

CM, CME

Horizontal, multistage centrifugal pumps
50/60 Hz



1. General description	4	18. Performance curves, CM 60 Hz	44
Introduction	4	CM 1	44
2. Overview	6	CM 3	45
3. Applications	7	CM 5	46
4. Features and benefits	9	CM 10	47
5. Identification	10	CM 15	48
Type key	10	CM 25	49
6. Product range	11	19. Performance curves, CME 50/60 Hz	50
7. Performance range	13	CME 1	50
CM, 50 Hz	13	CME 3	51
CM, 60 Hz	13	CME 5	52
CME, 50/60 Hz	14	CME 10	53
8. Operating conditions	15	CME 15	54
Environmental rating	16	CME 25	55
9. Pumped liquids	18	20. Dimensions, CM 50 Hz	56
List of pumped liquids	18	CM 1-A	56
10. Construction	21	CM 1-I and CM 1-G	57
Pump	21	CM 3-A	58
Motor	21	CM 3-I and CM 3-G	59
Frequency converter operation	22	CM 5-A	60
Shaft seal	22	CM 5-I and CM 5-G	61
Material specification	25	CM 10-A	62
11. CME pumps	26	CM 10-I and CM 10-G	63
Communication with CME pumps	26	CM 15-A	64
Speed control of CME pumps	27	CM 15-I and CM 15-G	65
12. Grundfos CUE	28	CM 25-A	66
CM pumps connected to Grundfos CUE, external frequency converters	28	CM 25-I and CM 25-G	67
13. Approvals and markings	29	21. Dimensions, CM 60 Hz and 50/60 Hz	68
Approvals	29	CM 1-A	68
Markings	29	CM 1-I and CM 1-G	69
14. Certificates	30	CM 3-A	70
15. Selection and sizing	34	CM 3-I and CM 3-G	71
Selection of pumps	34	CM 5-A	72
Selection of CME pumps	36	CM 5-I and CM 5-G	73
16. How to read the curve charts	37	CM 10-A	74
Guidelines to performance curves	37	CM 10-I and CM 10-G	75
17. Performance curves, CM 50 Hz	38	CM 15-A	76
CM 1	38	CM 15-I and CM 15-G	77
CM 3	39	CM 25-A	78
CM 5	40	CM 25-I and CM 25-G	79
CM 10	41	22. Dimensions, CME 60 Hz and 50/60 Hz	80
CM 15	42	CME 1-A	80
CM 25	43	CME 1-I and CME 1-G	81
		CME 3-A	82
		CME 3-I and CME 3-G	83
		CME 5-A	84
		CME 5-I and CME 5-G	85
		CME 10-A	86
		CME 10-I and CME 10-G	87
		CME 15-A	88
		CME 15-I and CME 15-G	89
		CME 25-A	90
		CME 25-I and CME 25-G	91

23. Weights and shipping volume	92
24. Motor data	103
Mains-operated motors, 50 Hz	103
Mains-operated motors, 60 Hz	103
Mains-operated motors, 50/60 Hz	104
Speed-controlled motors	106
Additional data for speed-controlled motors	107
25. Customisation	108
Motors	108
Pumps	112
26. Accessories	114
Pipework connections	114
Potentiometer for CME	119
CIU communication interface units for CME	119
R100 remote control	119
Sensors for CME	120
MP 204 motor protector	121
Cover for CM motor	121
Angled cable gland	121
27. Further product documentation	122
WebCAPS	122
WinCAPS	123
	123

1. General description

Introduction

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

The CM and CME pumps are available in these three material versions:

- cast iron (EN-GJL-200)*
- stainless steel (EN 1.4301/AISI 304)
- stainless steel (EN 1.4401/AISI 316).

* 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 1.4057/AISI 431).

CM

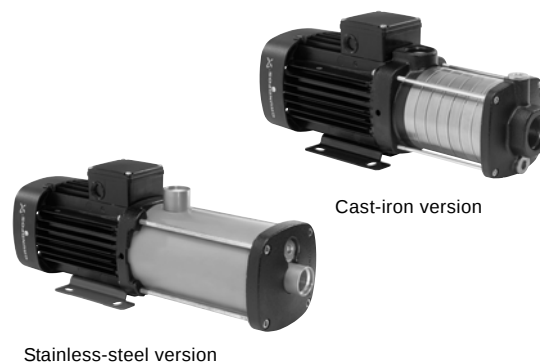


Fig. 1 Grundfos CM pumps

The CM pumps are unique products that have been developed in order to fulfil a wide variety of customer demands. The development of the pumps has resulted in no less than five patent applications.

The CM pumps are available in various sizes and numbers of stages to provide the flow 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 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 *4. Features and benefits* on page 9:

- compact design
- worldwide usage
- high reliability
- service-friendly
- wide performance range
- low noise
- customised solutions.

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CME



Fig. 2 Grundfos CME pumps

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 continuously variable control of the motor speed is to adjust the performance to a given requirement.

It is possible to connect a pressure sensor to the built-in frequency converter on CME pumps. For further information, see *Sensors for CME* on page 120.

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

Selecting a CME pump

Select a CME pump if the following features are required:

- controlled operation, i.e. consumption fluctuates
- constant pressure
- communication with the pump.

Adaptation of performance through frequency-controlled speed offers obvious benefits such as:

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

For further information about CME pumps, see **11. CME pumps** on page 26.

2. Overview

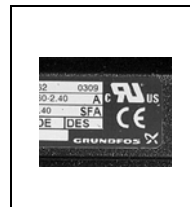


Applications



Pages 7 and 8

Identification



Page 10

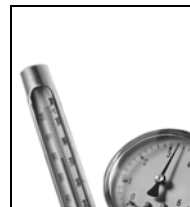


Product range



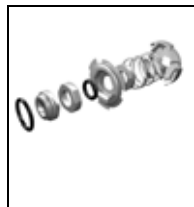
Pages 11 and 12

Operating conditions



Pages 15 to 17

Construction



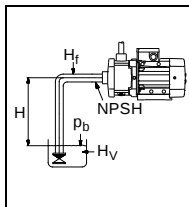
Pages 21 to 25

Certificates and approvals



Pages 30 and 31

Selection and sizing



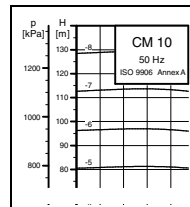
Pages 34 to 36

Pipe connections



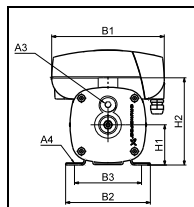
Pages 35 and 113

Performance curves



Pages 38 to 55

Dimensions



Pages 56 to 91

Motor data



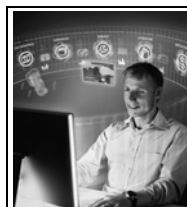
Pages 103 to 107

Accessories



Pages 114 to 121

Customisation



Page 108

Further product information



Pages 122 and 123

3. Applications

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

Some of the most typical applications are mentioned below:

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

Washing and cleaning



Fig. 3 Washing and cleaning

CM and CME pumps can be used in washing and cleaning applications, which usually involve pumping of water containing soap or other cleaning agents.

Reference applications

Typical washing and cleaning applications:

- 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 (Cleaning In Place).

Water treatment



Fig. 4 Water treatment

In water treatment plants, the water undergoes a process which makes it more suited for its end-use. In this process, the CM and CME pumps can be utilised either as feed pumps or as booster pumps.

Reference applications

Typical water treatment applications:

- nano-, micro- and ultra-filtration systems
- softening, ionising, demineralising systems
- desalination systems
- distillation systems
- separators
- swimming baths.

Temperature control

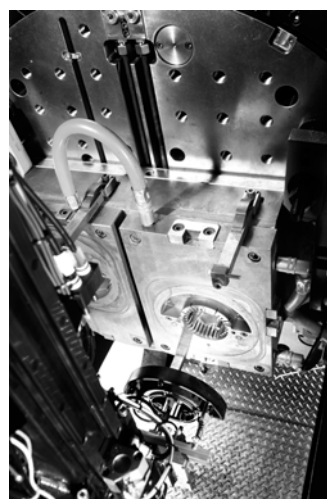


Fig. 5 Temperature control

Temperature control involves applications where the CM and CME pumps circulate a liquid in a closed loop consisting of a heating or cooling element for optimising a process by means of temperature. Temperature control is also chilling of equipment or food and beverage in the food production industry.

Reference applications

The CM and CME pumps can for example be used in temperature control systems such as:

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

To ensure safe and reliable operation in applications involving temperature control, we offer CM and CME pumps designed to meet your needs!

We provide solutions for applications involving pumping of these liquids:

- liquids at temperatures down to $-20\text{ }^{\circ}\text{C}$
- high-temperature liquids
- high-viscous liquids, etc.

Pumping of liquids at temperatures down to $-20\text{ }^{\circ}\text{C}$ *

When pumping liquids at temperatures down to $-20\text{ }^{\circ}\text{C}$, it is crucial that the pump parts are made of the right materials and have the right dimensions.

At such low temperatures, the selection of wrong materials and dimensions may cause deformation because of thermal expansion, and eventually stoppage of operation.

* CM and CME pumps for pumping liquids at temperatures below $-20\text{ }^{\circ}\text{C}$ are available on request. Please contact Grundfos.

Pumping of high-temperature liquids

The pumping of hot liquids such as water-based liquids up to $+120\text{ }^{\circ}\text{C}$ demands much of the pump parts, such as shaft seals and rubber parts.

Pumping of high-viscous liquids

In applications where high-viscous liquids are pumped, the motor of the pump can be overloaded, and the pump performance will be reduced.

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

To meet the above-mentioned requirements, we offer CM and CME pumps with oversize motors.

Pressure boosting



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Fig. 6 Pressure boosting

In pressure-boosting applications, the pumped liquid must be delivered at a desired pressure on demand. The main priorities in pressure-boosting applications are to ensure maximum reliability and user comfort. Therefore, the CM and CME pumps are also ideal for such applications.

Reference applications

Typical pressure-boosting applications:

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

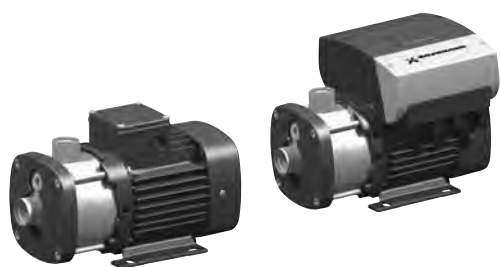
Other applications

Besides the applications mentioned above, the CM and CME pumps can be used in many other applications.

Examples:

- distilling systems
- dosing/mixing
- evaporation
- comprised machinery
- chemical industry
- pharmaceutical industry.

4. Features and benefits



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Fig. 7 CM and CME pumps

CM and CME 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 CM and CME 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.

Worldwide usage

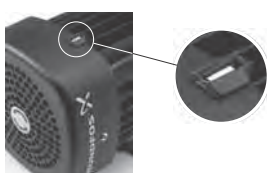
- With different voltage and frequency combinations, the CM and CME product ranges cover markets worldwide.
- Various certificates covering worldwide usage are available. See 14. *Certificates* on page 30.

High reliability

- New state-of-the-art shaft seal design and materials offering 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

- A Quick Guide is supplied with each CM pump, which enables easy installation and commissioning. Detailed multilingual installation and operating instructions are supplied with each pump.
- An installation indicator is fitted on three-phase pumps, which 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.



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Fig. 8 Installation indicator

Service-friendly

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

Wide performance range

- Can be used in a wide range of applications:
 - washing and cleaning
 - water treatment
 - temperature control
 - pressure boosting
 - chemical industry
 - pharmaceutical industry
 - etc.
- Product range in WinCAPS and WebCAPS. See 27. *Further product documentation* on page 122.

Low noise level

The CM and CME pumps offer very silent operation.

High-performance hydraulics

Pump efficiency is maximised by the optimised hydraulics 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 CM and CME pumps.

For further information, see 25. *Customisation* on page 108.

- Motor adaptation
- Pump body modifications.

Grundfos motor

Grundfos motors are remarkably silent and highly efficient.

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

Data and literature about the CM and CME pumps

All literature and technical data related to CM and CME pumps are available on line in Grundfos WebCAPS.

5. Identification

Type key

Example	CME	10	-	8	A	-	R	-	A	-	E	-	A	V	B	E	X	-	X	-	X	-	X
Type range CM: Centrifugal Modular CME: Centrifugal Modular with integrated frequency converter																	Sensor Sensor designation						
Rated flow rate Rated flow rate at 50 Hz [m³/h]																	Mains plug A: Prepared for cable glands B: Harting plug C: With cable D: Cable gland included						
Number of impellers																	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 J: Low-noise motor						
Pump version A: Basic version B: Oversize motor (one flange size larger) E: Pumps with certificates/approvals N: CME pump with pressure sensor P: Undersize motor (one flange size smaller) T: Oversize motor (two flange sizes larger) BE: Oversize motor with certificates/approvals BN: Oversize motor with pressure sensor EN: Pumps with certificates/approvals and pressure sensor EP: Pumps with certificates/approvals and undersize motor ET: Pumps with certificates/approvals and double-oversize motor EX: Pumps with certificates/approvals and two other variants selected NP: Undersize motor with pressure sensor NT: Double-oversize motor with pressure sensor X: Special pump																	Supply voltage A: 1 x 220 V, 60 Hz B: 1 x 115/230 V, 60 Hz B1: 1 x 115/230 V, 60 Hz, with terminal board C: 1 x 220-240 V, 50 Hz D: 1 x 127 V, 60 Hz E: 3 x 208-230/440-480 V, 60 Hz E1: 3 x 208-230/440-480 V, 60 Hz, with terminal board F: 3 x 220-240/380-415 V, 50 Hz G: 3 x 200/346 V, 50 Hz; 200-220/346-380 V, 60 Hz H: 3 x 575 V, 60 Hz I: 3 x 400 V, 50/60 Hz J: 3 x 380-415 V, 50 Hz; 440-480 V, 60 Hz K: 1 x 200-240 V, 50/60 Hz (E-motor) L: 3 x 380-480 V, 50/60 Hz (E-motor) M: 1 x 208-230 V, 50/60 Hz (E-motor) N: 3 x 460-480 V, 60 Hz (E-motor) O: 3 x 220-240/380-415 V, 50 Hz 3 x 220-255/380-440 V, 60 Hz Q: 3 x 208-230 V, 50/60 Hz (E-motor) R: 3 x 200-230 V, 50/60 Hz (E-motor)						
Pipe connection C: Tri-Clamp® F: DIN/ANSI/JIS flange P: Victaulic® coupling R: Whitworth thread Rp (ISO 7/1) S: Internal NPT thread																	Material of secondary seal E: EPDM (ethylene propylene) K: FFKM (perflour) V: FKM (flour)						
Materials in contact with pump media Suction and discharge parts A: Pump shaft Impellers/chambers Sleeve G: Pump shaft Impellers/chambers Sleeve I: Pump shaft Impellers/chambers X: Special version	EN-GJL-200 EN 1.4301/AISI 304 EN 1.4301/AISI 304 EN 1.4401/AISI 316 EN 1.4401/AISI 316 EN 1.4401/AISI 316 EN 1.4301/AISI 304 EN 1.4301/AISI 304 EN 1.4301/AISI 304																Material of stationary seal face B: Carbon, resin-impregnated Q: Silicon carbide (SIC)						
Rubber parts in pump (excluding neck ring and shaft seal) E: EPDM (ethylene propylene) K: FFKM (perflour) V: FKM (flour) Note: Gaskets between chambers for cast-iron versions are always made of Tesnit® BA-U.																	Material of rotating seal face Q: Silicon carbide (SIC) V: Aluminium oxide (Al2O3)						
																Shaft seal type designation A: O-ring seal with fixed driver							

Note: The type key cannot be used for ordering as not all combinations are possible.

6. Product range

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, AQBE AQQV, AQBV	AQKQ	1 x 220-240 V (supply voltage C)	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) ⁴⁾	1 x 127 V (supply voltage D) ¹⁾	3 x 208-230/440-480 V (supply voltage E/E1) ⁴⁾	3 x 575 V (supply voltage H) ⁴⁾	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 400 V (50/60 Hz) (supply voltage I)	3 x 380-480 V (50/60 Hz) (supply voltage L)	1 x 200-240 V (50/60 Hz) (supply voltage K)	3 x 460-480 V (60 Hz) (supply voltage N)	1 x 208-230 V (50/60 Hz) (supply voltage M)
CM 1-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-6	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-8	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-9	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-10	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-11	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-12	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-13	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-14	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-6	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-8	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-9	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-10	•	•	•	•	•	•	• ²⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-11	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-12	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-13	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-14	•	•	•	•	•	•	•	• ³⁾	• ³⁾	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

¹⁾ On request.

²⁾ Neither suitable for 60 Hz mains-operated pumps, nor for CME pumps running at 100 % speed.

³⁾ Not suitable for pumping liquids at temperatures above +90 °C.

⁴⁾ Pumps with supply voltages B and E are supplied for wire connection without terminal board inside the terminal box (flying wires).
Pumps with supply voltages B1 and E1 are supplied with terminal board inside the terminal box.

Pump type	50 Hz			60 Hz			Shaft seal			Mains-operated motor									Electronically speed-controlled motor																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	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, AQBE AQQV, AQBV			AQQK			1 x 220-240 V (supply voltage C)			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) ⁴⁾			1 x 127 V (supply voltage D) ¹⁾			3 x 208-230/440-480 V (supply voltage E/E1) ⁴⁾			3 x 575 V (supply voltage H) ⁴⁾			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 400 V (50/60 Hz) (supply voltage I)			3 x 380-480 V (50/60 Hz) (supply voltage L)			1 x 200-240 V (50/60 Hz) (supply voltage K)			3 x 460-480 V (60 Hz) (supply voltage N)			1 x 208-230 V (50/60 Hz) (supply voltage M)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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¹⁾ On request.

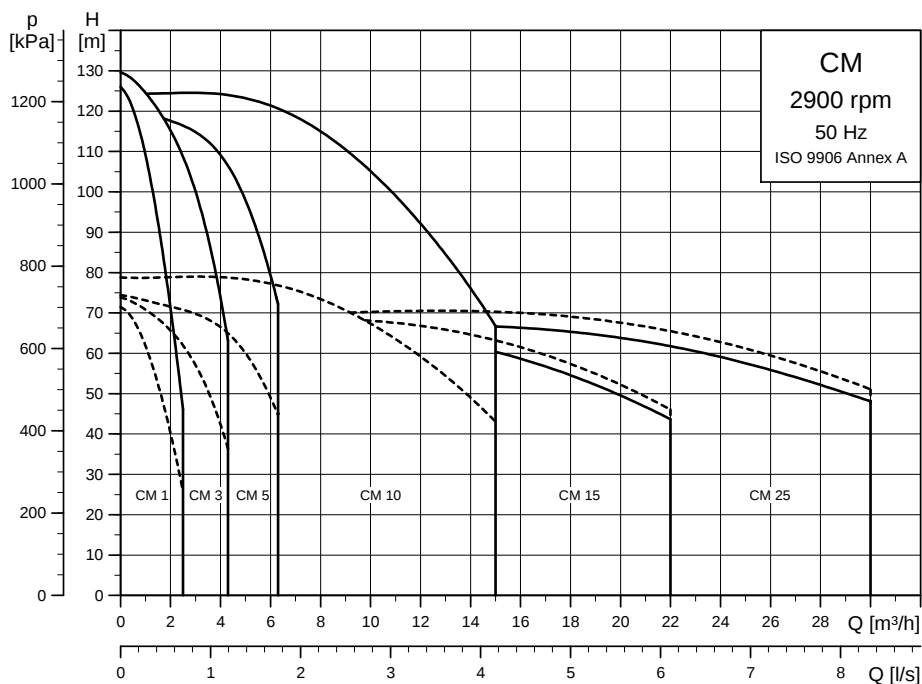
²⁾ Neither suitable for 60 Hz mains-operated pumps, nor for CME pumps running at 100 % speed.

³⁾ Not suitable for pumping liquids at temperatures above +90 °C.

⁴⁾ Pumps with supply voltages B and E are supplied for wire connection without terminal board inside the terminal box (flying wires).
Pumps with supply voltages B1 and E1 are supplied with terminal board inside the terminal box.

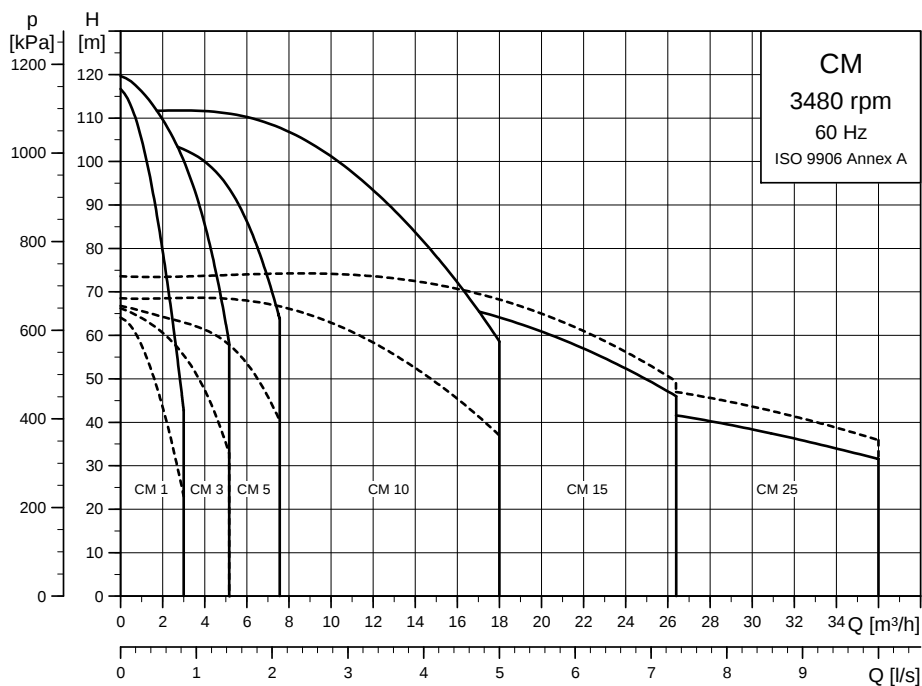
7. Performance range

CM, 50 Hz



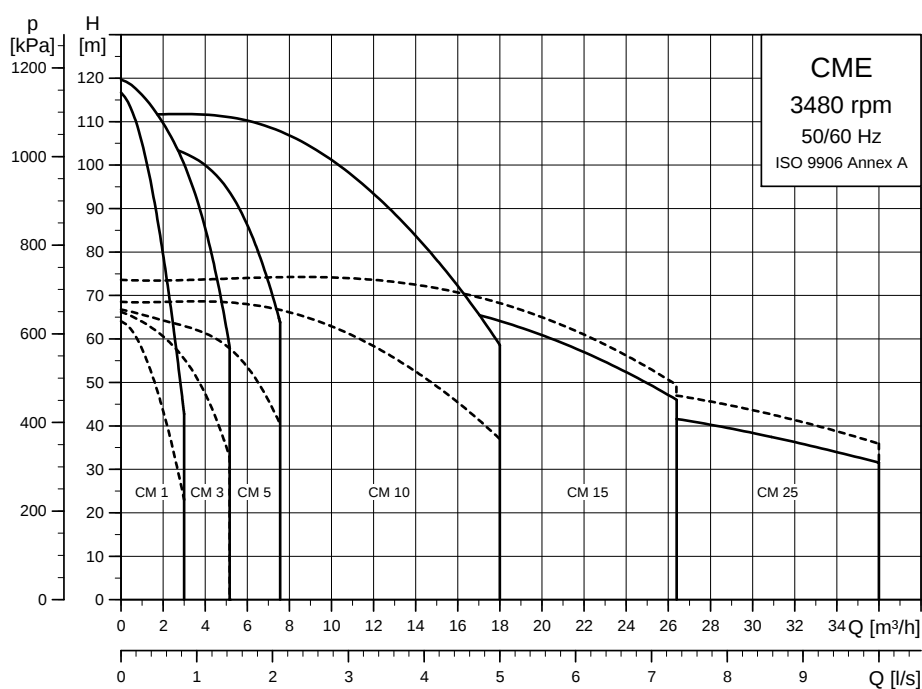
TM04 3340 0110

CM, 60 Hz



TM04 3369 0110

CME, 50/60 Hz



----- CME-A
 ————— CME-I/G

Note: Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min⁻¹.

TM04 3568 0110

8. Operating conditions

Ambient temperature

Maximum ambient temperature in relation to liquid temperature

The maximum ambient temperature depends on the liquid temperature as shown in the table below.

Maximum ambient temperature	Liquid temperature
+55 °C ¹⁾	+90 °C
+50 °C ¹⁾	+100 °C ²⁾
+45 °C ¹⁾	+110 °C ²⁾
+40 °C	+120 °C ²⁾

¹⁾ The maximum ambient temperature for CME pumps is +40 °C, irrespective of the liquid temperature.

²⁾ Note that the maximum permissible liquid temperature for CM-A and CME-A is +90 °C.

Derating of motor output (P_2) in relation to ambient temperature and altitude above sea level

If the ambient temperature exceeds +40 °C for CME pumps or +55 °C for CM pumps, or if the motor is installed more than 1000 metres above sea level, the motor output (P_2) must be reduced due to the low density and consequently low cooling effect of the air. In such cases, it may be necessary to use an oversize motor with higher rated output. Figure 9 shows the relationship between motor output (P_2) and ambient temperature or motor output (P_2) and altitude.

The x-axis showing the temperature corresponds to an altitude of 1000 metres above sea level. The x-axis showing the altitude corresponds to an ambient temperature of +40 °C.

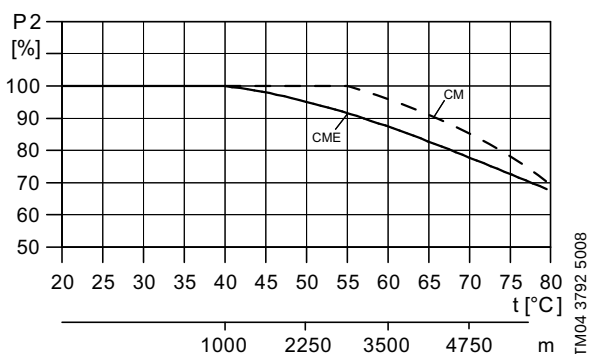


Fig. 9 Relationship between motor output (P_2) and temperature or motor output (P_2) and altitude

Storage and transport temperature

CM: -50 °C to +70 °C.

CME: -30 °C to +60 °C.

Installation of pump

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

The pump must be installed so that air locks are avoided in the pump housing and pipework.

Figure 10 shows the permissible pump positions.

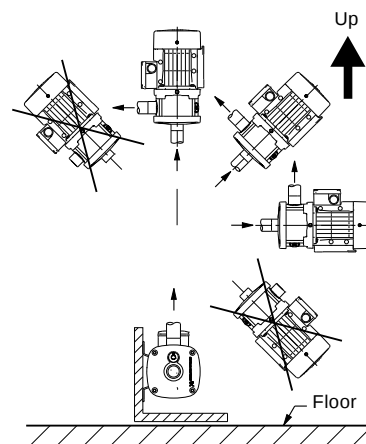


Fig. 10 Pump positions

The pump should be installed with easy access for inspection, maintenance and service.

The pump should be installed in a well-ventilated location.

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.

Material variant	Shaft seal	Permissible liquid temperature ¹⁾	Maximum operating pressure
Cast iron (EN-GJL-200)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	10 bar 6 bar
	AQQx/ AQBx	-20 °C to +90 °C	10 bar
Stainless steel (EN 1.4301/AISI 304)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	10 bar 6 bar
	AQQx/ AQBx	-20 °C ³⁾ to +90 °C +91 °C to +120 °C ²⁾	16 bar 10 bar
Stainless steel (EN 1.4401/AISI 316)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	10 bar 6 bar
	AQQx/ AQBx	-20 °C ³⁾ to +90 °C +91 °C to +120 °C ²⁾	16 bar 10 bar

¹⁾ 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.

²⁾ 120 °C applies only if the pump has an AQQE/AQBE shaft seal.

³⁾ CM-I, -G and CME-I, -G pumps for liquid temperatures below -20 °C are available on request. Please contact Grundfos.

Liquid temperature range

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

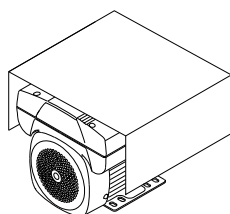
Frequency of starts and stops

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.

When installing CM and CME pumps outdoors, provide them with a suitable cover to protect them from build-up of condensed water. See fig. 11.



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Fig. 11 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 falls 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

Three-phase CME motors hold a UL NEMA 3R environmental rating.

Single-phase CME motors have not been tested against the UL NEMA environmental rating.

All motors are IP55.

Operating range of the shaft seal

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

The curve in fig. 12 shows which shaft seals are suitable at a given temperature and a given pressure.

The curve applies to clean water.

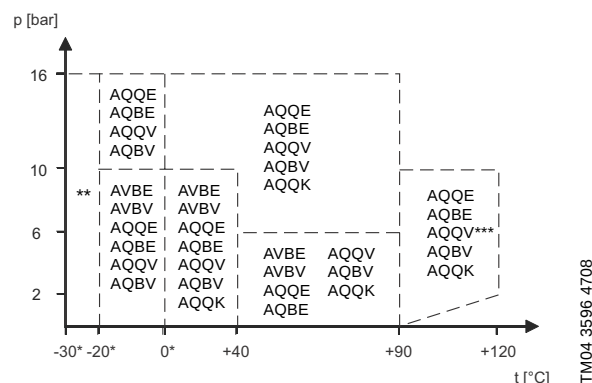


Fig. 12 Curve for the selection of shaft seals

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

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

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

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, i.e. 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

The pumping of 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 should be fitted with a larger motor. If in doubt, contact Grundfos or visit WebCAPS. See page 122.

Sound pressure level

The sound pressure values in the table below apply for CM pumps. If the motor output (P_2) for a given CM 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.

P_2 [kW]	50 Hz	60 Hz
	L_{pA} [dB(A)]	L_{pA} [dB(A)]
0.37	50	55
0.55	50	53
0.75	50	54
1.1	52	57
1.5	54	59
2.2	54	59
3.0	55	60
4.0	62	66
5.5	60	65
7.5	60	65
11.0	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 runs at a lower speed. Possible flow noise from control valves is also reduced at partial load in the case of the CME pump.

Minimum inlet pressure, NPSH

Calculation of the inlet pressure "H" is recommended in these situations:

- The liquid temperature is high.
- The flow 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 suction side of the pump.

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

$$H = p_b \times 10.2 - \text{NPSH} - H_f - H_v - H_s$$

p_b	=	Barometric pressure in bar. (Barometric pressure can be set to 1 bar). 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 the pump will be delivering).
H_f	=	Friction loss in suction pipe in metres head. (At the highest flow 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 ").
H_s	=	Safety margin = minimum 0.5 metres head.

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

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

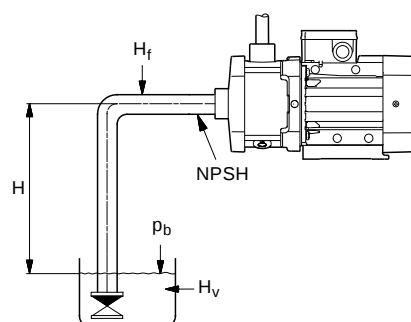


Fig. 13 Minimum inlet pressure (NPSH)

Note: 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.

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9. Pumped liquids

Thin, non-explosive liquids, not containing solid particles or fibres. The liquid must not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than those of water, oversized motors must be used, if required.

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

Please note that aggressive liquids (for instance seawater and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

List of pumped liquids

A number of typical liquids are listed below.

Other pump versions may be applicable, but those stated in the list are considered to be the best choices.

The table is intended as a general guide only and cannot replace actual testing of the pumped liquids and pump materials under specific working conditions.

The list should, however, be applied with some caution as factors such as concentration of the pumped liquid, liquid temperature or pressure may affect the chemical resistance of a specific pump version.

Safety precautions must be taken when pumping dangerous liquids.

Notes

a	To minimise the risk of corrosion the pump must be running continuously, i.e. standstills must not exceed 6-8 hours.
b	May contain additives or impurities which can cause shaft seal problems.
c	The density and viscosity may differ from those of water. Consider this when calculating motor and pump performance.
d	In order to avoid corrosion, the liquid must be free of oxygen.
e	Flammable or combustible liquid. Safety precautions must be considered to ensure safe handling of flammable liquids. Handling the liquid above the flash point and/or boiling point will require the greatest restrictions. A seal-less pump may be required. Contact Grundfos.
f	Risk of crystallisation/precipitation on the shaft seal.
g	If oil residues are present, EPDM cannot be used.
h	As no protective deposits are formed in demineralised water, a slight increase in the corrosion rate must be expected. If impurities (e.g. contamination with metal ions) in the pumped liquid are unacceptable, cast iron or copper containing metals should not be used. If the CO ₂ content is high, cast iron is unsuitable for use.
i	Special conditions related to the properties of demineralised water with a conductivity less than 2 microS/cm makes a SiC/SiC shaft seal unsuitable for use. Use the SiC/carbon shaft seal combination instead.

Pumped liquids	Chemical formula	Notes	Additional information	Cast iron (EN-GJL-200)	Stainless steel (EN 1.4301/AISI 304)	Stainless steel (EN 1.4401/AISI 316)
Water						
Boiler feed water				AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Brackish water		a	30 °C, 2000 ppm chloride			AVBE/AQQE
Condensate				AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Cooling and cutting lubricant		b		AQQV	AQQV	AQQV
Groundwater			< 300 ppm chloride	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Demineralised water		h	> 2 microS/cm	AQQE	AQQE	AQQE
Demineralised water		h, i	< 2 microS/cm	AQBE	AQBE	AQBE
District heating water				AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Oil-containing water				AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Softened water				AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Swimming pool water, chlorinated			40 °C, 150 ppm chloride, < 2 ppm free chlorine		AVBE/AQQE	AVBE/AQQE
Coolants						
Calcium chloride	CaCl ₂	b, c, d, f	< 0 °C, 30 %		AQQE	AQQE
Ethylene glycol	C ₂ H ₄ (OH) ₂	b, c		AQQE	AQQE	AQQE
Glycerine (glycerol)	C ₃ H ₅ (OH) ₃	b, c		AQQE	AQQE	AQQE
Hydrocarbon-based coolant		c, e		AQQV	AQQV	AQQV
Potassium acetate (inhibited)	CH ₃ COOK	b, c, d, f		AQQE	AQQE	AQQE
Potassium formate (inhibited)	HCOOK	b, c, d, f		AQQE	AQQE	AQQE
Propylene glycol	CH ₃ CHOHCH ₂ OH	b, c		AQQE	AQQE	AQQE
Sodium chloride	NaCl	b, c, d, f	< 0 °C, 30 %		AQQE	AQQE
Fuels						
Diesel oil		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Jet fuel		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Kerosene		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Naphtha		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Petrol		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Biodiesel		e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Mineral oils						
Crude oil		b, c, e	< 20 °C	AQQV	AQQV	AQQV
Mineral lubricating oil		c, e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Mineral motor oil		c, e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Synthetic oils						
Synthetic lubricating oil		c, e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Synthetic motor oil		c, e		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Silicone oil		c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Vegetable oils						
Corn oil		b, c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Olive oil		b, c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Peanut oil		b, c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Rapeseed oil		b, c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Soy oil		b, c		AVBV/AQQV	AVBV/AQQV	AVBV/AQQV
Cleaning						
Alkaline degreasing agent		b, g		AQQE	AQQE	AQQE
Soap (salts of fatty acids)		b	< 80 °C	AQQV	AQQV	AQQV
Organic solvents						
Acetone	C ₃ H ₆ O	e		AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Ethyl alcohol (ethanol)	C ₂ H ₆ O	e		AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Isopropyl alcohol	C ₃ H ₇ OH	e		AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Methyl alcohol (methanol)	CH ₃ OH	e		AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Oxidants						
Hydrogen peroxide	H ₂ O ₂	c	20 °C, 25 %		AQQE	AQQE

Pumped liquids	Chemical formula	Notes	Additional information	Cast iron (EN-GJL-200)	Stainless steel (EN 1.4301/AISI 304)	Stainless steel (EN 1.4401/AISI 316)
Salts						
Ammonium bicarbonate	NH ₄ HCO ₃	b, c	20 °C, 15 % 60 °C, 30 %	AQQE	AQQE	AQQE
Copper sulphate	CuSO ₄	b, c, f	60 °C, 30 %		AQQE/AQQV	AQQE/AQQV
Ferric sulphate	Fe ₂ (SO ₄) ₃	b, c, f	20 °C, 30 %		AQQE/AQQV	AQQE/AQQV
Potassium bicarbonate	KHCO ₃	b, c	20 °C, 20 % 60 °C, 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium carbonate	Na ₂ CO ₃	b, c, f	20 °C, 20 % 60 °C, 30 %	AQQE	AQQE	AQQE
Potassium permanganate	KMnO ₄	b, c	60 °C, 10 %		AQQE	AQQE
Sodium nitrate	NaNO ₃	b, c	20 °C, 5 % 60 °C, 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium nitrite	NaNO ₂	b, c	20 °C, 20 % 60 °C, 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium phosphate (mono)	NaH ₂ PO ₄	b, c, f	60 °C, 20 %		AQQE/AQQV	AQQE/AQQV
Sodium phosphate (di)	Na ₂ HPO ₄	b, c, f	30 °C, 30 % 60 °C, 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium phosphate (tri)	Na ₃ PO ₄	b, c, f	20 °C, 10 % 70 °C, 20 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium sulphate	Na ₂ SO ₄	b, c, f	60 °C, 30 %		AQQE/AQQV	AQQE/AQQV
Sodium sulphite	Na ₂ SO ₃	b, c, f	20 °C, 1 % 60 °C, 20 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Acids						
Acetic acid	C ₂ H ₄ O ₂		20 °C, 15 % 60 °C, 50 %		AQQE AQQK	AQQE AQQK
Citric acid	C ₆ H ₈ O ₇	c, f	40 °C, 50 %		AQQE	AQQE
Formic acid	CH ₂ O ₂	c	20 °C, 30 % 40 °C, 30 %		AQQE	AQQE AQQK
Nitric acid	HNO ₃	c	25 °C, 40 % 40 °C, 40 %		AQQE AQQK	AQQE AQQK
Oxalic acid		f	20 °C, 10 % 50 °C, 10 %		AQQE AQQK	AQQE AQQK
Phosphoric acid	H ₃ PO ₄	b, c, f	70 °C, 40 %		AQQE/AQQV	AQQE/AQQV
Sulphuric acid	H ₂ SO ₄	b	20 °C, 1 % 20 °C, 5 %		AQQE/AQQV	AQQE/AQQV
Sulphurous acid			20 °C, 10 % 50 °C, 10 %		AQQE AQQK	AQQE AQQK
Alkalies						
Ammonium hydroxide	NH ₄ OH		30 °C, 30 %	AQQE	AQQE	AQQE
Calcium hydroxide	Ca(OH) ₂	b	30 °C, 5 %	AQQE	AQQE	AQQE
Potassium hydroxide	KOH	c, f	20 °C, 20 % 60 °C, 20 %	AQQE	AQQE	AQQE
Sodium hydroxide	NaOH	c, f	20 °C, 20 % 80 °C, 20 %	AQQE	AQQE	AQQE

10. Construction

Pump

The CM and CME pumps are non-self-priming, horizontal, multistage centrifugal pumps. The pumps have axial suction port and radial discharge port and are mounted on a base plate.

