea level of the installation site. Motors installed up to 1000 m above sea level can be loaded 100 %. The motors can be installed up to 3500 m above sea level.



Motor output power in relation to installation altitude

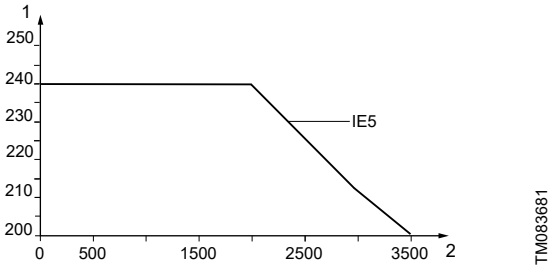
Pos.	Description
A	P2 [%]
B	Altitude [m]

In order to maintain the galvanic isolation and ensure correct clearance according to EN 60664-1:2007, you must adapt the supply voltage to the altitude.



Supply voltage for three-phase motor in relation to altitude

Pos.	Description
1	Supply voltage [V]
2	Altitude [m]

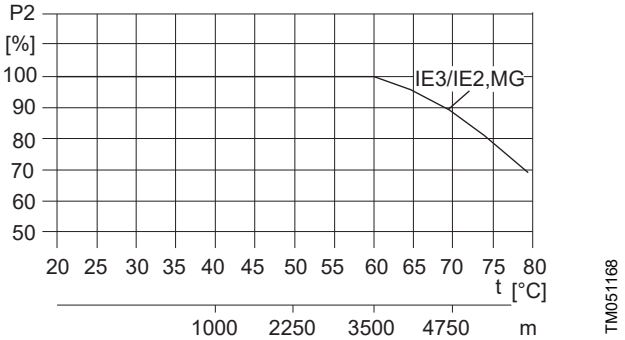


Supply voltage for single-phase motor in relation to altitude

Pos.	Description
1	Supply voltage [V]
2	Altitude [m]

Installation altitude for CM

Installation altitude is the height above sea level of the installation site. Motors installed up to 3500 m above sea level can be loaded 100 %.



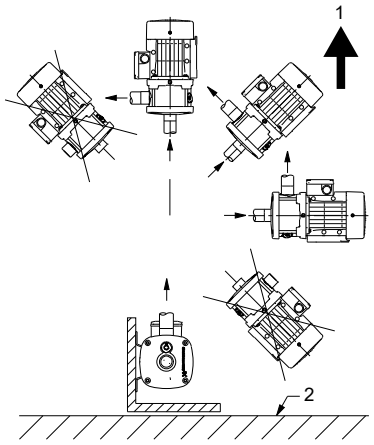
Motor output power in relation to temperature and installation altitude

Installation of pump

The pump must be installed on a plane surface and fixed so that it cannot be displaced during startup and operation.

Installation of CME and CM pumps

The pump must be installed so that air pockets are avoided in the pump housing and pipes. The figure below shows the permissible pump positions.



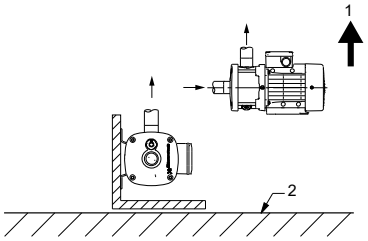
TM038773

Positions of CME and CM pumps

Pos.	Description
1	Up
2	Floor

Installation of CM self-priming pumps

Install the pump so that the inlet is horizontal. The figure below shows the permissible pump positions.



TM058905

Positions of CM self-priming pumps

Pos.	Description
1	Up
2	Floor

Install the pump with easy access for inspection, maintenance and service.

Install the pump in a well-ventilated location.

10. Construction

Pump

The pumps have an axial inlet port and a radial outlet port and are mounted on a base plate.

All movable parts are made of stainless steel.

Self-priming pumps are fitted with an internal water trap and an internal valve, both of which are mainly made of a composite material.

You find the sectional drawings in the sections from CME, CM 1-A to CM self-priming.

The pumps are available with mains-operated motors (CM pumps) and electronically speed-controlled motors (CME pumps).

All pumps incorporate a maintenance-free mechanical O-ring shaft seal with a fixed driver.

TM051130

CME and CM pump hydraulics

Related information

CME, CM 1-A

CM self-priming

Motor

CME and CM pumps are fitted with totally enclosed, fan-cooled, 2-pole motors with principal dimensions to EN 50347. The motors have been developed especially for CME and CM pumps.

Electrical tolerances comply with EN 60034.

Single-phase CME pumps are available from 0.37 to 1.5 kW.

Three-phase CME pumps are available from 0.37 to 7.5 kW.

Soft starter

Soft starters are only to be used for three-phase motors.

Efficiency

Motors for CME and CM pumps comply with different energy-efficiency requirements throughout the world, for example the European Ecodesign.

For China, motors with CCC and CEL marking are available.

Generally, this means that all three-phase motors of 0.75 kW and up are IE3-compliant as standard.

MGE motors

The motor is energy efficiency class IE5 according to IEC 60034-30-2. In combination with the integrated frequency converter, the combined power drive system is efficiency class IES2 according to IEC 50598-2.

Electrical data

Insulation class	F
Enclosure class	IP55 [20)]
Supply voltages (tolerance ± 10 %)	**CME** 1 x 200-240 V, 50/60 Hz 3 x 200-240 V, 50/60 Hz 3 x 380-500 V, 50/60 Hz 3 x 440-480 V, 50/60 Hz **CM** 1 x 115/230 V, 60 Hz 1 x 220-240 V, 50 Hz 3 x 208-230/440-480 V, 60 Hz 3 x 220-240/380-415 V, 50 Hz 3 x 200/346 V, 50 Hz; 200-220/346-380 V, 60 Hz 3 x 575 V, 60 Hz 3 x 380-415 V, 50 Hz; 440-480 V, 60 Hz 3 x 220-240/380-415 V, 50 Hz 3 x 220-255/380-440 V, 60 Hz

[20)] IP55 is not recommended for operation in condensing environments.
For operation in such environments, see the section on operation in condensing environments.

Related information

Operation in condensing environments

Motor protection

Mains-operated motors (CM)

Single-phase motors, 1 x 115/230 V, 60 Hz, do not incorporate motor protection and must be connected to a motor-protective circuit breaker which can be manually reset. Set the motor-protective circuit breaker according to the rated current of the motor ($I_{1/1}$). See the nameplate.

Other single-phase motors have built-in current- and temperature-dependent motor protection in accordance with IEC 60034-11 and require no further motor protection. The motor protection reacts to both slow- and quick-rising temperatures. The motor protection is automatically reset.

Three-phase motors up to 3 kW must be connected to a motor-protective circuit breaker which can be manually reset. Set the motor-protective circuit breaker according to the rated current of the motor ($I_{1/1}$). See the nameplate.

Motors with power ratings of 3 kW and up have built-in thermistors (PTC)[21]. The thermistors are designed according to DIN 44082. The motor protection reacts to both slow- and quick-rising temperatures.

Electronically speed-controlled motors (CME)

CME pumps require no external motor protection. The MGE motor incorporates thermal protection against steady overload and stalled condition (IEC 34-11).

Frequency converter operation

All three-phase motors can be connected to a frequency converter. Depending on the frequency converter type, this may cause increased acoustic noise from the motor. Furthermore, it may cause the motor to be exposed to detrimental voltage peaks.

Single-phase motors must not be connected to a frequency converter.

MG 71- and MG 80-based motors with supply voltages E, E1, H, J and O are supplied with phase insulation as standard. Phase insulation is available on request for MG 71- and MG 80-based motors with supply voltages F and G. Phase insulation is required for motors used with a frequency converter to protect the motor against voltage peaks higher than 650 V (peak value) between the supply terminals.

The above disturbances, that is both increased acoustic noise and detrimental voltage peaks, can be eliminated by fitting an LC filter between the frequency converter and the motor.

For further information, contact the frequency converter supplier or Grundfos.

Shaft seal

The shaft seal for the CME and CM pumps is of the O-ring type, which makes it very flexible when different types of O-rings and seal-face materials are needed. The shaft seal has a fixed seal driver which ensures a reliable rotation of all parts - even under the most extreme operating conditions.

Due to the special design of the shaft seal and the interfaces to the rest of the pump construction, the dry-running capabilities are improved significantly compared to most other similar shaft seals and pump types. Furthermore, improvements have been made to reduce the risk and effect of sticking. The shaft seal types available can be found in the section on selection of CME pumps where the key parameters of selecting a shaft seal are also described.

Exploded view of a shaft seal

Note that the available shaft seals for CME and CM pumps are very robust and durable, but dry running must always be avoided.

Details regarding operating conditions for the shaft seal can be found in the section on operating range of the shaft seal.

Further information about the shaft seal can be found in the separate book covering shaft seals which can be ordered from Grundfos.

Title	Publication number
Mechanical shaft seals for pumps	97506935

Related information

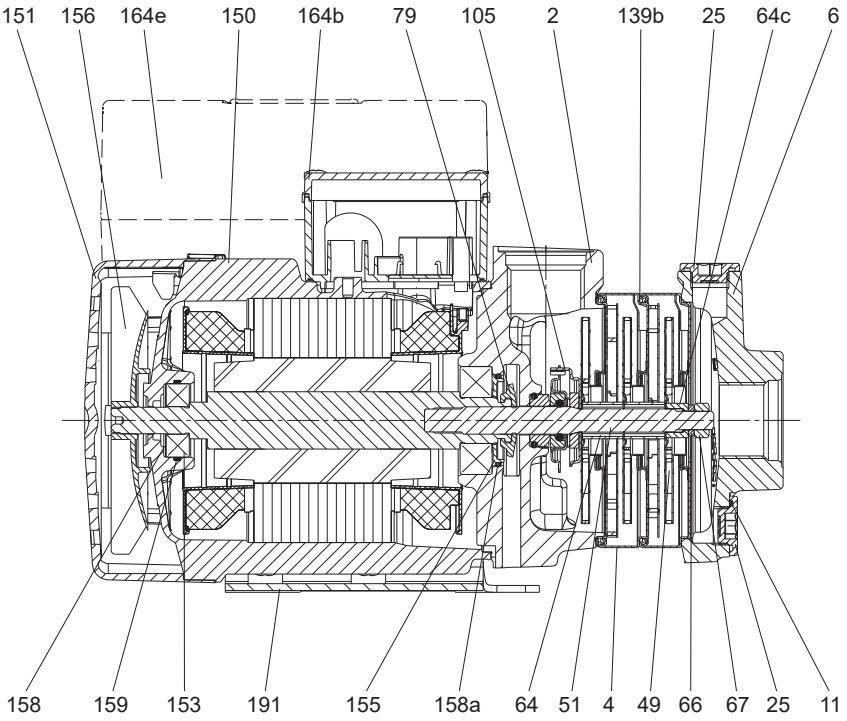
Operating range of the shaft seal
Selection of CME pumps

[21] Applies only to supply voltages F, G and O. Motors for other supply voltages must be connected to a motor-protective circuit breaker as described for three-phase motors up to 3 kW.

CME, CM 1-A

(A = cast iron EN-GJL-200)

Sectional drawing



CME, CM 1-3 with MG, MGE 71 motor

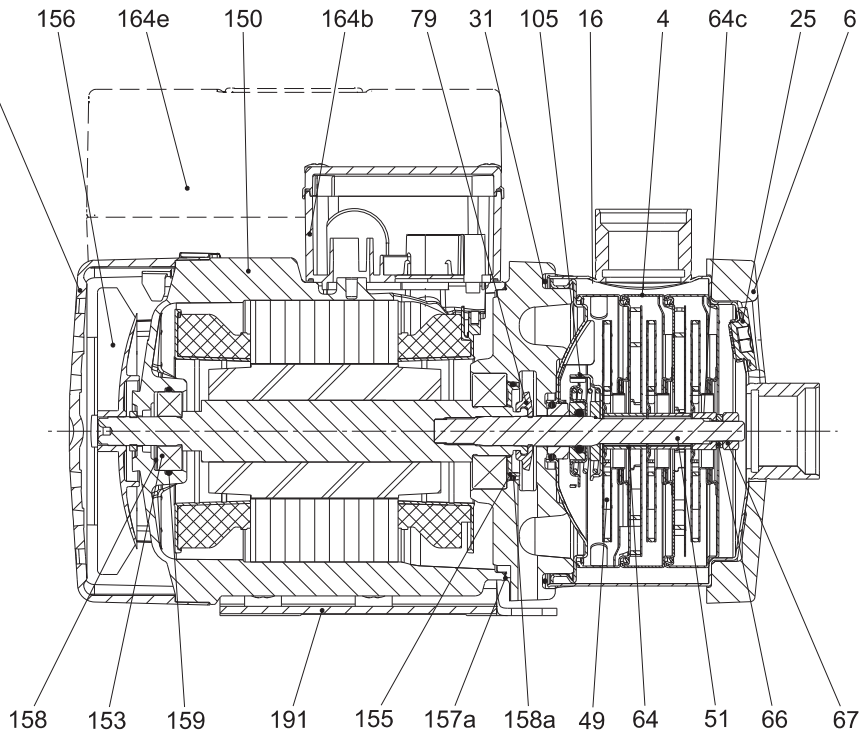
Components

Pos.	Component	Pos.	Component	Pos.	Component
2	Outlet part	64c	Clamp	153	Ball bearing
4	Chamber	66	Washer (NORD-LOCK)	155	Bearing cover plate
6	Inlet part	67	Nut	156	Fan
11	O-ring	79	Diverting disc	158	Corrugated spring
25	Plug	105	Shaft seal	158a	O-ring
49	Impeller	139b	Gasket	159	O-ring
51	Pump shaft	150	Stator housing	164b, 164e	Terminal box
64	Spacing pipe	151	Fan cover	191	Base plate

CME, CM 1-I and CME, CM 1-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)

Sectional drawing



CME, CM 1-3 with MG, MGE 71 motor

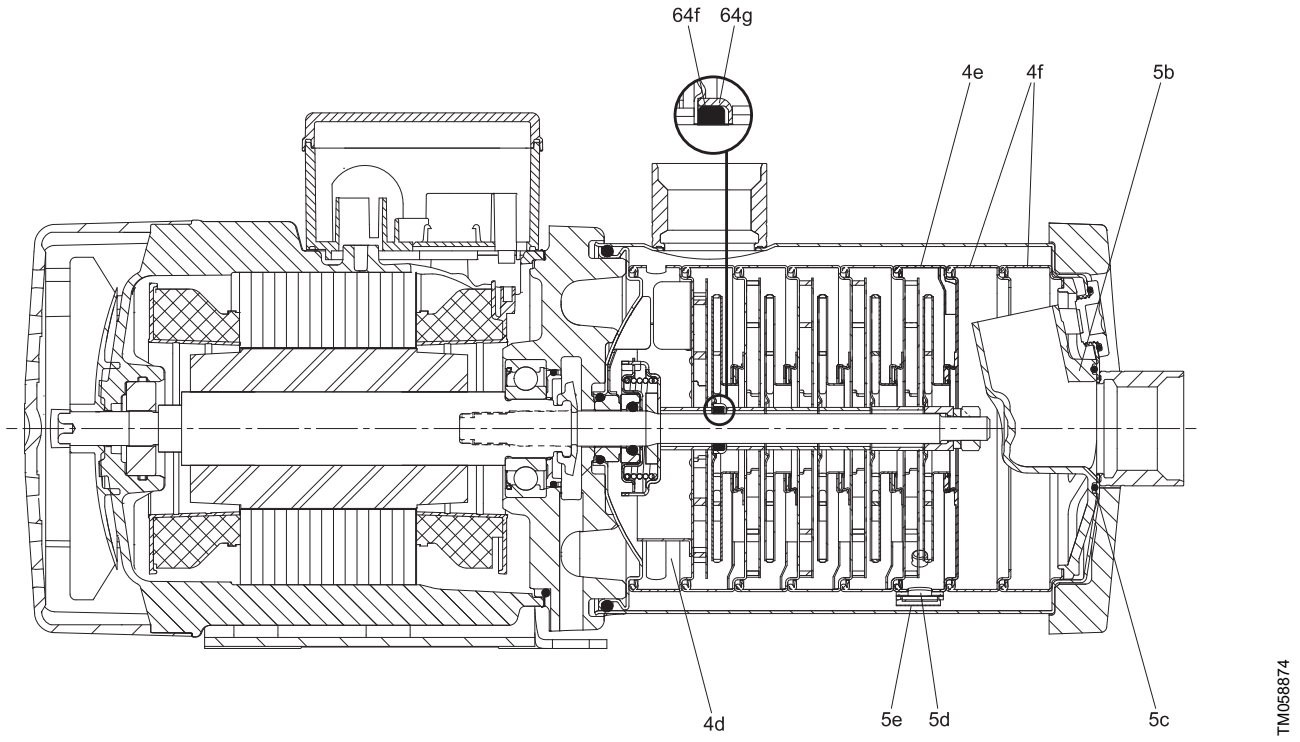
Components

Pos.	Component	Pos.	Component	Pos.	Component
4	Chamber	64c	Clamp	155	Bearing cover plate
6	Flange	66	Washer (NORD-LOCK)	156	Fan
16	Sleeve	67	Nut	157a	Gasket
25	Plug	79	Diverting disc	158	Corrugated spring
31	O-ring	105	Shaft seal	158a	O-ring
49	Impeller	150	Stator housing	159	O-ring
51	Pump shaft	151	Fan cover	164b, 164e	Terminal box
64	Spacing pipe	153	Ball bearing	191	Base plate

CM self-priming

Stainless steel: I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316

Sectional drawing



CM 1-3, self-priming version

Components

Pos.	Description	Material
4d	Chamber complete with ribs and vanes	Stainless steel (EN 1.4301/AISI 304)
4e	Chamber with recirculation hole	Stainless steel (EN 1.4301/AISI 304)
4f	Empty chambers	Stainless steel (EN 1.4301/AISI 304)
5b	Syphon	Composite (Noryl 731s-701-1977)
5c	O-ring	EPDM
5d	Base for valve	Composite (Noryl 731s-701-1977)
5e	Spring plate	Stainless steel (EN 1.4310/AISI 301)
64f	Rubber seal	EPDM
64g	Container for rubber seal	Stainless steel (EN 1.4301/AISI 304)

Material specification

Pos.	Description	Material	Pump material version					
			Cast iron (EN-GJL-200)		Stainless steel (EN 1.4301/AISI 304)		Stainless steel (EN 1.4401/AISI 316)	
			EN	ISO/AISI/ASTM	EN	ISO/AISI/ASTM	EN	ISO/AISI/ASTM
Motor parts								
156b	Motor flange	Cast iron						
150	Stator housing	Silumin (Alu)						
151	Fan cover	Composite PBT/PC						
153	Ball bearing							
156	Fan	Composite PA 66 30 % GF						
158	Corrugated spring	Steel						
164b	Terminal box, MG	Composite PC/ASA or silumin (Alu)						
164e	Terminal box, MGE							
191	Base plate	Steel, electrocoated	1.0330.3		1.0330.3			
		Steel, powder-coated, 60 to 120 µ, NCS 7005					1.0330.3	
79	Diverting disc	Silicone fluid (LSR)						
155	Bearing cover plate	PPS						
Pump parts								
105	Shaft seal, steel parts	Stainless steel	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4401	AISI 316
	Shaft seal, seal faces	Al_2O_3/carbon or SiC						
51	Pump shaft	Stainless steel	1.4301	AISI 304	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4401	AISI 316
11 31 [23] 158a 159	O-rings	EPDM, FKM or FFKM						
157a [23]	Gasket	Paper						
139b [24]	Gasket	Aramide fibres (nbr)						
2 [23]	Outlet part	Cast iron						
6 [23]	Inlet part	Cast iron						
4	Chamber	Stainless steel	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4401	AISI 316
25	Plug	Stainless steel	1.4404	AISI 316L	1.4404	AISI 316L	1.4404	AISI 316L
49	Impeller	Stainless steel	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4301/ 1.4401 [22]	AISI 304/ AISI 316 [22]	1.4401	AISI 316
64	Spacing pipe	Stainless steel	1.4401	AISI 316	1.4401	AISI 316	1.4401	AISI 316
64c	Clamp	Stainless steel	STX2000 [25]		STX2000 [25]		STX2000 [23]	
6 [23]	Flange	Cast iron						
16	Sleeve	Stainless steel			1.4301/ 1.4401 [22] [26]	AISI 304/ AISI 316 [22]	1.4401	AISI 316
67	Nut	Stainless steel A4						
66	Washer (NORD-LOCK)	Steel	1.4547		1.4547		1.4547	

[22] On request.

[23] Only in CME, CM-I/G pumps.

[24] Only in CME, CM-A pumps.

[25] STX2000 ~ CrNiMO 22 19 4.

[26] As standard, the pumps listed below are fitted with sleeves made of stainless steel 1.4401:
CME, CM 1-9 up to and including CME, CM 1-14
CME, CM 3-9 up to and including CME, CM 3-14
CME, CM 5-9 up to and including CME, CM 5-13
CME, CM 10-6 up to and including CME, CM 10-8.

11. CUE frequency converter

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

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

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

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

Overview of the CUE range

Supply voltage [V]	Power range [kW]									
	0.55	0.75	1.1	1.5	2.2	3.0	3.7	4.0	5.5	7.5
3 × 380-500	•	•	•	•	•	•		•	•	•
3 × 200-240		•	•	•	•	•	•		•	•
1 × 200-240			•	•	•	•	•		•	•

CUE is available in the following enclosure classes:

- IP20/21
- IP54/55
- IP66 (US markets).

Note that the maximum CUE frequency is 590 Hz.

RFI filters

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

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

TM077504

The CUE range

Functions

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

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

CUE features

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

Inputs and outputs

CUE incorporates various inputs and outputs:

- one RS-485 GENIbus connection
- one analog input, 0-10 V, 0/4-20 mA
  - external setpoint
- one analog input, 0-10 V, 0/4-20 mA
  - sensor input, feedback sensor
- one analog output, 0/4-20 mA
  - six digital inputs
  - two inputs can be changed to digital outputs
  - all digital inputs and outputs are programmable
- two signal relays (C/NO/NC)
  - programmable.

Accessories for CUE

Grundfos offers various accessories for CUE.

MCB 114 sensor input module

MCB 114 offers additional analog inputs for CUE:

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

Output filters

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

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

- dU/dt filters
- sine-wave filters.

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

Floor-mounting option

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

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

IP21/NEMA1 option

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

Sensors

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

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

Gateways

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

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

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

Control MPC

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

Use of output filters

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

The selection depends on these factors:

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

Cables used in CUE installations

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

Example of an installation in EMC-sensitive sites

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

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

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

Consider the following issues when using frequency converters in pump installations:

- To limit wear and overheating of windings, lubricate the journal bearings.
  - Ramp, up and down, is maximum 3 seconds.
- Use temperature monitoring by a Pt sensor.
  - If the motor overheats, there will be a low insulation resistance, which results in sensitivity to voltage peaks.
- Remember to use an output filter.
  - Cables act as an amplifier, which measures peaks at the motor.
- Limit the rise time (dU/dt) to a maximum of 1000 V/µs. It is determined by the equipment in CUE.
  - Time between switches is an expression of losses; therefore, exceeding the limit of 1000 V/µs may be required. The solution for this issue is filtering the output from CUE.
- Size the CUE in respect of the current, not the power output.
  - You can end up with a CUE that is too small in size otherwise.

12. Approvals and markings

CME, CM pumps

Safety approvals

cULus, pumps

The cULus approval complies with the following standards:

- UL778 and C22.2 No. 108
- NEMA 250 (IP code).

The cULus approval covers the standard product range for the following supply voltages:

- 1 x 115/230 V, 60 Hz (supply voltage B)
- 1 x 115/230 V, 60 Hz (supply voltage B1)

Contact Grundfos for further information.

Overheating protection

Note that cULus-approved pumps have no internal protection.

cURus, IE3 motors

The cURus approval for the IE3 motors complies with the following standards:

- UL1004-1
- CSA 22.2 No. 100.

Note that motors with power ratings of 3 kW and up have built-in thermistors (PTC).

The cURus approval covers the IE3 motors for the following supply voltages:

- 3 x 208-230/440-480 V, 60 Hz (supply voltage E/E1)
- 3 x 200/346 V, 50 Hz 3 x 200-220/346-380 V, 60 Hz (supply voltage G)
- 3 x 220-240/380-415 V, 50 Hz 3 x 220-255/380-440 V, 60 Hz (supply voltage O)
- 3 x 380-415 V, 50 Hz 440-480 V, 60 Hz (supply voltage J)
- 3 x 575 V, 60 Hz (supply voltage H).

cURus, E-motors

The cURus approval for E-motors complies with the following standards:

- UL 1004-1
- CSAC22.2 No. 100
- UL 60730-1.

The cURus approval covers the CME motors for the following supply voltages:

- 3 x 380-500 V, 50/60 Hz (supply voltage S)
- 3 x 440-480 V, 50/60 Hz (supply voltage T)
- 1 x 200-240 V, 50/60 Hz (supply voltage U)
- 3 x 200-240 V, 50/60 Hz (supply voltage V).

Drinking water approvals

- WRAS
- ACS
- NSF61 and NSF372
- German Drinking Water Ordinance, TrinkwV §17, (2), (UBA).

Energy approvals

The following energy approvals are available on request:

- CEL
- cURus Energy for Canada
- Energy Independence and Security Act (EISA) for the USA (CC marking)
- ErP for EU
- Minimum energy performance standard (MEPS) for Korea, Taiwan, China and Brazil.

Contact Grundfos if you have any questions regarding energy approvals for other countries.

Other approvals and compliance with directives

- CCC
- EAC
- PSE
- RCM
- RoHS.

Markings

[27] Not applicable to 60 Hz pumps with supply voltages A, B, B1 and B2.

CM self-priming pumps

The following approvals and markings are available as standard. Further approvals and markings are available on request. Contact Grundfos for further information.

Drinking water approvals

- WRAS
- ACS
- German Drinking Water Ordinance, TrinkwV §17, (2), (UBA).

Other approvals and compliance with directives

- CCC
- CEL
- ErP
- EAC
- RoHS.

Markings

[28] Not applicable to 60 Hz pumps with supply voltages A, B, B1 and B2.

13. Certificates

Certificate	Description
Certificate of compliance with the order	According to EN 10204, 2.1. Grundfos document certifying that the pump supplied is in compliance with the order specifications.
Test certificate. Non-specific inspection and testing	According to EN 10204, 2.2. Certificate with inspection and test results of a non-specific pump.
Inspection certificate 3.1	Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate.
Inspection certificate	Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate. Certificate from the surveyor is included. We offer the following inspection certificates: • Lloyds Register of Shipping (LRS) • DNV GL (Det Norske Veritas Germanischer Lloyd) • American Bureau of Shipping (ABS) • Registro Italiano Navale Agenture (RINA) • Biro Klassifikasio Indonesia (BKI) • United States Coast Guard (USCG) • Nippon Kaiji Koykai (NKK).
Standard test report	Certifies that the main components of the specific pump are manufactured by Grundfos, and that the pump has been QH-tested, inspected and conforms to the full requirements of the appropriate catalogues, drawings and specifications.
Material specification report	Certifies the material used for the main components of the specific pump.
Duty-point verification report	Certifies a test point specified by the customer. Issued according to ISO 9906:2012 concerning "Duty point verification".
Surface-roughness	Shows the measured roughness of the cast pump base of the specific pump. The report indicates the values measured at the base inlet and outlet according to ISO 1302.
Vibration report	Vibration report indicating the values measured during the performance test of the specific pump according to ISO 10816.
Motor test report	Shows the performance test of the specific motor, including power output, current, temperature, stator windings resistance and insulation test.
Cleaned and dried pump	Confirms that the specific pump has been cleaned and dried, and how it was done.

Examples of the certificates are shown in the section on examples of certificates.
Note that other certificates are available on request.

Examples of certificates

Certificate of compliance with the order

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Certificate of compliance with the order

EN 10204 2.1

General Info	
Customer name	
Customer order no.	
Customer TAG no.	
GRUNDFOS order no.	
Product type	

We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.

GRUNDFOS
Date:

Signature:
Name:
Dept.:

Part no. 96507895/PMI/000/1221711

TM034165

Test certificate

be think innovate GRUNDFOS

Test Certificate
Non-specific inspection and testing

EN 10204 2.2

Customer name	
Customer order no.	
Customer TAG no.	
GRUNDFOS order no.	

Pump		
Pump type		Part Number
Motor Make		Part Number
Flow	m^3/h	
Head	m	
Max.operating pressure	bar	
Max.operating temperature	0C	
Power P2	kW	
Voltage	V	
Frequency	Hz	
Full load current	A	
Motor speed	min^{-1}	

We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured, tested*1), inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.

GRUNDFOS
Date:

Signature:
Name:
Dept.:

*1) Cleaned and dried pumps and PWIS free pumps are not performance tested

Part no. 96507896/PMI/000/1221711

TM034163

Inspection certificate 3.1

be think innovate GRUNDFOS

Inspection certificate.

EN 10204 3.1

Manufactured by	
GRUNDFOS order no.	
GRUNDFOS DUT id.	
Customer order no.	
Customer name and address	
Shipyard / factory	
Ship / new building	
Customer TAG no.	
Classifying society	**GRUNDFOS authorized department**

Pump		Motor	
Pump type		Make	
Part number		Part number	
Serial no.		Serial No.	
Flow rate (m^3/h)		P2 (kW)	
Head (m)		Voltage (V)	
Max. ope. P/t (bar / °C)		Current (A)	
	Din / W. - No.	n(min^{-1})	
Base/Pump head cover		Frequency (Hz)	
Impeller/guidevanes		Insulation class	
Shaft/sleeve		Power factor	

Customer's requirements			
Flow rate (m^3/h)		Head (m)	

Test result ref. requirements							
Q(m^3/h)		H(m)		n(min^{-1})		I(A)	P1(kW)

Hydrostatic test		Bar – no leaks or deformation observed

GRUNDFOS
Date:

Signature:
Name:
Dept.:

Part no. 96 50 78 97 /PMI/000/1135258

96507897

Inspection certificate

Inspection Certificate

Russian Maritime Register of Shipping

General Info			
Customer name			
Customer order no.		GRUNDFOS order no.	
Customer TAG no.		Certificate No.	
Ship / new building			
Shipyard / factory			

Pump		Motor	
Pump type		Make	
Part No.		Part No.	
Serial No.		Serial No.	
Model		P2 [kW]	
Flow rate [m^3/h]		Voltage [V]	
Head [m]		Current [A]	
Max.liquid temp [°C]		Motor speed [min^{-1}]	
Max.opr. Press. [bar]		Frequency [Hz]	
Stamping ID		IP code	
		Max.temp.amb. [°C]	

Part according to EN 10204 - 3.1

Part	Raw material Grundfos PN	Raw material grade and standard	Vendor	Heat / Charge No.
Pump head				
Pump head cover*				
Base				
Sleeve				
Pump head*				
Seal chamber**				
THD flange***				
Blind cover (THD)***				

*) Only for CR(I/N) Back to Back, Tandem, Air cooled top
**) Only for CR(I/N) MagDrive ("Pump head cover" removed and "Pump head" included)
***) Only for CR(N) 95, 125, 155, 185, 215, 255 with base prepared for THD

Part according to EN 10204 - 2.2

Part	Material type	Raw material grade acc. to standard
Shaft		
Impeller		
Chamber		

Operational function			
Media		Application	

Required duty point			
Flow rate [m^3/h]		Head [m]	

Test performance
Result of tests are attached. See test point

Declaration of compliance for the Class Society Rules
Rules for technical supervision during construction of ships and manufacture of materials and products for ships, Part IV

GRUNDFOS
Date:

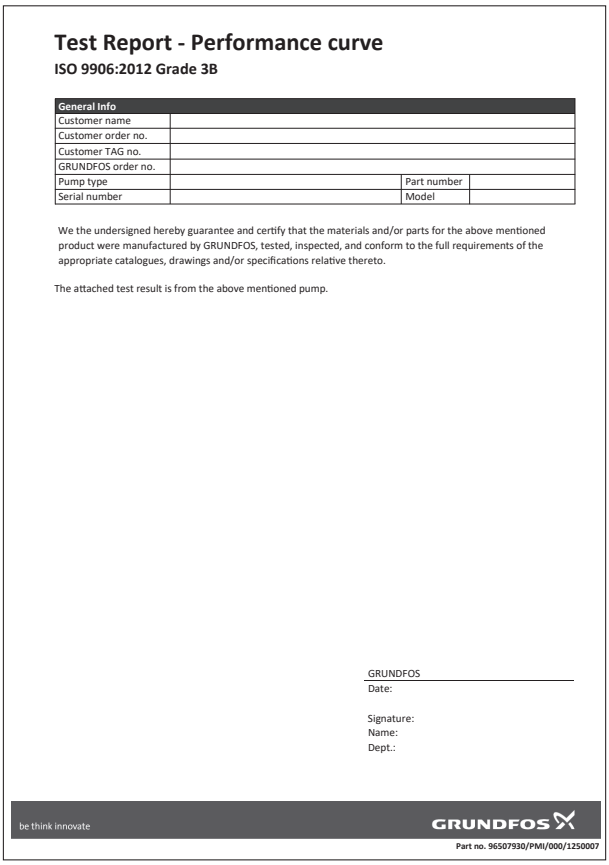
Signature:
Name:
Dept.:

be think innovate GRUNDFOS

Part no. 96507925/PMI/000/ 1249889

TM034156

Standard test report



Test Report - Performance curve

ISO 9906:2012 Grade 3B

General Info			
Customer name			
Customer order no.			
Customer TAG no.			
GRUNDFOS order no.			
Pump type		Part number	
Serial number		Model	

We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured by GRUNDFOS, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.

The attached test result is from the above mentioned pump.

GRUNDFOS
Date:

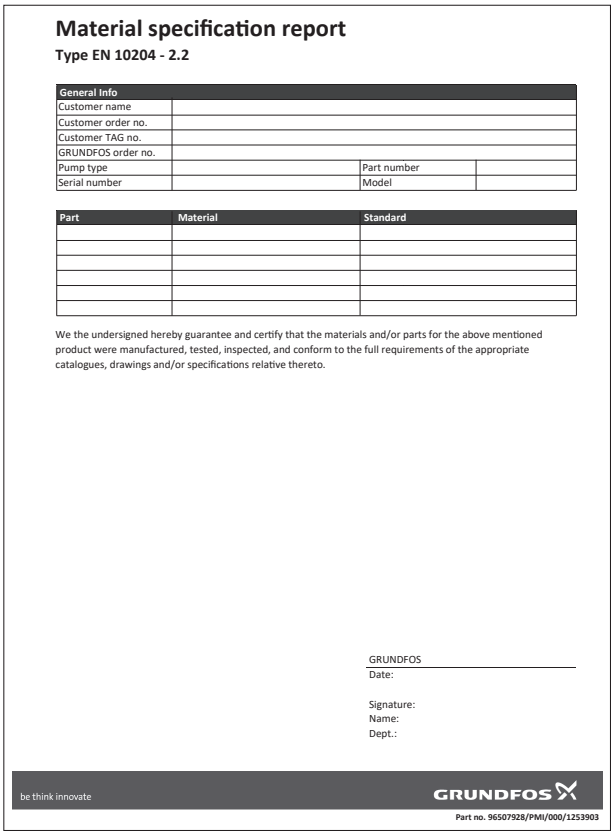
Signature:
Name:
Dept.:

be think innovate

Part no. 96507930/PMI/000/1250007

TM034143

Material specification report



Material specification report

Type EN 10204 - 2.2

General Info			
Customer name			
Customer order no.			
Customer TAG no.			
GRUNDFOS order no.			
Pump type		Part number	
Serial number		Model	

Part	Material	Standard

We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.

GRUNDFOS
Date:

Signature:
Name:
Dept.:

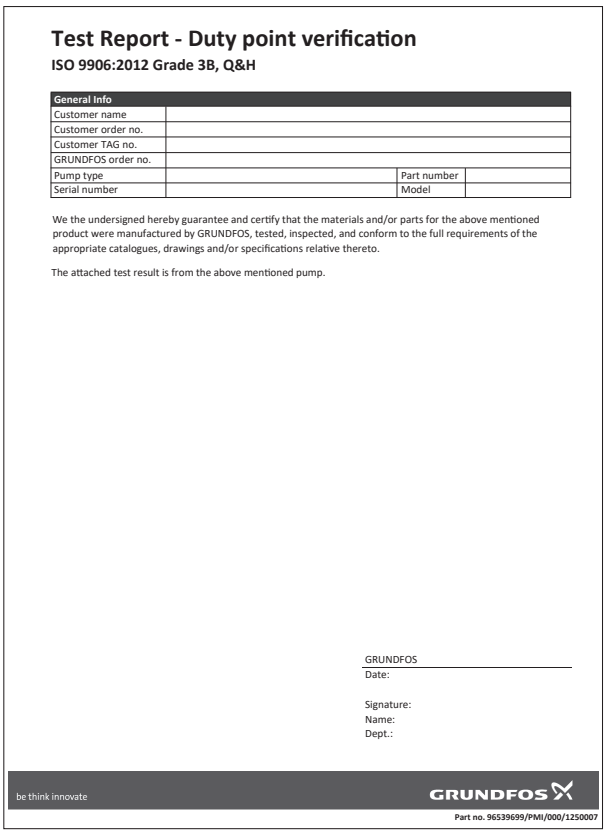
be think innovate

Part no. 96507928/PMI/000/1253903

TM034150

Material specification report with certificate from raw material supplier

Duty-point verification report



Test Report - Duty point verification

ISO 9906:2012 Grade 3B, Q&H

General Info			
Customer name			
Customer order no.			
Customer TAG no.			
GRUNDFOS order no.			
Pump type		Part number	
Serial number		Model	

We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured by GRUNDFOS, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.

The attached test result is from the above mentioned pump.

GRUNDFOS
Date:

Signature:
Name:
Dept.:

be think innovate

Part no. 96539699/PMI/000/1250007

TM034148

14. Selection

Selection of CME pumps

CME pumps are normally used in applications characterized by a variable flow rate. Consequently, you cannot select a pump that is constantly operating at its optimum efficiency. In order to achieve optimum operating economy, the duty point must therefore be close to the optimum efficiency (eta) for most operating hours. For further information, see the section on communication with CME pumps.

Note that irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

Related information

Control options

CME 1

Selection of pumps

Base the selection of pumps on these parameters:

- duty point of the pump
- sizing data such as pressure loss as a result of height differences, friction loss in the pipes, pump efficiency
- pump materials
- pump connections
- shaft seal.

Related information

Operating range of the shaft seal

Pump materials

Pump connections

Duty point of the pump

From a duty point, you can select a pump on the basis of the curve charts in the section on performance curves and technical data.

Ideally, the duty point should match the best efficiency on the pump curve.

Related information

CME 1

Grundfos Product Center

We recommend that you size your pump in Grundfos Product Center, which is a selection program offered by Grundfos.

Grundfos Product Center features a user-friendly and easy-to-use virtual guide which leads you through the selection of the pump for the application in question.

Related information

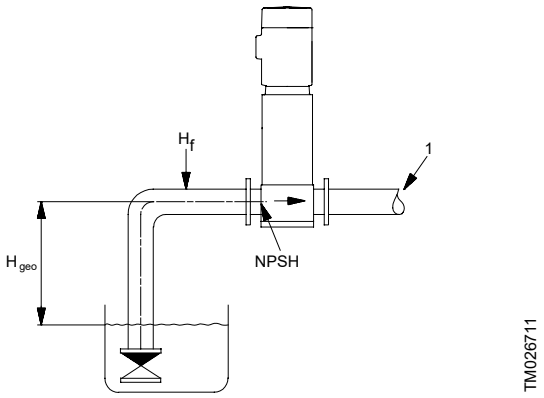
29. Grundfos Product Center

Sizing data

When sizing a pump, take these parameters into account:

- Required flow rate and pressure at the draw-off point.
- Pressure loss as a result of height differences (H_{geo}).
- Friction loss in the pipes (H_f).

  It may be necessary to account for pressure loss in connection with long pipes, bends, valves or similar.
- Best efficiency at the estimated duty point.
- NPSH value.



Sizing data

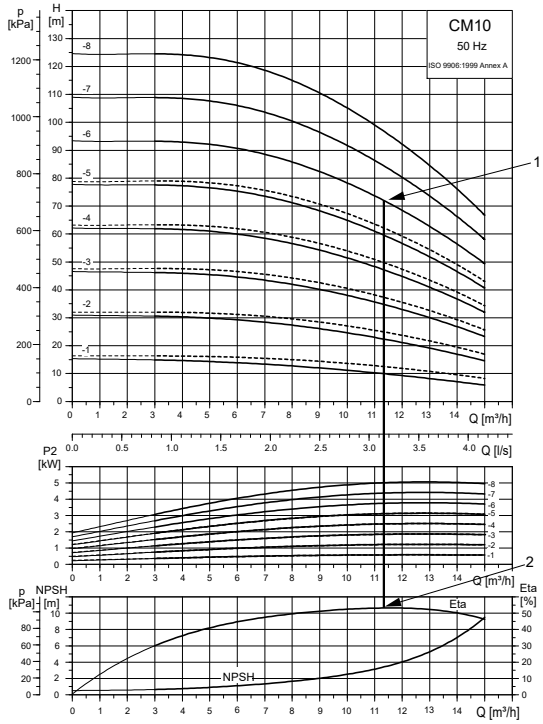
Pos.	Description
1	Required flow rate, required pressure

Related information

Minimum inlet pressure, NPSH

Pump efficiency

Before determining the best efficiency point, the operation pattern of the pump needs to be identified. If the pump is expected to operate at the same duty point, then select a CM pump which is operating at a duty point corresponding to the best efficiency of the pump. The example in the figure below shows how to check the pump efficiency when selecting a CM pump.

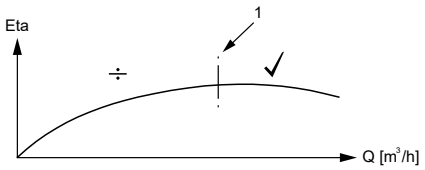


TM078916

Example of a CM pump's duty point

Pos.	Description
1	Duty point
2	Best efficiency

When sizing the pump, the efficiency (eta) must be considered so that the pump will operate at or near its maximum efficiency, for instance on the right-hand side in the curve example in the figure below.



TM009190

Best efficiency

Pos.	Description
1	Best efficiency point

Related information

Selection of CME pumps
Minimum inlet pressure, NPSH
CME 1

Pump materials

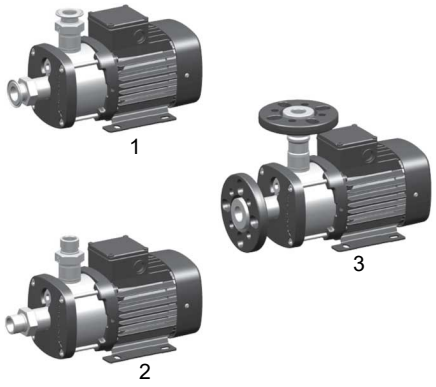
Select the material variant on the basis of the liquid to be pumped. The table below gives a general recommendation regarding selection of pump material.

Liquid to be pumped	Material in contact with pump media	Pump type
Clean, non-aggressive liquids such as potable water and oils	Cast iron [29] (EN-GJL-200)	CM-A, CME-A
Industrial liquids and acids	Stainless steel (EN 1.4301/AISI 304)	CM-I, CME-I
	Stainless steel (EN 1.4401/AISI 316)	CM-G, CME-G

[29] The impeller, chamber and filling plugs are made of stainless steel (EN 1.4301/AISI 304).
The pump shaft is made of stainless steel (EN 1.4301/AISI 316).

Contact Grundfos for a more specific selection based on the pumped liquid.

Pump connections



TM043937

Examples of pump connections

Pos.	Description
1	Tri-Clamp®
2	Victaulic® coupling
3	DIN, JIS, ANSI flange

Selection of pump connection depends on the rated pressure and pipes. To meet any requirement, the CME and CM pumps offer a wide range of flexible connections such as the following:

- Tri-Clamp®
- DIN flange
- ANSI flange
- JIS flange
- Victaulic® coupling
- Whitworth thread Rp
- internal NPT thread.

Operating pressure and inlet pressure

Do not exceed the limit values for these pressures:

- maximum operating pressure

- maximum inlet pressure.

Minimum inlet pressure, NPSH

We recommend calculating the inlet pressure "H" in these situations:

- The liquid temperature is high.
- The flow rate is significantly higher than the rated flow.
- Water is drawn from depths.
- Water is drawn through long pipes.
- Inlet conditions are poor.

