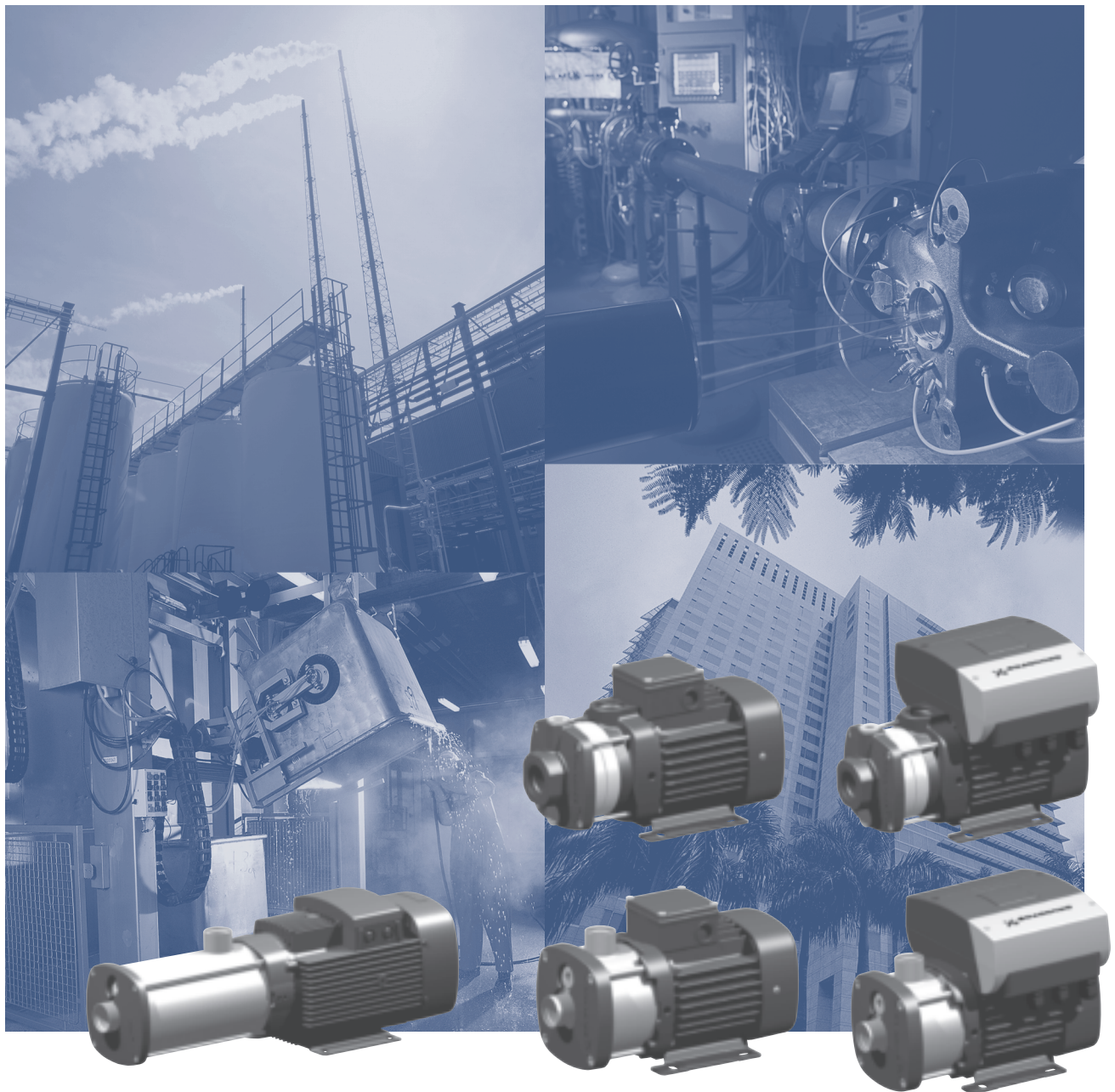


CM, CME

Horizontal, multistage centrifugal pumps
60 Hz



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1. 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 suitable for a wide variety of pumping systems where the performance and material of the pump must meet specific demands.

Some of the most typical applications are:

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

Washing and cleaning



Fig. 1 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. 2 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 utilized either as feed pumps or as booster pumps.

Reference applications

Typical water treatment applications:

- nano-, micro- and ultra-filtration systems
- softening, ionizing, demineralizing systems
- desalination systems
- distillation systems
- separators
- swimming pools.

Temperature control

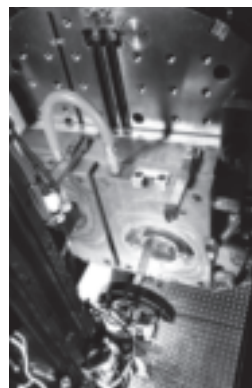


Fig. 3 Temperature control

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 optimizing 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
- moisturizing 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 $-4\text{ }^{\circ}\text{F}$ ($-20\text{ }^{\circ}\text{C}$)
- high-temperature liquids
- high-viscous liquids, etc.

Pumping of liquids at temperatures down to $-4\text{ }^{\circ}\text{F}$ ($-20\text{ }^{\circ}\text{C}$)*

All CM(E) -A, -I, -G pumps are capable of pumping liquids at temperatures down to $-4\text{ }^{\circ}\text{F}$ ($-20\text{ }^{\circ}\text{C}$).

CM(E) -I, -G pumps capable of pumping liquids down to $-22\text{ }^{\circ}\text{F}$ ($-30\text{ }^{\circ}\text{C}$) are available on request.

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

Pumping of high-temperature liquids

The pumping of hot liquids such as water-based liquids up to $+248\text{ }^{\circ}\text{F}$ ($+120\text{ }^{\circ}\text{C}$) demands much of the pump parts, such as shaft seals and rubber parts.

Pumping of highly viscous liquids

In applications where highly 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



TM05 4759 4508

Fig. 4 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. The CM and CME pumps are 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
- OEM machinery
- chemical industry
- pharmaceutical industry.

2. Product introduction

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 (ASTM A48 CL30 / EN-GJL-200)*
- Stainless steel (AISI 304 / EN 1.4301)
- Stainless steel (AISI 316 / EN 1.4401).

* The impeller, chamber and filling plugs are made of stainless steel (AISI 304 / EN 1.4301).
The pump shaft is made of stainless steel (AISI 431 / EN 1.4057).

CM

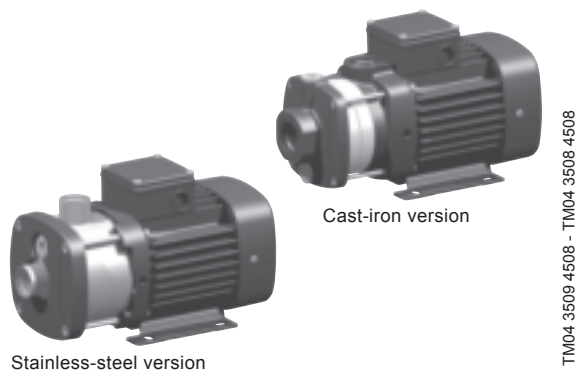


Fig. 1 Grundfos CM pumps

The CM pumps are unique products that have been developed in order to fulfill 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.

The pump unit incorporates optimized hydraulics and offers various types of connections.

The pumps offer many advantages; see also *Features and benefits* on page 7:

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

CME

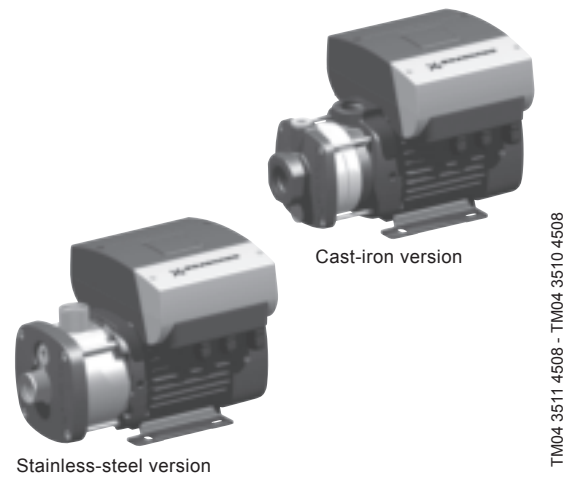


Fig. 2 Grundfos CME pumps

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 MLE motor. The motor incorporates a variable frequency drive (VFD).

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 sensor to the built-in variable frequency drive on CME pumps. For further information about CME pumps, see *Communication with CME pumps* on page 24.

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, flow, or temperature
- 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 *Communication with CME pumps* on page 24.

CME Plus

CME Plus pumps are built on the basis of CME pumps. In addition to the features of a standard CME, the CME Plus includes a pressure sensor, expansion tank, and discharge piping making it a complete package ready for constant pressure applications.

The CME Plus incorporates a stop function ensuring that the pump automatically stops if the water demand drops to a very low level or disappears altogether. The method gives good total operating economy irrespective of the water demand, and the pump is not subjected to overheating and the subsequent risk of damage to the shaft seal.

Features and benefits

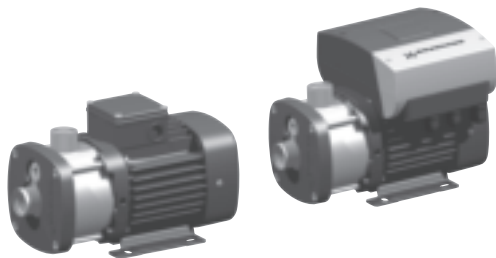


Fig. 3 CM and CME pumps

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 a compact pump is required.

Modular construction/customized 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 customized 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. Contact Grundfos for details.

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 service friendly

- 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.
- No special service tools required.
- Kits in stock for quick delivery.
- All parts available as kits, single parts or in bulk.
- Service instructions and video make it simple to disassemble and assemble the pump.
- Service kit instructions available where deemed necessary.

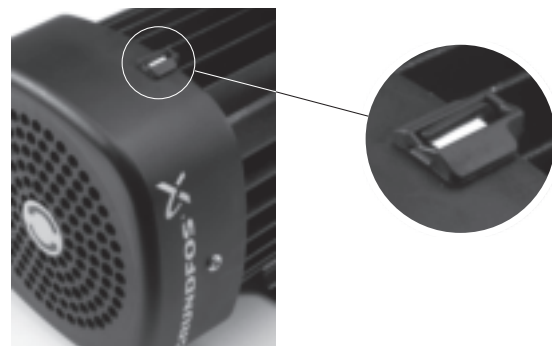


Fig. 4 Indicator for motor rotation shows black if rotation is correct; white if rotation is incorrect

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 16. *Further product documentation* on page 84.

Low noise level

The CM and CME pumps offer very quiet operation.

High-performance hydraulics

Pump efficiency is maximized by the optimized hydraulics and carefully crafted production technology.

Electrocoated cast-iron parts

- Optimized corrosion resistance
- Better efficiency because of smooth surfaces.

Customized solutions

It is possible to create many different variants of the CM and CME pumps. For further information, see *Customization* on page 76.

- Motor adaptation
- Pump body modifications.

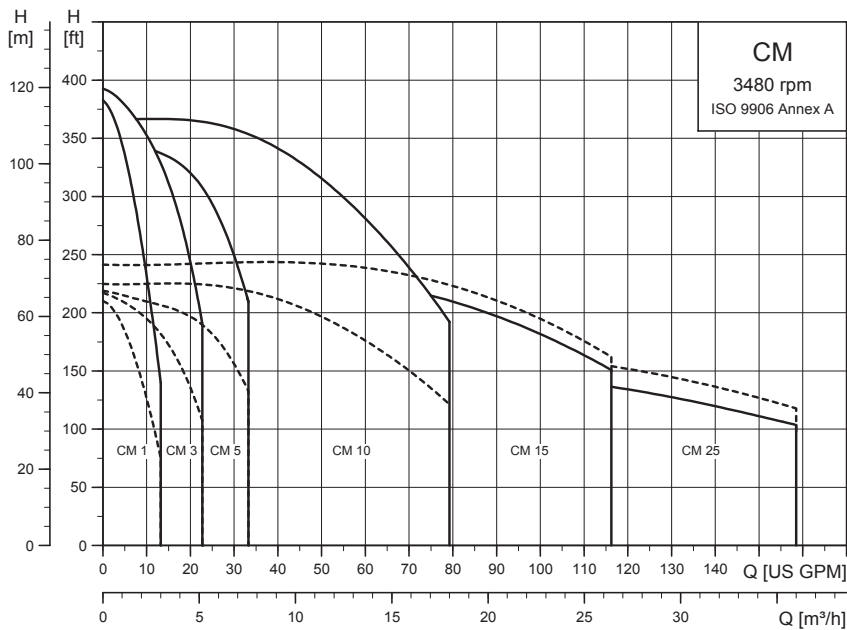
Motors

Grundfos motors are remarkably quiet and highly efficient.

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

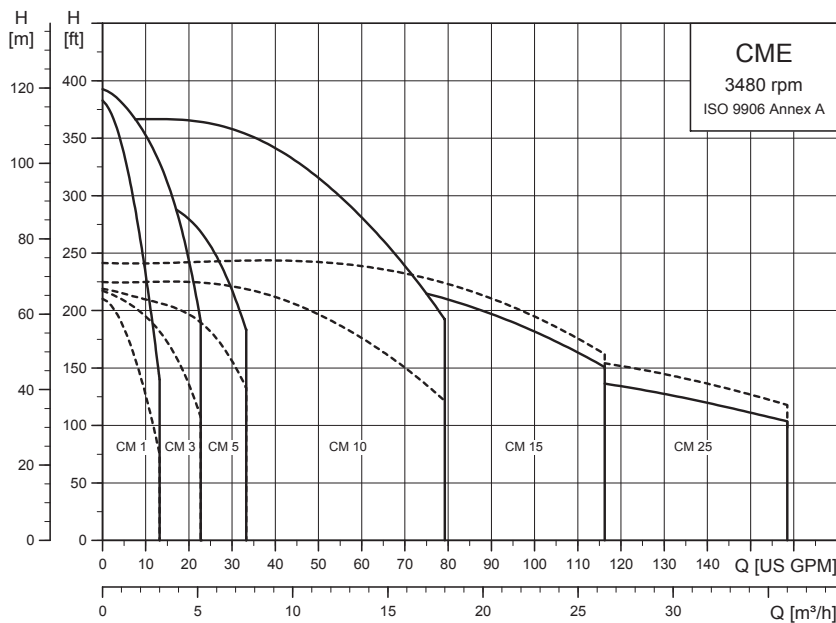
3. Performance range

CM, 3480 rpm



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CME, 3480 rpm



TM04 5545 3610

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

4. Product range

Pump type	60 Hz			Shaft seal			Mains-operated motor					Electronically speed-controlled motor				
	Material						60 Hz			50/60 Hz		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)	AVBE AVBV	AQQE, AQBE AQQV, AQBV	AQKQ	1 x 115/230 V (supply voltage B)	3 x 208-230/440-480 V (supply voltage E)	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 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 (60 Hz) (supply voltage Q)	
CM 1-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-6	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-7	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-8	-	•	•	• ¹⁾	•	•	•	•	•	•	•	•	•	•	•	•
CM 1-9	-	•	•	• ¹⁾	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-6	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-7	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-8	-	•	•	• ¹⁾	•	•	•	•	•	•	•	•	•	•	•	•
CM 3-9	-	•	•	• ¹⁾	•	•	•	•	•	•	•	•	•	•	•	•
CM 5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 5-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 5-4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 5-5	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 5-6	-	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 5-7	-	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 5-8	-	•	•	• ¹⁾	•	•	-	•	•	•	•	•	•	•	•	•
CM 10-1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CM 10-2	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 10-3	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 10-4	-	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 10-5	-	•	•	• ¹⁾	•	•	-	•	•	•	•	•	•	•	•	•
CM 15-1	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 15-2	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 15-3	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 25-1	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•
CM 25-2	•	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•

¹⁾ Suitable for 60 Hz mains-operated pumps, for CME pumps running at 100 % speed.

5. Identification

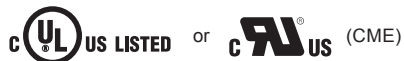
Type key CM, CME

Example	CME	10	-	8	A	-	S	-	A	-	E	-	A	Q	Q	E	E	-	A	-	A	-	N	
Type range CM: Centrifugal Modular CME: Centrifugal Modular with integrated frequency converter																								Sensor Sensor designation N: No sensor
Rated flow rate Rated flow rate at 50 Hz [m ³ /h]																								Mains plug A: Cable glands* C: With cable
Number of impellers																								Motor information A: Standard motor (IP55)* B: Phase-insulated motor for use with frequency converter C: Condensing environments (IP54) 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
Pump version A: Basic version * B: Oversize motor (one flange size larger) E: Pumps with certificates and other approvals N: CME pump with sensor (see code for "Sensor") P: Undersize motor (one flange size smaller) T: Oversize motor (two flange sizes larger) X: Special pump																								Supply voltage B: 1 x 115/230 V, 60 Hz* E: 3 x 208-230/440-480 V, 60 Hz* H: 3 x 575 V, 60 Hz** J: 3 x 380-415 V, 50 Hz; 440-480 V, 60 Hz L: 3 x 380-480 V, MGE motor, 50/60 Hz M: 1 x 208-230 V, MLE motor, 50/60 Hz* N: 3 x 460-480 V, MLE motor, 60 Hz* O: 3 x 220-240/380-415 V, 50 Hz 3 x 220-255/380-440 V, 60 Hz Q: 3 x 208-230V, MLE motor, 50/60 Hz
Pipe connection C: Tri-Clamp® F: DIN flange G: ANSI flange J: JIS flange P: PJE 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 A:* Suction and discharge parts EN-GJL-200 Pump shaft AISI 431 / EN 1.405 Impellers/chambers AISI 304 / EN 1.4301 I:* Sleeve AISI 304 / EN 1.4301 Pump shaft AISI 304 / EN 1.4301 Impellers/chambers AISI 304 / EN 1.4301 G:* Sleeve AISI 316 / EN 1.4401 Pump shaft AISI 316 / EN 1.4401 Impellers/chambers AISI 316 / EN 1.4401 X: Special version																								Material of stationary seal face B: Carbon, synthetic resin-impregnated Q: Silicon carbide (SIC)*
Rubber parts in pump (excl. neck ring and shaft seal) E:* EPDM (ethylene propylene) K: FFKM (perfluoroelastimer) V:* FKM (fluoroelastimer)																								Material of rotating seal face Q: Silicon carbide (SIC)* V: Aluminium oxide (Al2O3)
Note: Gaskets between chambers for cast-iron versions are always made of Tesnit® BA-U.																								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.

* Standard offering in U.S.

** Standard voltage in Canada



6. Construction

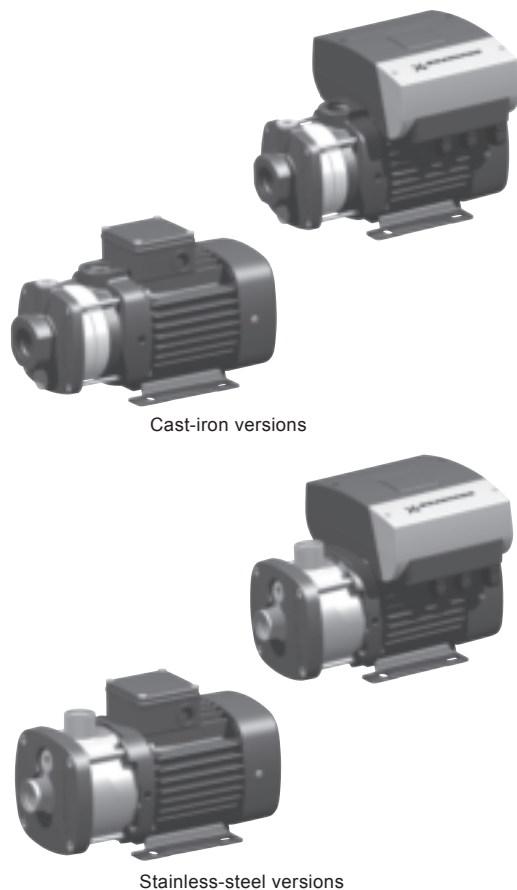
Pump

The CM and CME pumps are non-self-priming, horizontal, multistage centrifugal pumps. The pumps have an axial suction port and a 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 with variable frequency drive motors (CME pumps).

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



Cast-iron versions

Stainless-steel versions

Fig. 5 CM and CME pumps

Motor

CM and CME pumps are fitted with totally enclosed, fan-cooled, 2-pole motors.

CM pumps up to and including 2 hp are available with single-phase motors as standard. CME pumps up to and including 1.5 hp are available with single-phase motors as standard. CM and CME pumps from 2 to 10 hp are fitted with three-phase motors.

Approvals

	CM	CME
Approvals		

Electrical data

Insulation class	F
Enclosure class	TEFC (IP55)*
Efficiency	Energy Efficient (IE2)***
Supply voltages (tolerance $\pm 10\%$)	CM 1 x 115/230 V, 60 Hz 3 x 208-230/440-480 V, 60 Hz 3 x 575 V, 60 Hz 3 x 380-415 V, 50 Hz; 440-480 V, 60 Hz**
	CME 1 x 208-230 V, 50/60 Hz 3 x 208-230 V, 50/60 Hz 3 x 460-480 V, 60 Hz 3 x 380-480 V, 50/60 Hz**

* IP55 is not recommended for operation in condensing environments. For operation in such environments, see *Operation in condensing environments* on page 22.

** These motors are not UL Listed.

***Premium efficient (IE3) available on request

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 is of the TP 211 type, which reacts to both slow- and quick-rising temperatures. The motor protection is automatically reset.

Three-phase motors up to 5 hp 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 5 hp and higher have built-in thermistors (PTC). The thermistors are designed according to DIN 44082. The motor protection is of the TP 211 type, which reacts to both slow- and quick-rising temperatures. If the thermistors are not used, then the pumps must be connected to a motor protective circuit breaker as mentioned previously.

TM04 3509 4508 - TM04 3511 4508 - TM04 3508 4508 - TM04 3510 4508

Electronically speed-controlled motors (CME)

CME pumps require no external motor protection. The MLE motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).

Variable frequency drive (VFD) operation

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

As standard ML 71- and ML 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: ML 71- and ML 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 variable frequency drive and the motor.

For further information, please contact the variable frequency drive 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 29 where the key parameters of selecting a shaft seal are also described.



TM04 3933 0409

Fig. 6 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 23.