All movable parts are made of stainless steel.

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 fixed driver.

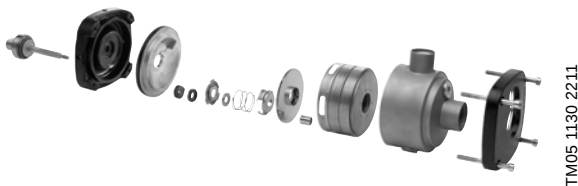


Fig. 14 CM and CME pump hydraulics

Motor

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

Electrical tolerances comply with EN 60034.

CME pumps up to and including 1.1 kW are fitted with single-phase motors as standard. CME pumps from 1.1 to 7.5 kW are available with three-phase motors.

Efficiency

Motors for CM and CME pumps comply with different energy-efficiency requirements throughout the world. E.g. Korean MEPS (Minimum Energy Performance Standards) and the European Ecodesign directive.

Generally, this means that all three-phase motors of 0.75 kW and up are equipped with IE2-compliant motors as standard.

IE3-compliant motors are available on request.

Electrical data

Insulation class	F
Enclosure class	IP55*
	CM
	1 x 220 V, 60 Hz
	1 x 115/230 V, 60 Hz
	1 x 220-240 V, 50 Hz
	1 x 127 V, 60 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
Supply voltages	3 x 575 V, 60 Hz
(tolerance $\pm 10\%$)	3 x 400 V, 50/60 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
	CME
	1 x 200-240 V, 50/60 Hz
	3 x 380-480 V, 50/60 Hz
	1 x 208-230 V, 50/60 Hz
	3 x 460-480 V, 60 Hz

* IP55 is not recommended for operation in condensing environments. For operation in such environments, see *Operation in condensing environments* on page 16.

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

* 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.

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.

As standard MG 71- and MG 80-based motors have no phase insulation and must therefore be protected against voltage peaks higher than 650 V (peak value) between the supply terminals.

Note: MG 71- and MG 80-based motors with phase insulation are available on request.

The above disturbances, i.e. 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, please contact the frequency converter supplier or Grundfos.

Shaft seal

The shaft seal for the CM and CME 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 *Selection of shaft seal* on page 36 where the key parameters of selecting a shaft seal are also described.



Fig. 15 Exploded view of shaft seal

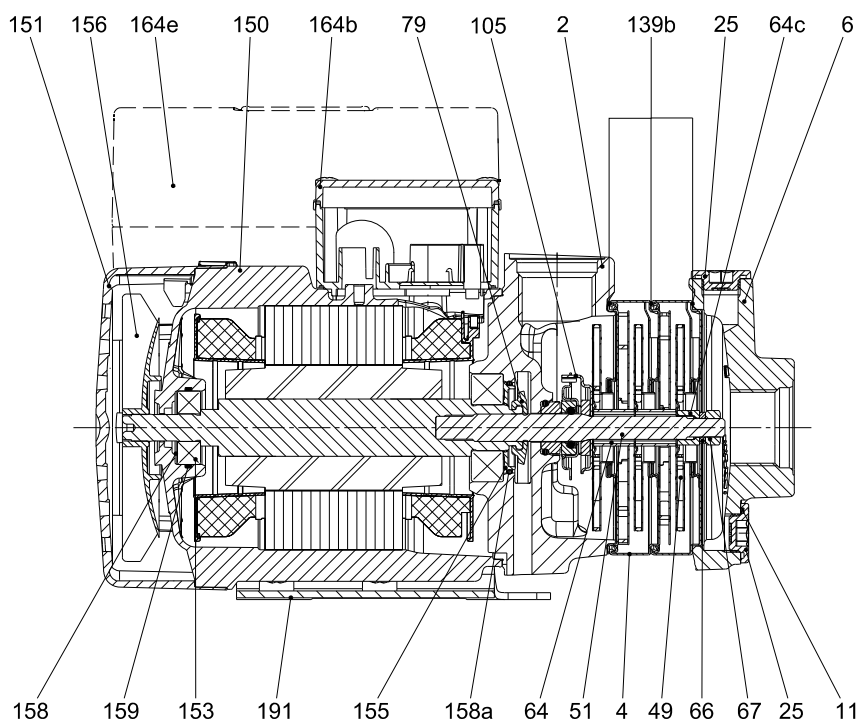
Note: The available shaft seals for CM and CME pumps are very robust and durable, but dry running must always be avoided.

Details regarding operating conditions for the shaft seal can be found in *Operating range of the shaft seal* on page 16.

Further information about the shaft seal can be found in the separate data booklet covering shaft seals which can be downloaded from WebCAPS.

See 27. *Further product documentation* on page 122.

Title	Publication number
Shaft seals	96519875

CM(E) 1-A**(A = cast iron EN-GJL-200)****Sectional drawing**

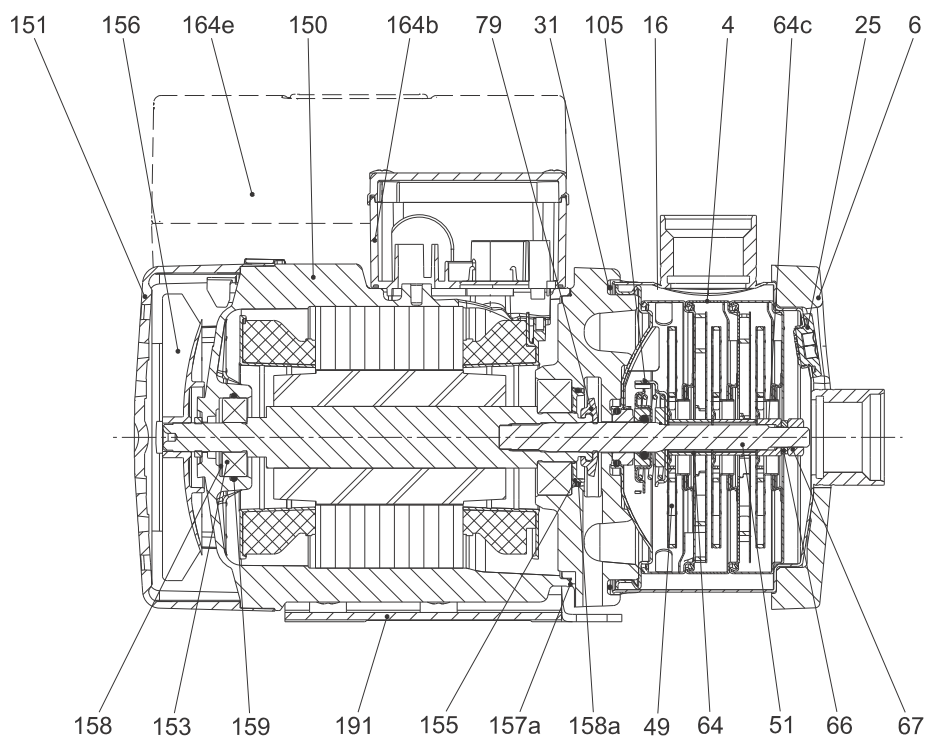
TM04 3723 3809

Fig. 16 CM(E) 1-3 with MG(E) 71 motor**Components**

Pos.	Component	Pos.	Component	Pos.	Component
2	Discharge 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

CM(E) 1-I and CM(E) 1-G

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

Sectional drawing

TN04 3722 3809

Fig. 17 CM(E) 1-3 with MG(E) 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

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)	
			DIN W.-Nr.	ISO/AISI/ASTM	DIN W.-Nr.	ISO/AISI/ASTM	DIN W.-Nr.	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, electro-coated	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 ¹⁾	AISI 304/ AISI 316 ¹⁾	1.4301/ 1.4401 ¹⁾	AISI 304/ AISI 316 ¹⁾	1.4401	AISI 316
	Shaft seal, seal faces	Al ₂ O ₃ /carbon or SiC						
51	Pump shaft	Stainless steel	1.4301	AISI 304	1.4301/ 1.4401 ¹⁾	AISI 304/ AISI 316 ¹⁾	1.4401	AISI 316
11 31 ³⁾ 158a 159	O-rings	EPDM, FKM or FFKM						
157a ³⁾	Gasket	Paper						
139b ⁴⁾	Gasket	Aramide fibres (nbr)						
2 ⁴⁾	Discharge part	Cast iron						
6 ⁴⁾	Inlet part	Cast iron						
4	Chamber	Stainless steel	1.4301/ 1.4401 ¹⁾	AISI 304/ AISI 316 ¹⁾	1.4301/ 1.4401 ¹⁾	AISI 304/ AISI 316 ¹⁾	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 ¹⁾	AISI 304/ AISI 316 ¹⁾	1.4301/ 1.4401 ¹⁾	AISI 304/ AISI 316 ¹⁾	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 ⁵⁾		STX2000 ⁵⁾		STX2000 ³⁾	
6 ³⁾	Flange	Cast iron						
16	Sleeve	Stainless steel			1.4301/ 1.4401 ¹⁾⁺²⁾	AISI 304/ AISI 316 ¹⁾	1.4401	AISI 316
67	Nut	Stainless steel A4						
66	Washer (NORD-LOCK®)	Steel	1.4547		1.4547		1.4547	

1) On request.

2) As standard, the pumps listed below are fitted with sleeves made of stainless steel 1.4401:

CM(E) 1-9 up to and including CM(E) 1-14
 CM(E) 3-9 up to and including CM(E) 3-14
 CM(E) 5-9 up to and including CM(E) 5-13
 CM(E) 10-6 up to and including CM(E) 10-8

3) Only in CM(E)-I/G pumps.

4) Only in CM(E)-A pumps.

5) STX2000 ~ CrNiMO 22 19 4.

11. CME pumps

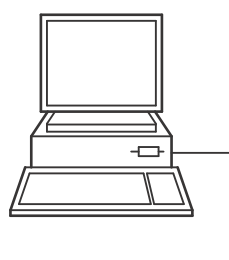
Communication with CME pumps

Communication with CME pumps is possible by means of

- a central building management system
- a remote control (Grundfos R100)
- a control panel.

Central building management system

The operator can communicate with a CME pump at a distance. Communication can take place via a central building management system allowing the operator to monitor and change control modes and setpoint settings.



LON, PROFIBUS, Modbus, GSM, GRM or BACnet network



CIU 100: LON
CIU 150: Profibus DP
CIU 200: Modbus RTU
CIU 250: GSM
CIU 270: GRM
CIU 300: BACnet MS/TP



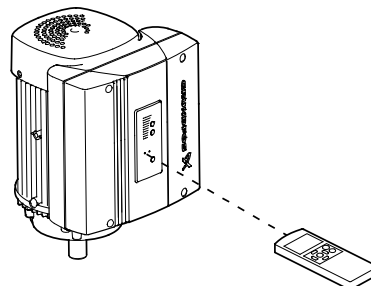
CME pump

TM04 6090 4909

Remote control

The Grundfos R100 remote control is available as an accessory. See page 119.

The operator can communicate with the CME pump by pointing the IR-signal transmitter at the control panel of the terminal box.



TM03 0141 4104

Fig. 18 R100 remote control

The operator can monitor and change control modes and settings of the CME pump with the R100.

Control panel

The operator can change the setpoint settings manually on the control panel of the CME pump terminal box.



Fig. 19 Control panel of a CME pump

TM00 7600 0404

Speed control of CME pumps

Affinity equations

Normally, CME pumps are used in applications characterised by a variable flow. Consequently, it is not possible to select a pump that is constantly operating at its optimum efficiency.

In order to achieve optimum operating economy, the duty point should be close to the optimum efficiency (eta) for most operating hours.

Between the min. and max. performance curves, CME pumps have an infinite number of performance curves, each representing a specific speed. It may therefore not be possible to select a duty point close to the max. curve.

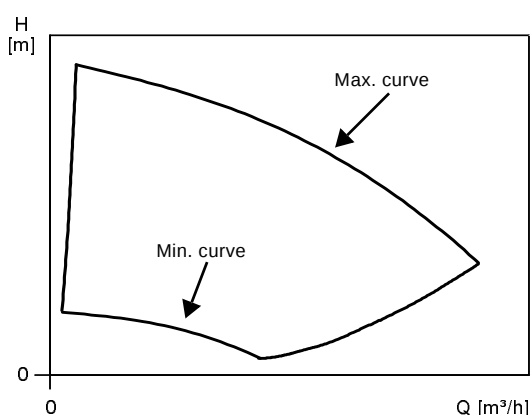


Fig. 20 Min. and max. performance curves

In situations where it is not possible to select a duty point close to the max. 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: 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.

Finally, it is worth noting that the efficiency of the frequency converter and the motor must be taken into account if a precise calculation of the power saving resulting from a reduction of the pump speed is wanted.

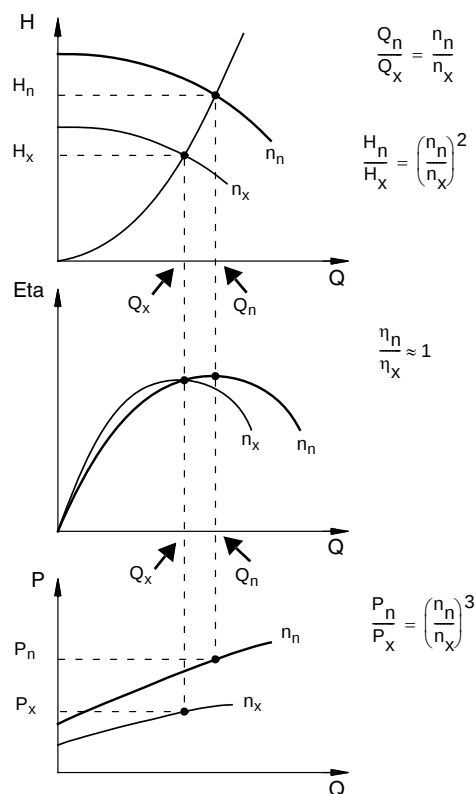


Fig. 21 Affinity equations

Legend

H_n	Rated head in metres
H_x	Current head in metres
Q_n	Rated flow rate in m ³ /h
Q_x	Current flow rate in m ³ /h
n_n	Rated motor speed in min ⁻¹
n_x	Current motor speed in min ⁻¹
η_n	Rated efficiency in %
η_x	Current efficiency in %

WinCAPS and WebCAPS

WinCAPS and WebCAPS are selection programs offered by Grundfos.

The two programs make it possible to calculate the specific duty point and energy consumption of a CME pump.

When you enter the dimensions of the pump, WinCAPS and WebCAPS can calculate the exact duty point and energy consumption.

For further information, see page 122.

TM00 8720 3496

12. Grundfos CUE

CM pumps connected to Grundfos CUE, external frequency converters



GrA4404

Fig. 22 Grundfos CUE product range

Grundfos CUE is a complete range of frequency converters for pump control in a wide range of applications. Grundfos CUE is designed for wall mounting.

Grundfos CUE provides a variety of benefits to the end-user.

The benefits include

- Grundfos CME pump functionality and user interface
- application- and pump family-related functions
- increased comfort compared to mains-operated pump solutions
- simple installation and commissioning compared to standard frequency converters.

Functions

Intuitive startup guide

The startup guide enables easy installation and commissioning as well as plug-and-pump convenience. Few settings need to be made by the installer as the rest is done automatically or preset from the factory.

Smart user interface



TM04 3283 4108

Fig. 23 Grundfos CUE control panel

Grundfos CUE features a unique user-friendly control panel with graphic display and easy-to-use buttons. Panel layout resembles the well-known Grundfos R100 remote control, which is used with Grundfos CME pumps.

Controlling the value you choose

Grundfos CUE has a built-in PI controller offering closed-loop control of a desired value.

The values include

- constant differential pressure
- proportional pressure
- constant temperature
- constant flow.

Wide product range

The CUE product range is quite comprehensive, covering five different voltage ranges, enclosure classes IP20/21 (NEMA 1) and IP54/55 (NEMA 12), and a wide range of output powers.

The table below provides a general overview.

Input voltage [V]	Output voltage [V]	Motor [kW]
1 x 200-240	3 x 200-240	1.1 - 7.5
3 x 200-240	3 x 200-240	0.75 - 45
3 x 380-500	3 x 380-500	0.55 - 250
3 x 525-600	3 x 525-600	0.75 - 7.5

13. Approvals and markings

Approvals

CB certificate, IEC countries.

C-tick mark, New Zealand and Australian EMC.

cULus

The cULus approval covers the following supply voltages:

- 1 x 115/230 V, 60 Hz (supply voltage B)
- 3 x 208-230/440-480 V, 60 Hz (supply voltage E)
- 3 x 575 V, 60 Hz (supply voltage H).

UL

The UL approval covers the following supply voltages:

- 1 x 115/230 V, 60 Hz (supply voltage B1)
- 3 x 208-230/440-480 V, 60 Hz (supply voltage E1)
- 3 x 400 V, 50/60 Hz (supply voltage I)
- 3 x 380-415 V, 50 Hz/3 x 440-480 V, 60 Hz (supply voltage J).

Note: The above voltages are planned to be cULus-approved during 2012.

Pumps

UL778 and C22.2 No 108-01

NEMA 250 (IP code).

Overheating protection

UL2111 and C22.2 No 77-95.

cURus motors

CME motors comply with UL508C and C22.2 No 14.

The cURus approval covers the following supply voltages:

- 3 x 380-480 V, 50/60 Hz (supply voltage L)
- 3 x 460-480 V, 60 Hz (supply voltage N)
- 1 x 208-230 V, 50/60 Hz (supply voltage M)
- 3 x 208-230 V, 50/60 Hz (supply voltage Q).

EC declaration of conformity

Machinery Directive (2006/42/EC).

- Standards used:
EN 809: 2008 and EN 60204-1: 2006.

Low Voltage Directive (2006/95/EC).

Applicable when the rated power is lower than 2.2 kW.

- Standards used:
EN 60335-1: 2002 and EN 60335-2-51: 2003.

EMC Directive (2004/108/EC).

Ecodesign Directive (2009/125/EC).

- Electric motors:
Commission Regulation No. 640/2009.
Applies only to three-phase Grundfos motors marked IE2 or IE3. See motor nameplate.
Standard used: EN 60034-30: 2009.

Other approvals and compliance with directives

- GOST (Russia)
- Compliance with RoHS, directive 2002/96/EC
- PSE
- Kemco.

Drinking water approvals

- WRAS
- ACS
- NSF61.

Markings



C-tick



CE



cULus



cURus



UL

14. 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) • Det Norske Veritas (DNV) • Germanischer Lloyd (GL) • Bureau Veritas (BV) • American Bureau of Shipping (ABS) • Registro Italiano Navale Agenture (RINA) • China Classification Society (CCS) • Russian maritime register of Shipping (RS) • 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.
Material specification report with certificate from raw material supplier	Certifies the material used for the main components of the specific pump. A material certificate, EN 10204, 3.1, will be supplied for each main component.
Duty-point verification report	Certifies a test point specified by the customer. Issued according to ISO 9906 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.
Electro-polished pump	Confirms that the specific pump has been electro-polished. The maximum surface roughness is specified in the report.

Examples of the certificates are shown on pages 31 to 33.

Note: Other certificates are available on request.

Examples of certificates

Certificate of compliance with the order

BE THINK INNOVATE		GRUNDFOS	
Certificate of compliance with the order			
EN 10204 2.1			
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. 96 50 78 95/1001002			

TM03 4165 1706

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		
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, inspected, and conform to the full requirements of the appropriate catalogues, drawings and / or specifications relative thereto.			
GRUNDFOS Date: _____ Signature: _____ Name: _____ Dept.: _____			
Part no 96 50 78 96/1001002			

TM03 4163 1706

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/guide vanes		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 97/1004140			

TM03 4162 3607

Inspection certificate

BE THINK INNOVATE		GRUNDFOS	
Inspection certificate.			
Russian Maritime Register of Shipping			
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			
Russian Maritime Register of Shipping (RS)			
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)	
Service		Frequency (Hz)	
Medium		Insulation class	
Base/Pump head cover		Power factor	
Impeller/guide vanes			
Shaft/sleeve			
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			
The pump has been marked			
Surveyor signature:		GRUNDFOS	
Tested date:		Date:	
		Signature:	
		Name:	
		Dept.:	
Part no. 96 50 79 25/1014142			

TM03 4156 3607

Standard test report

BE THINK INNOVATE		GRUNDFOS
Standard test report		
Customer name		
Customer order no.		
Customer Tag no.		
GRUNDFOS order no.		
Product type		
GRUNDFOS DUT id.		
Part number		
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.:		
Part no. 96 50 79 30 P01 / A72775		

TM03 4143 1706

Material specification report

BE THINK INNOVATE		GRUNDFOS
Material specification report.		
Customer name		
Customer order no.		
Customer TAG no.		
GRUNDFOS order no.		
Pump type		
GRUNDFOS DUT id.		
Part number		
Production code		
Pump	Materials	DIN W.-Nr.
Pump head		
Pump head cover		
Shaft		
Impeller		
Chamber		
Outer sleeve		
Base		
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. 96 50 79 28/A72775		

TM03 4150 1706

Material specification report with certificate from raw material supplier

BE THINK INNOVATE		GRUNDFOS
Material specification report with EN10204 3.1 material certificate from raw material supplier		
Customer name		
Customer order no.		
Customer TAG no.		
GRUNDFOS order no.		
Pump type		
GRUNDFOS DUT id.		
Part number		
Production code		
Pump	Raw material no.	Supplier certificate no.
Pump head		
Pump head cover		
Shaft		
Impeller		
Chamber		
Outer sleeve		
Base		
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. 96 50 79 29/A72775		

TM03 4149 3607

Duty-point verification report

BE THINK INNOVATE		GRUNDFOS
Duty point verification report		
Customer name		
Customer order no.		
Customer Tag no.		
GRUNDFOS order no.		
Product type		
GRUNDFOS DUT id.		
Part number		
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.		
GRUNDFOS Date: Signature: Name: Dept.:		
Part no. 96 53 96 99 / A72775		

TM03 4148 1706

Motor test report

BE THINK INNOVATE		GRUNDFOS
Motor test report		
Customer name		
Customer order no.		
Customer TAG no.		
GRUNDFOS order no.		
GRUNDFOS DUT id.		
Part number		
Motor no.		
Motor serie no.		
We the undersigned hereby guarantee and certify that the above motor has been tested. The performance of the motor can be seen in the motor test report on the next page.		
GRUNDFOS Date: Signature: Name: Dept.:		
Part no. 96 50 79 33 /A72775		

TM03 4146 1706

Clean and dried pump

BE THINK INNOVATE		GRUNDFOS
Cleaned and dried pump		
Customer name		
Customer order no.		
Customer TAG no.		
GRUNDFOS order no.		
Pump type		
GRUNDFOS DUT id.		
Part number		
Production code		
GRUNDFOS hereby confirms that the pump mentioned above is manufactured according the specifications mentioned in the "CR, CRI, CRN Custom-built pumps" data booklet. This means that prior to assembly, pump components are washed in pure, hot soap water, rinsed in de-ionized water and dried. The pump is wrapped in a plastic bag before being packed. The pump has not been performance-tested.		
GRUNDFOS Date: Signature: Name: Dept.:		
Part no. 96 50 79 34 /A72775		

TM03 4145 1706

Electro-polished pump

BE THINK INNOVATE		GRUNDFOS																
Electro-polished pump																		
Customer name																		
Customer order no.																		
Customer TAG no.																		
GRUNDFOS order no.																		
Pump type																		
GRUNDFOS DUT id.																		
Part number																		
Production code																		
Grundfos hereby confirms that the pump mentioned above is manufactured according to the specifications mention in the "CR, CRI, CRN Custom-built pumps" data booklet. This means that prior to assembly, pump components are electro-polished in a mixture of sulphuric acid and phosphoric acid. Finally the components are passivated in nitric acid. The CRN1s, 1, 3, 5, 10, 15, and 20 casted parts are all mechanically polished before being electropolished. The pump will then obtain following surface roughness; <table border="1"> <thead> <tr> <th>Pump type</th> <th>Stainless steel casted parts</th> <th>Stainless steel plate and other non casted parts</th> <th>Surface roughness (µm)</th> </tr> </thead> <tbody> <tr> <td>CRN1s, 1, 3, 5</td> <td>*</td> <td>*</td> <td>equal to or below 0,8</td> </tr> <tr> <td>CRN10, 15, 20</td> <td>*</td> <td>*</td> <td>equal to or below 0,8</td> </tr> <tr> <td>CRN32, 45, 64, 90</td> <td>*</td> <td>*</td> <td>between 10 – 15 equal to or below 0,8</td> </tr> </tbody> </table>			Pump type	Stainless steel casted parts	Stainless steel plate and other non casted parts	Surface roughness (µm)	CRN1s, 1, 3, 5	*	*	equal to or below 0,8	CRN10, 15, 20	*	*	equal to or below 0,8	CRN32, 45, 64, 90	*	*	between 10 – 15 equal to or below 0,8
Pump type	Stainless steel casted parts	Stainless steel plate and other non casted parts	Surface roughness (µm)															
CRN1s, 1, 3, 5	*	*	equal to or below 0,8															
CRN10, 15, 20	*	*	equal to or below 0,8															
CRN32, 45, 64, 90	*	*	between 10 – 15 equal to or below 0,8															
GRUNDFOS Date: Signature: Name: Dept.:																		
Part no. 96 50 79 35 /A72775																		

TM03 4144 1706

15. Selection and sizing

Selection of pumps

Selection of pumps should be based on these elements:

- the duty point of the pump (see below)
- dimensional data such as pressure loss as a result of height differences, friction loss in the pipework, pump efficiency, etc. (see below)
- pump materials (see page 35)
- pump connections (see page 35)
- shaft seal (see page 36).

Duty point of the pump

From a duty point it is possible to select a pump on the basis of the curve charts starting on page 38.

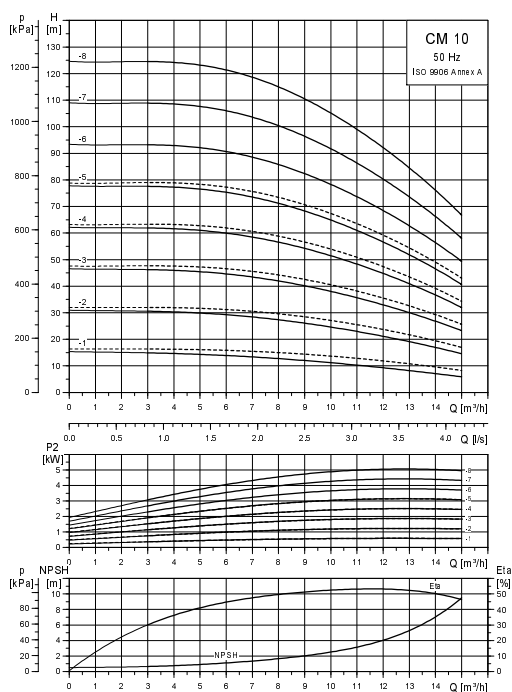


Fig. 24 Example of a curve chart

TM04 6404 0210

Dimensional data

When sizing a pump, take the following factors into account:

- Required flow and pressure at the draw-off point.
- Pressure loss as a result of height differences (H_{geo}).
- Friction loss in the pipework (H_f).
It may be necessary to account for pressure loss in connection with long pipes, bends or valves, etc.
- Best efficiency at the estimated duty point.*
- NPSH value.

For calculation of the NPSH value, see *Minimum inlet pressure, NPSH* on page 17.

* See *Selection of CME pumps* on page 36 for further information about sizing CME pumps.

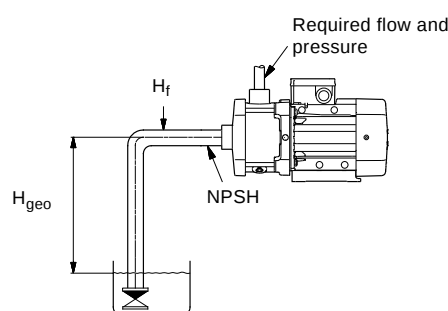


Fig. 25 Dimensional data

TM04 3486 4508

Pump efficiency

When sizing the pump, the efficiency (η) should 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 fig. 26.

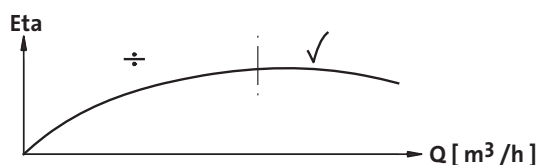


Fig. 26 Best efficiency

TM00 9190 1303

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 with the best efficiency of the pump. The example in fig. 27 shows how to check the pump efficiency when selecting a CM pump.

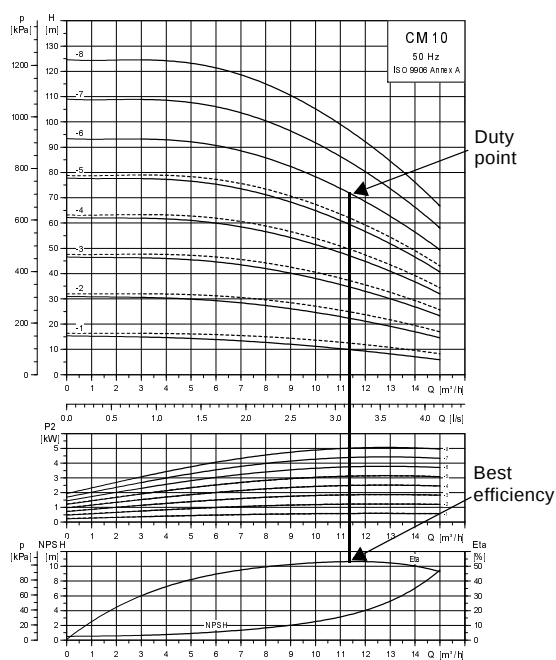


Fig. 27 Example of a CM pump's duty point

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* (EN-GJL-200)	CM(E)-A
	Stainless steel (EN 1.4301/AISI 304)	CM(E)-I
Industrial liquids and acids	Stainless steel (EN 1.4401/AISI 316)	CM(E)-G

* 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 1.4057/AISI 431).

For more specific selection based on the pumped liquid, see *List of pumped liquids* on page 18, or contact Grundfos.

Pump connections



Fig. 28 Examples of pump connections

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

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

TM04 3937 0409

TM04 6404 0210

Selection of shaft seal

As standard, the CM and CME pumps are fitted with a Grundfos O-ring type shaft seal with fixed driver suitable for the most common applications.



TM04 3934 0409

Fig. 29 Shaft seal (O-ring type with fixed driver)

The table below shows the available shaft seal types for CM and CME pumps.

Pump type	Shaft seal type	Material	Rubber parts
CM, CME	AQQE	Stainless steel	EPDM (E) FKM (V) FFKM
	AQQV		
	AQQK		
	AQBE		
	AQBV		
	AVBE		
	AVBV		

These key parameters must be taken into account when selecting the shaft seal:

- type of pumped liquid
- liquid temperature
- maximum pressure.

Use the curve in fig. 12 on page 16 to select a suitable shaft seal. If the pumped liquid differs from water, a suitable shaft seal can be found in *List of pumped liquids* on page 18.

Note: The list should be applied with some caution, as factors such as concentration of the pumped liquid, liquid temperature or pressure may affect the chemical resistance of a specific pump version.

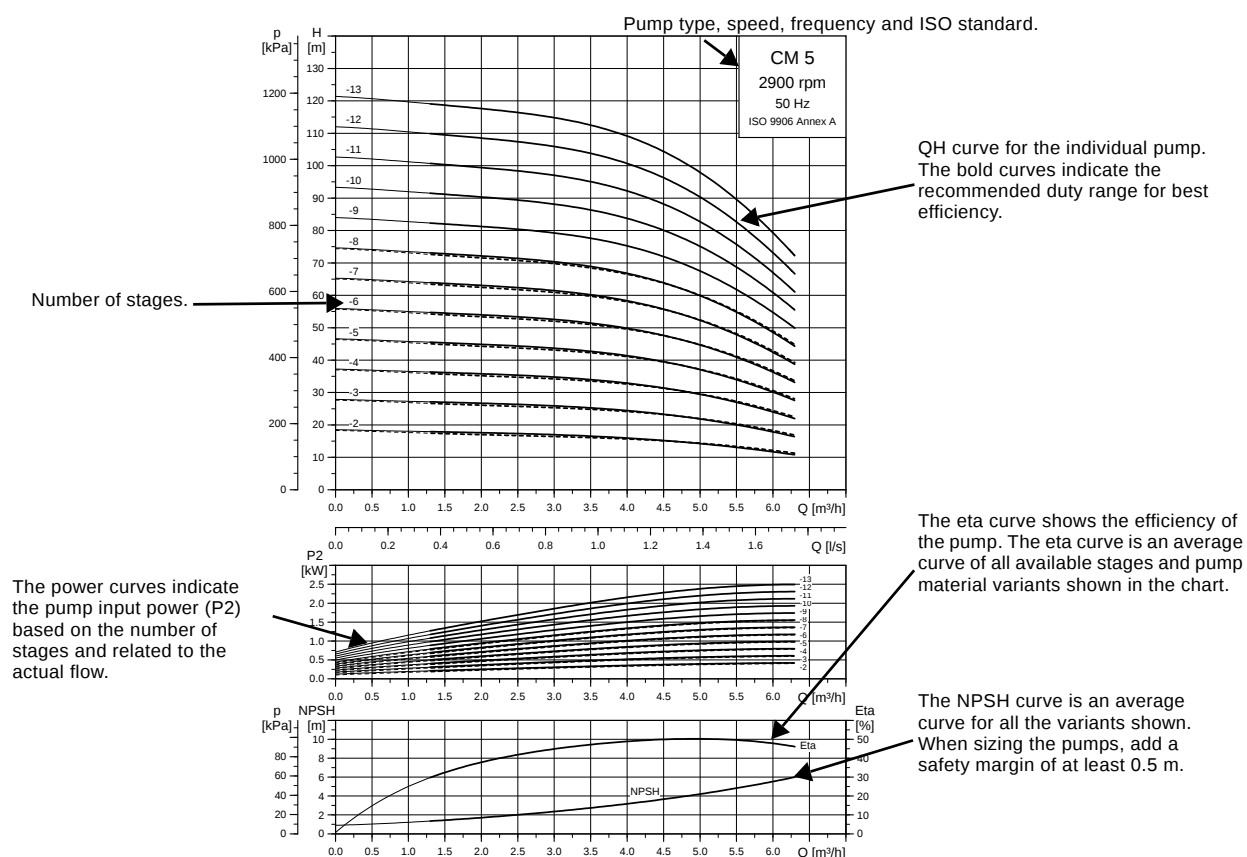
Selection of CME pumps

CME pumps are normally used in applications characterised by a variable flow. Consequently, it is not possible to select a pump that is constantly operating at its optimum efficiency. In order to achieve optimum operating economy, the duty point should therefore be close to the optimum efficiency (eta) for most operating hours.