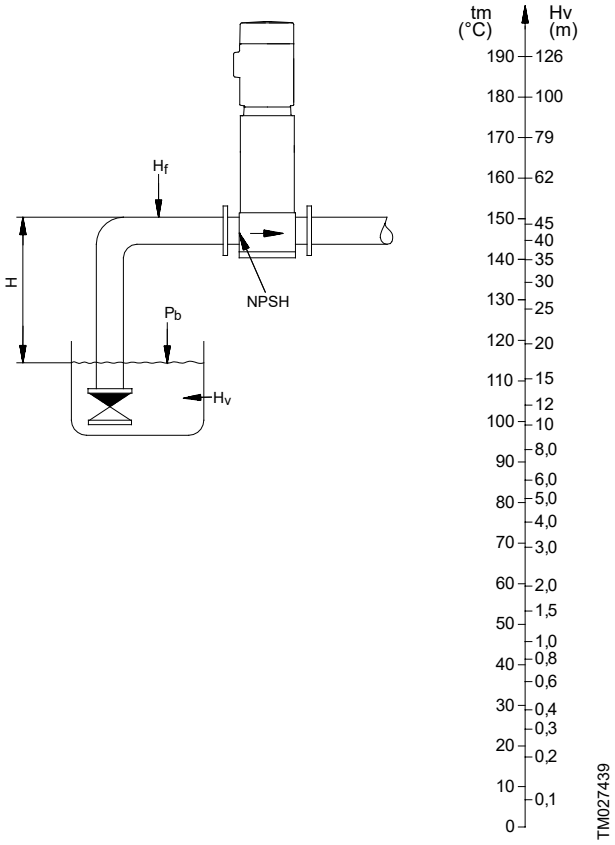
To avoid cavitation, make sure that there is a minimum pressure on the inlet side of the pump.

The maximum suction lift "H" in metres head can be calculated as follows:

H	=	p_b x 10.2 - NPSH - H_f - H_v
p_b	=	Barometric pressure in bar. P_b can be set to 1 bar at sea level. In closed systems, p_b indicates the system pressure in bar.
NPSH	=	Net Positive Suction Head in metres head. To be read from the NPSH curve at the highest flow rate the pump will be delivering.
H_f	=	Friction loss in inlet pipe in metres head at the highest flow rate the pump will be delivering.
H_v	=	Vapour pressure in metres head. To be read from the vapour pressure scale. H_v depends on the liquid temperature t_m.

If the calculated "H" is positive, the pump can operate at a suction lift of maximum "H" metres head.

If the calculated "H" is negative, an inlet pressure of minimum "H" metres head is required.

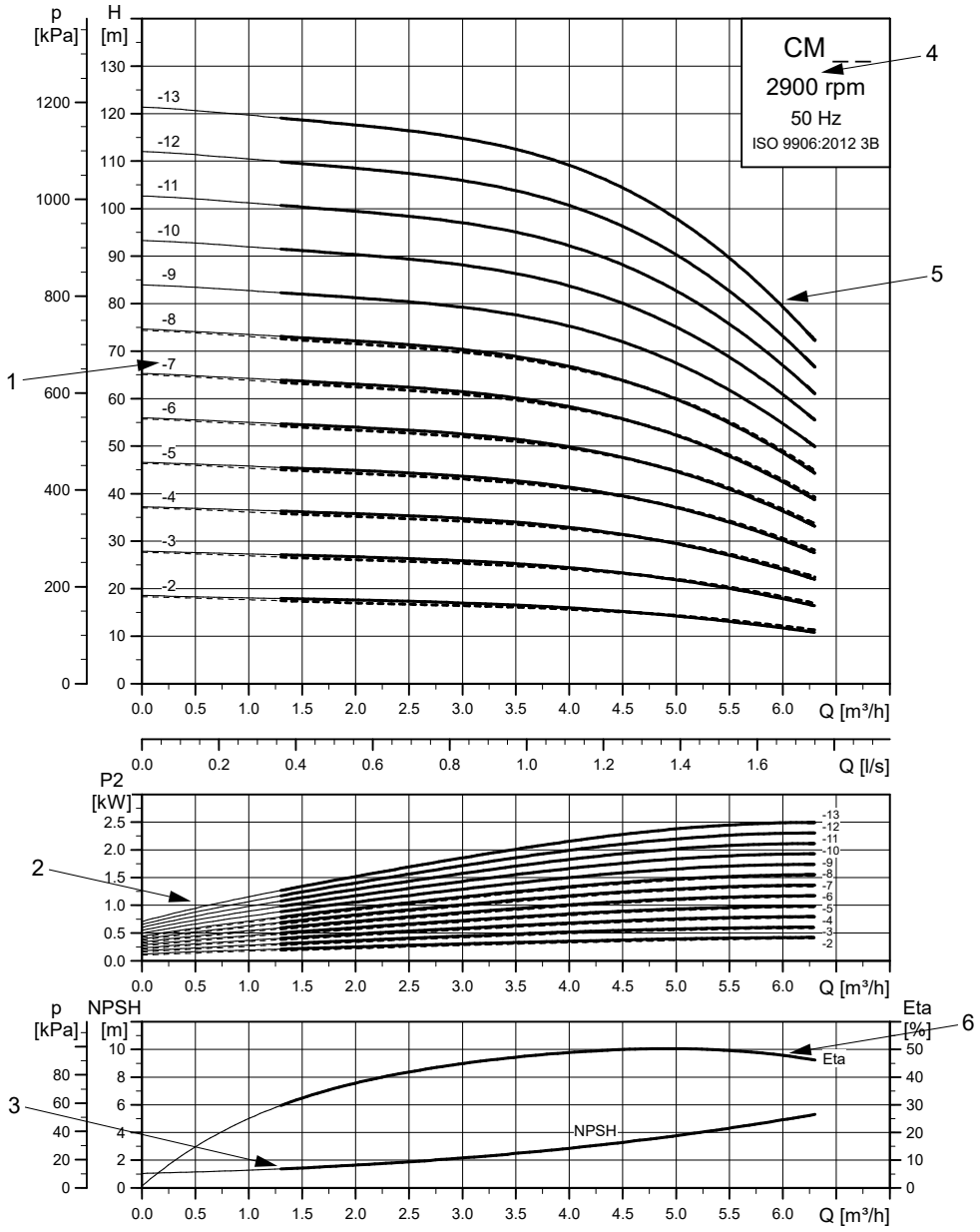


Minimum inlet pressure, NPSH

To avoid cavitation, never select a pump with a duty point too far to the right on the NPSH curve.

Always check the NPSH value of the pump at the highest possible flow rate.

15. How to read the curve charts



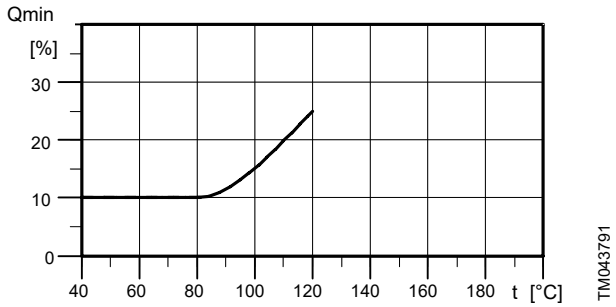
How to read the curve charts

Pos.	Description
1	Number of stages.
2	The power curves indicate the pump input power (P2) based on the number of stages and related to the actual flow rate.
3	The NPSH curve is a maximum curve for all the variants shown.
4	Pump type, speed, frequency and ISO standard.
5	QH curve for the individual pump. The **bold** curves indicate the **recommended** duty range for best efficiency.
6	The eta curve shows the efficiency of the pump. The eta curve is an average curve of all available stages and pump material variants shown in the chart.

Guidelines for performance curves

The guidelines below apply to the curves shown on the following pages:

- Tolerances to ISO 9906:2012 3B.
- Measurements have been made with airless water at a temperature of 20 °C.
- The curves apply to the following kinematic viscosity: υ = 1 mm^2/s (1 cSt).
- The QH curves apply to fixed speeds of 2900 min^{-1} (50 Hz) and 3480 min^{-1} (60 Hz). Note that the actual speed will in most cases deviate from the above-mentioned speeds. For realistic curves, see Grundfos Product Center at www.grundfos.com, where the pump curves include the characteristics of the selected motor and therefore show curves at actual speeds. In Grundfos Product Center, you can also adjust the curves depending on the density and viscosity.
- The conversion between head H (m) and pressure p (kPa) applies to a water density of ρ = 1000 kg/m^3.
- Due to the risk of overheating, the pumps are not to be used at a flow rate below the minimum flow rate. The curve in the figure below shows the minimum flow rate as a percentage of the rated flow rate in relation to the liquid temperature.



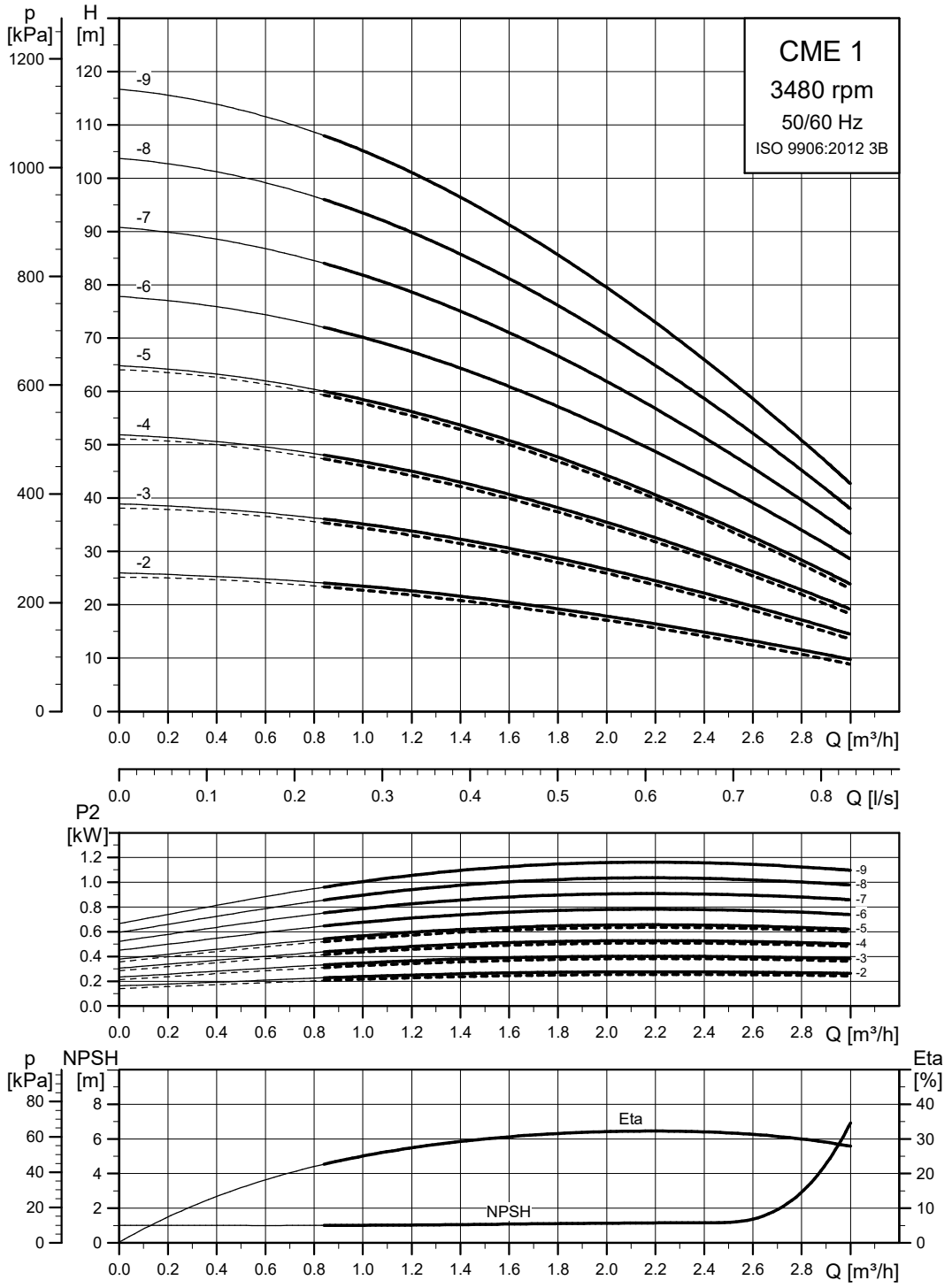
Minimum flow rate

Related information

29. Grundfos Product Center

16. Performance curves, CME 50/60 Hz

CME 1

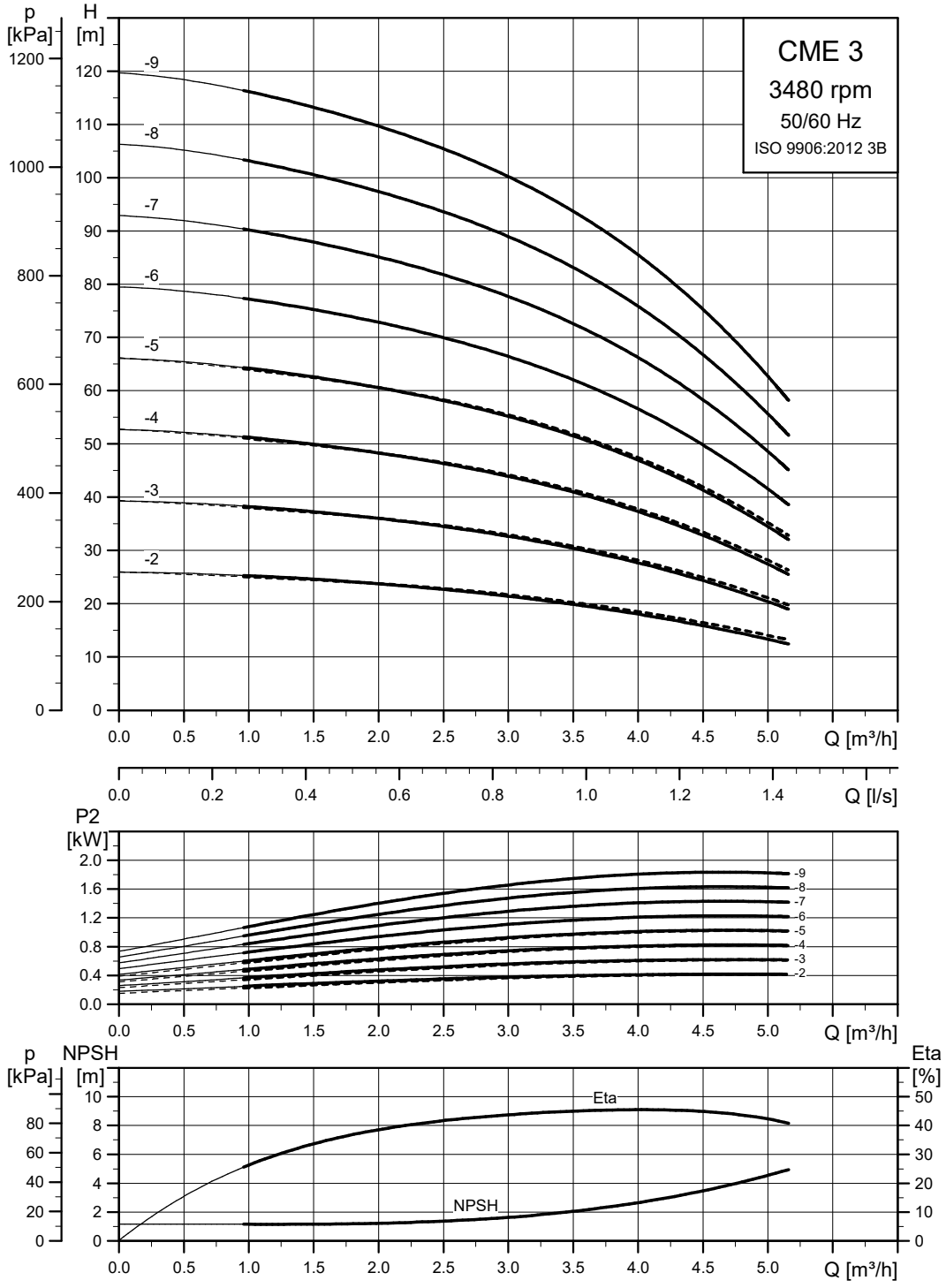


------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

CME 3



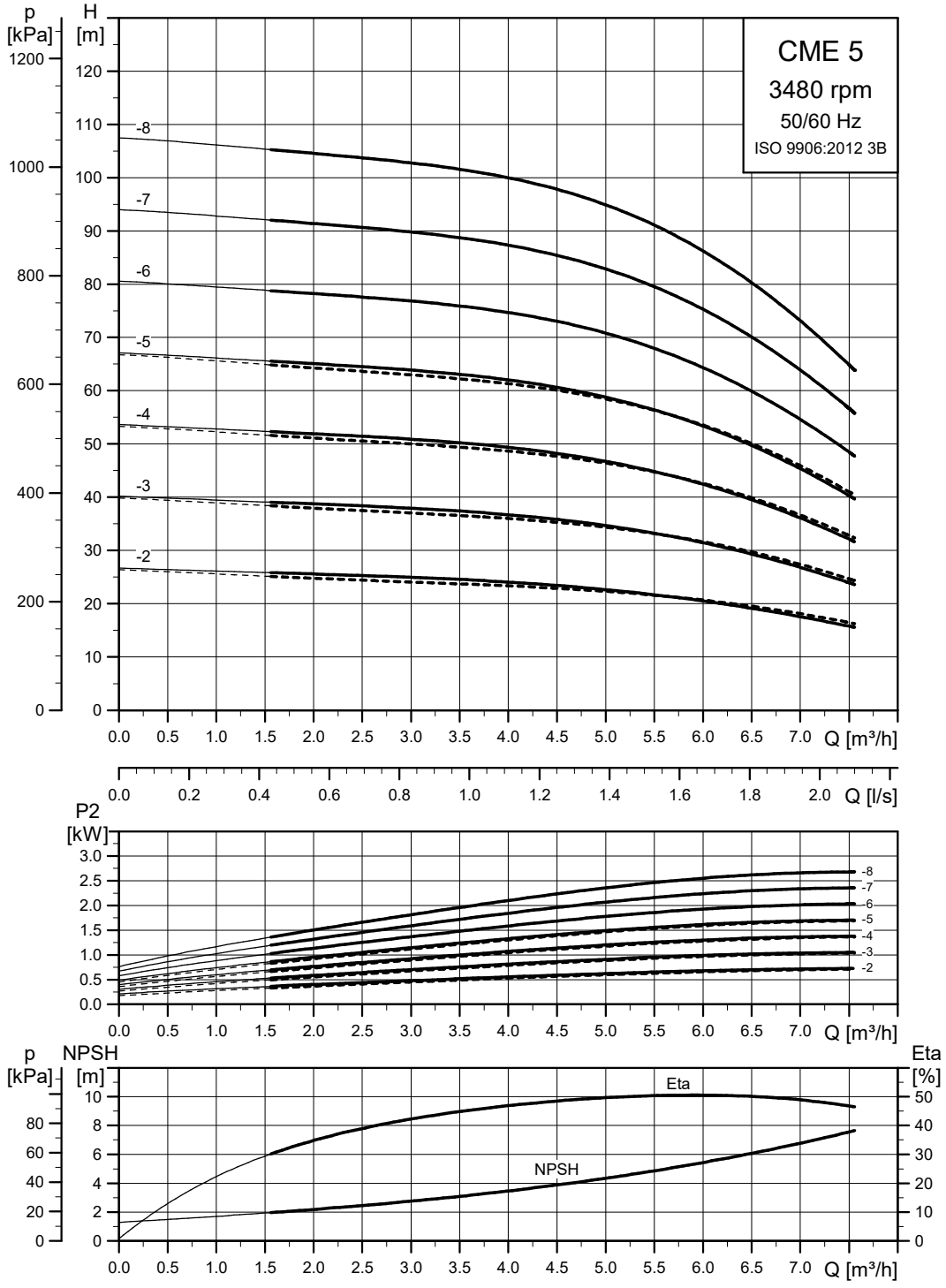
TM043570

------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

CME 5



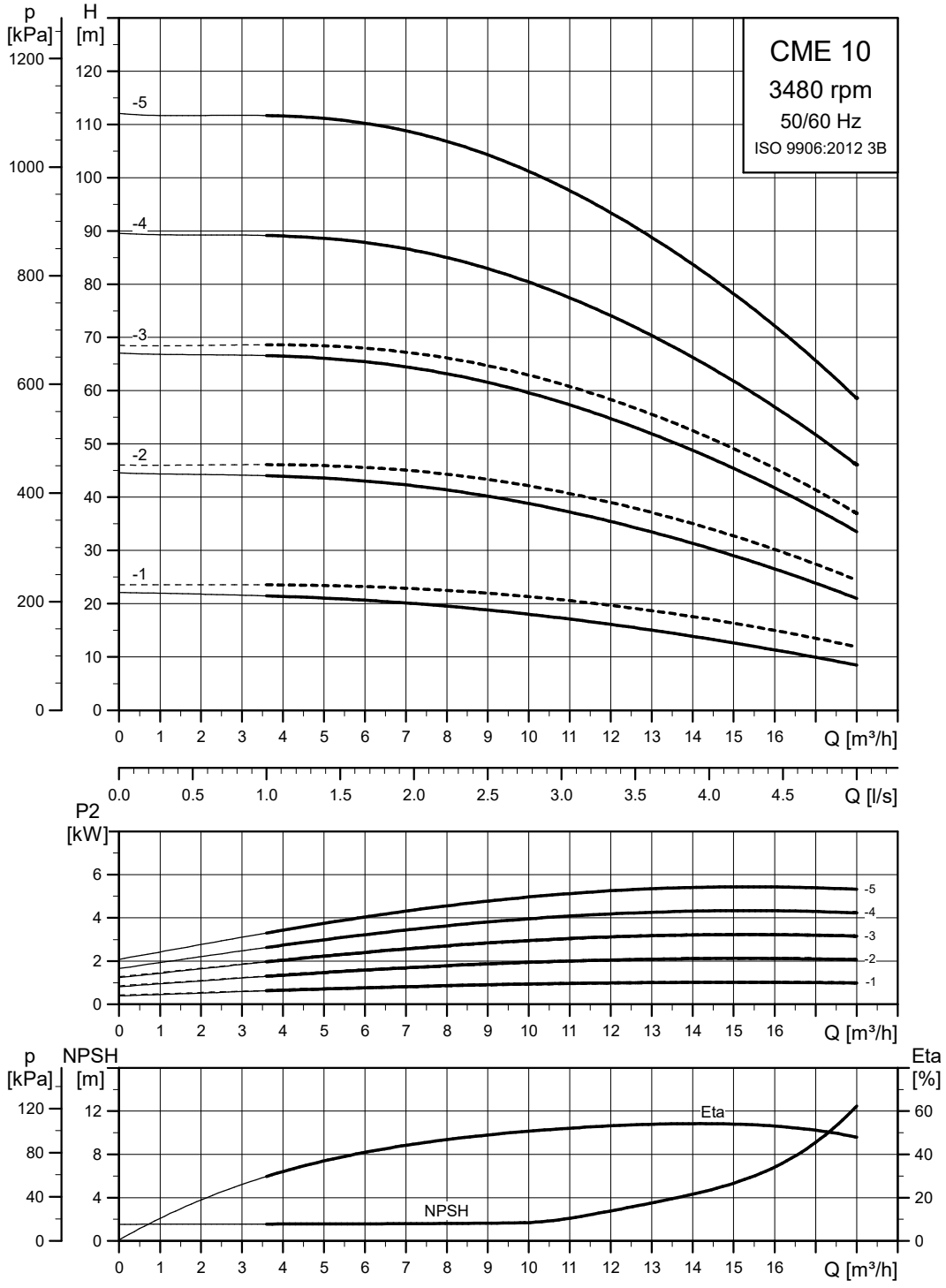
TM043571

------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

CME 10



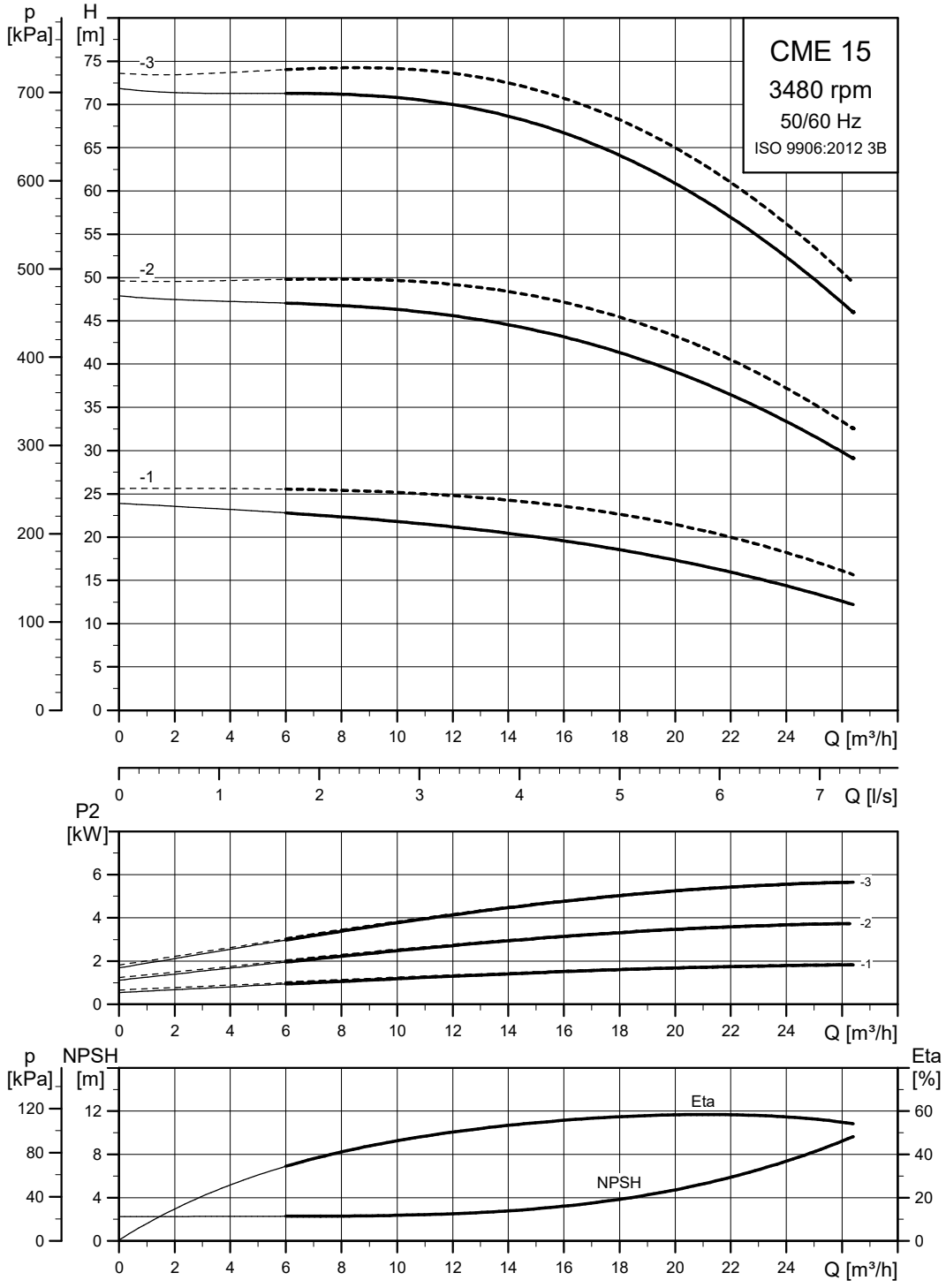
TM043572

------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

CME 15

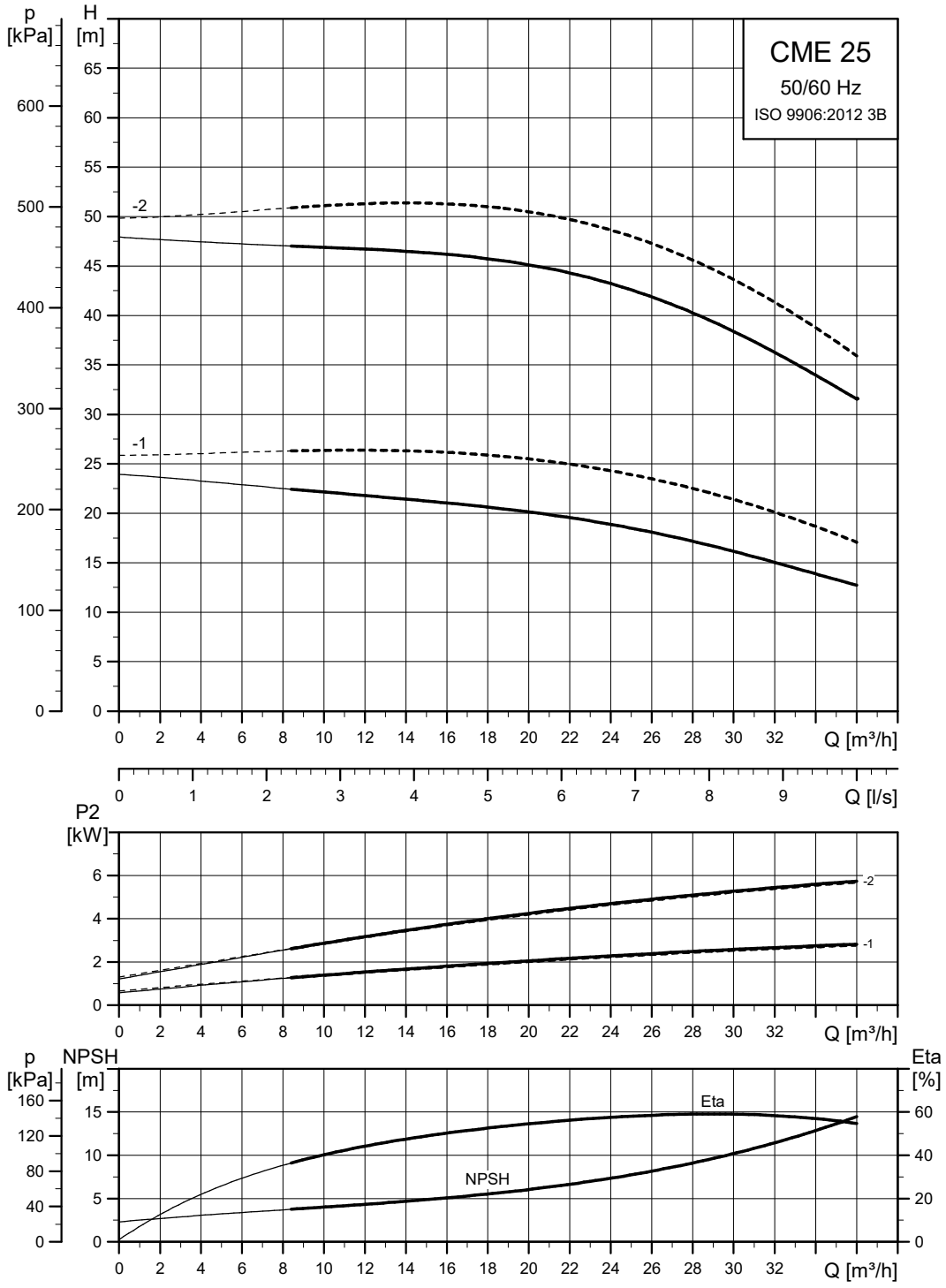


------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

CME 25



TM043574

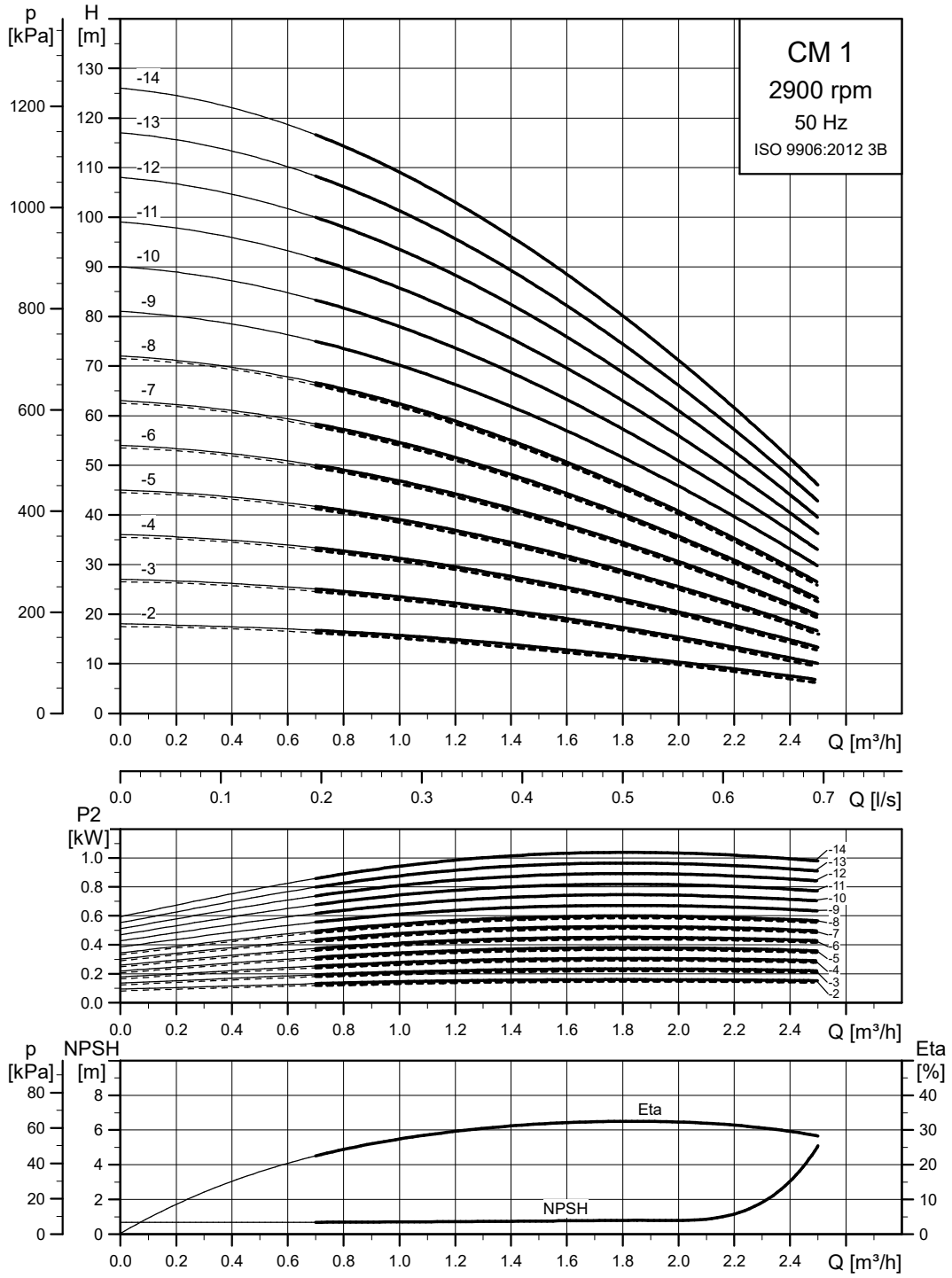
------ CME-A

—— CME-I/G

Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1}.

17. Performance curves, CM 50 Hz

CM 1

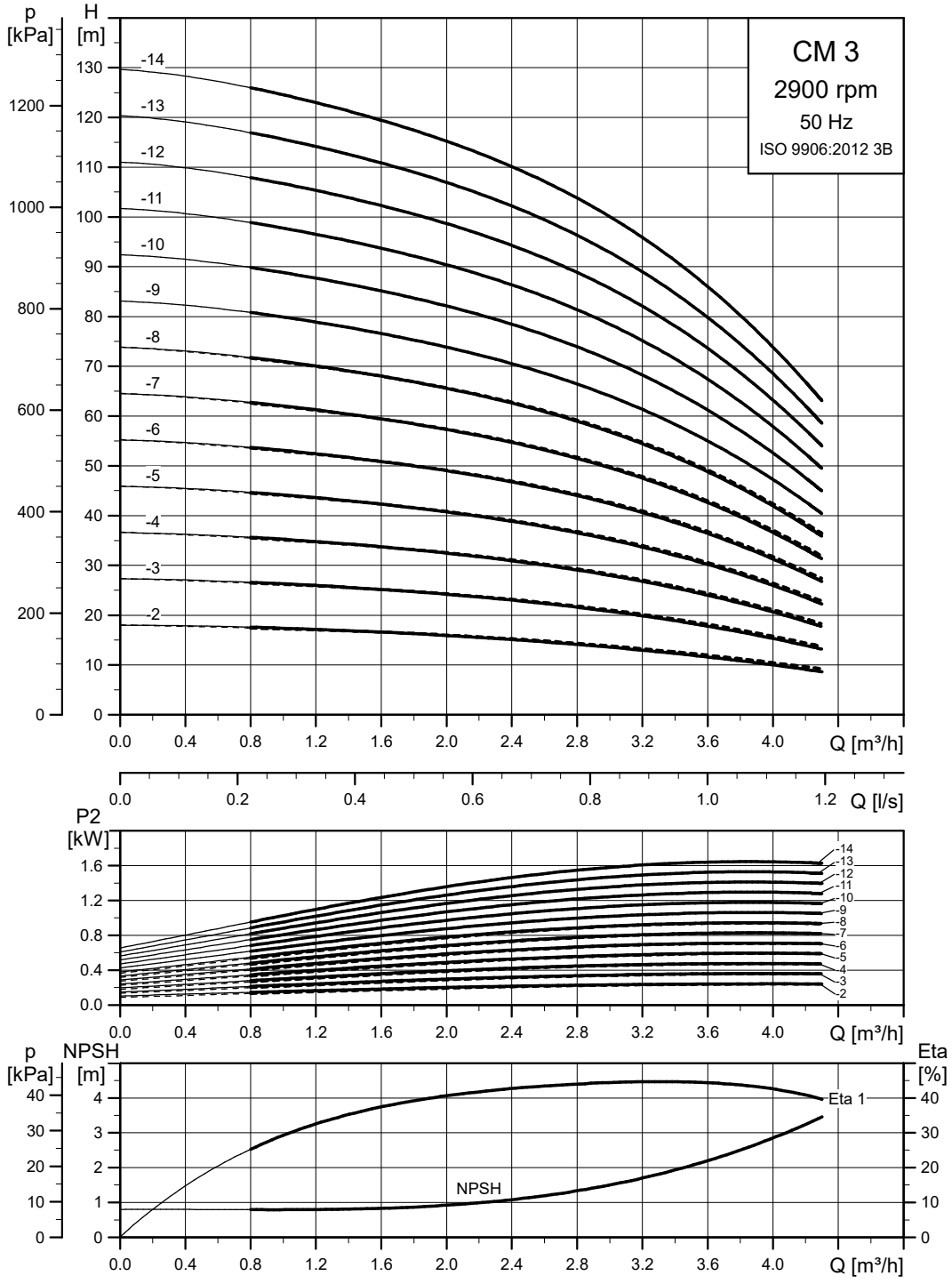


TM043334

------ **CM-A**

—— **CM-I/G**

CM 3

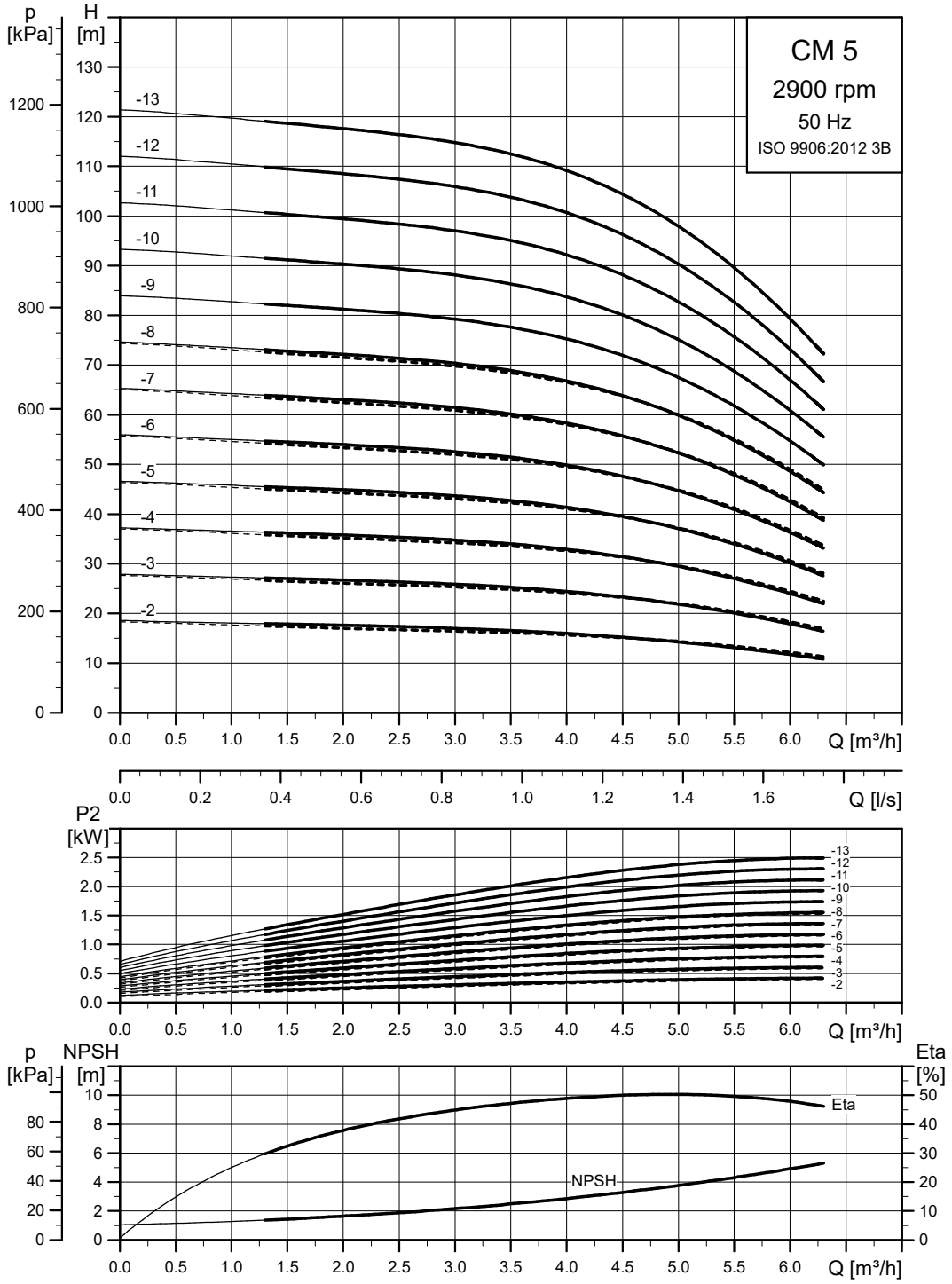


TM043335

------ **CM-A**

—— **CM-I/G**

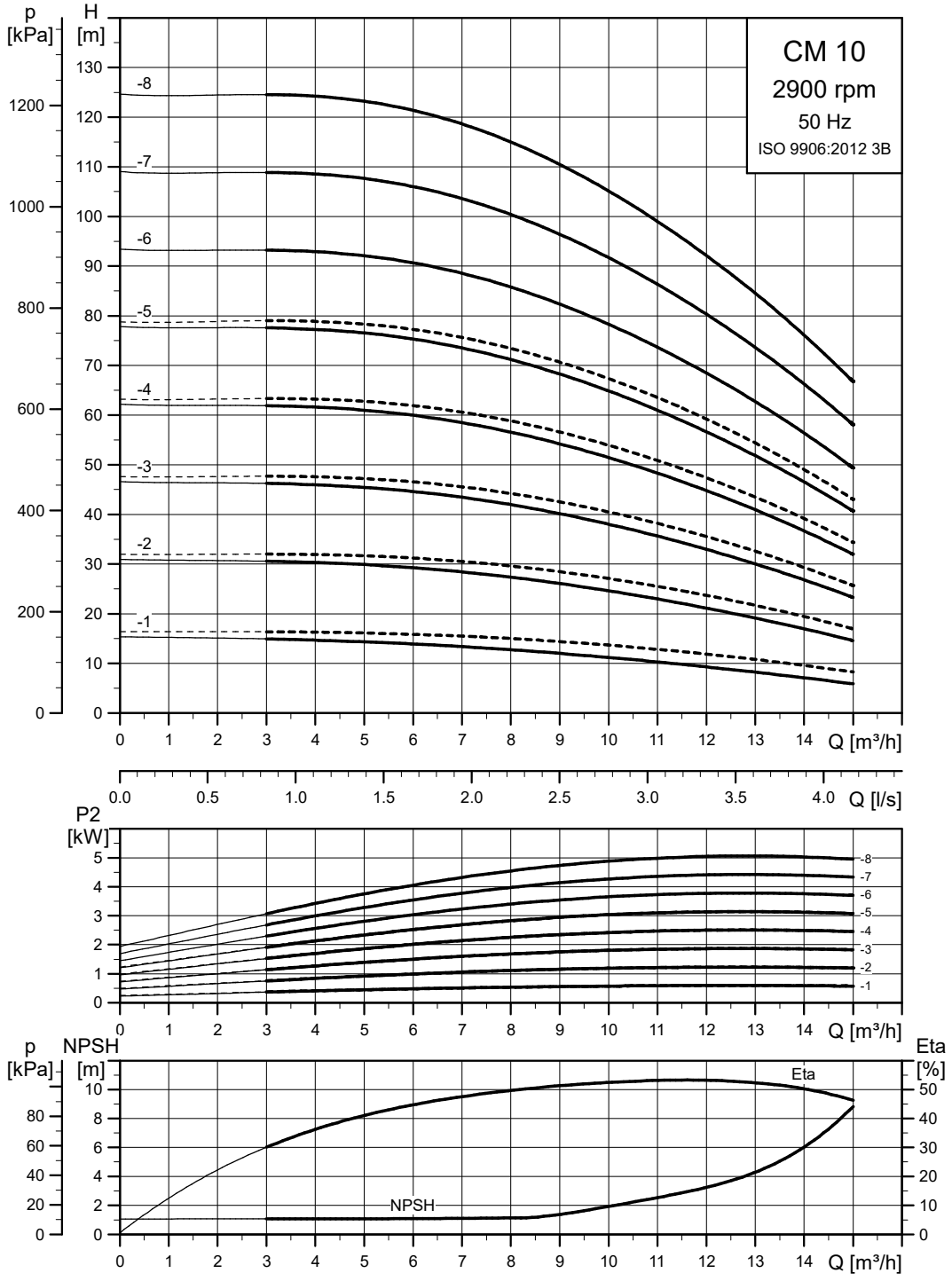
CM 5


CM 5
2900 rpm
50 Hz
ISO 9906:2012 3B
p [kPa]
H [m]
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
Q [m³/h]
Q [l/s]
P2 [kW]
p [kPa]
NPSH [m]
Eta [%]
Eta
NPSH
TM043336