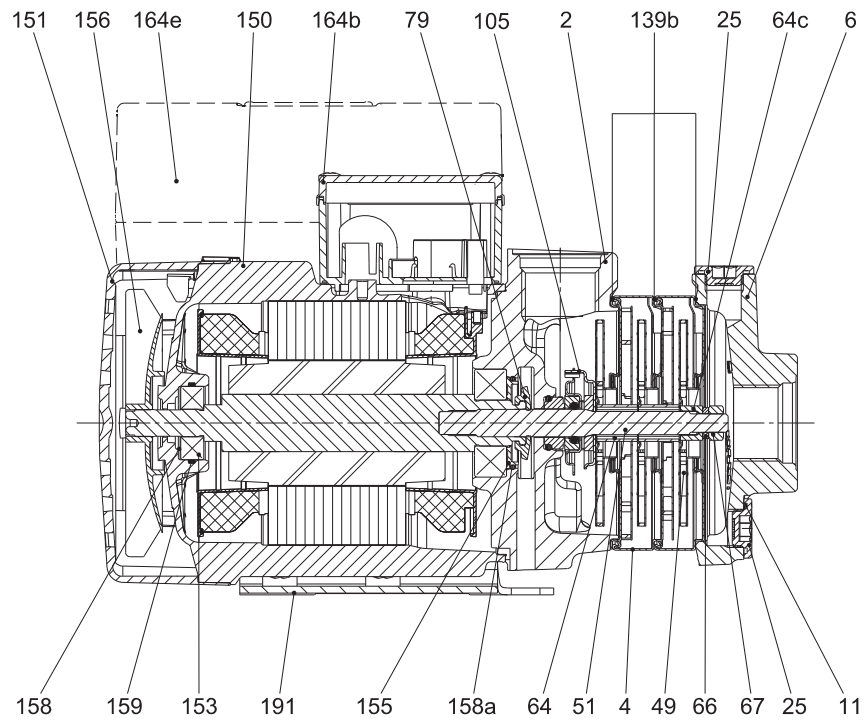
Further information about the shaft seal can be found in separate documentation covering shaft seals which can be downloaded from WebCAPS. See *Further product documentation* on page 84.

Title	Publication number
Shaft seals	96519875

Sectional drawings

CM(E) A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 3723 3809

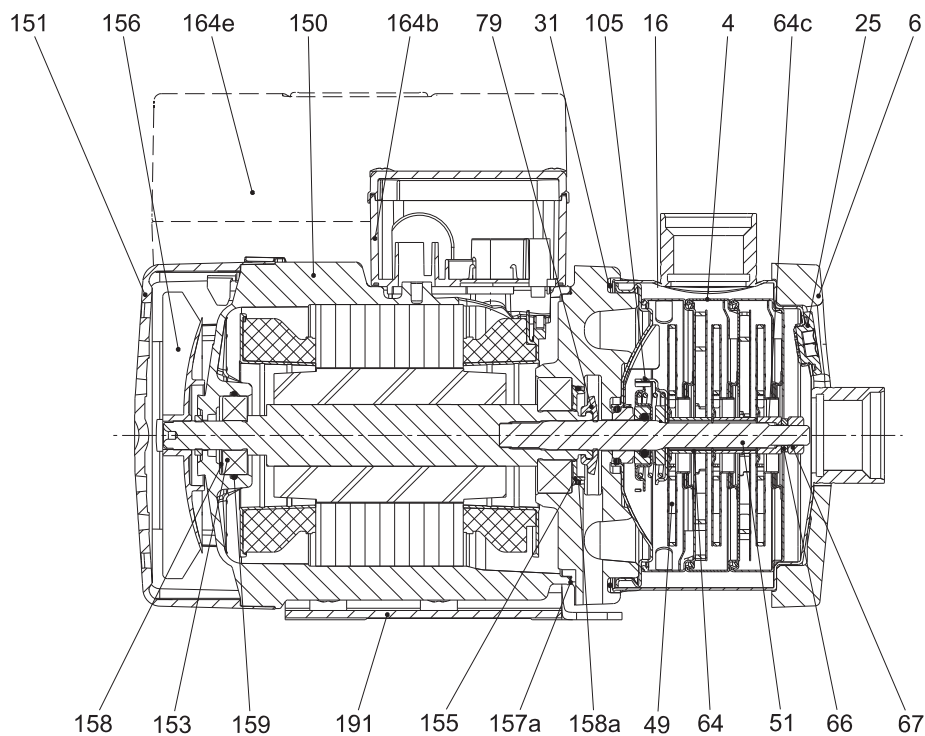
Fig. 7 CM(E) 1-3 with ML(E) 71 motor

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) I and CM(E) G

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



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Fig. 8 CM(E) 1-3 with ML(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					
			CM(E) A Cast iron (ASTM A48 CL30/ EN-GJL-200)		CM(E) I Stainless steel (AISI 304 / EN 1.4301)		CM(E) G Stainless steel (AISI 316) / EN 1.4401	
			DIN W.-Nr.	ISO/AISI/AS TM	DIN W.-Nr.	ISO/AISI/AS TM	DIN W.-Nr.	ISO/AISI/AS TM
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, cataphoresis-treated	1.0330.3	ASTM A366 / A611-C1	1.0330.3	ASTM A366 / A611-C1		
		Steel, powder-coated, 60 to 120 µ, NCS 7005					1.0330.3	ASTM A366 / A611-C1
79	Diverting disc	Silicone fluid (LSR)						
155	Bearing cover plate	PPS						
Pump parts								
105	Shaft seal, steel parts	Stainless steel	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4401	AISI 316
	Shaft seal, seal faces	SiC/SiC or Al ₂ O ₃ /carbon						
51	Pump shaft	Stainless steel	1.4057	AISI 431	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4401	AISI 316
11 31 ¹⁾ 158a 159	O-rings	EPDM, FKM or FFKM						
157a ¹⁾	Gasket	Paper						
139b ²⁾	Gasket	Aramide fibers (nbr)						
2 ²⁾	Discharge part	Cast iron						
6 ²⁾	Inlet part	Cast iron						
4	Chamber	Stainless steel	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4401	AISI 316
25	Plug	Stainless steel	1.4401	AISI 316L	1.4401	AISI 316L	1.4401	AISI 316L
49	Impeller	Stainless steel	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	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 ³⁾		STX2000 ³⁾		STX2000 ³⁾	
6 ¹⁾	Flange	Cast iron						
16	Sleeve	Stainless steel			1.4301/1.440 1 ¹⁾	AISI 304/ AISI 316 ³⁾	1.4401	AISI 316
67	Nut	Stainless steel A4						
66	Washer (NORD-LOCK®)	Steel	1.4547 ⁴⁾		1.4547 ⁴⁾		1.4547 ⁴⁾	

^{*)} On request.

¹⁾ Only in CM(E)-I/G pumps.

²⁾ Only in CM(E)-A pumps.

³⁾ STX2000 ~ CrNiMo 22 19 4.

⁴⁾ 1.4547 ~ CrNiMoCuN 20-18-7

7. Operating conditions

Pumped liquids

CM, CME pumps are designed to move thin, non-explosive liquids, not containing solid particles or fibers. 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 in the chart.

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 minimize the risk of corrosion the pump must be running continuously, i.e. standstills must not exceed 6 to 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 flashpoint and/or boiling point will require the greatest restrictions. A sealless pump may be required. Contact Grundfos.
f	Risk of crystallization/precipitation on the shaft seal.
g	If oil residues are present, EPDM cannot be used.

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	86 °F (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
Demineralized water			< 2 microS/cm (> 0.5 Meg)	AQQE	AQQE	AQQE
Demineralized water			> 2 microS/cm (< 0.5 Meg)	AVBE	AVBE	AVBE
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			104 °F (40 °C), 150 ppm chloride, < 2 ppm free chlorine	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Coolants						
Calcium chloride	CaCl ₂	b, c, d, f	< 32 °F (0 °C), 30 %		AQQE	AQQE
Ethylene glycol	C ₂ H ₄ (OH) ₂	b, c	< 122° (50 °C)	AQQE	AQQE	AQQE
Glycerine (glycerol)	C ₃ H ₅ (OH) ₃	b, c	< 122° (50 °C)	AQQE	AQQE	AQQE
Hydrocarbon-based coolant		c, e	122° (50 °C)	AQQV	AQQV	AQQV
Potassium acetate (inhibited)	CH ₃ COOK	b, c, d, f	< 68 °F (20 °C)	AQQE	AQQE	AQQE
Potassium formate (inhibited)	HCOOK	b, c, d, f	< 68 °F (20 °C)	AQQE	AQQE	AQQE
Propylene glycol	CH ₃ CHOHCH ₂ OH	b, c	< 122° (50 °C)	AQQE	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)
Sodium chloride	NaCl	b, c, d, f	< 32 °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
Naphta		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	< 68 °F (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	< 176 °F (80 °C)	AQQV	AQQV	AQQV
Organic solvents						
Acetone	C ₃ H ₆ O	e	104 °F (40 °C)	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Ethyl alcohol (ethanol)	C ₂ H ₆ O	e	104 °F (40 °C)	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Isopropyl alcohol	C ₃ H ₇ OH	e	104 °F (40 °C)	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Methyl alcohol (methanol)	CH ₃ OH	e	104 °F (40 °C)	AVBE/AQQE	AVBE/AQQE	AVBE/AQQE
Oxidants						
Hydrogen peroxide	H ₂ O ₂	c	68 °F (20 °C), 25 %	AQQE	AQQE	AQQE
Salts						
Ammonium bicarbonate	NH ₄ HCO ₃	b, c	68 °F (20 °C), 15 % 140 °F (60 °C), 30 %	AQQE	AQQE	AQQE
Copper sulphate	CuSO ₄	b, c, f	140 °F (60 °C), 30 %		AQQE/AQQV	AQQE/AQQV
Ferric sulphate	Fe ₂ (SO ₄) ₃	b, c, f	68 °F (20 °C), 30 %		AQQE/AQQV	AQQE/AQQV
Potassium bicarbonate	KHCO ₃	b, c	68 °F (20 °C), 20 % 140 °F (60 °C), 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium carbonate	Na ₂ CO ₃	b, c, f	68 °F (20 °C), 20 % 140 °F (60 °C), 30 %	AQQE	AQQE	AQQE
Potassium permanganate	KMnO ₄	b, c	140 °F (60 °C), 10 %		AQQE	AQQE
Sodium nitrate	NaNO ₃	b, c	68 °F (20 °C), 5 % 140 °F (60 °C), 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium nitrite	NaNO ₂	b, c	68 °F (20 °C), 20 % 140 °F (60 °C), 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium phosphate (mono)	NaH ₂ PO ₄	b, c, f	140 °F (60 °C), 20 %		AQQE/AQQV	AQQE/AQQV
Sodium phosphate (di)	Na ₂ HPO ₄	b, c, f	86 °F (30 °C), 30 % 140 °F (60 °C), 30 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium phosphate (tri)	Na ₃ PO ₄	b, c, f	68 °F (20 °C), 10 % 158 °F (70 °C), 20 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Sodium sulphate	Na ₂ SO ₄	b, c, f	140 °F (60 °C), 30 %		AQQE/AQQV	AQQE/AQQV
Sodium sulphite	Na ₂ SO ₃	b, c, f	68 °F (20 °C), 1 % 140 °F (60 °C), 20 %	AQQE/AQQV	AQQE/AQQV	AQQE/AQQV
Acids						
Acetic acid	C ₂ H ₄ O ₂		68 °F (20 °C), 15 % 140 °F (60 °C), 50 %		AQQE	AQQE
					AQQK	AQQK

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)
Citric acid	C ₆ H ₈ O ₇	c, f	104 °F (40 °C), 50 %		AQQE	AQQE
Formic acid	CH ₂ O ₂	c	68 °F (20 °C), 30 % 104 °F (40 °C), 30 %		AQQE	AQQE
Nitric acid	HNO ₃	c	77 °F (25 °C), 40 % 104 °F (40 °C), 40 %		AQQE	AQQE
Oxalic acid		f	68 °F (20 °C), 10 % 122 °F (50 °C), 10 %		AQQE	AQQE
Phosphoric acid	H ₃ PO ₄	b, c, f	158 °F (70 °C), 40 %		AQQE/AQQV	AQQE/AQQV
Sulphuric acid	H ₂ SO ₄	b	68 °F (20 °C), 1 % 68 °F (20 °C), 5 %		AQQE/AQQV	AQQE/AQQV
Sulphurous acid			68 °F (20 °C), 10 % 122 °F (50 °C), 10 %		AQQE	AQQE
Alkalies						
Ammonium hydroxide	NH ₄ OH		86 °F (30 °C), 30 %	AQQE	AQQE	AQQE
Calcium hydroxide	Ca(OH) ₂	b	86 °F (30 °C), 5 %	AQQE	AQQE	AQQE
Potassium hydroxide	KOH	c, f	68 °F (20 °C), 20 % 140 °F (60 °C), 20 %	AQQE	AQQE	AQQE
Sodium hydroxide	NaOH	c, f	68 °F (20 °C), 20 % 176 °F (80 °C), 20 %	AQQE	AQQE	AQQE

Ambient temperature and altitude

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.

Max. ambient temperature [F° (°C)]	Liquid temperature [F° (°C)]
+131 (+55) ¹⁾	+194 (+90)
+122 (+50) ¹⁾	+212 (+100) ²⁾
+113 (+45) ¹⁾	+230 (+110) ²⁾
+104 (+40)	+248 (+120) ²⁾

¹⁾ The maximum ambient temperature for CME pumps is +104 °F (+40 °C), irrespective of the liquid temperature.

²⁾ Note that the maximum permissible liquid temperature for CM-A and CME-A is +194 °F (+90 °C).

Derating of motor output (P₂) in relation to ambient temperature and altitude above sea level

If the ambient temperature exceeds +104 °F (+40 °C) for CME pumps or +131 °F (+55 °C) for CM pumps, or if the motor is installed more than 3280 ft (1000 meters) above sea level, the motor output (P₂) 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 (P₂) and ambient temperature or motor output (P₂) and altitude. The x-axis showing the temperature corresponds to an altitude of 3280 ft (1000 meters) above sea level. The x-axis showing the altitude corresponds to an ambient temperature of +104 °F (+40 °C).

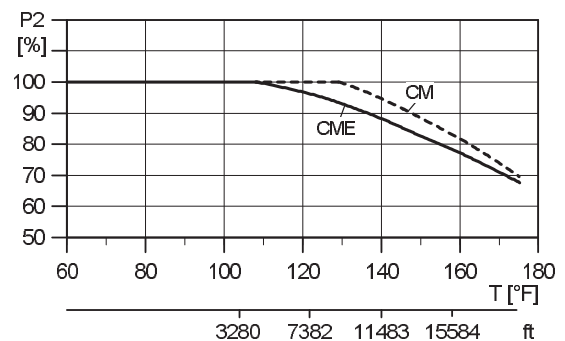


Fig. 9 Relationship between motor output (P₂) and temperature or motor output (P₂) and altitude

Storage and transport temperature

-40 °F (-40 °C) to +140 °F (+60 °C).

Temperatures and pressures

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⁾ [F° (°C)]	Maximum operating pressure [psi (bar)]
Cast iron (A48 CL30 / EN-GJL-200)	AVBx	-4 to +104 (-20 to +40)	145 (10)
	AQQx	+105 to +194° (+41 to +90)	87 (6)
Stainless steel (AISI 304 / EN 1.4301)	AVBx	-4 to +194 (-20 to +90) ³⁾	145 (10)
	AQQx	+105 to +104 (+41 to +90)	87 (6)
Stainless steel (AISI 316 / EN 1.4401)	AVBx	+195 to +248 (+91 to +120) ²⁾	145 (10)
	AQQx	-4 to +104 (-20 to +40)	145 (10)
Stainless steel (AISI 316 / EN 1.4401)	AVBx	+105 to +104 (+41 to +90)	87 (6)
	AQQx	-4 to +194 (-20 to +90) ³⁾	232 (16)
Stainless steel (AISI 316 / EN 1.4401)	AVBx	+195 to +248 (+91 to +120) ²⁾	145 (10)
	AQQx	-4 to +194 (-20 to +90) ³⁾	232 (16)

¹⁾ At liquid temperatures below 32 °F (0 °C), higher motor outputs may be needed due to increased viscosity, for instance if glycol has been added to the water.

²⁾ 248 °F (120 °C) applies only if the pump has an AQQE shaft seal.

³⁾ CM-I, -G and CME-I, -G pumps for liquid temperatures below -4 °F(-20 °C) are available on request. Please contact Grundfos.

Liquid temperature range

O-ring material / liquid	Permissible liquid temperature [°F (°C)]
EPDM	-4 to +248 (-20 to +120)
FFKM	-4 to +248 (-20 to +120)
FKM / liquids containing water	-4 to +194 (-20 to +90)
FKM / oil without water	+32 to +248 (0 to +120)

Maximum inlet pressure

The maximum inlet pressure of the CM pumps is equal to the maximum operating pressure of the pump minus the pumps discharge pressure against a closed valve.

For example:

CM5-3 A-S-A-E-AQQE

Max. operating pressure: 145 psi

Discharge pressure against closed valve: 57 psi

Max. inlet pressure=145-57=88 psi

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.

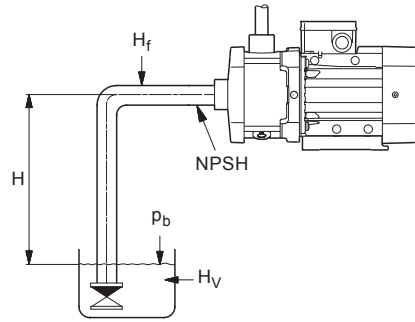
To avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump. The maximum suction lift "H" in feet of head can be calculated as follows:

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

p_b	= Barometric pressure in feet absolute. (Barometric pressure can be set to 33.9). In closed systems, p_b indicates the system pressure in feet.
NPSH	= Net Positive Suction Head in feet of 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 feet of head. (At the highest flow the pump will be delivering).
H_v	= Vapour pressure in feet of head. (To be read from the vapor pressure scale. " H_v " depends on the liquid temperature " T_m ").
H_s	= Safety margin = minimum 2 ft of head.

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

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

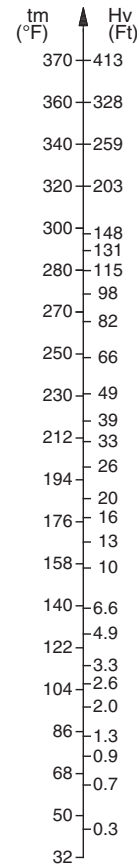


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Fig. 10 Minimum inlet pressure (NPSH)

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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Fig. 11 Vapor pressure chart

Sound pressure

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 [hp]	60 Hz	50 Hz
	\bar{L}_{pA} [dB(A)]	\bar{L}_{pA} [dB(A)]
.5	55	50
.75	53	50
1	54	50
1.5	57	52
2	59	54
3	59	54
4	60	55
5.4	66	62
7.4	65	60

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.

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 water condensation. See fig. 12.

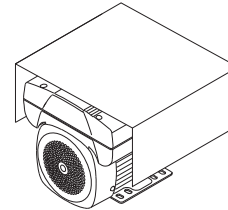


Fig. 12 CME pump with protective cover

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 MGE/MLE motors hold a UL NEMA 3R environmental rating.

Single-phase MGE/MLE motors have not been tested against the UL NEMA environmental rating.

All motors are IP55.

When the rubber plug is removed the rating becomes IP34. This applies to both CM and CME pumps. The use of a cover does not affect the IP rating.

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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. 13 shows which shaft seals are suitable at a given temperature and a given pressure.

The curve applies to clean water.

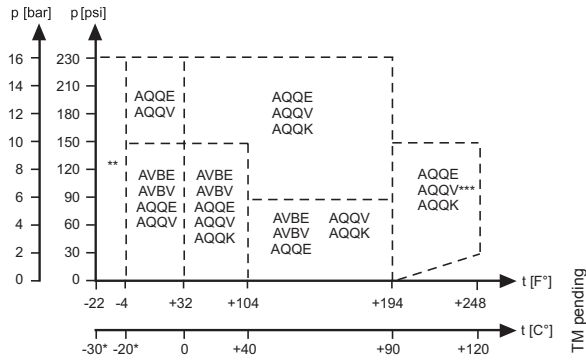


Fig. 13 Curve for the selection of shaft seals

- * Antifreeze should be added at liquid temperatures below +32 °F (0 °C).
- ** CM and CME pumps for liquid temperatures below -4 °F (-20 °C) are available on request. Please contact Grundfos.
- *** AQQV above 194 °F (+90 °C) only in media not containing water.

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.

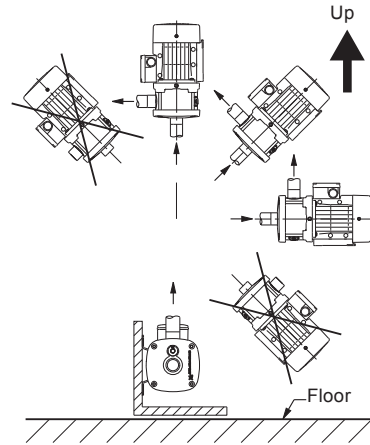
For instance at liquid temperatures below +32 °F (0 °C), higher motor outputs may be needed due to increased viscosity if glycol has been added to the water.

In such situations, the pump should be fitted with a larger motor. If in doubt, contact Grundfos or visit WebCAPS. See page 84.

Installation of pump

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

The pump must be installed so that air locks are avoided in the pump housing and pipework; fig. 14 shows the permissible pump positions.



TM03 8773 3409

Fig. 14 Permissible 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.

8. CME pumps

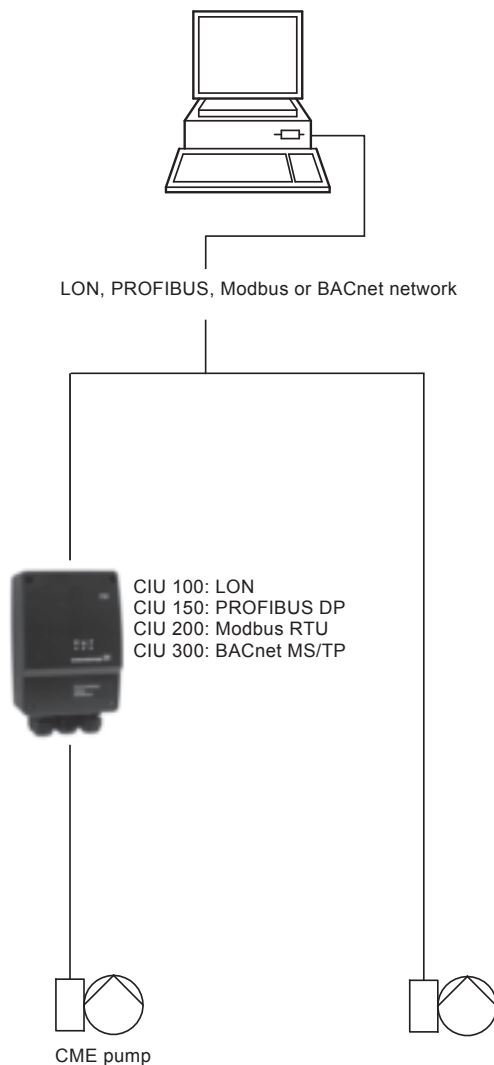
Communication with CME pumps

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.



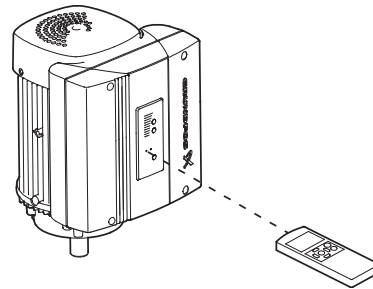
TM04 5022 2409

Fig. 15 Diagram of building management system

Remote control

The Grundfos R100 remote control is available as an accessory. See page 81.

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. 16 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.