For further information, see 11. *CME pumps* on page 26.

Note: Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min⁻¹. See CME performance curves on pages 50 to 55.

16. How to read the curve charts



TM04 3336 0210

Fig. 30 How to read the curve charts

Guidelines to performance curves

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

- Tolerances to ISO 9906, Annex A, if indicated.
- Measurements have been made with airless water at a temperature of +20 °C.
- The curves apply to the following kinematic viscosity: $\mu = 1 \text{ mm}^2/\text{s}$ (1 cSt).
- The QH curves apply to fixed speeds of 2900 min^{-1} (50 Hz) and 3480 min^{-1} (60 Hz).
Note: Please refer to WebCAPS for pump curves which include the characteristic of the selected motor. In WebCAPS, it is also possible to 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 $\rho = 1000 \text{ kg/m}^3$.

- Due to the risk of overheating, the pumps should not be used at a flow below the minimum flow rate. The curve in fig. 31 shows the minimum flow rate as a percentage of the rated flow rate in relation to the liquid temperature.

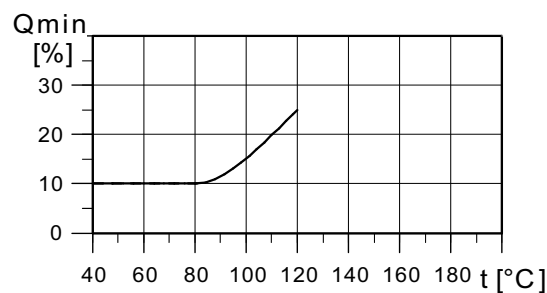
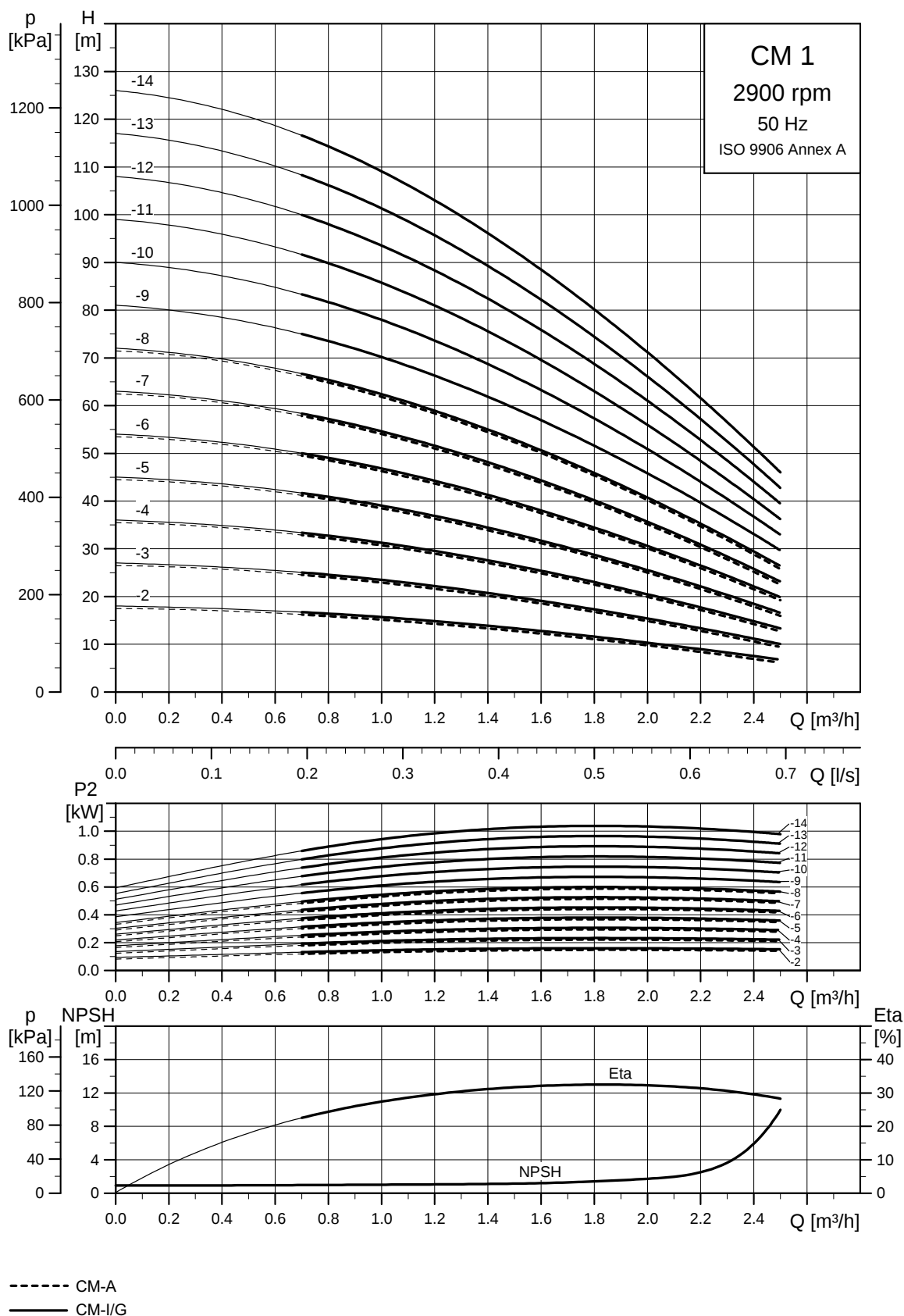