------ CM-A

—— CM-I/G

CM 10

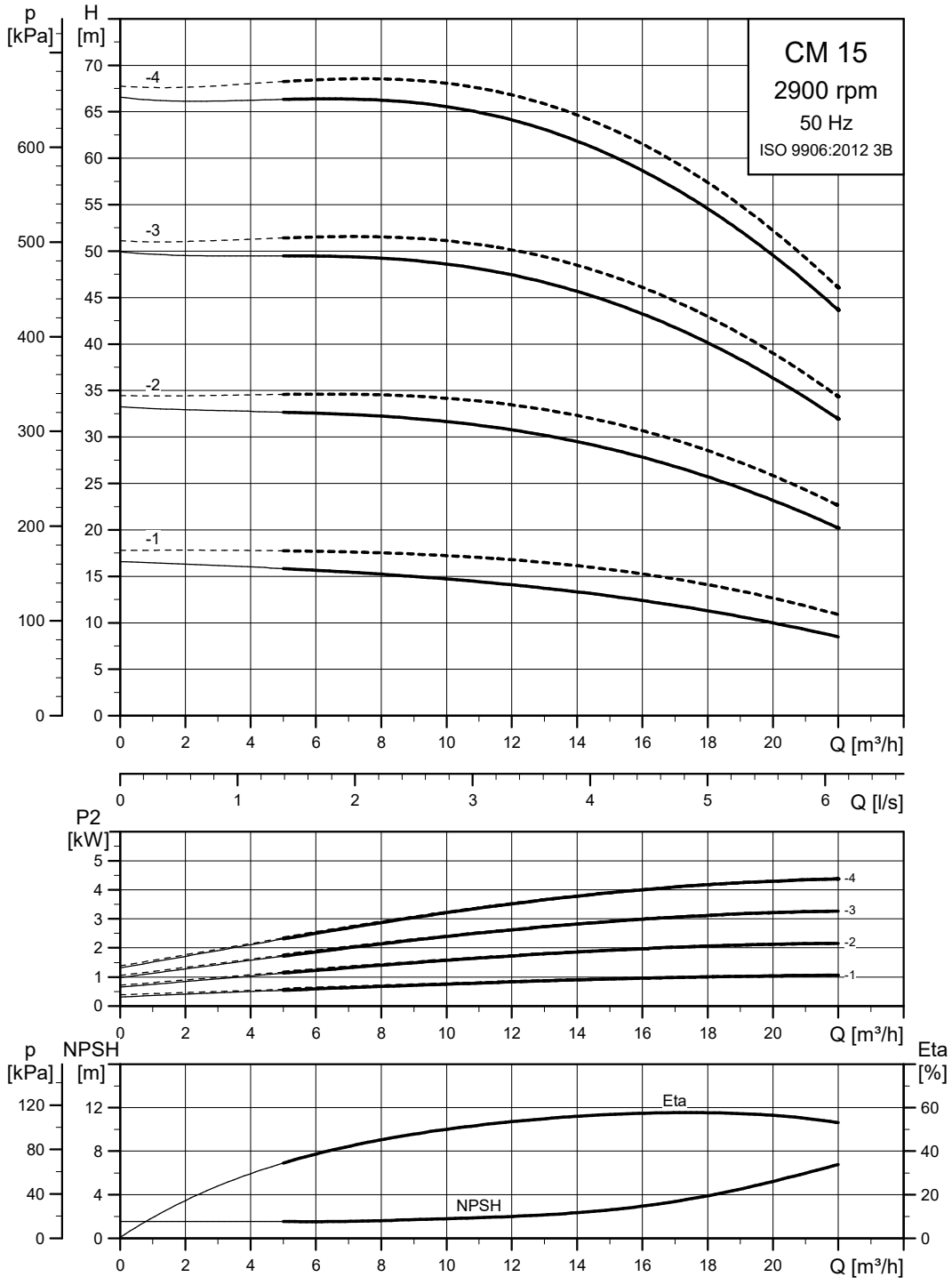


TM043337

------ CM-A

—— CM-I/G

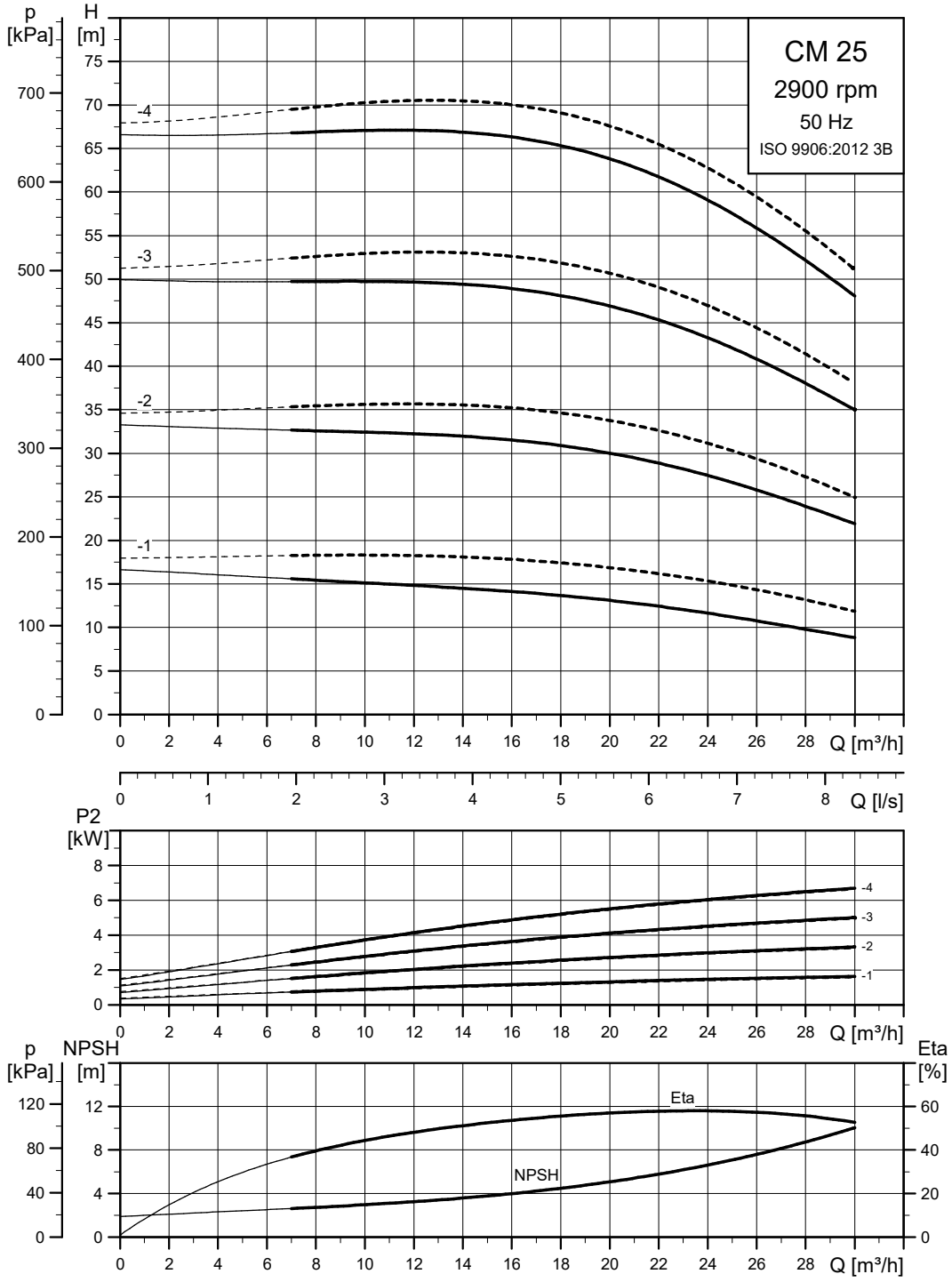
CM 15



------ CM-A

—— CM-I/G

CM 25

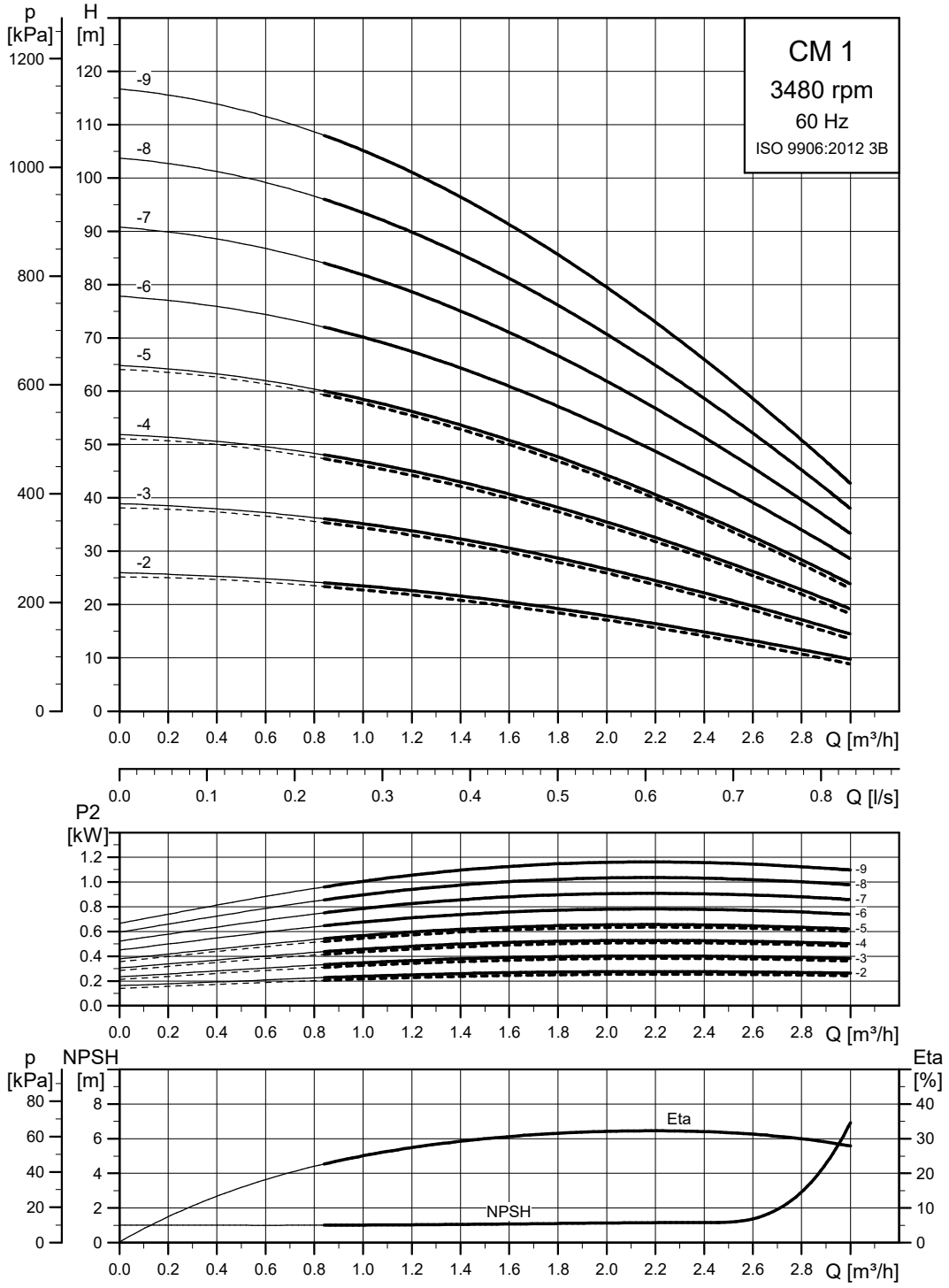


------ CM-A

—— CM-I/G

18. Performance curves, CM 60 Hz

CM 1

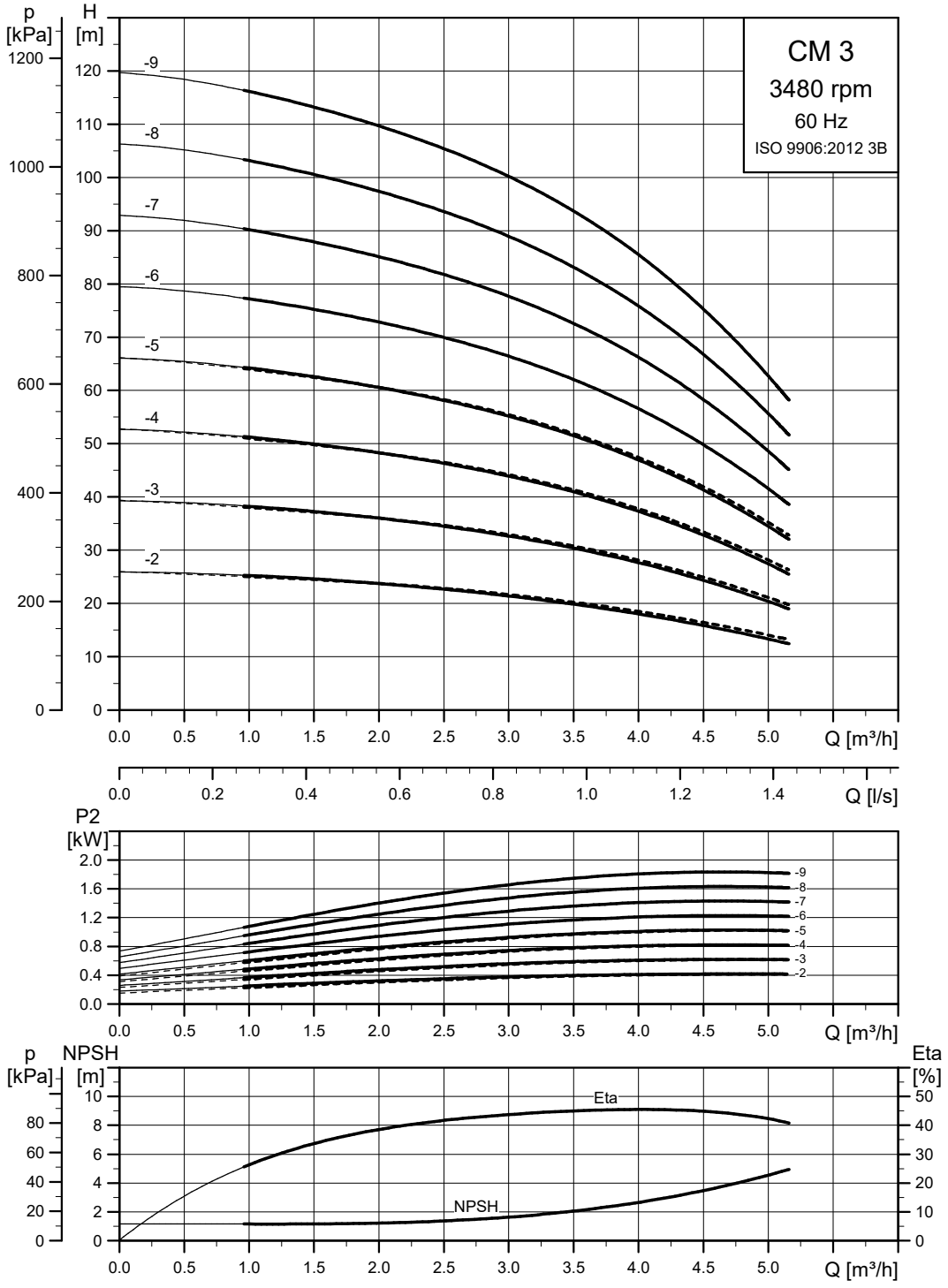


TM043370

------ CM-A

—— CM-I/G

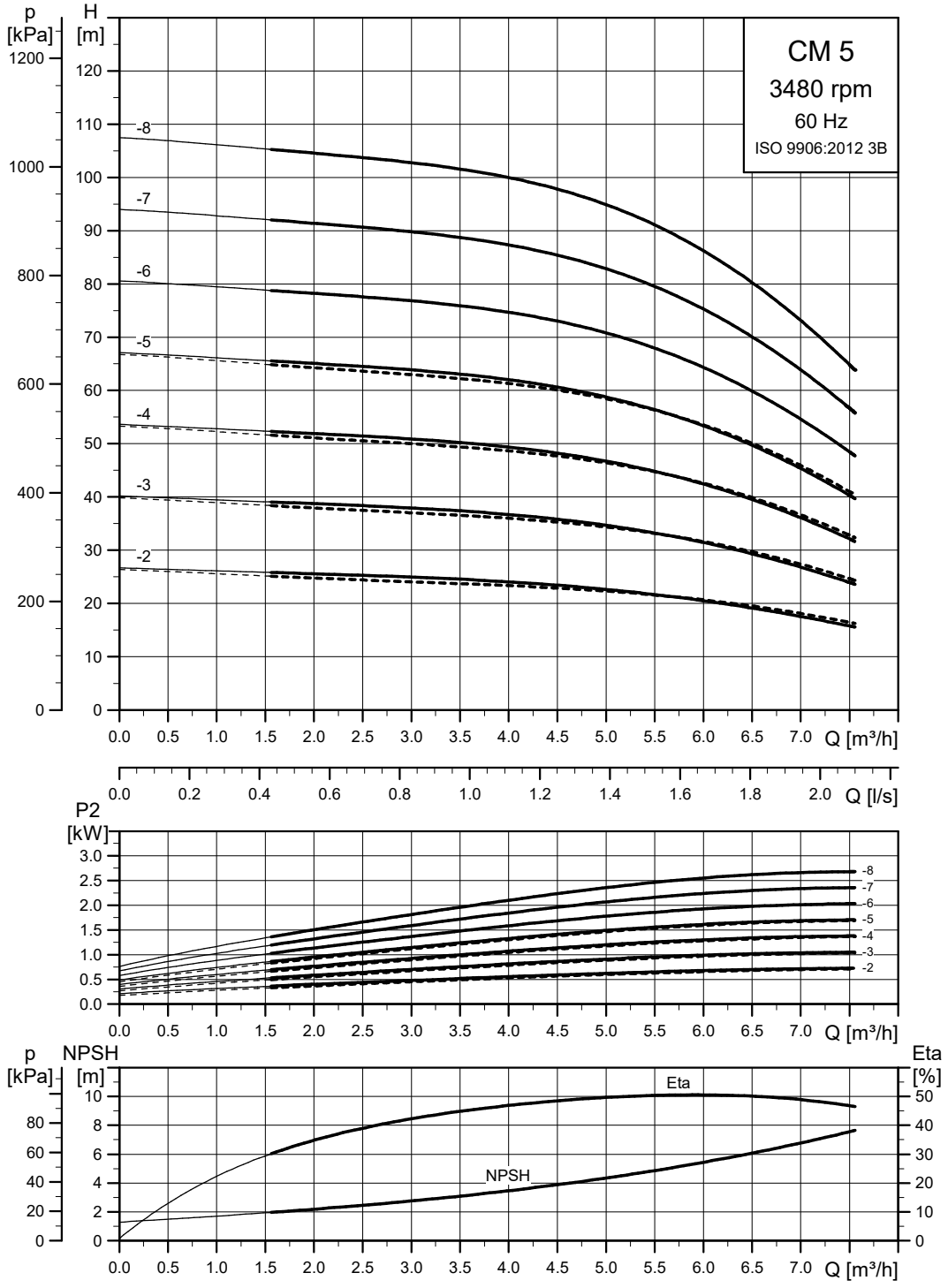
CM 3


p [kPa]
H [m]
CM 3
3480 rpm
60 Hz
ISO 9906:2012 3B
-9
-8
-7
-6
-5
-4
-3
-2
Q [m³/h]
Q [l/s]
P2 [kW]
p [kPa]
NPSH [m]
Eta [%]
Eta
NPSH
TM043371

------ CM-A

—— CM-I/G

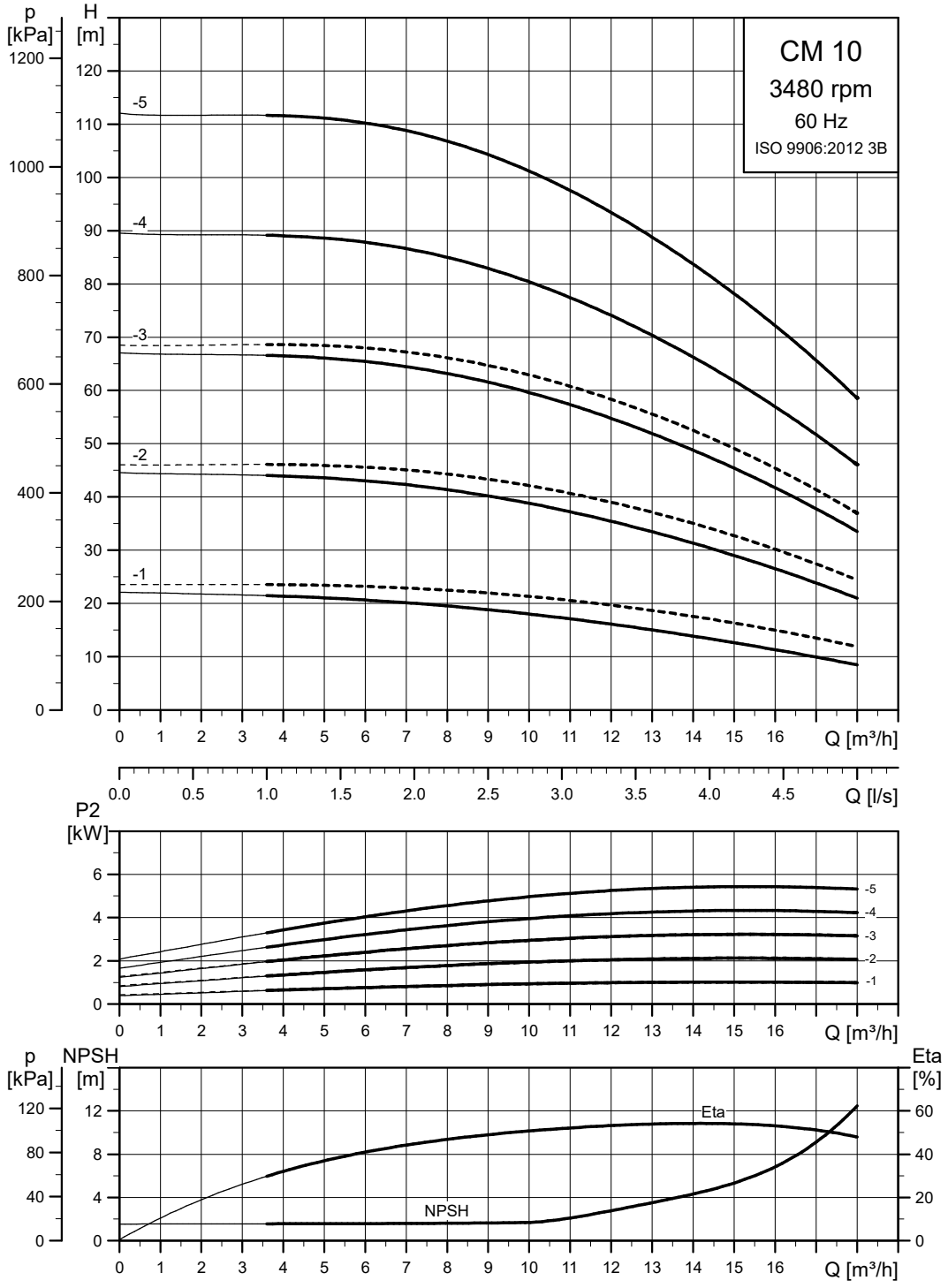
CM 5


CM 5
3480 rpm
60 Hz
ISO 9906:2012 3B
p [kPa]
H [m]
-8
-7
-6
-5
-4
-3
-2
Q [m³/h]
Q [l/s]
P2 [kW]
p [kPa]
NPSH [m]
Eta [%]
Eta
NPSH
TM043372

------ CM-A

—— CM-I/G

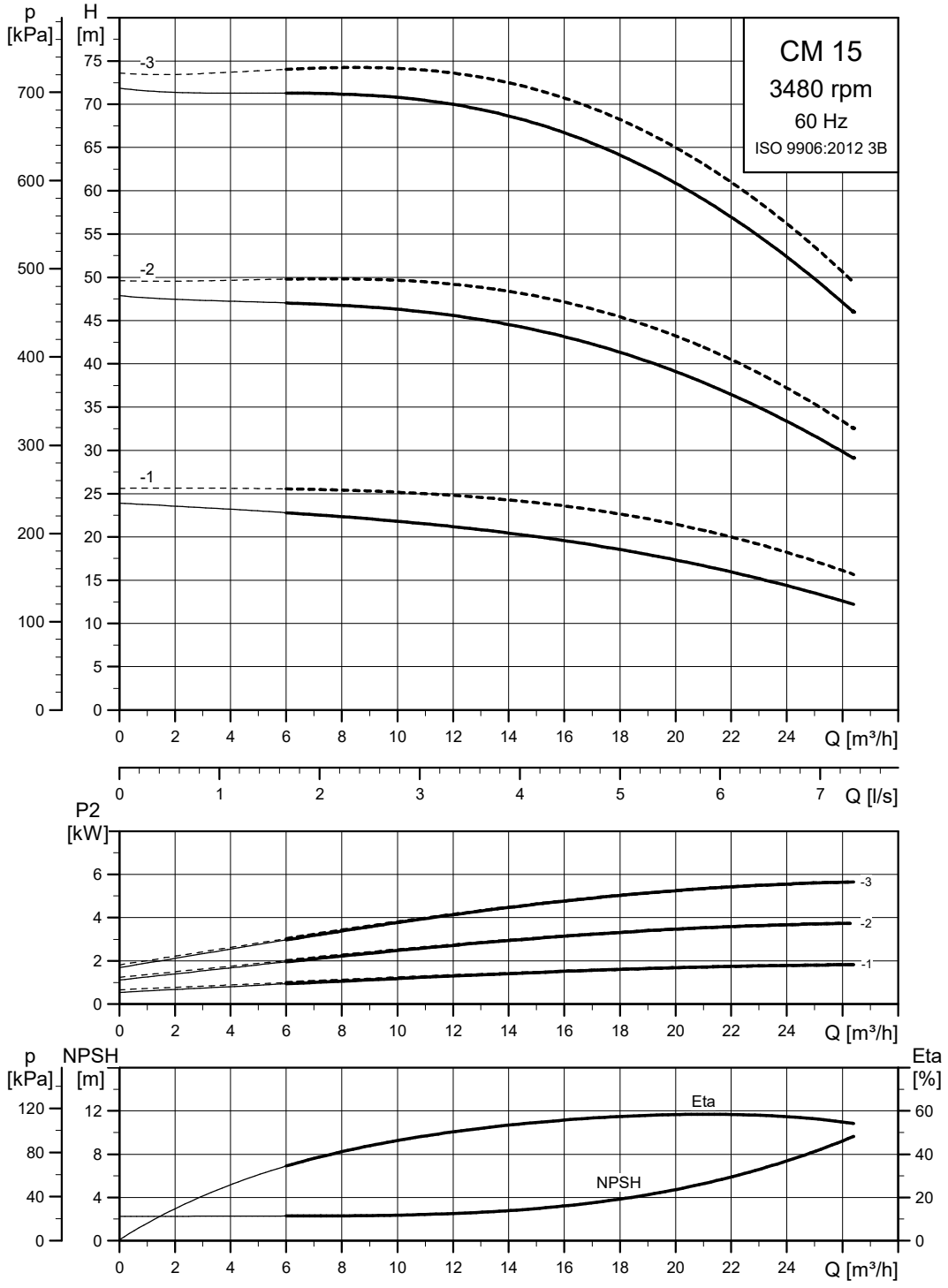
CM 10



------ CM-A

—— CM-I/G

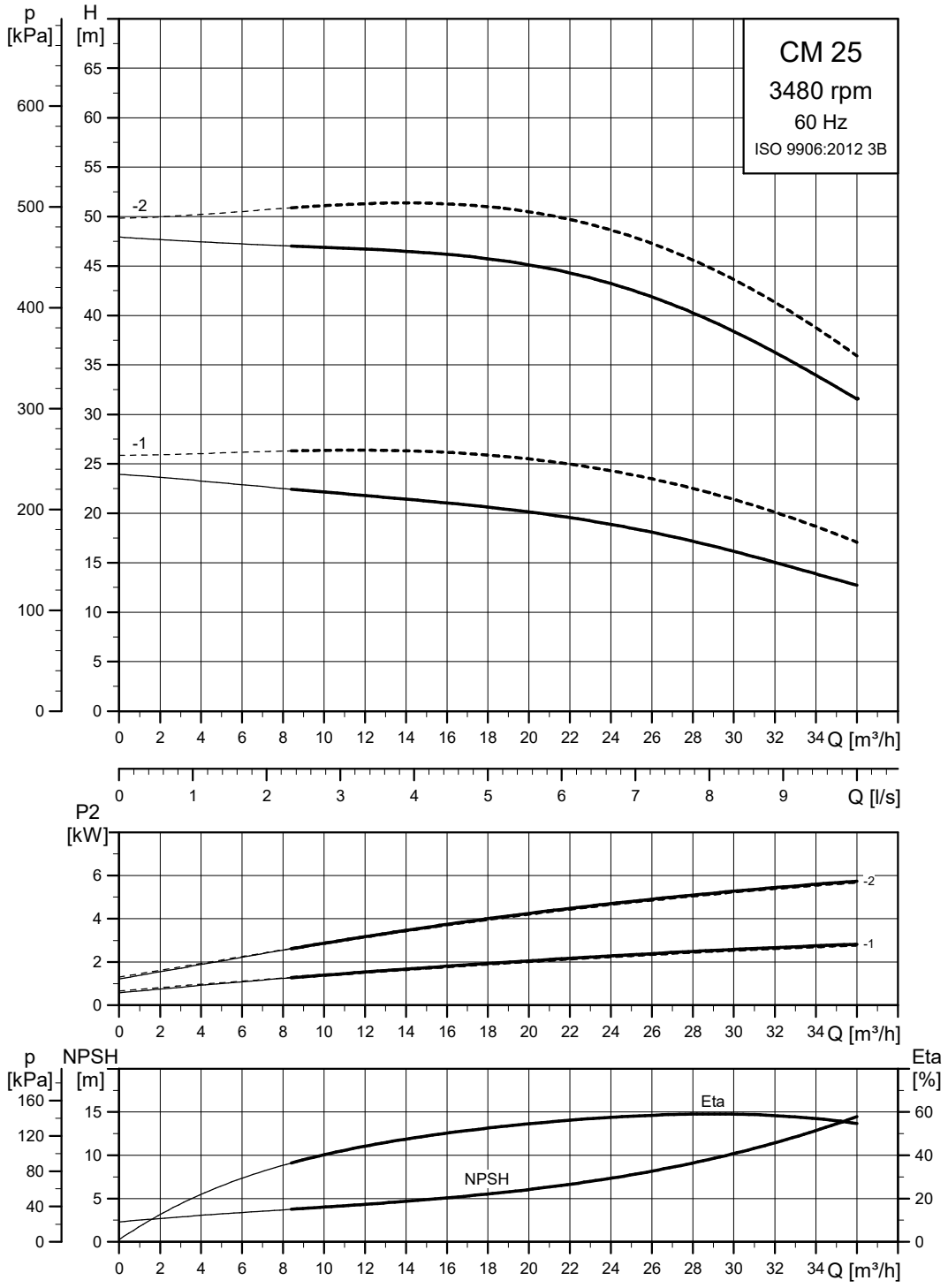
CM 15



------ CM-A

—— CM-I/G

CM 25

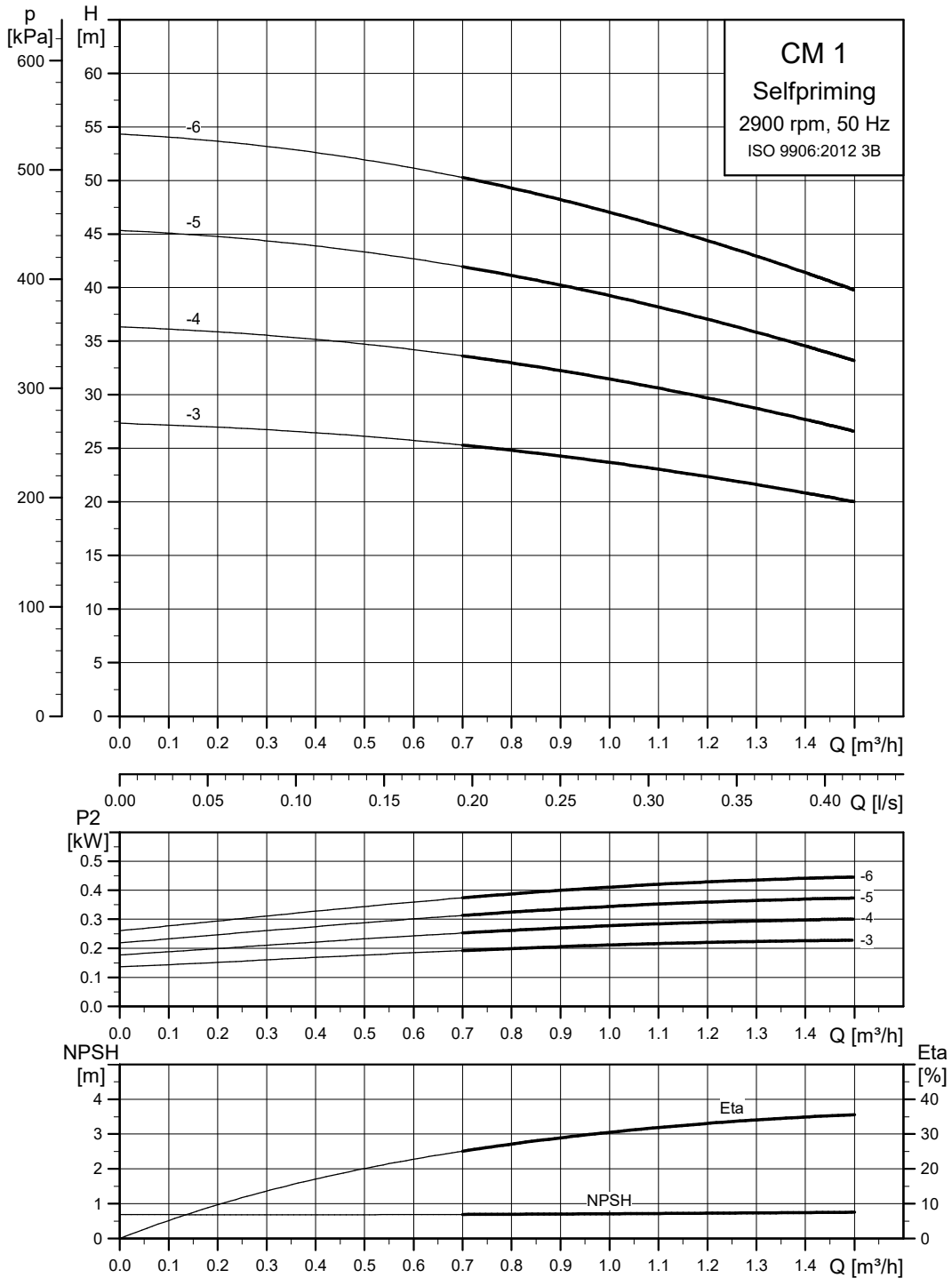


------ CM-A

—— CM-I/G

19. Performance curves, CM self-priming, 50 Hz

CM 1



TM058756

Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

CM 1-3

Pump head [m]		Flow [m^3/h]						
		0	0.25	0.5	0.75	1	1.25	1.5
Suction lift [m]	0	27.3	26.9	26.1	25.1	23.7	22.0	20.0
	1	26.3	25.9	25.1	24.1	22.7	21.0	19.0
	2	25.3	24.9	24.1	23.1	21.7	20.0	18.0
	3	24.3	23.9	23.1	22.1	20.7	19.0	17.0
	4	23.3	22.9	22.1	21.1	19.7	18.0	16.0

CM 1-4

Pump head [m]		Flow [m^3/h]						
		0	0.25	0.5	0.75	1	1.25	1.5
Suction lift [m]	0	36.3	35.7	34.7	33.3	31.5	29.2	26.6
	1	35.3	34.7	33.7	32.3	30.5	28.2	25.6
	2	34.3	33.7	32.7	31.3	29.5	27.2	24.6
	3	33.3	32.7	31.7	30.3	28.5	26.2	23.6
	4	32.3	31.7	30.7	29.3	27.5	25.2	22.6

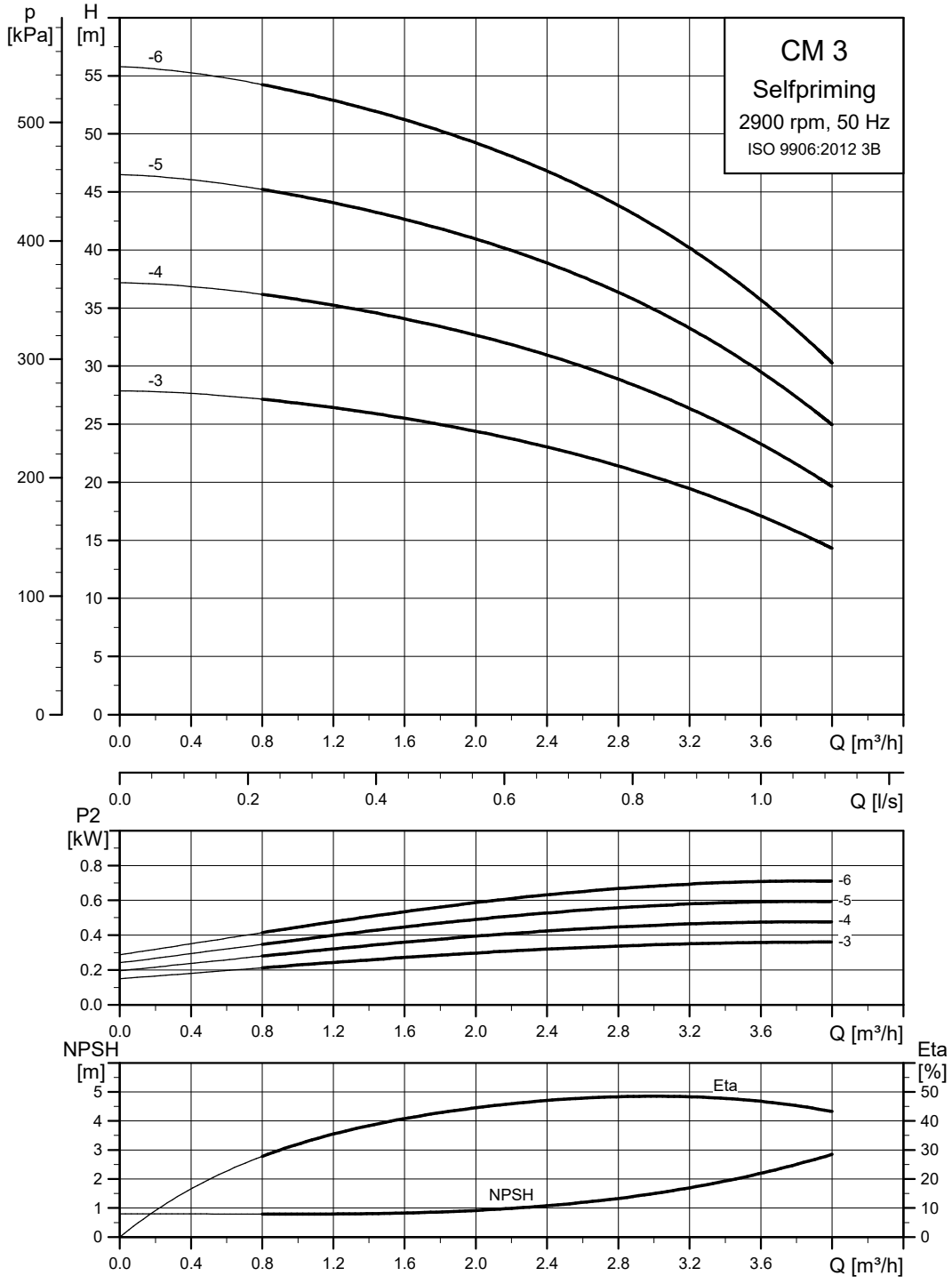
CM 1-5

Pump head [m]		Flow [m^3/h]						
		0	0.25	0.5	0.75	1	1.25	1.5
Suction lift [m]	0	45.3	44.6	43.3	41.6	39.3	36.5	33.2
	1	44.3	43.6	42.3	40.6	38.3	35.5	32.2
	2	43.3	42.6	41.3	39.6	37.3	34.5	31.2
	3	42.3	41.6	40.3	38.6	36.3	33.5	30.2
	4	41.3	40.6	39.3	37.6	35.3	32.5	29.2

CM 1-6

Pump head [m]		Flow [m^3/h]						
		0	0.25	0.5	0.75	1	1.25	1.5
Suction lift [m]	0	54.3	53.4	51.9	49.8	47.0	43.7	39.8
	1	53.3	52.4	50.9	48.8	46.0	42.7	38.8
	2	52.3	51.4	49.9	47.8	45.0	41.7	37.8
	3	51.3	50.4	48.9	46.8	44.0	40.7	36.8
	4	50.3	49.4	47.9	45.8	43.0	39.7	35.8

CM 3



Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

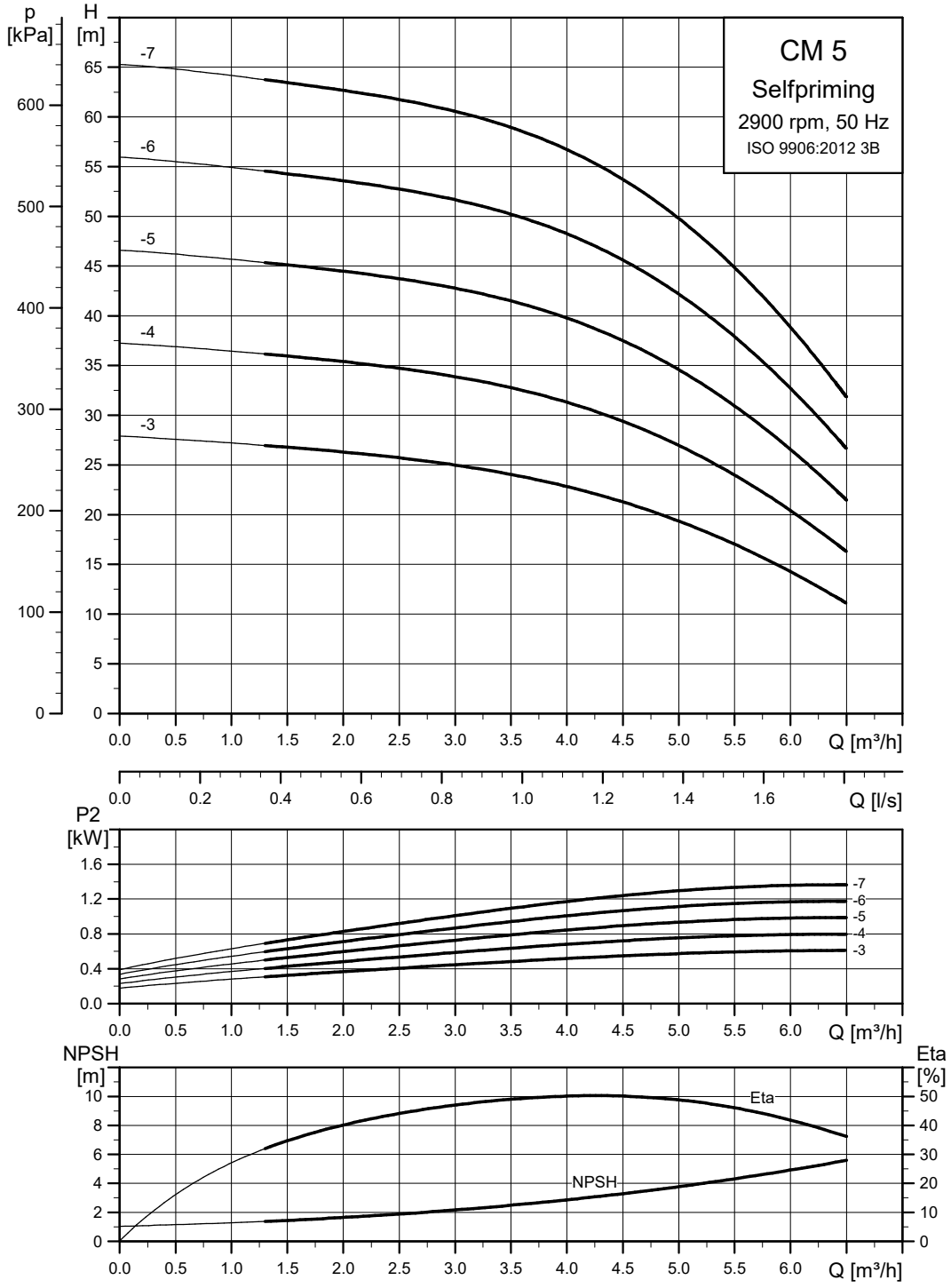
CM 3-3

Pump head [m]		Flow [m^3/h]								
		0	0.5	1	1.5	2	2.5	3	3.5 [30]	4 [30]
Suction lift [m]	0	27.9	27.5	26.8	25.8	24.4	22.7	20.5	17.7	14.3
	1	26.9	26.5	25.8	24.8	23.4	21.7	19.5	16.7	13.3
	2	25.9	25.5	24.8	23.8	22.4	20.7	18.5	15.7	12.3
	3	24.9	24.5	23.8	22.8	21.4	19.7	17.5	14.7	11.3
	4	23.9	23.5	22.8	21.8	20.4	18.7	16.5	13.7	10.3
	5 [31]	22.9	22.5	21.8	20.8	19.4	17.7	15.5	-	-
	6 [31]	21.9	21.5	20.8	19.8	18.4	16.7	14.5	-	-
	7 [31]	20.9	20.5	19.8	18.8	17.4	15.7	-	-	-
	8 [31]	19.9	19.5	18.8	17.8	-	-	-	-	-

[30] Only available in S-version.