TM00 7600 0404

Fig. 17 Control panel of a CME pump

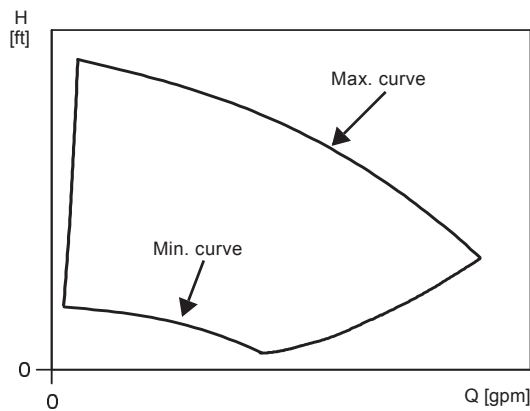
Speed control of CME pumps

Affinity equations

Normally, CME pumps are used in applications characterized 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 (η) 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.



TM01 4916 4803

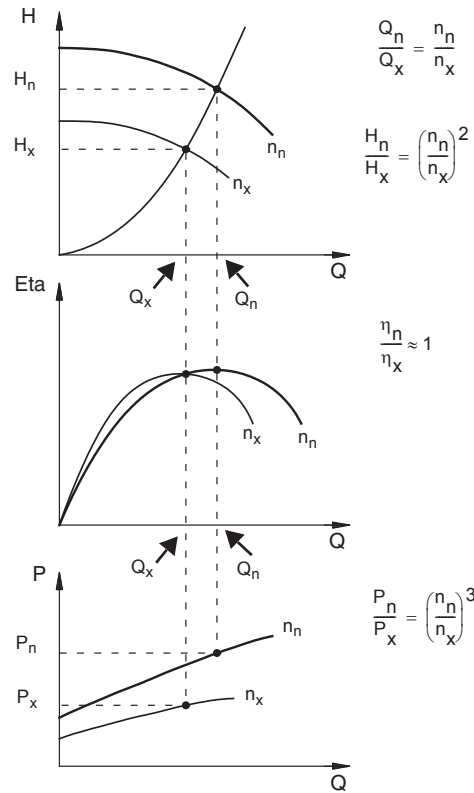
Fig. 18 Min. and max. performance curves

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 variable frequency drive 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.



TM00 8720 3496

Fig. 19 Affinity equations

Legend

- H_n Rated head
- H_x Current head
- Q_n Rated flow rate
- Q_x Current flow rate
- n_n Rated motor speed
- n_x Current motor speed
- η_n Rated efficiency
- η_x Current efficiency

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 84.

CM connected to Grundfos CUE external variable frequency drive



GrA 4404

Fig. 20 Grundfos CUE product range

Grundfos CUE is a complete range of external variable frequency drives (VFDs) 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 VFDs.

Functions

Intuitive start-up guide

The start-up 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. 21 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 [hp]
1 x 200-240	3 x 200-240	1.5 - 10
3 x 200-240	3 x 200-240	1 - 60
3 x 380-500	3 x 380-500	.75 - 300
3 x 525-600	3 x 525-600	1 - 10

9. Selection and sizing

Selection of pumps

Selection of pumps should be based on these elements:

- the duty point of the pump (see fig. 22)
- dimensional data such as pressure loss as a result of height differences, friction loss in the pipework, pump efficiency, etc. (see fig. 23)
- pump materials (see *Construction* on page 19)
- pump connections (see page 28)
- shaft seal (see page 29).

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 31.

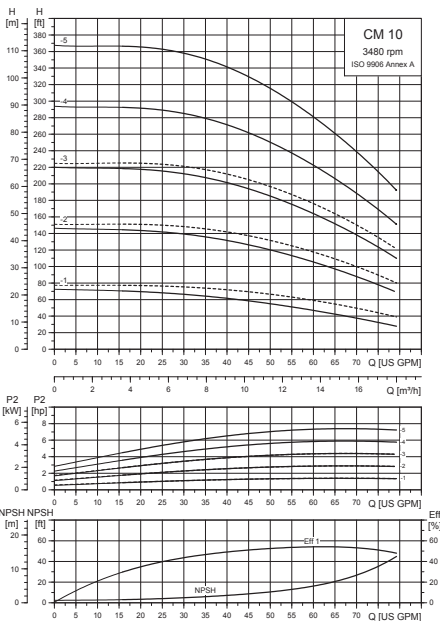


Fig. 22 Example of a curve chart

TM04 5899 3610

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).
- Best efficiency at the estimated duty point.*
- NPSH value.

For calculation of the NPSH value, see *Minimum inlet pressure* on page 21.

* See *Selection of CME pumps* on page 29 for further information about sizing CME pumps.

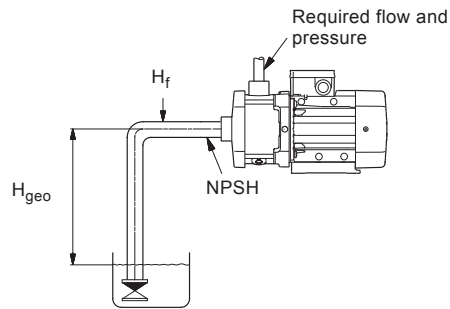


Fig. 23 Dimensional data

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. 24.

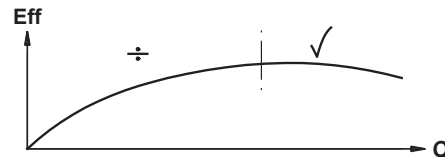


Fig. 24 Best efficiency

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. 25 shows how to check the pump efficiency when selecting a CM pump.

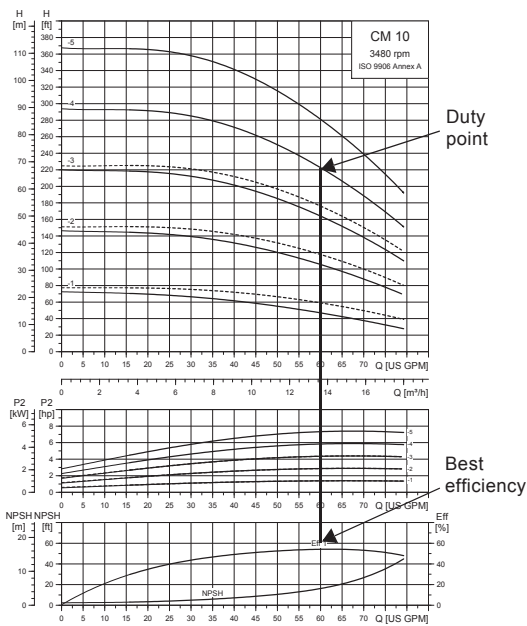


Fig. 25 Example of a CM pump's duty point

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* (A48 CL30 / EN-GJL-200)	CM(E)-A
Industrial liquids and acids	Stainless steel (AISI 304 / EN 1.4301)	CM(E)-I
	Stainless steel (AISI 316 / EN 1.4401)	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 17, or contact Grundfos.

Pump connections

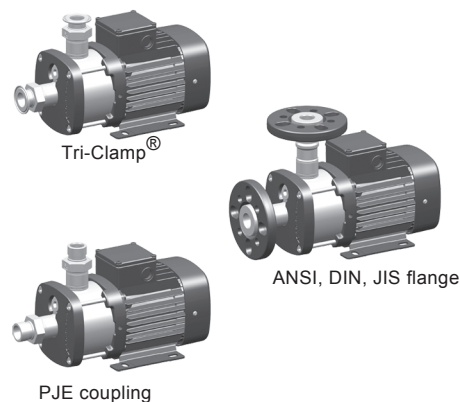


Fig. 26 Examples of pump connections

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:

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

CM and CME pumps come standard with NPT fittings (see dimensions on pages 43 to 66).

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. 27 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 (K)
	AQQV		
	AQQK		
	AVBE		
	AVBV		

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

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

Use fig. 11 on page 14 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 17.

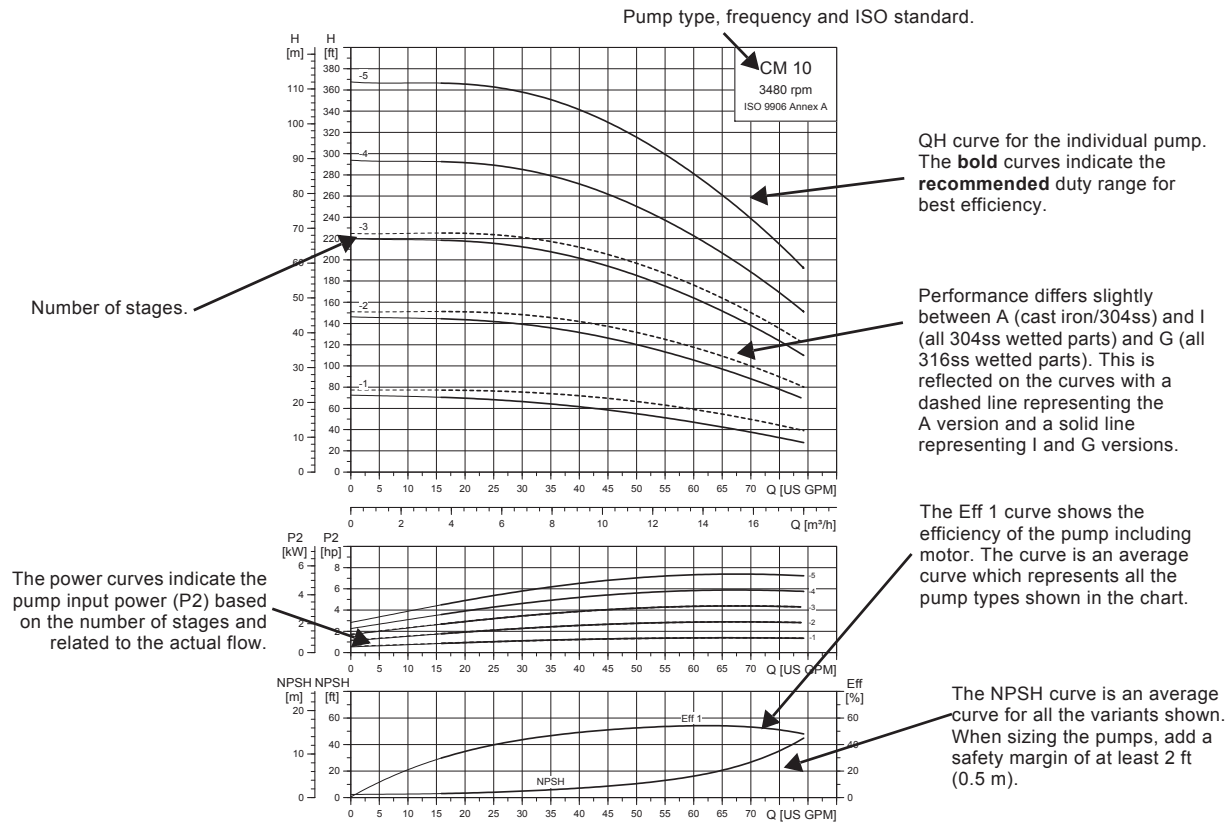
Note: The list should be applied with some caution, as factors such as concentration of the pumped liquid, liquid temperature or pressure may affect the chemical resistance of a specific pump version.

Selection of CME pumps

CME pumps are normally used in applications characterized 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 (eff) for most operating hours. For further information see *CME pumps* on page 24.

Note: Irrespective of the input frequency, the 100 % speed of CME pumps is approximately 3400 min^{-1} , corresponding to an input frequency of 60 Hz, i.e. if the input frequency is 50 Hz, the 100 % speed will still be approximately 3400 min^{-1} . See CME performance curves on pages 37 to 42.

10. How to read the curve charts



TM04 5899 3610

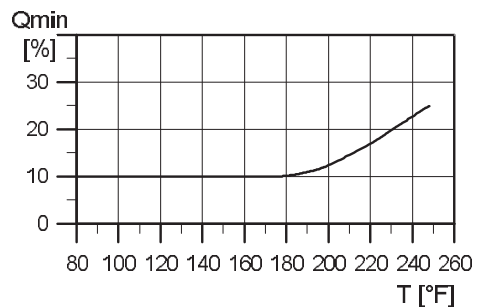
Fig. 28 How to read the curve charts

Guidelines to performance curves

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

- Tolerances to ISO 9906, Annex A, if indicated.
- The motors used for the measurements are the specifically designed motors for CM and CME pumps. The motors are based on Grundfos standard motors (ML or MLE).
- Measurements have been made with airless water at a temperature of +68 °F (+20 °C).
- The curves apply to the following kinematic viscosity: $\nu = 1 \text{ cSt} (1 \text{ mm}^2/\text{s})$.
- The QH curves apply to rated motor speeds of approximately $3400 \text{ min}^{-1} (60 \text{ Hz})$. All curves are based on current motor speeds. The QH curves apply to a fixed speed of 3480 rpm for CM pumps. CME QH curves apply to a fixed speed of 3480 rpm.
Note: Please refer to WebCAPS for more precise curves. In WebCAPS, it is also possible to adjust the curves depending on the density and viscosity.
- When the motor is running at the lowest or highest rated voltage, the pump performance will usually vary by $\pm 2 - 4 \text{ ft}$ at a given duty point.

- All curves are based on pumps fitted with a three-phase motor.
- CM pumps using single phase or three phase motors may differ in performance. For curves corresponding to specific motors please refer to WebCAPS.
- Due to the risk of overheating, the pumps should not be used at a flow below the minimum flow rate. The curve in fig. 29 shows the minimum flow rate as a percentage of the rated flow rate in relation to the liquid temperature.

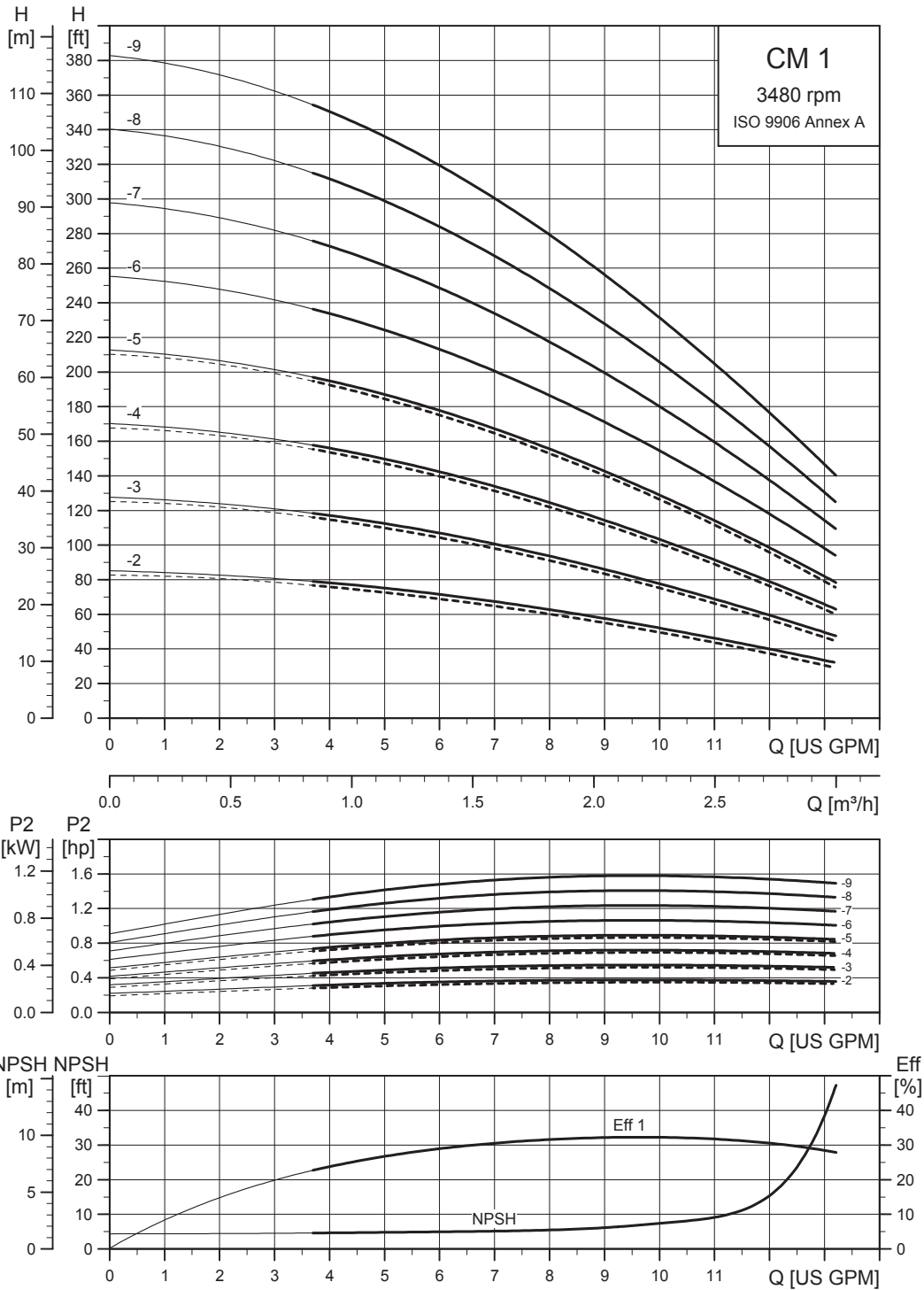


TM04 5895.

Fig. 29 Minimum flow rate

11. Curve charts and technical data

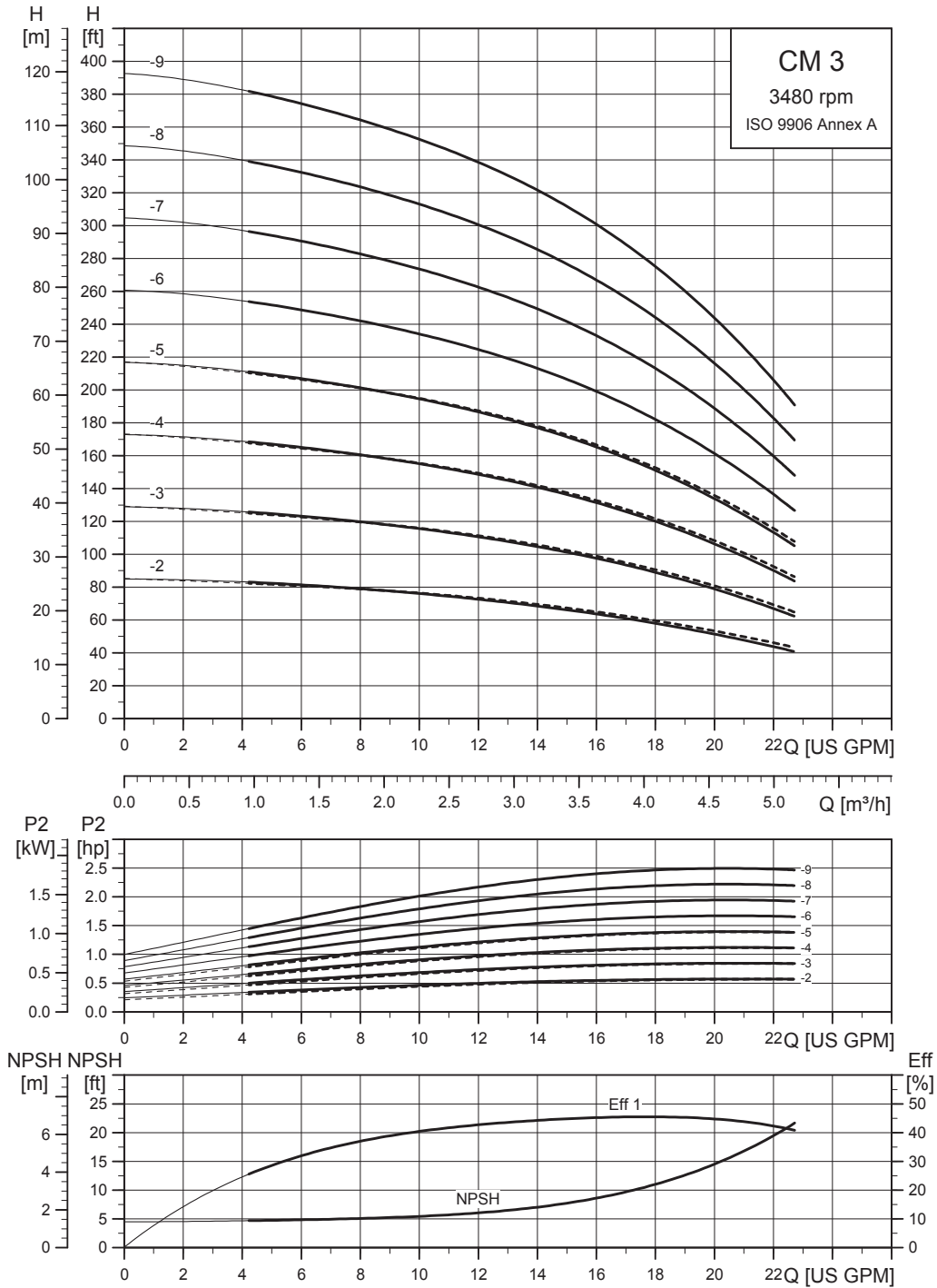
CM 1



TM04 5696 3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).
 - - - - A version
 — I, G versions