Fig. 31 Minimum flow rate

TM04 3791 5005

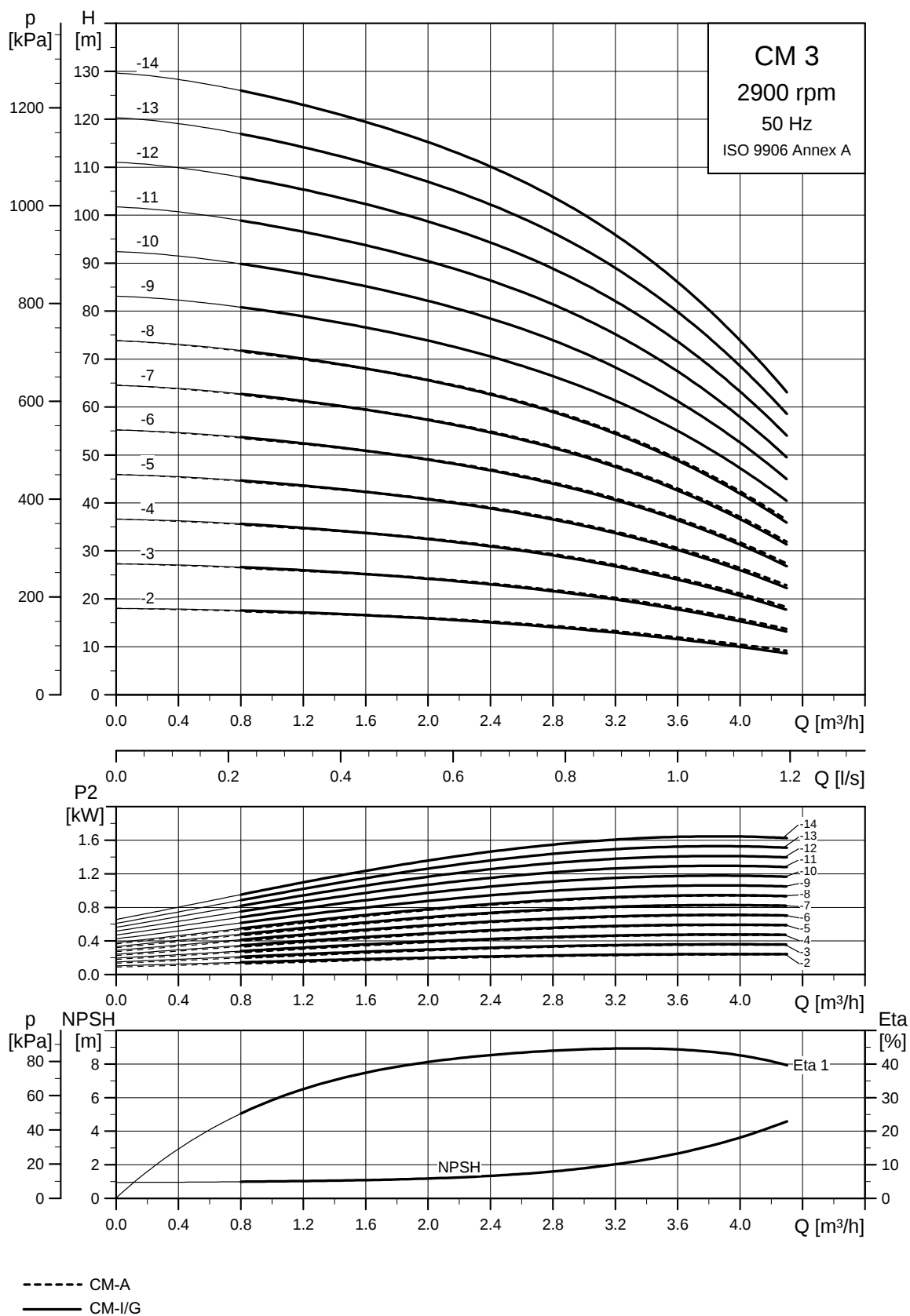
17. Performance curves, CM 50 Hz

CM 1



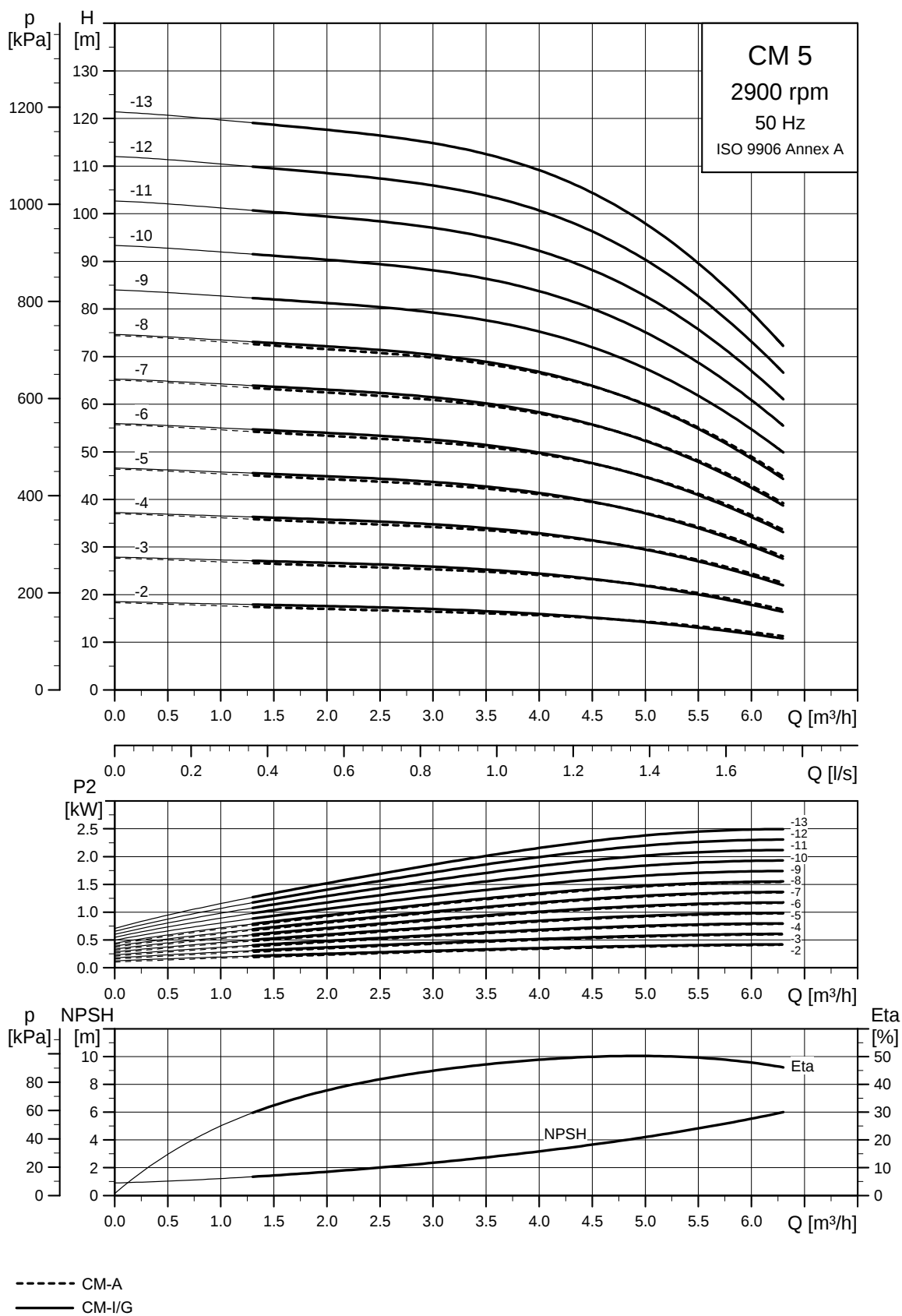
TM04 3334 0210

CM 3



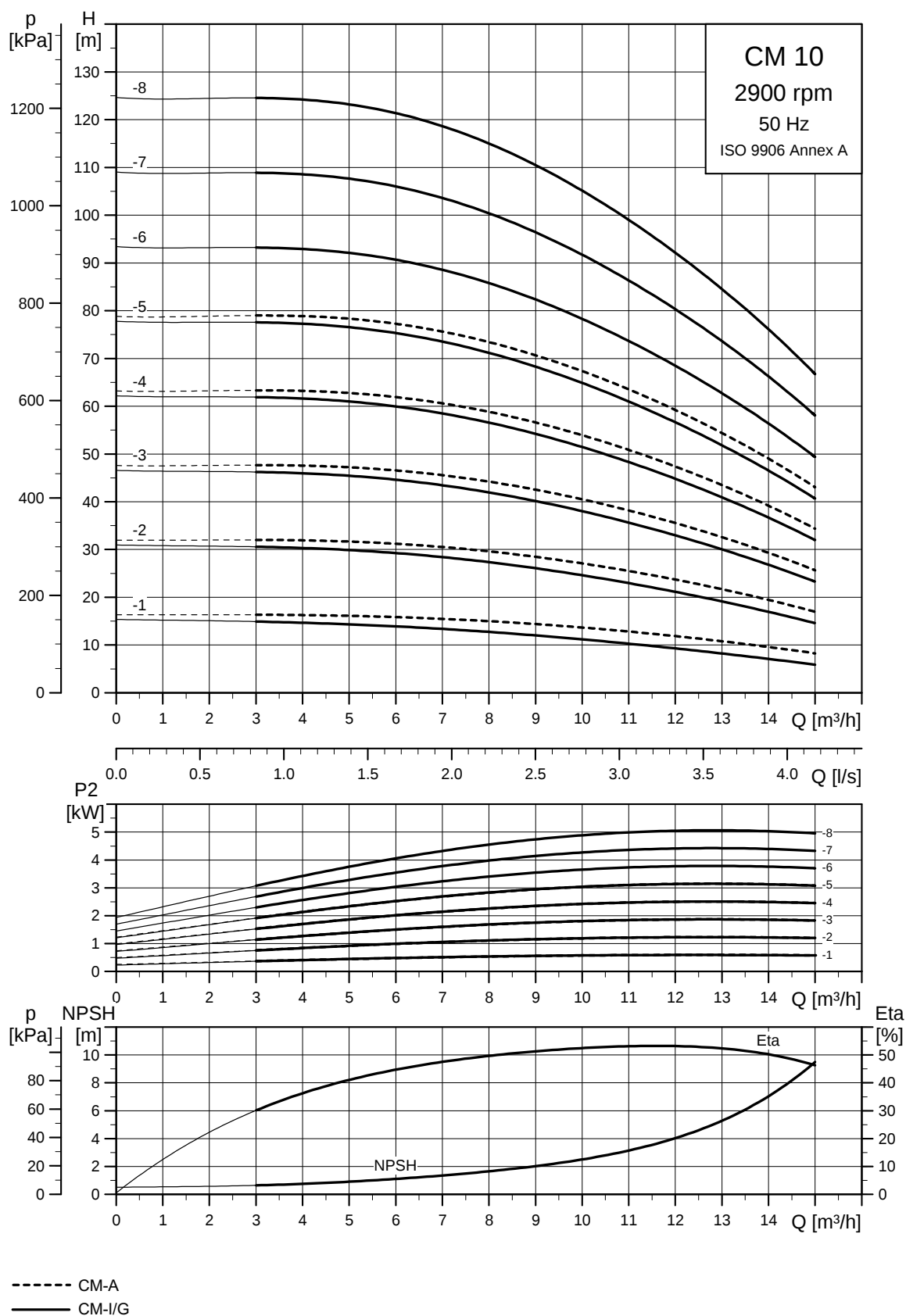
TM04 3335 0210

CM 5



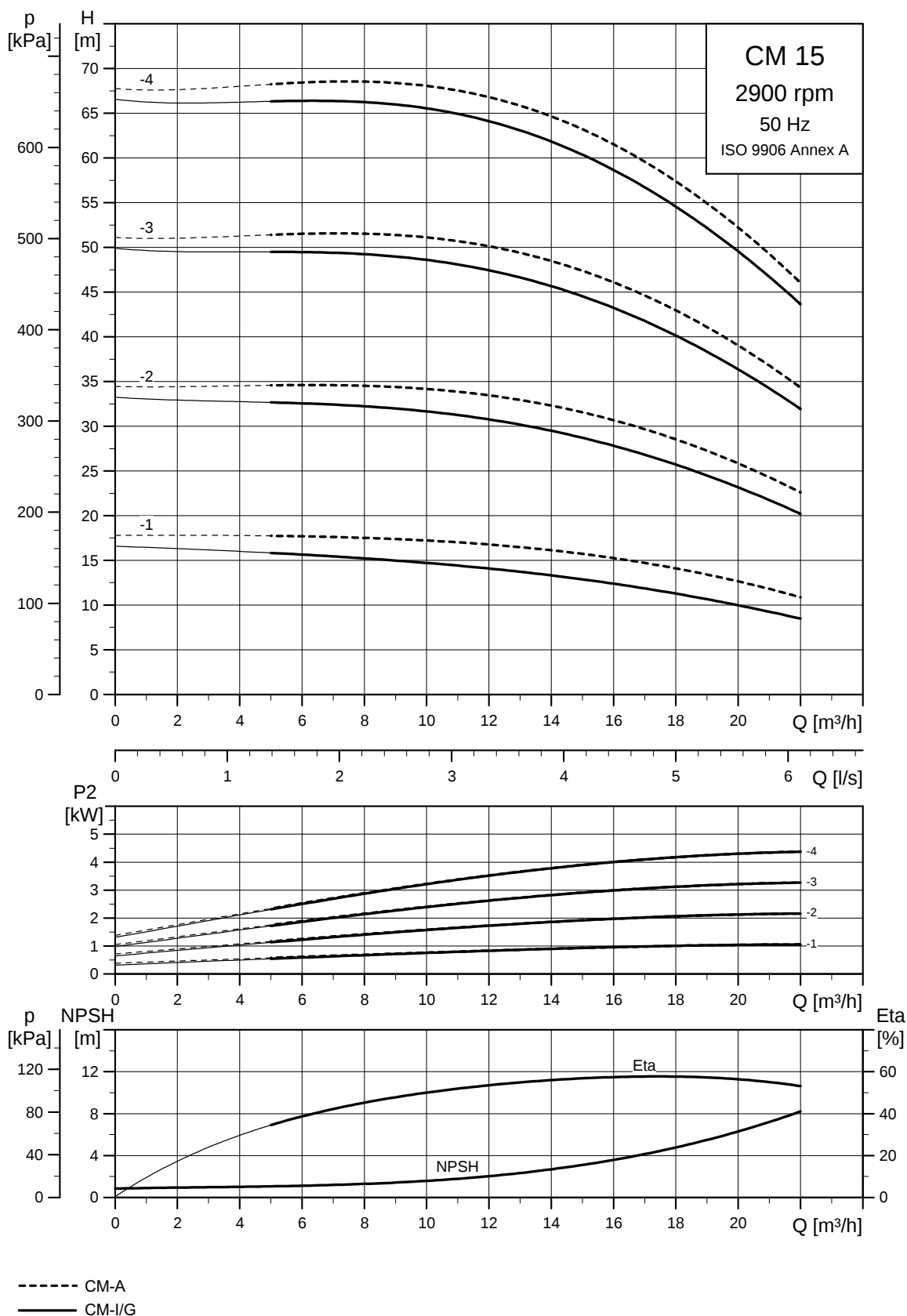
TM04 3336 0210

CM 10



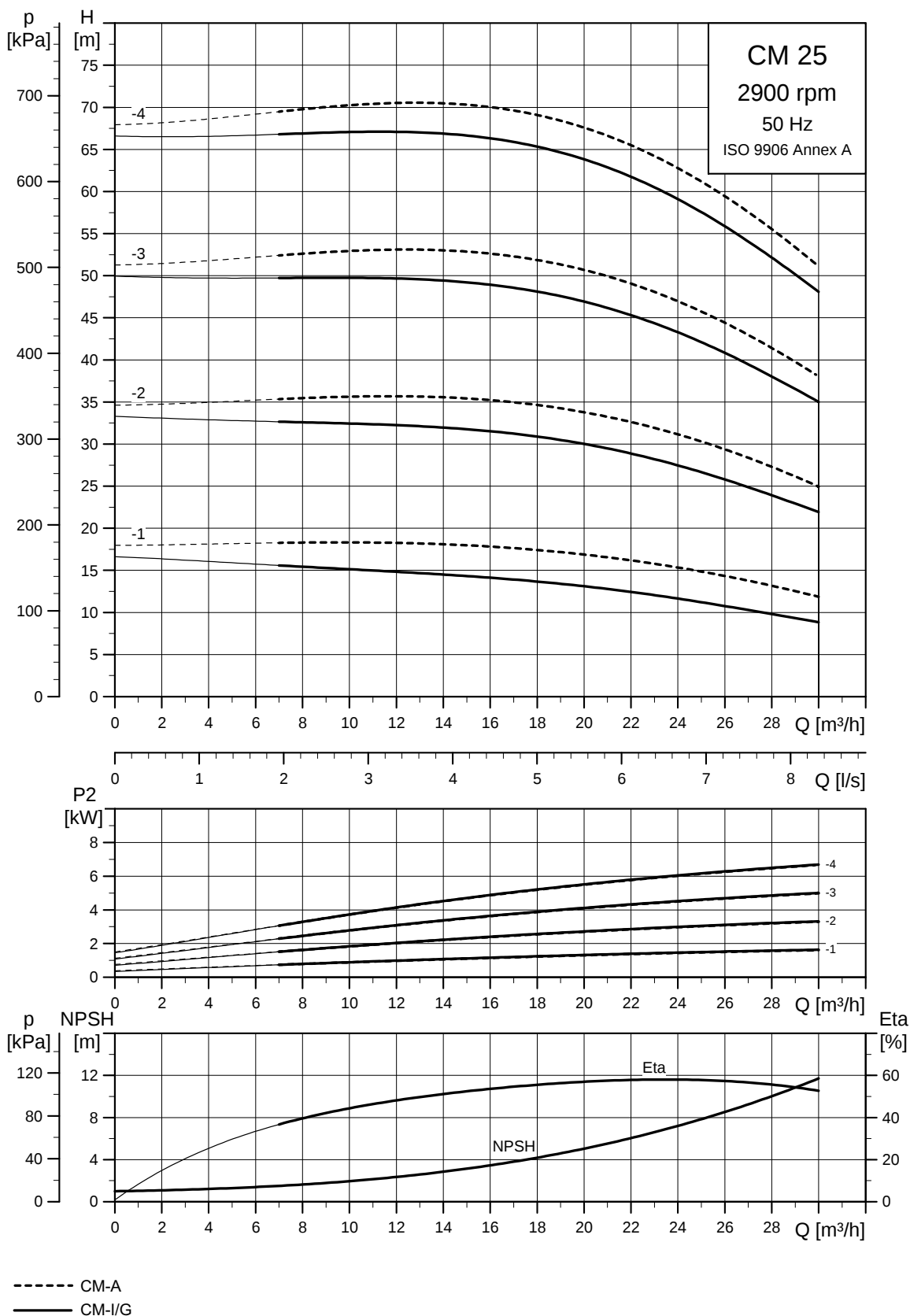
TM04 3337 0210

CM 15



TM04 3338 0210

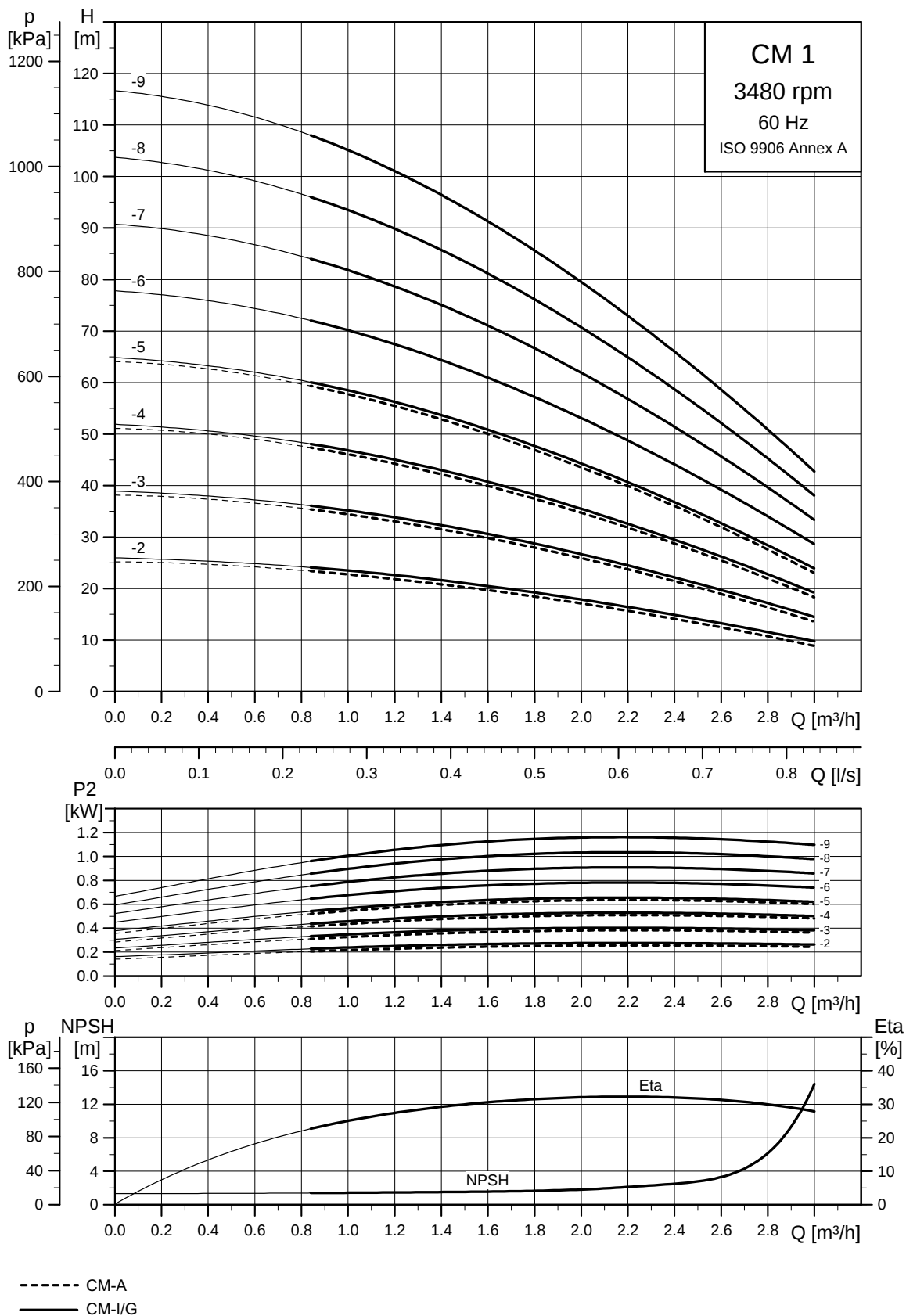
CM 25



TM04 3339 0210

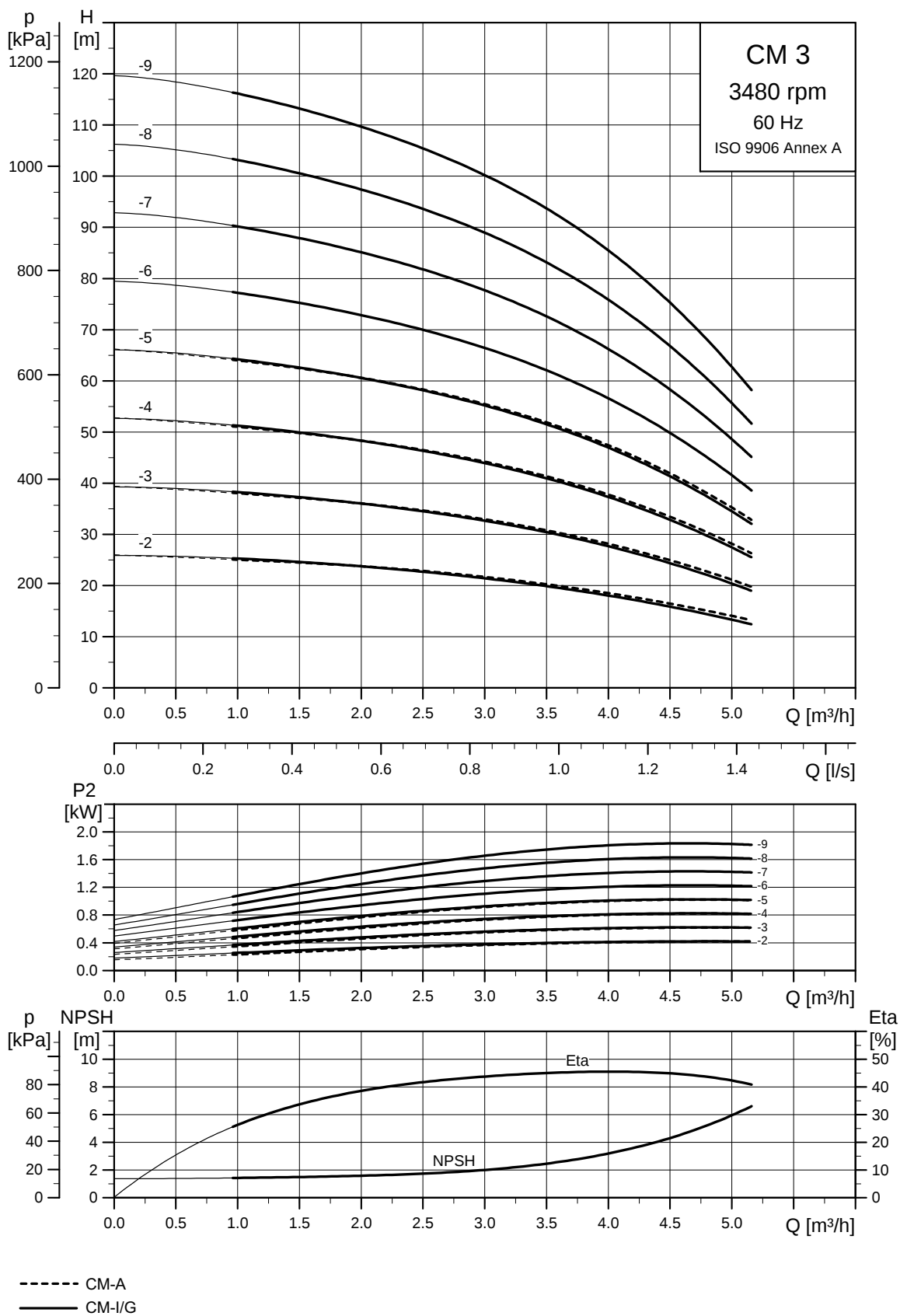
18. Performance curves, CM 60 Hz

CM 1



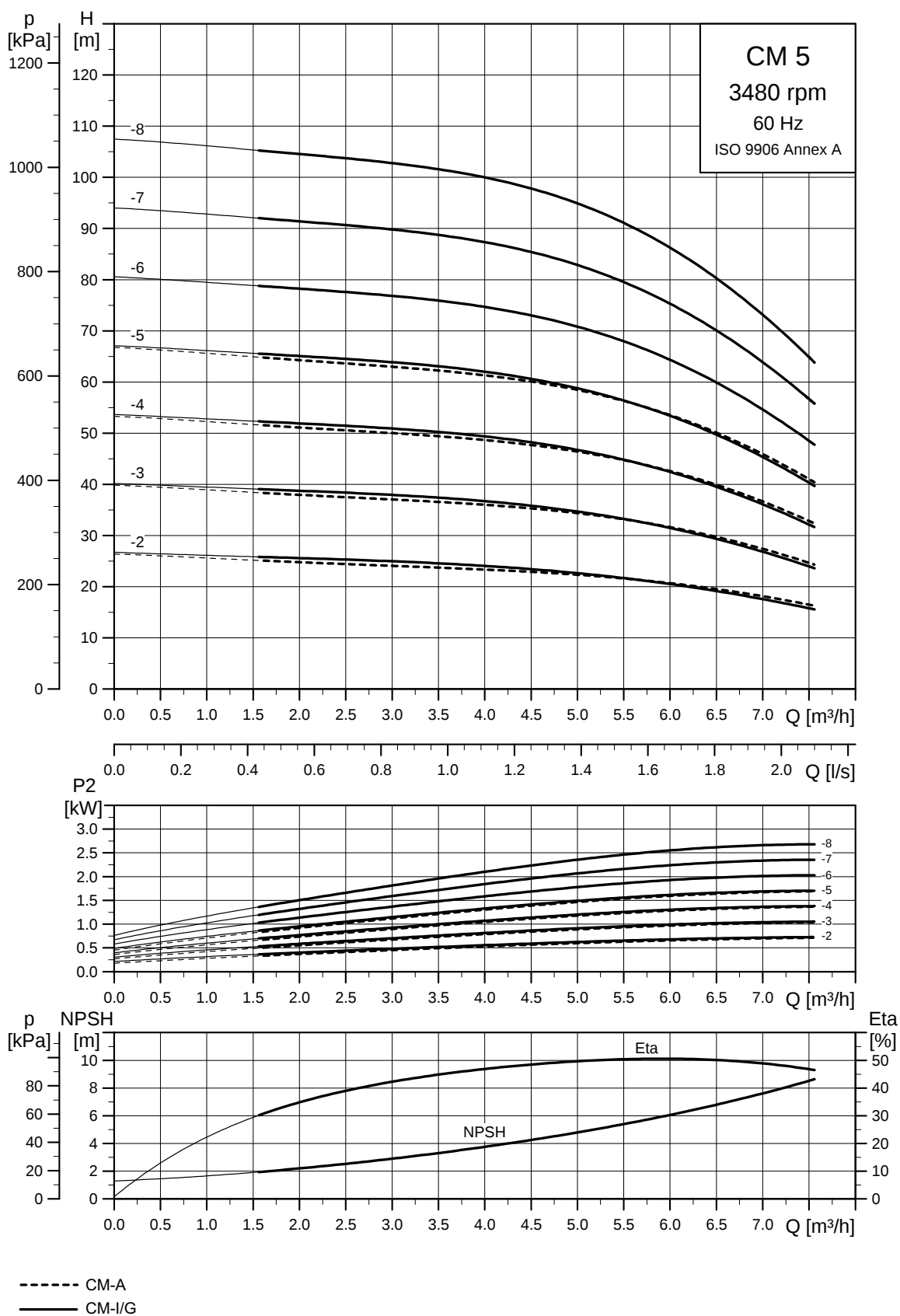
TM04 3370 0210

CM 3



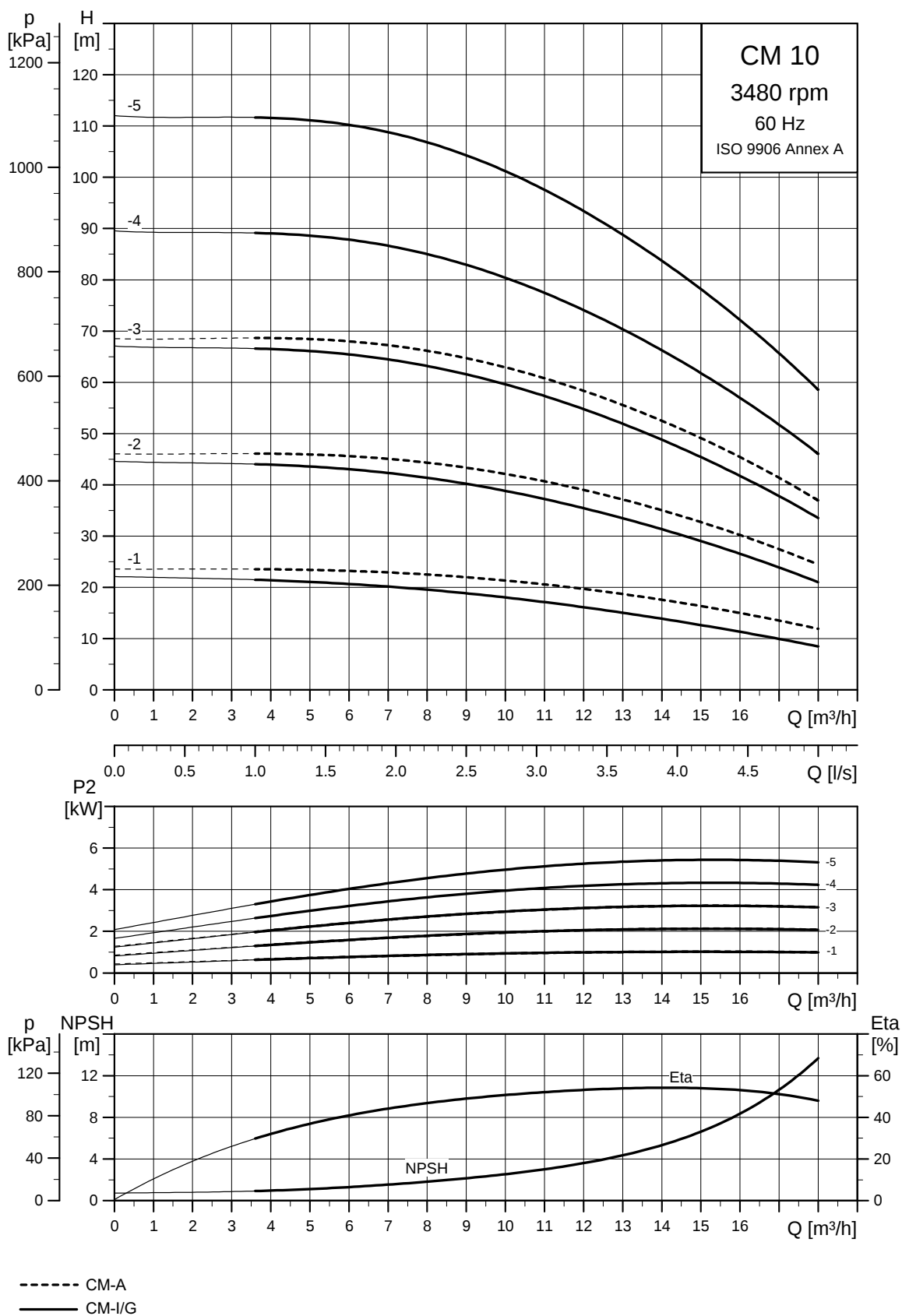
TM04 3371 0210

CM 5



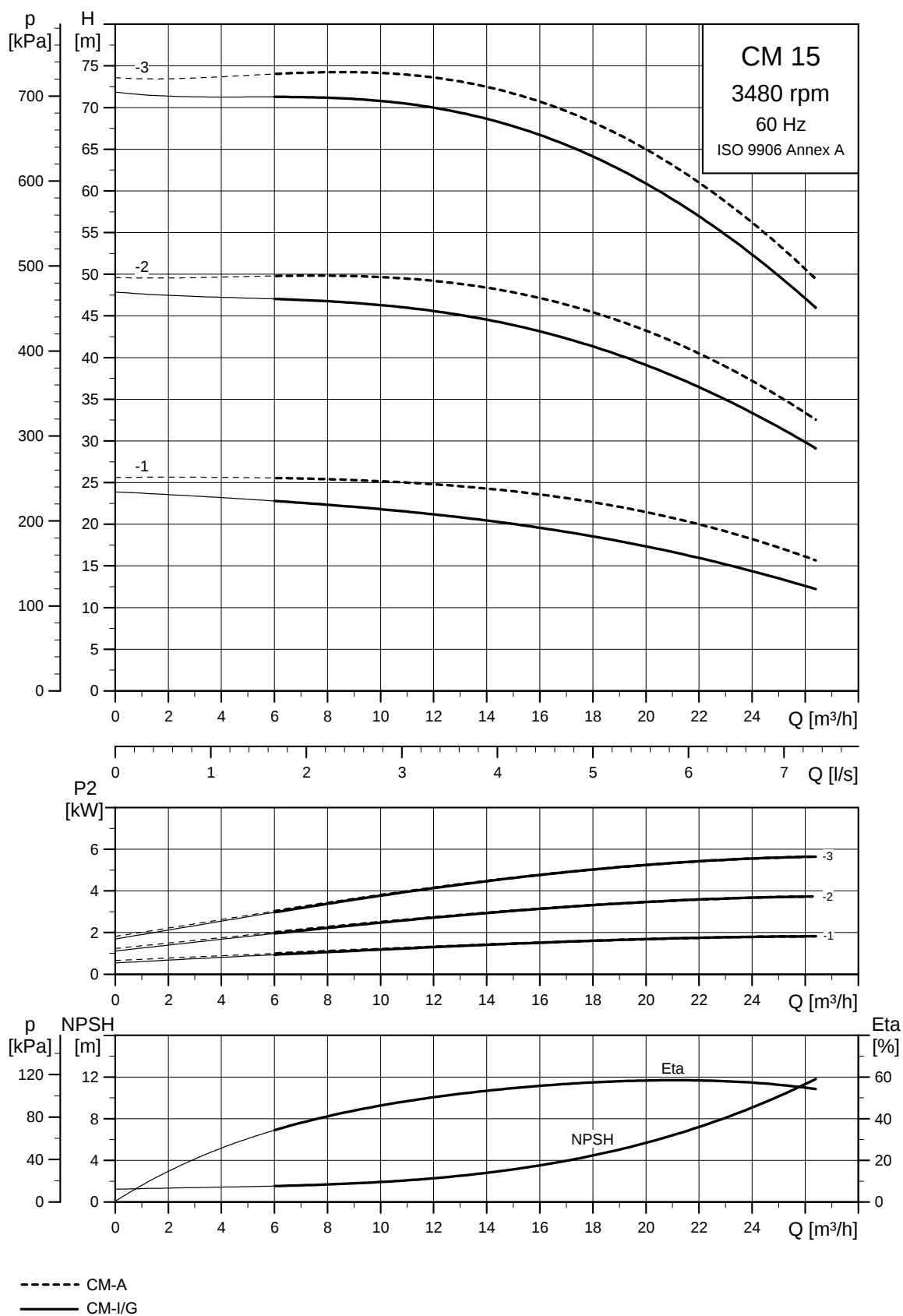
TM04 3372 0210

CM 10



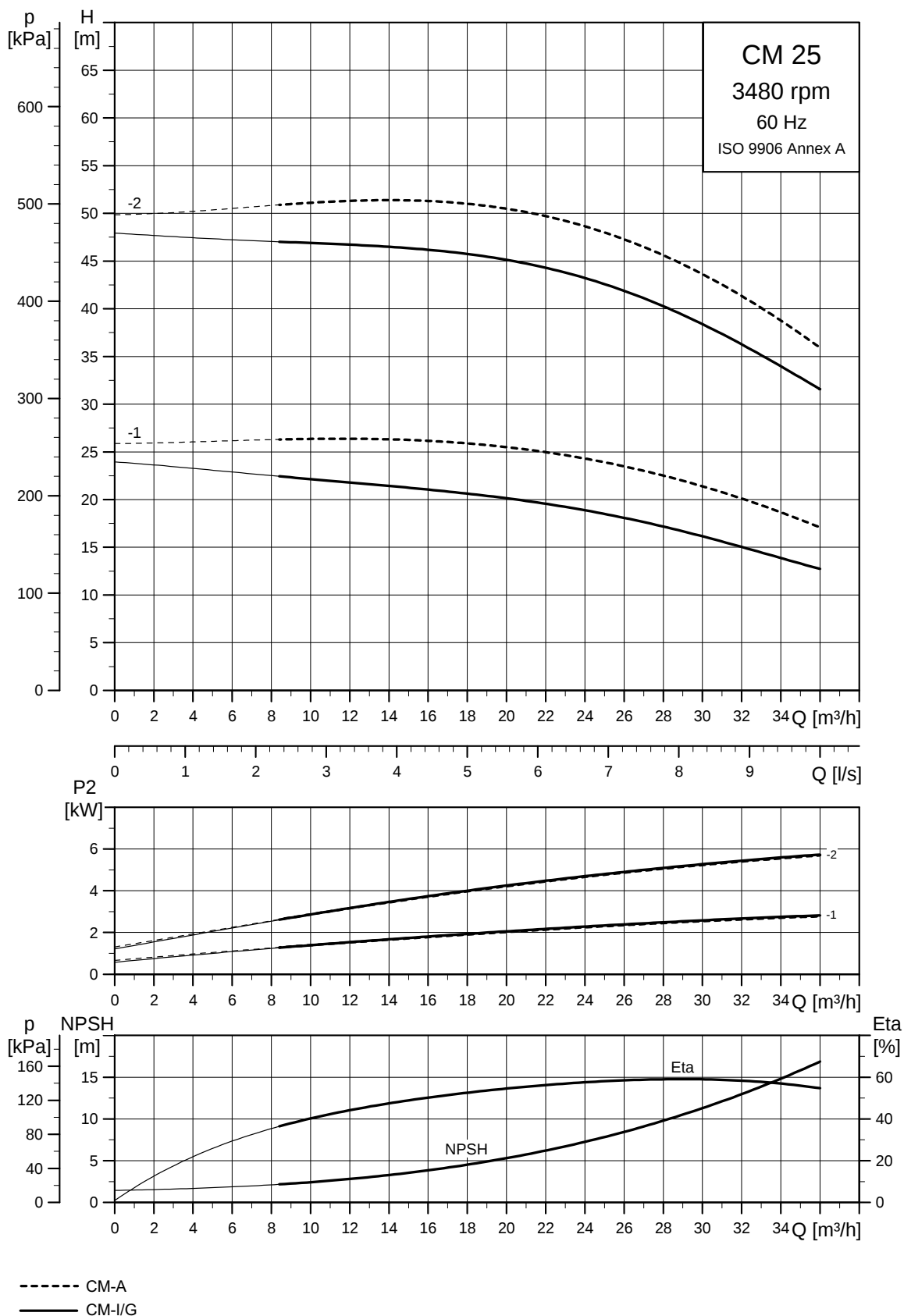
TM04 3373 0210

CM 15



TM04 3374 0210

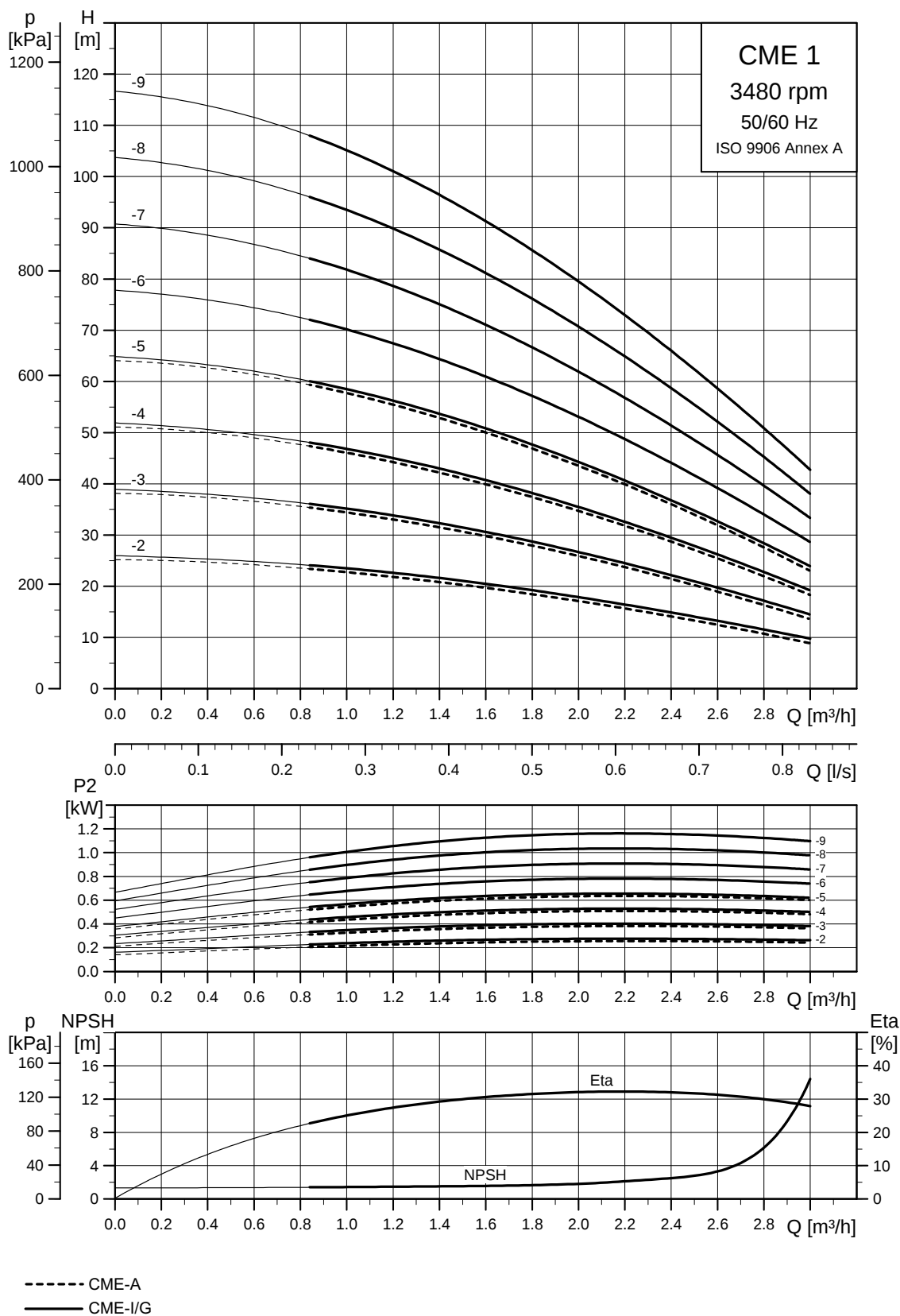
CM 25



TM04 3375 0210

19. Performance curves, CME 50/60 Hz

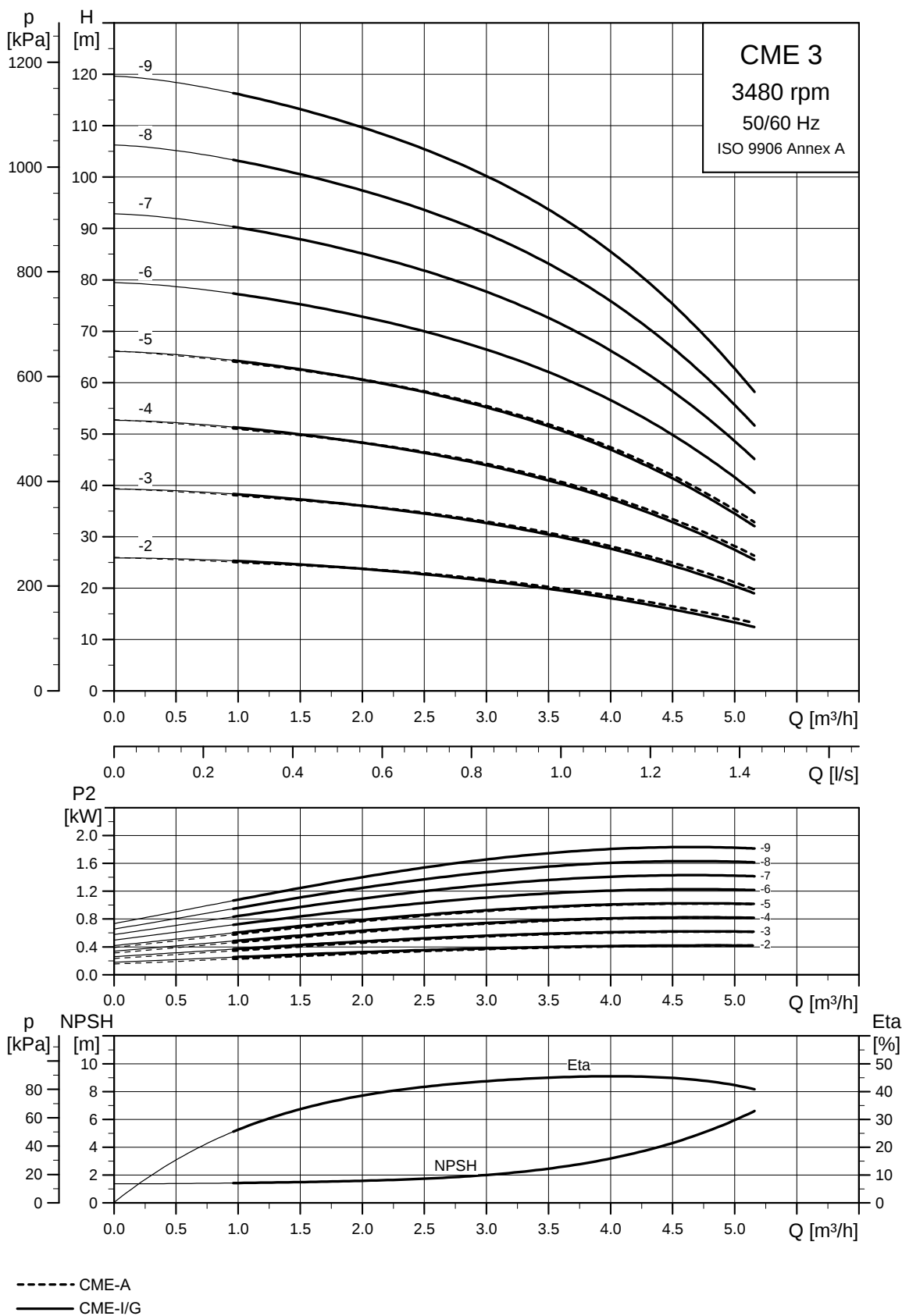
CME 1



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

TM04 3569 0210

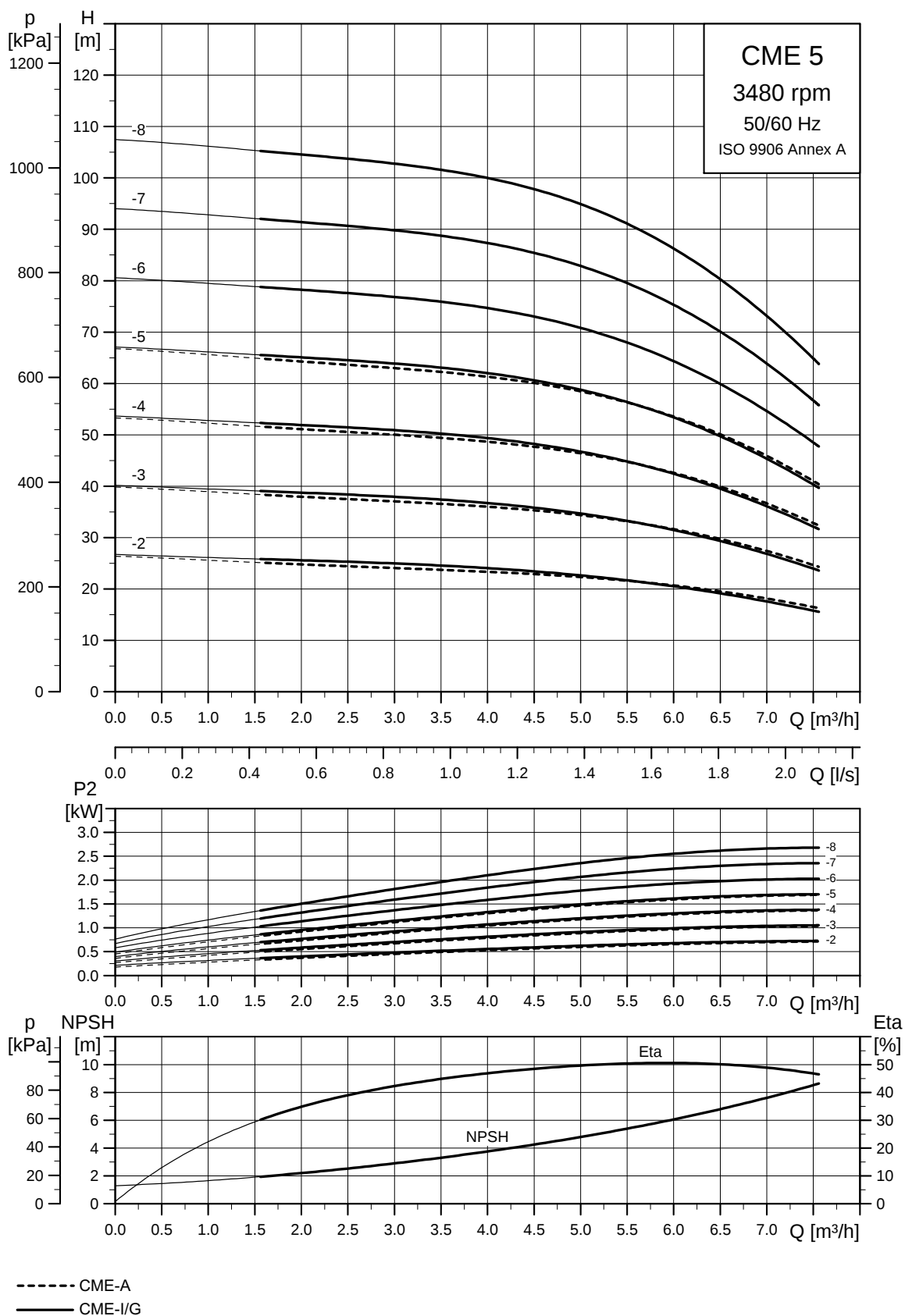
CME 3



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

TM04 3570 0210

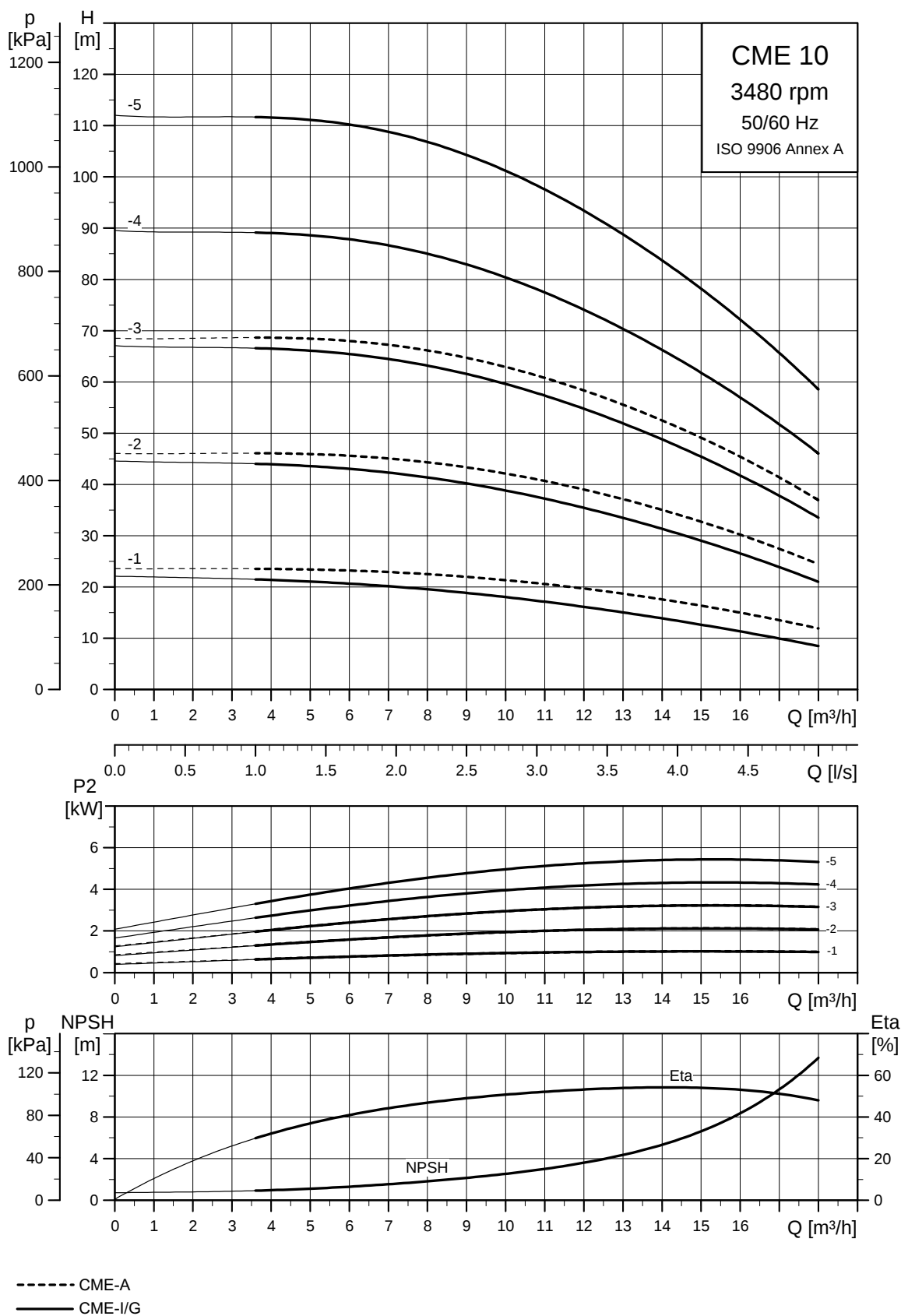
CME 5



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

TM04 3571 0210

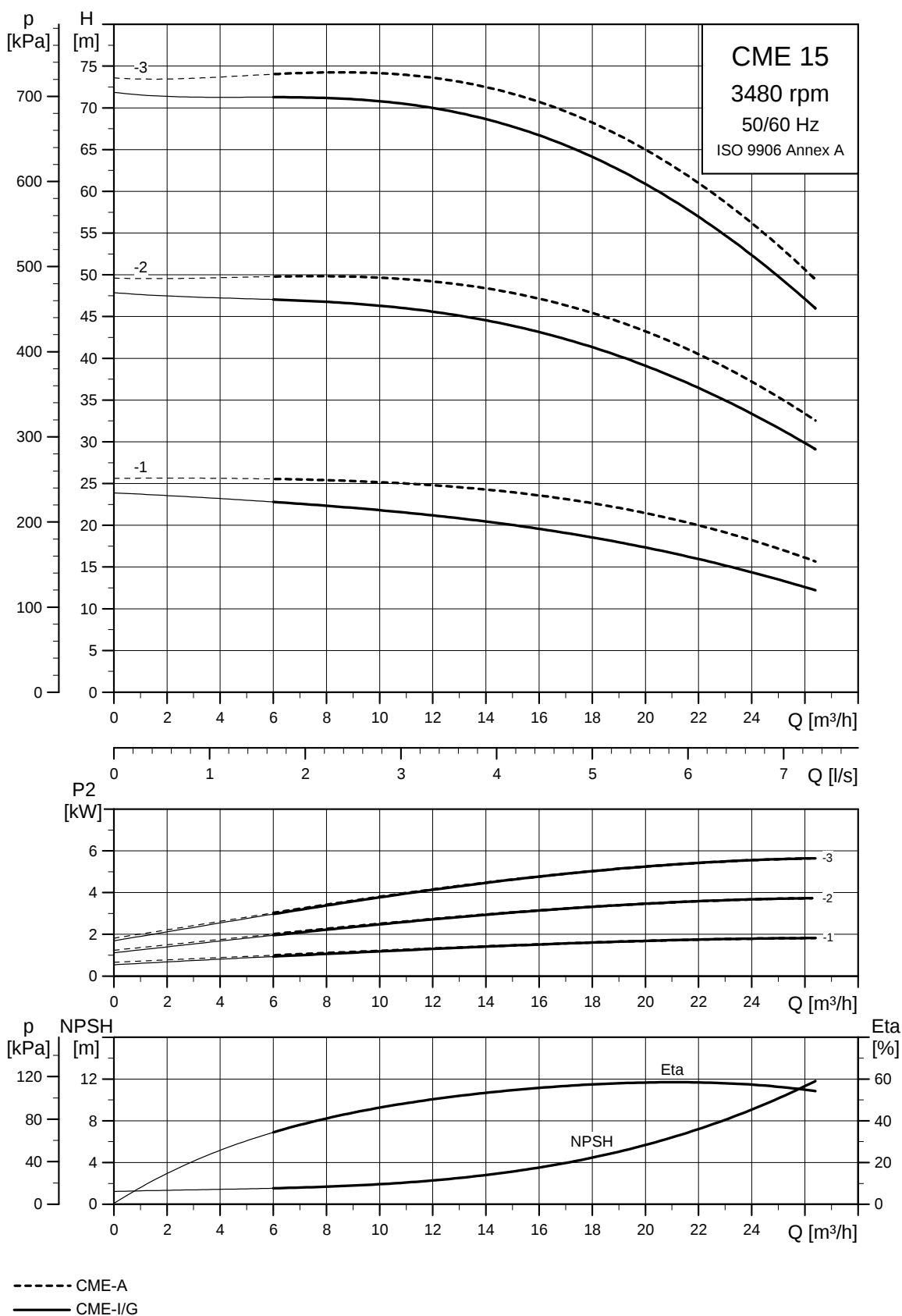
CME 10



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

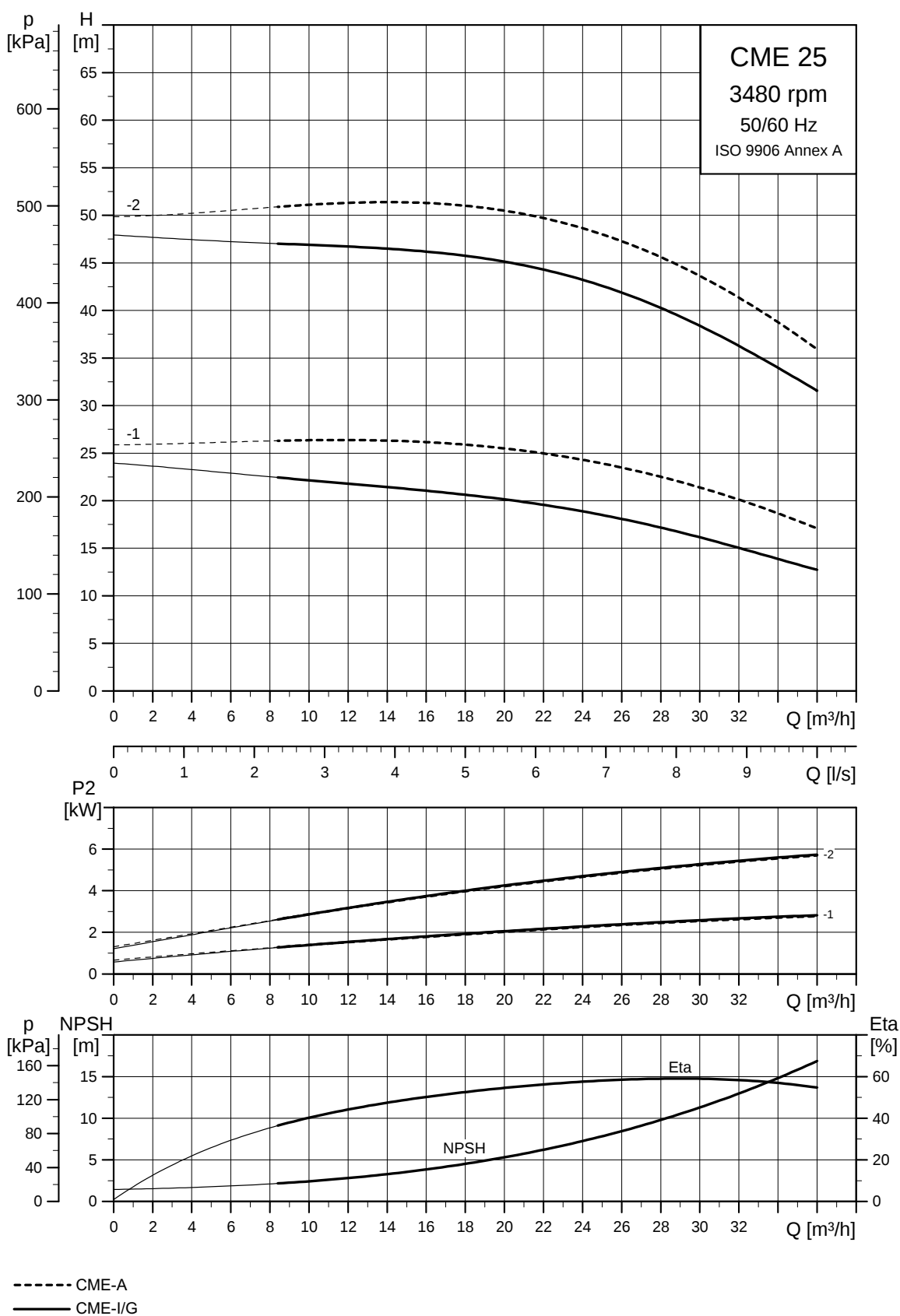
TM04 3572 0210

CME 15



TM04 3573 0210

CME 25



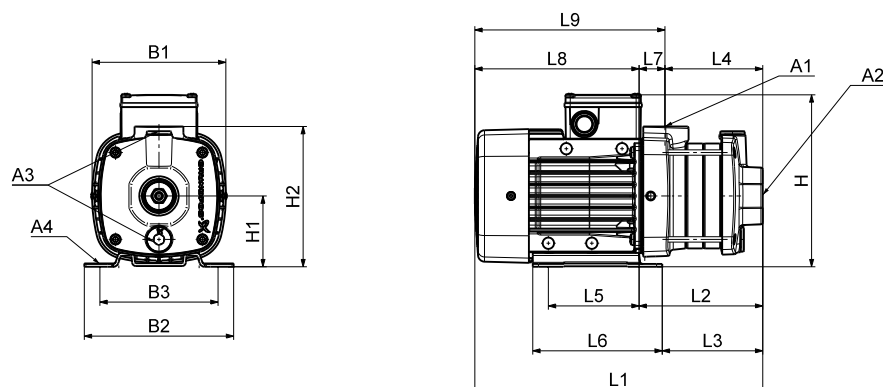
Note: Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1} .