[31] Only available in O-version.

CM 5



Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

CM 5-3

Pump head [m]		Flow [m^3/h]													
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5 [32]	6 [32]	6.5 [32]
Suction lift [m]	0	27.9	27.6	27.2	26.8	26.3	25.7	25.0	24.0	22.8	21.3	19.4	17.0	14.3	11.1
	1	26.9	26.6	26.2	25.8	25.3	24.7	24.0	23.0	21.8	20.3	18.4	16.0	13.3	10.1
	2	25.9	25.6	25.2	24.8	24.3	23.7	23.0	22.0	20.8	19.3	17.4	15.0	12.3	-
	3	24.9	24.6	24.2	23.8	23.3	22.7	22.0	21.0	19.8	18.3	16.4	-	-	-
	4	23.9	23.6	23.2	22.8	22.3	21.7	21.0	20.0	18.8	17.3	-	-	-	-
	5 [33]	22.9	22.6	22.2	21.8	21.3	20.7	20.0	19.0	17.8	-	-	-	-	-
	6 [33]	21.9	21.6	21.2	20.8	20.3	19.7	19.0	-	-	-	-	-	-	-
	7 [33]	20.9	20.6	20.2	19.8	19.3	-	-	-	-	-	-	-	-	-
	8 [33]	19.9	19.6	19.2	18.8	-	-	-	-	-	-	-	-	-	-

[32] Only available in S-version.

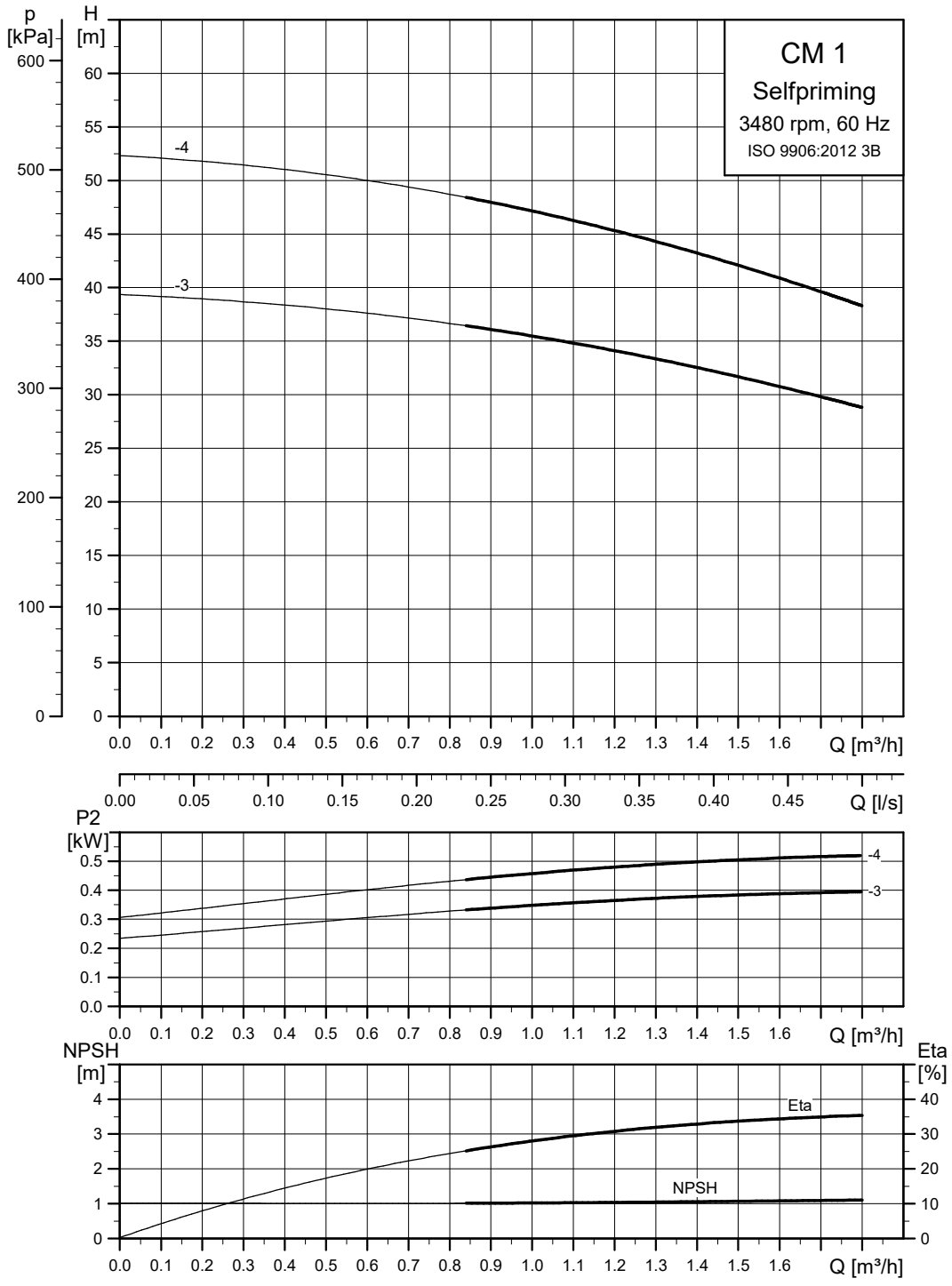
[33] Only available in O-version.

CM 5-4

Pump head [m]		Flow [m^3/h]													
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5 [32]	6 [32]	6.5 [32]
Suction lift [m]	0	37.3	36.9	36.4	35.9	35.4	34.7	33.9	32.8	31.3	29.4	27.0	24.0	20.4	16.3
	1	36.3	35.9	35.4	34.9	34.4	33.7	32.9	31.8	30.3	28.4	26.0	23.0	19.4	15.3
	2	35.3	34.9	34.4	33.9	33.4	32.7	31.9	30.8	29.3	27.4	25.0	22.0	18.4	-
	3	34.3	33.9	33.4	32.9	32.4	31.7	30.9	29.8	28.3	26.4	24.0	-	-	-
	4	33.3	32.9	32.4	31.9	31.4	30.7	29.9	28.8	27.3	25.4	-	-	-	-
	5 [33]	32.3	31.9	31.4	30.9	30.4	29.7	28.9	27.8	26.3	-	-	-	-	-
	6 [33]	31.3	30.9	30.4	29.9	29.4	28.7	27.9	-	-	-	-	-	-	-
	7 [33]	30.3	29.9	29.4	28.9	28.4	-	-	-	-	-	-	-	-	-
	8 [33]	29.3	28.9	28.4	27.9	-	-	-	-	-	-	-	-	-	-

20. Performance curves, CM self-priming, 60 Hz

CM 1



TM058793

Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

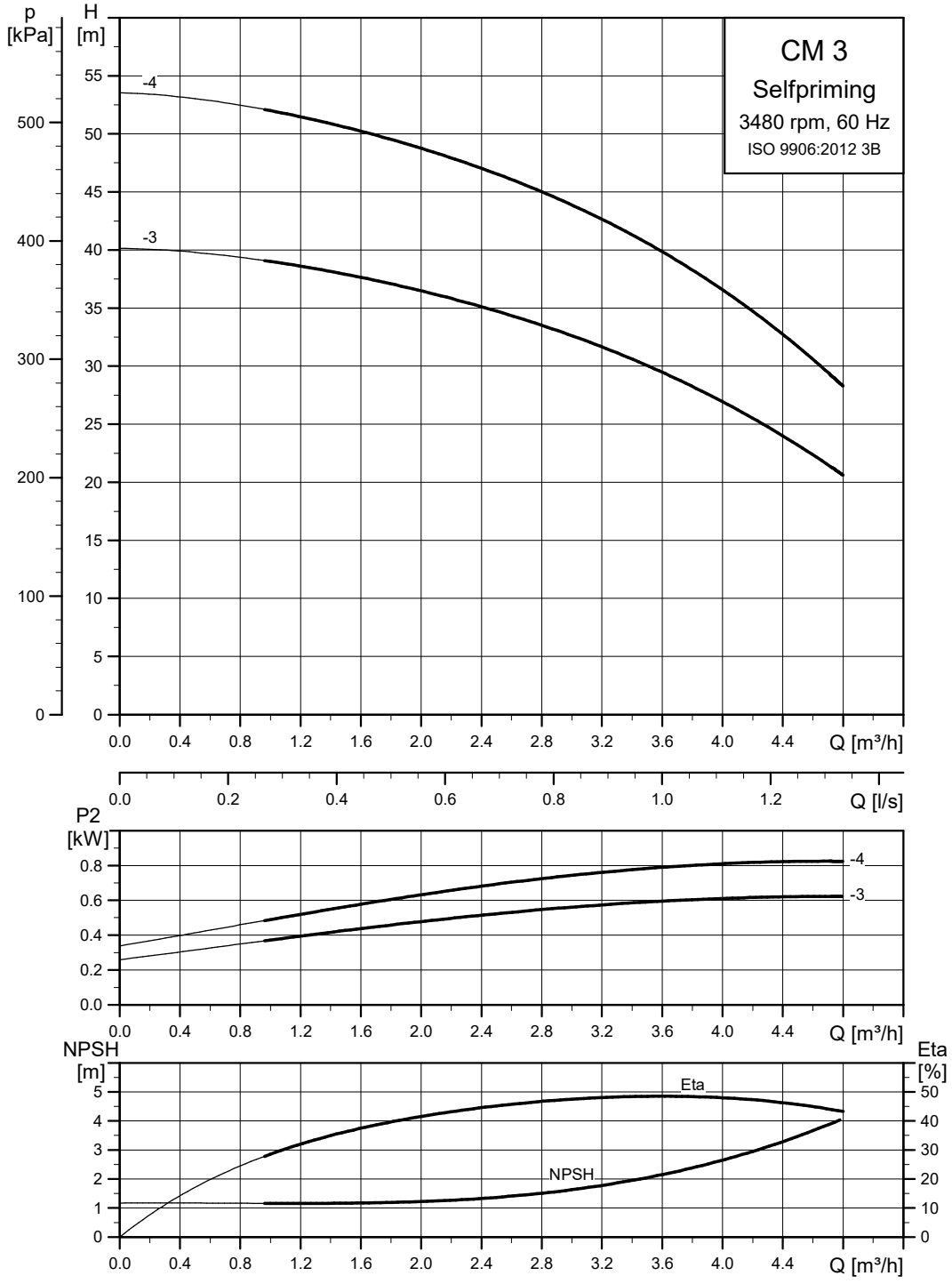
CM 1-3

Pump head [m]		Flow [m^3/h]										
		0	**0.25**	**0.5**	**0.75**	**1**	**1.25**	**1.5**	**1.75**	**2**	**2.25**	**2.5**
Suction lift [m]	**0**	39.4	38.8	38.0	36.9	35.5	33.7	31.7	29.3	26.7	23.8	20.8
	1	38.4	37.8	37.0	35.9	34.5	32.7	30.7	28.3	25.7	22.8	19.8
	2	37.4	36.8	36.0	34.9	33.5	31.7	29.7	27.3	24.7	21.8	18.8
	3	36.4	35.8	35.0	33.9	32.5	30.7	28.7	26.3	23.7	20.8	17.8
	4	35.4	34.8	34.0	32.9	31.5	29.7	27.7	25.3	22.7	19.8	16.8

CM 1-4

Pump head [m]		Flow [m^3/h]										
		0	**0.25**	**0.5**	**0.75**	**1**	**1.25**	**1.5**	**1.75**	**2**	**2.25**	**2.5**
Suction lift [m]	**0**	52.3	51.6	50.5	49.1	47.2	44.8	42.1	39.0	35.5	31.7	27.7
	1	51.3	50.6	49.5	48.1	46.2	43.8	41.1	38.0	34.5	30.7	26.7
	2	50.3	49.6	48.5	47.1	45.2	42.8	40.1	37.0	33.5	29.7	25.7
	3	49.3	48.6	47.5	46.1	44.2	41.8	39.1	36.0	32.5	28.7	24.7
	4	48.3	47.6	46.5	45.1	43.2	40.8	38.1	35.0	31.5	27.7	23.7

CM 3



Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

CM 3-3

Pump head [m]		Flow [m^3/h]										
		0	0.5	1	1.5	2	2.5	3	3.5	4 [34)]	4.5 [34)]	5 [34)]
Suction lift [m]	0	40.1	39.8	39.0	37.9	36.5	34.7	32.6	30.1	26.9	23.2	18.7
	1	39.1	38.8	38.0	36.9	35.5	33.7	31.6	29.1	25.9	22.2	17.7
	2	38.1	37.8	37.0	35.9	34.5	32.7	30.6	28.1	24.9	21.2	16.7
	3	37.1	36.8	36.0	34.9	33.5	31.7	29.6	27.1	23.9	20.2	-
	4	36.1	35.8	35.0	33.9	32.5	30.7	28.6	26.1	22.9	-	-
	5 [35)]	35.1	34.8	34.0	32.9	31.5	29.7	27.6	-	-	-	-
	6 [35)]	34.1	33.8	33.0	31.9	30.5	28.7	26.6	-	-	-	-
	7 [35)]	33.1	32.8	32.0	30.9	29.5	27.7	-	-	-	-	-
	8 [35)]	32.1	31.8	31.0	29.9	-	-	-	-	-	-	-

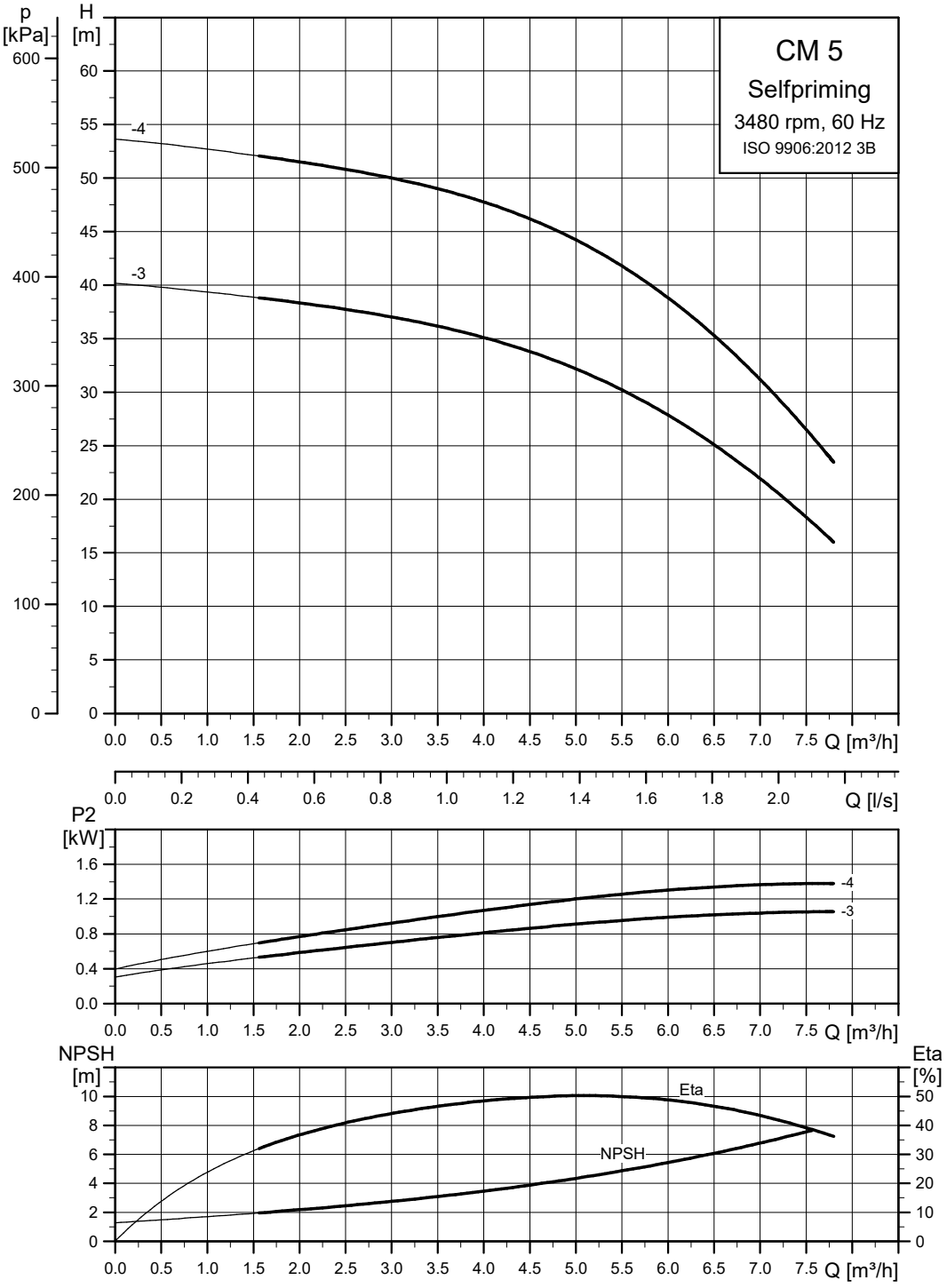
34) Only available in S-version.

35) Only available in O-version.

CM 3-4

Pump head [m]		Flow [m^3/h]										
		0	0.5	1	1.5	2	2.5	3	3.5	4 [34)]	4.5 [34)]	5 [34)]
Suction lift [m]	0	53.5	53.0	52.0	50.6	48.8	46.6	43.9	40.6	36.6	31.7	25.8
	1	52.5	52.0	51.0	49.6	47.8	45.6	42.9	39.6	35.6	30.7	24.8
	2	51.5	51.0	50.0	48.6	46.8	44.6	41.9	38.6	34.6	29.7	23.8
	3	50.5	50.0	49.0	47.6	45.8	43.6	40.9	37.6	33.6	28.7	-
	4	49.5	49.0	48.0	46.6	44.8	42.6	39.9	36.6	32.6	-	-
	5 [35)]	48.5	48.0	47.0	45.6	43.8	41.6	38.9	-	-	-	-
	6 [35)]	47.5	47.0	46.0	44.6	42.8	40.6	37.9	-	-	-	-
	7 [35)]	46.5	46.0	45.0	43.6	41.8	39.6	-	-	-	-	-
	8 [35)]	45.5	45.0	44.0	42.6	-	-	-	-	-	-	-

CM 5



Pump performance is influenced by the suction lift. See the section on pump performance in relation to suction lift.

Related information

Pump performance in relation to suction lift

Pump performance in relation to suction lift

CM 5-3

Pump head [m]		Flow [m³/h]															
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5 [36]	7 [36]	7.5 [36]
Suction lift [m]	0	40.2	39.8	39.4	38.9	38.3	37.7	37.0	36.2	35.1	33.8	32.2	30.2	27.9	25.1	21.9	18.3
	1	39.2	38.8	38.4	37.9	37.3	36.7	36.0	35.2	34.1	32.8	31.2	29.2	26.9	24.1	-	-
	2	38.2	37.8	37.4	36.9	36.3	35.7	35.0	34.2	33.1	31.8	30.2	28.2	25.9	-	-	-
	3	37.2	36.8	36.4	35.9	35.3	34.7	34.0	33.2	32.1	30.8	29.2	-	-	-	-	-
	4	36.2	35.8	35.4	34.9	34.3	33.7	33.0	32.2	31.1	29.8		-	-	-	-	-
	5 [37]	35.2	34.8	34.4	33.9	33.3	32.7	32.0	31.2	30.1	-	-	-	-	-	-	-
	6 [37]	34.2	33.8	33.4	32.9	32.3	31.7	31.0	-	-	-	-	-	-	-	-	-
	7 [37]	33.2	32.8	32.4	31.9	31.3	-	-	-	-	-	-	-	-	-	-	-
	8 [37]	32.2	31.8	31.4	30.9	-	-	-	-	-	-	-	-	-	-	-	-

[36] Only available in S-version.

[37] Only available in O-version.

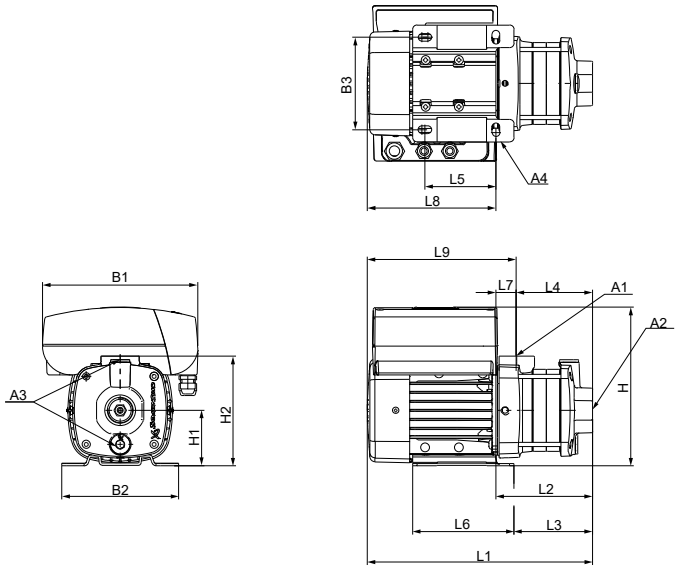
CM 5-4

Pump head [m]		Flow [m³/h]															
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5 [36]	7 [36]	7.5 [36]
Suction lift [m]	0	53.6	53.2	52.7	52.1	51.5	50.8	50.0	49.0	47.8	46.2	44.2	41.8	38.8	35.3	31.2	26.5
	1	52.6	52.2	51.7	51.1	50.5	49.8	49.0	48.0	46.8	45.2	43.2	40.8	37.8	34.3	-	-
	2	51.6	51.2	50.7	50.1	49.5	48.8	48.0	47.0	45.8	44.2	42.2	39.8	36.8	-	-	-
	3	50.6	50.2	49.7	49.1	48.5	47.8	47.0	46.0	44.8	43.2	41.2	-	-	-	-	-
	4	49.6	49.2	48.7	48.1	47.5	46.8	46.0	45.0	43.8	42.2	-	-	-	-	-	-
	5 [37]	48.6	48.2	47.7	47.1	46.5	45.8	45.0	44.0	42.8	-	-	-	-	-	-	-
	6 [37]	47.6	47.2	46.7	46.1	45.5	44.8	44.0	-	-	-	-	-	-	-	-	-
	7 [37]	46.6	46.2	45.7	45.1	44.5	-	-	-	-	-	-	-	-	-	-	-
	8 [37]	45.6	45.2	44.7	44.1	-	-	-	-	-	-	-	-	-	-	-	-

21. Dimensions, CME 60 Hz and 50/60 Hz

CME 1-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	348	112	87	85	96	137	27	236	263
CME1-3	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	366	130	105	103	96	137	27	236	263
CME1-4	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	384	148	123	121	96	137	27	236	263
CME1-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	402	166	141	139	96	137	27	236	263

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	308	112	87	85	96	137	27	196	223
CME1-3	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	326	130	105	103	96	137	27	196	223
CME1-4	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	344	148	123	121	96	137	27	196	223
CME1-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	362	166	141	139	96	137	27	196	223

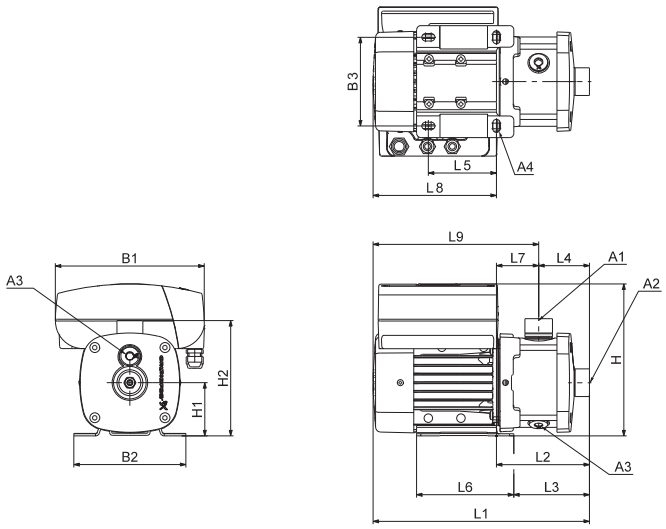
3x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-5	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	151	402	166	141	139	96	137	27	236	263

All dimensions are in millimetres unless otherwise stated.

CME 1-I and CME 1-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067508

Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME1-3	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME1-4	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	386	150	125	90	96	137	60	236	296
CME1-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	404	168	143	108	96	137	60	236	296
CME1-6	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	440	204	179	144	96	137	60	236	296
CME1-7	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	440	204	179	144	96	137	60	236	296
CME1-8	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	476	240	215	180	96	137	60	236	296
CME1-9	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	483	285	270	180	125	155	105	198	303

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME1-3	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME1-4	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	346	150	125	90	96	137	60	196	256
CME1-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	364	168	143	108	96	137	60	196	256
CME1-6	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	400	204	179	144	96	137	60	196	256
CME1-7	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	400	204	179	144	96	137	60	196	256
CME1-8	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	436	240	215	180	96	137	60	196	256
CME1-9	90	1.50	1"	1"	3/8"	10.5	212	178	140	248	90	181	443	285	270	180	125	155	105	158	263

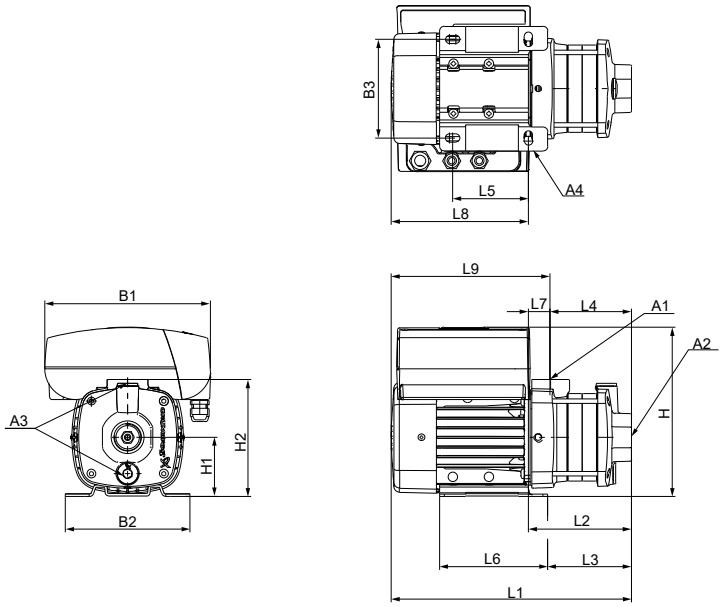
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																	
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-5	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	404	168	143	108	96	137	60	236	296
CME1-6	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	440	204	179	144	96	137	60	236	296
CME1-7	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	440	204	179	144	96	137	60	236	296
CME1-8	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	476	240	215	180	96	137	60	236	296
CME1-9	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	483	285	270	180	125	155	105	198	303

All dimensions are in millimetres unless otherwise stated.

CME 3-A

(A = cast iron EN-GJL-200)



TM067510

Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	348	112	87	85	96	137	27	236	263
CME3-3	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	366	130	105	103	96	137	27	236	263
CME3-4	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	384	148	123	121	96	137	27	236	263
CME3-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	402	166	141	139	96	137	27	236	263

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	149	308	112	87	85	96	137	27	196	223
CME3-3	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	326	130	105	103	96	137	27	196	223
CME3-4	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	344	148	123	121	96	137	27	196	223
CME3-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	149	362	166	141	139	96	137	27	196	223

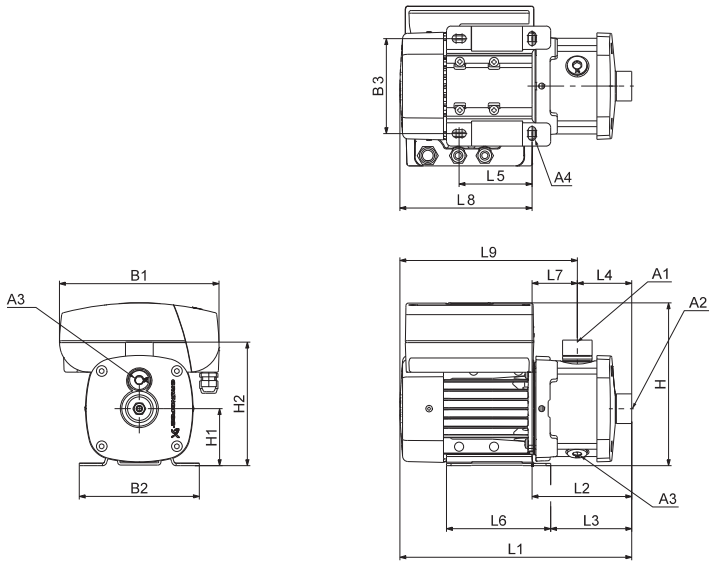
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-3	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	151	366	130	105	103	96	137	27	236	263
CME3-4	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	151	384	148	123	121	96	137	27	236	263
CME3-5	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	151	402	166	141	139	96	137	27	236	263

All dimensions are in millimetres unless otherwise stated.

CME 3-I and CME 3-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067508

Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME3-3	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME3-4	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	386	150	125	90	96	137	60	236	296
CME3-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	404	168	143	108	96	137	60	236	296
CME3-6	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	447	249	234	144	125	155	105	198	303
CME3-7	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	447	249	234	144	125	155	105	198	303
CME3-8	90	2.20	1"	1"	3/8"	10.5	267	178	140	248	90	181	483	285	270	180	125	155	105	198	303
CME3-9	90	2.20	1"	1"	3/8"	10.5	267	178	140	248	90	181	483	285	270	180	125	155	105	198	303

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-2	71	0.55	1"	1"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME3-3	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME3-4	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	346	150	125	90	96	137	60	196	256
CME3-5	80	1.10	1"	1"	3/8"	10.5	212	158	125	233	75	165	364	168	143	108	96	137	60	196	256
CME3-6	90	1.50	1"	1"	3/8"	10.5	212	178	140	248	90	181	407	249	234	144	125	155	105	158	263
CME3-7	90	1.50	1"	1"	3/8"	10.5	212	178	140	248	90	181	407	249	234	144	125	155	105	158	263

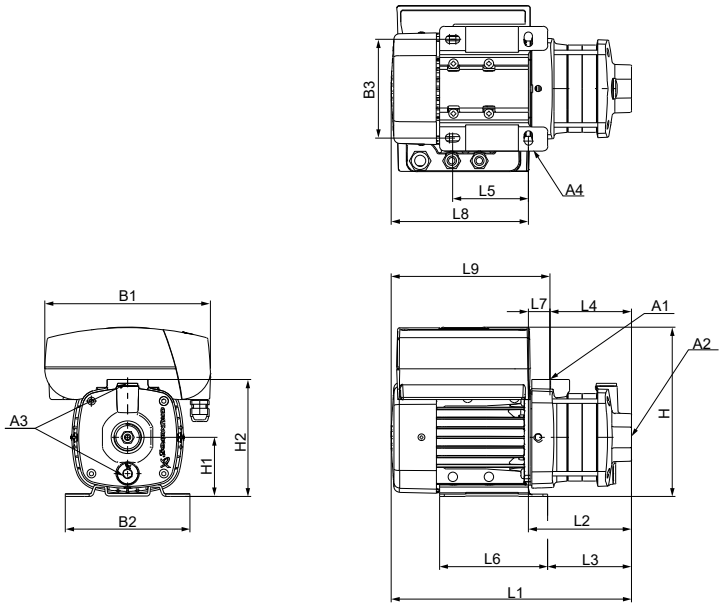
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-3	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME3-4	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	386	150	125	90	96	137	60	236	296
CME3-5	80	1.10	1"	1"	3/8"	10.5	267	158	125	233	75	165	404	168	143	108	96	137	60	236	296
CME3-6	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	447	249	234	144	125	155	105	198	303
CME3-7	90	1.50	1"	1"	3/8"	10.5	267	178	140	248	90	181	447	249	234	144	125	155	105	198	303
CME3-8	100	2.20	1"	1"	3/8"	12.0	291	200	160	300	100	190	560	290	273	180	140	173	110	270	380
CME3-9	100	2.20	1"	1"	3/8"	12.0	291	200	160	300	100	190	560	290	273	180	140	173	110	270	380

All dimensions are in millimetres unless otherwise stated.

CME 5-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	149	348	112	87	85	96	137	27	236	263
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	149	366	130	105	103	96	137	27	236	263
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	202	391	193	178	108	125	155	85	198	283
CME5-5	90	2.20	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	202	409	211	196	126	125	155	85	198	283

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	149	308	112	87	85	96	137	27	196	223
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	149	326	130	105	103	96	137	27	196	223
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	212	178	140	248	90	202	351	193	178	108	125	155	85	158	243

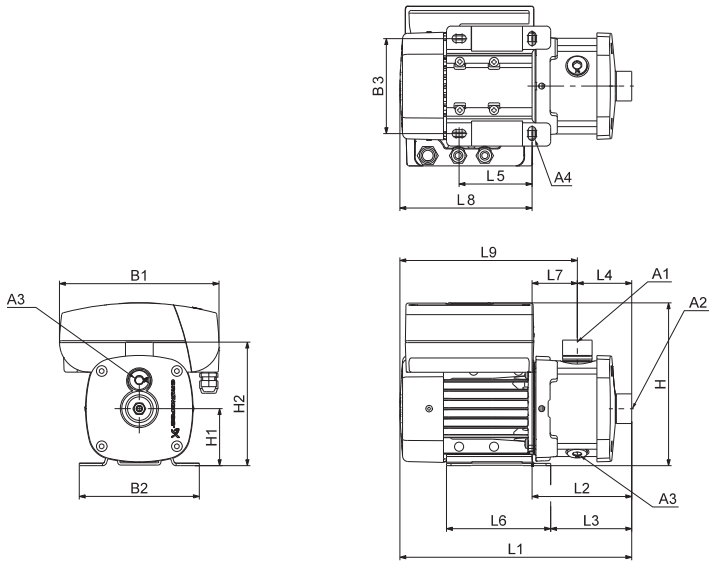
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	267	158	125	233	75	151	348	112	87	85	96	137	27	236	263
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	267	158	125	233	75	151	366	130	105	103	96	137	27	236	263
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	202	391	193	178	108	125	155	85	198	283
CME5-5	100	2.20	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	211	486	216	199	126	140	173	90	270	361

All dimensions are in millimetres unless otherwise stated.

CME 5-I and CME 5-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067508

Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	181	393	195	180	90	125	155	105	198	303
CME5-5	90	2.20	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	181	411	213	198	108	125	155	105	198	303
CME5-6	90	2.20	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	181	447	249	234	144	125	155	105	198	303
CME5-7	100	3.00	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	524	254	237	144	140	173	110	270	380
CME5-8	100	3.00	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	560	290	273	180	140	173	110	270	380

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	212	158	125	233	75	165	328	132	107	72	96	137	60	196	256
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	212	178	140	248	90	181	353	195	180	90	125	155	105	158	263

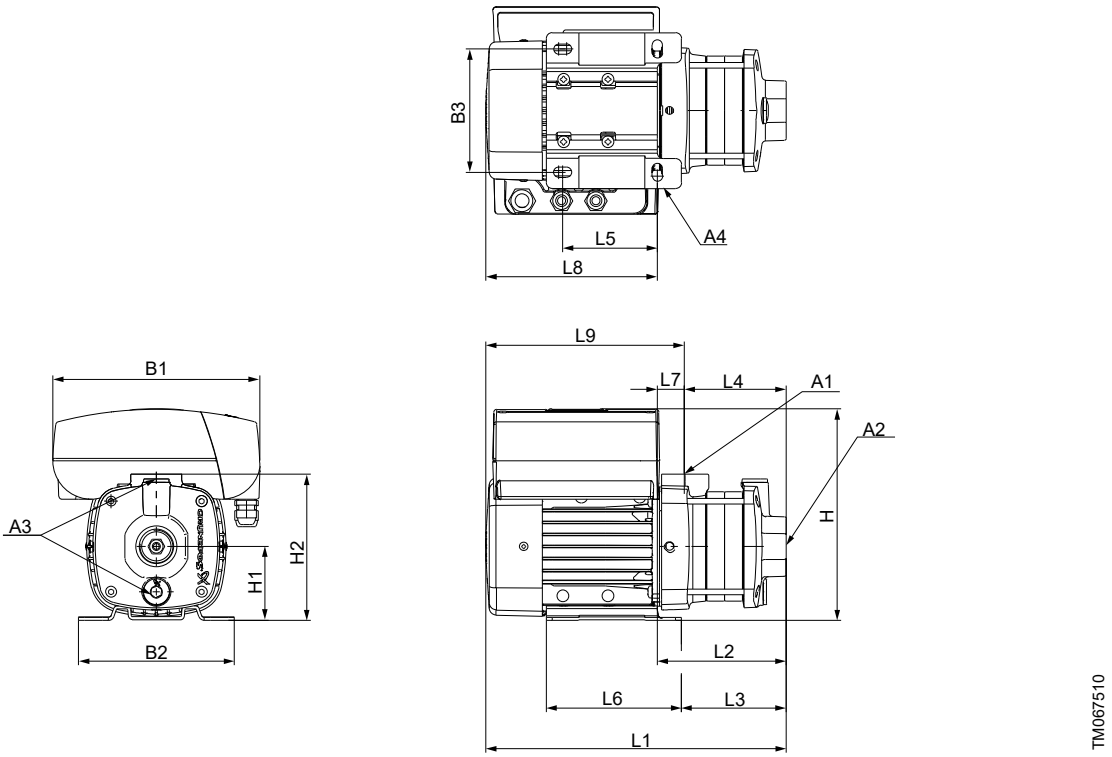
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-2	80	1.10	1"	1 1/4"	3/8"	10.5	267	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME5-3	80	1.10	1"	1 1/4"	3/8"	10.5	267	158	125	233	75	165	368	132	107	72	96	137	60	236	296
CME5-4	90	1.50	1"	1 1/4"	3/8"	10.5	267	178	140	248	90	181	393	195	180	90	125	155	105	198	303
CME5-5	100	2.20	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	488	218	201	108	140	173	110	270	380
CME5-6	100	2.20	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	524	254	237	144	140	173	110	270	380
CME5-7	100	3.00	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	524	254	237	144	140	173	110	270	380
CME5-8	100	3.00	1"	1 1/4"	3/8"	12.0	291	200	160	300	100	190	560	290	273	180	140	173	110	270	380

All dimensions are in millimetres unless otherwise stated.

CME 10-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	212	158	125	258	100	242	392	155	131	97	95	137	58	236	295
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	12.0	267	199	160	258	100	242	388	180	165	97	140	170	82	209	291
CME10-3	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	254	496	232	212	127	140	180	105	264	369

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	212	158	125	258	100	242	352	155	131	97	95	137	58	196	255

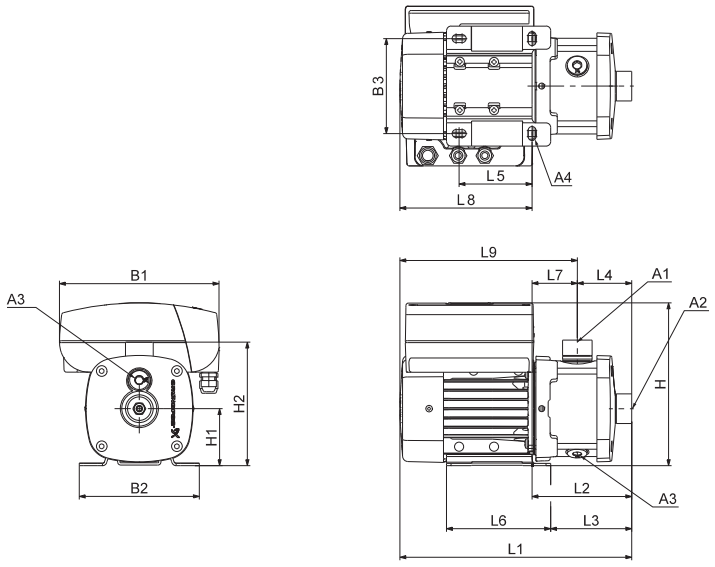
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	267	158	125	258	100	242	392	155	131	97	95	137	58	236	295
CME10-2	100	2.20	1 1/2"	1 1/2"	3/8"	12.0	291	200	160	300	100	242	466	196	179	97	140	173	98	270	369
CME10-3	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	254	496	232	212	127	140	180	105	264	369

All dimensions are in millimetres unless otherwise stated.

CME 10-I and CME 10-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067508

Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	212	158	125	258	100	219	422	185	161	105	95	137	80	236	317
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	12.0	267	199	160	258	100	219	428	220	205	105	140	170	115	209	323
CME10-3	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	230	506	242	222	105	140	180	137	264	401
CME10-4	112	5.50	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	230	553	289	269	135	140	180	154	264	418
CME10-5	112	5.50	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	230	613	349	329	195	140	180	154	264	418

1 x 200-240 V, 50/60 Hz (supply voltage U)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	212	158	125	258	100	219	382	185	161	105	95	137	80	196	277

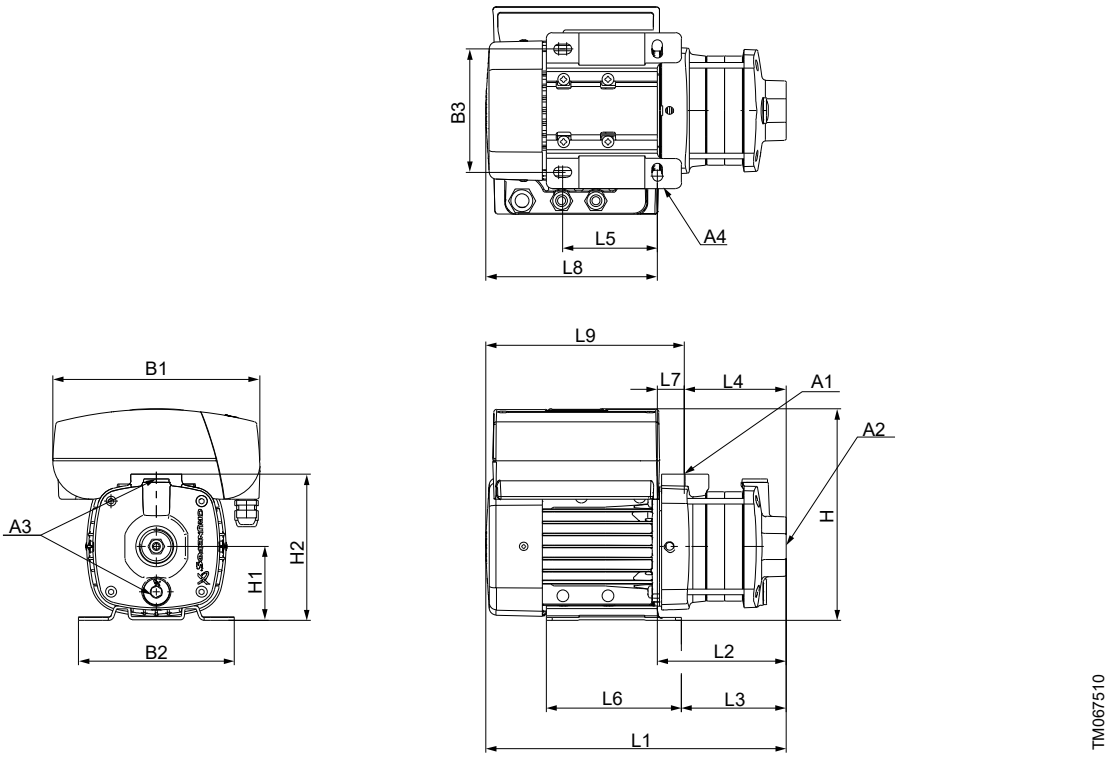
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	267	158	125	258	100	219	422	185	161	105	95	137	80	236	317
CME10-2	100	2.20	1 1/2"	1 1/2"	3/8"	12.0	291	200	160	300	100	218	506	236	219	105	140	173	131	270	401
CME10-3	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	291	230	190	312	112	230	506	242	222	105	140	180	137	264	401
CME10-4	132	5.50	1 1/2"	1 1/2"	3/8"	12.0	346	256	216	368	132	250	579	279	259	135	140	180	144	300	444
CME10-5	132	5.50	1 1/2"	1 1/2"	3/8"	12.0	346	256	216	368	132	250	639	339	319	195	140	180	144	300	444

All dimensions are in millimetres unless otherwise stated.