CM 3

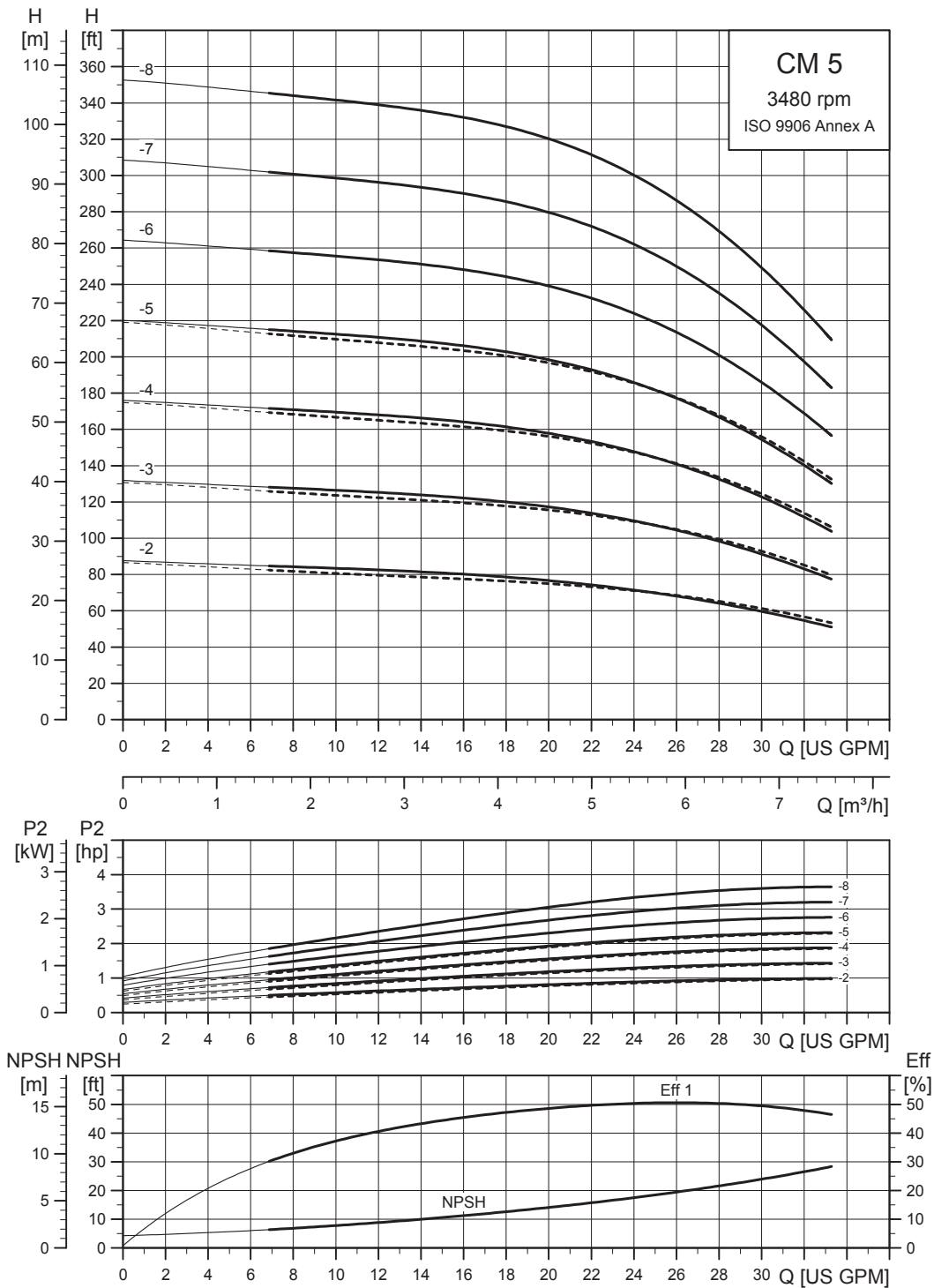


Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

TM04 5697 3610

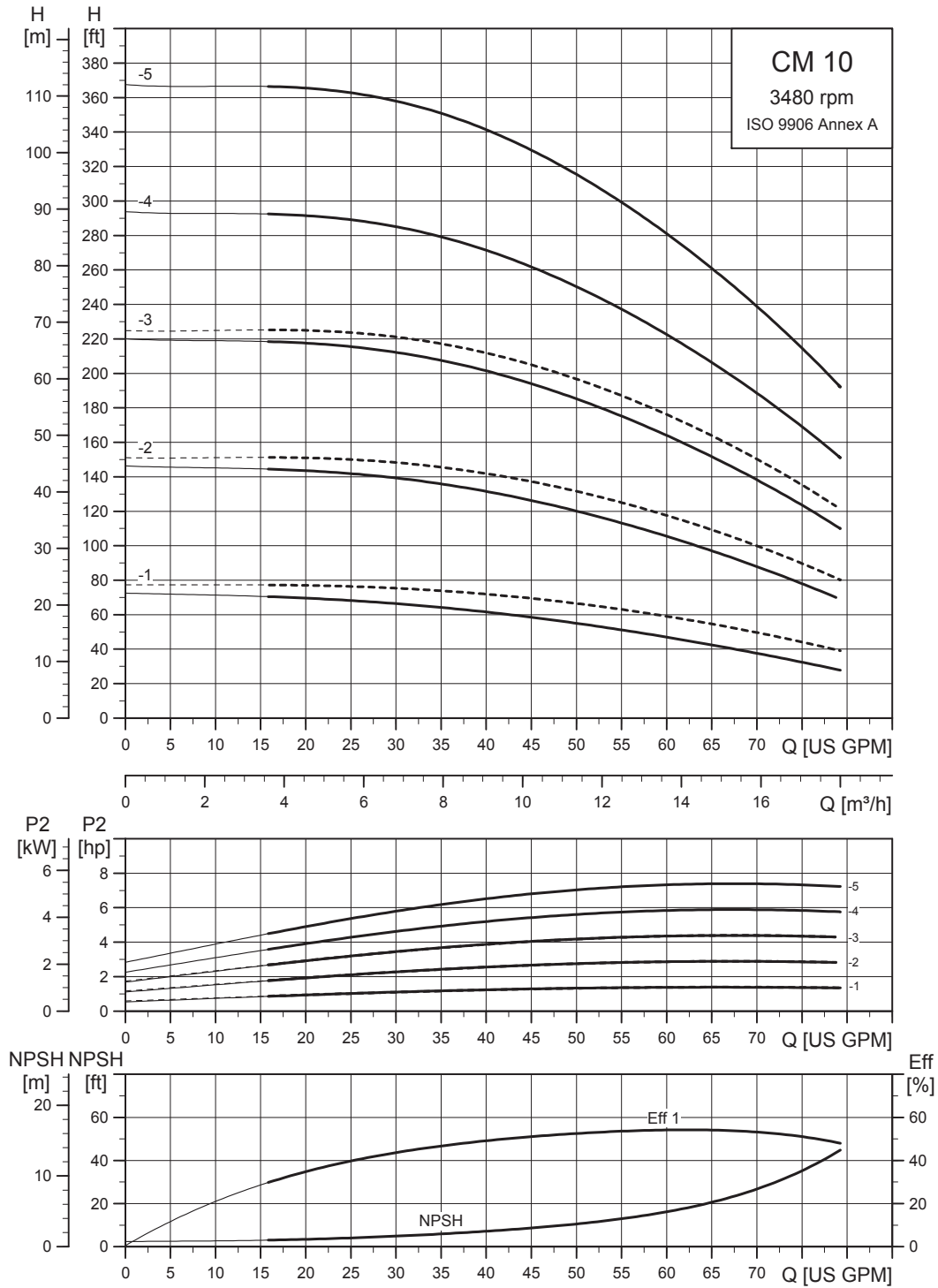
CM 5



TM04 5898 3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).
 - - - - A version
 — I, G versions

CM 10

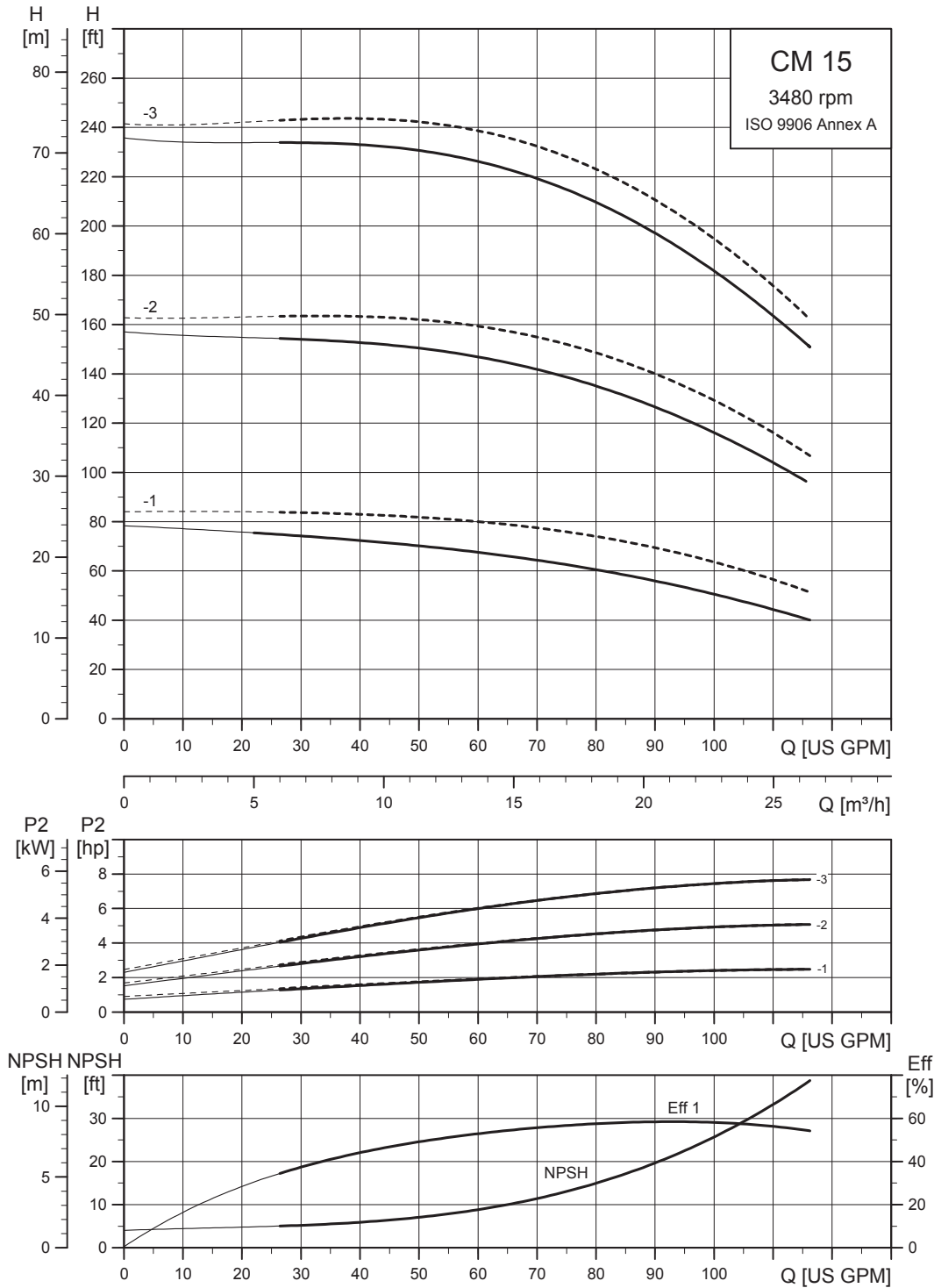


Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
—— I, G versions

TM04 5899 3610

CM 15

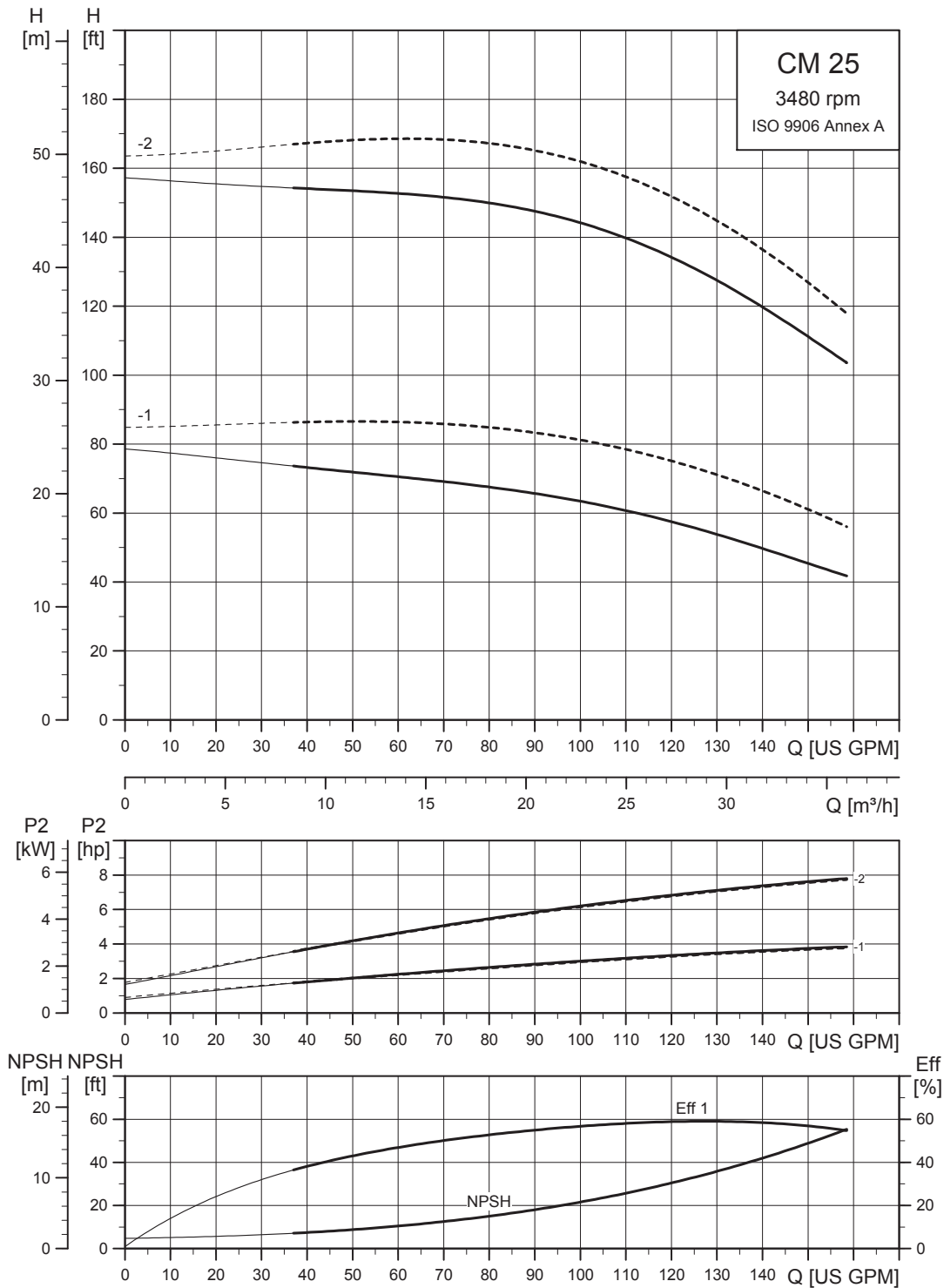


TM04 5900 3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

CM 25

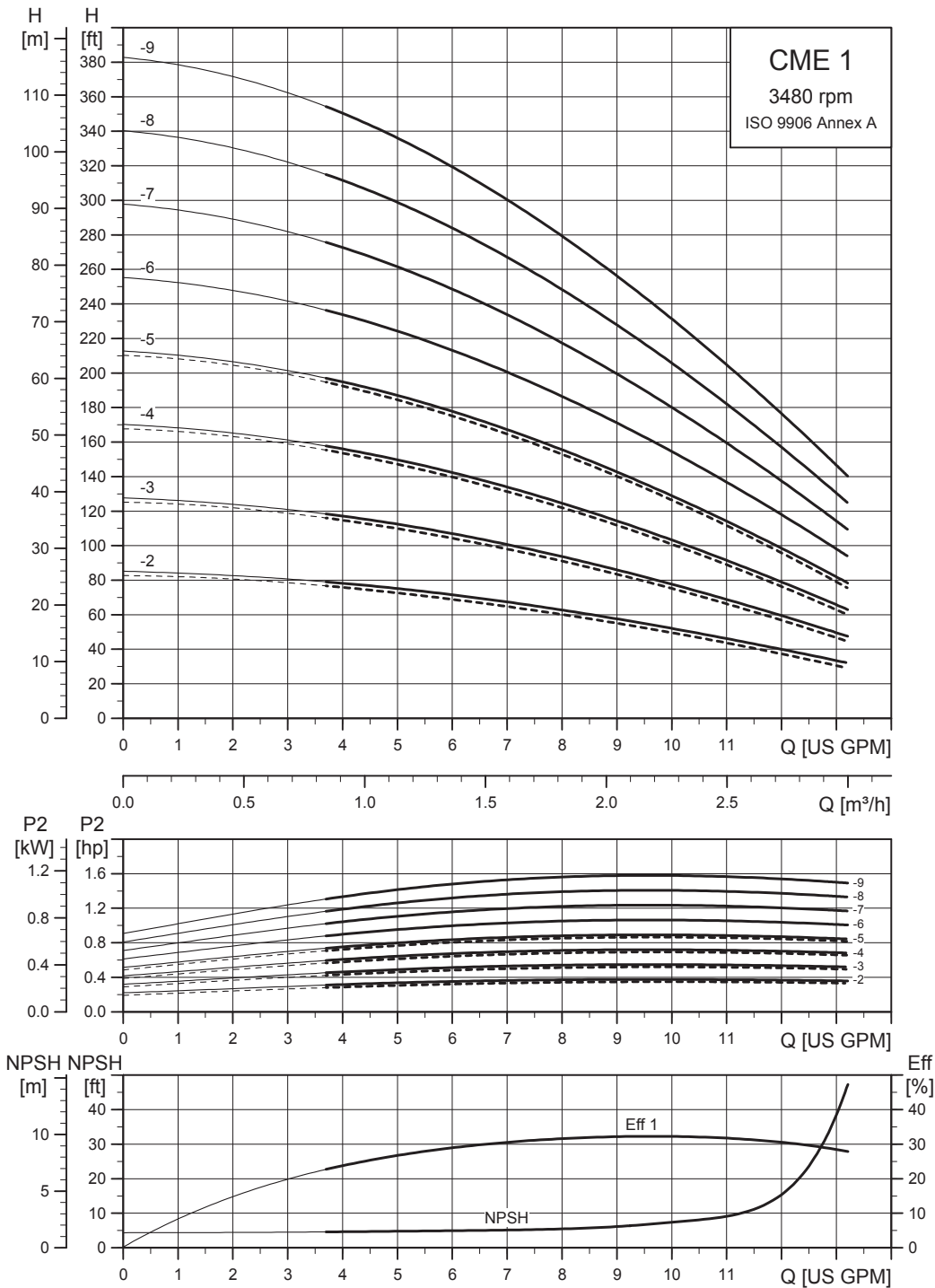


Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

TM04 5901 2612

CME 1

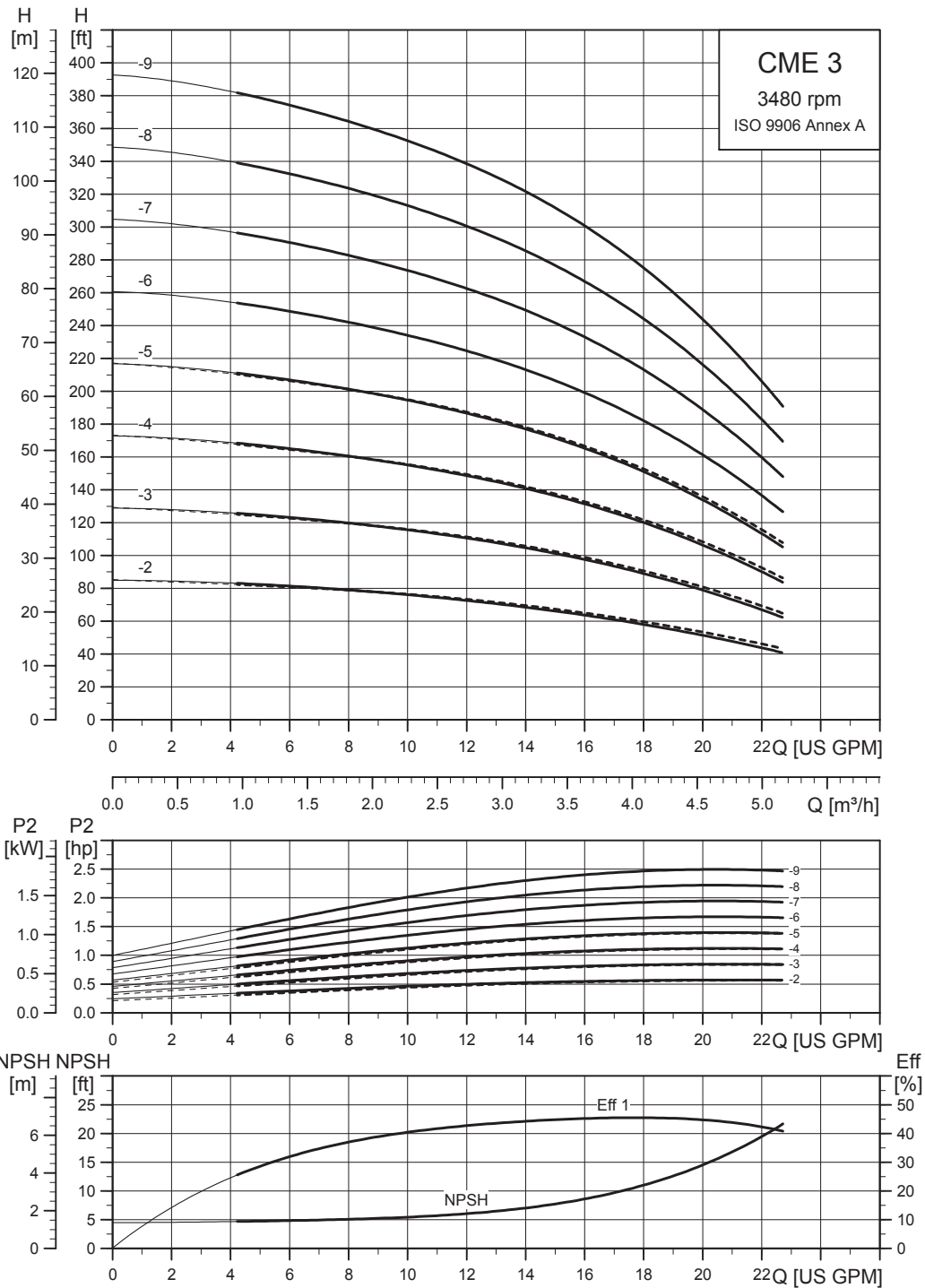


TM04 5902 3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

CME 3



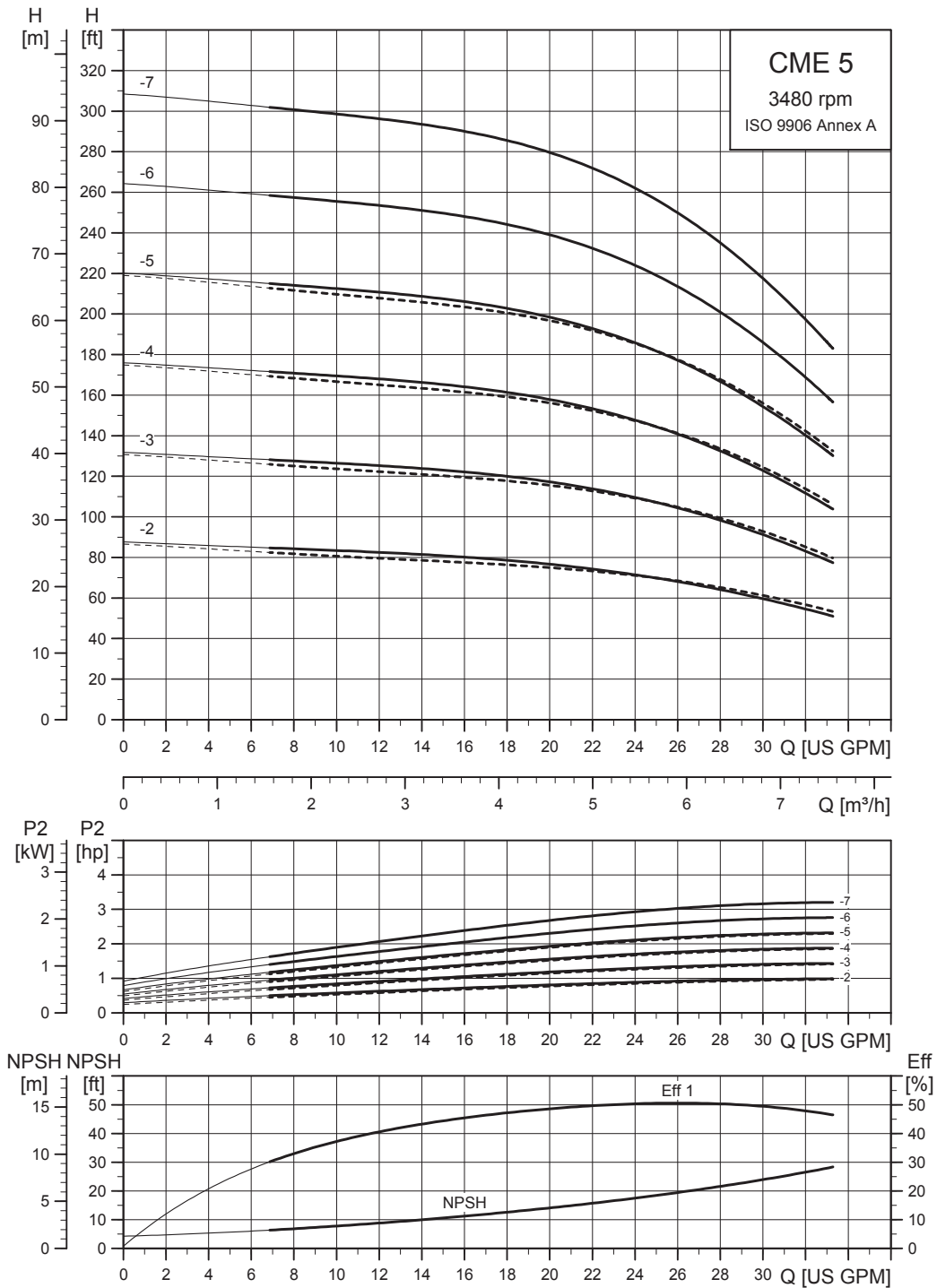
Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version