TM04 3574 0210

20. 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 [kW]	Dimensions																		
			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	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM1-3	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM1-4	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	324	150	125	122	96	137	28	174	202
CM1-5	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	342	168	143	140	96	137	28	174	202
CM1-6	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	360	186	161	158	96	137	28	174	202
CM1-7	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	149	378	204	179	176	96	137	28	174	202
CM1-8	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	149	396	222	197	194	96	137	28	174	202

All dimensions are in mm unless otherwise stated.

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

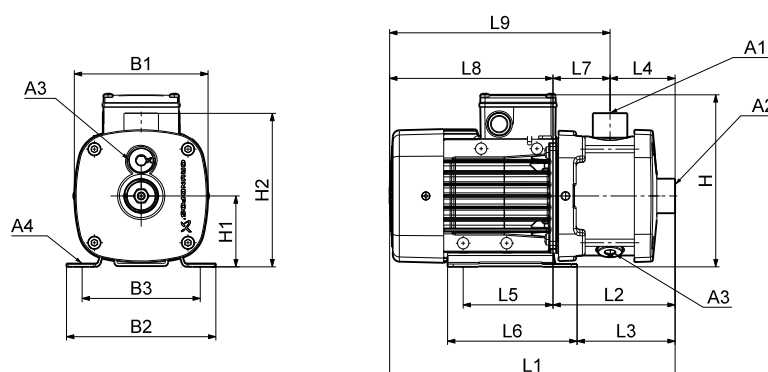
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	149	288	114	89	86	96	137	28	174	202
CM1-3	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	149	306	132	107	104	96	137	28	174	202
CM1-4	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	324	150	125	122	96	137	28	174	202
CM1-5	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	342	168	143	140	96	137	28	174	202
CM1-6	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	360	186	161	158	96	137	28	174	202
CM1-7	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	378	204	179	176	96	137	28	174	202
CM1-8	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	149	436	222	197	194	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

TM04 2248 2208

CM 1-I and CM 1-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM1-3	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM1-4	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	323	149	125	90	96	137	60	174	234
CM1-5	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	341	167	143	108	96	137	60	174	234
CM1-6	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	377	203	179	144	96	137	60	174	234
CM1-7	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	165	377	203	179	144	96	137	60	174	234
CM1-8	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	165	413	239	215	180	96	137	60	174	234
CM1-9	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	165	413	239	215	180	96	137	60	174	234
CM1-10	80	0.85	1"	1"	3/8"	10	142	158	125	184	75	165	489	275	251	216	96	137	60	214	274
CM1-11	80	0.85	1"	1"	3/8"	10	142	158	125	184	75	165	489	275	251	216	96	137	60	214	274
CM1-12	80	0.85	1"	1"	3/8"	10	142	158	125	184	75	165	543	329	305	270	96	137	60	214	274
CM1-13	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	165	563	329	305	270	96	137	60	234	294
CM1-14	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	165	563	329	305	270	96	137	60	234	294

All dimensions are in mm unless otherwise stated.

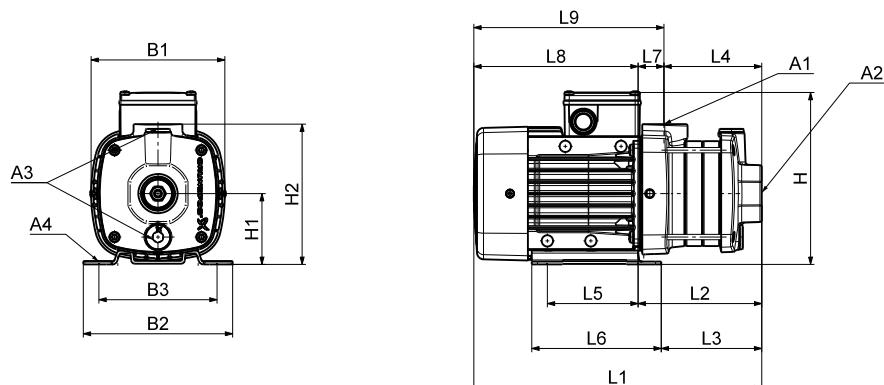
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM1-3	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM1-4	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	323	149	125	90	96	137	60	174	234
CM1-5	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	341	167	143	108	96	137	60	174	234
CM1-6	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	377	203	179	144	96	137	60	174	234
CM1-7	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	377	203	179	144	96	137	60	174	234
CM1-8	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	165	453	239	215	180	96	137	60	214	274
CM1-9	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	165	453	239	215	180	96	137	60	214	274
CM1-10	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	165	489	275	251	216	96	137	60	214	274
CM1-11	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	165	489	275	251	216	96	137	60	214	274
CM1-12	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	165	543	329	305	270	96	137	60	214	274
CM1-13	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	165	543	329	305	270	96	137	60	214	274
CM1-14	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	593	369	354	270	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

CM 3-A

(A = cast iron EN-GJL-200)



TM04 2248 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM3-3	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM3-4	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	149	324	150	125	122	96	137	28	174	202
CM3-5	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	149	342	168	143	140	96	137	28	174	202
CM3-6	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	149	360	186	161	158	96	137	28	174	202
CM3-7	80	0.85	1"	1"	3/8"	10	142	158	125	184	75	149	418	204	179	176	96	137	28	214	242
CM3-8	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	149	456	222	197	194	96	137	28	234	262

All dimensions are in mm unless otherwise stated.

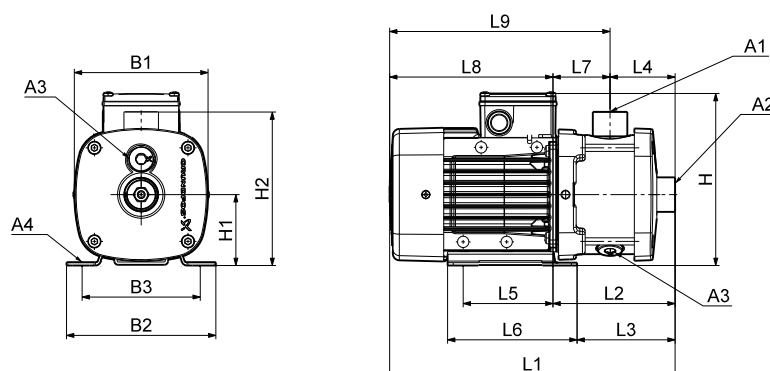
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	149	288	114	89	86	96	137	28	174	202
CM3-3	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	306	132	107	104	96	137	28	174	202
CM3-4	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	324	150	125	122	96	137	28	174	202
CM3-5	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	149	342	168	143	140	96	137	28	174	202
CM3-6	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	149	400	186	161	158	96	137	28	214	242
CM3-7	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	149	418	204	179	176	96	137	28	214	242
CM3-8	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	149	436	222	197	194	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

CM 3-I and CM 3-G

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



TN04 22-46 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM3-3	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM3-4	71	0.46	1"	1"	3/8"	10	142	158	125	184	75	165	323	149	125	90	96	137	60	174	234
CM3-5	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	165	341	167	143	108	96	137	60	174	234
CM3-6	71	0.65	1"	1"	3/8"	10	142	158	125	184	75	165	377	203	179	144	96	137	60	174	234
CM3-7	80	0.85	1"	1"	3/8"	10	142	158	125	184	75	165	417	203	179	144	96	137	60	214	274
CM3-8	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	165	473	239	215	180	96	137	60	234	294
CM3-9	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	165	473	239	215	180	96	137	60	234	294
CM3-10	80	1.2	1"	1"	3/8"	10	142	158	125	184	75	165	509	275	251	216	96	137	60	234	294
CM3-11	90	1.58	1"	1"	3/8"	10	178	178	140	200	90	180	539	315	300	216	125	155	99	224	323
CM3-12	90	1.58	1"	1"	3/8"	10	178	178	140	200	90	180	593	369	354	270	125	155	99	224	323
CM3-13	90	1.58	1"	1"	3/8"	10	178	178	140	200	90	180	593	369	354	270	125	155	99	224	323
CM3-14	90	2.2	1"	1"	3/8"	10	178	178	140	200	90	180	633	369	354	270	125	155	99	264	363

All dimensions are in mm unless otherwise stated.

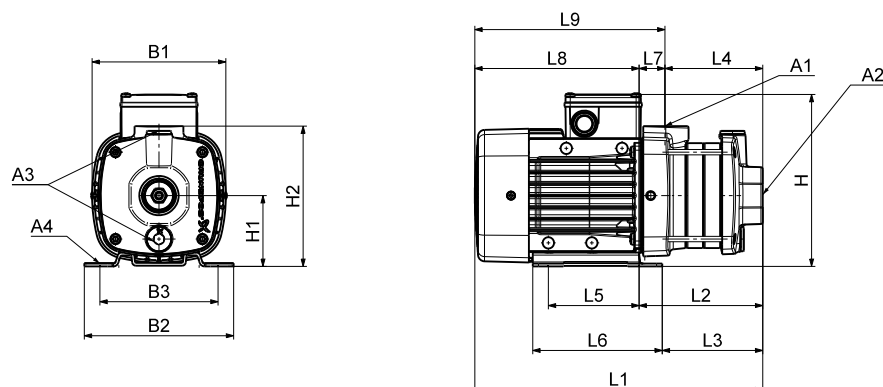
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.3	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM3-3	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM3-4	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	323	149	125	90	96	137	60	174	234
CM3-5	71	0.5	1"	1"	3/8"	10	142	158	125	208	75	165	341	167	143	108	96	137	60	174	234
CM3-6	80	0.67	1"	1"	3/8"	10	142	158	125	208	75	165	417	203	179	144	96	137	60	214	274
CM3-7	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	165	417	203	179	144	96	137	60	214	274
CM3-8	80	0.9	1"	1"	3/8"	10	142	158	125	208	75	165	453	239	215	180	96	137	60	214	274
CM3-9	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	503	279	264	180	125	155	99	224	323
CM3-10	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	539	315	300	216	125	155	99	224	323
CM3-11	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	539	315	300	216	125	155	99	224	323
CM3-12	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	593	369	354	270	125	155	99	224	323
CM3-13	90	1.3	1"	1"	3/8"	10	178	178	140	229	90	180	593	369	354	270	125	155	99	224	323
CM3-14	90	1.9	1"	1"	3/8"	10	178	178	140	229	90	180	593	369	354	270	125	155	99	224	323

All dimensions are in mm 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																		
			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	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM5-3	71	0.65	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM5-4	80	0.85	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	364	150	125	122	96	137	28	214	242
CM5-5	80	1.2	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	402	168	143	140	96	137	28	234	262
CM5-6	80	1.2	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	420	186	161	158	96	137	28	234	262
CM5-7	90	1.58	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	468	244	229	162	125	155	82	224	306
CM5-8	90	1.58	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	486	262	247	180	125	155	82	224	306

All dimensions are in mm unless otherwise stated.

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

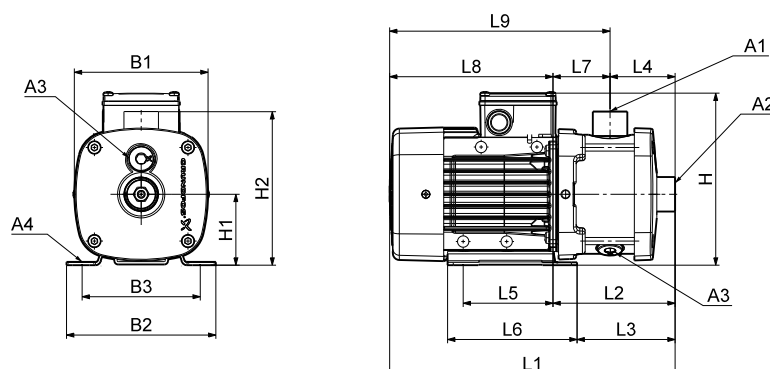
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.5	1"	1 1/4"	3/8"	10	142	158	125	208	75	149	288	114	89	86	96	137	28	174	202
CM5-3	71	0.5	1"	1 1/4"	3/8"	10	142	158	125	208	75	149	306	132	107	104	96	137	28	174	202
CM5-4	80	0.67	1"	1 1/4"	3/8"	10	142	158	125	208	75	149	364	150	125	122	96	137	28	214	242
CM5-5	80	0.9	1"	1 1/4"	3/8"	10	142	158	125	208	75	149	382	168	143	140	96	137	28	214	242
CM5-6	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	201	450	226	211	144	125	155	82	224	306
CM5-7	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	201	468	244	229	162	125	155	82	224	306
CM5-8	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	201	486	262	247	180	125	155	82	224	306

All dimensions are in mm unless otherwise stated.

TMO4 2248 2208

CM 5-I and CM 5-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM5-3	71	0.65	1"	1 1/4"	3/8"	10	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM5-4	80	0.85	1"	1 1/4"	3/8"	10	142	158	125	184	75	165	363	149	125	90	96	137	60	214	274
CM5-5	80	1.2	1"	1 1/4"	3/8"	10	142	158	125	184	75	165	401	167	143	108	96	137	60	234	294
CM5-6	80	1.2	1"	1 1/4"	3/8"	10	142	158	125	184	75	165	437	203	179	144	96	137	60	234	294
CM5-7	90	1.58	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	467	243	228	144	125	155	99	224	323
CM5-8	90	1.58	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	503	279	264	180	125	155	99	224	323
CM5-9	90	2.2	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	543	279	264	180	125	155	99	264	363
CM5-10	90	2.2	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	579	315	300	216	125	155	99	264	363
CM5-11	90	2.2	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	579	315	300	216	125	155	99	264	363
CM5-12	100	3.2	1"	1 1/4"	3/8"	12	198	199	160	220	100	190	651	379	364	270	140	170	109	272	381
CM5-13	100	3.2	1"	1 1/4"	3/8"	12	198	199	160	220	100	190	651	379	364	270	140	170	109	272	381

All dimensions are in mm unless otherwise stated.

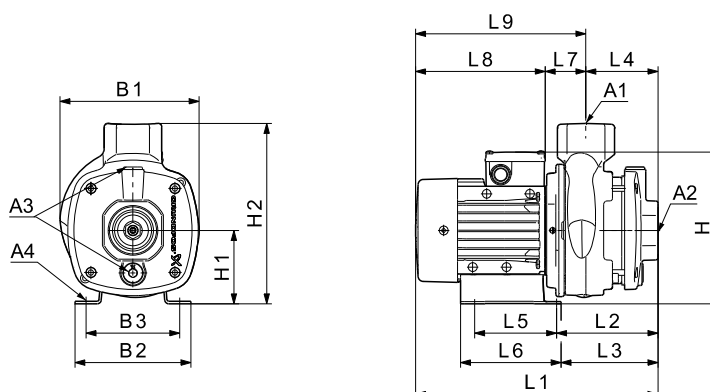
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.5	1"	1 1/4"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM5-3	71	0.5	1"	1 1/4"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM5-4	80	0.67	1"	1 1/4"	3/8"	10	142	158	125	208	75	165	363	149	125	90	96	137	60	214	274
CM5-5	80	0.9	1"	1 1/4"	3/8"	10	142	158	125	208	75	165	381	167	143	108	96	137	60	214	274
CM5-6	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	467	243	228	144	125	155	99	224	323
CM5-7	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	467	243	228	144	125	155	99	224	323
CM5-8	90	1.3	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	503	279	264	180	125	155	99	224	323
CM5-9	90	1.9	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	503	279	264	180	125	155	99	224	323
CM5-10	90	1.9	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	539	315	300	216	125	155	99	224	323
CM5-11	90	1.9	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	539	315	300	216	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

CM 10-A

(A = cast iron EN-GJL-200)



TM04 6111 4909

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	71	0.65	1 1/2"	1 1/2"	3/8"	10.2	190	158	125	209	100	245	329	155	131	97	96	137	58	174	232
CM10-2	80	1.2	1 1/2"	1 1/2"	3/8"	10.2	190	158	125	209	100	245	389	155	131	97	96	137	58	234	292
CM10-3	90	2.2	1 1/2"	1 1/2"	3/8"	10.2	190	199	160	210	100	245	491	220	205	127	140	170	93	272	364
CM10-4	100	3.2	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	245	537	265	250	157	140	170	108	272	380
CM10-5	100	3.2	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	245	567	295	280	187	140	170	108	272	380

All dimensions are in mm unless otherwise stated.

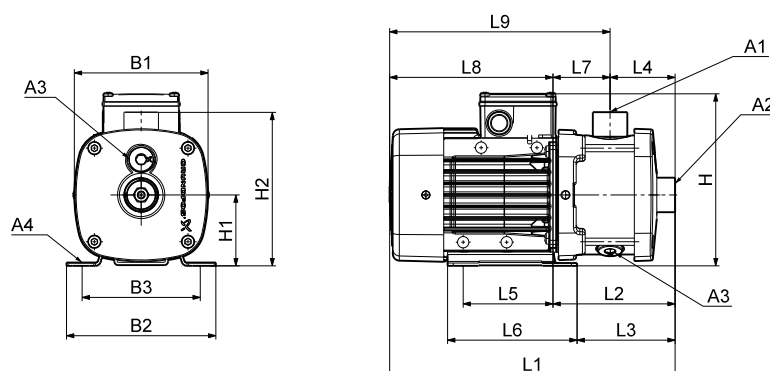
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	190	158	125	233	100	245	369	155	131	97	96	137	58	214	272
CM10-2	90	1.3	1 1/2"	1 1/2"	3/8"	10.2	190	199	160	239	100	245	421	190	175	97	140	170	93	232	324
CM10-3	90	1.9	1 1/2"	1 1/2"	3/8"	10.2	190	199	160	239	100	245	451	220	205	127	140	170	93	232	324

All dimensions are in mm unless otherwise stated.

CM 10-I and CM 10-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	71	0.65	1 1/2"	1 1/2"	3/8"	10.2	180	158	125	209	100	218	359	185	161	105	96	137	80	174	254
CM10-2	80	1.2	1 1/2"	1 1/2"	3/8"	10.2	180	158	125	209	100	218	419	185	161	105	96	137	80	234	314
CM10-3	90	2.2	1 1/2"	1 1/2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385
CM10-4	100	3.2	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	218	537	265	250	135	140	170	130	272	402
CM10-5	100	3.2	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	218	597	325	310	195	140	170	130	272	402
CM10-6	100	4.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	218	597	325	310	195	140	170	130	272	402
CM10-7	132	5.8	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	709	407	391	255	140	172	152	302	454
CM10-8	132	5.8	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	709	407	391	255	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

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

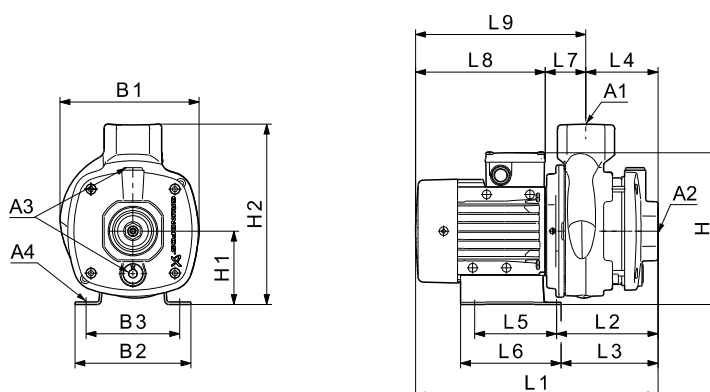
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	180	158	125	233	100	218	399	185	161	105	96	137	80	214	294
CM10-2	90	1.3	1 1/2"	1 1/2"	3/8"	10.2	180	199	160	239	100	218	450	219	204	105	140	170	114	232	345
CM10-3	90	1.9	1 1/2"	1 1/2"	3/8"	10.2	180	199	160	239	100	218	450	219	204	105	140	170	114	232	345

All dimensions are in mm unless otherwise stated.

CM 15-A

(A = cast iron EN-GJL-200)



TM04 6111 4909

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	80	1.2	2"	2"	3/8"	10.2	190	158	125	209	100	245	389	155	131	97	96	137	58	234	292
CM15-2	90	2.2	2"	2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM15-3	100	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	245	507	235	220	127	140	170	108	272	380
CM15-4	132	5.8	2"	2"	3/8"	12.0	220	228	190	246	112	257	590	288	272	157	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

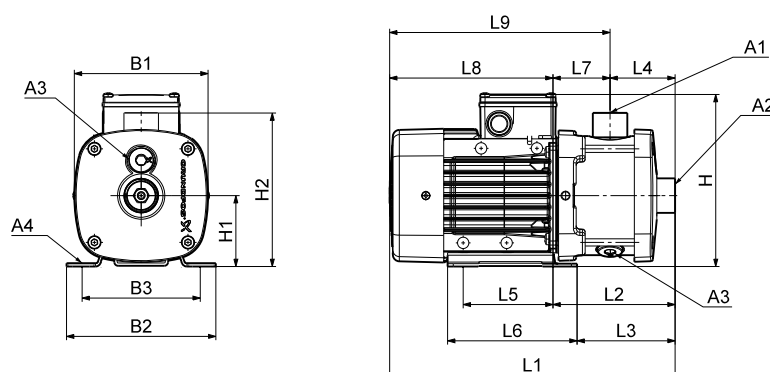
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.3	2"	2"	3/8"	10.2	190	199	160	239	100	245	421	190	175	97	140	170	93	232	324
CM15-2	90	1.9	2"	2"	3/8"	10.2	190	199	160	239	100	245	421	190	175	97	140	170	93	232	324

All dimensions are in mm unless otherwise stated.

CM 15-I and CM 15-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	80	1.2	2"	2"	3/8"	10.2	180	158	125	209	100	218	419	185	161	105	96	137	80	234	314
CM15-2	90	2.2	2"	2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385
CM15-3	100	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402
CM15-4	132	5.8	2"	2"	3/8"	12.0	220	228	190	246	112	230	589	287	271	135	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

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

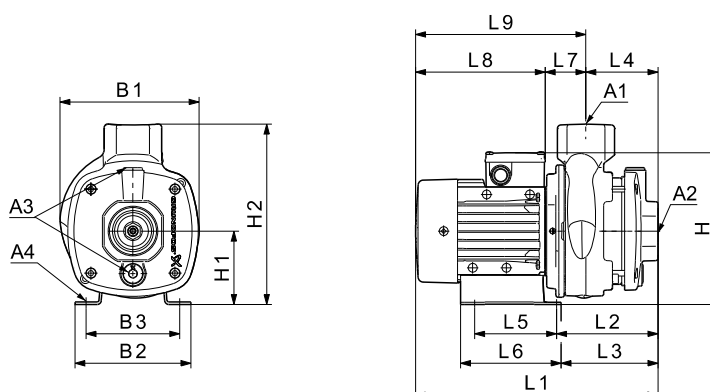
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.3	2"	2"	3/8"	10.2	180	199	160	239	100	218	450	219	204	105	140	170	114	232	345
CM15-2	90	1.9	2"	2"	3/8"	10.2	180	199	160	239	100	218	450	219	204	105	140	170	114	232	345

All dimensions are in mm unless otherwise stated.

CM 25-A

(A = cast iron EN-GJL-200)



TM04 6111 4909

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	2.2	2"	2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM25-2	100	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	245	477	205	190	97	140	170	108	272	380
CM25-3	132	5.8	2"	2"	3/8"	12.0	220	228	190	246	112	257	560	258	242	127	140	172	131	302	433
CM25-4	132	7.4	2"	2"	3/8"	12.0	220	228	190	246	112	257	590	288	272	157	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

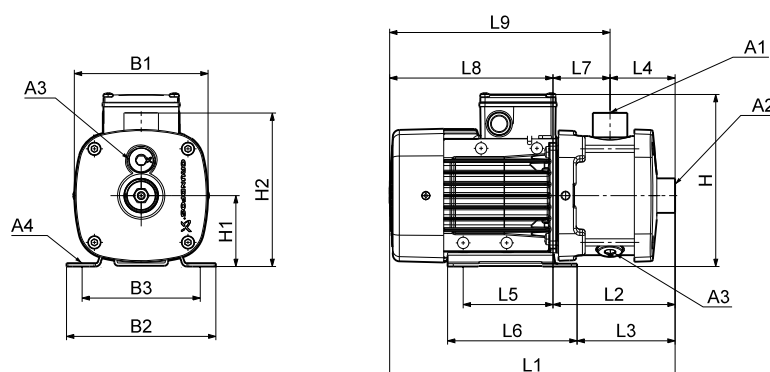
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	1.9	2"	2"	3/8"	10.2	190	199	160	239	100	245	421	190	175	97	140	170	93	232	324

All dimensions are in mm unless otherwise stated.

CM 25-I and CM 25-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	2.2	2"	2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385
CM25-2	100	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402
CM25-3	132	5.8	2"	2"	3/8"	12.0	220	228	190	246	112	230	559	257	241	105	140	172	152	302	454
CM25-4	132	7.4	2"	2"	3/8"	12.0	220	228	190	246	112	230	589	287	271	135	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

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

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

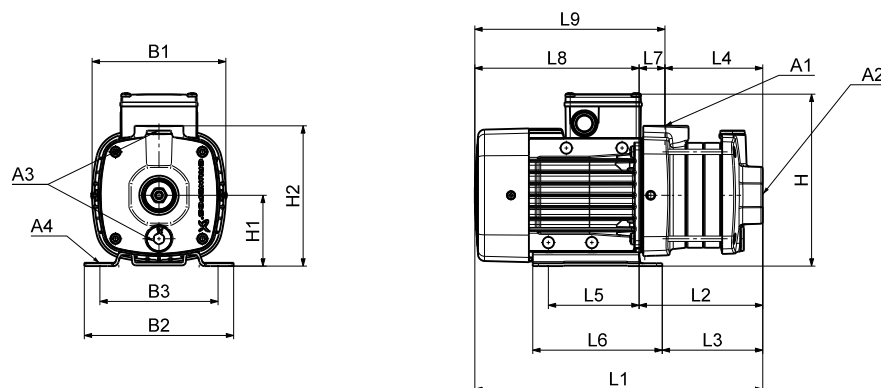
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	1.9	2"	2"	3/8"	10.2	180	199	160	239	100	218	450	219	204	105	140	170	114	232	345

All dimensions are in mm unless otherwise stated.

21. 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 575 V, 60 Hz (supply voltage H)

3 x 400 V, 50/60 Hz (supply voltage I)

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																	
		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	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	149	288	114	89	86	96	137	28	174	202	
CM1-3	71	0.25**/0.43	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	149	306	132	107	104	96	137	28	174	202	
CM1-4	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	149	324	150	125	122	96	137	28	174	202	
CM1-5	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	149	342	168	143	140	96	137	28	174	202	

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage O.

** Applies to supply voltage J.

*** Applies to supply voltage I.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	208	75	149	288	114	89	86	96	137	28	174	202
CM1-3	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	149	306	132	107	104	96	137	28	174	202
CM1-4	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	149	324	150	125	122	96	137	28	174	202
CM1-5	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	149	342	168	143	140	96	137	28	174	202

All dimensions are in mm unless otherwise stated.

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

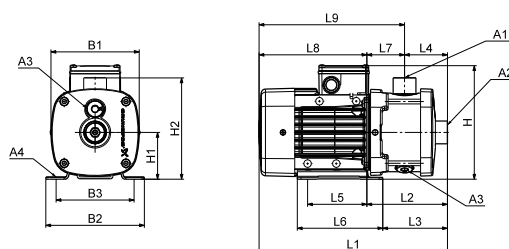
Pump type	Frame size	P ₂ [kW]								Dimensions												
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.25	0.43	1"	1"	3/8"	10	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM1-3	71	0.25	0.43	1"	1"	3/8"	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM1-4	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	149	324	150	125	122	96	137	28	174	202
CM1-5	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	149	342	168	143	140	96	137	28	174	202

All dimensions are in mm unless otherwise stated.

TM04 2248 2208

CM 1-I and CM 1-G

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



TM04 2246 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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																		
		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	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	165	305	131	107	72	96	137	60	174	234
CM1-3	71	0.25**/0.43	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	165	305	131	107	72	96	137	60	174	234
CM1-4	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	323	149	125	90	96	137	60	174	234
CM1-5	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	341	167	143	108	96	137	60	174	234
CM1-6	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	377	203	179	144	96	137	60	174	234
CM1-7	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	377	203	179	144	96	137	60	174	234
CM1-8	80	0.6/1.04***	1.04	1"	1"	3/8"	10	142	158	125	191	75	165	453	239	215	180	96	137	60	214	274
CM1-9	80	0.74/1.28***	1.28	1"	1"	3/8"	10	142	158	125	191	75	165	473	239	215	180	96	137	60	234	294

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage O.

** Applies to supply voltage J.

*** Applies to supply voltage I.

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM1-3	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM1-4	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	165	323	149	125	90	96	137	60	174	234
CM1-5	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	165	341	167	143	108	96	137	60	174	234
CM1-6	80	0.84*/0.78	1"	1"	3/8"	10	142	158	125	208	75	165	417	203	179	144	96	137	60	214	274
CM1-7	80	1.14*/1.10	1"	1"	3/8"	10	205	158	125	208	75	165	417	203	179	144	96	137	60	214	274
CM1-8	80	1.14*/1.10	1"	1"	3/8"	10	205	158	125	208	75	165	453	239	215	180	96	137	60	214	274
CM1-9	80	1.14*/1.10	1"	1"	3/8"	10	205	158	125	208	75	165	453	239	215	180	96	137	60	214	274

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

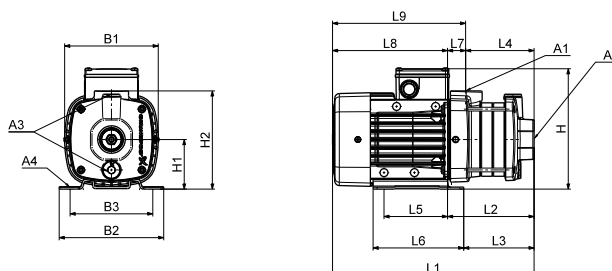
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P ₂ [kW]		Dimensions																		
		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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM1-3	71	0.25	0.43	1"	1"	3/8"	10	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM1-4	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	323	149	125	90	96	137	60	174	234
CM1-5	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	341	167	143	108	96	137	60	174	234
CM1-6	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	377	203	179	144	96	137	60	174	234
CM1-7	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	377	203	179	144	96	137	60	174	234
CM1-8	80	0.6	1.04	1"	1"	3/8"	10	142	158	125	184	75	165	453	239	215	180	96	137	60	214	274
CM1-9	80	0.74	1.28	1"	1"	3/8"	10	142	158	125	184	75	165	473	239	215	180	96	137	60	234	294

All dimensions are in mm unless otherwise stated.

CM 3-A

(A = cast iron EN-GJL-200)



TM04 2248 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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																
		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	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	149	288	114	89	86	96	137	28	174	202
CM3-3	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	149	306	132	107	104	96	137	28	174	202
CM3-4	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	149	324	150	125	122	96	137	28	174	202
CM3-5	80	0.60/1.04***	1.04	1"	1"	3/8"	10	142	158	125	191	75	149	382	168	143	140	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage O.

** Applies to supply voltage J.

*** Applies to supply voltage I.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	208	75	149	288	114	89	86	96	137	28	174	202
CM3-3	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	149	306	132	107	104	96	137	28	174	202
CM3-4	80	0.84*/0.78	1"	1"	3/8"	10	142	158	125	208	75	149	364	150	125	122	96	137	28	214	242
CM3-5	80	1.14*/1.10	1"	1"	3/8"	10	205	158	125	208	75	149	382	168	143	140	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

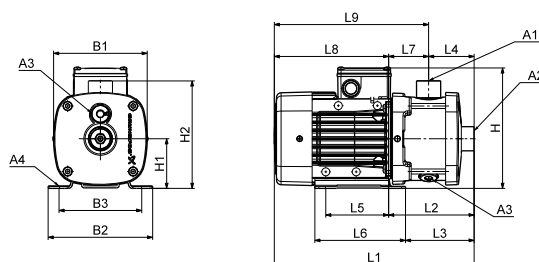
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P ₂ [kW]		Dimensions																		
		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	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM3-3	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM3-4	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	149	324	150	125	122	96	137	28	174	202
CM3-5	80	0.6	1.04	1"	1"	3/8"	10	142	158	125	184	75	149	382	168	143	140	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

CM 3-I and CM 3-G

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



TM04 2246 2208

Dimensions

3 x 208-230/440-480 V, 60 Hz (supply voltage E); 3 x 575 V, 60 Hz (supply voltage H)
 3 x 400 V, 50/60 Hz (supply voltage I); 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																		
		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	0.43/0.74*	1"	1"	3/8"	10	142	158	125	191	75	165	305	131	107	72	96	137	60	174	234
CM3-3	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	305	131	107	72	96	137	60	174	234
CM3-4	71	0.43/0.74***	0.74	1"	1"	3/8"	10	142	158	125	191	75	165	323	149	125	90	96	137	60	174	234
CM3-5	80	0.6*/1.04***/1.45**	1.04/2.5**	1"	1"	3/8"	10	142	158	125	191	75	165	381	167	143	108	96	137	60	214	274
CM3-6	80	0.74/1.28***	1.28	1"	1"	3/8"	10	142	158	125	191	75	165	437	203	179	144	96	137	60	234	294
CM3-7	90	1.0/1.7***	1.7	1"	1"	3/8"	10	178	178	140	200	90	180	467	243	228	144	125	155	99	224	323
CM3-8	90	1.45/2.5***	2.5	1"	1"	3/8"	10	178	178	140	200	90	180	543	279	264	180	125	155	99	264	363
CM3-9	90	1.45/2.5***	2.5	1"	1"	3/8"	10	178	178	140	200	90	180	543	279	264	180	125	155	99	264	363

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage O.

** Applies to supply voltage J.

*** Applies to supply voltage I.

CM 3-7, CM 3-8 and CM 3-9 are not available with supply voltage O.

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM3-3	71	0.60	1"	1"	3/8"	10	142	158	125	208	75	165	305	131	107	72	96	137	60	174	234
CM3-4	80	0.84*/0.78	1"	1"	3/8"	10	142	158	125	208	75	165	363	149	125	90	96	137	60	214	274
CM3-5	80	1.14*/1.10	1"	1"	3/8"	10	205	158	125	208	75	165	381	167	143	108	96	137	60	214	274
CM3-6	90	1.54*/1.50	1"	1"	3/8"	10	178	178	140	229	90	180	467	243	228	144	125	155	99	224	323
CM3-7	90	1.54*/1.50	1"	1"	3/8"	10	178	178	140	229	90	180	467	243	228	144	125	155	99	224	323
CM3-8	90	1.54*/1.50	1"	1"	3/8"	10	178	178	140	229	90	180	503	279	264	180	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

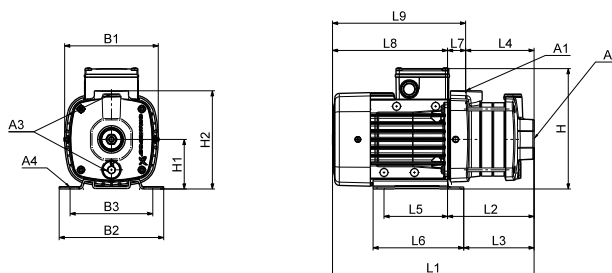
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P ₂ [kW]		Dimensions																		
		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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM3-3	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM3-4	71	0.43	0.74	1"	1"	3/8"	10	142	158	125	184	75	165	323	149	125	90	96	137	60	174	234
CM3-5	80	0.6	1.04	1"	1"	3/8"	10	142	158	125	184	75	165	381	167	143	108	96	137	60	214	274
CM3-6	80	0.74	1.28	1"	1"	3/8"	10	142	158	125	184	75	165	437	203	179	144	96	137	60	234	294
CM3-7	90	1	1.7	1"	1"	3/8"	10	178	178	140	200	90	180	467	243	228	144	125	155	99	224	323
CM3-8	90	1.4	2.5	1"	1"	3/8"	10	178	178	140	200	90	180	543	279	264	180	125	155	99	264	363
CM3-9	90	1.4	2.5	1"	1"	3/8"	10	178	178	140	200	90	180	543	279	264	180	125	155	99	264	363

All dimensions are in mm 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 575 V, 60 Hz (supply voltage H)

3 x 400 V, 50/60 Hz (supply voltage I)

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																
		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*	0.74	1"	1 1/4"	3/8"	10	142	158	125	191	75	149	288	114	89	86	96	137	28	174	202	
CM5-3	80	0.60/1.04*	1.04	1"	1 1/4"	3/8"	10	142	158	125	191	75	149	346	132	107	104	96	137	28	214	242	
CM5-4	90	1.0**/1.7*	1.7	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	414	190	175	108	125	155	82	224	306	
CM5-5	90	1.45**/2.5*	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	472	208	193	126	125	155	82	264	346	

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

** Applies to supply voltage J.

CM 5-4 and CM 5-5 are not available with supply voltage O.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	0.84*/0.78	1"	1 1/4"	3/8"	10	142	158	125	208	75	149	328	114	89	86	96	137	28	214	242
CM5-3	80	1.14*/1.10	1"	1 1/4"	3/8"	10	205	158	125	208	75	149	346	132	107	104	96	137	28	214	242
CM5-4	90	1.54*/1.50	1"	1 1/4"	3/8"	10	178	178	140	229	90	201	414	190	175	108	125	155	82	224	306
CM5-5	90	1.50	1"	1 1/4"	3/8"	10	178	178	140	229	90	201	432	208	193	126	125	155	82	224	306

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

Note: CM 5-5 is not available with supply voltage A.