CME 15-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME15-1	90	2.20	2"	2"	3/8"	12.0	267	199	160	258	100	242	388	180	165	97	140	170	82	209	291
CME15-2	112	4.00	2"	2"	3/8"	12.0	291	230	190	312	112	254	466	202	182	97	140	180	105	264	369
CME15-3	132	7.50	2"	2"	3/8"	12.0	346	256	216	368	132	274	539	239	219	127	140	180	112	300	412

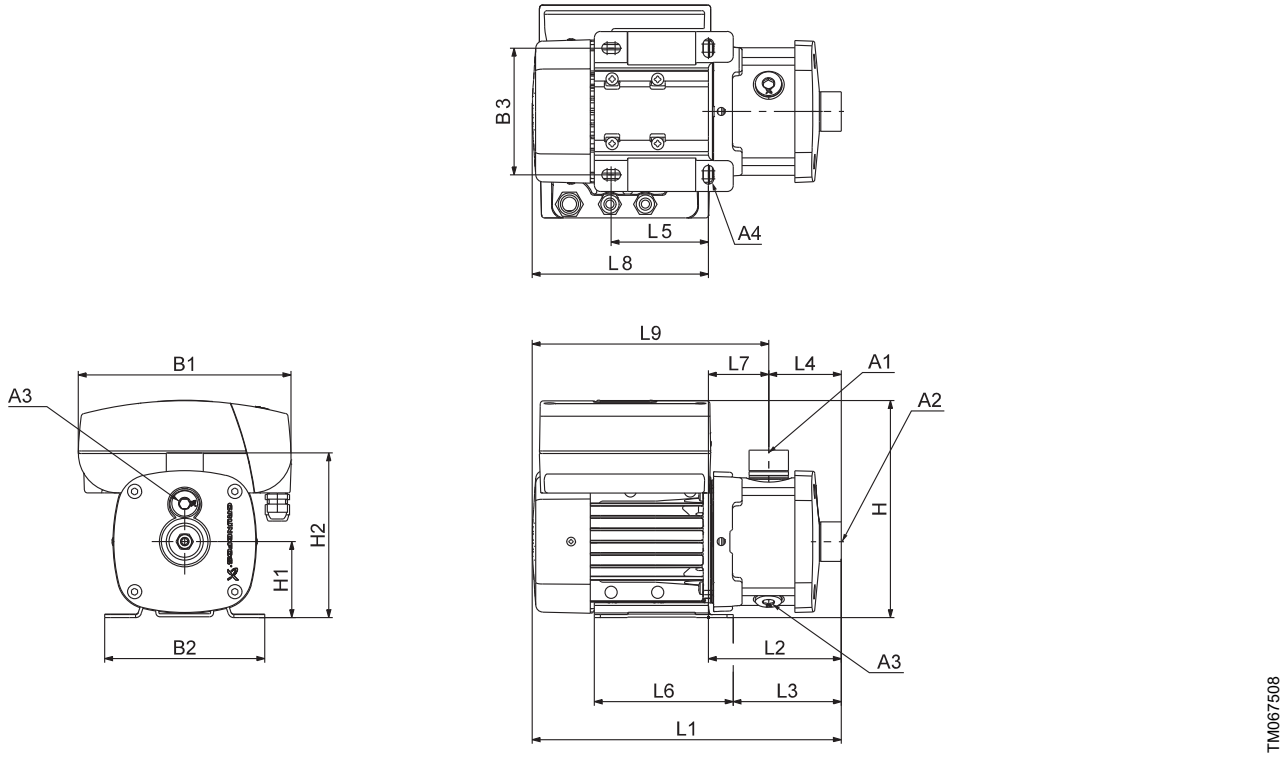
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME15-1	100	2.20	2"	2"	3/8"	12.0	291	200	160	300	100	242	466	196	179	97	140	173	98	270	369
CME15-2	112	4.00	2"	2"	3/8"	12.0	291	230	190	312	112	254	466	202	182	97	140	180	105	264	369
CME15-3	132	5.50	2"	2"	3/8"	12.0	346	256	216	368	132	274	539	239	219	127	140	180	112	300	412

All dimensions are in millimetres unless otherwise stated.

CME 15-I and CME 15-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME15-1	90	2.20	2"	2"	3/8"	12.0	267	199	160	258	100	217	428	220	205	105	140	170	115	209	323
CME15-2	112	4.00	2"	2"	3/8"	12.0	291	230	190	312	112	229	506	242	222	105	140	180	137	264	401
CME15-3	132	7.50	2"	2"	3/8"	12.0	346	256	216	368	132	249	549	249	229	105	140	180	144	300	444

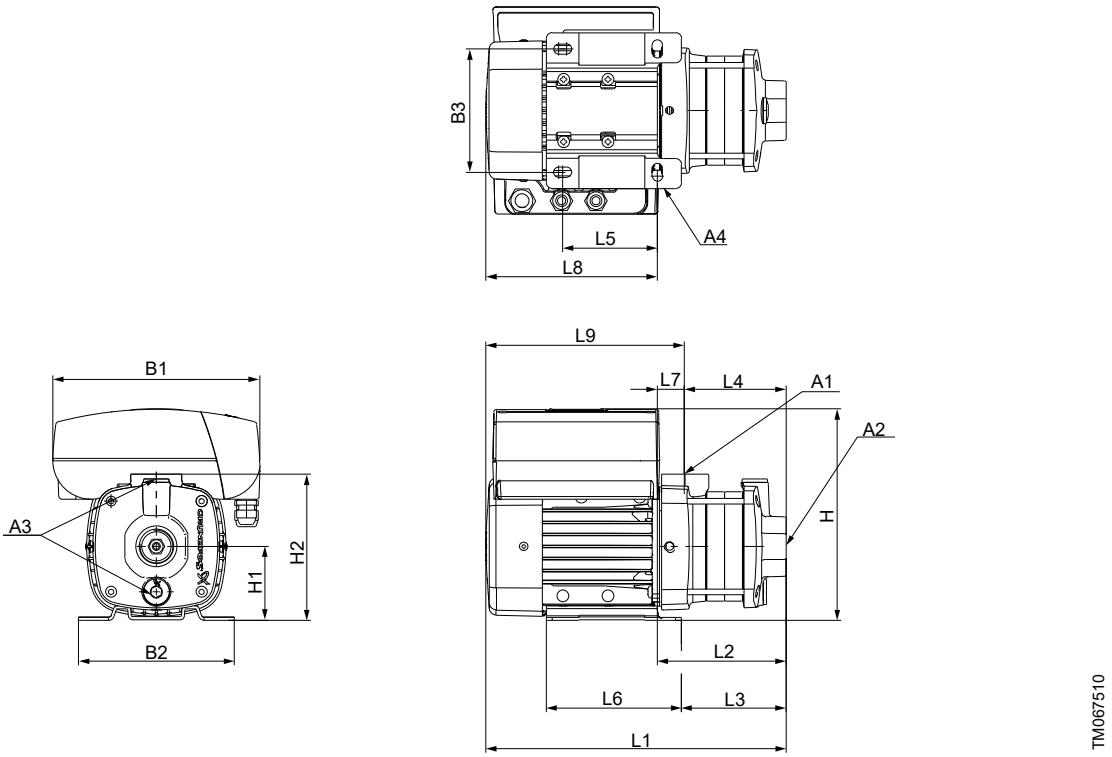
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME15-1	100	2.20	2"	2"	3/8"	12.0	291	200	160	300	100	217	506	236	219	105	140	173	131	270	401
CME15-2	112	4.00	2"	2"	3/8"	12.0	291	230	190	312	112	229	506	242	222	105	140	180	137	264	401
CME15-3	132	5.50	2"	2"	3/8"	12.0	346	256	216	368	132	249	549	249	229	105	140	180	144	300	444

All dimensions are in millimetres unless otherwise stated.

CME 25-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100	3.00	2"	2"	3/8"	12.0	291	200	160	300	100	242	466	196	179	97	140	173	98	270	369
CME25-2	132	7.50	2"	2"	3/8"	12.0	346	256	216	368	132	274	509	209	189	97	140	180	112	300	412

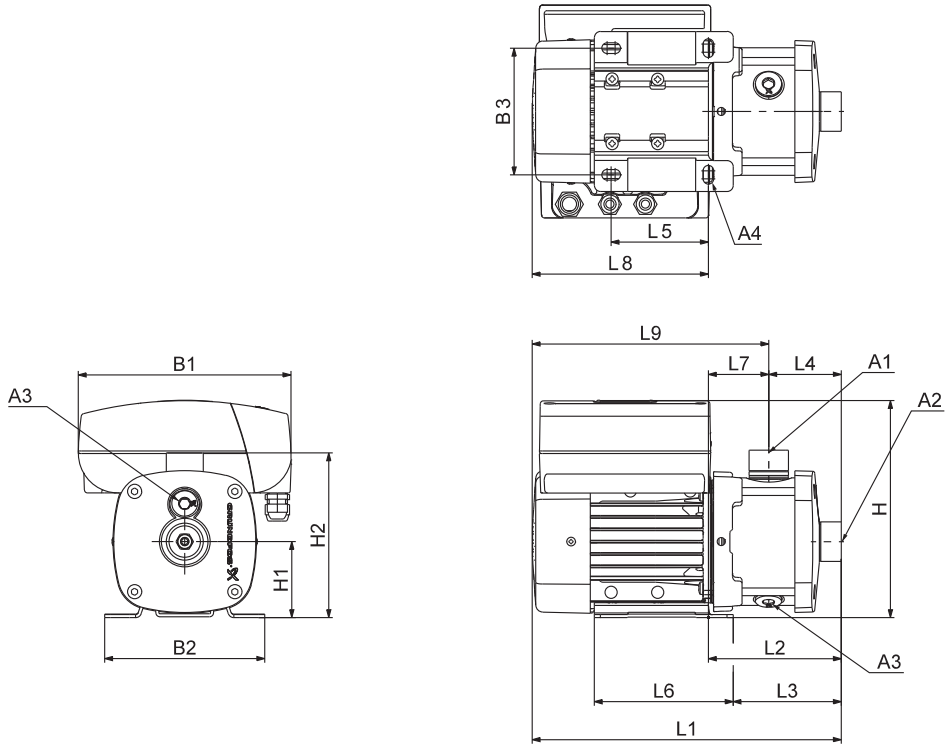
3 x 200-240 V, 50/60 Hz (supply voltage V)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100A	3.00	2"	2"	3/8"	12.0	291	200	160	300	100	242	466	196	179	97	140	173	98	270	369
CME25-2	132F	5.50	2"	2"	3/8"	12.0	346	256	216	368	132	274	509	209	189	97	140	180	112	300	412

All dimensions are in millimetres unless otherwise stated.

CME 25-I and CME 25-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100	3.00	2"	2"	3/8"	12.0	291	200	160	300	100	217	506	235	219	105	140	173	130	270	401
CME25-2	132	7.50	2"	2"	3/8"	12.0	346	256	216	368	132	249	549	249	229	105	140	180	144	300	444

3 x 200-240 V, 50/60 Hz (supply voltage V)

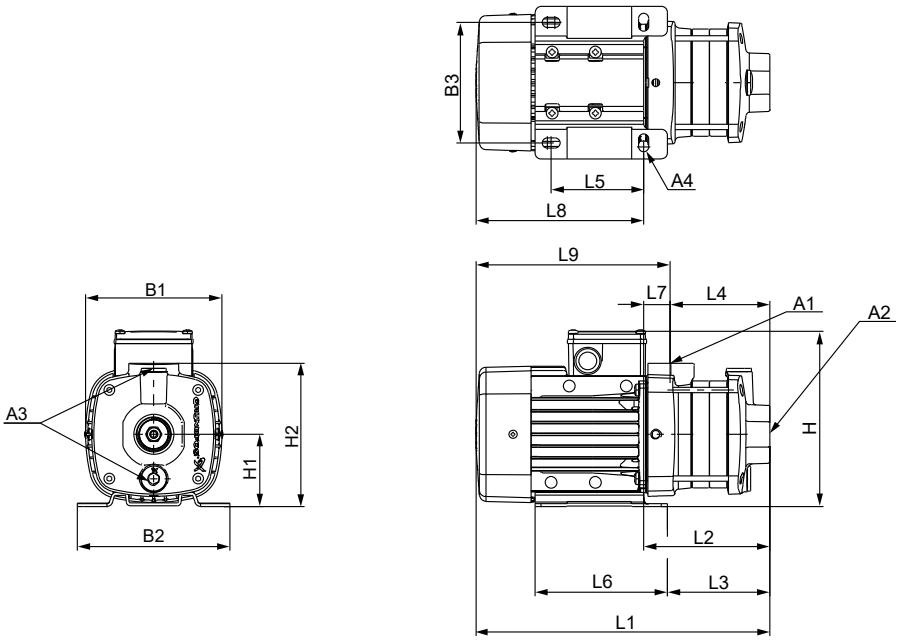
Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100	3.00	2"	2"	3/8"	12.0	291	200	160	300	100	217	506	236	219	105	140	173	131	270	401
CME25-2	132	5.50	2"	2"	3/8"	12.0	346	256	216	368	132	249	549	249	229	105	140	180	144	300	444

All dimensions are in millimetres unless otherwise stated.

22. Dimensions, CM 50 Hz

CM 1-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	340	166	142	139	96	137	27	174	201
CM1-6	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	358	184	160	157	96	137	27	174	201
CM1-7	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	149	376	202	178	175	96	137	27	174	201
CM1-8	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	149	394	220	196	193	96	137	27	174	201

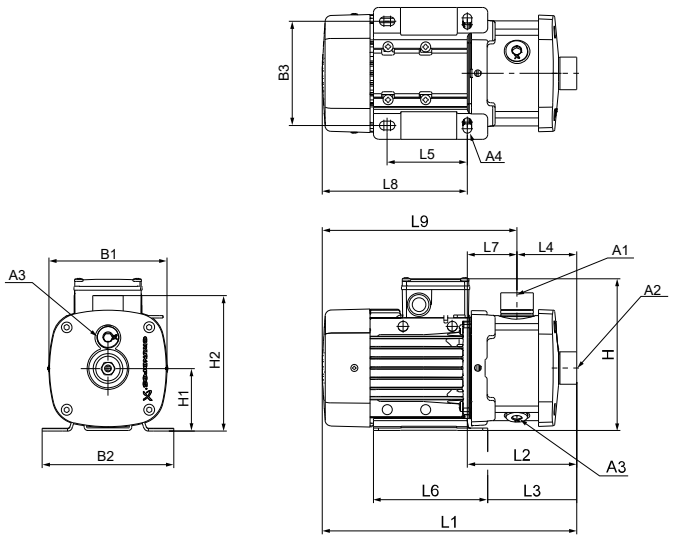
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	340	166	142	139	96	137	27	174	201
CM1-6	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	358	184	160	157	96	137	27	174	201
CM1-7	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	376	202	178	175	96	137	27	174	201
CM1-8	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	149	434	220	196	193	96	137	27	214	241

All dimensions are in millimetres unless otherwise stated.

CM 1-I and CM 1-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067507

Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-3	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-4	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM1-5	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	342	168	144	108	96	137	60	174	234
CM1-6	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-7	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-8	71	0.65	1"	1"	3/8"	10.5	141	158	125	184	75	165	414	240	216	180	96	137	60	174	234
CM1-9	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	165	414	240	216	180	96	137	60	174	234
CM1-10	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	510	276	252	216	96	137	60	234	294
CM1-11	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	510	276	252	216	96	137	60	234	294
CM1-12	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	564	330	306	270	96	137	60	234	294
CM1-13	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	564	330	306	270	96	137	60	234	294
CM1-14	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	564	330	306	270	96	137	60	234	294

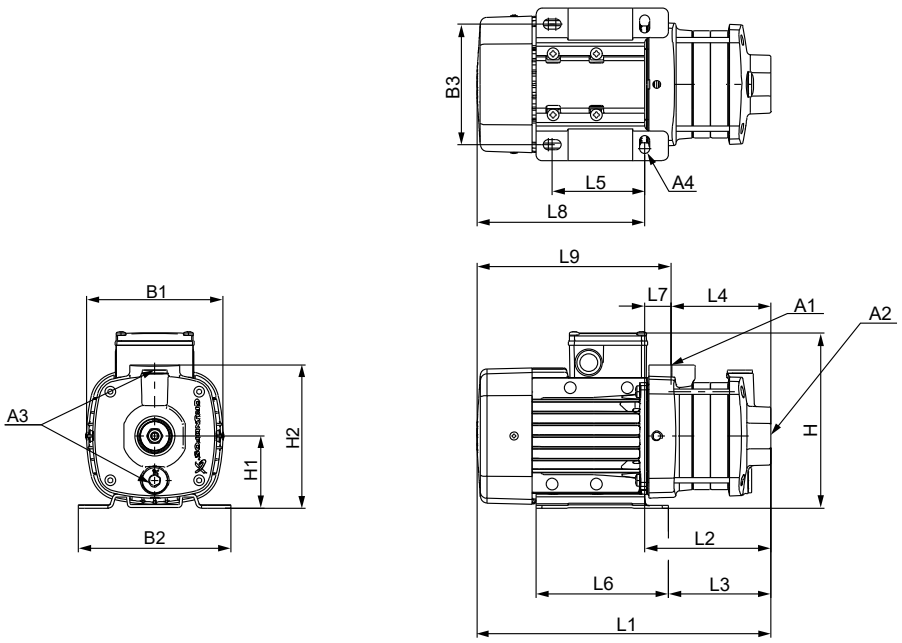
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM1-3	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM1-4	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	324	150	126	90	96	137	60	174	234
CM1-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	342	168	144	108	96	137	60	174	234
CM1-6	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM1-7	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM1-8	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	454	240	216	180	96	137	60	214	274
CM1-9	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	454	240	216	180	96	137	60	214	274
CM1-10	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	490	276	252	216	96	137	60	214	274
CM1-11	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	510	276	252	216	96	137	60	234	294
CM1-12	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	564	330	306	270	96	137	60	234	294
CM1-13	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	564	330	306	270	96	137	60	234	294
CM1-14	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	595	371	356	270	125	155	101	224	325

All dimensions are in millimetres unless otherwise stated.

CM 3-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM3-4	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM3-5	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	149	340	166	142	139	96	137	27	174	201
CM3-6	71	0.65	1"	1"	3/8"	10.5	141	158	125	184	75	149	358	184	160	157	96	137	27	174	201
CM3-7	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	149	436	202	178	175	96	137	27	234	261
CM3-8	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	149	454	220	196	193	96	137	27	234	261

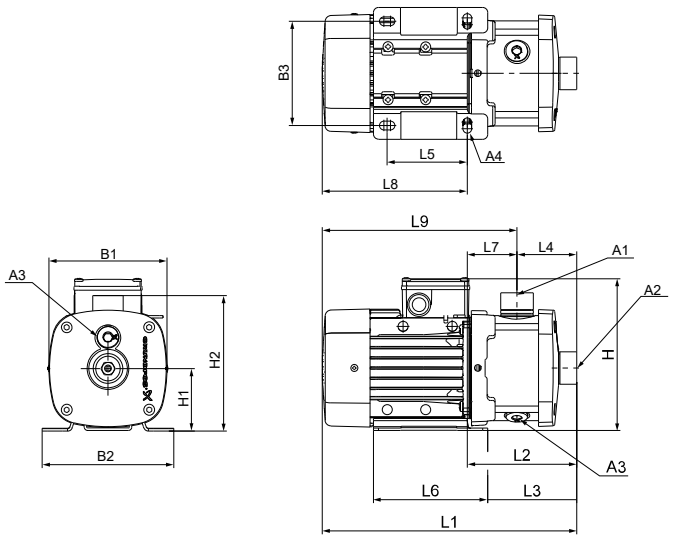
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM3-4	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	322	148	124	121	96	137	27	174	201
CM3-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	340	166	142	139	96	137	27	174	201
CM3-6	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	149	398	184	160	157	96	137	27	214	241
CM3-7	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	149	436	202	178	175	96	137	27	234	261
CM3-8	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	149	454	220	196	193	96	137	27	234	261

All dimensions are in millimetres unless otherwise stated.

CM 3-I and CM 3-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



TM067507

Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																	
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-3	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-4	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM3-5	71	0.60	1"	1"	3/8"	10.5	141	158	125	184	75	165	342	168	144	108	96	137	60	174	234
CM3-6	71	0.65	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM3-7	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	438	204	180	144	96	137	60	234	294
CM3-8	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294
CM3-9	80	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294
CM3-10	90	1.50	1"	1"	3/8"	10.0	178	178	140	200	90	180	541	317	302	216	125	155	101	224	325
CM3-11	90	1.50	1"	1"	3/8"	10.0	178	178	140	200	90	180	541	317	302	216	125	155	101	224	325
CM3-12	90	1.50	1"	1"	3/8"	10.0	178	178	140	200	90	180	595	371	356	270	125	155	101	224	325
CM3-13	90	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	635	371	356	270	125	155	101	264	365
CM3-14	90	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	635	371	356	270	125	155	101	264	365

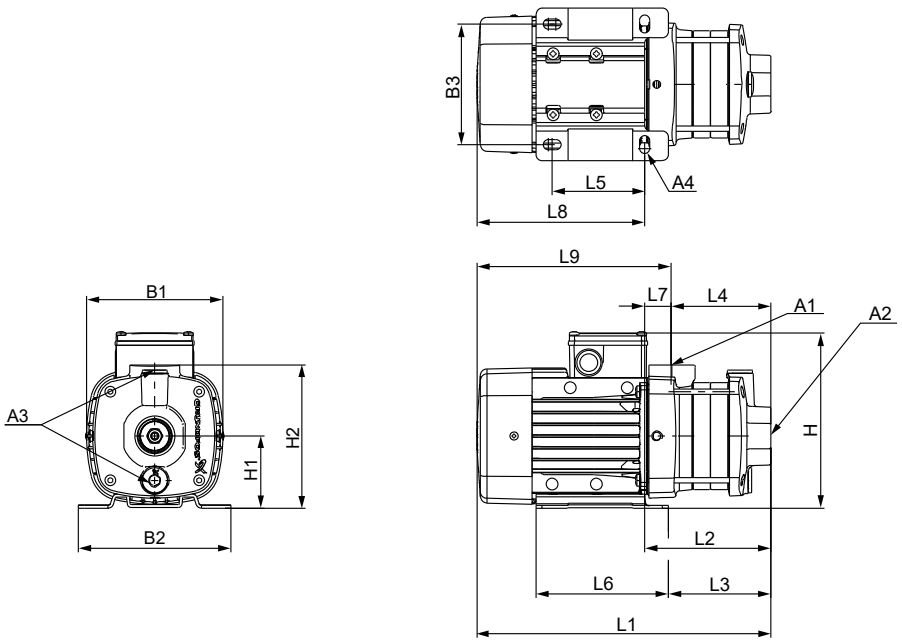
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																	
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM3-3	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM3-4	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	324	150	126	90	96	137	60	174	234
CM3-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	342	168	144	108	96	137	60	174	234
CM3-6	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM3-7	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	438	204	180	144	96	137	60	234	294
CM3-8	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	474	240	216	180	96	137	60	234	294
CM3-9	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	505	281	266	180	125	155	101	224	325
CM3-10	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	541	317	302	216	125	155	101	224	325
CM3-11	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	541	317	302	216	125	155	101	224	325
CM3-12	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	595	371	356	270	125	155	101	224	325
CM3-13	90	1.70	1"	1"	3/8"	10.0	178	178	140	229	90	180	635	371	356	270	125	155	101	264	365
CM3-14	90	1.70	1"	1"	3/8"	10.0	178	178	140	229	90	180	635	371	356	270	125	155	101	264	365

All dimensions are in millimetres unless otherwise stated.

CM 5-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.46	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM5-3	71	0.60	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM5-4	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	382	148	124	121	96	137	27	234	261
CM5-5	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	400	166	142	139	96	137	27	234	261
CM5-6	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	449	225	210	144	125	155	81	224	306
CM5-7	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	467	243	228	162	125	155	81	224	306
CM5-8	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	525	261	246	180	125	155	81	264	346

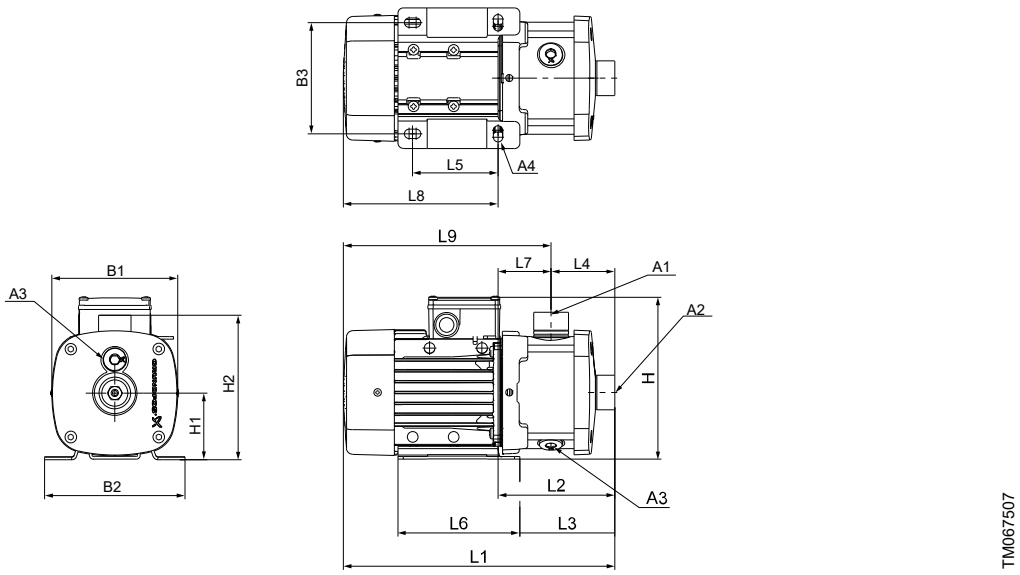
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM5-3	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM5-4	80	0.67	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	362	148	124	121	96	137	27	214	241
CM5-5	80	0.90	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	380	166	142	139	96	137	27	214	241
CM5-6	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	449	225	210	144	125	155	81	224	306
CM5-7	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	467	243	228	162	125	155	81	224	306
CM5-8	90	1.70	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	525	261	246	180	125	155	81	264	346

All dimensions are in millimetres unless otherwise stated.

CM 5-I and CM 5-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																	
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.46	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM5-3	71	0.60	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM5-4	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	384	150	126	90	96	137	60	234	294
CM5-5	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	402	168	144	108	96	137	60	234	294
CM5-6	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	469	245	230	144	125	155	101	224	325
CM5-7	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	469	245	230	144	125	155	101	224	325
CM5-8	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365
CM5-9	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365
CM5-10	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	581	317	302	216	125	155	101	264	365
CM5-11	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	581	317	302	216	125	155	101	264	365
CM5-12	100	3.00	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	651	378	363	270	140	170	108	273	381
CM5-13	100	3.00	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	651	378	363	270	140	170	108	273	381

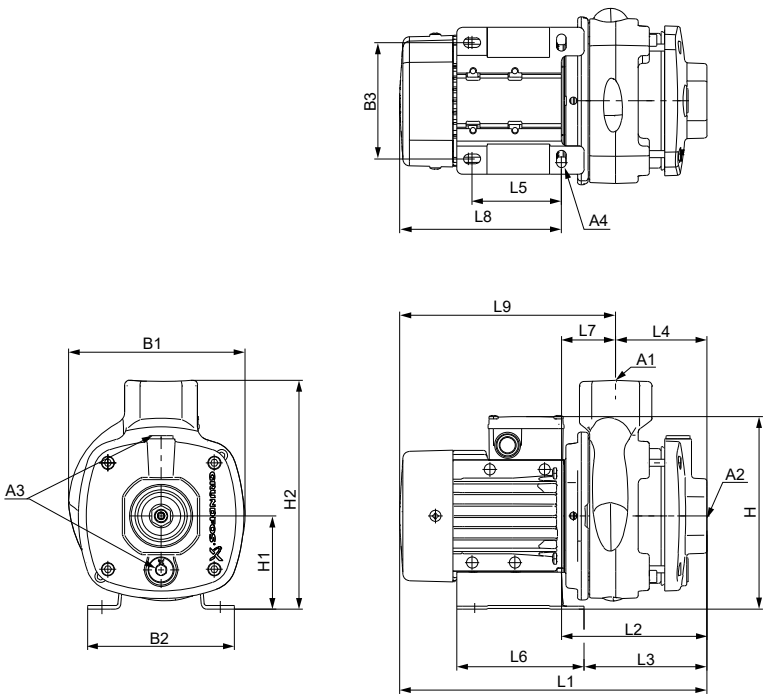
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																	
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM5-3	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM5-4	80	0.67	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	165	364	150	126	90	96	137	60	214	274
CM5-5	80	0.90	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	165	402	168	144	108	96	137	60	234	294
CM5-6	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	180	469	245	230	144	125	155	101	224	325
CM5-7	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	180	469	245	230	144	125	155	101	224	325
CM5-8	90	1.70	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	180	545	281	266	180	125	155	101	264	365
CM5-9	90	1.70	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	180	545	281	266	180	125	155	101	264	365

All dimensions are in millimetres unless otherwise stated.

CM 10-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	71	0.60	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	209	100	242	330	156	131	97	95	137	59	174	232
CM10-2	90	1.50	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	210	100	242	411	179	164	97	140	170	82	232	314
CM10-3	90	2.20	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	210	100	242	481	209	194	127	140	170	82	272	354
CM10-4	100	3.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	242	527	254	239	157	140	170	97	273	370
CM10-5	100	3.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	242	557	284	269	187	140	170	97	273	370

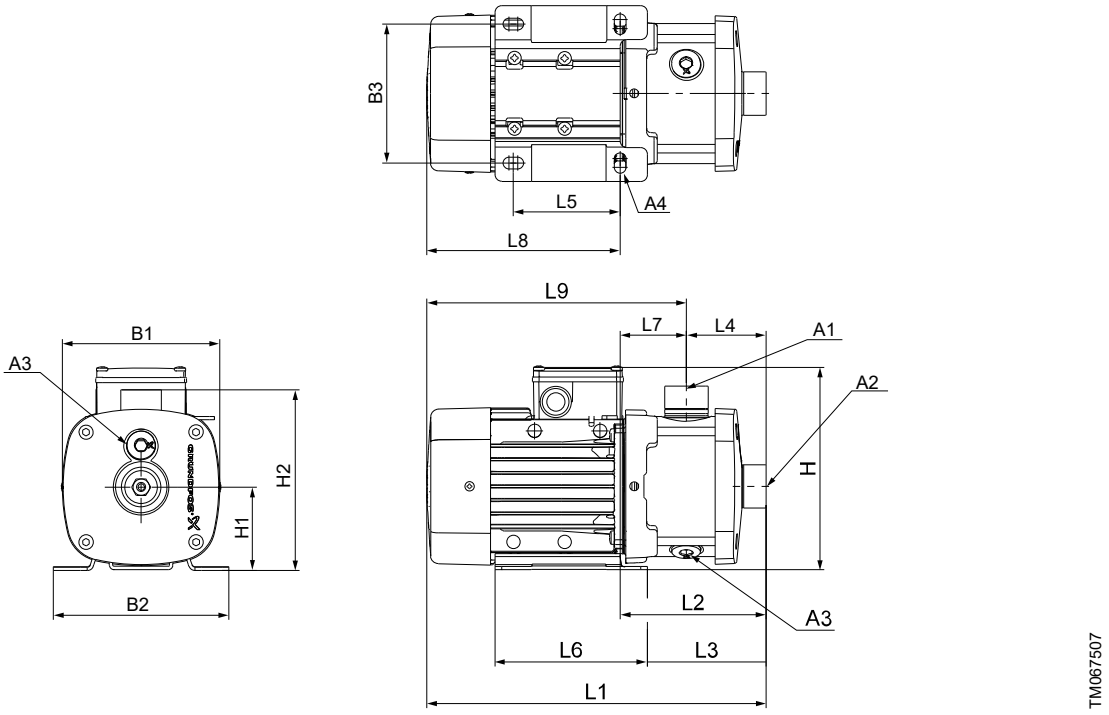
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.67	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	233	100	242	370	156	131	97	95	137	59	214	272
CM10-2	90	1.30	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314
CM10-3	90	1.70	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	239	100	242	481	209	194	127	140	170	82	272	354

All dimensions are in millimetres unless otherwise stated.

CM 10-I and CM 10-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	71	0.60	1 1/2"	1 1/2"	3/8"	10.5	180	158	125	209	100	219	360	186	161	105	95	137	81	174	255
CM10-2	90	1.50	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	210	100	219	451	219	204	105	140	170	114	232	346
CM10-3	90	2.20	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	210	100	219	491	219	204	105	140	170	114	272	386
CM10-4	100	3.00	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	219	537	264	249	135	140	170	129	273	402
CM10-5	100	3.00	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	219	597	324	309	195	140	170	129	273	402
CM10-6	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	650	348	332	195	140	172	153	302	455
CM10-7	132	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	710	408	392	255	140	172	153	302	455
CM10-8	132	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	710	408	392	255	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 10-1, CM 10-2 and CM 10-3.

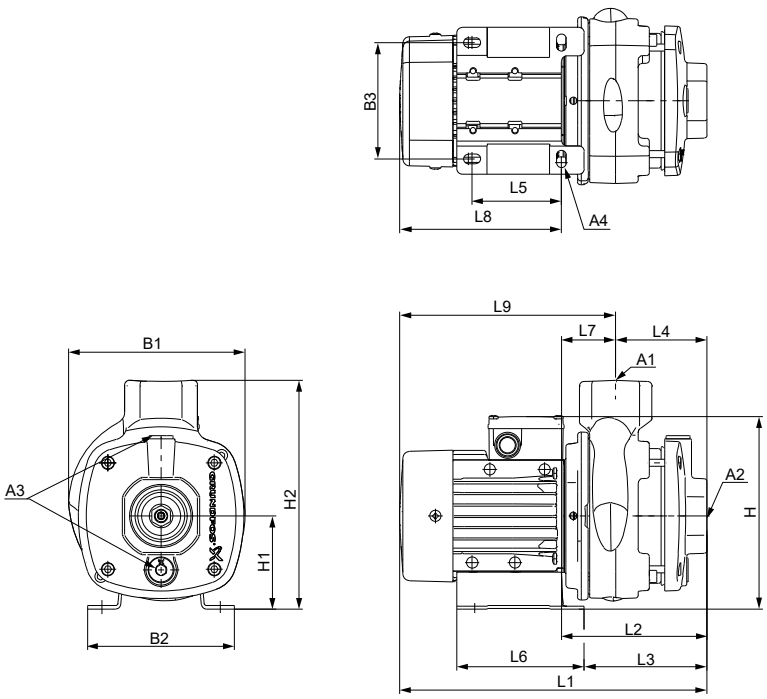
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.67	1 1/2"	1 1/2"	3/8"	10.5	141	158	125	233	100	219	400	186	161	105	95	137	81	214	295
CM10-2	90	1.30	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	239	100	219	451	219	204	105	140	170	114	232	346
CM10-3	90	1.70	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	239	100	219	491	219	204	105	140	170	114	272	386

All dimensions are in millimetres unless otherwise stated.

CM 15-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	80	1.1	2"	2"	3/8"	10.5	190	158	125	209	100	242	390	156	131	97	95	137	59	234	292
CM15-2	90	2.2	2"	2"	3/8"	12.0	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM15-3	112	4.0	2"	2"	3/8"	12.0	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423
CM15-4	132	5.5	2"	2"	3/8"	12.0	220	228	190	246	112	254	580	278	262	157	140	172	120	302	423

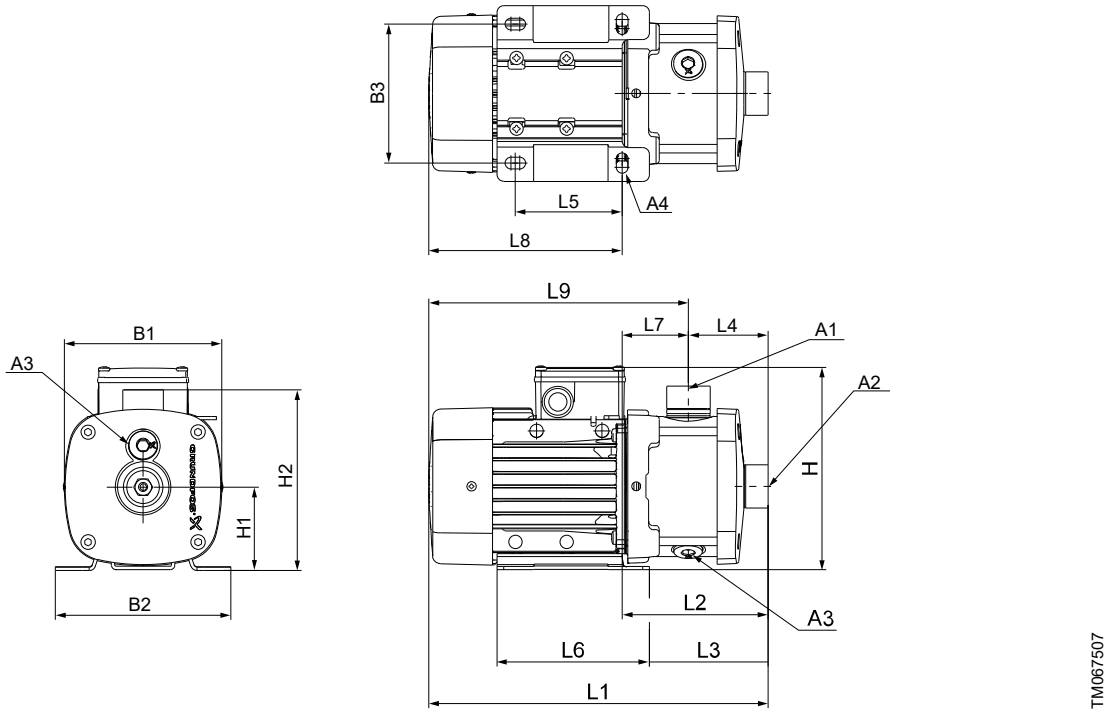
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.30	2"	2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314

All dimensions are in millimetres unless otherwise stated.

CM 15-I and CM 15-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	80	1.10	2"	2"	3/8"	10.5	141	158	125	209	100	217	420	186	161	105	95	137	81	234	315
CM15-2	90	2.20	2"	2"	3/8"	12.0	178	199	160	210	100	217	491	219	204	105	140	170	114	272	386
CM15-3	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM15-4	132	5.50	2"	2"	3/8"	12.0	220	228	190	246	112	229	590	288	272	135	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 15-1 and CM 15-2.

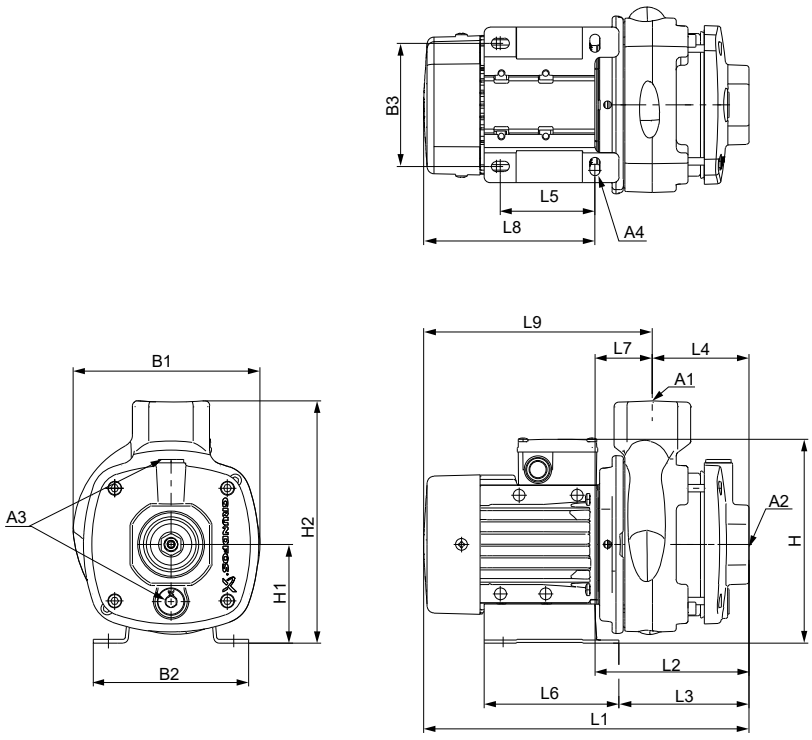
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90SA	1.3	2"	2"	3/8"	12.0	178	199	160	239	100	217	451	219	204	105	140	170	114	232	346

All dimensions are in millimetres unless otherwise stated.

CM 25-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	2.20	2"	2"	3/8"	12.0	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM25-2	112	4.0	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM25-3	132	5.50	2"	2"	3/8"	12.0	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423
CM25-4	132	7.50	2"	2"	3/8"	12.0	263	244	216	291	132	273	559	269	257	157	140	164	112	290	402

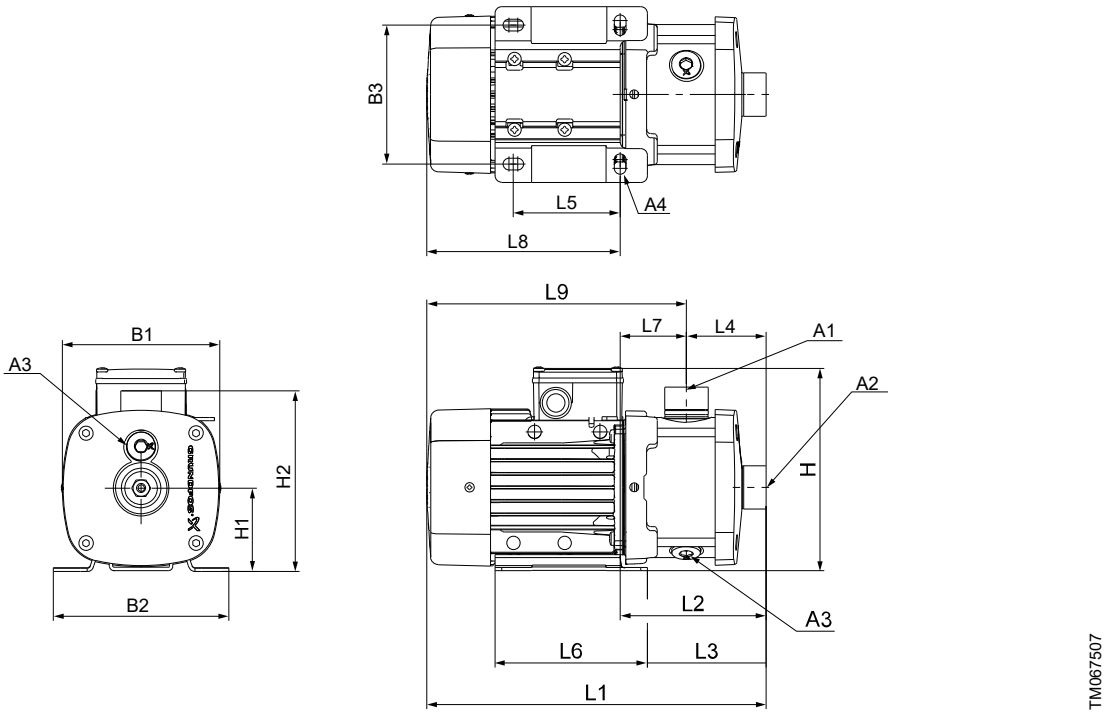
1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	1.70	2"	2"	3/8"	12.0	190	199	160	239	100	242	451	179	164	97	140	170	82	272	354

All dimensions are in millimetres unless otherwise stated.

CM 25-I and CM 25-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	2.20	2"	2"	3/8"	12.0	178	199	160	210	100	217	491	219	204	105	140	170	114	272	386
CM25-2	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM25-3	132	5.50	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM25-4	132	7.50	2"	2"	3/8"	12.0	263	244	216	291	132	248	569	279	267	135	140	164	144	290	434

Please note that the dimension H is smaller than H2 for CM 25-1.