———— I, G versions

TM04 5903 3610

CME 10

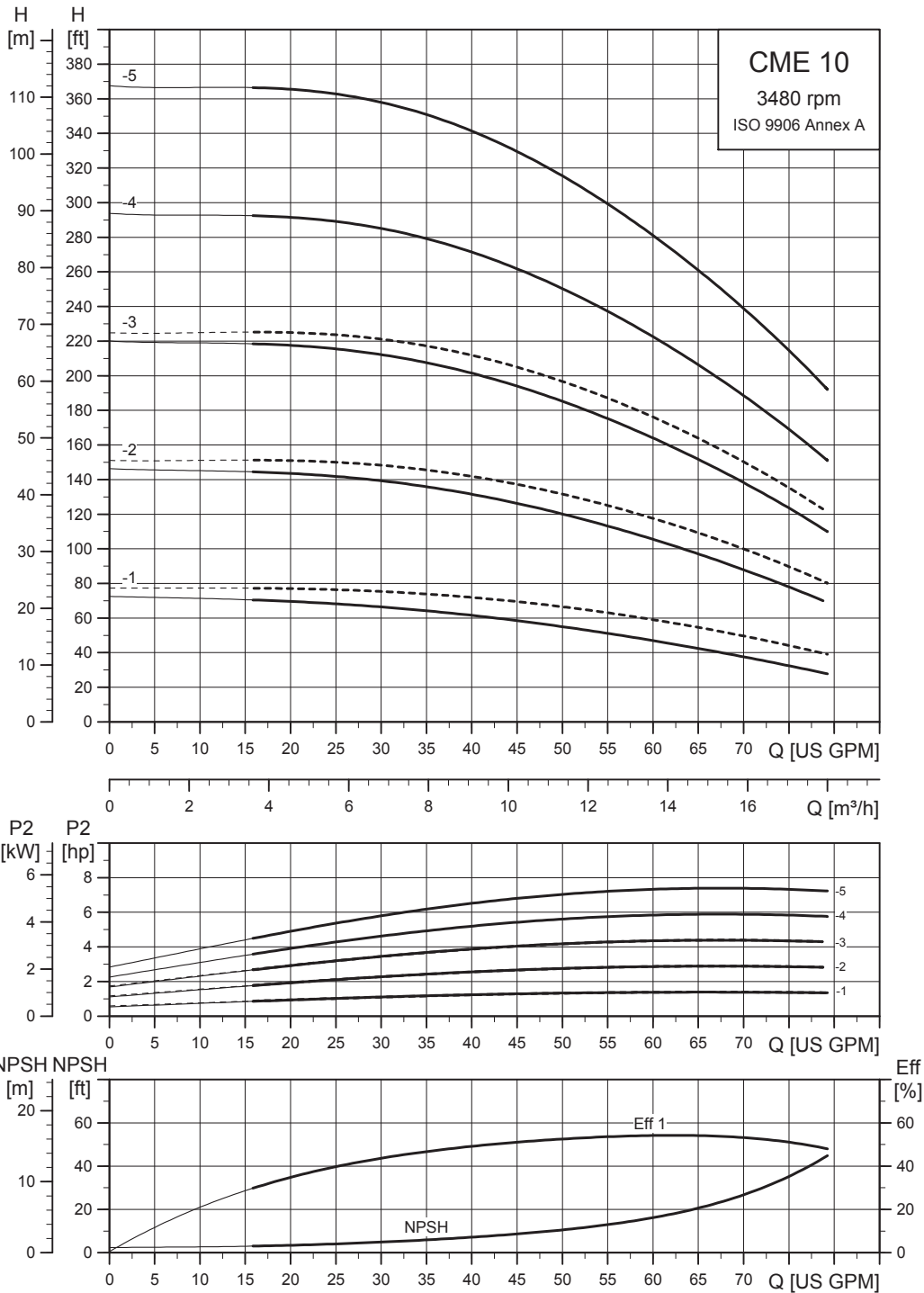


TM04 5904 3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

CME 15

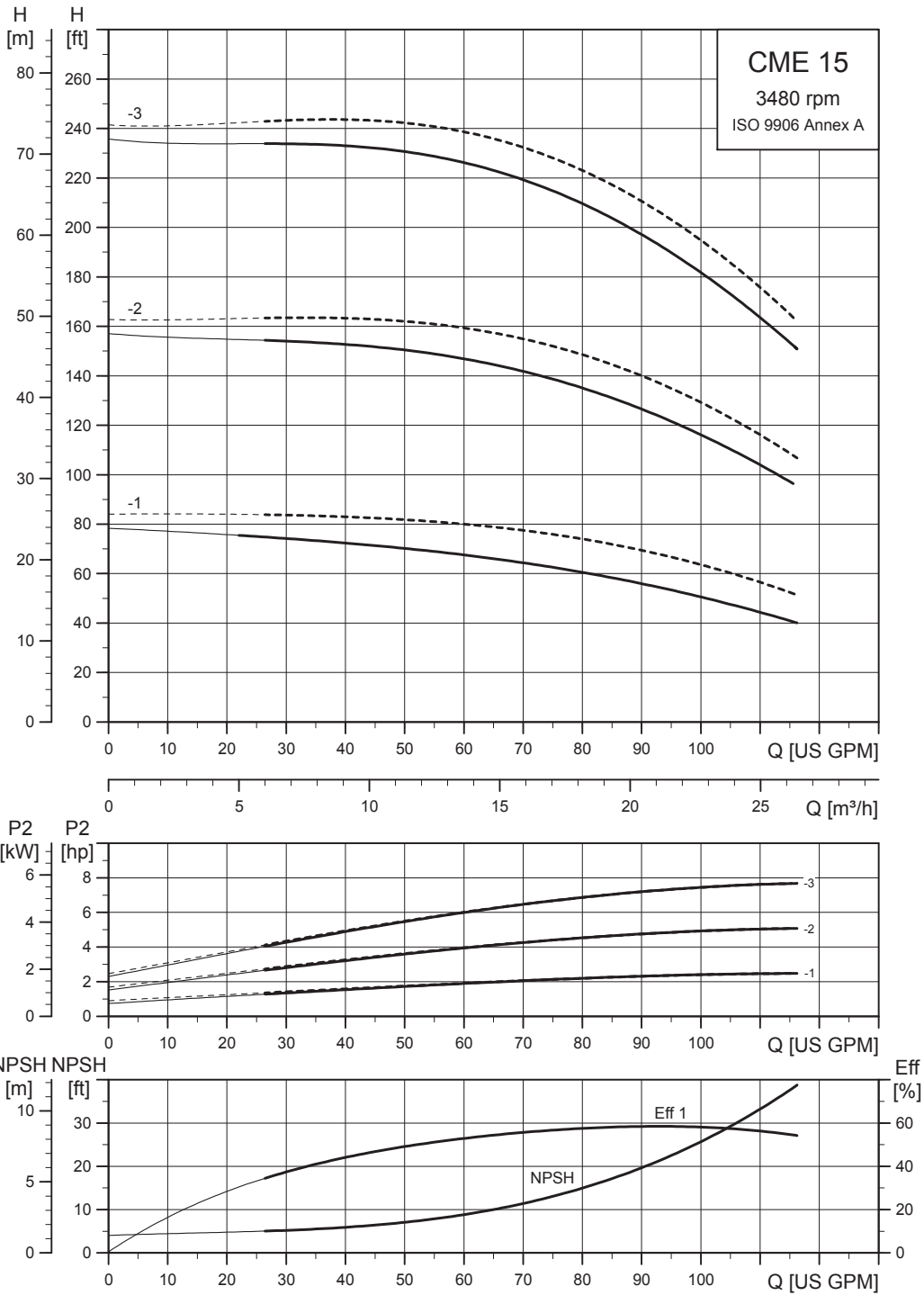


Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

TM04 5905 3610

CME 25



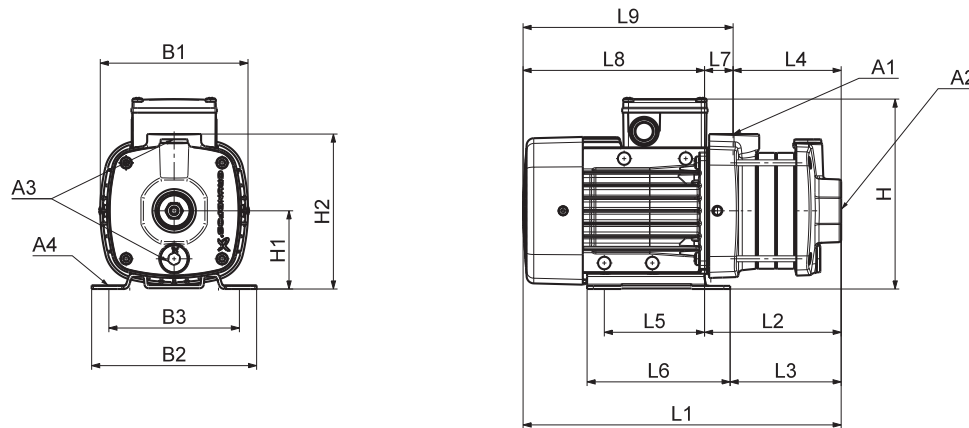
TM04-5906-3610

Eff1 = Wire to water efficiency of the pump including motor (see page 30).

----- A version
 ——— I, G versions

CM 1-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2248 2208

Dimensions

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

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

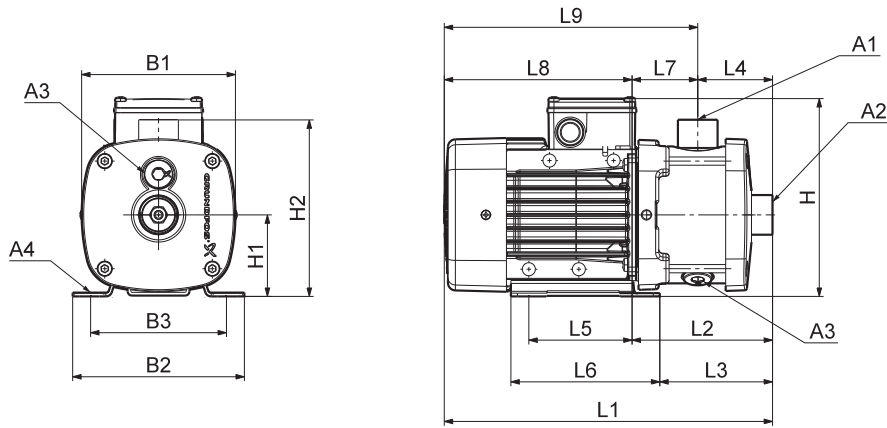
Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 1-2	71	0.58	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-3	71	0.58	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	12.05 (306)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-4	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	12.76 (324)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-5	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	13.46 (342)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 1-2	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-3	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	12.05 (306)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-4	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	12.76 (324)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 1-5	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	13.46 (342)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)

CM 1-I and CM 1-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 1-2	71	0.58	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-3	71	0.58	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-4	71	1.0	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.72 (323)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-5	71	1.0	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	13.43 (341)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-6*	71	1.0	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	14.84 (377)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-7*	71	1.0	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	14.84 (377)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-8*	80	1.4	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	17.83 (453)	9.41 (239)	8.46 (215)	7.09 (180)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 1-9*	80	1.7	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	17.83 (453)	9.41 (239)	8.46 (215)	7.09 (180)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)

* Only CM-I and CM-G versions are available with this number of stages.

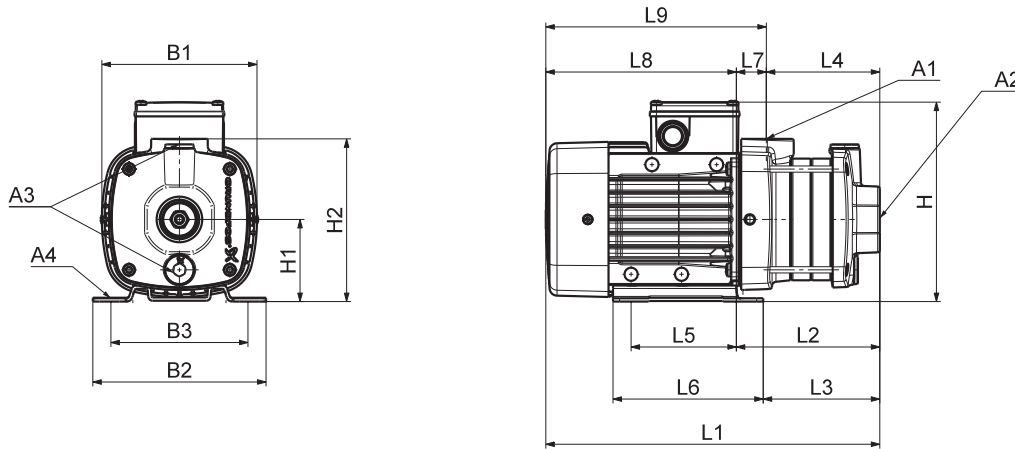
1 x 115/230 V, 60 Hz (supply voltage B)

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 1-2	71	0.8	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-3	71	0.8	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-4	71	0.8	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	12.72 (323)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-5	71	0.8	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	13.43 (341)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 1-6*	80	1.06	1"	1"	3/8"	.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	16.42 (417)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 1-7*	80	1.5	1"	1"	3/8"	.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	16.42 (417)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 1-8*	80	1.5	1"	1"	3/8"	.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	17.83 (453)	9.41 (239)	8.46 (215)	7.09 (180)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 1-9*	80	1.5	1"	1"	3/8"	.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	17.83 (453)	9.41 (239)	8.46 (215)	7.09 (180)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)

* Only CM-I and CM-G versions are available with this number of stages.

CM 3-A

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



TM04 2248 2208

Dimensions

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

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

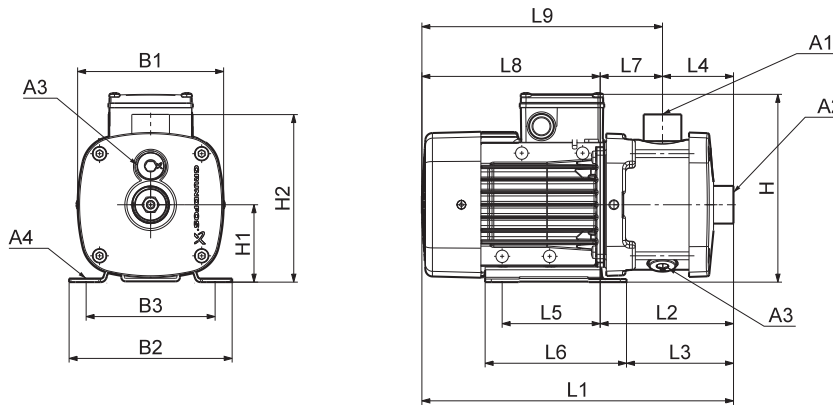
Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 3-2	71	0.58	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 3-3	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	12.05 (306)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 3-4	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	12.76 (324)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 3-5	80	1.4	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	15.04 (382)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 3-2	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 3-3	71	0.8	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	12.05 (306)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 3-4	80	1.06	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	14.33 (364)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CM 3-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	15.04 (382)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)

CM 3-I and CM 3-G

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



TM04 2246 2208

Dimensions

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 3-2	71	0.58	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.00 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 3-3	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.00 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 3-4	71	1.0	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.72 (323)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 3-5	80	1.4	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	15.0 (381)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 3-6*	80	1.7	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	16.42 (417)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 3-7*	90	2.3	1"	1"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 3-8*	90	3.4	1"	1"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	19.80 (503)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 3-9*	90	3.4	1"	1"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	19.80 (503)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)

* Only CM-I and CM-G versions are available with this number of stages.

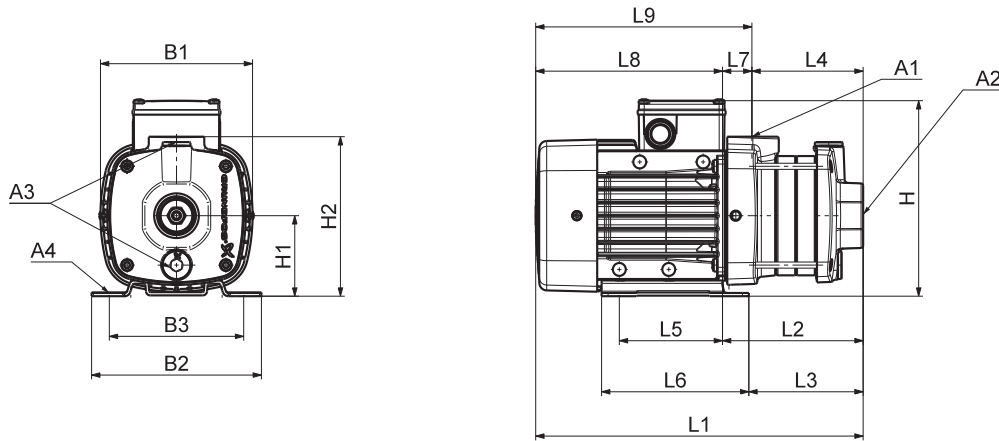
1 x 115/230 V, 60 Hz (supply voltage B)

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 3-2	71	0.6	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	12.00 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 3-3	71	0.6	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	12.00 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 3-4	80	1.06	1"	1"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	14.29 (363)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 3-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	6.50 (165)	15.0 (381)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 3-6*	90	2.03	1"	1"	3/8"	0.39 (10)	7.01 (178)	7.01 (178)	5.51 (140)	9.02 (229)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 3-7*	90	2.03	1"	1"	3/8"	0.39 (10)	7.01 (178)	7.01 (178)	5.51 (140)	9.02 (229)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 3-8*	90	2.03	1"	1"	3/8"	0.39 (10)	7.01 (178)	7.01 (178)	5.51 (140)	9.02 (229)	3.54 (90)	7.09 (180)	19.80 (503)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)

* Only CM-I and CM-G versions are available with this number of stages.

CM 5-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2248 2208

Dimensions

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

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

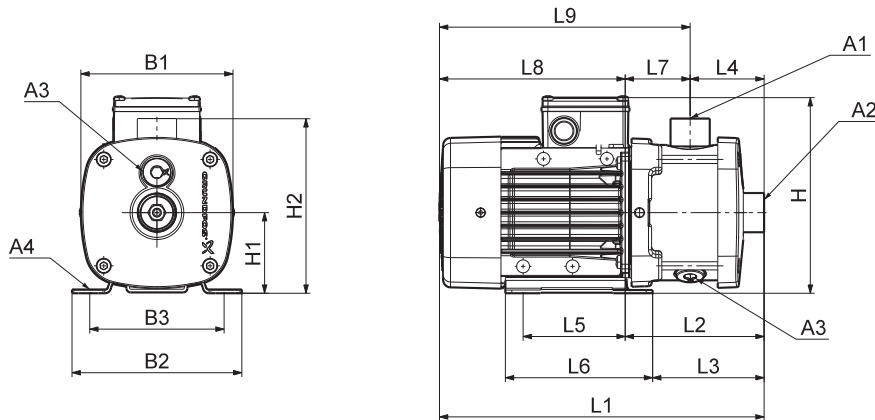
Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 5-2	71	1.0	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	11.34 (288)	4.89 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CM 5-3	80	1.4	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	5.87 (149)	13.62 (346)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CM 5-4	90	2.3	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.91 (201)	16.34 (415)	7.52 (191)	6.93 (176)	9.94 (109)	4.92 (125)	6.10 (155)	3.23 (82)	8.82 (224)	12.05 (306)
CM 5-5	90	3.4	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.91 (201)	17.05 (433)	8.23 (209)	7.64 (194)	5.00 (127)	4.92 (125)	6.10 (155)	3.23 (82)	8.82 (224)	12.05 (306)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 5-2	80	1.06	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	12.91 (328)	4.89 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CM 5-3	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	8.19 (208)	2.95 (75)	5.87 (149)	13.62 (346)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CM 5-4	90	2.03	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	8.19 (208)	3.54 (90)	7.91 (201)	16.34 (415)	7.52 (191)	6.93 (176)	9.94 (109)	4.92 (125)	6.10 (155)	3.23 (82)	8.82 (224)	12.05 (306)

CM 5-I and CM 5-G

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



TM04 2246 2208

Dimensions

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

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 5-2	71	1.0	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	12.00 (305)	5.16 (131)	4.22 (107)	2.84 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CM 5-3	80	1.4	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	7.52 (191)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.22 (107)	2.84 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 5-4	90	2.3	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	16.26 (413)	7.44 (189)	6.85 (174)	3.54 (90)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 5-5	90	3.4	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	16.97 (431)	8.15 (207)	7.56 (192)	4.25 (108)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 5-6*	90	3.4	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 5-7*	90	3.4	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	7.87 (200)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CM 5-8*	100	5.4	1"	1 1/4"	3/8"	0.39 (10)	7.80 (198)	7.83 (199)	6.30 (160)	8.66 (220)	3.94 (100)	7.48 (190)	22.09 (561)	11.38 (289)	10.79 (274)	7.09 (180)	5.51 (140)	6.69 (170)	4.29 (109)	10.71 (272)	15 (381)

* Only CM-G versions are available with this number of stages.