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

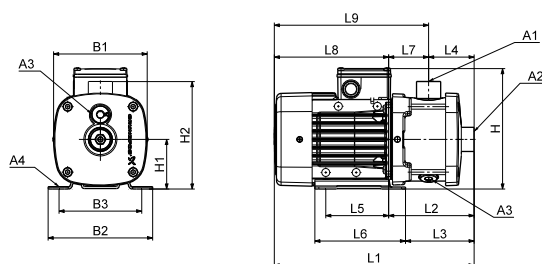
Pump type	Frame size	P ₂ [kW]										Dimensions											
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	
CM5-2	71	0.43	0.74	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202	
CM5-3	80	0.6	1.04	1"	1 1/4"	3/8"	10	142	158	125	184	75	149	346	132	107	104	96	137	28	214	242	
CM5-4	90	1	1.7	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	414	190	175	108	125	155	82	224	306	
CM5-5	90	1.4	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	201	472	208	193	126	125	155	82	264	346	

All dimensions are in mm unless otherwise stated.

TM04 2248 2208

CM 5-I and CM 5-G

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



TN04 22-46 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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											
		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*	0.74	1"	1 1/4"	3/8"	10	142	158	125	191	75	165	305	131	107	72	96	137	60	174	234	
CM5-3	80	0.6/1.04*	1.04	1"	1 1/4"	3/8"	10	142	158	125	191	75	165	345	131	107	72	96	137	60	214	274	
CM5-4	90	1.0/1.7*	1.7	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	413	189	174	90	125	155	99	224	323	
CM5-5	90	1.45/2.5*	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	471	207	192	108	125	155	99	264	363	
CM5-6	90	1.45/2.5*	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	507	243	228	144	125	155	99	264	363	
CM5-7	90	1.45/2.5*	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	507	243	228	144	125	155	99	264	363	
CM5-8	100	2.36/4.0*	4	1"	1 1/4"	3/8"	12	198	199	160	220	100	190	561	289	274	180	140	170	109	272	381	

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: CM 5-4, CM 5-5, CM 5-6, CM 5-7 and CM 5-8 are not available with supply voltage O.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	80	0.84*/0.78	1"	1 1/4"	3/8"	10	142	158	125	208	75	165	345	131	107	72	96	137	60	214	274
CM5-3	80	1.14*/1.10	1"	1 1/4"	3/8"	10	205	158	125	208	75	165	345	131	107	72	96	137	60	214	274
CM5-4	90	1.54*/1.50	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	413	189	174	90	125	155	99	224	323
CM5-5	90	1.50	1"	1 1/4"	3/8"	10	178	178	140	229	90	180	431	207	192	108	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

Note: CM 5-5 is not available with supply voltage A.

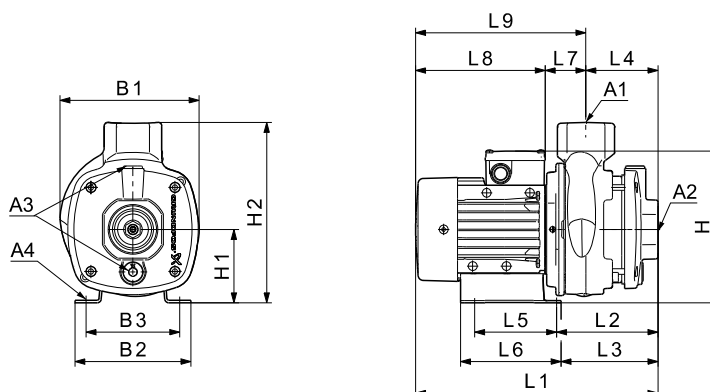
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P ₂ [kW]		Dimensions																		
		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	142	158	125	184	75	165	305	131	107	72	96	137	60	174	234
CM5-3	80	0.6	1.04	1"	1 1/4"	3/8"	10	142	158	125	184	75	165	345	131	107	72	96	137	60	214	274
CM5-4	90	1	1.7	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	413	189	174	90	125	155	99	224	323
CM5-5	90	1.4	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	471	207	192	108	125	155	99	264	363
CM5-6	90	1.4	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	507	243	228	144	125	155	99	264	363
CM5-7	90	1.4	2.5	1"	1 1/4"	3/8"	10	178	178	140	200	90	180	507	243	228	144	125	155	99	264	363
CM5-8	100	2.3	4.0	1"	1 1/4"	3/8"	12	198	199	160	220	100	190	561	289	274	180	140	170	109	272	381

All dimensions are in mm unless otherwise stated.

CM 10-A

(A = cast iron EN-GJL-200)



TM04 6111 4909

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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															
		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*	1.28	1 1/2"	1 1/2"	3/8"	10.2	190	158	125	216	100	245	389	155	131	97	96	137	58	234	292
CM10-2	90	1.45/2.5*	2.5	1 1/2"	1 1/2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM10-3	100	2.36/4.0*	4	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	245	507	235	220	127	140	170	108	272	380

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	205	158	125	233	100	245	369	155	131	97	96	137	58	214	272

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

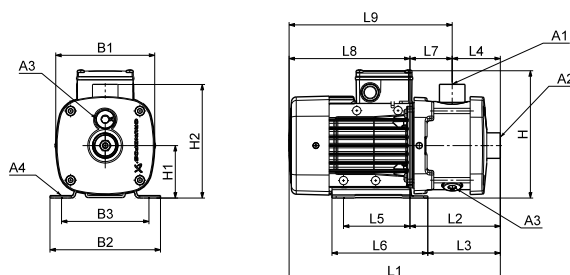
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)

Pump type	Frame size	P ₂ [kW]			Dimensions																	
		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"	10.2	190	158	125	209	100	245	389	155	131	97	96	137	58	234	292
CM10-2	90	1.4	2.5	1 1/2"	1 1/2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM10-3	100	2.3	4.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	245	507	235	220	127	140	170	108	272	380

All dimensions are in mm unless otherwise stated.

CM 10-I and CM 10-G

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



TM04 2246 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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															
		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*	1.28	1 1/2"	1 1/2"	3/8"	10.2	180	158	125	216	100	218	399	185	161	105	96	137	80	214	294
CM10-2	90	1.45/2.5*	2.5	1 1/2"	1 1/2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385
CM10-3	100	2.36/4.0*	4	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402
CM10-4	132	4.2/6.2*	6.2	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	589	287	271	135	140	172	152	302	454
CM10-5	132	4.2/6.2*	6.2	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	649	347	331	195	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: The dimension H is smaller than H2 for CM 10-1 and CM 10-2.**Note:** CM 10-2, CM 10-3, CM 10-4 and CM 10-5 are not available with supply voltage O.

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	205	158	125	233	100	218	399	185	161	105	96	137	80	214	294

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage A.

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

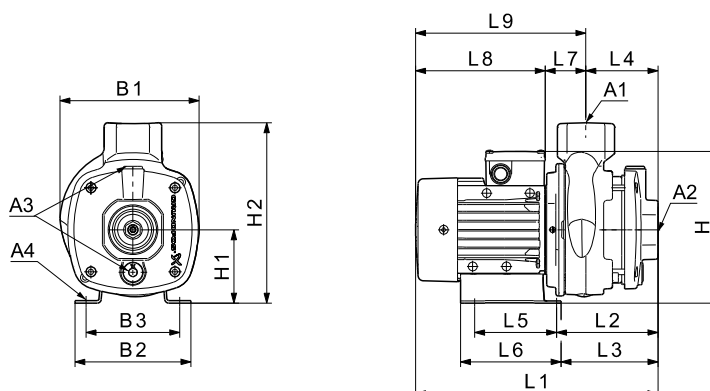
Pump type	Frame size	P ₂ [kW]					Dimensions																
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	
CM10-1	80	0.74	1.28	1 1/2"	1 1/2"	3/8"	10.2	180	158	125	209	100	218	419	185	161	105	96	137	80	234	314	
CM10-2	90	1.4	2.5	1 1/2"	1 1/2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385	
CM10-3	100	2.3	4.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402	
CM10-4	112	3.5	6.2	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	589	287	271	135	140	172	152	302	454	
CM10-5	112	3.5	6.2	1 1/2"	1 1/2"	3/8"	12.0	220	228	190	246	112	230	649	347	331	195	140	172	152	302	454	

All dimensions are in mm unless otherwise stated.

Note: The dimension H is smaller than H2 for CM 10-1 and CM 10-2.

CM 15-A

(A = cast iron EN-GJL-200)



Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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

Pump type	Frame size	P ₂ [kW]		Dimensions																		
		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	1.45/2.5*	2.5	2"	2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM15-2	100	2.36/4.0*	4	2"	2"	3/8"	12.0	198	199	160	220	100	245	477	205	190	97	140	170	108	272	380
CM15-3	132	4.2/6.2*	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: CM 15-2 and CM 15-3 are not available with supply voltage O.

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

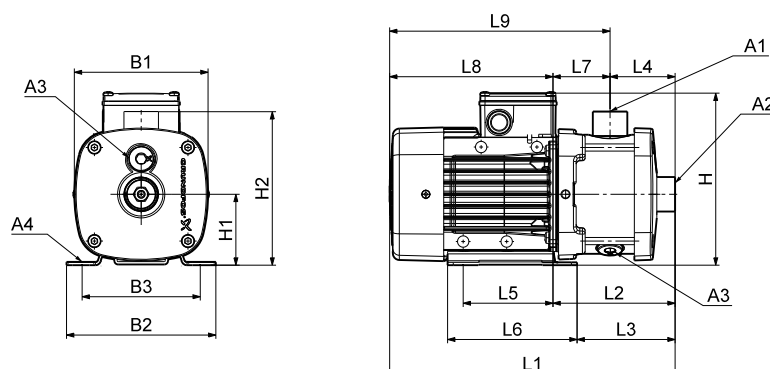
Pump type	Frame size	P ₂ [kW]		Dimensions																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.4	2.5	2"	2"	3/8"	10.2	190	199	160	210	100	245	461	190	175	97	140	170	93	272	364
CM15-2	100	2.3	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	245	477	205	190	97	140	170	108	272	380
CM15-3	112	3.5	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

TM04 6111 4909

CM 15-I and CM 15-G

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



TM04 2246 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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

Pump type	Frame size	P ₂ [kW]								Dimensions														
		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	1.45/2.5*	2.5	2"	2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385		
CM15-2	100	2.36/4.0*	4	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402		
CM15-3	132	4.2/6.2*	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	230	559	257	241	105	140	172	152	302	454		

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: The dimension H is smaller than H2 for CM 15-1.

CM 15-1, CM 15-2 and CM 15-3 are not available with supply voltage O.

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

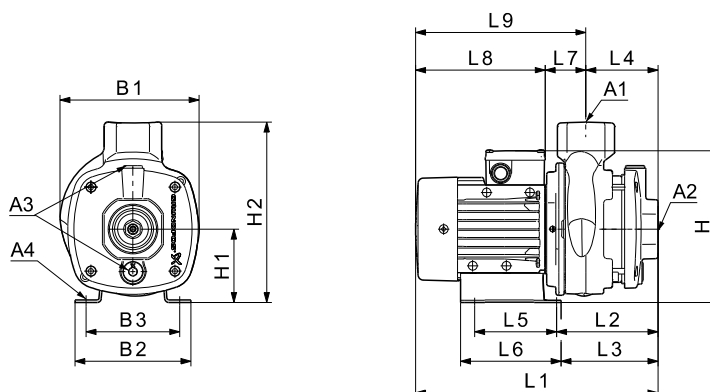
Pump type	Frame size	P ₂ [kW]		Dimensions																		
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.4	2.5	2"	2"	3/8"	10.2	180	199	160	210	100	218	490	219	204	105	140	170	114	272	385
CM15-2	100	2.3	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402
CM15-3	112	3.5	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

Note: The dimension H is smaller than H2 for CM 15-1.

CM 25-A

(A = cast iron EN-GJL-200)



Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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

Pump type	Frame size	P ₂ [kW]							Dimensions														
		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	100	2.36/4.0*	4	2"	2"	3/8"	12.0	198	199	160	220	100	245	477	205	190	97	140	170	108	272	380	
CM25-2	132	4.2/6.2*	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	257	530	228	212	97	140	172	131	302	433	

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: CM 25-1 and CM 25-2 are not available with supply voltage O.

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

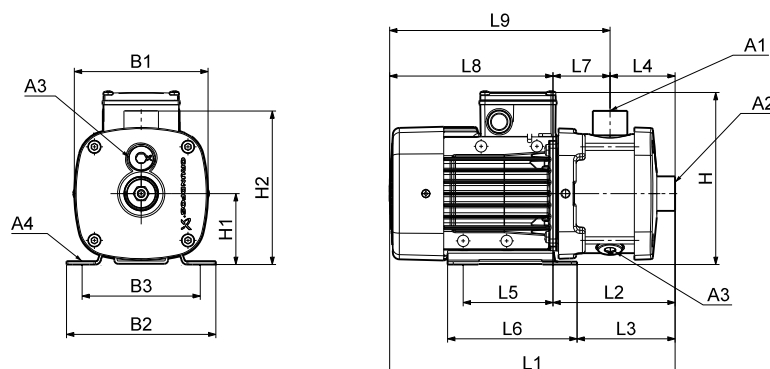
Pump type	Frame size	P ₂ [kW]										Dimensions											
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	
CM25-1	100	2.3	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	245	477	205	190	97	140	170	108	272	380	
CM25-2	112	3.5	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	257	530	228	212	97	140	172	131	302	433	

All dimensions are in mm unless otherwise stated.

TM04 6111 4909

CM 25-I and CM 25-G

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



TM04 2246 2208

Dimensions

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

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

3 x 400 V, 50/60 Hz (supply voltage I)

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

Pump type	Frame size	P ₂ [kW]								Dimensions														
		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	100	2.36/4.0*	4	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402		
CM25-2	132	4.2/6.2*	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	230	559	257	241	105	140	172	152	302	454		

All dimensions are in mm unless otherwise stated.

* Applies to supply voltage I.

Note: CM 25-1 and CM 25-2 are not available with supply voltage O.

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

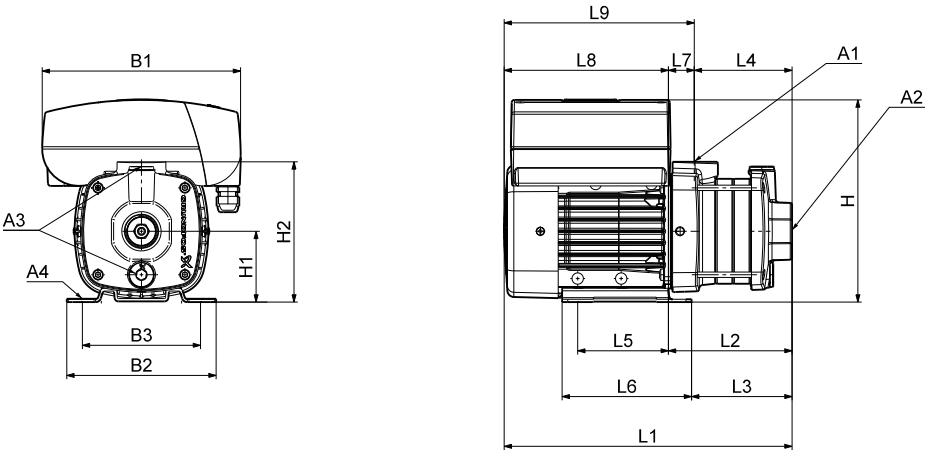
Pump type	Frame size	P ₂ [kW]						Dimensions														
		50 Hz	60 Hz	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	100	2.3	4.0	2"	2"	3/8"	12.0	198	199	160	220	100	218	507	235	220	105	140	170	130	272	402
CM25-2	112	3.5	6.2	2"	2"	3/8"	12.0	220	228	190	246	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

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

CME 1-A

(A = cast iron EN-GJL-200)



Dimensions

1 x 200-240 V, 50/60 Hz (supply voltage K)
1 x 208-230 V, 50/60 Hz (supply voltage M)

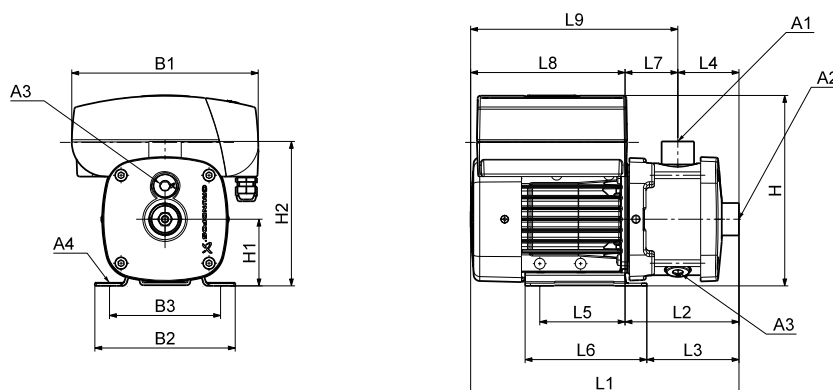
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-2	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	149	288	114	89	86	96	137	28	174	202
CME1-3	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	149	306	132	107	104	96	137	28	174	202
CME1-4	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	149	324	150	125	122	96	137	28	174	202
CME1-5	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	149	382	168	143	140	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

TM04 2249 2208

CME 1-I and CME 1-G

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



TM04 2247 2208

Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	210	158	125	215	75	165	305	131	107	72	96	137	60	174	234
CME1-3	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	165	305	131	107	72	96	137	60	174	234
CME1-4	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	165	323	149	125	90	96	137	60	174	234
CME1-5	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	381	167	143	108	96	137	60	214	274
CME1-6	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	417	203	179	144	96	137	60	214	274
CME1-7	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	417	203	179	144	96	137	60	214	274
CME1-8	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	453	239	215	180	96	137	60	214	274

All dimensions are in mm unless otherwise stated.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-9	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	503	279	264	180	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

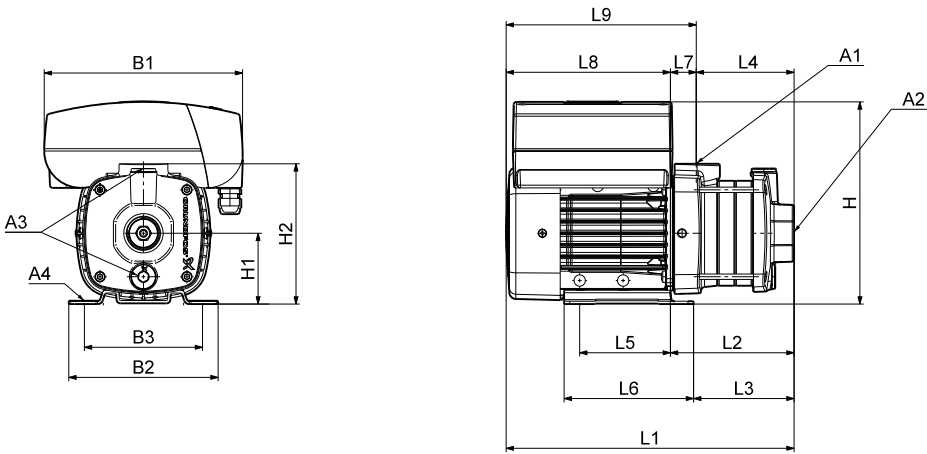
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME1-9	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	503	279	264	180	125	155	99	224	323

All dimensions are in mm unless otherwise stated.

CME 3-A

(A = cast iron EN-GJL-200)



Dimensions

1 x 200-240 V, 50/60 Hz (supply voltage K)
1 x 208-230 V, 50/60 Hz (supply voltage M)

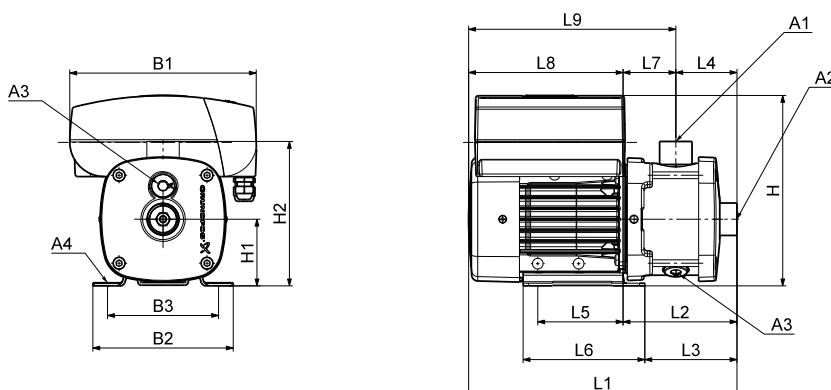
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-2	71	0.55	1"	1"	3/8"	10	210	158	125	215	75	149	288	114	89	86	96	137	28	174	202
CME3-3	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	149	346	132	107	104	96	137	28	214	242
CME3-4	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	149	364	150	125	122	96	137	28	214	242
CME3-5	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	149	382	168	143	140	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

TM04 2249 2208

CME 3-I and CME 3-G

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



TM04 2247 2208

Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	210	158	125	215	75	165	305	131	107	72	96	137	60	174	234
CME3-3	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	345	131	107	72	96	137	60	214	274
CME3-4	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	363	149	125	90	96	137	60	214	274
CME3-5	80	1.10	1"	1"	3/8"	10	210	158	125	215	75	165	381	167	143	108	96	137	60	214	274

All dimensions are in mm unless otherwise stated.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-6	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	467	243	228	144	125	155	99	224	323
CME3-7	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	467	243	228	144	125	155	99	224	323
CME3-8	90	2.20	1"	1"	3/8"	10	264	178	140	257	90	180	543	279	264	180	125	155	99	264	363
CME3-9	90	2.20	1"	1"	3/8"	10	264	178	140	257	90	180	543	279	264	180	125	155	99	264	363

All dimensions are in mm unless otherwise stated.

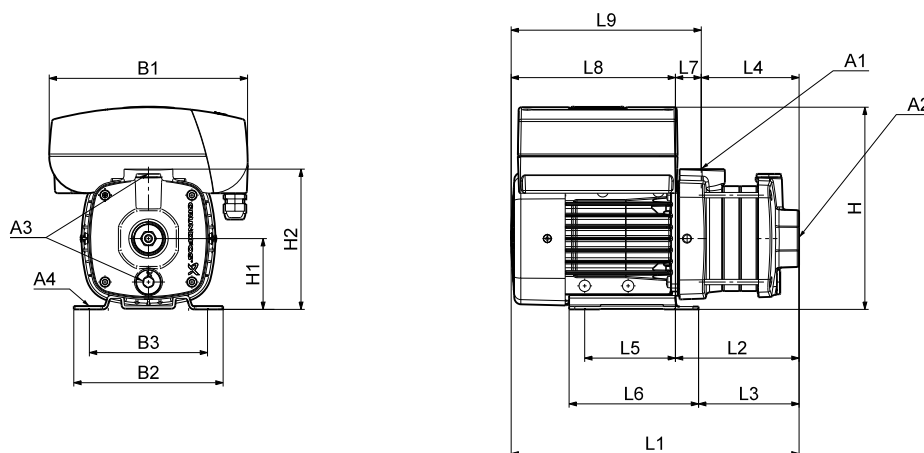
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME3-6	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	467	243	228	144	125	155	99	224	323
CME3-7	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	467	243	228	144	125	155	99	224	323
CME3-8	90	1.50	1"	1"	3/8"	10	264	178	140	257	90	180	503	279	264	180	125	155	99	224	323
CME3-9	90	2.20	1"	1"	3/8"	10	264	178	140	257	90	180	543	279	264	180	125	155	99	264	363

All dimensions are in mm unless otherwise stated.

CME 5-A

(A = cast iron EN-GJL-200)



Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	210	158	125	215	75	149	328	114	89	86	96	137	28	214	242
CME5-3	80	1.10	1"	1 1/4"	3/8"	10	210	158	125	215	75	149	346	132	107	104	96	137	28	214	242

All dimensions are in mm unless otherwise stated.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-4	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	201	414	190	175	108	125	155	82	224	306
CME5-5	90	2.20	1"	1 1/4"	3/8"	10	264	178	140	257	90	201	472	208	193	126	125	155	82	264	346

All dimensions are in mm unless otherwise stated.

3 x 460-480 V, 60 Hz (supply voltage N)

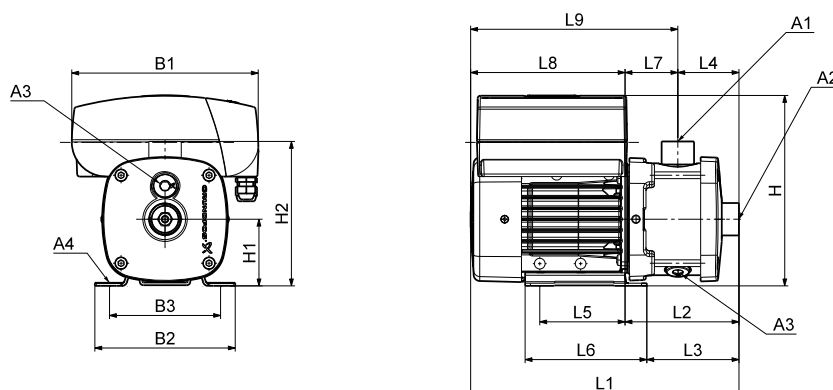
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-4	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	201	414	190	175	108	125	155	82	224	306
CME5-5	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	201	432	208	193	126	125	155	82	224	306

All dimensions are in mm unless otherwise stated.

TM04 2249 2208

CME 5-I and CME 5-G

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



TM04 2247 2208

Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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	210	158	125	215	75	165	345	131	107	72	96	137	60	214	274
CME5-3	80	1.10	1"	1 1/4"	3/8"	10	210	158	125	215	75	165	345	131	107	72	96	137	60	214	274

All dimensions are in mm unless otherwise stated.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-4	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	413	189	174	90	125	155	99	224	323
CME5-5	90	2.20	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	471	207	192	108	125	155	99	264	363
CME5-6	90	2.20	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	507	243	228	144	125	155	99	264	363
CME5-7	100	3.0	1"	1 1/4"	3/8"	12	264	199	160	277	100	190	525	253	238	144	140	170	109	272	381
CME5-8	100	3.0	1"	1 1/4"	3/8"	12	264	199	160	277	100	190	561	289	274	180	140	170	109	272	381

All dimensions are in mm unless otherwise stated.

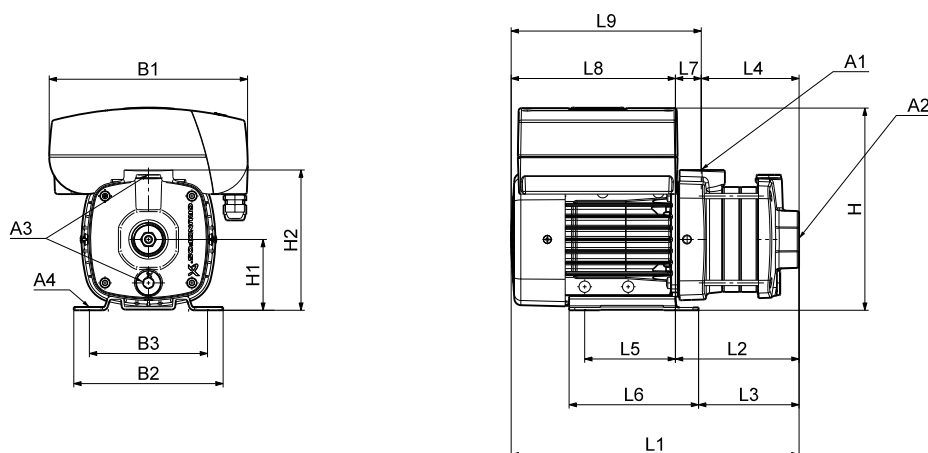
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME5-4	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	413	189	174	90	125	155	99	224	323
CME5-5	90	1.50	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	431	207	192	108	125	155	99	224	323
CME5-6	90	2.20	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	507	243	228	144	125	155	99	264	363
CME5-7	90	2.20	1"	1 1/4"	3/8"	10	264	178	140	257	90	180	507	243	228	144	125	155	99	264	363

All dimensions are in mm unless otherwise stated.

CME 10-A

(A = cast iron EN-GJL-200)



TM04 6110 2208

Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	210	158	125	240	100	245	369	155	131	97	96	137	58	214	272

All dimensions are in mm unless otherwise stated.

Note: The dimension H is smaller than H2 for CM 10-1.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	10.2	264	199	160	267	100	245	461	190	175	97	140	170	93	272	364
CME10-3	112	4.0	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

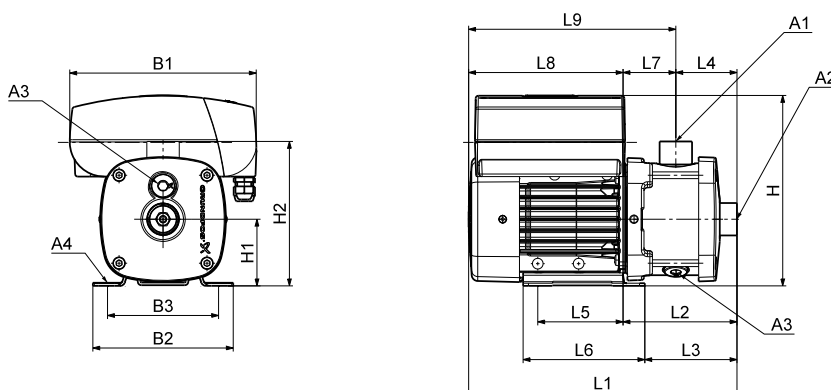
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	10.2	264	199	160	267	100	245	461	190	175	97	140	170	93	272	364
CME10-3	112	4.0	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

CME 10-I and CME 10-G

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



TM04 2247 2208

Dimensions

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

1 x 208-230 V, 50/60 Hz (supply voltage M)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	210	158	125	240	100	218	399	185	161	105	96	137	80	214	294

All dimensions are in mm unless otherwise stated.

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	10.2	264	199	160	267	100	218	490	219	204	105	140	170	114	272	385
CME10-3	112	4.0	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454
CME10-4	132	5.5	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	589	287	271	135	140	172	152	302	454
CME10-5	132	5.5	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	649	347	331	195	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

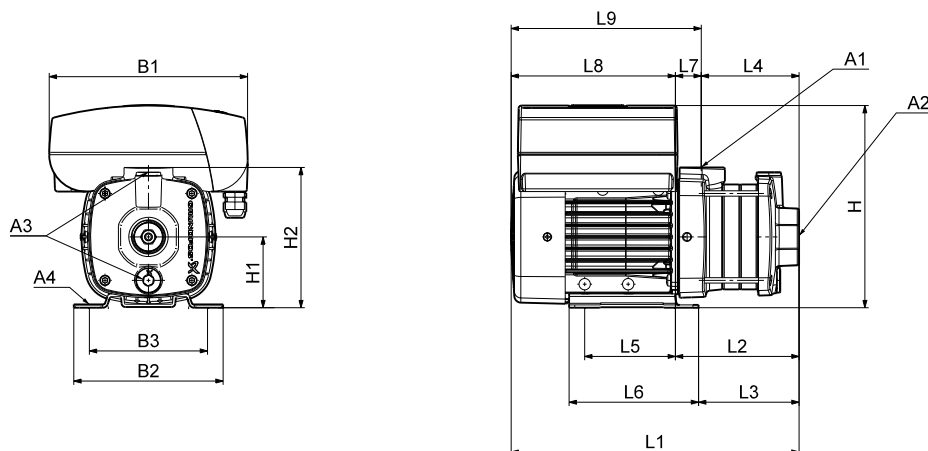
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME10-2	90	2.20	1 1/2"	1 1/2"	3/8"	10.2	264	199	160	267	100	218	490	219	204	105	140	170	114	272	385
CME10-3	112	4.0	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454
CME10-4	112	4.0	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	589	287	271	135	140	172	152	302	454
CME10-5	132	5.5	1 1/2"	1 1/2"	3/8"	12.0	290	228	190	300	112	230	649	347	331	195	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

CME 15-A

(A = cast iron EN-GJL-200)



TM04 2249 2208

Dimensions**3 x 380-480 V, 50/60 Hz (supply voltage L)**

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	264	199	160	267	100	245	461	190	175	97	140	170	93	272	364
CME15-2	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	257	530	228	212	97	140	172	131	302	433
CME15-3	132	7.5	2"	2"	3/8"	12.0	290	228	190	300	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

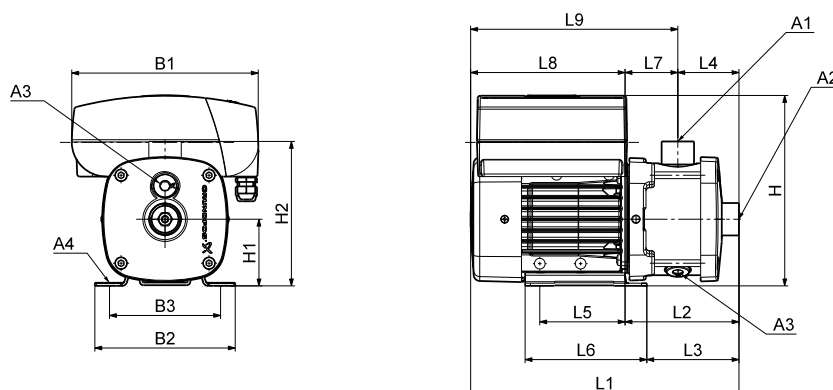
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	264	199	160	267	100	245	461	190	175	97	140	170	93	272	364
CME15-2	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	257	530	228	212	97	140	172	131	302	433
CME15-3	132	5.5	2"	2"	3/8"	12.0	290	228	190	300	112	257	560	258	242	127	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

CME 15-I and CME 15-G

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



TM04 2247 2208

Dimensions

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	264	199	160	267	100	218	490	219	204	105	140	170	114	272	385
CME15-2	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454
CME15-3	132	7.5	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

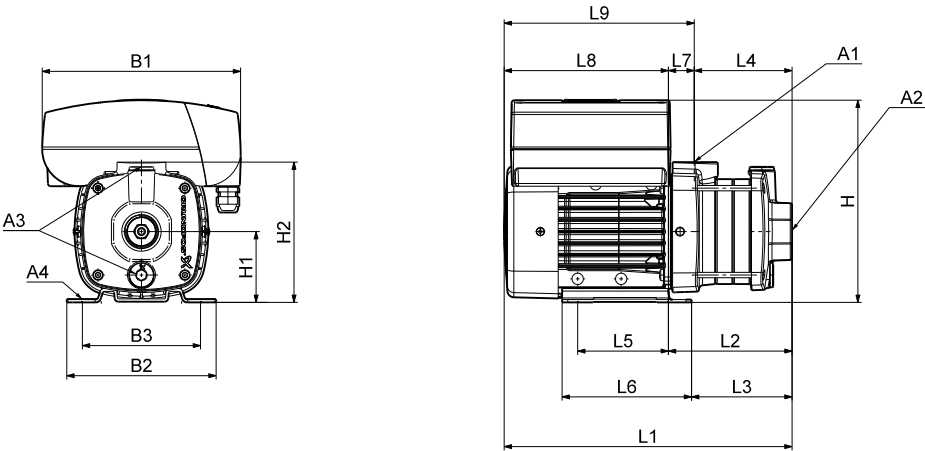
3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			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"	10.2	264	199	160	267	100	218	490	219	204	105	140	170	114	272	385
CME15-2	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454
CME15-3	132	5.5	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

CME 25-A

(A = cast iron EN-GJL-200)



Dimensions

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100	3.0	2"	2"	3/8"	12.0	264	199	160	277	100	245	477	205	190	97	140	170	108	272	380
CME25-2	132	7.5	2"	2"	3/8"	12.0	290	228	190	300	112	257	530	228	212	97	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

3 x 460-480 V, 60 Hz (supply voltage N)

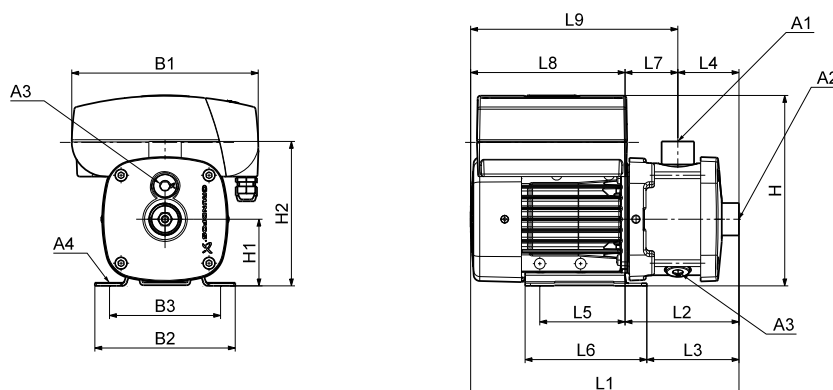
Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	257	530	228	212	97	140	172	131	302	433
CME25-2	132	5.5	2"	2"	3/8"	12.0	290	228	190	300	112	257	530	228	212	97	140	172	131	302	433

All dimensions are in mm unless otherwise stated.