1 x 220-230 V, 50 Hz (supply voltage C1)

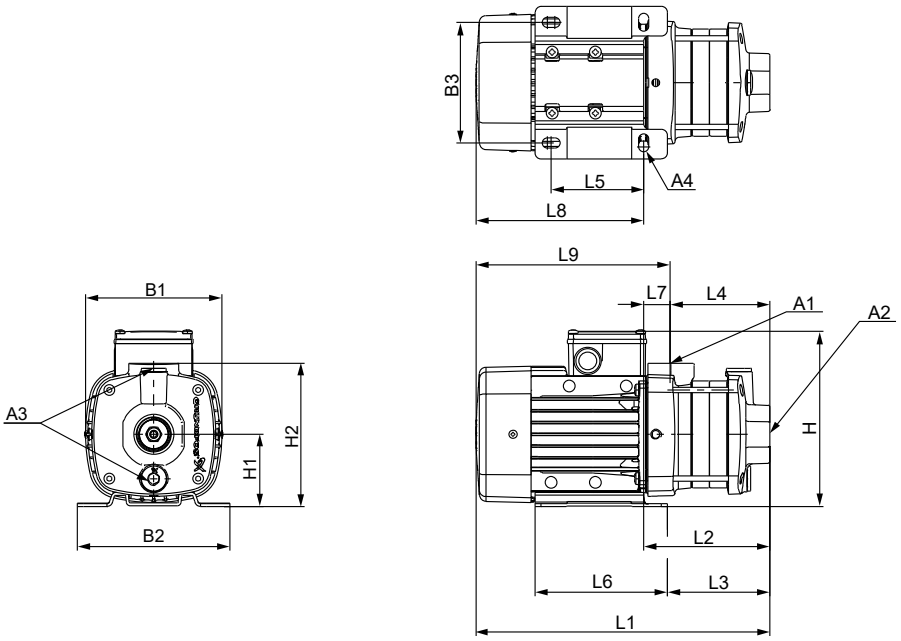
Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	1.70	2"	2"	3/8"	12.0	178	199	160	239	100	217	491	219	204	105	140	170	114	272	386

All dimensions are in millimetres unless otherwise stated.

23. Dimensions, CM 60 Hz and 50/60 Hz

CM 1-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.25/0.43 [38)]	0.43/0.74 [38)]	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.25/0.43 [38)]	0.43/0.74 [38)]	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	340	166	142	139	96	137	27	174	201

[38)] Applies to supply voltage O.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-4	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	149	382	148	124	121	96	137	27	234	261
CM1-5	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	149	400	166	142	139	96	137	27	234	261

1 x 115/230 V, 60 Hz (supply voltage B, B1)

1 x 230 V, 60 Hz (supply voltage B2)

1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	340	166	142	139	96	137	27	174	201

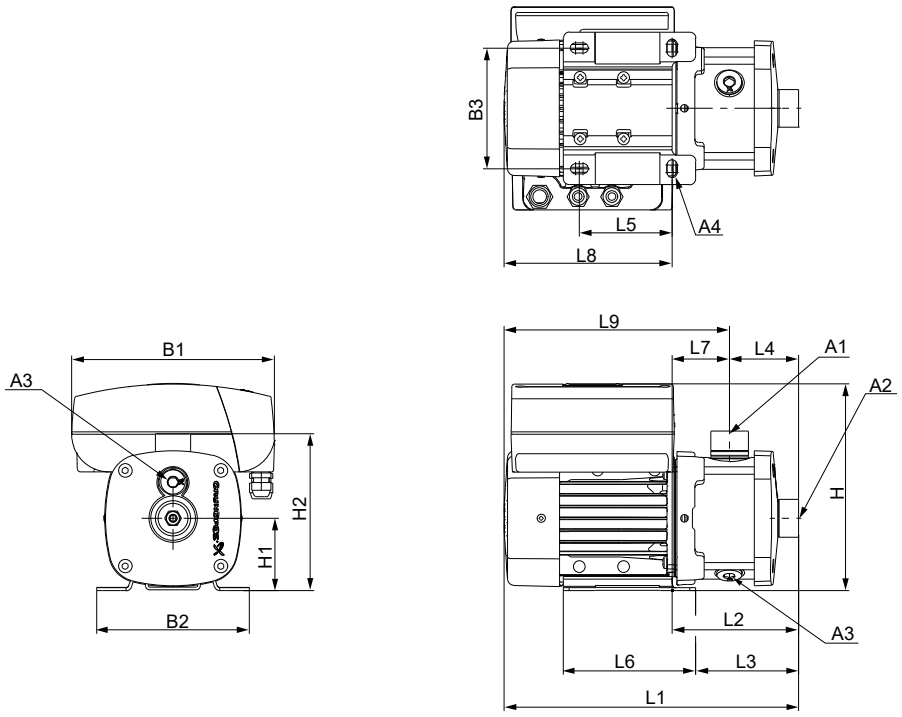
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	340	166	142	139	96	137	27	174	201

All dimensions are in millimetres unless otherwise stated.

CM 1-I and CM 1-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.25/0.43 [39]	0.43/0.74 [39]	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-3	71	0.25/0.43 [39]	0.43/0.74 [39]	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM1-5	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	342	168	144	108	96	137	60	174	234
CM1-6	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-7	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-8	80	0.64	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294
CM1-9	80	0.64	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294

[39] Applies to supply voltage O.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-4	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	384	150	126	90	96	137	60	234	294
CM1-5	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	402	168	144	108	96	137	60	234	294
CM1-6	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	438	204	180	144	96	137	60	234	294
CM1-7	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	438	204	180	144	96	137	60	234	294
CM1-8	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	474	240	216	180	96	137	60	234	294
CM1-9	90	1.50	1"	1"	3/8"	10.0	178	178	140	200	90	180	505	281	266	180	125	155	101	224	325

1 x 115/230 V, 60 Hz (supply voltage B, B1)
1 x 230 V, 60 Hz (supply voltage B2)
1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM1-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM1-4	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	324	150	126	90	96	137	60	174	234
CM1-5	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	342	168	144	108	96	137	60	174	234
CM1-6	80	0.84 [40)]/0.78	1"	1"	3/8"	10.5	141	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM1-7	80	1.14 [40)]/1.10	1"	1"	3/8"	10.5	206	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM1-8	80	1.14 [40)]/1.10	1"	1"	3/8"	10.5	206	158	125	208	75	165	454	240	216	180	96	137	60	214	274
CM1-9	80	1.14 [40)]/1.10	1"	1"	3/8"	10.5	206	158	125	208	75	165	454	240	216	180	96	137	60	214	274

[40)] Applies to supply voltage A.

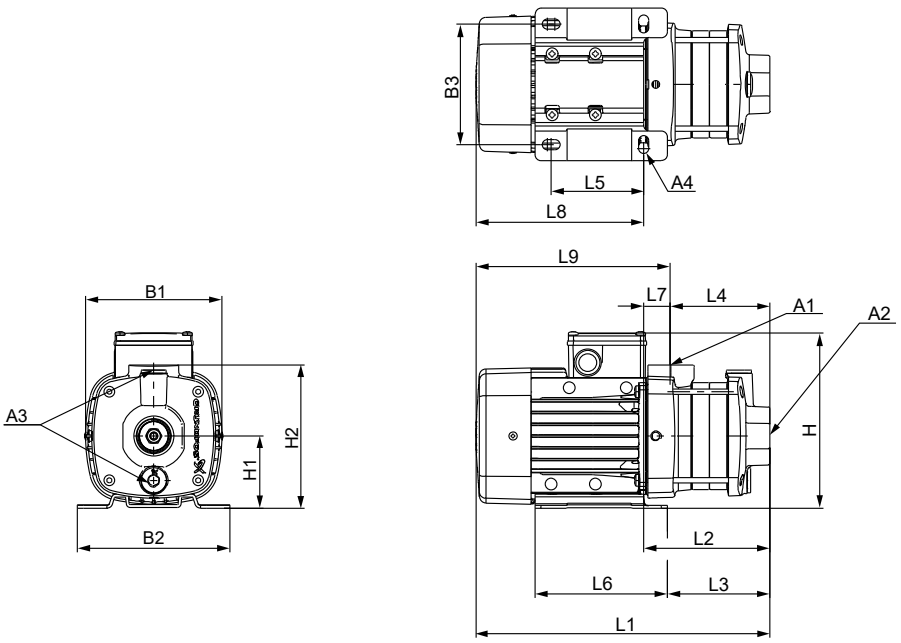
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-3	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM1-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM1-5	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	342	168	144	108	96	137	60	174	234
CM1-6	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-7	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	378	204	180	144	96	137	60	174	234
CM1-8	80	0.74	1.28	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294
CM1-9	80	0.74	1.28	1"	1"	3/8"	10.5	141	158	125	184	75	165	474	240	216	180	96	137	60	234	294

All dimensions are in millimetres unless otherwise stated.

CM 3-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.25/0.43 [41)]	0.43/0.74 [41)]	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM3-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM3-5	80	0.64	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	149	400	166	142	139	96	137	27	234	261

41) Applies to supply voltage O.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-3	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	149	364	130	106	103	96	137	27	234	261
CM3-4	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	149	382	148	124	121	96	137	27	234	261
CM3-5	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	149	400	166	142	139	96	137	27	234	261

1 x 115/230 V, 60 Hz (supply voltage B, B1)
1 x 230 V, 60 Hz (supply voltage B2)
1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM3-4	80	0.84 [42)]/0.78	1"	1"	3/8"	10.5	141	158	125	208	75	149	362	148	124	121	96	137	27	214	241
CM3-5	80	1.14 [42)]/1.10	1"	1"	3/8"	10.5	206	158	125	208	75	149	380	166	142	139	96	137	27	214	241

[42)] Applies to supply voltage A.

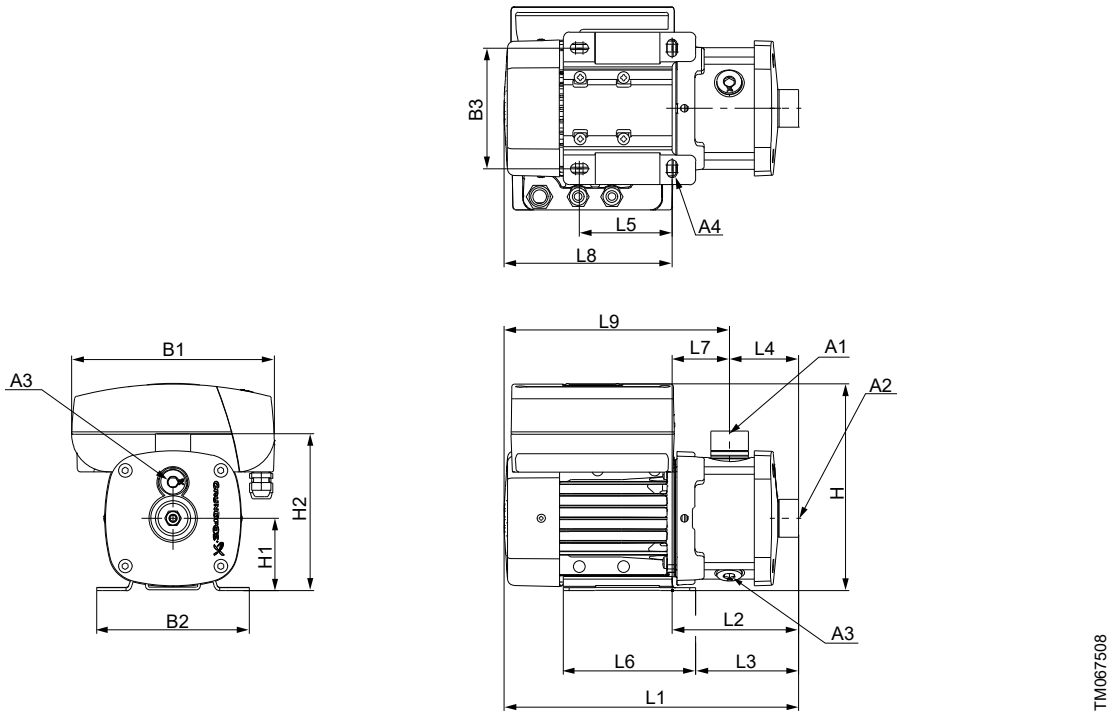
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																	
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM3-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM3-5	80	0.74	1.28	1"	1"	3/8"	10.5	141	158	125	184	75	149	400	166	142	139	96	137	27	234	261

All dimensions are in millimetres unless otherwise stated.

CM 3-I and CM 3-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.25/0.43 [43)]	0.43/0.74 [43)]	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-3	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM3-5	80	0.64	1.10	1"	1"	3/8"	10.5	141	158	125	184	75	165	402	168	144	108	96	137	60	234	294
CM3-6	90	1.27	2.20	1"	1"	3/8"	10	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM3-7	90	1.27	2.20	1"	1"	3/8"	10	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM3-8	90	1.27	2.20	1"	1"	3/8"	10	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365
CM3-9	90	1.27	2.20	1"	1"	3/8"	10	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365

[43)] Applies to supply voltage O.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																			
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-3	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	366	132	108	72	96	137	60	234	294
CM3-4	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	384	150	126	90	96	137	60	234	294
CM3-5	80	1.10	1"	1"	3/8"	10.5	141	158	125	192	75	165	402	168	144	108	96	137	60	234	294
CM3-6	90	1.50	1"	1"	3/8"	10.0	178	178	140	200	90	180	469	245	230	144	125	155	101	224	325
CM3-7	90	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM3-8	90	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365
CM3-9	90	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365

1 x 115/230 V, 60 Hz (supply voltage B, B1)
1 x 230 V, 60 Hz (supply voltage B2)
1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM3-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	306	132	108	72	96	137	60	174	234
CM3-4	80	0.84 [44)]/0.78	1"	1"	3/8"	10.5	141	158	125	208	75	165	364	150	126	90	96	137	60	214	274
CM3-5	80	1.14 [44)]/1.10	1"	1"	3/8"	10.5	206	158	125	208	75	165	382	168	144	108	96	137	60	214	274
CM3-6	90	1.54 [44)]/1.50	1"	1"	3/8"	10.0	178	178	140	229	90	180	469	245	230	144	125	155	101	224	325
CM3-7	90	1.54 [44)]/1.50	1"	1"	3/8"	10.0	178	178	140	229	90	180	469	245	230	144	125	155	101	224	325
CM3-8	90	1.54 [44)]/1.50	1"	1"	3/8"	10.0	178	178	140	229	90	180	505	281	266	180	125	155	101	224	325

[44)] Applies to supply voltage A.

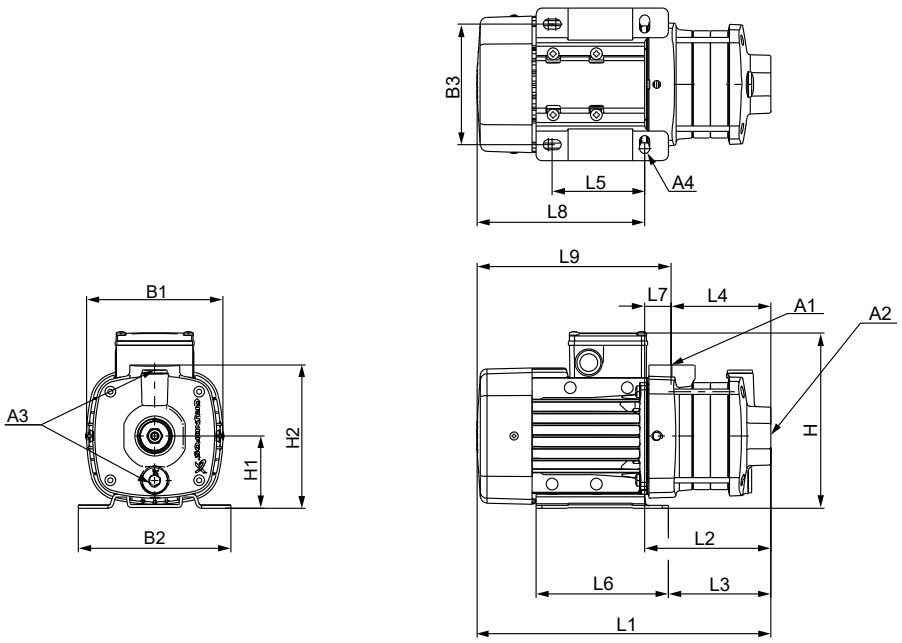
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.25	0.43	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-3	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM3-4	71	0.43	0.74	1"	1"	3/8"	10.5	141	158	125	184	75	165	324	150	126	90	96	137	60	174	234
CM3-5	80	0.74	1.28	1"	1"	3/8"	10.5	141	158	125	184	75	165	402	168	144	108	96	137	60	234	294
CM3-6	80	0.74	1.28	1"	1"	3/8"	10.5	141	158	125	184	75	165	438	204	180	144	96	137	60	234	294
CM3-7	90	1.27	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM3-8	90	1.27	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365
CM3-9	90	1.27	2.20	1"	1"	3/8"	10.0	178	178	140	200	90	180	545	281	266	180	125	155	101	264	365

All dimensions are in millimetres unless otherwise stated.

CM 5-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.43	0.74	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM5-3	80	0.64	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	364	130	106	103	96	137	27	234	261
CM5-4	90	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	453	189	174	108	125	155	81	264	346
CM5-5	90	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	471	207	192	126	125	155	81	264	346

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	192	75	149	346	112	88	85	96	137	27	234	261
CM5-3	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	192	75	149	364	130	106	103	96	137	27	234	261
CM5-4	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	413	189	174	108	125	155	81	224	306
CM5-5	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	471	207	192	126	125	155	81	264	346

1 x 115/230 V, 60 Hz (supply voltage B, B1)
1 x 230 V, 60 Hz (supply voltage B2)
1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	0.84 [45)]/0.78	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	326	112	88	85	96	137	27	214	241
CM5-3	80	1.14 [45)]/1.10	1"	1 1/4"	3/8"	10.5	206	158	125	208	75	149	344	130	106	103	96	137	27	214	241
CM5-4	90	1.54 [45)]/1.50	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	413	189	174	108	125	155	81	224	306

45) Applies to supply voltage A.

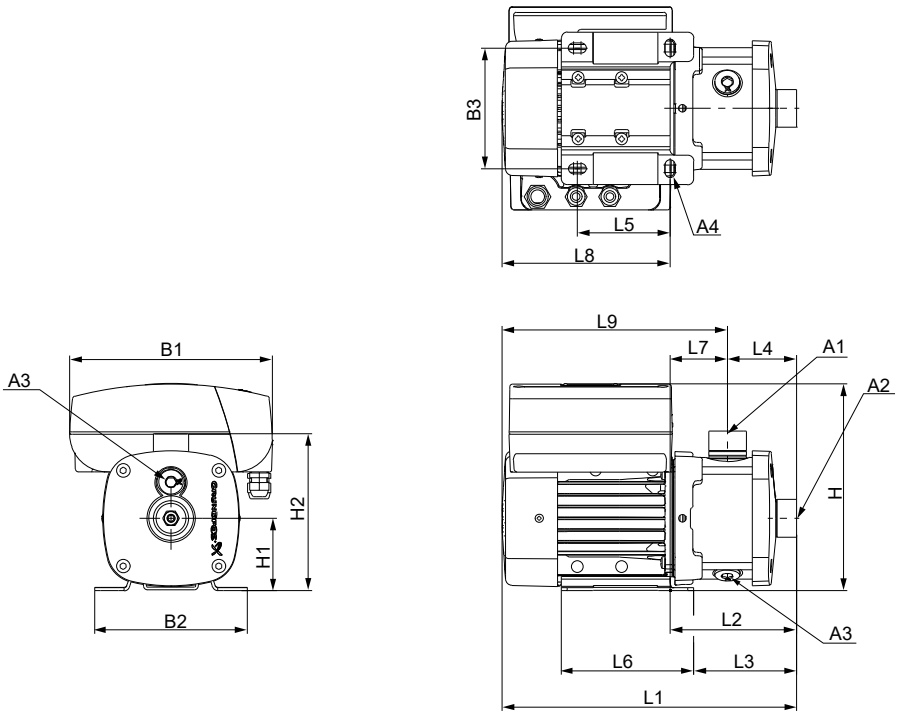
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.43	0.74	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM5-3	80	0.74	1.28	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	364	130	106	103	96	137	27	234	261
CM5-4	90	1.27	2.2	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	453	189	174	108	125	155	81	264	346
CM5-5	90	1.27	2.2	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	471	207	192	126	125	155	81	264	346

All dimensions are in millimetres unless otherwise stated.

CM 5-I and CM 5-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.43	0.74	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM5-3	80	0.64	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	366	132	108	72	96	137	60	234	294
CM5-4	90	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	455	191	176	90	125	155	101	264	365
CM5-5	90	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	473	209	194	108	125	155	101	264	365
CM5-6	90	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM5-7	100	1.68	2.90	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	525	252	237	144	140	170	108	273	381
CM5-8	100	1.68	2.90	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	561	288	273	180	140	170	108	273	381

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	192	75	165	366	132	108	72	96	137	60	234	294
CM5-3	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	192	75	165	366	132	108	72	96	137	60	234	294
CM5-4	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	415	191	176	90	125	155	101	224	325
CM5-5	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	473	209	194	108	125	155	101	264	365
CM5-6	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM5-7	100	3.00	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	525	252	237	144	140	170	108	273	381
CM5-8	100	3.00	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	561	288	273	180	140	170	108	273	381

1 x 115/230 V, 60 Hz (supply voltage B, B1)
1 x 230 V, 60 Hz (supply voltage B2)
1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	0.84 [46]/0.78	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	165	346	132	108	72	96	137	60	214	274
CM5-3	80	1.14 [46]/1.10	1"	1 1/4"	3/8"	10.5	206	158	125	208	75	165	346	132	108	72	96	137	60	214	274
CM5-4	90	1.54 [46]/1.50	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	180	415	191	176	90	125	155	101	224	325

[46] Applies to supply voltage A.

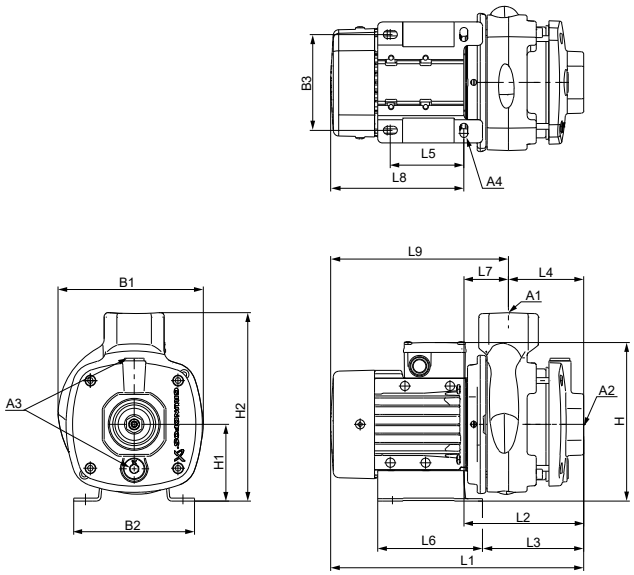
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71B	0.43	0.74	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	306	132	108	72	96	137	60	174	234
CM5-3	80C	0.74	1.28	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	165	366	132	108	72	96	137	60	234	294
CM5-4	90LE	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	455	191	176	90	125	155	101	264	365
CM5-5	90LE	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	473	209	194	108	125	155	101	264	365
CM5-6	90LE	1.27	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	180	509	245	230	144	125	155	101	264	365
CM5-7	100LC	1.68	2.90	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	525	252	237	144	140	170	108	273	381
CM5-8	100LC	1.68	2.90	1"	1 1/4"	3/8"	12.0	198	199	160	220	100	190	561	288	273	180	140	170	108	273	381

All dimensions are in millimetres unless otherwise stated.

CM 10-A

(A = cast iron EN-GJL-200)



TM067512

Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.64	1.10	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	209	100	242	390	156	131	97	95	137	59	234	292
CM10-2	90	1.27	2.2	1 1/2"	1 1/2"	3/8"	12	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM10-3	112	2.3	4.0	1 1/2"	1 1/2"	3/8"	12	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	1.1	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	217	100	242	390	156	131	97	95	137	59	234	292
CM10-2	100	3.0	1 1/2"	1 1/2"	3/8"	12	198	199	160	220	100	242	467	194	179	97	140	170	97	273	370
CM10-3	112	4.0	1 1/2"	1 1/2"	3/8"	12	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423
CM10-5	132	7.5	1 1/2"	1 1/2"	3/8"	12	262	228	190	271	112	231	633	359	343	195	140	172	164	274	438

1 x 115/230 V, 60 Hz (supply voltage B, B1)

1 x 230 V, 60 Hz (supply voltage B2)

1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	1.14 /1.10	1 1/2"	1 1/2"	3/8"	10.5	255	158	125	233	100	242	370	156	131	97	95	137	59	214	272

47) Applies to supply voltage A.

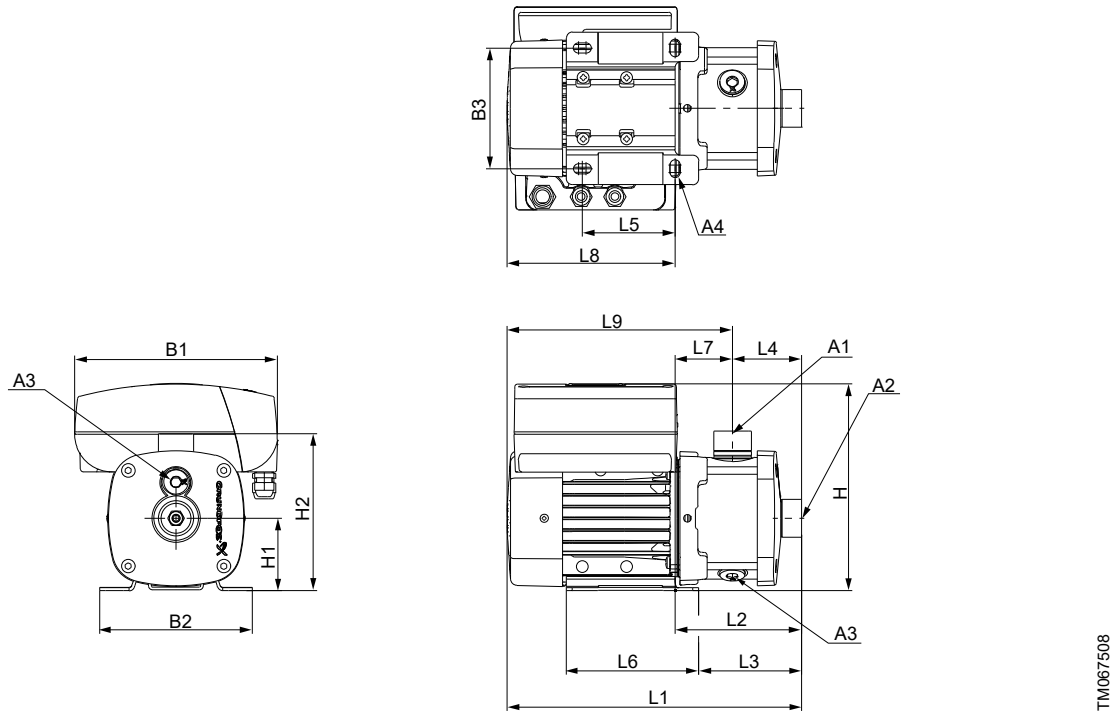
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.74	1.28	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	209	100	242	390	156	131	97	95	137	59	234	292
CM10-2	90	1.27	2.20	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM10-3	112	2.30	4.00	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423

All dimensions are in millimetres unless otherwise stated.

CM 10-I and CM 10-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.64	1.10	1 1/2"	1 1/2"	3/8"	10.5	141	158	125	209	100	219	420	186	161	105	95	137	81	234	315
CM10-2	90	1.27	2.20	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	210	100	219	491	219	204	105	140	170	114	272	386
CM10-3	112	2.30	4.00	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	560	258	242	105	140	172	153	302	455
CM10-4	132	3.18	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	590	288	272	135	140	172	153	302	455
CM10-5	132	3.18	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	650	348	332	195	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 10-1 and CM 10-2.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	1.10	1 1/2"	1 1/2"	3/8"	10.5	141	158	125	217	100	219	420	186	161	105	95	137	81	234	315
CM10-2	100	3.00	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	219	507	234	219	105	140	170	129	273	402
CM10-3	112	4.00	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	560	258	242	105	140	172	153	302	455
CM10-4	132	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	590	288	272	135	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 10-1 and CM 10-2.

1 x 115/230 V, 60 Hz (supply voltage B)

1 x 230 V, 60 Hz (supply voltage B2)

1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	1.14 /1.10	1 1/2"	1 1/2"	3/8"	10.5	206	158	125	233	100	219	400	186	161	105	95	137	81	214	295

48) Applies to supply voltage A.

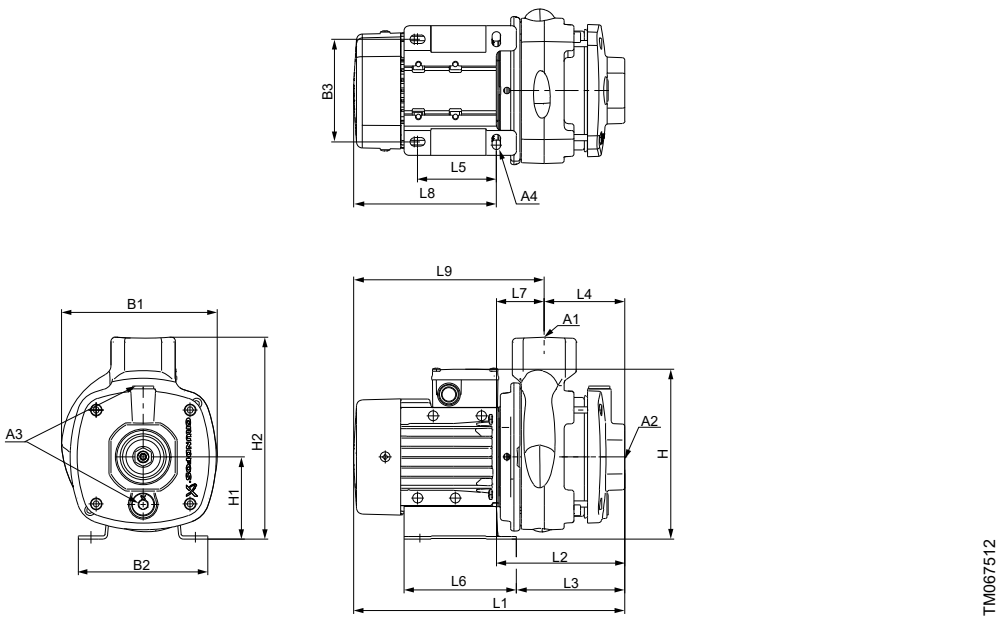
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.74	1.28	1 1/2"	1 1/2"	3/8"	10.5	141	158	125	209	100	219	420	186	161	105	95	137	81	234	315
CM10-2	90	1.27	2.20	1 1/2"	1 1/2"	3/8"	12.0	178	199	160	210	100	219	491	219	204	105	140	170	114	272	386
CM10-3	112	2.30	4.00	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	560	258	242	105	140	172	153	302	455
CM10-4	132	3.18	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	590	288	272	135	140	172	153	302	455
CM10-5	132	3.18	5.50	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	231	650	348	332	195	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 10-1 and CM 10-2.
All dimensions are in millimetres unless otherwise stated.

CM 15-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.27	2.20	2"	2"	3/8"	12	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM15-2	112	2.30	4.00	2"	2"	3/8"	12	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM15-3	132	3.70	6.40	2"	2"	3/8"	12	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	2.20	2"	2"	3/8"	12.0	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM15-2	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM15-3	132	7.50	2"	2"	3/8"	12.0	262	228	190	271	112	254	533	259	243	127	140	172	132	274	406

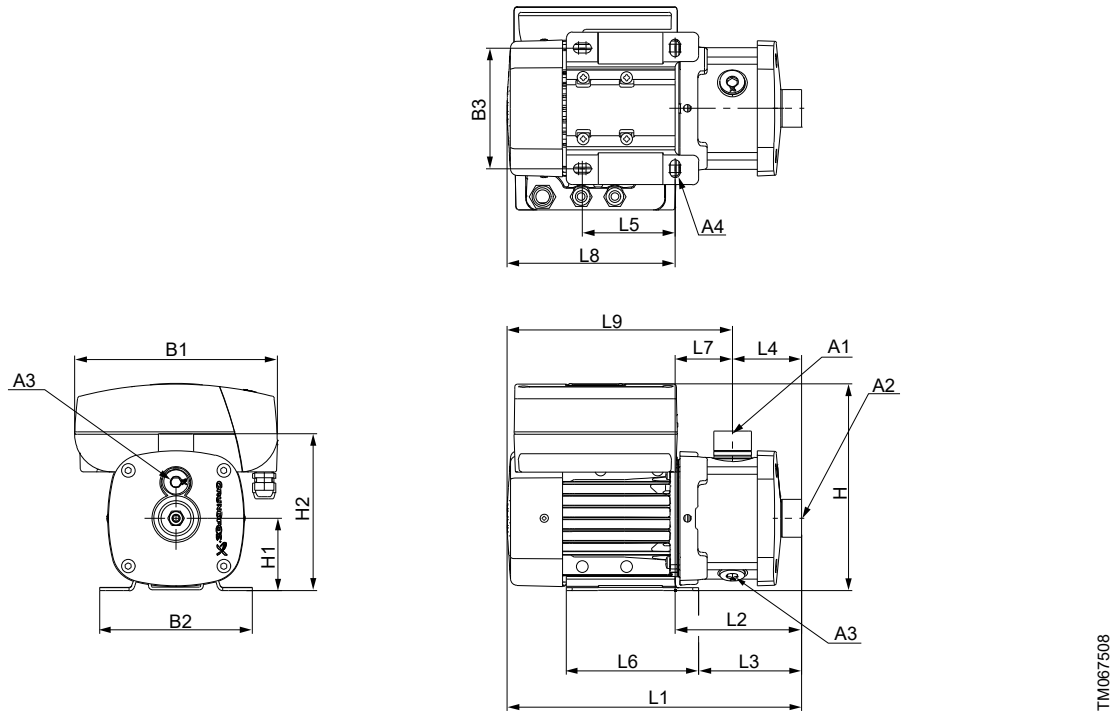
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.27	2.20	2"	2"	3/8"	12.0	190	199	160	210	100	242	451	179	164	97	140	170	82	272	354
CM15-2	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM15-3	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	254	550	248	232	127	140	172	120	302	423

All dimensions are in millimetres unless otherwise stated.

CM 15-I and CM 15-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.27	2.20	2"	2"	3/8"	12.0	178	199	160	210	100	217	491	219	204	105	140	170	114	272	386
CM15-2	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM15-3	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 15-1.

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2	Dimensions [mm]																		
		[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	2.20	2"	2"	3/8"	12.0	178	199	160	210	100	217	491	219	204	105	140	170	114	272	386
CM15-2	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM15-3	132	7.50	2"	2"	3/8"	12.0	262	228	190	271	112	229	543	269	253	105	140	172	164	274	438

Please note that the dimension H is smaller than H2 for CM 15-1.

3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

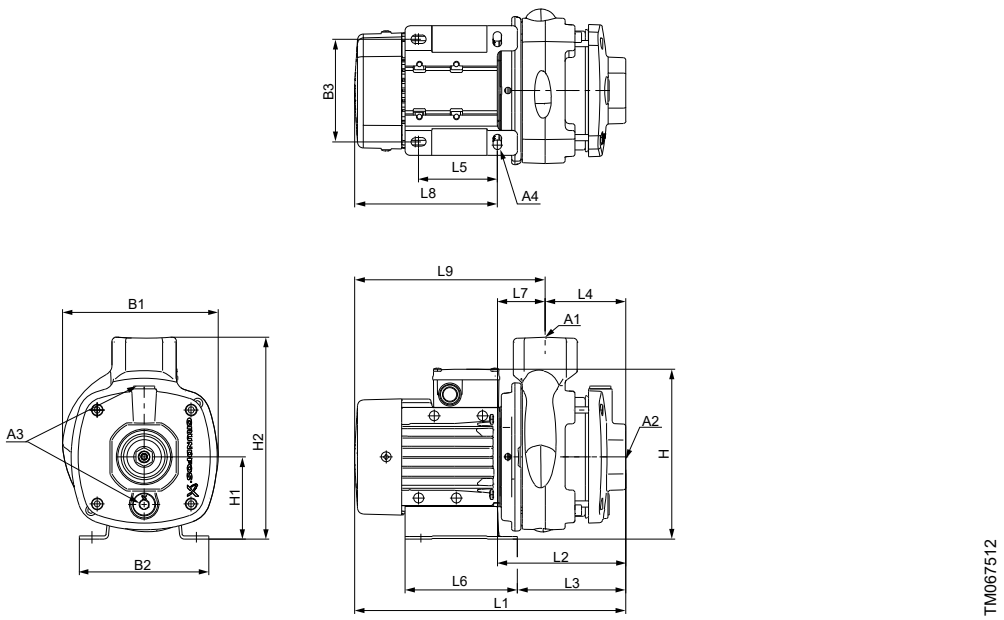
Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.27	2.20	2"	2"	3/8"	12	178	199	160	210	100	217	491	219	204	105	140	170	114	272	386
CM15-2	112	2.30	4.00	2"	2"	3/8"	12	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM15-3	132	3.70	6.40	2"	2"	3/8"	12	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455

Please note that the dimension H is smaller than H2 for CM 15-1.

All dimensions are in millimetres unless otherwise stated.

CM 25-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM25-2	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423

3 x 575 V, 60 Hz (supply voltage H)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM25-2	132	7.50	2"	2"	3/8"	12.0	262	228	190	271	112	254	503	229	213	97	140	172	132	274	406

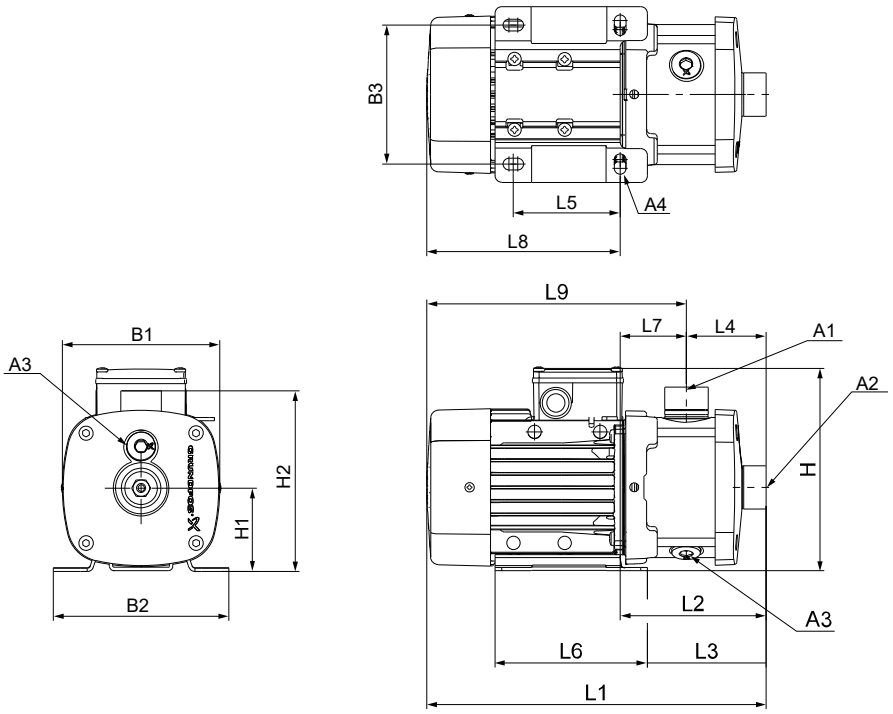
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423
CM25-2	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	254	520	218	202	97	140	172	120	302	423

All dimensions are in millimetres unless otherwise stated.

CM 25-I and CM 25-G

(I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)



Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E)

3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)

3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM25-2	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455

3 x 575 V, 60 Hz (supply voltage H)

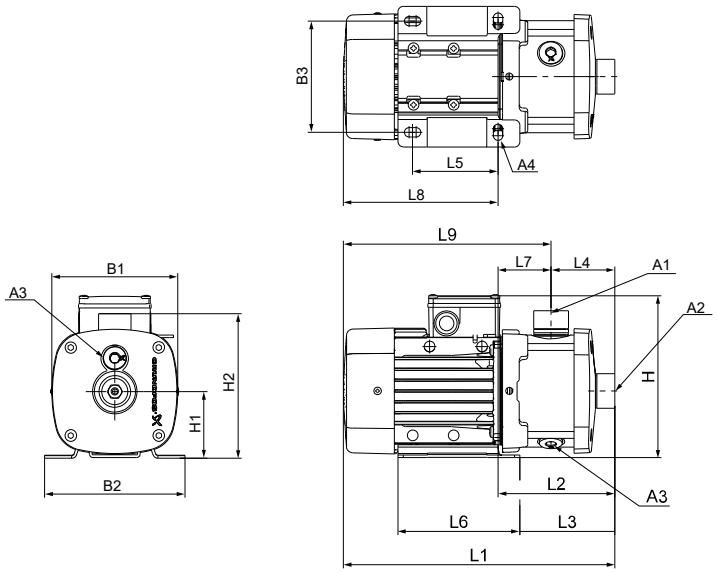
Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM25-2	132	7.50	2"	2"	3/8"	12.0	262	228	190	271	112	229	543	269	253	105	140	172	164	274	438

3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P_2 [kW]		Dimensions [mm]																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	112	2.30	4.00	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455
CM25-2	132	3.70	6.40	2"	2"	3/8"	12.0	220	228	190	246	112	229	560	258	242	105	140	172	153	302	455

All dimensions are in millimetres unless otherwise stated.

24. Dimensions, CM self-priming 50 Hz and 60 Hz



Dimensions

1 x 220-230 V, 50 Hz (supply voltage C1)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 1-3	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 1-4	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 1-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	414	240	216	180	96	137	60	174	234
CM 1-6	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	414	240	216	180	96	137	60	174	234
CM 3-3	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 3-4	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 3-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	414	240	216	180	96	137	60	174	234
CM 3-6	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	454	240	216	180	96	137	60	214	274
CM 5-3	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 5-4	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM 5-5	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	165	454	240	216	180	96	137	60	214	274
CM 5-6	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	505	281	266	180	125	155	101	224	325
CM 5-7	90	1.30	1"	1"	3/8"	10.0	178	178	140	229	90	180	541	317	302	216	125	155	101	224	325

1 x 220 V, 60 Hz (supply voltage A)

Pump type	Frame size	P_2 [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 1-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 1-4	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 3-3	71	0.60	1"	1"	3/8"	10.5	141	158	125	208	75	165	378	204	180	144	96	137	60	174	234
CM 3-4	80	0.84	1"	1"	3/8"	10.5	141	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM 5-3	80	1.14	1"	1"	3/8"	10.5	141	158	125	208	75	165	418	204	180	144	96	137	60	214	274
CM 5-4	90	1.54	1"	1"	3/8"	10.0	178	178	140	229	90	180	469	245	230	144	125	155	101	224	325

All dimensions are in millimetres unless otherwise stated.

25. Weights and shipping volume

All weights and volumes refer to pumps with standard pipe connections.