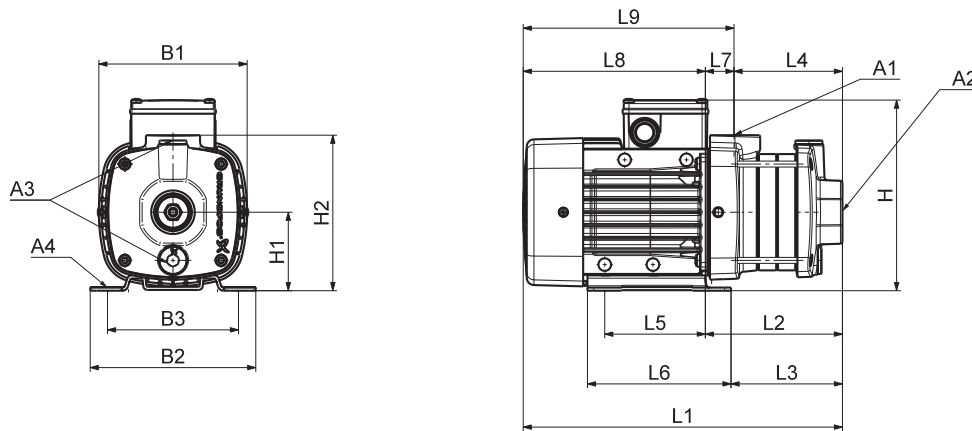
1 x 115/230 V, 60 Hz (supply voltage B)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 5-2	80	1.06	1"	1 1/4"	3/8"	0.39 (10)	5.59 (142)	6.22 (158)	4.92 (125)	4.25 (208)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.22 (107)	2.84 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 5-3	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	205	6.22 (158)	4.92 (125)	4.25 (208)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.22 (107)	2.84 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CM 5-4	90	2.03	1"	1 1/4"	3/8"	0.39 (10)	7.00 (178)	7.00 (178)	5.51 (140)	9.02 (229)	3.54 (90)	7.09 (180)	16.26 (413)	7.4 (189)	6.85 (174)	3.54 (90)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)

CM 10-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2248 2208

CM 10-A Dimensions**3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E)****3 x 575 V, 60 Hz (supply voltage H)**

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 10-1	80	1.7	1 1/2"	1 1/2"	3/8"	0.39 (10)	7.48 (190)	6.22 (158)	7.92 (125)	8.50 (216)	3.94 (100)	9.65 (245)	14.53 (369)	6.10 (155)	5.16 (131)	3.82 (97)	3.78 (96)	5.39 (137)	2.28 (58)	8.43 (214)	10.71 (272)
CM 10-2*	90	3.4	1 1/2"	1 1/2"	3/8"	0.39 (10)	7.48 (190)	7.84 (199)	6.30 (160)	8.27 (210)	3.94 (100)	9.65 (245)	16.58 (421)	8.62 (219)	8.03 (204)	3.82 (97)	5.51 (140)	6.69 (170)	3.66 (93)	9.13 (232)	12.76 (324)
CM 10-3*	100	5.4	1 1/2"	1 1/2"	3/8"	0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	9.65 (245)	16.96 (507)	9.25 (235)	8.66 (220)	5 (127)	5.51 (140)	6.69 (170)	4.25 (108)	10.71 (272)	14.96 (380)

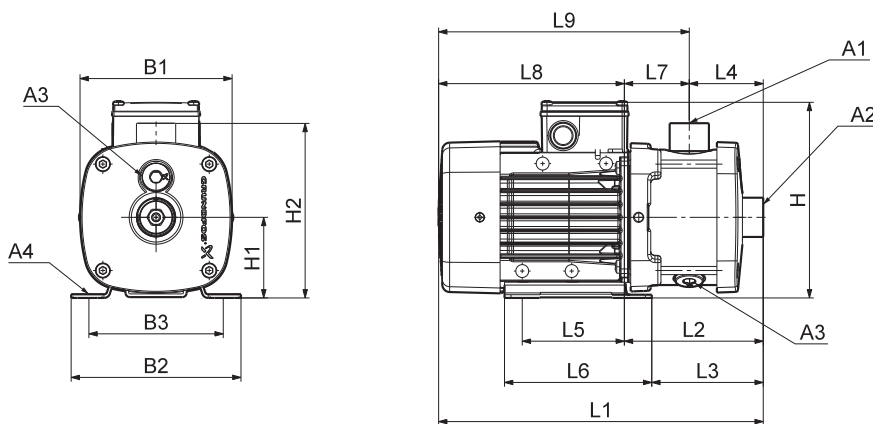
* This pump type is not available with supply voltage O.

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 10-1	80	1.5	1 1/2"	1 1/2"	3/8"	0.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	9.17 (233)	3.94 (100)	9.65 (245)	14.53 (369)	6.10 (155)	5.16 (131)	3.82 (97)	3.78 (96)	5.39 (137)	2.28 (58)	8.43 (214)	10.71 (272)

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 V / 440-480 V, 60 Hz (supply voltage E)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]															
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	
CM 10-1	80	1.7	1 1/2"	1 1/2"	3/8"		0.39 (10)	7.09 (180)	6.22 (158)	4.92 (125)	8.50 (216)	3.94 (100)	8.58 (218)	15.71 (399)	7.28 (185)	6.34 (161)	4.13 (105)	3.78 (96)	5.39 (137)	4.15 (80)	8.43 (214)	11.57 (294)
CM 10-2*	90	3.4	1 1/2"	1 1/2"	3/8"		0.39 (10)	7.09 (180)	7.84 (199)	6.30 (160)	8.27 (210)	3.94 (100)	8.58 (218)	17.72 (450)	7.05 (179)	6.46 (164)	4.13 (105)	5.51 (140)	6.69 (170)	2.91 (74)	10.71 (272)	13.58 (345)
CM 10-3*	100	5.4	1 1/2"	1 1/2"	3/8"		0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	8.58 (218)	19.96 (507)	9.25 (235)	8.66 (220)	4.13 (105)	5.51 (140)	6.69 (170)	5.12 (130)	10.71 (272)	15.83 (402)
CM 10-4*	112	8.4	1 1/2"	1 1/2"	3/8"		.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	9.69 (246)	4.41 (112)	9.06 (230)	23.19 (589)	11.30 (287)	10.67 (271)	5.32 (135)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)
CM 10-5*	112	8.4	1 1/2"	1 1/2"	3/8"		.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	9.69 (246)	4.41 (112)	9.06 (230)	25.55 (649)	13.66 (347)	13.03 (331)	7.68 (195)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

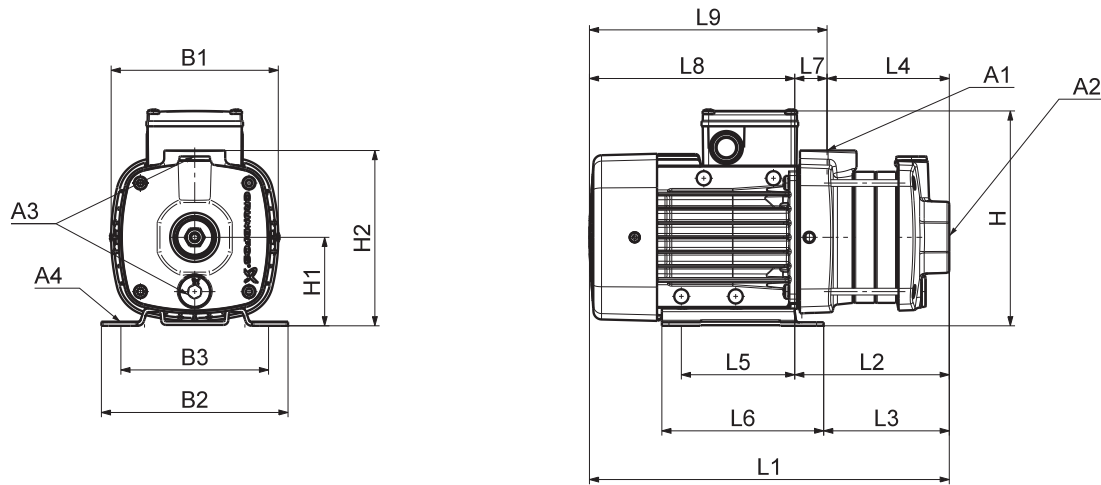
* This pump type is not available with supply voltage O.

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]															
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	
CM 10-1	80	1.5	1 1/2"	1 1/2"	3/8"		0.39 (10)	8.07 (205)	6.22 (158)	4.92 (125)	9.17 (233)	3.94 (100)	8.58 (218)	15.71 (399)	7.28 (185)	6.34 (161)	4.13 (105)	3.78 (96)	5.39 (137)	4.15 (80)	8.43 (214)	11.57 (294)

CM 15-A

(A = cast iron, A48 CL30 / EN-GJL-200)



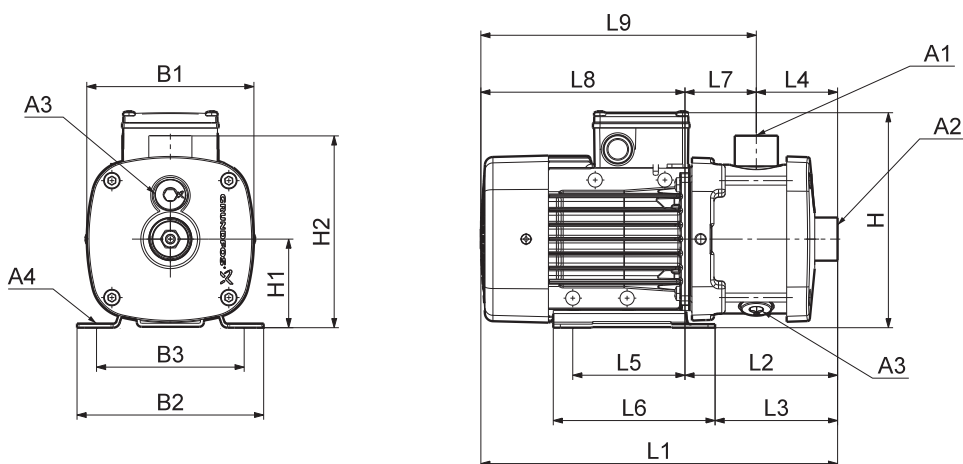
TM04 2248 2208

Dimensions**3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E)****3 x 575 V, 60 Hz (supply voltage H)**

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CM 15-1	90	3.4	2"	2"	3/8"	0.39 (10)	7.48 (190)	7.84 (199)	6.30 (160)	8.23 (210)	3.94 (100)	9.65 (245)	16.57 (421)	7.48 (190)	6.89 (175)	3.82 (97)	5.52 (140)	6.69 (170)	3.66 (93)	9.13 (232)	12.76 (324)
CM 15-2	100	5.4	2"	2"	3/8"	0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	9.65 (245)	18.78 (477)	8.07 (205)	7.48 (190)	3.82 (97)	5.52 (140)	6.69 (170)	4.25 (108)	10.71 (272)	14.96 (380)
CM 15-3	112	8.4	2"	2"	3/8"	0.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	9.69 (246)	4.91 (112)	10.19 (257)	22.05 (560)	10.16 (258)	9.53 (242)	5.00 (127)	5.52 (140)	6.77 (72)	5.16 (131)	11.89 (302)	17.05 (433)

CM 15-I and CM 15-G

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



TM04 2246 2208

Dimensions

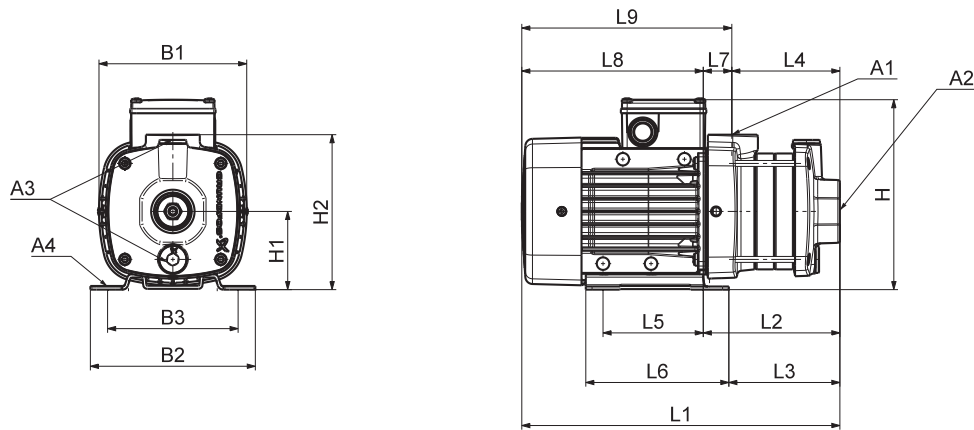
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 15-1	90	3.4	2"	2"	3/8"	0.39 (10)	7.09 (180)	7.84 (199)	6.30 (160)	8.23 (210)	3.94 (100)	8.58 (218)	17.72 (450)	8.62 (219)	8.03 (204)	4.13 (105)	5.52 (140)	6.69 (170)	4.49 (114)	9.13 (232)	13.58 (345)
CM 15-2	100	5.4	2"	2"	3/8"	0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	8.58 (218)	19.96 (507)	9.25 (235)	8.66 (220)	4.13 (105)	5.52 (140)	6.69 (170)	5.12 (130)	10.71 (272)	15.83 (402)
CM 15-3	112	8.4	2"	2"	3/8"	0.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	9.69 (246)	4.91 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.52 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

CM 25-A

(A = cast iron, A48-CL30 / EN-GJL-200)



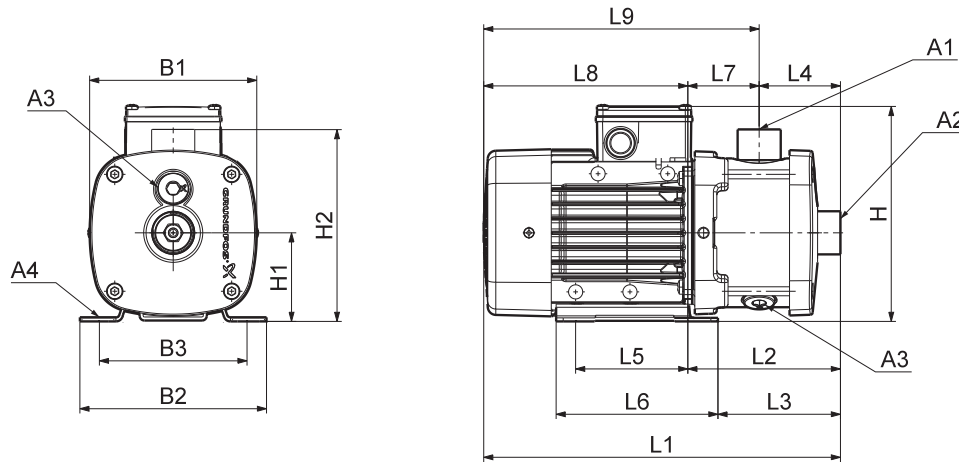
TM04 2248 2208

Dimensions**3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E)****3 x 575 V, 60 Hz (supply voltage H)**

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 25-1	100	5.4	2"	2"	3/8"	0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	9.65 (245)	18.78 (477)	8.07 (205)	7.48 (190)	3.82 (97)	5.52 (140)	6.69 (170)	4.25 (108)	10.71 (272)	14.96 (380)
CM 25-2	112	8.4	2"	2"	3/8"	0.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	9.69 (246)	4.91 (112)	10.12 (257)	20.87 (530)	8.98 (228)	8.35 (212)	3.82 (97)	5.52 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)

CM 25-I and CM 25-G

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



TM04 2246 2208

Dimensions

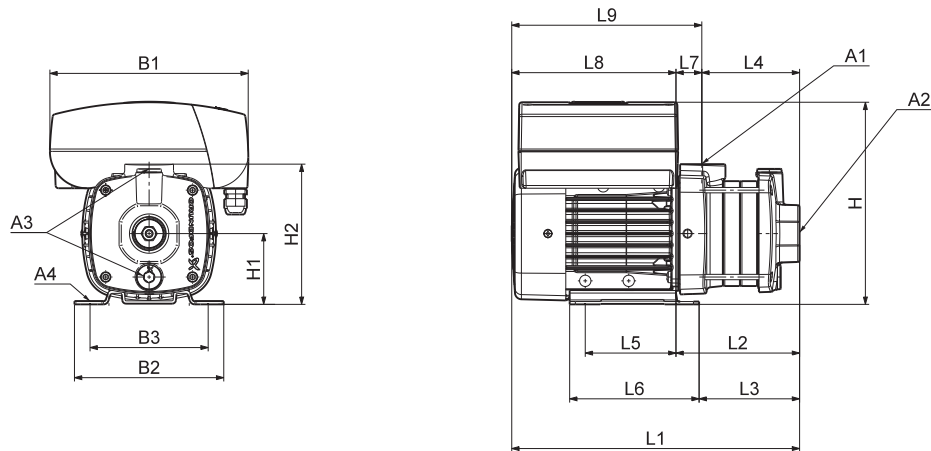
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E)

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 25-1	100	5.4	2"	2"	3/8"	0.39 (10)	7.80 (198)	7.84 (199)	6.30 (160)	8.66 (220)	3.94 (100)	8.58 (218)	19.96 (507)	9.25 (235)	8.66 (220)	4.13 (105)	5.52 (140)	6.69 (170)	5.12 (130)	10.71 (272)	15.83 (402)
CM 25-2	112	8.4	2"	2"	3/8"	0.47 (12)	8.66 (220)	8.98 (228)	7.48 (190)	1.81 (246)	4.91 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.52 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

CME 1-A

(A = cast iron, A48 CL30 / EN-GJL-200)



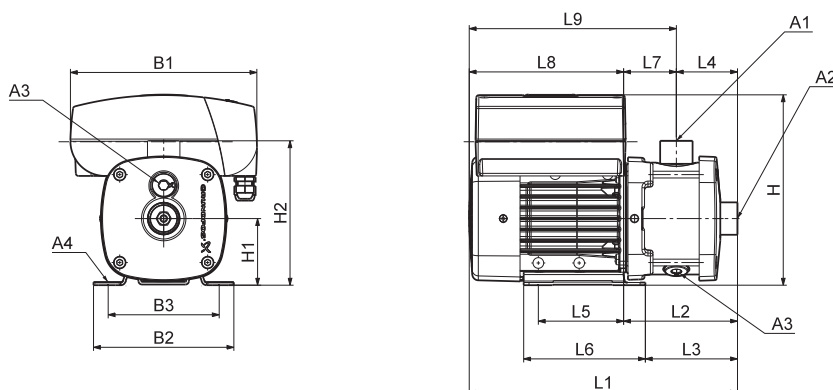
TM04 2249 2208

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 1-2	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CME 1-3	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	12.05 (306)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CME 1-4	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	12.76 (324)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CME 1-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	15.04 (382)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)

CME 1-I and CME 1-G

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



TM04 2247 2208

Dimensions

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

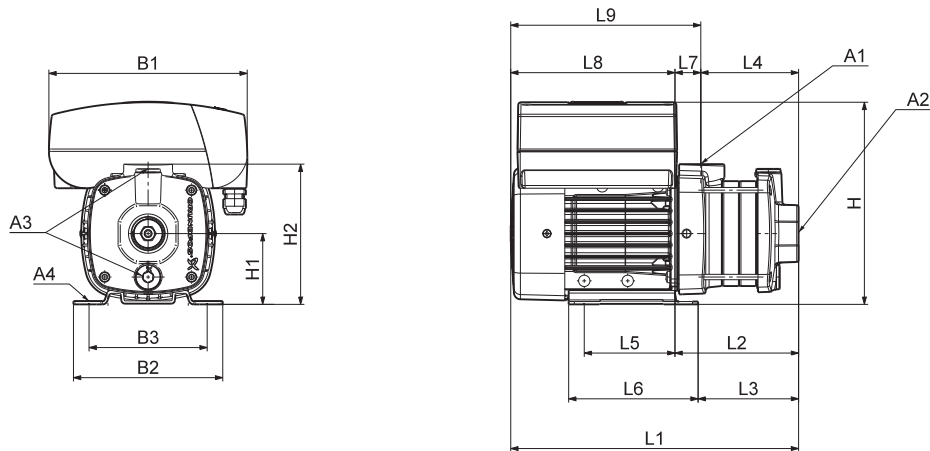
Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CME 1-2	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CME 1-3	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CME 1-4	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	12.72 (323)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CME 1-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	15.00 (381)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 1-6	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	16.42 (417)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 1-7	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	16.42 (417)	7.99 (203)	7.05 (179)	5.67 (144)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 1-8	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	17.83 (453)	9.41 (239)	8.46 (215)	7.09 (180)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)

3 x 460-480 V, 60 Hz (supply voltage N)
3 x 208-230 V, 50/60 Hz (supply voltage Q)

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3		A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
CME 1-9	90	2.0	1"	1"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	19.80 (503)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)

CME 3-A

(A = cast iron, A48 CL30 / EN-GJL-200)



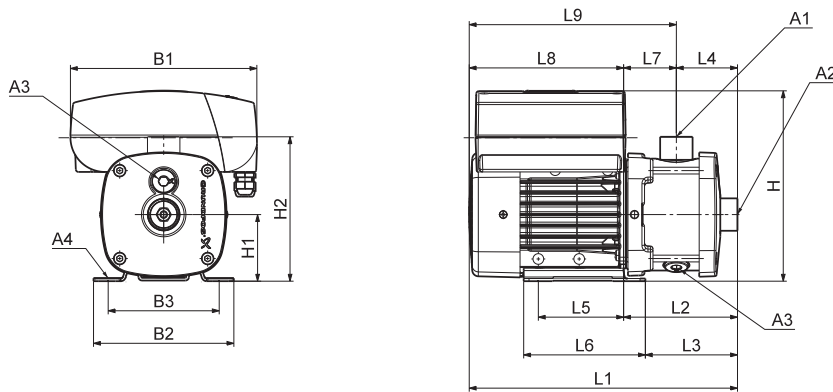
TM04 2249 2208

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 3-2	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	11.34 (288)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	6.85 (174)	7.95 (202)
CME 3-3	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	13.62 (346)	5.20 (132)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CME 3-4	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	14.33 (364)	5.91 (150)	4.92 (125)	4.80 (122)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CME 3-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	15.04 (382)	6.61 (168)	5.63 (143)	5.51 (140)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)

CME 3-I and CME 3-G

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



TM04 2247 2208

Dimensions

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

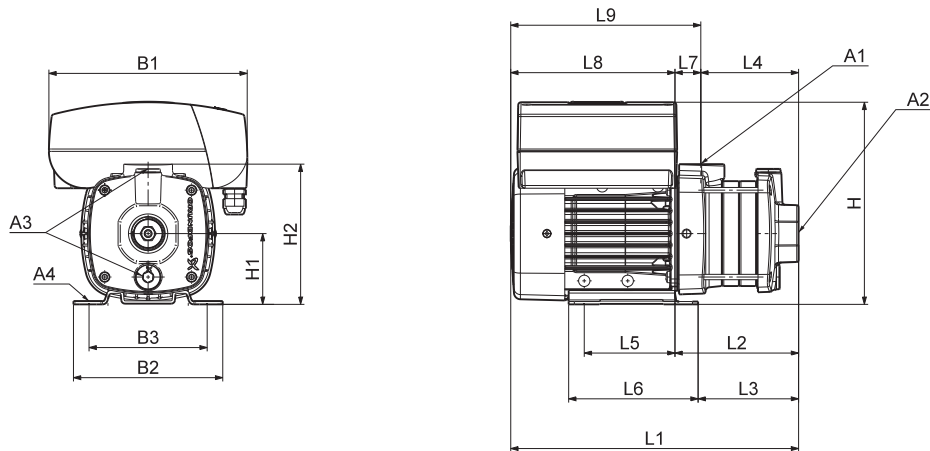
Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 3-2	71	0.75	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	12.01 (305)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	6.85 (174)	9.21 (234)
CME 3-3	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 3-4	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	14.29 (363)	5.87 (149)	4.92 (125)	3.54 (90)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 3-5	80	1.5	1"	1"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	15.00 (381)	6.57 (167)	5.63 (143)	4.25 (108)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)

3 x 460-480 V, 60 Hz (supply voltage N)
3 x 208-230 V, 50/60 Hz (supply voltage Q)