TM04 2249 2208

CME 25-I and CME 25-G

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



TM04 2247 2208

Dimensions

3 x 380-480 V, 50/60 Hz (supply voltage L)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	100	3.0	2"	2"	3/8"	12.0	264	199	160	277	100	218	507	235	220	105	140	170	130	272	402
CME25-2	132	7.5	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

3 x 460-480 V, 60 Hz (supply voltage N)

Pump type	Frame size	P ₂ [kW]	Dimensions																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME25-1	112	4.0	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454
CME25-2	132	5.5	2"	2"	3/8"	12.0	290	228	190	300	112	230	559	257	241	105	140	172	152	302	454

All dimensions are in mm unless otherwise stated.

23. Weights and shipping volume

All weights and volumes refer to CM(E) pumps with standard pipe connections.3

CM 1-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 1-2	11.0	13.5	0.02
	CM 1-3	11.3	13.8	0.02
	CM 1-4	12.2	14.7	0.02
	CM 1-5	12.5	15.0	0.02
	CM 1-6	12.8	15.3	0.03
	CM 1-7	13.0	15.5	0.03
	CM 1-8	14.7	17.2	0.03
	CM 1-2	11.7	14.2	0.02
1 x 115/230 V, 60 Hz (supply voltage B)	CM 1-3	12.0	14.5	0.02
	CM 1-4	12.2	14.7	0.02
	CM 1-5	12.5	15.0	0.02
	CM 1-2	11.0	13.5	0.02
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 1-3	11.3	13.8	0.02
	CM 1-4	11.5	14.0	0.02
	CM 1-5	11.8	14.3	0.02
	CM 1-6	12.1	14.6	0.03
	CM 1-7	13.0	15.5	0.03
	CM 1-8	13.3	15.8	0.03
	CM 1-2	11.0	13.5	0.02
	CM 1-3	11.3	13.8	0.02
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 1-4	12.2	14.7	0.02
	CM 1-5	12.5	15.0	0.02
	CM 1-2	11.0	13.5	0.02
	CM 1-3	11.3	13.8	0.02
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 1-4	12.2	14.7	0.02
	CM 1-5	12.5	15.0	0.02
	CM 1-2	11.0	13.5	0.02
	CM 1-3	11.3	13.8	0.02

CM 3-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 3-2	11.0	13.5	0.0200
	CM 3-3	12.0	14.5	0.0200
	CM 3-4	12.2	14.7	0.0200
	CM 3-5	12.5	15.0	0.0200
	CM 3-6	14.2	16.7	0.0300
	CM 3-7	15.5	18.0	0.0300
	CM 3-8	15.8	18.3	0.0300
	CM 3-2	11.7	14.2	0.0200
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 3-3	12.0	14.5	0.0200
	CM 3-4	13.6	16.1	0.0300
	CM 3-5	15.0	17.5	0.0400
	CM 3-2	11.0	13.5	0.0200
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 3-3	11.3	13.8	0.0200
	CM 3-4	11.5	14.0	0.0200
	CM 3-5	12.5	15.0	0.0200
	CM 3-6	12.8	15.3	0.0300
	CM 3-7	15.8	18.3	0.0300
	CM 3-8	16.8	19.3	0.0400
	CM 3-2	11.0	13.5	0.0200
	CM 3-3	12.0	14.5	0.0200
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 3-4	12.2	14.7	0.0200
	CM 3-5	15.3	17.8	0.0300
	CM 3-2	11.0	13.5	0.0200
	CM 3-3	12.0	14.5	0.0200
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 3-4	12.2	14.7	0.0200
	CM 3-5	13.9	16.4	0.0370
	CM 3-2	11.0	13.5	0.0200
	CM 3-3	12.0	14.5	0.0200

CM 5-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 5-2	11.6	14.1	0.0200
	CM 5-3	11.9	14.4	0.0200
	CM 5-4	13.5	16.0	0.0300
	CM 5-5	14.9	17.4	0.0300
	CM 5-6	22.7	25.2	0.0400
	CM 5-7	23.0	25.5	0.0400
	CM 5-8	23.2	25.7	0.0400
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 5-2	13.0	15.5	0.0200
	CM 5-3	14.4	16.9	0.0400
	CM 5-4	24.3	26.8	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 5-2	10.9	13.4	0.0200
	CM 5-3	11.9	14.4	0.0200
	CM 5-4	14.9	17.4	0.0300
	CM 5-5	15.9	18.4	0.0300
	CM 5-6	16.2	18.7	0.0300
	CM 5-7	25.8	28.3	0.0400
	CM 5-8	26.0	28.5	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 5-2	11.6	14.1	0.0200
	CM 5-3	14.7	17.2	0.0300
	CM 5-4	24.3	26.8	0.0300
	CM 5-5	29.7	32.2	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 5-2	11.6	14.1	0.0200
	CM 5-3	14.7	17.2	0.0300
	CM 5-4	24.3	26.8	0.0300
	CM 5-5	29.7	32.2	0.0400
	CM 5-5	29.7	32.2	0.0400

CM 10-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 10-1	22.2	24.7	0.0400
	CM 10-2	29.8	32.3	0.0400
	CM 10-3	32.6	35.1	0.0400
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 10-1	23.4	25.9	0.0400
	CM 10-1	20.9	23.4	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 10-2	25.0	27.5	0.0400
	CM 10-3	35.8	38.3	0.0400
	CM 10-4	38.6	41.1	0.0500
	CM 10-5	39.3	41.8	0.0500
	CM 10-11	24.4	26.9	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 10-12	37.1	39.6	0.0400
	CM 10-13	40.8	43.3	0.0400
	CM 10-1	24.3	26.8	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 10-2	37.1	39.6	0.0400
	CM 10-3	40.8	43.3	0.0400
	CM 10-3	40.8	43.3	0.0400
	CM 10-3	40.8	43.3	0.0400

CM 15-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 15-1	28.5	31.0	0.0400
	CM 15-2	31.3	33.8	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 15-1	23.7	26.2	0.0400
	CM 15-2	34.5	37.0	0.0400
	CM 15-3	40.2	42.7	0.0400
	CM 15-4	56.0	58.5	0.0800
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 15-1	35.8	38.3	0.0400
	CM 15-2	39.5	42.0	0.0400
	CM 15-3	52.0	54.5	0.0800
3 x 208-230/440-480 V, 60 Hz (supply voltage E)	CM 15-1	35.8	38.3	0.0400
3 x 575 V, 60 Hz (supply voltage H)	CM 15-2	39.5	42.0	0.0400
3 x 400 V, 50/60 Hz (supply voltage I)	CM 15-3	52.0	54.5	0.0800
3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)				

CM 25-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 25-1	30.6	33.1	0.0400
	CM 25-1	33.8	36.3	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 25-2	39.5	42.0	0.0400
	CM 25-3	55.3	57.8	0.0800
	CM 25-4	56.4	58.9	0.0800
	CM 25-1	38.8	41.3	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 25-2	51.3	53.8	0.0800
	CM 25-1	38.8	41.3	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E)	CM 25-1	38.8	41.3	0.0400
3 x 575 V, 60 Hz (supply voltage H)	CM 25-2	51.3	53.8	0.0800
3 x 400 V, 50/60 Hz (supply voltage I)				
3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)				

CM 1-I and CM 1-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 1-2	11.6	14.1	0.0200
	CM 1-3	11.7	14.2	0.0200
	CM 1-4	12.7	15.2	0.0200
	CM 1-5	13.1	15.6	0.0200
	CM 1-6	13.7	16.2	0.0300
	CM 1-7	13.8	16.3	0.0300
	CM 1-8	15.7	18.3	0.0400
	CM 1-9	15.8	18.3	0.0400
	CM 1-10	16.4	18.9	0.0400
	CM 1-11	17.6	20.1	0.0400
	CM 1-12	18.5	21.0	0.0500
	CM 1-13	18.6	21.1	0.0500
	CM 1-14	24.3	26.8	0.0800
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 1-2	11.6	14.1	0.0200
	CM 1-3	11.7	14.2	0.0200
	CM 1-4	12.0	14.5	0.0200
	CM 1-5	12.4	14.9	0.0200
	CM 1-6	13.0	15.5	0.0300
	CM 1-7	13.8	16.3	0.0300
	CM 1-8	14.4	16.8	0.0300
	CM 1-9	14.4	16.9	0.0300
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 1-2	17.8	20.3	0.0400
	CM 1-3	17.9	20.4	0.0400
	CM 1-4	18.8	21.3	0.0500
	CM 1-5	19.6	22.1	0.0500
	CM 1-6	19.6	22.1	0.0500
	CM 1-7	12.3	14.8	0.0200
	CM 1-8	12.4	14.9	0.0200
	CM 1-9	12.7	15.2	0.0200
	CM 1-10	13.1	15.6	0.0200
	CM 1-11	15.1	17.6	0.0300
	CM 1-12	16.3	18.8	0.0400
	CM 1-13	16.8	19.3	0.0400
	CM 1-14	16.9	19.4	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 1-2	11.6	14.1	0.0200
	CM 1-3	11.7	14.2	0.0200
	CM 1-4	12.7	15.2	0.0200
	CM 1-5	13.1	15.6	0.0200
	CM 1-6	13.7	16.2	0.0300
	CM 1-7	13.8	16.3	0.0300
	CM 1-8	17.2	19.7	0.0400
	CM 1-9	17.9	20.4	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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	11.6	14.1	0.0200
	CM 1-3	11.7	14.2	0.0200
	CM 1-4	12.7	15.2	0.0200
	CM 1-5	13.1	15.6	0.0200
	CM 1-6	13.7	16.2	0.0300
	CM 1-7	13.8	16.3	0.0300
	CM 1-8	17.2	19.7	0.0400
	CM 1-9	17.9	20.4	0.0400

CM 3-I and CM 3-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 3-2	11.6	14.1	0.0200
	CM 3-3	12.4	14.9	0.0200
	CM 3-4	12.7	15.2	0.0200
	CM 3-5	13.1	15.6	0.0200
	CM 3-6	15.1	17.6	0.0300
	CM 3-7	16.3	18.8	0.0300
	CM 3-8	16.8	19.3	0.0400
	CM 3-9	22.6	25.1	0.0400
	CM 3-10	23.2	25.7	0.0500
	CM 3-11	23.3	25.8	0.0500
	CM 3-12	24.2	26.7	0.0800
	CM 3-13	24.2	26.7	0.0800
	CM 3-14	26.4	28.9	0.0800
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 3-2	11.6	14.1	0.0200
	CM 3-3	11.7	14.2	0.0200
	CM 3-4	12.0	14.5	0.0200
	CM 3-5	13.1	15.6	0.0200
	CM 3-6	13.7	16.2	0.0300
	CM 3-7	16.6	19.1	0.0300
	CM 3-8	17.8	20.3	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 3-2	17.9	20.4	0.0400
	CM 3-3	18.5	21.0	0.0400
	CM 3-4	26.1	28.6	0.0500
	CM 3-5	27.0	29.5	0.0800
	CM 3-6	27.0	29.5	0.0800
	CM 3-7	30.0	32.5	0.0800
	CM 3-8	12.3	14.8	0.0200
	CM 3-9	12.4	14.9	0.0200
	CM 3-10	14.1	16.6	0.0300
	CM 3-11	15.6	18.1	0.0400
	CM 3-12	24.0	26.5	0.0400
	CM 3-13	24.0	26.5	0.0400
	CM 3-14	24.6	27.1	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 3-2	11.6	14.1	0.0200
	CM 3-3	12.4	14.9	0.0200
	CM 3-4	12.7	15.2	0.0200
	CM 3-5	15.9	18.4	0.0300
	CM 3-6	17.2	19.7	0.0300
	CM 3-7	24.0	26.5	0.0400
	CM 3-8	29.8	32.3	0.0500
	CM 3-9	29.9	32.4	0.0500
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 3-2	11.6	14.1	0.0200
	CM 3-3	12.4	14.9	0.0200
	CM 3-4	12.7	15.2	0.0200
	CM 3-5	15.9	18.4	0.0300
	CM 3-6	17.2	19.7	0.0300
	CM 3-7	24.0	26.5	0.0400
	CM 3-8	29.8	32.3	0.0500
	CM 3-9	29.9	32.4	0.0500

CM 5-I and CM 5-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 5-2	12.3	14.8	0.0200
	CM 5-3	12.4	14.9	0.0200
	CM 5-4	14.1	16.6	0.0300
	CM 5-5	15.5	18.0	0.0300
	CM 5-6	21.8	24.3	0.0400
	CM 5-7	21.9	24.4	0.0400
	CM 5-8	22.5	25.0	0.0400
	CM 5-9	24.7	27.2	0.0400
	CM 5-10	25.3	27.8	0.0500
	CM 5-11	25.4	27.9	0.0500
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A)	CM 5-2	11.6	14.1	0.0200
	CM 5-3	12.4	14.9	0.0200
	CM 5-4	15.5	18.0	0.0300
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 5-2	16.5	19.0	0.0300
	CM 5-3	17.1	19.6	0.0300
	CM 5-4	24.7	27.2	0.0400
	CM 5-5	25.3	27.8	0.0400
	CM 5-6	28.3	30.8	0.0500
	CM 5-7	28.9	31.4	0.0500
	CM 5-8	29.0	31.5	0.0500
	CM 5-9	31.5	34.0	0.0800
	CM 5-10	31.6	34.1	0.0800
	CM 5-11	13.7	16.2	0.0200
	CM 5-12	14.9	17.4	0.0400
	CM 5-13	23.0	25.5	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 5-2	12.3	14.8	0.0200
	CM 5-3	15.2	17.7	0.0200
	CM 5-4	23.0	25.5	0.0300
	CM 5-5	28.5	31.0	0.0400
	CM 5-6	29.1	31.6	0.0400
	CM 5-7	29.2	31.7	0.0400
	CM 5-8	32.8	35.3	0.0500
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 5-2	12.3	14.8	0.0200
	CM 5-3	15.2	17.7	0.0200
	CM 5-4	23.0	25.5	0.0300
	CM 5-5	28.5	31.0	0.0400
	CM 5-6	29.1	31.6	0.0400
	CM 5-7	29.2	31.7	0.0400
	CM 5-8	32.8	35.3	0.0500

CM 10-I and CM 10-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 10-1	17.6	20.1	0.0400
	CM 10-2	24.8	27.3	0.0400
	CM 10-3	27.1	29.6	0.0400
1 x 115/230 V, 60 Hz (supply voltage B) 1 x 220 V, 60 Hz (supply voltage A) 3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 10-1	16.3	18.8	0.0400
	CM 10-2	19.0	21.5	0.0400
	CM 10-3	30.3	32.8	0.0400
	CM 10-4	33.2	35.7	0.0500
	CM 10-5	34.6	37.1	0.0800
	CM 10-6	37.7	40.2	0.0800
	CM 10-7	54.3	56.8	0.0800
	CM 10-8	54.5	57.0	0.0800
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 10-1	18.8	21.3	0.0400
	CM 10-2	32.1	34.6	0.0400
	CM 10-3	35.3	37.8	0.0400
	CM 10-4	48.0	50.5	0.0500
	CM 10-5	49.4	51.9	0.0800
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 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 10-1	18.8	21.3	0.0400
	CM 10-2	32.1	34.6	0.0400
	CM 10-3	35.3	37.8	0.0400
	CM 10-4	48.0	50.5	0.0500
	CM 10-5	49.4	51.9	0.0800

CM 15-I and CM 15-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 15-1	24.5	27.0	0.0400
	CM 15-2	26.8	29.3	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 15-1	18.7	21.2	0.0400
	CM 15-2	30.0	32.5	0.0400
	CM 15-3	35.2	37.7	0.0400
	CM 15-4	51.2	53.7	0.0500
	CM 15-1	31.8	34.3	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 15-2	35.0	37.5	0.0400
	CM 15-3	47.0	49.5	0.0500
	CM 15-1	31.8	34.3	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H) 3 x 400 V, 50/60 Hz (supply voltage I) 3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)	CM 15-2	35.0	37.5	0.0400
	CM 15-3	47.0	49.5	0.0500
	CM 15-1	31.8	34.3	0.0400

CM 25-I and CM 25-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 220-240 V, 50 Hz (supply voltage C)	CM 25-1	26.6	29.1	0.0400
	CM 25-1	29.8	32.3	0.0400
	CM 25-2	35.0	37.5	0.0400
3 x 220-240/380-415 V, 50 Hz (supply voltage F)	CM 25-3	50.3	52.8	0.0500
	CM 25-4	51.6	54.1	0.0500
	CM 25-1	34.8	37.3	0.0400
3 x 200/346 V, 50 Hz; 3 x 200-220/346-380 V, 60 Hz (supply voltage G)	CM 25-2	46.8	49.3	0.0500
	CM 25-1	34.8	37.3	0.0400
3 x 208-230/440-480 V, 60 Hz (supply voltage E)	CM 25-1	34.8	37.3	0.0400
3 x 575 V, 60 Hz (supply voltage H)				
3 x 400 V, 50/60 Hz (supply voltage I)				
3 x 380-415 V, 50 Hz; 3 x 440-480 V, 60 Hz (supply voltage J)	CM 25-3	46.8	49.3	0.0500

CME 1-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 1-2	14.4	17.9	0.0300
	CME 1-3	14.7	18.2	0.0300
	CME 1-4	14.9	18.4	0.0400
	CME 1-5	17.6	21.1	0.0400

CME 3-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 3-2	14.4	17.9	0.0300
	CME 3-3	17.1	20.6	0.0400
	CME 3-4	17.3	20.8	0.0400
	CME 3-5	17.6	21.1	0.0400

CME 5-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 5-2	16.7	20.2	0.040
	CME 5-3	17.0	20.5	0.040
	CME 5-4	30.0	33.5	0.080
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 5-5	34.2	37.7	0.080
	CME 5-4	31.3	34.8	0.080
3 x 460-480 V, 60 Hz (supply voltage N)	CME 5-4	31.3	34.8	0.080
	CME 5-5	31.5	35.0	0.080

CME 10-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 10-1	25.9	29.4	0.040
	CME 10-2	41.6	45.1	0.080
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 10-3	63.5	67.0	0.080
	CME 10-2	41.7	45.2	0.080
3 x 460-480 V, 60 Hz (supply voltage N)	CME 10-3	60.2	63.7	0.080

CME 15-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 15-1	40.3	43.8	0.080
	CME 15-2	62.1	65.6	0.080
	CME 15-3	67.0	70.5	0.080
3 x 460-480 V, 60 Hz (supply voltage N)	CME 15-1	40.4	43.9	0.080
	CME 15-2	58.8	62.3	0.080
	CME 15-3	63.2	66.7	0.080

CME 25-A

(A = cast iron EN-GJL-200)

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 25-1	43.5	47.0	0.080
	CME 25-2	66.3	69.8	0.080
3 x 460-480 V, 60 Hz (supply voltage N)	CME 25-1	58.2	61.7	0.080
	CME 25-2	62.5	66.0	0.080

CME 1-I and CME 1-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 1-2	15.0	18.5	0.0300
	CME 1-3	15.1	18.6	0.0300
	CME 1-4	15.4	18.9	0.0400
	CME 1-5	18.2	21.7	0.0400
	CME 1-6	18.8	22.3	0.0400
	CME 1-7	18.9	22.4	0.0400
	CME 1-8	19.5	23.0	0.0400
	CME 1-9	30.4	33.9	0.0800
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 1-9	31.7	35.2	0.0800

CME 3-I and CME 3-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 3-2	15.0	18.5	0.0300
	CME 3-3	17.5	21.0	0.0400
	CME 3-4	17.8	21.3	0.0400
	CME 3-5	18.2	21.7	0.0400
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 3-6	29.7	33.2	0.0800
	CME 3-7	29.7	33.2	0.0800
	CME 3-8	34.3	37.8	0.0800
	CME 3-9	34.4	37.9	0.0800
	CME 3-6	31.0	34.5	0.0800
3 x 460-480 V, 60 Hz (supply voltage N)	CME 3-7	31.0	34.5	0.0800
	CME 3-8	31.6	35.1	0.0800
	CME 3-9	34.6	38.1	0.0800

CME 5-I and CME 5-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 5-2	17.4	20.9	0.0400
	CME 5-3	17.5	21.0	0.0400
	CME 5-4	28.7	32.2	0.0800
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 5-5	33.0	36.5	0.0800
	CME 5-6	33.6	37.1	0.0800
	CME 5-7	36.9	40.4	0.0800
	CME 5-8	37.5	41.0	0.0800
	CME 5-4	30.0	33.5	0.0800
3 x 460-480 V, 60 Hz (supply voltage N)	CME 5-5	30.3	33.8	0.0800
	CME 5-6	33.8	37.3	0.0800
	CME 5-7	33.9	37.4	0.0800

CME 10-I and CME 10-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
1 x 200-240 V, 50/60 Hz (supply voltage K) 1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 10-1	21.3	24.8	0.0400
	CME 10-2	36.6	40.1	0.0800
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 10-3	57.9	61.4	0.0800
	CME 10-4	58.8	62.3	0.0800
	CME 10-5	60.2	63.7	0.0800
	CME 10-2	36.7	40.2	0.0800
	CME 10-3	54.6	58.1	0.0800
3 x 460-480 V, 60 Hz (supply voltage N)	CME 10-4	55.5	59.0	0.0800
	CME 10-5	60.6	64.1	0.0800

CME 15-I and CME 15-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 15-1	36.3	39.8	0.0800
	CME 15-2	57.6	61.1	0.0800
	CME 15-3	62.0	65.5	0.0800
3 x 460-480 V, 60 Hz (supply voltage N)	CME 15-1	36.4	39.9	0.0800
	CME 15-2	54.3	57.8	0.0800
	CME 15-3	58.2	61.7	0.0800

CME 25-I and CME 25-G

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

Supply voltage	Pump type	Net weight [kg]	Gross weight [kg]	Shipping volume [m ³]
3 x 380-480 V, 50/60 Hz (supply voltage L)	CME 25-1	39.5	43.0	0.0800
	CME 25-2	61.8	65.3	0.0800
3 x 460-480 V, 60 Hz (supply voltage N)	CME 25-1	54.1	57.6	0.0800
	CME 25-2	58.0	61.5	0.0800

24. Motor data

Mains-operated motors, 50 Hz

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

Frame size	P ₂ [kW]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71A	0.3	1.8 - 2.4	0.95 - 0.86	67.4 - 61.4	6.1 - 8.2	2.800 - 2.830
71B	0.5	3.1 - 2.8	0.97 - 0.99	74 - 70	16.4 - 14.8	2.730 - 2.740
80A	0.67	4.4 - 4.0	0.99 - 0.99	71.8 - 73	17.2 - 15.6	2.720 - 2.800
80B	0.9	5.4 - 5.0	0.98 - 0.98	76 - 74	23.2 - 21.5	2.750 - 2.790
90SA	1.3	8.4 - 8.0	0.98 - 0.98	71 - 71	28.6 - 27.2	2.710 - 2.710
90SB	1.9	11.0 - 10.0	0.99 - 0.98	75 - 76	40.7 - 37.0	2.755 - 2.770

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

Frame size	P ₂ [kW]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71A	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	2.770 - 2.820
71B	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	2.770 - 2.820
80BA	0.85	3.5 - 3.8 / 2 - 2.22	0.77 - 0.68	79.7 - 79.3	21.0 - 24.3 / 12.0 - 14.2	2.840 - 2.870
80C	1.2	4.8 - 5.2 / 2.8 - 3	0.79 - 0.7	83 - 80.9	37.0 - 41.6 / 21.6 - 24.0	2.820 - 2.860
90SB	1.58	5.55 - 5.38 / 3.25 - 3	0.88 - 0.84	83.4 - 84.3	38.9 - 44.1 / 22.8 - 24.6	2.880 - 2.910
90SC	2.2	8.05 - 7.5 / 4.7 - 4.35	0.83 - 0.75	84.8 - 83.8	71.6 - 76.5 / 41.8 - 44.4	2.890 - 2.920
100LA	3.2	11.8 - 11.0 / 6.75 - 6.40	0.87 - 0.79	85.2 - 85.5	94.4 - 96.8 / 54.0 - 56.3	2.900 - 2.920
100LB	4.0	14.0 - 13.2 / 8.20 - 7.80	0.87 - 0.84	87.1 - 87.9	119.0 - 125.4 / 69.7 - 74.1	2.900 - 2.920
132SB	5.8	20.4 - 19.0 / 11.8 - 11.0	0.89 - 0.84	87.5 - 88.0	181.6 - 184.3 / 105.0 - 106.7	2.900 - 2.980
132SC	7.4	25.5 - 26.5 / 14.8 - 15.4	0.86 - 0.77	88.4 - 88.7	232.1 - 254.4 / 134.7 - 147.8	2.910 - 2.930

Mains-operated motors, 60 Hz

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

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
	[kW]	[hp]							
71B	0.60	0.80	1	4.1	4.1	0.98	71	16.8	3.300
80A	0.84	1.1	1	5.8	5.8	0.98	69.8	18.6	3.150
80B	1.14	1.5	1	7.35	7.35	0.99	73.5	19.8	3.270
90SB	1.54	2.0	1	9.8	9.8	0.98	74.8	37.2	3.330

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

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
	[kW]	[hp]							
71BA	0.60	0.8	1	7.6 / 3.9	7.6 / 3.9	0.76	69 - 66	19.8 / 10.1	3.240
80AA	0.78	1.06	1	10.6 / 5.4	10.6 / 5.4	0.65	69 - 68	31.8 / 16.2	3.240
80BA	1.10	1.50	1	14.0 / 7.0	14.0 / 7.0	0.94	71 - 69	44.8 / 22.4	3.320
90CC	1.50	2.03	1	19.5 / 9.8	19.5 / 9.8	0.97	72.9 - 69	78.0 / 39.2	3.360

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

Frame size	P ₂		Service factor	I _{1/1}	Service factor current	Cos φ _{1/1}	η	I _{start}	Speed
	[kW]	[hp]		[A]			[%]	[A]	[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	3.360 - 3.420
71BA	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	3.220 - 3.370
80BA	1.04	1.4	1	4.1 - 3.95 / 2 - 2	4.1 - 3.95 / 2 - 2	0.8 - 0.71/0.8 - 0.71	83.6 - 83	26.7 - 31.6 / 13.0 - 16.0	3.430 - 3.460
80CB	1.28	1.7	1	5.1 - 4.9 / 2.48 - 2.46	5.1 - 4.9 / 2.48 - 2.46	0.82 - 0.75/0.82 - 0.79	83.5 - 83.8	34.7 - 37.7 / 16.9 - 18.9	3.420 - 3.460
90CC	1.7	2.3	1	6.25 - 5.85 / 2.98 - 2.85	6.25 - 5.85 / 2.98 - 2.85	0.83 - 0.84/0.83 - 0.84	85.9 - 85.8	53.1 - 55.0 / 25.3 - 26.8	3.440 - 3.520
90FA	2.5	3.4	1	8.95 - 8.5 / 4.3 - 4	8.95 - 8.5 / 4.3 - 4	0.9 - 0.81/0.9 - 0.81	86.1 - 86.9	81.4 - 89.3 / 39.1 - 42.0	3.490 - 3.520
100BB	4.0	5.4	1	14.8 - 14.2 / 7.2 - 7.0	14.8 - 14.2 / 7.2 - 7.0	0.86 - 0.80/0.86 - 0.80	88.5 - 89.2	177.6 - 123.5 / 86.4 - 60.9	3.520 - 3.530
132CA	6	8.4	1	21 - 20.4 / 10.5 - 10.2	21 - 20.4 / 10.5 - 10.2	0.88 - 0.82/0.88 - 0.82	89.4 - 89	189.0 - 234.6 / 94.5 - 117.3	3.520 - 3.540

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

Frame size	P ₂		Service factor	I _{1/1}	Service factor current	Cos φ _{1/1}	η	I _{start}	Speed
	[kW]	[hp]		[A]			[%]	[A]	[min ⁻¹]
71AA	0.43	0.58	1	0.7	0.7	0.84	76.0	4.6	3.340
71BA	0.74	1.0	1	1.3	1.3	0.84	76	8.5	3.340
80BA	1.04	1.4	1	1.55	1.55	0.8	85.2	11.8	3.450
80CB	1.28	1.7	1	1.84	1.84	0.82	85.7	15.3	3.440
90CC	1.7	2.0	1	2.89	2.89	0.83	85.9	27.7	3.440
90FA	2.5	3.4	1	3.5	3.5	0.9	85.9	20.7	3.490
100BB	4.0	5.4	1	5.7	5.7	0.88	88.5	49.6	3.500
132CA	6	8	1	8.2	8.2	0.86	89.2	106.6	3.520

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

Frame size	P ₂	Frequency	I _{1/1}	Cos φ _{1/1}	η	I _{start}	Speed
	[kW]	[Hz]	[A]		[%]	[A]	[min ⁻¹]
71B	0.43	50	3.4 - 2.5 / 1.3 - 1.5	0.72 - 0.60	78 - 76	17.0 - 15.0 / 6.5 - 9.0	2.870 - 2.890
	0.74	60	3.4 - 2.9 / 1.6 - 1.7	0.87 - 0.84	75 - 77	17.0 - 17.4 / 8.0 - 10.2	3.280 - 3.350
80BA	0.6	50	3 - 3.65 / 1.72 - 2.1	0.63 - 0.5	84 - 80.1	28.8 - 31.4 / 16.5 - 18.1	2.920 - 2.930
	1.04	60	3.9 - 3.65 / 2.25 - 2.1	0.83 - 0.8	84.1 - 85.5	25.4 - 28.1 / 14.6 - 16.2	3.410 - 3.450
80C	0.74	50	3.65 - 4.5 / 2.1 - 2.5	0.64 - 0.5	84.6 - 81.3	35.0 - 40.5 / 20.2 - 22.5	2.920 - 2.930
	1.28	60	4.76 - 4.42 / 2.75 - 2.55	0.84 - 0.8	84.3 - 85.7	31.4 - 34.5 / 18.2 - 19.9	3.400 - 3.440

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

Frame size	P ₂	Frequency	I _{1/1}	Cos φ _{1/1}	η	I _{start}	Speed
	[kW]	[Hz]	[A]		[%]	[A]	[min ⁻¹]
71AA	0.25	50	0.55 - 0.65	0.77 - 0.71	77 - 76	4.0 - 5.1	2.870 - 2.890
	0.43	60	0.95 - 0.80	0.85 - 0.82	76.0 - 78.6	5.6 - 5.2	3.360 - 3.420
71BA	0.43	50	1.4 - 1.5	0.76 - 0.66	77 - 76	7.7 - 9.0	2.860 - 2.890
	0.74	60	1.7 - 1.8	0.89 - 0.83	76.0 - 78.4	10.0 - 11.7	3.220 - 3.380
80BA	0.6	50	1.55 - 1.75	0.68 - 0.62	83.5 - 82	13.8 - 14.7	2.900 - 2.910
	1.04	60	2 - 2.1	0.85 - 0.75	82.5 - 82.9	14.6 - 16.8	3.420 - 3.460
80CB	0.74	50	1.95 - 2.1	0.72 - 0.62	85.2 - 84.1	18.1 - 20.4	2.900 - 2.920
	1.28	60	2.55 - 2.45	0.82 - 0.76	85.3 - 85.8	19.1 - 21.3	3.440 - 3.470
90CC	1	50	2.25 - 2.3	0.8 - 0.74	83.9 - 82.9	25.2 - 27.8	2.930 - 2.950
	1.7	60	2.98 - 2.85	0.88 - 0.84	86.1 - 86.9	25.3 - 26.8	3.490 - 3.510
90FA	1.45	50	3 - 3.2	0.83 - 0.81	86.8 - 87	36.0 - 41.6	2.920 - 2.950
	2.5	60	4.3 - 4	0.9 - 0.87	86.1 - 86.9	38.7 - 44.0	3.490 - 3.520
100BB	2.36	50	6.0 - 6.5	0.76 - 0.65	88 - 87	72.0 - 87.8	2.950 - 2.960
	4.0	60	7.3 - 7.5	0.86 - 0.80	88.5 - 89.2	87.6 - 65.3	3.520 - 3.530
132CA	3.5	50	7.9 - 8.7	0.76 - 0.64	88.5 - 87	122.5 - 133.5	2.950 - 2.960
	6	60	10.2 - 10.2	0.86 - 0.79	89.3 - 89.1	123.4 - 136.7	3.520 - 3.530

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

Frame size	P ₂ [kW]	Frequency [Hz]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71AA	0.25	50	1.6 / 1.0	0.65	77 - 76	11.7 / 7.3	2.900
	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	3.370 - 3.424
71B	0.43	50	3.6 / 2.0	0.53	77 - 76	19.8 / 11.0	2.904
	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	3.380 - 3.429
80BA	0.6	50	3.8 / 2.2	0.56	82.4 - 82.4	35.3 / 20.5	2.930
	1.04	60	4.3 - 4.2 / 2.5 - 2.4	0.8 - 0.72	85 - 85	31.0 - 35.3 / 18.0 - 20.2	3.440 - 3.470
80C	0.74	50	4.25 / 2.44	0.61	84 - 84	36.1 / 20.7	2.910
	1.28	60	5.7 - 5.2 / 3.3 - 3	0.77 - 0.77	83.8 - 84.1	37.1 - 31.7 / 21.5 - 18.3	3.450 - 3.450
90SB	1	50	5.2 / 3	0.65	83 - 83	65.0 / 37.5	2.950
	1.7	60	6.6 - 6.3 / 3.8 - 3.6	0.83 - 0.84	85.9 - 85.8	56.1 - 63.0 / 32.3 - 36.0	3.440 - 3.520
90LC	1.45	50	6.5 / 3.8	0.75	86.6 - 86.6	88.4 / 51.7	2.950
	2.5	60	9.6 - 8.8 / 5.5 - 5.1	0.9 - 0.88	83.1 - 86.9	74.9 - 84.5 / 42.9 - 49.0	3.480 - 3.500
100LB	2.3	50	15.4 / 8.8	0.51	89 - 87	184.8 / 105.6	2.960
	4.0	60	15.8 - 15.4 / 9.4 - 8.7	0.86 - 0.79	88.5 - 89.2	189.6 - 134.0 / 112.8 - 75.7	3.510 - 3.530
112MC	3.5	50	19 / 11	0.62	88.2 - 88.2	285.0 / 165.0	2.960
	6.00	60	22.2 - 21.2 / 12.8 - 12.2	0.86 - 0.79	89.3 - 89	244.2 - 260.8 / 140.8 - 150.1	3.520 - 3.540

3 x 400 V, 50/60 Hz (supply voltage I)