Overview

Pump type	Material variant
CME non-self-priming	Cast iron
	Stainless steel
CM non-self-priming	Cast iron
	Stainless steel
CM self-priming	Stainless steel

Related information

CME non-self-priming pumps, cast iron

CME non-self-priming pumps, stainless steel

CM non-self-priming pumps, cast iron

CM non-self-priming pumps, stainless steel

CM self-priming pumps

CME non-self-priming pumps, cast iron

Cast iron (A = cast iron EN-GJL-200)

CME non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 380-500 V, 50/60 Hz (supply voltage S) 3 x 440-480 V, 50/60 Hz (supply voltage T)	CME 1-2	15.47	18.97	0.04
	CME 1-3	15.75	19.25	0.04
	CME 1-4	16.02	19.52	0.04
	CME 1-5	17.10	20.60	0.04
	CME 3-2	15.47	18.97	0.04
	CME 3-3	16.56	20.06	0.04
	CME 3-4	16.82	20.32	0.04
	CME 3-5	17.10	20.60	0.04
	CME 5-2	16.18	19.68	0.04
	CME 5-3	16.46	19.96	0.04
	CME 5-4	19.93	21.66	0.04
	CME 5-5	19.36	21.24	0.05
	CME 10-1	25.31	27.04	0.04
	CME 10-2	28.96	30.69	0.04
	CME 10-3	41.31	44.81	0.08
	CME 15-1	27.65	29.38	0.04
	CME 15-2	39.94	43.44	0.08
	CME 15-3	53.51	57.27	0.21
	CME 25-1	36.06	39.56	0.08
	CME 25-2	52.81	56.56	0.21
1 x 200-240 V, 50/60 Hz (supply voltage U)	CME 1-2	13.65	17.15	0.03
	CME 1-3	13.93	17.43	0.04
	CME 1-4	14.19	17.69	0.04
	CME 1-5	15.32	18.82	0.04
	CME 3-2	13.65	17.15	0.03
	CME 3-3	14.77	18.27	0.04
	CME 3-4	15.04	18.54	0.04
	CME 3-5	15.32	18.82	0.04
	CME 5-2	14.40	17.90	0.03
	CME 5-3	14.67	18.17	0.04
	CME 5-4	18.19	21.69	0.04
	CME 10-1	23.52	25.25	0.04
3 x 200-240 V, 50/60 Hz (supply voltage V)	CME 1-5	16.98	18.86	0.05
	CME 3-3	16.43	18.16	0.04
	CME 3-4	16.70	18.43	0.04
	CME 3-5	16.98	18.86	0.05
	CME 5-2	16.06	17.79	0.04
	CME 5-3	16.33	18.06	0.04
	CME 5-4	20.45	22.18	0.04
	CME 5-5	27.34	30.84	0.08
	CME 10-1	25.18	26.91	0.04
	CME 10-2	34.74	38.24	0.08
	CME 10-3	38.81	42.31	0.08
	CME 15-1	33.44	36.94	0.08
	CME 15-2	37.44	40.94	0.08
	CME 15-3	52.57	56.33	0.21
	CME 25-1	33.52	37.02	0.08
	CME 25-2	51.87	55.63	0.21

CME non-self-priming pumps, stainless steel

Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)

CME non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 380-500 V, 50/60 Hz (supply voltage S) 3 x 440-480 V, 50/60 Hz (supply voltage T)	CME 1-2	16.11	19.61	0.04
	CME 1-3	16.19	19.69	0.04
	CME 1-4	16.52	20.02	0.04
	CME 1-5	17.67	21.17	0.04
	CME 1-6	18.27	21.77	0.04
	CME 1-7	18.35	21.85	0.04
	CME 1-8	18.95	22.45	0.04
	CME 1-9	20.39	22.27	0.05
	CME 3-2	16.11	19.61	0.04
	CME 3-3	17.00	20.50	0.04
	CME 3-4	17.32	20.82	0.04
	CME 3-5	17.67	21.17	0.04
	CME 3-6	19.63	21.51	0.05
	CME 3-7	19.71	21.59	0.05
	CME 3-8	21.71	23.59	0.05
	CME 3-9	21.79	23.67	0.05
	CME 5-2	16.89	20.39	0.04
	CME 5-3	16.97	20.47	0.04
	CME 5-4	18.66	20.39	0.04
	CME 5-5	20.40	22.28	0.05
	CME 5-6	21.00	22.88	0.05
	CME 5-7	29.30	32.80	0.08
	CME 5-8	29.89	33.39	0.08
	CME 10-1	20.70	22.58	0.05
	CME 10-2	23.91	25.79	0.05
	CME 10-3	35.76	39.26	0.08
	CME 10-4	45.88	49.38	0.08
	CME 10-5	47.28	50.78	0.08
	CME 15-1	23.60	25.48	0.05
	CME 15-2	35.44	38.94	0.08
	CME 15-3	48.52	52.28	0.21
	CME 25-1	32.00	35.50	0.08
	CME 25-2	48.31	52.07	0.21

CME non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 200-240 V, 50/60 Hz (supply voltage U)	CME 1-2	14.29	17.79	0.04
	CME 1-3	14.37	17.86	0.04
	CME 1-4	14.69	18.19	0.04
	CME 1-5	15.89	19.39	0.04
	CME 1-6	16.49	19.99	0.04
	CME 1-7	16.57	20.07	0.04
	CME 1-8	17.17	20.67	0.04
	CME 1-9	18.65	22.15	0.04
	CME 3-2	14.29	17.79	0.04
	CME 3-3	15.21	18.71	0.04
	CME 3-4	15.54	19.04	0.04
	CME 3-5	15.89	19.39	0.04
	CME 3-6	17.89	21.39	0.04
	CME 3-7	17.97	21.47	0.04
	CME 5-2	15.11	18.61	0.04
	CME 5-3	15.19	18.69	0.04
	CME 5-4	16.91	20.41	0.04
	CME 10-1	18.92	20.65	0.04
3 x 200-240 V, 50/60 Hz (supply voltage V)	CME 1-5	20.67	22.55	0.05
	CME 1-6	21.27	23.15	0.05
	CME 1-7	21.35	23.23	0.05
	CME 1-8	21.95	23.83	0.05
	CME 1-9	20.91	22.79	0.05
	CME 3-3	20.00	21.73	0.04
	CME 3-4	20.32	22.06	0.04
	CME 3-5	20.67	22.55	0.05
	CME 3-6	20.15	22.03	0.05
	CME 3-7	20.23	22.11	0.05
	CME 3-8	27.44	30.94	0.08
	CME 3-9	27.52	31.02	0.08
	CME 5-2	19.89	21.62	0.04
	CME 5-3	19.97	21.70	0.04
	CME 5-4	19.17	20.90	0.04
	CME 5-5	26.14	29.64	0.08
	CME 5-6	26.74	30.24	0.08
	CME 5-7	26.90	30.40	0.08
	CME 5-8	27.49	30.99	0.08
	CME 10-1	20.57	22.45	0.05
	CME 10-2	29.69	33.19	0.08
	CME 10-3	33.26	36.76	0.08
	CME 10-4	48.53	52.30	0.21
	CME 10-5	49.93	53.69	0.21
	CME 15-1	29.38	32.88	0.08
	CME 15-2	32.94	36.44	0.08
	CME 15-3	47.58	51.34	0.21
	CME 25-1	29.46	32.96	0.08
	CME 25-2	47.37	51.13	0.21

CM non-self-priming pumps, cast iron

Cast iron (A = cast iron EN-GJL-200)

CM non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 220 V, 60 Hz (supply voltage A)	CM 1-2	11.71	14.21	0.02
	CM 1-3	11.98	14.48	0.02
	CM 1-4	12.25	14.75	0.02
	CM 1-5	12.53	15.03	0.02
	CM 3-2	11.71	14.21	0.02
	CM 3-3	11.98	14.48	0.02
	CM 3-4	13.65	16.15	0.03
	CM 3-5	15.03	17.52	0.03
	CM 5-2	13.01	15.51	0.02
	CM 5-3	14.38	16.88	0.02
	CM 5-4	24.22	26.72	0.04
	CM 10-1	23.40	25.90	0.04
1 x 115/230 V, 60 Hz (supply voltage B, B1) 1 x 230 V, 60 Hz (supply voltage B2)	CM 1-2	11.71	14.21	0.02
	CM 1-3	11.98	14.48	0.02
	CM 1-4	12.25	14.75	0.02
	CM 1-5	12.53	15.03	0.02
	CM 3-2	11.71	14.21	0.02
	CM 3-3	11.98	14.48	0.02
	CM 3-4	13.65	16.15	0.03
	CM 3-5	15.03	17.52	0.04
	CM 5-2	13.01	15.51	0.02
	CM 5-3	14.38	16.88	0.04
	CM 5-4	24.22	26.72	0.04
	CM 5-5	24.50	27.00	0.04
	CM 10-1	23.40/22.20 [49)]	25.90/24.70 [49)]	0.08

CM non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 220-230 V, 50 Hz (supply voltage C1)	CM 1-2	11.01	13.51	0.02
	CM 1-3	11.28	13.78	0.02
	CM 1-4	12.25	14.75	0.02
	CM 1-5	12.53	15.03	0.02
	CM 1-6	12.79	15.29	0.03
	CM 1-7	13.07	15.57	0.03
	CM 1-8	14.73	17.23	0.03
	CM 3-2	11.01	13.51	0.02
	CM 3-3	11.98	14.48	0.02
	CM 3-4	12.25	14.75	0.02
	CM 3-5	12.53	15.03	0.02
	CM 3-6	14.19	16.69	0.03
	CM 3-7	16.57	19.07	0.03
	CM 3-8	16.84	19.34	0.03
	CM 5-2	11.61	14.11	0.02
	CM 5-3	11.88	14.38	0.02
	CM 5-4	13.55	16.05	0.03
	CM 5-5	15.93	18.43	0.03
	CM 5-6	22.66	25.16	0.04
	CM 5-7	22.94	25.44	0.04
	CM 5-8	24.51	27.01	0.04
	CM 10-1	22.2	24.7	0.04
	CM 10-2	29.84	32.34	0.04
	CM 10-3	33.95	36.45	0.04
	CM 15-1	28.54	31.04	0.04
	CM 15-2	32.58	35.08	0.04
	CM 25-1	31.94	34.34	0.04

CM non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 1-2	11.01	13.51	0.02
	CM 1-3	11.28	13.78	0.02
	CM 1-4	11.55	14.05	0.02
	CM 1-5	11.82	14.32	0.02
	CM 1-6	12.09	14.59	0.03
	CM 1-7	13.07	15.57	0.03
	CM 1-8	13.34	15.84	0.03
	CM 3-2	11.01	13.51	0.02
	CM 3-3	11.28	13.78	0.02
	CM 3-4	11.55	14.05	0.02
	CM 3-5	12.53	15.03	0.02
	CM 3-6	12.79	15.29	0.03
	CM 3-7	16.17	18.67	0.03
	CM 3-8	16.43	18.93	0.04
	CM 5-2	10.91	13.41	0.02
	CM 5-3	11.88	14.38	0.02
	CM 5-4	15.25	17.75	0.03
	CM 5-5	15.53	18.03	0.03
	CM 5-6	23.27	25.77	0.04
	CM 5-7	23.55	26.05	0.04
	CM 5-8	27.61	30.11	0.05
	CM 10-1	20.90	23.40	0.04
	CM 10-2	30.48	32.98	0.04
	CM 10-3	35.00	37.50	0.04
	CM 10-4	37.32	39.82	0.05
	CM 10-5	38.01	40.51	0.05
	CM 15-1	22.54	25.04	0.04
	CM 15-2	33.63	36.13	0.04
	CM 15-3	48.16	50.66	0.05
	CM 15-4	55.85	58.35	0.08
	CM 25-1	32.98	35.48	0.04
	CM 25-2	47.45	49.95	0.04
	CM 25-3	55.16	57.66	0.05
	CM 25-4	54.77	57.27	0.08

CM non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 1-2	11.01	13.51	0.02
	CM 1-3	11.28	13.78	0.02
	CM 1-4	12.25	14.75	0.02
	CM 1-5	12.53	15.03	0.02
	CM 3-2	11.01	13.51	0.02
	CM 3-3	11.98	14.48	0.02
	CM 3-4	12.25	14.75	0.02
	CM 3-5	16.02	18.52	0.03
	CM 5-2	11.61	14.11	0.02
	CM 5-3	15.38	17.88	0.03
	CM 5-4	26.36	28.86	0.04
	CM 5-5	26.63	29.13	0.04
	CM 10-1	24.40	26.90	0.04
	CM 10-2	34.13	36.63	0.04
	CM 10-3	52.12	54.62	0.05
	CM 15-1	32.83	35.33	0.04
	CM 15-2	50.75	53.25	0.04
	CM 15-3	54.76	57.26	0.05
	CM 25-1	50.11	52.61	0.04
	CM 25-2	54.05	56.55	0.04
3 x 208-230/440-480 V, 60 Hz (supply voltage E, E1) 3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J) 3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)	CM 1-2	11.01 / 11.71 [50)]	13.51 / 14.21 [50)]	0.02
	CM 1-3	11.28 / 11.98 [50)]	13.78 / 14.48 [50)]	0.02
	CM 1-4	12.25	14.75	0.02
	CM 1-5	12.53	15.03	0.02
	CM 3-2	11.01 / 11.71 [50)]	13.51 / 14.21 [50)]	0.02
	CM 3-3	11.98	14.48	0.02
	CM 3-4	12.25	14.75	0.02
	CM 3-5	15.53 / 15.63 [50)]	18.02 / 18.13 [50)]	0.03
	CM 5-2	11.61	14.11	0.02
	CM 5-3	14.88 / 14.98 [50)]	17.38 / 17.48 [50)]	0.03
	CM 5-4	26.53	29.03	0.04
	CM 5-5	26.80	29.3	0.04
	CM 10-1	23.10 / 23.20 [50)]	25.60 / 25.70 [50)]	0.04
	CM 10-2	34.29 / 34.30 [50)]	36.79 / 36.80 [50)]	0.04
	CM 10-3	52.12 / 56.02 [50)]	54.62 / 58.52 [50)]	0.05
	CM 15-1	32.99 / 33.00 [50)]	35.49 / 35.5 [50)]	0.04
	CM 15-2	50.75 / 54.65 [50)]	53.25 / 57.15 [50)]	0.04
	CM 15-3	54.76	57.26	0.05
	CM 25-1	50.11 / 54.01 [50)]	52.61	0.04
	CM 25-2	54.05	56.55	0.04

CM non-self-priming pumps Cast iron (A = cast iron EN-GJL-200)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 575 V, 60 Hz (supply voltage H)	CM 1-4	14.75	17.25	0.03
	CM 1-5	15.03	17.52	0.03
	CM 3-3	14.48	16.98	0.03
	CM 3-4	14.75	17.25	0.03
	CM 3-5	15.03	17.52	0.03
	CM 5-2	14.11	16.61	0.03
	CM 5-3	14.38	16.88	0.03
	CM 5-4	23.88	26.38	0.03
	CM 5-5	26.17	28.67	0.04
	CM 10-1	24.30	26.80	0.04
	CM 10-2	40.32	42.82	0.04
	CM 10-3	52.12	54.62	0.05
	CM 10-5	52.12	54.62	0.08
	CM 15-1	32.35	34.85	0.04
	CM 15-2	50.75	53.25	0.04
	CM 15-3	54.76	57.26	0.08
	CM 25-1	50.11	52.61	0.04
	CM 25-2	54.05	56.55	0.08

49) Values for supply voltage B2.

50) Values for supply voltage O.

CM non-self-priming pumps, stainless steel

Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 220 V, 60 Hz (supply voltage A)	CM 1-2	12.34	14.84	0.02
	CM 1-3	12.42	14.92	0.02
	CM 1-4	12.75	15.25	0.02
	CM 1-5	13.10	15.60	0.02
	CM 1-6	15.09	17.59	0.03
	CM 1-7	16.27	18.77	0.03
	CM 1-8	16.87	19.37	0.04
	CM 1-9	16.95	19.45	0.04
	CM 3-2	12.34	14.84	0.02
	CM 3-3	12.42	14.92	0.02
	CM 3-4	14.15	16.65	0.03
	CM 3-5	15.60	18.10	0.03
	CM 3-6	23.92	26.42	0.04
	CM 3-7	24.00	26.50	0.04
	CM 3-8	24.60	27.10	0.04
	CM 5-2	13.71	16.21	0.03
	CM 5-3	14.89	17.39	0.03
	CM 5-4	22.95	25.45	0.04
	CM 10-1	18.79	21.29	0.04
1 x 115/230 V, 60 Hz (supply voltage B, B1) 1 x 230 V, 60 Hz (supply voltage B2)	CM 1-2	12.34	14.84	0.02
	CM 1-3	12.42	14.92	0.02
	CM 1-4	12.75	15.25	0.02
	CM 1-5	13.10	15.60	0.02
	CM 1-6	15.09	17.59	0.03
	CM 1-7	16.27	18.77	0.04
	CM 1-8	16.87	19.37	0.04
	CM 1-9	16.95	19.45	0.04
	CM 3-2	12.34	14.84	0.02
	CM 3-3	12.42	14.92	0.02
	CM 3-4	14.15	16.65	0.03
	CM 3-5	15.60	18.10	0.04
	CM 3-6	23.92	26.42	0.04
	CM 3-7	24.00	26.50	0.04
	CM 3-8	24.60	27.10	0.04
	CM 5-2	13.71	16.21	0.03
	CM 5-3	14.89	17.39	0.04
	CM 5-4	22.95	25.45	0.04
	CM 5-5	23.30	25.80	0.04
	CM 10-1	18.79/17.59 [51)]	21.29/20.09 [51)]	0.04

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 220-230 V, 50 Hz (supply voltage C1)	CM 1-2	11.64	14.14	0.02
	CM 1-3	11.72	14.22	0.02
	CM 1-4	12.75	15.25	0.02
	CM 1-5	13.10	15.60	0.02
	CM 1-6	13.69	16.19	0.03
	CM 1-7	13.77	16.27	0.03
	CM 1-8	15.77	18.27	0.04
	CM 1-9	15.85	18.35	0.04
	CM 1-10	16.47	18.97	0.04
	CM 1-11	18.64	21.14	0.04
	CM 1-12	19.51	22.01	0.05
	CM 1-13	19.58	22.08	0.05
	CM 1-14	24.29	26.79	0.08
1 x 220-230 V, 50 Hz (supply voltage C1)	CM 3-2	11.64	14.14	0.02
	CM 3-3	12.42	14.92	0.02
	CM 3-4	12.75	15.25	0.02
	CM 3-5	13.10	15.60	0.02
	CM 3-6	15.09	17.59	0.03
	CM 3-7	17.27	19.77	0.03
	CM 3-8	17.87	20.37	0.04
	CM 3-9	22.58	25.08	0.04
	CM 3-10	23.20	25.70	0.05
	CM 3-11	23.27	25.77	0.05
	CM 3-12	25.44	27.94	0.08
	CM 3-13	25.31	28.01	0.08
	CM 3-14	27.69	30.19	0.08
	CM 5-2	12.31	14.81	0.02
	CM 5-3	12.39	14.89	0.02
	CM 5-4	14.12	16.62	0.03
	CM 5-5	15.57	18.07	0.03
	CM 5-6	21.8	24.30	0.04
	CM 5-7	21.88	24.38	0.04
	CM 5-8	23.78	26.28	0.04
	CM 5-9	25.96	28.46	0.04
	CM 10-1	17.59	20.09	0.04
	CM 10-2	24.79	27.29	0.04
	CM 10-3	27.10	29.60	0.04
	CM 15-1	24.48	26.98	0.04
	CM 25-1	26.58	29.08	0.04

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 1-2	11.64	14.14	0.02
	CM 1-3	11.72	14.22	0.02
	CM 1-4	12.05	14.55	0.02
	CM 1-5	12.40	14.90	0.02
	CM 1-6	12.99	15.49	0.03
	CM 1-7	13.77	16.27	0.03
	CM 1-8	14.37	16.87	0.03
	CM 1-9	14.45	16.95	0.03
	CM 1-10	18.57	21.07	0.04
	CM 1-11	18.64	21.14	0.04
	CM 1-12	19.51	22.01	0.05
	CM 1-13	19.58	22.08	0.05
	CM 1-14	19.66	22.16	0.05
	CM 3-2	11.64	14.14	0.02
	CM 3-3	11.72	14.22	0.02
	CM 3-4	12.05	14.55	0.02
	CM 3-5	13.10	15.60	0.02
	CM 3-6	13.69	16.19	0.03
	CM 3-7	17.27	19.77	0.03
	CM 3-8	17.87	20.37	0.04
	CM 3-9	17.95	20.45	0.04
	CM 3-10	23.80	26.30	0.05
	CM 3-11	23.87	26.37	0.05
	CM 3-12	24.74	27.24	0.08
	CM 3-13	28.61	31.11	0.08
	CM 3-14	28.69	31.19	0.08
	CM 5-2	11.61	14.11	0.02
	CM 5-3	12.39	14.89	0.02
	CM 5-4	16.22	18.72	0.00
	CM 5-5	16.57	19.07	0.03
	CM 5-6	22.40	24.90	0.04
	CM 5-7	22.48	24.98	0.04
	CM 5-8	26.88	29.38	0.05
	CM 5-9	26.96	29.46	0.05
	CM 5-10	27.58	30.08	0.05
	CM 5-11	27.65	30.15	0.05
	CM 5-12	31.69	34.19	0.08
	CM 5-13	31.76	34.26	0.08
	CM 10-1	16.29	18.79	0.04

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 10-2	25.43	27.93	0.00
	CM 10-3	29.45	31.95	0.00
	CM 10-4	31.93	34.43	0.00
	CM 10-5	33.32	35.82	0.08
	CM 10-6	45.66	48.16	0.08
	CM 10-7	54.15	56.65	0.08
	CM 10-8	54.35	56.85	0.08
	CM 15-1	18.48	20.98	0.04
	CM 15-2	29.13	31.63	0.04
	CM 15-3	43.17	45.67	0.05
	CM 15-4	51.01	53.51	0.08
	CM 25-1	28.93	31.43	0.04
	CM 25-2	42.96	45.46	0.05
	CM 25-3	50.17	52.67	0.05
	CM 25-4	49.94	52.44	0.08
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 1-2	11.64	14.14	0.02
	CM 1-3	11.72	14.22	0.02
	CM 1-4	12.75	15.25	0.02
	CM 1-5	13.10	15.60	0.02
	CM 1-6	13.69	16.19	0.03
	CM 1-7	13.77	16.27	0.03
	CM 1-8	17.87	20.37	0.04
	CM 1-9	17.95	20.45	0.04
	CM 3-2	11.64	14.14	0.02
	CM 3-3	12.42	14.92	0.02
	CM 3-4	12.75	15.25	0.02
	CM 3-5	16.60	19.10	0.03
	CM 3-6	17.19	19.69	0.03
	CM 3-7	26.14	28.64	0.04
	CM 3-8	26.74	29.24	0.05
	CM 3-9	26.82	29.32	0.05
	CM 5-2	12.31	14.81	0.02
	CM 5-3	15.89	18.39	0.03
	CM 5-4	25.09	27.59	0.04
	CM 5-5	25.44	27.94	0.04
	CM 5-6	26.03	28.53	0.04
	CM 5-7	29.46	31.96	0.05
	CM 5-8	30.06	32.56	0.05
	CM 10-1	19.79	22.29	0.04
	CM 10-2	29.09	31.59	0.04
	CM 10-3	46.58	49.08	0.05
	CM 10-4	51.12	53.62	0.05
	CM 10-5	52.52	55.02	0.08
	CM 15-1	28.78	31.28	0.04
	CM 15-2	46.26	48.76	0.05
	CM 15-3	49.77	52.27	0.05
	CM 25-1	46.06	48.56	0.05
	CM 25-2	49.56	52.06	0.05

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
	CM 1-2	12.34	14.84	0.02
	CM 1-3	12.42	14.92	0.02
	CM 1-4	12.75	15.25	0.02
	CM 1-5	13.10	15.60	0.02
	CM 1-6	13.69	16.19	0.03
	CM 1-7	13.77	16.27	0.03
	CM 1-8	17.87	20.37	0.04
	CM 1-9	17.95	20.45	0.04
	CM 3-2	12.34	14.84	0.02
	CM 3-3	12.42	14.92	0.02
	CM 3-4	12.75	15.25	0.02
	CM 3-5	16.60	19.10	0.03
	CM 3-6	26.23	28.73	0.04
	CM 3-7	26.31	28.81	0.04
	CM 3-8	26.91	29.41	0.05
3 x 208-230/440-480 V, 60 Hz (supply voltage E, E1)	CM 3-9	26.99	29.49	0.05
3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)	CM 5-2	12.31	14.81	0.02
3 x 220-240/380-415 V, 50 Hz; 3 x 220-255/380-440 V, 60 Hz (supply voltage O)	CM 5-3	15.89	18.39	0.03
	CM 5-4	25.26	27.76	0.04
	CM 5-5	25.61	28.11	0.04
	CM 5-6	26.20	28.70	0.04
	CM 5-7	29.46	31.96	0.05
	CM 5-8	30.06	32.56	0.05
	CM 10-1	18.59	21.09	0.04
	CM 10-2	29.25	31.75	0.04
	CM 10-3	50.48	52.98	0.05
	CM 10-4	51.12	53.62	0.05
	CM 10-5	52.52	55.02	0.08
	CM 15-1	28.94	31.44	0.04
	CM 15-2	50.16	52.66	0.05
	CM 15-3	49.77	52.27	0.05
	CM 25-1	49.96	52.46	0.05
	CM 25-2	49.56	52.06	0.05

CM non-self-priming pumps Stainless steel (I = EN 1.4301/AISI 304 and G = EN 1.4401/AISI 316)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
3 x 575 V, 60 Hz (supply voltage H)	CM 1-4	16.15	18.65	0.03
	CM 1-5	16.50	19.00	0.03
	CM 1-6	17.09	19.59	0.03
	CM 1-7	17.17	19.67	0.03
	CM 1-8	17.77	20.27	0.04
	CM 1-9	24.34	26.84	0.04
	CM 3-3	15.82	18.32	0.03
	CM 3-4	16.15	18.65	0.03
	CM 3-5	16.50	19.00	0.03
	CM 3-6	23.58	26.08	0.04
	CM 3-7	25.68	28.18	0.04
	CM 3-8	26.27	28.77	0.05
	CM 3-9	26.35	28.85	0.05
	CM 5-2	15.71	18.21	0.03
	CM 5-3	15.79	18.29	0.03
	CM 5-4	22.61	25.11	0.03
	CM 5-5	24.97	27.47	0.04
	CM 5-6	25.57	28.07	0.04
	CM 5-7	32.36	34.86	0.05
	CM 5-8	32.96	35.46	0.05
	CM 10-1	19.69	22.19	0.04
	CM 10-2	35.27	37.77	0.04
	CM 10-3	46.58	49.08	0.05
	CM 10-4	47.42	49.92	0.05
	CM 15-1	28.30	30.80	0.04
	CM 15-2	46.26	48.76	0.05
	CM 15-3	49.77	52.27	0.08
	CM 25-1	46.06	48.56	0.05
	CM 25-2	49.56	52.06	0.08

51) Values for supply voltage B2.

CM self-priming pumps

Stainless steel (I = EN 1.4301/AISI 304)

CM self-priming pumps Stainless steel (I = EN 1.4301/AISI 304)	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
1 x 220 V, 60 Hz (supply voltage A)	CM 1-3	13.86	16.36	0.03
	CM 1-4	14.02	16.52	0.03
	CM 3-3	13.86	16.36	0.03
	CM 3-4	15.42	17.92	0.03
	CM 5-3	16.33	18.83	0.03
	CM 5-4	24.22	26.72	0.04
1 x 220-230 V, 50 Hz (supply voltage C1)	CM 1-3	13.15	15.65	0.03
	CM 1-4	14.02	16.52	0.03
	CM 1-5	14.53	17.03	0.03
	CM 1-6	14.81	17.31	0.03
	CM 3-3	13.86	16.36	0.03
	CM 3-4	14.02	16.52	0.03
	CM 3-5	14.53	17.03	0.03
	CM 3-6	16.21	18.71	0.04
	CM 5-3	13.83	16.33	0.03
	CM 5-4	15.39	17.89	0.03
	CM 5-5	17.01	19.51	0.04
	CM 5-6	22.92	25.42	0.04
	CM 5-7	23.33	25.83	0.05

26. Electrical data

Speed-controlled motors

3 x 380-500 V, 50/60 Hz (supply voltage S)

Frame size	P_2		Service factor	$I_{1/1}$	Service factor current	Cos $\varphi_{1/1}$
	[kW]	[hp]		[A]	[A]	
71A	0.55	0.75	-	1.35 - 1.30	-	0.77 - 0.61
80B	1.10	1.50	-	2.20 - 1.90	-	0.89 - 0.79
90C	1.50	2.00	-	2.90 - 2.40	-	0.92 - 0.85
90D	2.20	3.00	-	4.15 - 3.40	-	0.93 - 0.87
100A	3.00	4.00	-	5.80 - 4.80	-	0.91 - 0.86
112C	4.00	5.00	-	7.60 - 6.20	-	0.92 - 0.87
112E	5.50	7.50	-	10.3 - 8.20	-	0.92 - 0.88
132F	7.50	10.0	-	14.10 - 11.20	-	0.93 - 0.89

3 x 440-480 V, 50/60 Hz (supply voltage T)

Frame size	P_2		Service factor	$I_{1/1}$	Service factor current	Cos $\varphi_{1/1}$
	[kW]	[hp]		[A]	[A]	
71A	0.55	0.75	1.25	1.35	1.70	0.68
80B	1.10	1.50	1.15	2.05	2.40	0.84
90C	1.50	2.00	1.15	2.65	3.00	0.87
90D	2.20	3.00	1.15	3.80	4.30	0.89
112C	3.70	5.00	1.15	6.20 - 5.80	7.00 - 6.60	0.90 - 0.88
112E	5.50	7.50	1.15	9.10 - 8.50	10.4 - 9.70	0.91 - 0.89
132F	7.50	10.00	1.15	12.40 - 11.50	14.20 - 13.00	0.91 - 0.90

1 x 200-240 V, 50/60 Hz (supply voltage U)

Frame size	P_2		Service factor	$I_{1/1}$	Service factor current	Cos $\varphi_{1/1}$
	[kW]	[hp]		[A]	[A]	
71A	0.55	0.75	-	3.45 - 2.90	-	0.98
80B	1.10	1.50	-	6.70 - 5.60	-	0.99
90C	1.50	2.00	-	9.10 - 7.60	-	0.99

3 x 200-240 V, 50/60 Hz (supply voltage V)

Frame size	P_2		Service factor	$I_{1/1}$	Service factor current	Cos $\varphi_{1/1}$
	[kW]	[hp]		[A]	[A]	
80B	1.10	1.50	-	4.10 - 3.50	-	0.92
90C	1.50	2.00	-	5.40 - 4.60	-	0.92
100A	2.20	3.00	-	7.80 - 6.50	-	0.94
100A	3.00	4.00	-	10.50 - 8.80	-	0.94
112C	4.00	5.00	-	14.10 - 11.80	-	0.94
132F	5.50	7.50	-	19.60 - 16.30	-	0.94

Mains-operated motors, 50 Hz

1 x 220-240 V, 50 Hz (supply voltage C1)

Frame size	P_2 [kW]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71A	0.3	2.1 / 2.05	0.99 - 0.99	67.1 - 67.1	7.63 - 8.19	2800-2820
71B	0.5	3.3 / 3.15	0.99 - 0.99	73 - 73	10.4 - 10.86	2750-2780
80B	0.67	4.3 / 4.15	0.99 - 0.98	76.1 - 76.1	15.86 - 16.61	2810-2830
80C	0.9	5.72 / 5.6	0.98 - 0.96	78.5 - 78.5	21.41 - 22.57	2790-2810
90SE	1.3	8.2 / 7.95	0.97 - 0.97	80.7 - 80.7	40.95 - 43.81	2880-2890
90LE	1.7	10.2 / 9.75	0.99 - 0.99	81.9 - 81.9	44.2 - 46.6	2870-2880

3 x 220-240/380-415 V, 50 Hz (supply voltage F)

Frame size	P_2 [kW]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
1A [52)]	0.46	2.0 - 2.2 / 1.0 - 1.2	0.83 - 0.75	73.4 - 73.6	9.8 - 11.7 / 4.9 - 6.4	2770-2820
71B [52)]	0.60	2.5 - 2.6 / 1.5 - 1.5	0.83 - 0.74	78.6 - 78.2	9.8 - 16.6 / 9.0 - 15.5	2820-2860
71B [52)]	0.65	2.8 - 3.1 / 1.6 - 1.8	0.82 - 0.72	73.9 - 72.9	16.2 - 19.2 / 9.3 - 11.2	2770-2820
80C	1.1	4.4 - 4.5 / 2.55 - 2.6	0.82 - 0.74	83.1 - 83.4	31.7 - 35.1 / 18.4 - 20.3	2830-2860
90SD	1.50	5.70 - 5.70 / 3.30 - 3.30	0.84 - 0.78	84.2 - 84.2	40.5 - 45.0 / 23.4 - 26.1	2890-2910
90LE	2.20	8.00 - 8.00 / 4.60 - 4.60	0.86 - 0.80	85.9 - 85.9	67.2 - 73.6 / 38.6 - 42.3	2890-2910
100LC	3.0	11.0 - 11.0 / 6.30 - 6.30	0.87 - 0.82	87.2 - 87.1	92.4 - 101.2 / 52.9 - 58.0	2900-2920
112MC	4.0	13.8 - 13.2 / 8.00 - 7.65	0.89 - 0.86	89.2 - 89.2	154.6 - 162.4 / 89.6 - 94.1	2920-2940
132SC	5.5	19.0 - 19.0 / 11.0 - 11.0	0.87 - 0.82	89.9 - 90.2	212.8 - 243.2 / 123.2 - 140.8	2920-2940
132SB	7.5	25.0 - 24.2 / 14.4 - 14.0	0.88 - 0.82	90.1 - 90.4	195.0 - 220.2 / 112.3 - 127.4	2910-2920

52) Available with IE3 motor.

Mains-operated motors, 60 Hz

1 x 220 V, 60 Hz (supply voltage A)

Frame size	P_2 [kW]	P_2 [hp]	Service factor	$I_{1/1}$ [A]	Service factor current	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71B	0.60	0.80	1	4.1	1	0.98	71	16.8	3300
80A	0.84	1.1	1	5.8	1	0.98	69.8	18.6	3150
80B	1.14	1.5	1	7.35	1	0.99	73.5	19.8	3270
90SB	1.54	2.0	1	9.8	1	0.98	74.8	37.2	3330

1 x 115/230 V, 60 Hz (supply voltage B, B1)

Frame size	P_2 [kW]	P_2 [hp]	Service factor	$I_{1/1}$ [A]	Service factor current	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71BA	0.60	0.8	1	7.6 / 3.9	7.6 / 3.9	0.76	69	19.8 / 10.1	3240
80AA	0.78	1.06	1	10.6 / 5.4	10.6 / 5.4	0.65	69	31.8 / 16.2	3240
80BA	1.10	1.50	1	14.6 / 7.3	14.6 / 7.3	0.94	71	46.7 / 23.4	3320
90CC	1.50	2.03	1	18.8 / 9.8	18.8 / 9.8	0.97	72.9	75.2 / 39.2	3360

1 x 230 V, 60 Hz (supply voltage B2)

Frame size	P_2 [kW]	P_2 [hp]	Service factor	$I_{1/1}$ [A]	Service factor current	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71BA	0.60	0.8	1	3.9	3.9	0.76	66	10.1	3240
80AA	0.78	1.06	1	5.4	5.4	0.65	68	16.2	3240
80BA	1.10	1.50	1	7.3	7.3	0.94	69	23.4	3320
90CC	1.50	2.03	1	9.8	9.8	0.97	69	39.2	3360

3 x 208-230/440-480 V, 60 Hz (supply voltage E, E1)

Frame size	P_2 [kW]	P_2 [hp]	Service factor	$I_{1/1}$ [A]	Service factor current	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71AA	0.43	0.58	1	1.9 - 1.7 / 1.0 - 0.8	1.9 - 1.7 / 1.0 - 0.8	0.85 - 0.81 / 0.85 - 0.81	76.0 - 78.6	11.2 - 11.1 / 5.9 - 5.2	3360-3420
71BA [53)]	0.74	1.0	1	3.4 - 3.6 / 1.7 - 1.8	3.4 - 3.6 / 1.7 - 1.8	0.89 - 0.83 / 0.89 - 0.83	76.0 - 78.4	20.1 - 23.4 / 10.0 - 11.7	3220-3370
80CB	1.1	1.47	1	5.2 - 5.1 / 2.55 - 2.65	5.2 - 5.1 / 2.55 - 2.65	0.81 - 0.73 / 0.81 - 0.73	84.8 - 84.7	35.4 - 39.3 / 17.3 - 20.4	3430-3470
90HA	2.20	2.95	1	8.50 - 8.20 / 4.10 - 4.25	8.50 - 8.20 / 4.10 - 4.25	0.85 - 0.82	86.5 - 86.5	79.05 - 80.36 / 40.18 - 41.65	3500-3520
100DA	2.9	3.9	1	10.8 - 10.5 / 5.25 - 5.3	10.8 - 10.5 / 5.25 - 5.3	0.85 - 0.78 / 0.85 - 0.78	88.0 - 88.2	129.6 - 91.4 / 63.0 - 46.1	3520-3530
112CA	4.0	5.36	1	14.6 - 13.6 / 6.95 - 6.65	14.6 - 13.6 / 6.95 - 6.65	0.9 - 0.86 / 0.9 - 0.86	88.6 - 88.5	131.4 - 156.4 / 62.6 - 76.5	3530-3540
132DA [54)]	5.5	7.37	1	20.4 - 19.8 / 9.95 - 9.85	20.4 - 19.8 / 9.95 - 9.85	0.84 - 0.78 / 0.84 - 0.78	90.1 - 90.0	259.1 - 277.2 / 126.4 - 137.9	3540-3550
132EB	6.4	8.57	1	23.6 - 22.8 / 11.6 - 11.6	23.6 - 22.8 / 11.6 - 11.6	0.84 - 0.78 / 0.84 - 0.78	90.1 - 89.9	144.0 - 143.6 / 70.8 - 73.1	3530-3550

53) The motor is rated for 3 x 220-230/440-480 V, 60 Hz, but can be used at 208 V.

54) The motor is rated for 3 x 220-230/440-480 V, 60 Hz.

3 x 575 V, 60 Hz (supply voltage H)

Frame size	P_2 [kW]	P_2 [hp]	Service factor	$I_{1/1}$ [A]	Service factor current	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71AA	0.43	0.58	1	0.7	1	0.84	-	4.55	3340
80CB	1.10	1.50	1	1.72	1	0.78	-	12.6	3450
90CD	1.50	2.00	1	2.20	1	0.82	-	21.1	3530
90HA	2.20	2.95	1	3.25	1	0.83	-	25.4	3510
100BB	3.0	4.0	1	4.25	1	0.83	-	63.8	3540
112CA	4.0	5.5	1	5.35	1	0.84	-	99.2	3550
132DA	5.5	7.5	1	7.55	1	0.81	-	116.3	3550
132FA	7.5	10	1	9.5	1	0.87	-	90.3	3530

Mains-operated motors, 50/60 Hz

3 x 220-240/380-415 V, 50 Hz and 3 x 220-255/380-440 V, 60 Hz (supply voltage O)

Frame size	P_2 [kW]	Frequency [Hz]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71B [55)]	0.43	50	2.3 - 2.6 / 1.3 - 1.5	0.72 - 0.60	78 - 76	11.5 - 15.6 / 6.5 - 9.0	2870-2890
	0.74	60	3.1 - 2.75 / 1.78 - 1.58	0.87 - 0.84	75 - 77	15.5 - 16.5 / 8.9 - 9.5	3280-3350
80C	0.64	50	3.75 - 4.75 / 2.16 - 2.75	0.56 - 0.43	83.1 - 78.6	36.0 - 42.8 / 20.7 - 24.8	2920-2930
	1.1	60	4.30 - 4.25 / 2.48 - 2.44	0.83 - 0.72	84.6 - 85.4	28.4 - 33.2 / 16.4 - 19.0	3420-3470
90HA	1.27	50	5.60 - 6.25 / 3.30 - 3.60	0.70 - 0.59	83.5 - 83.5	61.6 - 71.9 / 36.3 - 41.4	2960-2970
	2.2	60	7.70 - 7.20 / 4.45 - 4.15	0.90 - 0.84	86.5 - 86.5	57.8 - 67.0 / 33.4 - 38.6	3470-3500
100LC	1.68	50	7.0 - 7.90 / 4.05 - 4.55	0.73 - 0.62	88.1 - 86.2	98.0 - 110.6 / 56.7 - 63.7	2950-2960
	2.90	60	10.2 - 9.10 / 5.85 - 5.25	0.90 - 0.85	86.9 - 88.5	88.7 - 88.3 / 50.9 - 50.9	3490-3520
112MC	2.3	50	9.95 - 10.6 / 5.75 - 6.1	0.73 - 0.63	88.4 - 86.7	159.2 - 173.8 / 92.0 - 100.0	2970-2970
	4	60	14.0 - 12.8 / 8.05 - 7.35	0.89 - 0.84	89.1 - 89.7	147.0 - 169.0 / 84.5 - 97.0	3520-3540
132SC	3.18	50	12.4 - 13.0 / 7.20 - 7.45	0.78 - 0.69	90.0 - 89.2	213.3 - 236.6 / 123.8 - 135.6	2960-2960
	5.5	60	19.0 - 16.8 / 11.0 - 9.75	0.91 - 0.86	89.5 - 90.4	201.4 - 231.0 / 116.6 - 134.1	3510-3530
132SD	3.7	50	16.4 - 18.4 / 9.45 - 10.6	0.69 - 0.57	89.6 - 87.8	272.2 - 311.0 / 156.9 - 179.1	2960-2970
	6.4	60	22.2 - 20.4 / 12.8 - 11.8	0.89 - 0.82	90.0 - 90.2	217.6 - 265.2 / 125.4 - 153.4	3510-3540

[55)] The motor is rated for 3 x 220-230/380-400 V, 50 Hz and 3 x 220-255/380-440 V, 60 Hz, but can be used at 415 V, 50 Hz.

3 x 380-415 V, 50 Hz and 3 x 440-480 V, 60 Hz (supply voltage J)

Frame size	P_2 [kW]	Frequency [Hz]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71AA	0.25	50	0.55 - 0.65	0.77 - 0.71	77 - 76	4.0 - 5.1	2870-2890
	0.43	60	0.95 - 0.80	0.85 - 0.82	76.0 - 78.6	5.6 - 5.2	3360-3420
71BA	0.43	50	1.4 - 1.5	0.76 - 0.66	77 - 76	7.7 - 9.0	2860-2890
	0.74	60	1.7 - 1.8	0.89 - 0.83	76.0 - 78.4	10.0 - 11.7	3220-3380
80CB	0.64	50	1.82 - 1.98	0.67 - 0.56	84.2 - 83.1	16.9 - 19.2	2910-2920
	1.10	60	2.22 - 2.22	0.8 - 0.72	84.9 - 85.4	16.7 - 19.3	3440-3470
90HA	1.27	50	3.30 - 3.60	0.70 - 0.59	83.5 - 83.5	36.3 - 41.4	2960-2970
	2.2	60	4.15 - 4.00	0.84 - 0.80	86.5 - 86.5	38.6 - 42.0	3500-3530
100DA	1.68	50	4.05 - 4.60	0.73 - 0.62	88.1 - 86.2	48.6 - 62.1	2950-2960
	2.9	60	5.25 - 5.3	0.85 - 0.79	88.5 - 88.2	63.0 - 46.1	3520-3540
112CA	2.3	50	5.2 - 5.1	0.8 - 0.74	86.4 - 88.8	80.6 - 78.3	2960-2970
	4.0	60	6.95 - 6.65	0.88 - 0.84	88.7 - 88.5	84.1 - 89.1	3540-3550
132DA	3.18	50	7.2 - 7.45	0.78 - 0.69	90.0 - 89.2	123.8 - 135.6	2960-2960
	5.5	60	9.7 - 9.45	0.86 - 0.82	90.4 - 90.4	133.4 - 145.5	3530-3550
132EB	3.7	50	9.45 - 10.6	0.69 - 0.57	89.6 - 87.8	156.9 - 179.1	2960-2970
	6.4	60	11.8 - 12.0	0.82 - 0.74	90.6 - 90.2	153.4 - 174.0	3540-3550

3 x 200/346 V, 50 Hz and 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Frame size	P_2 [kW]	Frequency [Hz]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
71AA	0.25	50	1.6 / 1.0	0.65	77	11.7 / 7.3	2900
	0.43	60	2.0 - 1.8 / 1.15 - 1.05	0.85 - 0.8	76.0 - 78.6	11.8 - 11.7 / 6.8 - 6.8	3370-3424
71B	0.43	50	3.6 / 2.0	0.53	77	19.8 / 11.0	2904
	0.74	60	3.3 - 3.5 / 2.0 - 2.2	0.83 - 0.76	76 - 78.4	19.5 - 22.8 / 11.8 - 14.3	3380-3429
80C	0.74	50	5.95 / 3.45	0.46	78.1	37.5 / 21.7	2920
	1.28	60	5.5 - 5.65 / 3.15 - 3.25	0.80 - 0.71	84.4 - 84.3	34.4 - 37.9 / 19.7 - 21.8	3410-3450
90LE	1.27	50	6.75 / 3.90	0.62	83.5	77.6 / 44.9	2960
	2.2	60	8.60 - 8.00 / 5.00 - 4.60	0.89 - 0.84	86.5 - 86.5	66.2 - 72.8 / 38.5 - 41.9	3490-3510
100LC	1.68	50	7.45 / 4.30	0.73	88.1	59.6 / 34.4	2950
	2.90	60	10.8 - 10.4 / 6.25 - 6.0	0.91 - 0.87	86.9 - 88.1	81.0 - 96.7 / 46.9 - 55.8	3490-3510

Frame size	P_2 [kW]	Frequency [Hz]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	I_{start} [A]	Speed [min^{-1}]
112MC	2.3	50	10.2 / 5.9	0.77	87.3	157.1 / 90.9	2960
	4	60	14.6 - 13.6 / 8.45 - 7.85	0.90 - 0.87	88.6 - 89.1	135.8 - 148.9 / 78.6 - 86.0	3520-3540
132SC	3.18	50	13.6 / 7.85	0.78	90.0	152.3 / 87.9	2960
	5.5	60	21.0 - 20.0 / 12.1 - 11.6	0.91 - 0.88	89.5 - 90.1	214.2 - 296.0 / 123.4 - 171.7	3510-3520
132SD	3.7	50	20.0 / 11.6	0.63	88.8	240.0 / 139.2	2970
	6.4	60	24.6 - 23.6 / 14.2 - 13.8	0.87 - 0.82	90.1 - 90.6	270.6 - 290.3 / 156.2 - 169.7	3520-3520

Additional data for speed-controlled motors

Single-phase supply voltage

1 x 200-240 V, 50/60 Hz (supply voltage U).

Recommended fuse size

Motor size [kW]	Min. [A]	Max. [A]
0.12 - 0.75	6	10
1.1 - 1.5	10	16

Motor size [kW]	Min. [A]	Max. [A]
0.25 - 0.75	6	10
1.1 - 1.5	10	16

You can use standard as well as quick-blow or slow-blow fuses.