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 3-6	90	2.0	1"	1"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CME 3-7	90	2.0	1"	1"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	18.39 (467)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CME 3-8	90	2.0	1"	1"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	19.80 (503)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CME 3-9	90	3.0	1"	1"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	21.38 (543)	10.98 (279)	10.39 (264)	7.09 (180)	4.92 (125)	6.10 (155)	3.90 (99)	10.39 (264)	14.29 (363)

CME 5-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2249 2208

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

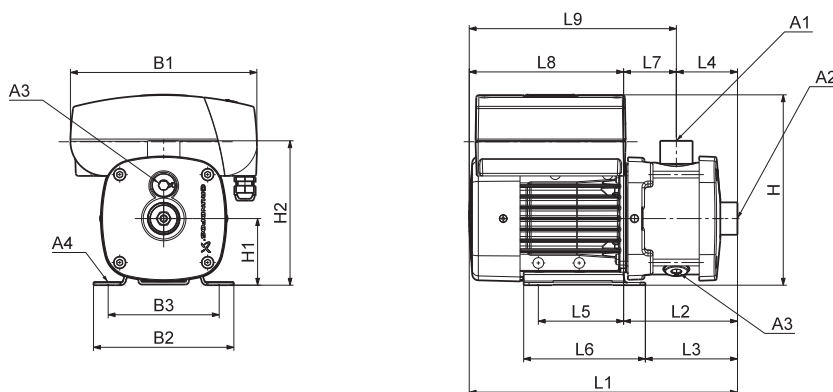
Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 5-2	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	12.91 (328)	4.49 (114)	3.50 (89)	3.39 (86)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)
CME 5-3	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	5.87 (149)	13.58 (345)	5.16 (131)	4.21 (107)	4.09 (104)	3.78 (96)	5.39 (137)	1.10 (28)	8.43 (214)	9.53 (242)

3 x 460-480 V, 60 Hz (supply voltage N)**3 x 208-230 V, 50/60 Hz (supply voltage Q)**

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 5-4	90	2.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.91 (201)	16.34 (415)	7.52 (191)	6.93 (176)	4.29 (109)	4.92 (125)	6.10 (155)	3.23 (82)	8.82 (224)	12.05 (306)
CME 5-5	90	2.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.91 (201)	17.05 (433)	8.23 (209)	7.64 (194)	5.00 (127)	4.92 (125)	6.10 (155)	3.23 (82)	8.82 (224)	12.05 (306)

CME 5-I and CME 5-G

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



TM04 2247 2208

Dimensions

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

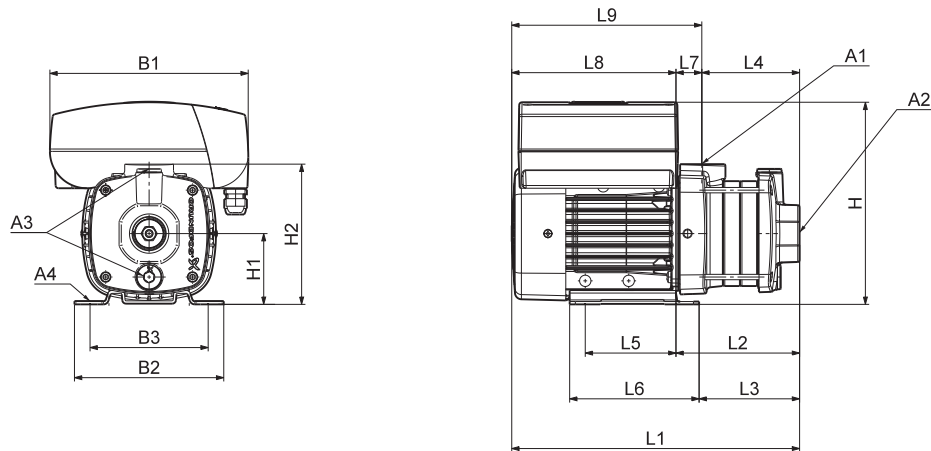
Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 5-2	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)
CME 5-3	80	1.5	1"	1 1/4"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	8.46 (215)	2.95 (75)	6.50 (165)	13.58 (345)	5.16 (131)	4.21 (107)	2.83 (72)	3.78 (96)	5.39 (137)	2.36 (60)	8.43 (214)	10.79 (274)

3 x 460-480 V, 60 Hz (supply voltage N)
3 x 208-230 V, 50/60 Hz (supply voltage Q)

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 5-4	90	2.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	16.25 (413)	7.44 (189)	6.85 (174)	3.54 (90)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CME 5-5	90	2.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	16.97 (431)	8.15 (207)	7.56 (192)	4.25 (108)	4.92 (125)	6.10 (155)	3.90 (99)	8.82 (224)	12.72 (323)
CME 5-6	90	3.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	19.96 (507)	9.57 (243)	8.98 (228)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	10.39 (264)	14.29 (363)
CME 5-7	90	3.0	1"	1 1/4"	3/8"	0.39 (10)	10.39 (264)	7.01 (178)	5.51 (140)	10.12 (257)	3.54 (90)	7.09 (180)	19.96 (507)	9.57 (243)	9.25 (235)	5.67 (144)	4.92 (125)	6.10 (155)	3.90 (99)	10.39 (264)	14.29 (363)

CME 10-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2249 2208

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

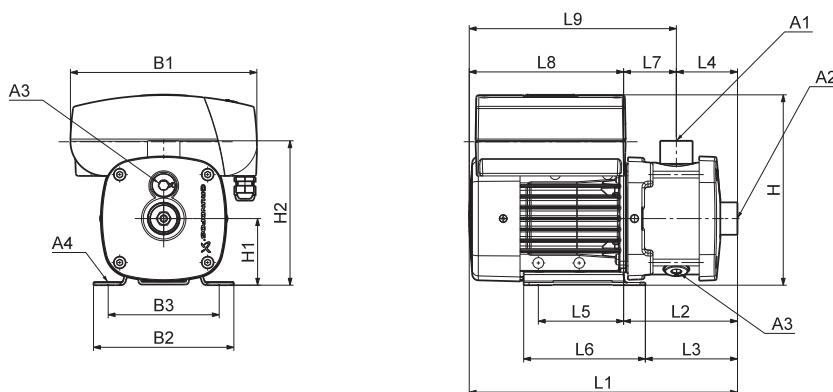
Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 10-1	80	1.5	1 1/2"	1 1/2"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	9.45 (240)	3.94 (100)	9.65 (245)	13.35 (339)	4.92 (125)	3.98 (101)	2.64 (67)	3.78 (96)	5.39 (137)	2.28 (58)	8.43 (214)	10.71 (272)

3 x 460-480 V, 60 Hz (supply voltage N)**3 x 208-230 V, 50/60 Hz (supply voltage Q)**

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 10-2	90	3.0	1 1/2"	1 1/2"	3/8"	0.39 (10)	10.39 (264)	7.84 (199)	6.30 (160)	10.51 (267)	3.94 (100)	9.65 (245)	18.15 (461)	7.48 (190)	6.89 (175)	3.82 (97)	5.51 (140)	6.69 (170)	3.66 (93)	10.71 (272)	14.33 (364)
CME 10-3	112	5.0	1 1/2"	1 1/2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	10.12 (257)	22.05 (560)	10.16 (258)	9.53 (242)	5.00 (127)	5.51 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)

CME 10-I and CME 10-G

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



TM04 2247 2208

Dimensions

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

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 10-1	80	1.5	1 1/2"	1 1/2"	3/8"	0.39 (10)	8.27 (210)	6.22 (158)	4.92 (125)	9.45 (240)	3.94 (100)	8.58 (218)	15.71 (399)	7.28 (185)	6.34 (161)	4.13 (105)	3.78 (96)	5.39 (137)	3.15 (80)	8.43 (214)	11.58 (294)

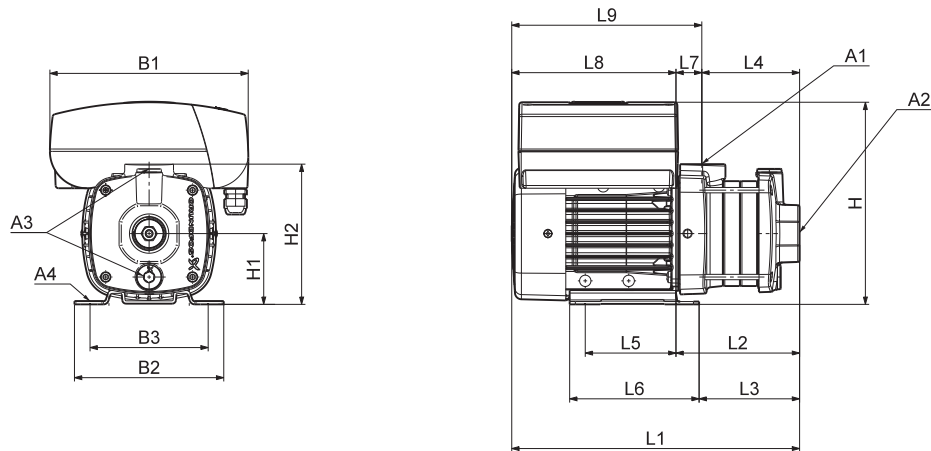
3 x 460-480 V, 60 Hz (supply voltage N)

3 x 208-230 V, 50/60 Hz (supply voltage Q)

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 10-2	90	3.0	1 1/2"	1 1/2"	3/8"	0.39 (10)	10.39 (264)	7.84 (199)	6.30 (160)	10.51 (267)	3.94 (100)	8.58 (218)	19.29 (490)	8.62 (219)	8.03 (204)	4.13 (105)	5.51 (140)	6.69 (170)	4.49 (114)	10.71 (272)	15.76 (385)
CME 10-3	112	5.0	1 1/2"	1 1/2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)
CME 10-4	112	5.0	1 1/2"	1 1/2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	23.19 (589)	11.30 (287)	10.67 (271)	5.32 (135)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)
CME 10-5	132	7.5	1 1/2"	1 1/2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	25.55 (649)	13.66 (347)	13.03 (331)	7.68 (195)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

CME 15-A

(A = cast iron, A48 CL30 / EN-GJL-200)



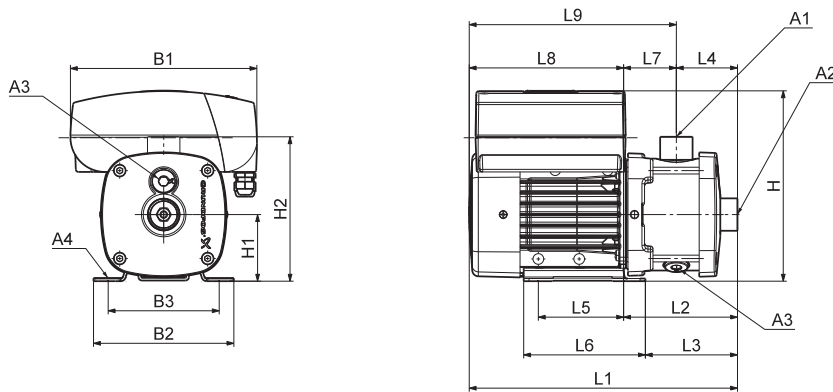
TM04 2249 2208

Dimensions**3 x 460-480 V, 60 Hz (supply voltage N)****3 x 208-230 V, 50/60 Hz (supply voltage Q)**

Pump type	Frame size	P ₂ [hp]	NPT		Rp	Dimensions [in (mm)]															
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 15-1	90	3.0	2"	2"	3/8"	.39 (10)	10.39 (264)	7.83 (199)	6.30 (160)	10.51 (267)	3.94 (100)	9.65 (245)	18.15 (461)	7.48 (190)	6.89 (175)	3.82 (97)	5.51 (140)	6.69 (170)	3.66 (93)	10.71 (272)	14.33 (364)
CME 15-2	112	5.0	2"	2"	3/8"	.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	10.12 (257)	20.87 (530)	8.98 (228)	8.35 (212)	3.82 (97)	5.51 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)
CME 15-3	132	7.5	2"	2"	3/8"	.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	10.12 (257)	22.05 (560)	10.16 (258)	9.53 (242)	5.00 (127)	5.51 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)

CME 15-I and CME 15-G

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



TM04 2247 2208

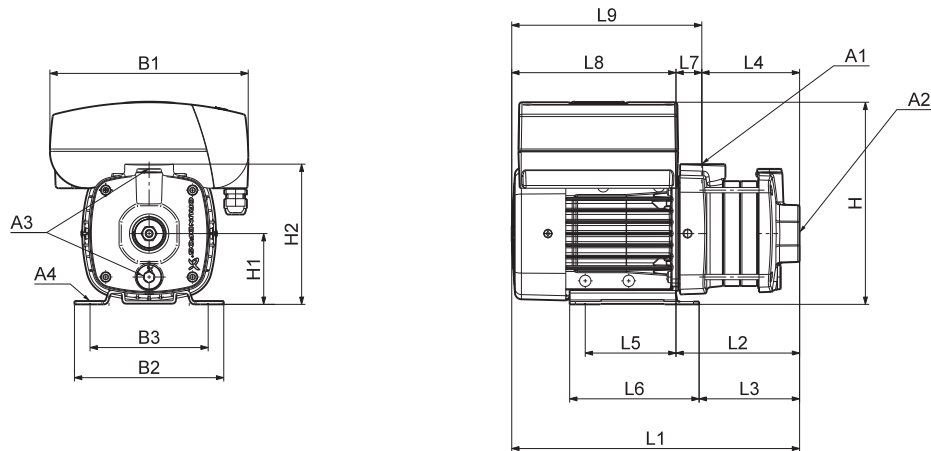
Dimensions

3 x 460-480 V, 60 Hz (supply voltage N)
 3 x 208-230 V, 50/60 Hz (supply voltage Q)

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 15-1	90	3.0	2"	2"	3/8"	0.39 (10)	10.39 (264)	7.83 (199)	6.30 (160)	10.51 (267)	3.94 (100)	8.58 (218)	19.29 (490)	8.62 (219)	8.03 (204)	4.13 (105)	5.51 (140)	6.69 (170)	4.49 (114)	10.71 (272)	15.16 (385)
CME 15-2	112	5.0	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)
CME 15-3	132	7.5	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

CME 25-A

(A = cast iron, A48 CL30 / EN-GJL-200)



TM04 2249 2208

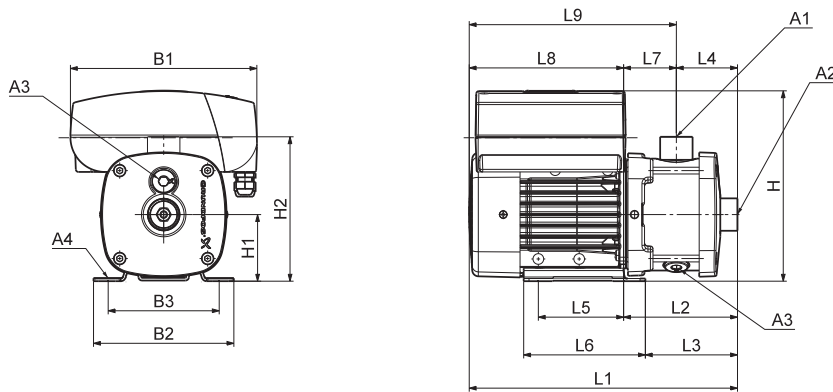
Dimensions**3 x 460-480 V, 60 Hz (supply voltage N)****3 x 208-230 V, 50/60 Hz (supply voltage Q)***

Pump type	Frame size	P ₂ [hp]	NPT			Rp	Dimensions [in (mm)]														
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 25-1	112	5.0	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	10.12 (257)	20.87 (530)	8.98 (228)	8.35 (212)	3.82 (97)	5.51 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)
CME 25-2	132	7.5	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	10.12 (257)	20.87 (530)	8.98 (228)	8.35 (212)	3.82 (97)	5.51 (140)	6.77 (172)	5.16 (131)	11.89 (302)	17.05 (433)

* Available for CME 25-1 only.

CME 25-I and CME 25-G

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



TM04 2247 2208

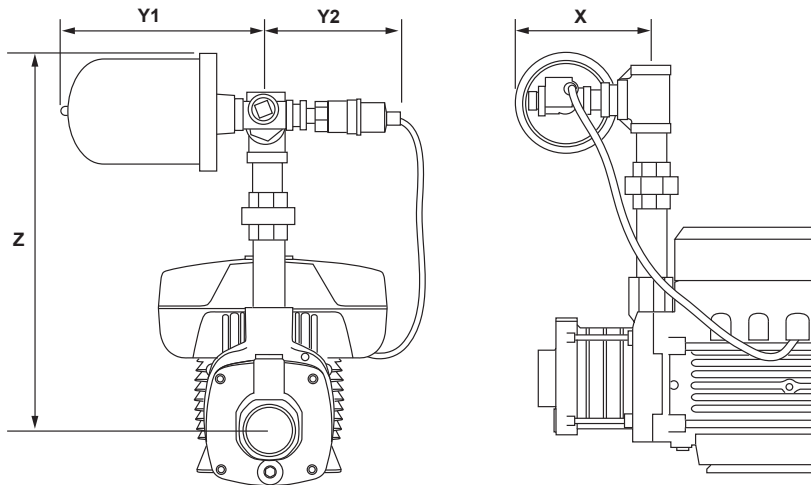
Dimensions

3 x 460-480 V, 60 Hz (supply voltage N)
 3 x 208-230 V, 50/60 Hz (supply voltage Q)*

Pump type	Frame size	P ₂ [hp]	NPT			Rp			Dimensions [in (mm)]												
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CME 25-1	112	5.0	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)
CME 25-2	132	7.5	2"	2"	3/8"	0.47 (12)	11.42 (290)	8.98 (228)	7.48 (190)	11.81 (300)	4.41 (112)	9.06 (230)	22.01 (559)	10.12 (257)	9.49 (241)	4.13 (105)	5.51 (140)	6.77 (172)	5.98 (152)	11.89 (302)	17.87 (454)

* Available for CME 25-1 only.

CME Plus technical data



TM05 4424 2512

CME Plus kit dimensions

CME 1	X [in (mm)]	Y1 [in (mm)]	Y2 [in (mm)]	Z [in (mm)]	Kit weight [lb (kg)]
CME 1	13.75 (350)	8 (204)	6 (153)	6 (153)	7.7 (3.5)
CME 3	13.75 (350)	8 (204)	6 (153)	6 (153)	7.7 (3.5)
CME 5	15 (381)	8 (204)	6 (153)	6 (153)	10.8 (4.9)
CME 10	16.5 (420)	8 (204)	6 (153)	7.25 (184)	13.4 (6.1)
CME 15	18 (458)	8 (204)	6 (153)	7.5 (191)	13.4 (6.1)
CME 25	18 (458)	8 (204)	6 (153)	7.5 (191)	17.0 (7.7)

Note: Dimensions, tolerance +/- 0.25 inches

CME Plus additional materials

	Description	Material
	Pressure transducer	4-20mA signal
	Diaphragm tank	A10008 Steel
	Nipple	304 SS
	Bushing	304 SS
	Union	304 SS
	Tee	304 SS
Hardware	Close nipple	304 SS
	Cross	316 SS
	Plug	304 SS
	Pipe nipple	316 SS
	Bushing for Sensor	316 SS

12. Weights and shipping volume

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

CM 1-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 1-2	25.8	11.7	31.3	14.2	1.05	0.0296
	CM 1-3	26.5	12.0	32.0	14.5	1.05	0.0296
	CM 1-4	26.9	12.2	32.4	14.7	1.31	0.0370
	CM 1-5	27.6	12.5	33.1	15.0	1.31	0.0370
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 1-2	24.3	11.0	29.8	13.5	1.05	0.0296
	CM 1-3	24.9	11.3	30.4	13.8	1.05	0.0296
	CM 1-4	26.9	12.2	32.4	14.7	1.31	0.0370
	CM 1-5	27.6	12.5	33.1	15.0	1.31	0.0370

CM 3-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 3-2	25.8	11.7	31.3	14.2	1.05	0.0296
	CM 3-3	26.5	12.0	32.0	14.5	1.05	0.0296
	CM 3-4	27.6	12.5	33.1	15.0	1.31	0.0370
	CM 3-5	30.0	13.6	35.5	16.1	1.31	0.0370
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 3-2	24.3	11.0	29.8	13.5	1.05	0.0296
	CM 3-3	26.5	12.0	32.0	14.5	1.05	0.0296
	CM 3-4	26.9	12.2	32.4	14.7	1.31	0.0370
	CM 3-5	30.6	13.9	36.2	16.4	1.31	0.0370

CM 5-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 5-2	28.7	13.0	34.2	15.5	1.05	0.0296
	CM 5-3	31.7	14.4	37.3	16.9	1.31	0.0370
	CM 5-4	53.6	24.3	59.1	26.8	1.31	0.0370
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 5-2	25.6	11.6	31.1	14.1	1.05	0.0296
	CM 5-3	29.3	13.3	34.8	15.8	1.31	0.0370
	CM 5-4	53.6	24.3	59.1	26.8	1.31	0.0370
	CM 5-5	54.0	24.5	59.5	27.0	1.58	0.0444

CM 10-A**(A = cast iron, A48 CL30 / EN-GJL-200)**

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 10-1	51.6	23.4	57.1	25.9	1.31	0.0370
	CM 10-1	51.6	23.4	57.1	25.9	1.31	0.0370
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 10-2	70.3	31.9	75.8	34.4	1.58	0.0444
	CM 10-3	89.9	40.8	95.5	43.3	1.58	0.0444

CM 15-A**(A = cast iron, A48 CL30 / EN-GJL-200)**

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 15-1	67.5	30.6	73.0	33.1	1.31	0.0370
	CM 15-2	87.1	39.5	92.6	42.0	1.58	0.0444
	CM 15-3	106.5	48.3	112.0	50.8	1.75	0.0495

CM 25-A**(A = cast iron, A48 CL30 / EN-GJL-200)**

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 25-1	85.5	38.8	91.1	41.3	1.58	0.0444
	CM 25-2	104.9	47.6	110.5	50.1	1.75	0.0495

CM 1-I and CM 1-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 1-2	27.1	12.3	32.6	14.8	1.05	0.0296
	CM 1-3	27.3	12.4	32.9	14.9	1.05	0.0296
	CM 1-4	28.0	12.7	33.5	15.2	1.31	0.0370
	CM 1-5	28.9	13.1	34.4	15.6	1.31	0.0370
	CM 1-6	33.3	15.1	38.8	17.6	1.31	0.0370
	CM 1-7	35.7	16.2	41.2	18.7	1.31	0.0370
	CM 1-8	37.0	16.8	42.6	19.3	1.58	0.0444
	CM 1-9	37.3	16.9	42.8	19.4	1.58	0.0444
	3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 1-2	25.6	11.6	31.1	14.1	1.05
CM 1-3		25.8	11.7	31.3	14.2	1.05	0.0296
CM 1-4		28.0	12.7	33.5	15.2	1.31	0.0370
CM 1-5		28.9	13.1	34.4	15.6	1.31	0.0370
CM 1-6		30.2	13.7	35.7	16.2	1.31	0.0370
CM 1-7		30.2	13.7	35.7	16.2	1.31	0.0370
CM 1-8		34.6	15.7	40.1	18.2	1.58	0.0444
CM 1-9		37.3	16.9	42.8	19.4	1.58	0.0444