Frame size	P ₂ [kW]	Frequency [Hz]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71AA	0.25	50	0.72	0.67	75.0	4.7	2.900
	0.43	60	1.0	0.86	74.9	6.5	3.350
80BA	0.6	50	1.9	0.59	81.6	13.5	2.910
	1.04	60	2.18	0.83	83	13.5	3.400
80CB	0.74	50	2.28	0.57	82.4	13.9	2.920
	1.28	60	2.65	0.84	83.9	13.8	3.400
90CC	1.7	60	3.2	0.87	81.3	23.7	3.510
90FA	1.45	50	3.0	0.83	86.8	36.0	2.920
	2.5	60	4.65	0.91	85.4	41.9	3.500
100BB	2.32	50	5.5	0.7	87	63.3	2.960
	4	60	7.35	0.89	87.6	63.2	3.500
132CA	3.5	50	8.8	0.65	88.2	145.2	2.960
	6	60	11.2	0.87	90	172.9	3.520

Speed-controlled motors

1 x 208-230 V, 50/60 Hz (supply voltage M)

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}
	[kW]	[hp]				
71BA	0.55	0.75	1	3.9 - 3.5	3.9 - 3.5	0.97
80BA	1.10	1.50	1	7.5 - 6.8	7.5 - 6.8	0.97

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

Frame size	P ₂ [kW]	I _{1/1} [A]	Cos φ _{1/1}
71B	0.55	4.30 - 3.6	0.97
80B	1.10	8.20 - 6.80	0.97

3 x 460-480 V, 60 Hz (supply voltage N)

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}
	[kW]	[hp]				
90CC	1.50	2.00	1.15	3.1 - 3.1	3.565 - 3.565	0.87
90FA	2.20	3.00	1.15	3.7 - 3.7	4.255 - 4.255	0.91
112CA	4.0	5.5	1.15	6.1 - 6.1	7.015 - 7.015	0.92
132DA	5.5	7.5	1.15	8.9 - 8.9	10.235 - 10.235	0.94

3 x 380-480 V, 50/60 Hz (supply voltage L)

Frame size	P ₂ [kW]	Frequency [Hz]	Cos φ _{1/1}
90SB	1.50	3.3 - 2.7	0.91 - 0.87
90LC	2.20	4.6 - 3.8	0.92 - 0.9
100LC	3.0	6.2 - 5	0.94 - 0.92
112MC	4.0	8.1 - 6.6	0.94 - 0.92
132SC	5.5	11 - 8.8	0.94 - 0.93
132SD	7.5	15 - 12	0.94 - 0.93

Additional data for speed-controlled motors

	Single-phase	Three-phase
Electricity supply to pump	1 x 200-240 V - 10 %/+ 10 %, 50/60 Hz, PE.	3 x 380-480 V - 10 %/+ 10 %, 50/60 Hz, PE.
Back-up fuse	Motor sizes of 0.55 to 1.1 kW: Max. 10 A. Standard as well as quick-blow or slow-blow fuses may be used.	Motor sizes of 1.5 to 5.5 kW: Max. 16 A. Motor size 7.5 kW: Max. 32 A. Standard as well as quick-blow or slow-blow fuses may be used.
External start/stop input	External potential-free contact. Maximum contact load: Voltage 5 VDC, current < 5 mA. Screened cable.*	
Digital input	External potential-free contact. Maximum contact load: Voltage 5 VDC, current < 5 mA. Screened cable.*	
Setpoint signals	- Potentiometer 0-10 VDC, 10 kΩ (via internal voltage supply). Screened cable.* Maximum cable length: 100 m. - Voltage signal 0-10 VDC, $R_i > 50 \text{ k}\Omega$. Tolerance: + 0 %/- 3 % at maximum voltage signal. Screened cable.* Maximum cable length: 500 m. - Current signal DC 0-20 mA/4-20 mA, $R_i = 175 \Omega$. Tolerance: + 0 %/- 3 % at maximum current signal. Screened cable.* Maximum cable length: 500 m.	- Potentiometer 0-10 VDC, 10 kΩ (via internal voltage supply). Screened cable.* Maximum cable length: 100 m. - Voltage signal 0-10 VDC, $R_i > 50 \text{ k}\Omega$. Tolerance: + 0 %/- 3 % at maximum voltage signal. Screened cable.* Maximum cable length: 500 m. - Current signal DC 0-20 mA/4-20 mA, $R_i = 250 \Omega$. Tolerance: + 0 %/- 3 % at maximum current signal. Screened cable.* Maximum cable length: 500 m.
Electricity supply to sensors	The sensors are supplied with electricity via the motor terminal box. • 24 VDC $\pm$ 10 %. Maximum load: 40 mA.	The sensors are supplied with electricity via the motor terminal box. • 24 VDC $\pm$ 10 %. Maximum load: 40 mA.
Sensor signals	- Voltage signal 0-10 VDC, $R_i > 50 \text{ k}\Omega$. Tolerance: + 0 %/- 3 % at maximum voltage signal. Screened cable.* Maximum cable length: 500 m. - Current signal DC 0-20 mA/4-20 mA, $R_i = 175 \Omega$. Tolerance: + 0 %/- 3 % at maximum current signal. Screened cable.* Maximum cable length: 500 m.	- Voltage signal 0-10 VDC, $R_i > 50 \text{ k}\Omega$. Tolerance: + 0 %/- 3 % at maximum voltage signal. Screened cable.* Maximum cable length: 500 m. - Current signal DC 0-20 mA/4-20 mA, $R_i = 250 \Omega$. Tolerance: + 0 %/- 3 % at maximum current signal. Screened cable.* Maximum cable length: 500 m.
Signal output	Potential-free changeover contact. Maximum contact load: 250 VAC, 2 A. Minimum contact load: 5 VDC, 10 mA. Screened cable: 0.5 - 2.5 mm ² . Maximum cable length: 500 m.	
Bus input	Grundfos bus protocol, GENIbus protocol, RS-485. 0.5 - 1.5 mm ² screened 2-core cable. Maximum cable length: 500 m.	
EMC	EN 61800-3 Note: When pumps fitted with 7.5 kW motors are installed in first environment (residential areas), an additional EMC filter is required to obtain class B, group 1 status. Motors of 0.55 to 5.5 kW: Electromagnetic disturbance – first environment (residential areas) – unrestricted distribution, corresponding to CISPR 11, class B, group 1. Motors of 7.5 kW: Electromagnetic disturbance – first environment (residential areas) – restricted distribution. Immunity to electromagnetic disturbance – second environment (industrial areas) – unrestricted distribution, corresponding to CISPR 11, class A, group 1.	
Enclosure class	IP55 (IEC 34-5).	
Insulation class	F (IEC 85).	
Ambient temperature	During operation: -20 °C to +40 °C. During storage/transport: -40 °C to +60 °C.	
Relative air humidity	Maximum 95 %.	

* Cross section min. 0.5 mm² and max. 1.5 mm².

25. Customisation

Although the Grundfos CM and CME 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 CM and CME 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: For CME pumps we offer the solutions shown on page 109.

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.

Figure 32 shows the position of the multiplug on the mains-operated motor.

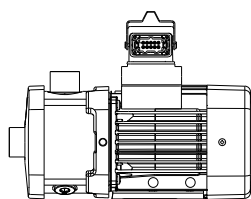
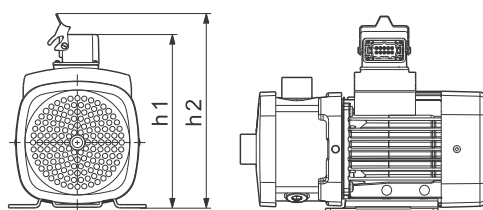


Fig. 32 Motor with multiplug connection



Fig. 33 Multiplug logo

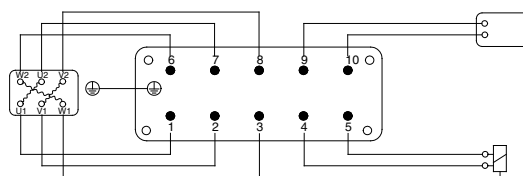
Dimensions



TM04 5847 4609

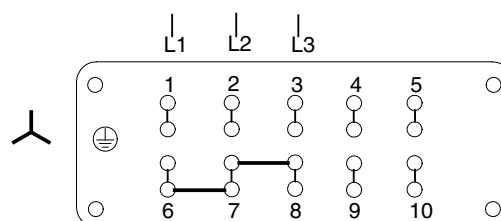
Pump type	Frame size	h1	h2
CM 1	71	206	237
CM 3	80	206	237
CM 5	90	263	294
	100	283	314
	71	231	262
	80	231	262
CM 10	90	273	304
CM 15	100	283	314
CM 25	112	309	340
	132	309	340

Plug connections



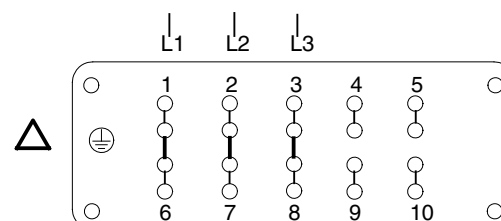
TM01 8702 0700

Fig. 34 Plug connection from motor



TM01 8703 0700

Fig. 35 Plug connection for star connection



TM01 8704 0700

Fig. 36 Plug connection for delta connection

Note: Wire bridges for connections are located in the plug.

Plug-and-pump solutions for CME pumps

To facilitate electrical installation and service of our three-phase CME pumps, all motor terminal boxes are equipped with a detachable cable entry bar.

When the cable entry bar is removed, it is possible to disconnect all electrical connections.

Figure 37 shows the location of the detachable cable entry bar on the motor terminal box as well as plugs for mains connection, sensor and communication.

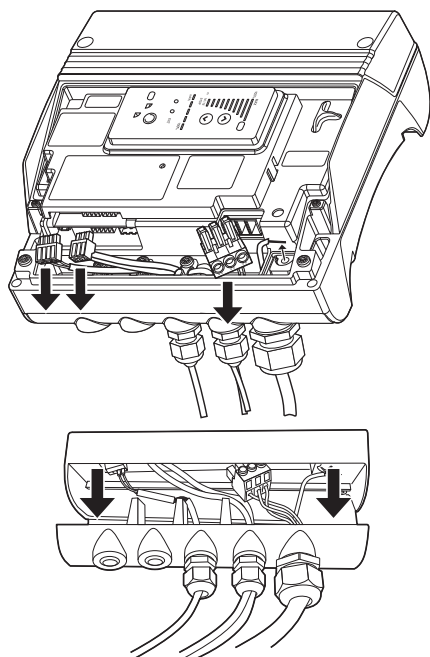


Fig. 37 Location of the detachable cable entry bar

TM03 1964 3405 - TM03 1962 3405

Motor with anti-condensation heater



Fig. 38 Mains-operated motor with anti-condensation heater

TM03 2440 4305

In applications where condensation in the motor may occur, we recommend to 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.

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.

In areas with ambient temperatures below 0 °C, it is advisable always to use motors with anti-condensation heater.

Note: 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 bearings, housings, etc.

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 IP34. If IP55 protection is required due to operation in dusty environments, it is advisable to install a motor with anti-condensation heater.

Figure 39 shows a typical circuit of a three-phase motor with anti-condensation heater.

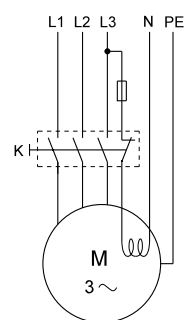


Fig. 39 Three-phase motor with anti-condensation heater

TM03 4058 1406

Legend

Symbol	Designation
K	Contactor
M	Motor

Note: 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 anti-condensation heater:

Motors, 50/60 Hz	Power of heating unit [W]	
	1 x 24 V	1 x 190-250 V
Frame size		
71/80		23
90	38	31
100		38
112/132	2 x 38	2 x 38

Motors with PTC sensors



TM02 7038 2403

Fig. 40 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 with supply voltages F, G and O of 3 kW and up have PTC sensors as standard (UL-approved motors have no internal protection).

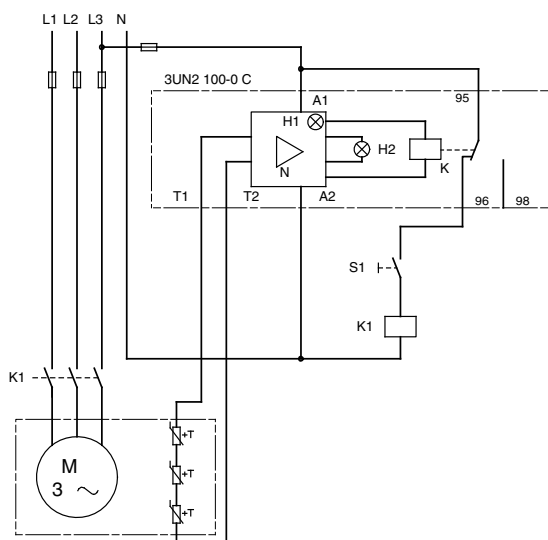
Note: PTC sensors must be connected to an external tripping unit connected to the control circuit.

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.

Figure 41 shows a typical circuit of a three-phase motor with PTC sensors.



TM00 3965 1494

Fig. 41 Three-phase motor with PTC sensors

Legend

Symbol	Designation
S1	On/off switch
K1	Contactors
+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)



TM02 7042 2403

Fig. 42 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: 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:

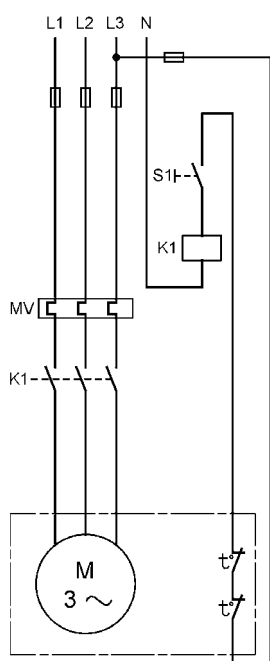
- slow and rapid overheating.

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)

Figure 43 shows a typical circuit of a three-phase motor with built-in bimetallic thermal switches.



TM00 3964 1494

Fig. 43 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

The available motor sizes are shown in section 24. *Motor data* on pages 103 to 106.

Undersize and oversize motors are defined as the next kW size below or above the fitted standard motor.

Note: The CM 1, 3 and 5 cannot be combined with frame sizes 112 and 132.

It is advisable to 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 +40 °C (CME).
- The ambient temperature exceeds +55 °C (CM).

It is advisable to use an undersize motor if the operating conditions do not at all reach the standard conditions.

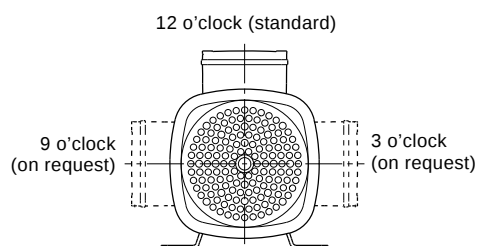
We especially recommend undersize motors in these cases:

- 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.

Terminal box positions

As standard the terminal box is mounted in 12 o'clock position as shown in fig. 44.

CM pumps with motor frame sizes of 71 and 80 are available with other terminal box positions on special request.



TM04 0357 1008

Fig. 44 Terminal box positions of frame sizes 71 and 80

Options for CME pumps

CME pumps offer a number of advantages, depending on hardware combinations and software configuration of the motor. Amongst others, there are various functional modules available as described below:

- **Standard module:** Simple control of one parameter (for instance pressure, differential pressure, temperature, differential temperature or flow rate).
- **Advanced module:** Same as standard module, but with additional digital inputs for further control options.
- **Multipump module:** The module enables parallel operation of two, three or four identical pumps without the need for a separate control system. Only one pressure transmitter is necessary. All other functions are similar to those of the standard module.

Pumps

Pumping of liquids down to -30 °C

We offer custom-built pumps for the pumping of 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 CM and CME in I and G versions (stainless steel).

Surface treatment

Cleaned and dried pumps

Cleaned and dried pumps are recommended for use in applications involving strict demands on cleanliness and surface quality, such as low content of silicone. Prior to 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: $Ra \leq 0.8 \mu m$.

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: The Grundfos standard nameplate is always fitted to the pump.

Shaft seal arrangements

The shaft seal is developed with customisation in mind. Depending on media, you may combine the seal faces in any way.

Available stationary seal faces: Q, B.

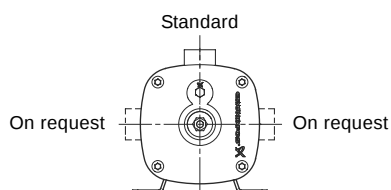
Available rotating seal faces: Q, V.

Rubber: E, V and K.

Note: For further details about seal face material codes, see *Type key* on page 10.

Alternative connection positions

The pump is available with various connection positions on special request. See fig. 45.



TM03 8709 1008

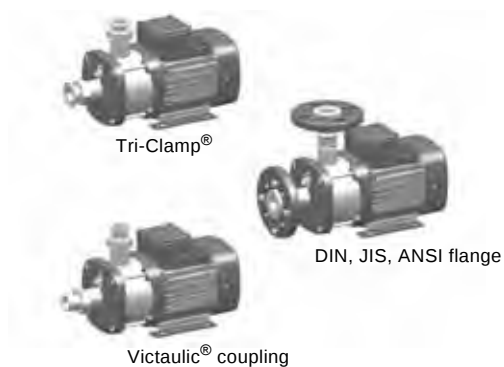
Fig. 45 Alternative connection positions

Alternative pipe connections

A wide range of pipe connections are available for the CM and CME pumps:

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

The available pipe connections are shown in fig. 46.



TM04 3937 0409

Fig. 46 Examples of pipe connections

26. Accessories

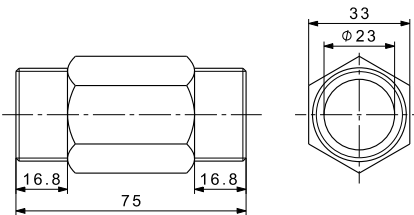
Pipework connections

Various sets of flanges and couplings are available for pipework connection.

Distance piece

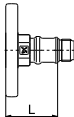
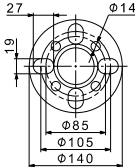
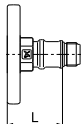
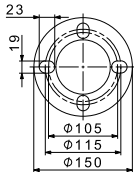
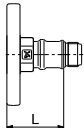
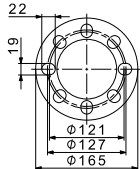
The distance piece is intended for mounting on the discharge port in order to improve the accessibility when connecting the pump to the piping system.

The distance piece is made of brass.

Distance piece	Pump type	Pipework connection	Pump thread	Product number
	CM 1 CM 3 CM 5	1"	R	96587201
TM04 5800 4009				

Flange sets for CM(E) (DIN/ANSI/JIS)

All materials in contact with the pumped liquids are made of stainless steel EN 1.4408/AISI 316.

Flange	Pump type	Pipework connection	Pump thread	L* [mm]		Product number
				Flange mounted on pump inlet	Flange mounted on pump outlet	
 	CM 1 CM 3 CM 5	DN 32	Rp	49.0	78.0	96904693
			NPT			96904705
			Rp			96904696
			NPT			96904708
TM04 3867 0309						
 	CM 10	DN 40	Rp	44.0	68.0	96904699
			NPT			96904711
TM04 3869 0309						
 	CM 15 CM 25	DN 50	Rp	48.0	68.0	96904702
			NPT			96904714
TM04 3868 0309						

* Length from outer edge of flange to pump suction or discharge port.

Note: Please pay attention to the compatibility between pump and flange before ordering. See tables below.

CM pumps compatible with DIN/ANSI/JIS flanges

Pump type	Material version	MG71/80 1-ph	MG71/80 3-ph	MG 90 1-ph	MG 90 3-ph	MG 100	MG 112
CM 1, 3, 5	Cast iron		•	•	•		
	Stainless steel	•	•		•	•	
CM 10, 15, 25	Cast iron	•	•	•	•	•	•
	Stainless steel	•	•	•	•	•	•

CME pumps compatible with DIN/ANSI/JIS flanges

Pump type	Material version	MGE 71/80	MGE 90S	MGE 90L	MGE 100	MGE 112/132
CME 1, 3, 5	Cast iron		• ²⁾	•	•	
	Stainless steel	• ¹⁾		•	•	
CME 10, 15, 25	Cast iron	•		•	•	•
	Stainless steel	•		•	•	•

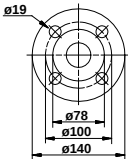
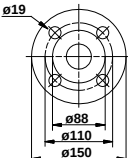
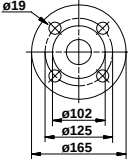
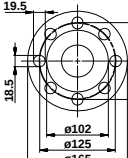
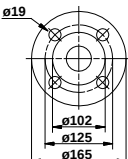
¹⁾ Only 10 mm clearance between flange and terminal box.

²⁾ Only 9 mm clearance between flange and terminal box.

Counterflanges for CM(E)-A

Counterflanges for CM(E)-A pumps are made of cast iron EN-GJL-200.

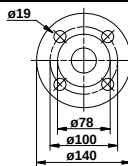
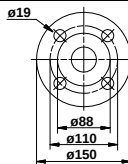
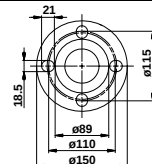
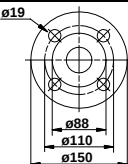
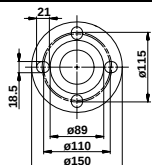
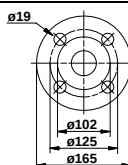
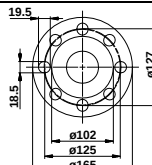
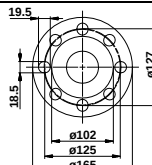
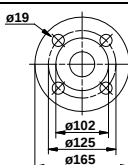
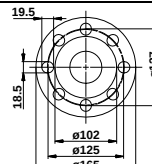
A counterflange set consists of one counterflange, one gasket, bolts and nuts.

Counterflange	Pump type	Description	Rated pressure	Pipework connection	Product number	
	TM03 0400 3705	CM(E) 1-A CM(E) 3-A CM(E) 5-A	Threaded	16 bar, EN 1092-2	Rp 1 1/4	00419901
			For welding	25 bar, EN 1092-2	32 mm, nominal	00419902
	TM03 0401 3705	CM(E) 10-A	Threaded	16 bar, EN 1092-2	Rp 1 1/2	00429902
			Threaded	16 bar, EN 1092-2	Rp 2	00429904
			For welding	25 bar, EN 1092-2	40 mm, nominal	00429901
			For welding	40 bar, special flange	50 mm, nominal	00429903
	TM03 0402 3705		Threaded	16 bar, EN 1092-2	Rp 2	00339903
			Threaded	16 bar, special flange	Rp 2 1/2	00339904
	TM02 7203 2803	CM(E) 15-A CM(E) 25-A	Threaded	16 bar, special flange	Rp 2 1/2	96509578
	TM03 0402 3705		For welding	25 bar, EN 1092-2	50 mm, nominal	00339901
			For welding	40 bar, special flange	65 mm, nominal	00339902

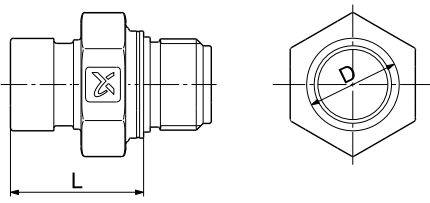
Counterflanges for CM(E)-I/G

Counterflanges for CM(E)-I/G pumps are made of stainless steel EN 1.4401/AISI 316.

A counterflange set consists of one counterflange, one gasket, bolts and nuts.

Counterflange	Pump type	Description	Rated pressure	Pipework connection	Product number	
	TM03 0400 3705	CM(E) 1-I/G CM(E) 3-I/G CM(E) 5-I/G	Threaded	16 bar, EN 1092-2	Rp 1 1/4	00415304
			For welding	25 bar, EN 1092-2	32 mm, nominal	00415305
	TM03 0401 3705		Threaded	16 bar, EN 1092-2	Rp 1 1/2	00425245
	TM02 7202 2803		Threaded	16 bar, EN 1092-2	Rp 2	96509570
	TM03 0401 3705	CM(E) 10-I/G	For welding	25 bar, EN 1092-2	40 mm, nominal	00425246
	TM02 7202 2803		For welding	25 bar, special flange	50 mm, nominal	96509571
	TM00 0402 3705		Threaded	16 bar, EN 1092-2	Rp 2	00335254
	TM02 7203 2803		Threaded	16 bar, special flange	Rp 2 1/2	96509575
	TM02 7203 2803		Threaded	16 bar, special flange	Rp 2 1/2	96509579
	TM03 0402 3705	CM(E) 15-I/G CM(E) 25-I/G	For welding	25 bar, EN 1092-2	50 mm, nominal	00335255
	TM00 7203 2803		For welding	25 bar, special flange	65 mm, nominal	96509573

Victaulic® connections for CM(E)

Victaulic® connection	Pump type	Pump thread	D [mm]	L* [mm]	Product number
	CM 1	Rp	33.7	48.5	96904694
	CM 3	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	Rp	60.3	50.1	96904703
	CM 25	NPT			96904715

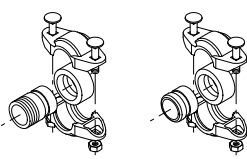
TM04 3865 0309

* Length from outer edge of connection to pump suction or discharge 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.

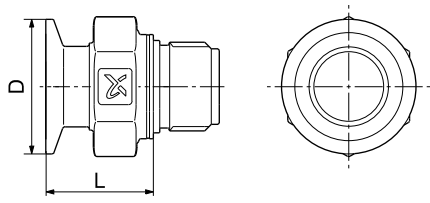
Coupling and pipe stub	Pump type	Pipe stub	Pipework connection	Rubber parts	Number of coupling sets required	Product number
	CM(E) 1 CM(E) 3 CM(E) 5*	Threaded	R 1	EPDM	2	97575245
				FKM	2	97575246
		For welding	DN 25	EPDM	2	97575247
				FKM	2	97575248
	CM(E) 5**	Threaded	R 1 1/4	EPDM	1	00419911
				FKM	1	00419905
		For welding	DN 32	EPDM	1	00419912
				FKM	1	00419904
	CM(E) 10	Threaded	R 1 1/2	EPDM	2	97575249
				FKM	2	97575250
		For welding	DN 40	EPDM	2	97575251
				FKM	2	97575252
	CM(E) 15 CM(E) 25	Threaded	R 2	EPDM	2	00339911
				FKM	2	00339918
		For welding	DN 50	EPDM	2	00339910
				FKM	2	00339917

TM00 3808 1094

* For discharge port. **Note:** Only one coupling set is required for the discharge port.

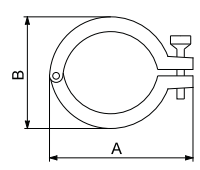
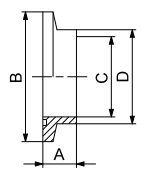
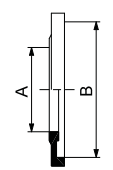
** For suction port.

Tri-Clamp® connections for CM(E)

Tri-Clamp®		Pump type	Pump thread	D [mm]	L* [mm]	Product number
	TM04 3866 0309	CM 1	Rp	50.4	40.3	96904695
		CM 3	NPT			96904707
		CM 5	Rp	50.4	35.3	96904698
			NPT			96904710
		CM 10	Rp	50.4	37.4	96904701
			NPT			96904713
		CM 15	Rp	63.9	37.4	96904704
		CM 25	NPT			96904716

* Length from outer edge of Tri-Clamp® connection to pump suction or discharge port.

Clamping ring, pipe stub and gasket for Tri-Clamp® connections

Clamping ring				Pipe stub				Gasket	
									
TM03 4645 2406				TM03 4646 2406				TM03 4647 2406	
Pump type	Nominal diameter [mm]	A [mm]	B [mm]	A [mm]	B [mm]	C [mm]	D [mm]	A [mm]	B [mm]
CM(E) 1, 3, 5, 10	38.0	92.0	59.5	21.5	50.5	35.6	38.6	35.3	50.5
CM(E) 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	Pipework connection	Connection material	Gasket	Pressure [bar]	Number of coupling sets required	Product number
CM(E) 1, 3, 5, 10	DN 32	Stainless steel	EPDM	16	2	96515374
			PTFE		2	96515375
CM(E) 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

CIU communication interface units for CME



GrA6118

Fig. 47 Grundfos CIU communication interface unit

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

We offer the following CIU units:

CIU 100

For communication via LON.

CIU 150

For communication via Profibus DP.

CIU 200

For communication via Modbus RTU.

CIU 250

For communication via GSM.

CIU 270

For communication via Grundfos Remote Management (GRM).

CIU 300

For communication via BACnet MS/TP.

Unit type	Fieldbus protocol	Product number
CIU 100	LON	96753735
CIU 150	Profibus DP	96753081
CIU 200	Modbus RTU	96753082
CIU 250	GSM	96787106
CIU 270	GRM	Contact Grundfos
CIU 300	BACnet MS/TP	96893769

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

R100 remote control



GrA5953

Fig. 48 R100 remote control

Use the R100 for wireless communication with the CME pump. The communication takes place by means of infrared light.

Product	Product number
R100	625333

Sensors for CME

The sensors must be fitted to the pipework with suitable fittings.

Accessory	Type	Supplier	Measuring range	Product number
Flowmeter	SITRANS FM MAGFLO MAG 5100 W	Siemens	1-5 m ³ (DN 25)	ID8285
Flowmeter	SITRANS FM MAGFLO MAG 5100 W	Siemens	3-10 m ³ (DN 40)	ID8286
Flowmeter	SITRANS FM MAGFLO MAG 5100 W	Siemens	6-30 m ³ (DN 65)	ID8287
Flowmeter	SITRANS FM MAGFLO MAG 5100 W	Siemens	20-75 m ³ (DN 100)	ID8288
Temperature sensor	TTA (0) 25	Carlo Gavazzi	0 °C to +25 °C	96432591
Temperature sensor	TTA (-25) 25	Carlo Gavazzi	-25 °C to +25 °C	96430194
Temperature sensor	TTA (50) 100	Carlo Gavazzi	+50 °C to +100 °C	96432592
Temperature sensor	TTA (0) 150	Carlo Gavazzi	0 °C to +150 °C	96430195
Accessory for temperature sensor. All with 1/2 RG connection.	Protecting tube Ø9 x 50 mm	Carlo Gavazzi		96430201
	Protecting tube Ø9 x 100 mm	Carlo Gavazzi		96430202
	Cutting ring bush	Carlo Gavazzi		96430203
Temperature sensor, ambient temperature	WR 52	tmg (Plesner)	-50 °C to +50 °C	ID8295
Differential-temperature sensor	ETSD	Honsberg	0 °C to +20 °C	96409362
Differential-temperature sensor	ETSD	Honsberg	0 °C to +50 °C	96409363

Note: All sensors have 4-20 mA signal output.

Danfoss pressure sensor kits for CME pumps and CM pumps connected to Grundfos CUE

The kit comprises:	Pressure range [bar]	Temperature range	Product number
- Danfoss pressure transmitter, type MBS 3000, with 2 m screened cable Connection: G 1/2 A (DIN 16288 - B6kt) 5 cable clips (black) - Installation and operating instructions PT (400212)	0-4	-40 °C to +85 °C	96428014
	0-6		96428015
	0-10		96428016
	0-16		96428017
	0-25		96428018

DPI differential-pressure sensor kit

The kit comprises:	Pressure range [bar]	Product number
1 sensor incl. 0.9 m screened cable (7/16" connections) 1 original DPI bracket (for wall mounting) 1 Grundfos bracket (for mounting on motor) 2 M4 screws for mounting of sensor on bracket 1 M6 screw (self-cutting) for mounting on MGE 90/100 1 M8 screw (self-cutting) for mounting on MGE 112/132 3 capillary tubes (short/long) 2 fittings (1/4" - 7/16") 5 cable clips (black) - Installation and operating instructions (480675) - Service kit instructions	0 - 0.6	96611522
	0 - 1.0	96611523
	0 - 1.6	96611524
	0 - 2.5	96611525
	0 - 4.0	96611526
	0 - 6.0	96611527
	0 - 10	96611550

MP 204 motor protector



TM03 1471 2205

Fig. 49 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, like for instance:

- 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/thermal switch.

The MP 204 is designed for single- and three-phase motors.

Note: The MP 204 must not be used together with frequency converters.

Features

- Phase-sequence monitoring
- indication of current or temperature
- input for PTC sensor/thermal switch
- indication of temperature in °C or °F
- 4-digit, 7-segment display
- setting and status reading with the Grundfos R100 remote control
- setting and status reading via the Grundfos GENIbus fieldbus.

Tripping conditions

- Overload
- underload (dry running)
- temperature
- missing phase
- phase sequence
- overvoltage
- undervoltage
- power factor ($\cos \phi$)
- current unbalance.

Warnings

- Overload
- underload
- temperature
- overvoltage
- undervoltage
- power factor ($\cos \phi$)
- 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

Angled cable gland



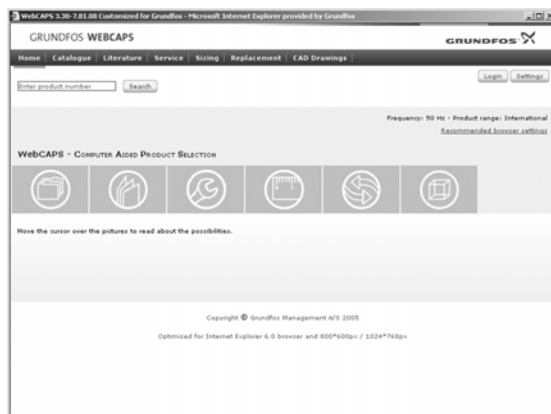
TM05 0729 1411

Fig. 50 Angled cable gland with O-ring and lock nut

Description	Product number
Angled cable gland with O-ring and lock nut	97842998

27. Further product documentation

WebCAPS

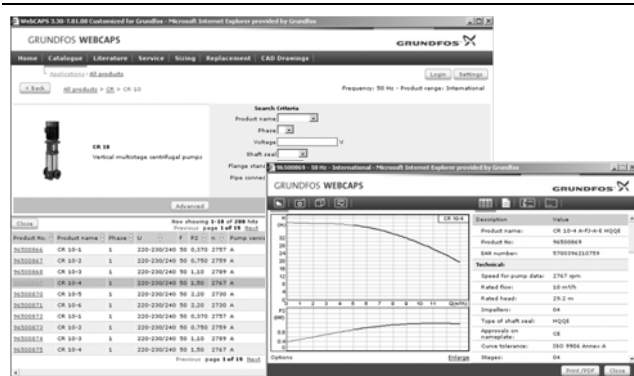


WebCAPS is a **Web**-based **Computer Aided Product Selection** program available on www.grundfos.com.

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

Information in WebCAPS is divided into six sections:

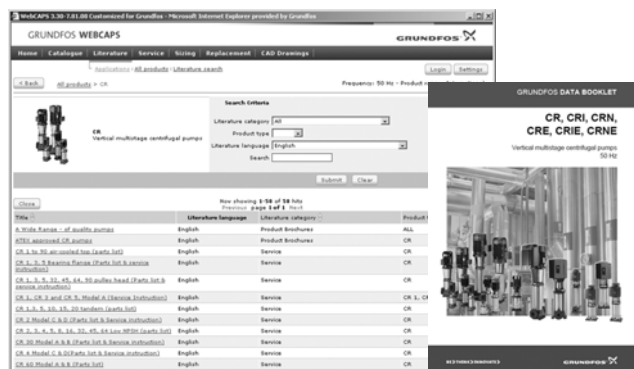
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

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

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



Literature

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

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



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.

Furthermore, the section contains service videos showing you how to replace service parts.



Sizing

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

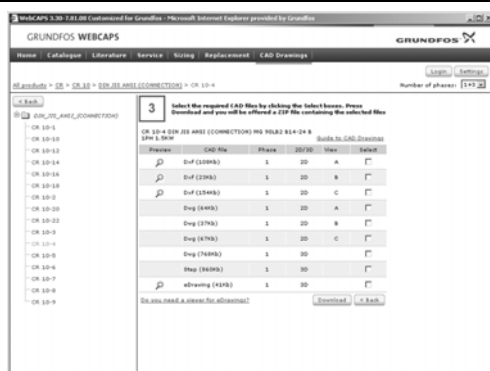
- Select the most suitable and efficient pump for your installation
- Carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- Analyse your selected pump via the built-in life cycle cost tool
- Determine the flow velocity in wastewater applications,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



Replacement

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

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



CAD drawings

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

These formats are available in WebCAPS:

2-dimensional drawings:

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

3-dimensional drawings:

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

WinCAPS



Fig. 51 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 220,000 Grundfos products in more than 30 languages.

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

WinCAPS is available on CD-ROM and updated once a year.

Subject to alterations.

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ECM: 1083776

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