Leakage current

Earth leakage current less than 3.5 mA, AC.

Earth leakage current less than 10 mA, DC.

The leakage currents are measured in accordance with EN 61800-5-1:2007.

Three-phase supply voltage

3 x 380-500 V, 50/60 Hz (supply voltage S)

3 x 440-480 V, 50/60 Hz (supply voltage T)

Recommended fuse size

Motor size [kW]	Min. [A]	Max. [A]
0.12 - 1.1	6	6
1.5	6	10
2.2	6	16
3	10	16
4	13	16
5.5	16	32
7.5	20	32
11	32	32

You can use standard as well as quick-blow or slow-blow fuses.

Leakage current, AC

Speed [min^{-1}]	Power [kW]	Mains voltage [V]	Leakage current [mA]
2900-4000	0.25 - 2.2	≤ 400	< 3.5
		> 400	< 5
	3 - 5.5	≤ 400	< 3.5
		> 400	< 3.5
	7.5 - 11	≤ 400	< 3.5
		> 400	< 5

Speed [min^{-1}]	Power [kW]	Mains voltage [V]	Leakage current [mA]
4000-5900	0.25 - 2.2	≤ 400	< 3.5
		> 400	< 5
	3 - 5.5	≤ 400	< 3.5
		> 400	< 3.5
	7.5 - 11	≤ 400	< 3.5
		> 400	< 5

The leakage currents are measured in accordance with EN 61800-5-1:2007.

Inputs and outputs

Earth reference, GND

All voltages refer to GND.

All currents return to GND.

Absolute maximum voltage and current limits

Exceeding the following electrical limits may result in severely reduced operating reliability and motor life:

Relay 1:

Maximum contact load: 250 VAC, 2 A or 30 VDC, 2 A.

Relay 2:

Maximum contact load: 30 VDC, 2 A.

GENI terminals: -5.5 to +9.0 VDC or less than 25 mADC.

Other input or output terminals: -0.5 to +26 VDC or less than 15 mADC.

Digital inputs, DI

Internal pull-up current greater than 10 mA at V_i equal to 0 VDC.

Internal pull-up to 5 VDC (currentless for V_i greater than 5 VDC).

Low logic level: V_i less than 1.5 VDC.

High logic level: V_i greater than 3.0 VDC.

Hysteresis: No.

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Maximum cable length: 500 m.

Open-collector digital outputs, OC

Current sinking capability: 75 mADC, no current sourcing.

Load types: Resistive or/and inductive.

Low-state output voltage at 75 mADC: Maximum 1.2 VDC.

Low-state output voltage at 10 mADC: Maximum 0.6 VDC.

Overcurrent protection: Yes.

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Maximum cable length: 500 m.

Analog inputs, AI

Voltage signal ranges:

- 0.5 - 3.5 VDC, AL AU.
- 0-5 VDC, AU.
- 0-10 VDC, AU.

Voltage signal: R_i greater than 100 kΩ at 25 °C.

Leak currents may occur at high operating temperatures. Keep the source impedance low.

Current signal ranges:

- 0-20 mADC, AU.
- 4-20 mADC, AL AU.

Current signal: R_i equal to 292 Ω.

Current overload protection: Yes. Change to voltage signal.

Measurement tolerance: 0/+ 3 % of full scale (maximum-point coverage).

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Maximum cable length: 500 m, excl. potentiometer.

Potentiometer connected to +5 V, GND, any AI:

Use maximum 10 kΩ.

Maximum cable length: 100 m.

Analog output, AO

Current sourcing capability only.

Voltage signal:

- Range: 0-10 VDC.
- Minimum load between AO and GND: 1 kΩ.
- Short-circuit protection: Yes.

Current signal:

- Ranges: 0-20 and 4-20 mADC.
- Maximum load between AO and GND: 500 Ω.
- Open-circuit protection: Yes.

Tolerance: 0/+ 4 % of full scale (maximum-point coverage).

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Maximum cable length: 500 m.

Pt100/1000 inputs, PT

Temperature range:

- Minimum -30 °C. 88 Ω / 882 Ω.
- Maximum 180 °C. 168 Ω / 1685 Ω.

Measurement tolerance: ± 1.5 °C.

Measurement resolution: < 0.3 °C.

Automatic range detection. Pt100 or Pt1000: Yes.

Sensor fault alarm: Yes.

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Use Pt100 for short wires.

Use Pt1000 for long wires.

LiqTec sensor inputs *

Use Grundfos LiqTec sensor only.

Screened cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Grundfos Digital Sensor input and output, GDS *

Use Grundfos Digital Sensor only.

* Only applicable for TPE, TPED Series 2000 and TPE3, TPE3 D pumps.

Power supplies

+5 V:

- Output voltage: 5 VDC - 5%/+5%.
- Maximum current: 50 mADC, sourcing only.
- Overload protection: Yes.

+24 V:

- Output voltage: 24 VDC - 5%/+5%.
- Maximum current: 60 mADC, sourcing only.
- Overload protection: Yes.

Digital outputs, relays

Potential-free changeover contacts.

Minimum contact load when in use: 5 VDC, 10 mA.

Screened cable: 0.5 - 2.5 mm^2, 28-12 AWG.

Maximum cable length: 500 m.

Bus input

Grundfos GENIbus protocol, RS-485.

Screened 3-core cable: 0.5 - 1.5 mm^2, 28-16 AWG.

Maximum cable length: 500 m.

EMC (electromagnetic compatibility)

Standard used: EN 61800-3.

The table below indicates the emission category of the motor.

C1: Fulfils the requirements for residential areas.

C3: Fulfils the requirements for industrial areas.

Motor [kW]	Emission category	
	1450-2000 min^{-1}	2900-4000 min^{-1} 4000-5900 min^{-1}
0.25	C1	C1
0.37	C1	C1
0.55	C1	C1
0.75	C1	C1
1.1	C1	C1
1.5	C1	C1
2.2	C1	C1
3	C1	C1
4	C1	C1
5.5	C3/C1 [56)]	C1
7.5	C3/C1 [56)]	C3/C1 [56)]
11	-	C3/C1 [56)]

[56)] C1, if equipped with an external Grundfos EMC filter.

Immunity: Fulfils the requirements for industrial areas.

Contact Grundfos for further information.

Enclosure class

Standard: IP55 (IEC 34-5).

Insulation class

F (IEC 85).

Standby power consumption

5-10 W.

Cable entries

Motor [kW]	Number and size of cable entries	
	2900-4000 min^{-1}	4000-5900 min^{-1}
0.25 - 1.5	4 x M20	4 x M20
2.2	4 x M20	4 x M20
3-4	1 x M25 + 4 x M20	1 x M25 + 4 x M20
5.5	1 x M25 + 4 x M20	1 x M25 + 4 x M20
7.5 - 11	1 x M32 + 5 x M20	1 x M32 + 5 x M20

Cable glands delivered with the pump

Motor [kW]	Quantity	Thread size	Cable diameter [mm]
0.25 - 2.2	2	M20 x 1.5	5
	1		7-14
3 - 5.5	4	M20 x 1.5	5
	1	M25 x 1.5	9-18
7.5 - 11	4	M20 x 1.5	5
	1	M32 x 1.5	14-25

Torques

Terminal	Thread size	Maximum torque [Nm]
L1, L2, L3, L, N	M4	1.8
NC, C1, C2, NO	M2.5	0.5
1-26 and A, Y, B	M2	0.5

Sound pressure level

Motor [kW]	Maximum speed stated on nameplate [min^{-1}]	Speed [min^{-1}]	Sound pressure level ISO 3743 [dB(A)]	
			1-phase motors	3-phase motors
0.25 - 0.75	2000	1500	38	38
		2000	42	42
	4000	3000	53	53
		4000	58	58
	5900	4000	58	58
		5900	68	68
1.1	2000	1500		38
		2000		42
	4000	3000	53	53
		4000	58	58
	5900	4000	58	58
		5900	68	68

Motor [kW]	Maximum speed stated on nameplate [min^{-1}]	Speed [min^{-1}]	Sound pressure level ISO 3743 [dB(A)]	
			1-phase motors	3-phase motors
1.5	2000	1500		39
		2000		46
	4000	3000	57	57
		4000	64	64
	5900	4000	58	58
		5900	68	68
2.2	2000	1500		47
		2000		
	4000	3000		57
		4000		64
	5900	4000		58
		5900		68
3	2000	1500		48
		2000		54
	4000	3000		59
		4000		67
	5900	4000		63
		5900		73
4	2000	1500		48
		2000		55
	4000	3000		60
		4000		67
	5900	4000		63
		5900		73
5.5	2000	1500		54
		2000		60
	4000	3000		60
		4000		68
	5900	4000		63
		5900		73
7.5	2000	1500		55
		2000		61
	4000	3000		64
		4000		72
	5900	4000		68
		5900		79
11	4000	3000		65
		4000		73
	5900	4000		69
		5900		79

The grey fields indicate that the motor is not available in this MGE motor range.

27. Customisation

Although the Grundfos CME and CM product range offers a number of pumps for different applications, customers require specific pump solutions to satisfy their needs. Below are the options available for customising the CME and CM pumps.

Contact Grundfos for further information or for requests other than the ones mentioned below.

Motors

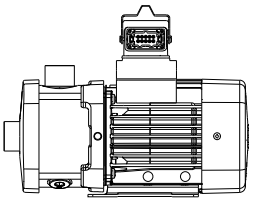
Motor with multiplug connection

Mains-operated motors fitted with a Harting® 10-pin multiplug connection, HAN 10 ES, enable easy connection to the mains.

Note that for CME pumps we offer the solutions shown in the section on plug-and-pump solution for CME pumps.

The purpose of a multiplug connection is to facilitate the electrical installation and service of the pump. The multiplug functions as a plug-and-pump device.

The figure below shows the position of the multiplug on the mains-operated motor.



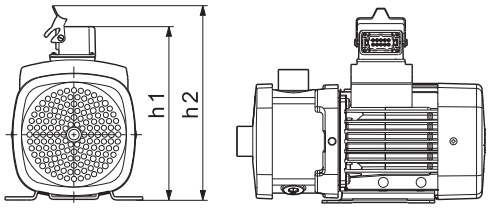
TM045846

Motor with a multiplug connection

TM020470

Multiplug logo

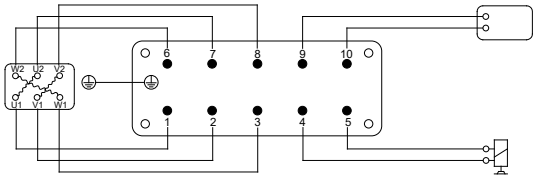
Dimensions



TM045847

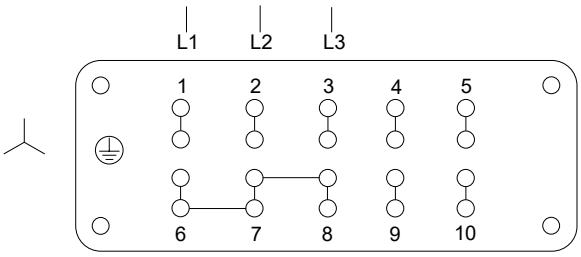
Pump type	Frame size	h1	h2
CM 1 CM 3 CM 5	71	206	237
	80	206	237
	90	263	294
	100	283	314
CM 10 CM 15 CM 25	71	231	262
	80	231	262
	90	273	304
	100	283	314
	112	309	340
	132	309	340

Plug connections



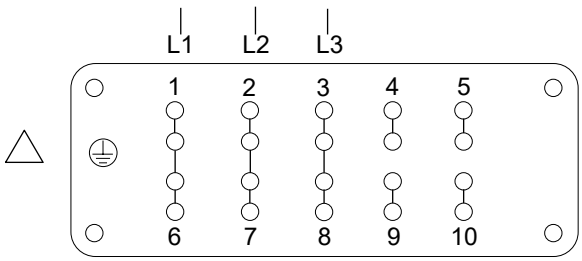
TM018702

Plug connection from motor



TM018703

Plug connection for star connection



TM018704

Plug connection for delta connection

Note that wire bridges for connections are located in the plug.

Related information

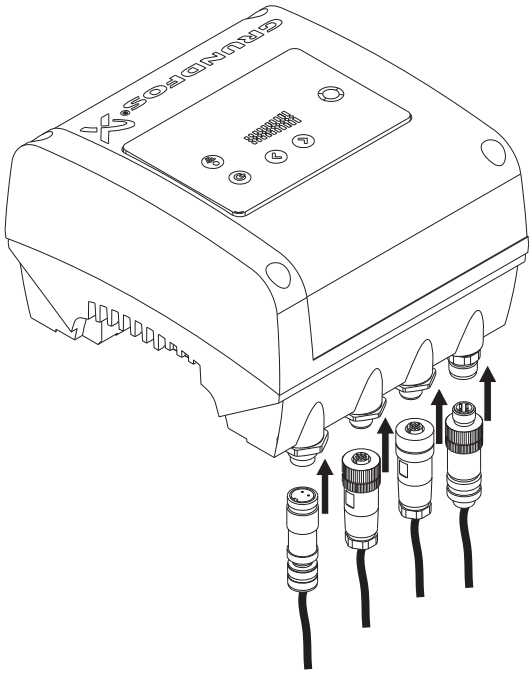
Plug-and-pump solution for CME pumps

Plug-and-pump solution for CME pumps

To facilitate electrical installation and service, we offer plug-and-pump solutions for CME pumps. These customised solutions are only available on request. Please contact Grundfos.

CME pumps can be fitted with receptacles in the cable entries of the motor for fast cable connection. Simply plug and pump.

The figure below shows how the CME pumps are connected.



TM057677

Fast connection of CME pumps

Motor with anti-condensation heater

CM

TM032440

Mains-operated motor with an anti-condensation heater

In applications where condensation in the motor may occur, we recommend that you install a motor with an anti-condensation heater on the stator coil ends. The heater keeps the motor temperature higher than the ambient temperature and prevents condensation.

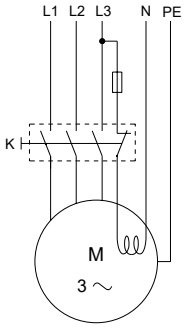
In areas with ambient temperatures below 0 °C, we recommend that you always use motors with an anti-condensation heater.

High humidity may cause condensation in the motor. Slow condensation occurs as a result of a decreasing ambient temperature; rapid condensation occurs as a result of shock cooling caused by direct sunlight followed by rain.

Note that rapid condensation is not to be confused with the phenomenon which occurs when the pressure inside the motor is lower than the atmospheric pressure. In such cases, moisture is sucked from the atmosphere into the motor through, for example, bearings and housings.

In applications with constant humidity levels above 85 %, the drain holes in the drive-end flange must be open. This changes the enclosure class to IPX5. If IP55 protection is required due to operation in dusty environments, we recommend that you install a motor with an anti-condensation heater.

The figure below shows a typical circuit of a three-phase motor with an anti-condensation heater.



TM034058

Three-phase motor with an anti-condensation heater

Legend

Symbol	Designation
K	Contactor
M	Motor

Note that you must connect the anti-condensation heater to the power supply so that it is on when the motor is switched off.

The following motor sizes are available with an anti-condensation heater:

Motors, 50/60 Hz	Power of heating unit [W]	
Frame size	1 x 24 V	1 x 190-250 V
71/80	38	23
90		31
100		38
112/132	2 x 38	2 x 38

CME

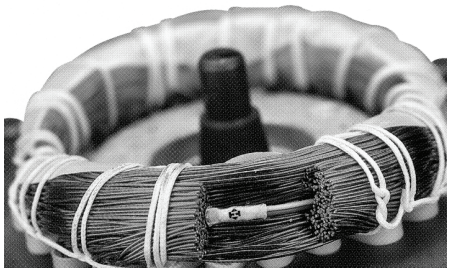
The MGE motors fitted to CME pumps incorporate a standstill heating function. No external heater on the stator coil is necessary.

The working principle is that AC voltage is applied to the motor windings. The applied AC voltage will not make the motor run, but will ensure that sufficient heat is generated to prevent condensation in the motor. The terminal box is kept warm and dry by the heat generated via the mains voltage connected. However, it is a condition that the terminal box is not exposed to open air. It must be provided with a suitable cover to protect it from rain and the drain plugs have to be removed to obtain ventilation in the motor and terminal box. See the section on operation in condensing environments.

Related information

Operation in condensing environments

Motors with PTC sensors



TM027038

PTC sensor incorporated in windings

Built-in PTC sensors (thermistors) protect the motor against overheating. Single-phase motors are protected against slow and rapid overheating. Three-phase motors are protected against slow overheating.

We offer built-in PTC sensors to protect the motor.

Three-phase mains-operated motors of 3 kW and up have PTC sensors as standard.

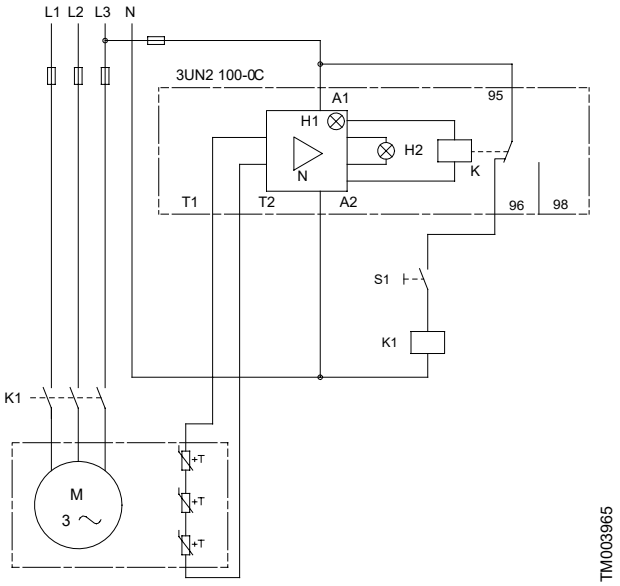
Note that PTC sensors must be connected to an external tripping unit connected to the control circuit.

Protection according to IEC 60034-11:

- slow and rapid overheating.

PTC sensors comply with DIN 44082. Maximum voltage at the terminals: U_{max} = 2.5 VDC. All tripping units available for DIN 44082 PTC sensors meet this requirement.

The figure below shows a typical circuit of a three-phase motor with PTC sensors.



Three-phase motor with PTC sensors

Legend

Symbol	Designation
S1	On/off switch
K1	Contactor
+T	PTC sensor (thermistor) in motor
M	Motor
3UN2 100-0 C	Tripping unit with automatic resetting
N	Amplifier
K	Output relay
H1	LED "Ready"
H2	LED "Tripped"
A1, A2	Connection for control voltage
T1, T2	Connection for PTC sensor loop

Motors with thermal switches (PTO)

TM027042

Thermal switch incorporated in windings

Built-in thermal switches protect the motor against overheating. Single-phase motors are protected against slow and rapid overheating. Three-phase motors are protected against slow overheating.

We offer mains-operated motors with bimetallic thermal switches in the motor windings.

Three-phase mains-operated motors with supply voltages F, G and O are available with built-in thermal switches.

Note that thermal switches must be connected to an external control circuit to protect the motor against slow overheating. The thermal switches require no tripping unit.

Protection according to IEC 60034-11:

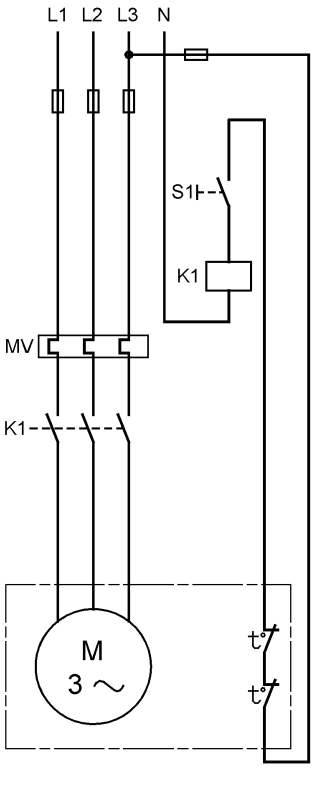
- slow and rapid overheating.

As protection against seizure, the motor must be connected to a motor-protective circuit breaker.

Thermal switches tolerate the following maximum loads:

U_{max}	250 VAC
I_N	1.5 A
I_{max}	5.0 A (locked-rotor and breaking current)

The figure below shows a typical circuit of a three-phase motor with built-in bimetallic thermal switches.



TM003964

Three-phase motor with thermal switches

Legend

Symbol	Designation
S1	On/off switch
K1	Contactor
t°	Thermal switch in motor
M	Motor
MV	Motor-protective circuit breaker

Undersize and oversize motors

Undersize and oversize motors are defined as the next kW size below or above the fitted standard motor.

Note that CM 1, 3 and 5 cannot be combined with frame sizes 112 and 132.

We recommend that you use an oversize motor if the operating conditions fall outside the standard conditions.

We especially recommend oversize motors in these cases:

- The pump is installed at an altitude of more than 1000 metres above sea level.
- The viscosity or density of the pumped liquid is higher than that of water.
- The ambient temperature exceeds 55 °C (CM).

We recommend that you use an undersize motor if the operating conditions do not at all reach the standard conditions.

We especially recommend undersize motors in these cases:

- The viscosity or density of the pumped liquid is lower than that of water.
- The duty point of the pump is constant, and the flow rate is significantly lower than the recommended maximum flow rate.

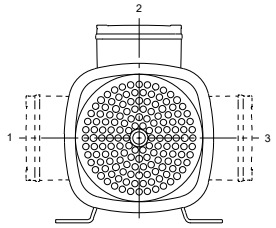
Related information

Speed-controlled motors

Mains-operated motors, 50 Hz

Terminal box positions

As standard the terminal box is mounted in 12 o'clock position as shown in the figure below. CM pumps with motor frame sizes of 71 and 80 are available with other terminal box positions on special request.



TM040357

Terminal box positions of frame sizes 71 and 80, as seen from the fan cover side

Pos.	Description
1	9 o'clock (on request)
2	12 o'clock (standard)
3	3 o'clock (on request)

Pumps

Pumping of liquids down to -30 °C

We offer custom-built pumps for pumping liquids down to -30 °C. The pumps have an oversize neck ring ensuring that impellers do not seize up as a result of thermal expansion.

We offer the above solution for CME and CM in I and G versions (stainless steel).

Surface treatment

Cleaned and dried pumps

We recommend cleaned and dried pumps for use in applications involving strict demands on cleanliness and surface quality, such as low content of silicone. Before assembly, all pump parts are cleaned in 60 to 70 °C water with a cleaning agent. All pump parts are then thoroughly rinsed in de-ionised water and dried. The pump is assembled without any use of silicone lubricants.

Cleaned and dried pumps are not performance-tested.

Electropolished stainless-steel pumps

Electropolished pumps are often used in the pharmaceutical industry and in the food and beverage industry where materials and surface quality must meet strict requirements to hygiene or corrosion resistance.

Electropolishing removes burrs as well as metallic and non-metallic inclusions, providing a smooth, clean and corrosion-resistant stainless-steel surface.

First, all components are pickled in a mixture of nitric and hydrofluoric acid. Subsequently, the components are electropolished in a mixture of sulphuric and phosphoric acid. Finally, the components are passivated in nitric acid.

To meet the strict hygienic requirements to material and surface quality, we offer electropolished stainless-steel pumps with the following surface quality:

Surface quality: Ra ≤ 0.8 µm.

Alternative colouring

We offer custom-built pumps in any NCS- or RAL-specified colour to suit your requirements.

The used paint is water-based. Painted parts correspond to corrosion class III.

All pump types and sizes are available with alternative colouring.

Customised nameplate

We offer additional customised nameplates attached to the pump:

- a nameplate supplied by you
- a Grundfos nameplate customised in terms of a specific duty point
- a Grundfos nameplate with a tag number.

Note that the Grundfos standard nameplate is always fitted to the pump.

Shaft seal arrangements

The shaft seal is developed with customisation in mind. Depending on the media, you may combine the seal faces in any way.

Available stationary seal faces: Q, B, U.

Available rotating seal faces: Q, V, U.

Rubber: E, V, K.

For further details about seal face material codes, see the section on identification.

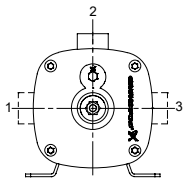
Related information

Type key

Key to codes

Alternative connection positions

The pump is available with various connection positions on special request. See the figure below.



TM038709

Alternative connection positions as seen from the pump inlet side

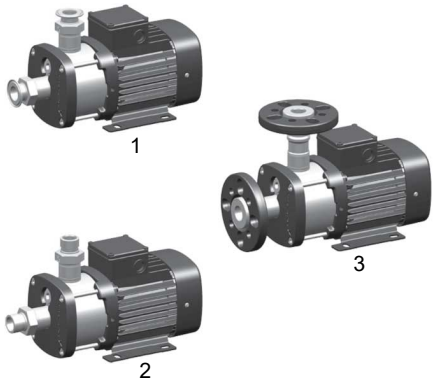
Pos.	Description
2	12 o'clock (standard)

Alternative pipe connections

A wide range of pipe connections are available for the CME and CM pumps:

- Tri-Clamp®
- DIN, JIS, ANSI flange (combi flange)
- Victaulic® coupling
- Whitworth thread Rp
- internal NPT thread.

The available pipe connections are shown in the figure below.



TM043937

Examples of pipe connections

Pos.	Description
1	Tri-Clamp®
2	Victaulic® coupling
3	DIN, JIS, ANSI flange

28. Accessories

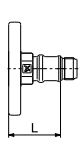
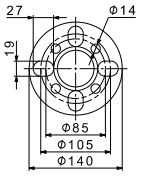
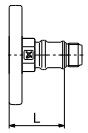
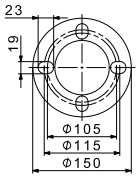
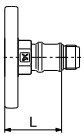
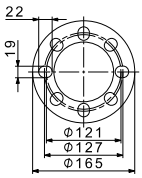
Pipe connections

Various sets of flanges and couplings are available for pipe connection.

Flange sets for CME, CM (DIN/ANSI/JIS)

All materials in contact with the pumped liquids are made of stainless steel EN 1.4408/AISI 316.

The pipe stub is made of stainless steel EN 1.4408/AISI 316, the flange part is made of cast iron EN-GJL-200 and the O-rings are made of EPDM or FKM.

Flange		Pump type	Pipe connection	Pump thread	L [mm]		Product number
					Flange mounted on pump inlet	Flange mounted on pump outlet	
	 TM043867	CM 1 CM 3	DN 32	Rp	49.0	78.0	96904693
				NPT			96904705
		CM 5		Rp			96904696
				NPT			96904708
	 TM043869	CM 10	DN 40	Rp	44.0	68.0	96904699
				NPT			96904711
	 TM043868	CM 15 CM 25	DN 50	Rp	48.0	68.0	96904702
				NPT			96904714

57) Length from the outer edge of the flange to the pump inlet or outlet port.

Please pay attention to the compatibility between the pump and flange before ordering. See tables below.

CM pumps compatible with DIN/ANSI/JIS flanges

Pump type	Material version	MG 71/80 1-ph	MG 71/80 3-ph	MG 90 1-ph	MG 90 3-ph	MG 100/112/132
CM 1, 3, 5	Cast iron		• 58)	•	•	•
	Stainless steel	• 58)	• 59)	•	•	•
CM 10, 15, 25	Cast iron	•	•	•	•	•
	Stainless steel	•	•	•	•	•

58) 17 mm clearance.

59) 32 mm clearance.

CME pumps compatible with DIN/ANSI/JIS flanges

Pump type	Material version	MGE 71	MGE 80	MGE 90	MGE 90 3-ph	MGE 100	MGE 112/132
CM 1, 3, 5	Cast iron			•	•	•	
	Stainless steel				•	•	
CM 10, 15, 25	Cast iron		•	•	•	•	•
	Stainless steel		•	•	•	•	•

60) 13 mm clearance.

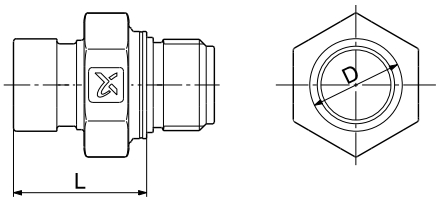
Tri-clamp and Victaulic connections for CME, CM

Pump type	Material version	MG, MGE 71	MG, MGE 80	MG, MGE 90	MG, MGE 100	MG, MGE 100/112/132
CM 1, 3, 5	Cast iron		•	•	•	•
	Stainless steel		•	•	•	•
CM 10, 15, 25	Cast iron		•	•	•	•
	Stainless steel		•	•	•	•

Victaulic® connections for CME, CM

All materials in contact with the pumped liquids are made of stainless steel EN 1.4408/AISI 316.

The pipe stub is made of stainless steel EN 1.4408/AISI 316, and the O-rings are made of EPDM or FKM.

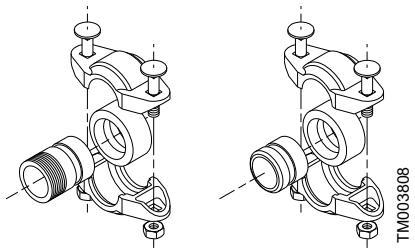
Victaulic® connection	Pump type	Pump thread	D [mm]	L [mm]	Product number
 TM043865	CM 1 CM 3	Rp	33.7	48.5	96904694
		NPT			96904706
	CM 5	Rp	33.7 / 42.4	48.5	96904697
		NPT			96904709
	CM 10	Rp	48.3	48.5	96904700
		NPT			96904712
	CM 15 CM 25	Rp	60.3	50.1	96904703
		NPT			96904715

61) Length from the outer edge of the connection to the pump inlet or outlet port.

Coupling, pipe stub and gasket for Victaulic® connections

Parts in contact with the pumped liquid are made of stainless steel EN 1.4401/AISI 316 and rubber.

A Victaulic® coupling set consists of two coupling halves (Victaulic, type 77), one gasket, one pipe stub (for welding or threaded), bolts and nuts.

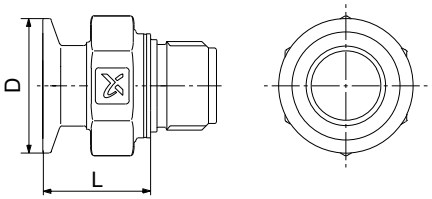
Coupling and pipe stub	Pump type	Pipe stub	Pipe connection	Rubber parts	Number of coupling sets required	Product number
 TM003808	CM 1, CME 1 CM 3, CME 3 CM 5, CME 5	Threaded	R 1	EPDM	2	97575245
				FKM	2	97575246
		For welding	DN 25	EPDM	2	97575247
				FKM	2	97575248
	CM 5, CME 5	Threaded	R 1 1/4	EPDM	1	00419911
				FKM	1	00419905
		For welding	DN 32	EPDM	1	00419912
				FKM	1	00419904
	CM 10, CME 10	Threaded	R 1 1/2	EPDM	2	97575249
				FKM	2	97575250
		For welding	DN 40	EPDM	2	97575251
				FKM	2	97575252
	CM 15, CME 15 CM 25, CME 25	Threaded	R 2	EPDM	2	00339911
				FKM	2	00339918
		For welding	DN 50	EPDM	2	00339910
				FKM	2	00339917

62) For the outlet port. Note that only one coupling set is required for the outlet port.

63) For the inlet port.

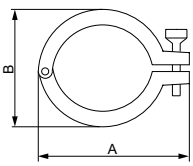
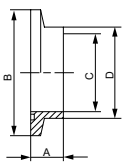
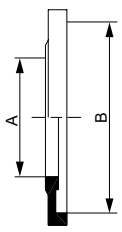
Tri-Clamp® connections for CME, CM

All materials in contact with the pumped liquids are made of stainless steel EN 1.4408/AISI 316.
The pipe stub is made of stainless steel EN 1.4408/AISI 316, and the O-rings are made of EPDM or FKM.

Tri-Clamp®	Pump type	Pump thread	D [mm]	L [mm]	Product number
 TM043866	CM 1 CM 3	Rp	50.4	40.3	96904695
		NPT			96904707
	CM 5	Rp	50.4	35.3	96904698
		NPT			96904710
	CM 10	Rp	50.4	37.4	96904701
		NPT			96904713
	CM 15 CM 25	Rp	63.9	37.4	96904704
		NPT			96904716

64) Length from the outer edge of the Tri-Clamp® connection to the pump inlet or outlet port.

Clamping ring, pipe stub and gasket for Tri-Clamp® connections

	Clamping ring		Pipe stub				Gasket	
	 TM034645		 TM034646				 TM034647	
Pump type	Nominal diameter [mm]	A [mm]	B [mm]	A [mm]	B [mm]	C [mm]	D [mm]	A [mm]	B [mm]
CME, CM: 1, 3, 5, 10	38.0	92.0	59.5	21.5	50.5	35.6	38.6	35.3	50.5
CME, CM: 15, 25	51.0	104.4	74.0	21.5	64.0	48.6	51.6	48.0	64.0

The clamping ring is made of stainless steel EN 1.4301/AISI 304.
The pipe stub is made of stainless steel EN 1.4401/AISI 316.
The gasket is made of PTFE or EPDM.

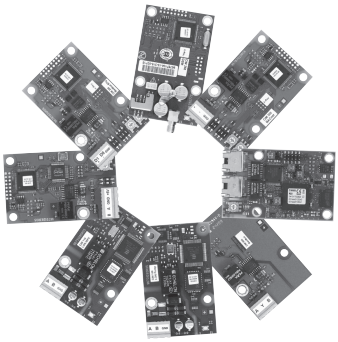
Pump type	Pipe connection	Connection material	Gasket	Pressure [bar]	Number of coupling sets required	Product number
CME, CM: 1, 3, 5, 10	DN 32	Stainless steel	EPDM	16	2	96515374
			PTFE		2	96515375
CME, CM: 15, 25	DN 50		EPDM		2	96515376
			PTFE		2	96515377

Potentiometer for CME

The potentiometer is for setpoint setting and start/stop of the CME pump.

Product	Product number
External potentiometer with cabinet for wall mounting	625468

Communication interface modules (CIM) for CME



TM076519

Grundfos CIM modules

A CIM module is an add-on communication interface module for MGE motors. The CIM module enables data transmission between the pump and an external system, for example a BMS (building management system) or SCADA system.

We offer the following CIM modules:

Description	Fieldbus protocol	Product number
CIM 050	GENIbus	96824631
CIM 100	LonWorks	96824797
CIM 150	PROFIBUS DP	96824793
CIM 200	Modbus RTU	96824796
CIM 300	BACnet MS/TP	96893770
CIM 500	BACnet IP	98301408
CIM 500	EtherNet/IP	
CIM 500	GIC	
CIM 500	GRM IP	
CIM 500	Modbus TCP	
CIM 500	PROFINET	

Grundfos GO

Use Grundfos GO for the following types of wireless communication with the pump:

- infrared
- radio
- Bluetooth.

MI 301

MI 301 is a module with built-in infrared and radio communication. It is required for Grundfos GO communication. MI 301 can be used together with Android or iOS-based smart devices with a Bluetooth connection. MI 301 has a rechargeable Li-ion battery that must be charged separately.

TM053890

MI 301

Supplied with the product:

- Grundfos MI 301
- sleeve
- battery charger
- quick guide.

Product numbers

Grundfos GO variant	Product number
Grundfos MI 301	98046408

Sensors for CME, CM

The sensors must be fitted to the pipe with suitable fittings.

Standard sensors for CME, CM

Accessory	Type	Measuring range	Connection	Product number
Danfoss temperature sensor, Pt100B	Pt100B, with 2 m cable, 50 pieces, without O-rings	-50 - +200 °C	1/2"	99408847
	Pt100B, with 2 m cable, one piece, with EPDM and FKM O-rings	-50 - +200 °C	1/2"	99501120
	Pt100B, with 2 m cable, 50 pieces, with EPDM O-ring	-50 - +200 °C	1/4"	99239596
	Pt100B, with 2 m cable, one piece, with EPDM O-ring	-50 - +200 °C	1/4"	99532820
Accessories for Danfoss temperature sensor Pt100B	EPDM O rings, 50 pieces	-	-	99412727
	FKM O rings, 50 pieces	-	-	99412883
Hornsberg differential temperature sensor, ESTD	ESTD, 4-20 mA	0-20 °C	1/2"	96409362
	ESTD, 4-20 mA	0-50 °C	1/2"	96409363
Grundfos pressure transmitter, ISP40	ISP40 0-6b, with 5 m M12 cable	0-6 bar	1/2"	99792159
	ISP40 0-10b, with 5 m M12 cable	0-10 bar	1/2"	99792175
	ISP40 0-16b, with 5 m M12 cable	0-16 bar	1/2"	99792176
Grundfos pressure manager, PM	PM2, 1 x 200-220 V, 0-40 °C	1.5 - 5 bar	G1"	96848738
	PM2, 1 x 100-120 V, 0-40 °C	1.5 - 5 bar	G1"	96848750

For more information, see Grundfos Product Center at www.grundfos.com.

Note that the CME and CM pumps are fitted with 3/8" plugs. In order to fit the sensors directly on the CME and CM pumps, an adapter must be used.

Related information

29. Grundfos Product Center

Direct sensors for CME, CM

Accessory	Type	Measuring range	Connection	Product number	
				EPDM	FKM
Grundfos relative pressure and temperature sensor, RPS					
 TM076692	RPS, 0.5 - 3.5 V/4.1, plug and play set	0 - 2.5 bar / 40 psig	1/2"	99472356	99472357
		0-4 bar / 60 psig	1/2"	99387871	99472358
		0-6 bar / 90 psig	1/2"	99472359	99472360
		0-10 bar / 150 psig	1/2"	99514113	99472355
		0-16 bar / 230 psig	1/2"	99514415	99514116
Grundfos differential pressure and temperature sensor, DPS					
 TM076690	DPS, 0.5 - 3.5 V/4.1, plug and play set with AISI 316 housing and 6 mm tube adapters	0 - 2.5 bar / 40 psig	-	99472339	-
		0 - 4 bar / 60 psig	-	99472340	
Grundfos flow and temperature sensor, VFS					

Accessory	Type	Measuring range	Connection	Product number	
				EPDM	FKM
 TM076695	VFS 0.5-3.5 V/4.1, plug and play set with BSPP brass fittings	1-20 lpm / 0.3 - 5.2 gpm	1/2"	98529414	99508194
		2-40 lpm / 0.5 - 10.5 gpm	3/4"	99508184	99508195
		5-100 lpm / 1.3 - 26.4 gpm	3/4"	99508185	99508196
		10-200 lpm / 2.6 - 52.8 gpm	3/4"	99508196	99508197
		20-400 lpm / 5.2 - 105.6 gpm	1.1/4"	99508187	99508198
Grundfos flow and temperature sensor, VFI/T					
 TM076694	VFI/T 0-10 V, plug and play set with BSPP fittings and cable	0.3 - 6 m^3 / h / 1.3 - 26.4 gpm	DN 18	97688334	97688342
		0.6 - 12 m^3 / h / 2.6 - 52.8 gpm	DN 25	99513543	99513547
		1.3 - 25 m^3 / h / 5.7 - 110 gpm	DN 32	99513544	99513549
		2-40 m^3 / h / gpm	DN 40	99513499	99513535
Grundfos pressure and temperature sensor, RPI/T					
 TM076691	RPI/T, plug and play, with 2 m cable	0 - 2.5 bar / 40 psig	1/2"	97748930	97748960
		0-4 bar / 60 psig	1/2"	97748941	97748961
		0-6 bar / 90 psig	1/2"	97748942	97748962
		0-10 bar / 150 psig	1/2"	97748944	97748963
		0-16 bar / 230 psig	1/2"	97748945	97748964
Accessories for RPS, DPS, and VFS sensors	CNV power supply and converter	-	-	96983684	-
	1200 mm cable	-	-	98515668	-
	2900 mm cable	-	-	98444532	-
Accessories for RPI and VFI sensors	2 m M12 cable	-	-	98515668	-
	5 m M12 cable	-	-	98444532	-

For more information, see Grundfos Product Center at www.grundfos.com.

Note that the CME and CM pumps are fitted with 3/8" plugs. In order to fit the sensors directly on the CME and CM pumps, an adapter must be used.

Related information

29. Grundfos Product Center

MP 204 motor protector

TM031471

MP 204

The MP 204 is an electronic motor protector and data collecting unit. Apart from protecting the motor, it can also send information to a control unit via GENIbus, such as the following:

- trip
- warning
- energy consumption
- input power
- motor temperature.

The MP 204 protects the motor primarily by measuring the motor current by means of a true RMS measurement.

The pump is protected secondarily by measuring the temperature with a Tempcon sensor, a Pt100/Pt1000 sensor and a PTC sensor or thermal switch.

The MP 204 is designed for single- and three-phase motors.

Note that the MP 204 must not be used together with frequency converters.

Features

- Phase-sequence monitoring
- indication of current or temperature
- input for PTC sensor or thermal switch
- indication of temperature in °C or °F
- 4-digit, 7-segment display
- setting and status reading with Grundfos GO
- setting and status reading via the Grundfos GENIbus fieldbus.

Tripping conditions

- Overload
- underload (dry running)
- temperature
- missing phase
- phase sequence
- overvoltage
- undervoltage
- power factor (cos φ)
- current unbalance.

Warnings

- Overload
- underload
- temperature
- overvoltage
- undervoltage
- power factor (cos φ)
- run capacitor (single-phase operation)
- starting capacitor (single-phase operation)
- loss of communication in network
- harmonic distortion.

Learning function

- Phase sequence (three-phase operation)
- run capacitor (single-phase operation)
- starting capacitor (single-phase operation)
- identification and measurement of Pt100/Pt1000 sensor circuit.

Product number

Description	Product number
MP 204 motor protector	96079927

Cover for CM motor

The cover protects the motor from ingress of liquid, especially if the pump is installed in a vertically tilted position with the motor end pointing upwards.

Product number

Description	Product number
Cover for CM motors, frame sizes 71 and 80	97528743

Adapter base plates

TM085463

Adapter base plate

Adapter base plates allow CM pumps to be mounted on the surface of an old CH pump.

Description	Product number
Adapter base plate, CH 2, 4 to CM 1, 3, 5	96960786
Adapter base plate, CH 8, 12 to CM 10, 15, 25	96960787
Adapter base plate, CHI to CM	96960788

29. Grundfos Product Center

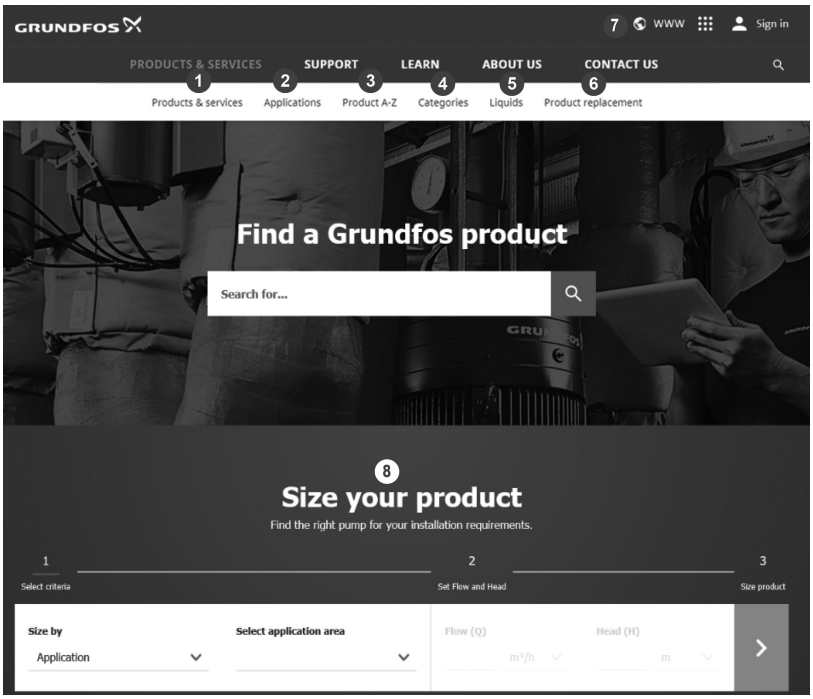
Online search and sizing tool to help you make the right choice.
From the international view, you can select your specific country to view the product range available to you.
International view: *https://product-selection.grundfos.com*

All the information you need in one place

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

Downloads

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



When you select your country, you will see the menus below. Note that some menus may not be available depending on the country.
Example: *https://product-selection.grundfos.com/uk*

Pos.	Description
1	**Products & services** enables you to find products and documents by typing a product number or name into the search field.
2	**Applications** enables you to choose an application to see how Grundfos can help you design and optimise your system.
3	**Products A-Z** enables you to look through a list of all the Grundfos products.
4	**Categories** enables you to look for a product category.
5	**Liquids** enables you to find pumps designed for aggressive, flammable or other special liquids.
6	**Product replacement** enables you to find a suitable replacement.
7	**WWW** enables you to select the country, which changes the language, the available product range and the structure of the website.
8	**Sizing** enables you to size a product based on your application and operating conditions.

Grundfos GO

Mobile solution for professionals on the GO!

Grundfos GO is the mobile tool box for professional users on the go. It is the most comprehensive platform for mobile pump control and pump selection, including sizing, replacement and documentation. It offers intuitive, handheld assistance and access to Grundfos online tools, and it saves valuable time for reporting and data collection.

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