CM 3-I and CM 3-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 3-2	27.1	12.3	32.6	14.8	1.05	0.0296
	CM 3-3	27.3	12.4	32.9	14.9	1.05	0.0296
	CM 3-4	31.1	14.1	36.6	16.6	1.31	0.0370
	CM 3-5	34.4	15.6	39.9	18.1	1.31	0.0370
	CM 3-6	52.5	23.8	58.0	26.3	1.58	0.0444
	CM 3-7	52.9	24.0	58.4	26.5	1.58	0.0444
	CM 3-8	54.2	24.6	59.8	27.1	1.58	0.0444
	3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 3-2	25.6	11.6	32.0	14.1	1.05
CM 3-3		27.3	12.4	32.9	14.9	1.05	0.0296
CM 3-4		28.0	12.7	33.5	15.2	1.31	0.0370
CM 3-5		32.0	14.5	37.5	17.0	1.31	0.0370
CM 3-6		35.7	16.2	41.2	18.7	1.31	0.0370
CM 3-7		52.9	24.0	58.4	26.5	1.58	0.0444
CM 3-8		54.2	24.6	59.8	27.1	1.58	0.0444
CM 3-9		54.6	24.7	60.0	27.2	1.58	0.0444

CM 5-I and CM 5-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 5-2	30.2	13.7	35.7	16.2	1.31	0.0370
	CM 5-3	32.9	14.9	38.5	17.4	1.31	0.0370
	CM 5-4	50.7	23.0	56.2	25.5	1.31	0.0370
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 5-2	27.1	12.3	32.6	14.8	1.05	0.0296
	CM 5-3	30.4	13.8	35.9	16.3	1.31	0.0370
	CM 5-4	50.7	23.0	56.2	25.5	1.31	0.0370
	CM 5-5	51.4	23.3	56.9	25.8	1.58	0.0444
	CM 5-6	52.7	23.9	58.2	26.4	1.58	0.0444
	CM 5-7	52.9	24.0	58.4	26.5	1.58	0.0444
	CM 5-8	72.3	32.8	77.8	35.3	1.75	0.0495

CM 10-I and CM 10-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 115/230 V, 60 Hz (supply voltage B)	CM 10-1	41.5	18.8	46.7	21.3	1.31	0.0370
	CM 10-1	41.5	18.8	47.0	21.3	1.31	0.0370
	CM 10-2	59.3	26.9	64.8	29.4	1.58	0.0444
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 10-3	77.8	35.3	83.3	37.8	1.58	0.0444
	CM 10-4	97.7	44.3	103.2	46.8	1.75	0.0495
	CM 10-5	100.8	45.7	106.3	48.2	2.99	0.0847

CM 15-I and CM 15-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 15-1	58.6	26.6	64.1	29.1	1.58	0.0444
	CM 15-2	77.2	35.0	82.7	37.5	1.58	0.0444
	CM 15-3	95.5	43.3	101.0	45.8	1.75	0.0495

CM 25-I and CM 25-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 208-230 V / 440-480 V, 60 Hz (supply voltage E) 3 x 575 V, 60 Hz (supply voltage H)	CM 25-1	76.7	34.8	82.2	37.3	1.58	0.0444
	CM 25-2	95.0	43.1	100.5	45.6	1.75	0.0495

CME 1-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 1-2	31.8	14.4	39.5	17.9	1.05	0.0296
	CME 1-3	32.4	14.7	40.1	18.2	1.05	0.0296
	CME 1-4	32.9	14.9	40.6	18.4	1.31	0.0370
	CME 1-5	38.8	17.6	46.5	21.1	1.31	0.0370

CME 3-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 3-2	31.8	14.4	39.5	17.9	1.05	0.0296
	CME 3-3	37.7	17.1	45.4	20.6	1.31	0.0370
	CME 3-4	38.1	17.3	46.0	20.8	1.31	0.0370
	CME 3-5	38.8	17.6	46.5	21.1	1.31	0.0370

CME 5-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 5-2	36.8	16.7	44.5	20.2	1.05	0.0296
	CME 5-3	37.5	17.0	45.2	20.5	1.31	0.0370
3 x 460-480 V, 60 Hz (supply voltage N)	CME 5-4	69.0	31.3	76.7	34.8	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 5-5	69.5	31.5	77.2	35.0	2.99	0.0847

CME 10-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 10-1	57.1	25.9	64.8	29.4	1.31	0.0370
3 x 460-480 V, 60 Hz (supply voltage N)	CME 10-2	91.9	41.7	99.7	45.2	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 10-3	132.7	60.2	140.4	63.7	2.99	0.0847

CME 15-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 460-480 V, 60 Hz (supply voltage N)	CME 15-1	80.3	36.4	88.0	39.9	2.99	0.0847
	CME 15-2	119.7	54.3	127.4	57.8	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 15-3	128.3	58.2	136.0	61.7	2.99	0.0847

CME 25-A

(A = cast iron, A48 CL30 / EN-GJL-200)

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 460-480 V, 60 Hz (supply voltage N)	CME 25-1	119.3	54.1	127.0	57.6	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)*	CME 25-2	127.9	58.0	135.6	61.5	2.99	0.0847

* For CME 25-1 only

CME 1-I and CME 1-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 1-2	33.07	15.0	40.79	18.5	1.05	0.0296
	CME 1-3	33.29	15.1	41.01	18.6	1.05	0.0296
	CME 1-4	33.95	15.4	41.67	18.9	1.31	0.0370
	CME 1-5	40.12	18.2	47.84	21.7	1.31	0.0370
	CME 1-6	41.45	18.8	49.16	22.3	1.31	0.0370
	CME 1-7	41.45	18.8	49.16	22.3	1.31	0.0370
	CME 1-8	42.77	19.4	50.49	22.9	1.58	0.0444
	CME 1-9	69.89	31.7	77.60	35.2	2.99	0.0847
3 x 460-480 V, 60 Hz (supply voltage N)	CME 1-9	69.89	31.7	77.60	35.2	2.99	0.0847

CME 3-I and CME 3-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 3-2	33.1	15.0	40.8	18.5	1.05	0.0296
	CME 3-3	38.6	17.5	46.3	21.0	1.31	0.0370
	CME 3-4	39.2	17.8	47.0	21.3	1.31	0.0370
	CME 3-5	40.1	18.2	47.8	21.7	1.31	0.0370
	CME 3-6	68.3	31.0	76.1	34.5	2.99	0.0847
3 x 460-480 V, 60 Hz (supply voltage N)	CME 3-7	68.3	31.0	76.1	34.5	2.99	0.0847
	CME 3-8	69.7	31.6	77.4	35.1	2.99	0.0847
	CME 3-9	76.3	34.6	84.0	38.1	2.99	0.0847
	CME 3-9	76.3	34.6	84.0	38.1	2.99	0.0847

CME 5-I and CME 5-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 5-2	38.4	17.4	46.1	20.9	1.31	0.0370
	CME 5-3	38.6	17.5	46.3	21.0	1.31	0.0370
	CME 5-4	66.1	30.0	73.9	33.5	2.99	0.0847
3 x 460-480 V, 60 Hz (supply voltage N)	CME 5-5	66.8	30.3	74.5	33.8	2.99	0.0847
	CME 5-6	74.5	33.8	82.2	37.3	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 5-7	74.7	33.9	82.5	37.4	2.99	0.0847

CME 10-I and CME 10-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
1 x 208-230 V, 50/60 Hz (supply voltage M)	CME 10-1	47.0	21.3	54.7	24.8	1.31	0.0370
	CME 10-2	80.9	36.7	88.6	40.2	2.99	0.0847
3 x 460-480 V, 60 Hz (supply voltage N) 3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 10-3	120.5	54.6	129.0	58.1	2.99	0.0847
	CME 10-4	122.4	55.5	130.7	59.0	2.99	0.0847
	CME 10-5	133.6	60.6	141.3	64.1	2.99	0.0847

CME 15-I and CME 15-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 460-480 V, 60 Hz (supply voltage N)	CME 15-1	80.3	36.4	88.0	39.9	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)	CME 15-2	119.7	54.3	127.4	57.8	2.99	0.0847
	CME 15-3	128.3	58.2	136.0	61.7	2.99	0.0847

CME 25-I and CME 25-G

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

Supply voltage	Pump type	Net weight		Gross weight		Shipping volume	
		[lb]	[kg]	[lb]	[kg]	[ft ³]	[m ³]
3 x 460-480 V, 60 Hz (supply voltage N)	CME 25-1	119.3	54.1	127.0	57.6	2.99	0.0847
3 x 208-230 V, 50/60 Hz (supply voltage Q)*	CME 25-2	127.9	58.0	135.6	61.5	2.99	0.0847

* For CME 25-1 only

13. Motor data

Mains-operated motors, 60 Hz

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

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}	I _{start}	Speed [min ⁻¹]
71	0.8	1.0	8.5 / 4.26	0.76	21.1 / 11.1	3240
80	1.06	1.0	11.0 / 5.6	0.65	33.0 / 16.8	3240
80	1.5	1.0	14.2 / 7.2	0.94	45.4 / 23.0	3320
90	2.03	1.0	18.8 / 9.8	0.97	75.2 / 39.2	3360

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

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}	I _{start}	Speed [min ⁻¹]
71	0.58	1.0	1.86 - 1.7 / 0.95 - 0.8	0.85 - 0.81 / 0.85 - 0.81	11.0 - 10.0 / 6.2 - 5.2	3360-3420
71	1.0	1.0	3.4 - 2.8 / 1.76 - 1.46	0.89 - 0.83 / 0.89 - 0.83	20.1 - 16.5 / 11.4 - 9.5	3220-3370
80	1.4	1.0	4.6 - 3.9 / 2.1 - 1.86	0.85 - 0.85 / 0.85 - 0.85	27.1 - 23.0 / 13.7 - 12.1	3220-3340
80	1.7	1.0	5.4 - 4.9 / 2.6 - 2.5	0.85 - 0.79 / 0.85 - 0.79	38.9 - 35.3 / 20.8 - 20.0	3380-3430
90	2.3	1.0	6.6 - 5.8 / 3.1 - 2.8	0.88 - 0.85 / 0.88 - 0.85	79.4 - 72.1 / 42.8 - 40.5	3490-3520
90	3.4	1.0	9.8 - 8.9 / 4.75 - 4.5	0.87 - 0.80 / 0.87 - 0.80	58.8 - 66.8 / 32.3 - 33.8	3470-3500
100	5.4	1.0	14.6 - 13.6 / 7.1 - 6.8	0.86 - 0.80 / 0.86 - 0.80	175.2 - 163.2 / 61.8 - 59.2	3520-3530
112	8.4	1.0	23.6 - 22.6 / 11.8 - 11.0	0.86 - 0.76 / 0.86 - 0.76	181.7 - 174.0 / 100.3 - 93.5	3490-3510

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

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}	I _{start}	Speed [min ⁻¹]
71	0.58	1.0	0.70	0.84	4.6	3340
71	1.0	1.0	1.20	0.84	7.8	3340
80	1.4	1.0	1.70	0.86	11.1	3220
80	1.7	1.0	2.10	0.86	16.8	3360
90	2.0	1.0	2.40	0.89	21.6	3490
90	3.4	1.0	3.70	0.90	27.8	3450
100	5.4	1.0	5.50	0.88	47.9	3500
112	8.4	1.0	9.10	0.87	77.4	3490

Speed-controlled motors

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

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}
71	0.75	1.0	3.9 - 3.5	0.97
80	1.5	1.0	7.5 - 6.8	0.97

3 x 208-230 V, 50/60 Hz (supply voltage Q)

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}
90	2.0	1.0	5.6-5.1	0.88
90	3.0	1.0	8.3-7.6	0.89
112	5.0	1.0	13.4-12.8	0.87
132	7.5	1.0	19.7-18.1	0.86

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

Frame size	P ₂ [hp]	Service factor	I _{1/1} [A]	Cos φ _{1/1}
90	2.0	1.15	2.7 - 2.7	0.87
90	3.0	1.15	3.7 - 3.7	0.91
112	5.0	1.15	6.1 - 6.1	0.92
132	7.5	1.15	8.9 - 8.9	0.92

Additional data for speed-controlled motors

	Single-phase	Three-phase
Electricity supply to pump	1 x 200-230 V – 10 %/+ 10 %, 50/60 Hz, PE.	3 x 460-480V – 10 %/+ 10 %, 60 Hz, PE.
Back-up fuse	Motor sizes of 0.75 to 1.5 hp: Max. 10 A. Standard as well as quick-blow or slow-blow fuses may be used.	Motor sizes of 2.0 to 7.5 hp: Max. 16 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	<ul style="list-style-type: none"> Potentiometer 0-10 VDC, 10 kΩ (via internal voltage supply). Screened cable*. Maximum cable length: 330 ft (100 m). Voltage signal 0-10 VDC, $R_i > 50$ kΩ. Tolerance: + 0 %/– 3 % at maximum voltage signal. Screened cable*. Maximum cable length: 1650 ft (500 m). Current signal DC 0-20 mA/4-20 mA, $R_i = 175$ Ω. Tolerance: + 0 %/– 3 % at maximum current signal. Screened cable*. Maximum cable length: 1650 ft (500 m). 	<ul style="list-style-type: none"> Potentiometer 0-10 VDC, 10 kΩ (via internal voltage supply). Screened cable*. Maximum cable length: 330 ft (100 m). Voltage signal 0-10 VDC, $R_i > 50$ kΩ. Tolerance: + 0 %/– 3 % at maximum voltage signal. Screened cable*. Maximum cable length: 1650 ft (500 m). Current signal DC 0-20 mA/4-20 mA, $R_i = 250$ Ω. Tolerance: + 0 %/– 3 % at maximum current signal. Screened cable*. Maximum cable length: 1650 ft (500 m).
Electricity supply to sensors	The sensors are supplied with electricity via the motor terminal box. <ul style="list-style-type: none"> 24 VDC \pm 10 %. Maximum load: 40 mA. 	The sensors are supplied with electricity via the motor terminal box. <ul style="list-style-type: none"> 24 VDC \pm 10 %. Maximum load: 40 mA.
Sensor signals	<ul style="list-style-type: none"> Voltage signal 0-10 VDC, $R_i > 50$ kΩ. Tolerance: + 0 %/– 3 % at maximum voltage signal. Screened cable*. Maximum cable length: 1650 ft (500 m). Current signal DC 0-20 mA/4-20 mA, $R_i = 175$ Ω. Tolerance: + 0 %/– 3 % at maximum current signal. Screened cable*. Maximum cable length: 1650 ft (500 m). 	<ul style="list-style-type: none"> Voltage signal 0-10 VDC, $R_i > 50$ kΩ. Tolerance: + 0 %/– 3 % at maximum voltage signal. Screened cable*. Maximum cable length: 1650 ft (500 m). Current signal DC 0-20 mA/4-20 mA, $R_i = 250$ Ω. Tolerance: + 0 %/– 3 % at maximum current signal. Screened cable*. Maximum cable length: 1650 ft (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: 1650 ft (500 m).	
Bus input	Grundfos bus protocol, GENIbus protocol, RS-485. 0.5 - 1.5 mm ² screened 2-core cable. Maximum cable length: 1650 ft (500 m).	
EMC	EN 61800-3 Note: When pumps fitted with 10 hp motors are installed in first environment (residential areas), an additional EMC filter is required to obtain class B, group 1 status. Motors of 0.75 to 1.5 hp: Electromagnetic disturbance – first environment (residential areas) – unrestricted distribution, corresponding to CISPR 11, class B, group 1. Motors of 10 hp: 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	TEFC (IP55 (IEC 34-5)).	
Insulation class	F (IEC 85).	
Ambient temperature	During operation: –4 °F to 104 °F (–20 °C to +40 °C). During storage/transport: –40 °F to 140 °F (–40 °C to +60 °C).	
Relative air humidity	Maximum 95 %.	

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

14. Customization

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 customizing the CM and CME pumps. Contact Grundfos for further information or for requests other than the ones mentioned below.

Motors

Motor with thermal protection	Grundfos offers motors with bimetallic thermal switches or temperature-controlled PTC sensors (thermistors) in the motor windings.
Oversize motor	In installations where one of the conditions mentioned below is present, the motor size must be evaluated to make sure there will be no risk of overload. <ul style="list-style-type: none"> • ambient temperatures above +131 °F (+55 °C) • liquid temperatures below +32 °F (0 °C) • installation at altitudes of more than 3300 ft (1000 meters) above sea level • use of glycol or other high-viscous liquids. Alternative motors are available on request. See more information in this section.
Undersize motor	Available on request. See more information in this section.
Terminal box position	Other terminal box positions are possible for CM pumps with MG 71 and MG 80 motors. See more information in this section.
Use of external frequency converter	For most three-phase CM pumps, a variable frequency drive (VFD) supplied by either single- or three-phase supply can be used. In many cases where an external VFD is used, it is necessary to protect the motor against voltage peaks higher than 650 V (peak value). Grundfos offers pumps with phase insulation to protect the pump against voltage peaks up to 1000 V (peak values). The supplier of the VFD must be consulted to verify the maximum voltage peaks. Grundfos CUE is a suitable VFD. See page 26.
Harting plug	Harting plugs are available for easier installation and maintenance of pumps.
High-efficiency motors	CM and CME pumps with three-phase motors ranging from 1.5 to 10 hp are available with premium efficient (IE3) motors.
Motor with anti-condensation heater	The heater keeps the motor temperature higher than the ambient temperature and prevents condensation.
Motors with PTC sensors	Built-in PTC sensors (thermistors) protect the motor against rapid as well as slow overheating. PTC sensors must be connected to an external tripping or LiqTec unit connected to the control circuit.
Motors with thermal switches	Built-in thermal switches protect the motor against rapid as well as slow overheating. Thermal switches must be connected to an external control circuit to protect the motor against slow overheating. The thermal switches require no tripping unit.
Low noise motors	Motors have the fans removed. These motors do not have UL approval.

Under- and over-size motors

The available motor sizes are shown in the 13. *Motor data* section beginning on page 74.

Undersize and oversize motors are defined as the next horsepower 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 3,280 ft (1000 meters) above sea level.
- The viscosity or density of the pumped liquid is higher than that of water.
- The ambient temperature exceeds +104 °F (+40 °C) (CME).
- The ambient temperature exceeds +131 °F (+55 °C) (CM).

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

Undersize motors can be used 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.

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. 30.

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

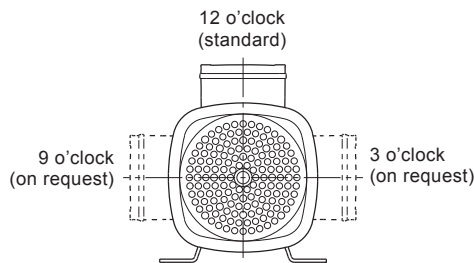


Fig. 30 Terminal box positions of frame sizes 71 and 80

TM04 0357 1008

Pumps

Low-temperature pump	<p>As standard, the CM and CME pumps can be exposed to temperatures down to -4 F (-20 °C). If required, CM and CME pumps can be delivered in a special variant for pumping liquids at -22 °F (-30 °C). These pumps have an oversize neck ring ensuring that impellers do not seize up as a result of thermal expansion. Available for CM-I and CM-G versions only. Contact Grundfos.</p>
Aggressive liquids	<p>When it is necessary to pump very aggressive liquids, the pump must be fitted with special rubber parts. It is possible to order the pumps with FKM and FFKM rubber parts.</p>
Alternative connection positions	<p>The CM and CME pumps are available with the discharge port rotated to the 3 o'clock or 9 o'clock position. This is possible on all CM-I and CM-G models and CM-A models with 71 or 80 frame motors. See more information in this section.</p>
Surface treatments	<p>CM pumps are available with several surface treatment options:</p> <ul style="list-style-type: none"> • cleaned and dried pumps • electro-polished pumps • alternative coloring. <p>See more information in this section.</p>

Alternative connection positions

The pump is available with various connection positions on special request. See fig. 31.

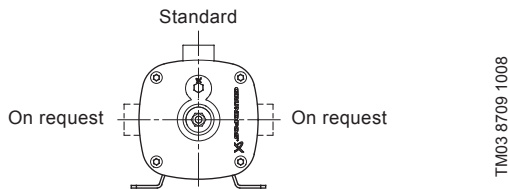


Fig. 31 Alternative connection positions

Surface treatments

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 140 °F to 158 °F (60 to 70 °C) water with a cleaning agent. All pump parts are then thoroughly rinsed in de-ionized water and air-dried. The pump is assembled without any use of silicone lubricants. Finally, the pump is packed in silicone-free plastic.

Cleaned and dried pumps are not performance-tested.

Electro-polished pumps

Electro-polished 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.

Electro-polishing 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 electro-polished in a mixture of sulphuric and phosphoric acid. Finally, the components are passivated in nitric acid.

All cast parts are polished mechanically before being electro-polished.

To meet the strict hygienic requirements to material and surface quality, we offer electro-polished stainless-steel pumps with the following surface quality:

Surface quality: Ra ≤ 0,8 µm.

Alternative coloring

All pump types and sizes are available with alternative coloring. We offer custom-built pumps in any NCS- or RAL-specified color to suit your requirements!

The paint used is water-based. Painted parts correspond to corrosion class III.

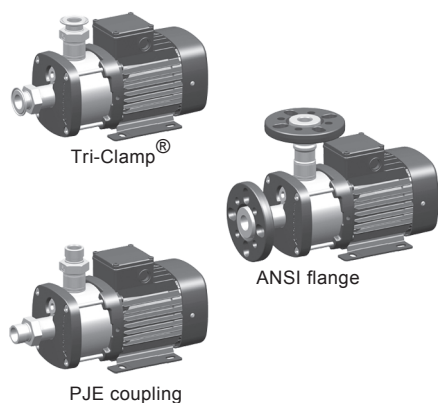
Connections and other variants

Pipe connections	<p>The CM and CME pumps can be ordered with the following pipe connections on request:</p> <ul style="list-style-type: none"> • Tri-Clamp® • DIN flange • ANSI flange • JIS flange • PJE coupling.
------------------	---

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

- internal NPT thread (standard in North America)
- Whitworth thread Rp
- Tri-Clamp® (accessory)
- ANSI flange (accessory)
- DIN flange (accessory)
- JIS flange (accessory)
- PJE coupling (accessory).

Some of the available pipe connections are shown in fig. 32.



TM04 3937 0409

Fig. 32 Examples of pipe connections

Certificates and nameplates

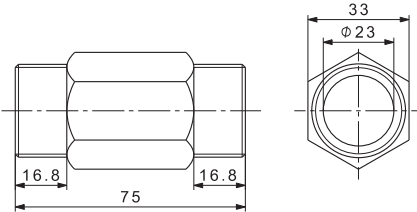
Certificates	<p>Certificate of compliance with the order</p> <p>Test certificate</p> <p>Inspection certificate</p> <p>Standard test report</p> <p>...and many more.</p>
Extra nameplate	<p>Available on request.</p>
UR-marked motor	<p>If the UL-listed product according to UL778 is not available, a pump with UR-marked motor according to UL1004 can be offered as an alternative.</p>

15. Accessories

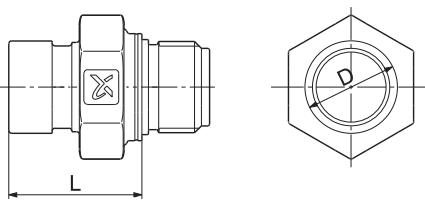
Pipework connections

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"	NPT	96587201
TM04 5800 4009				

PJE connection adapter sets for CM(E)

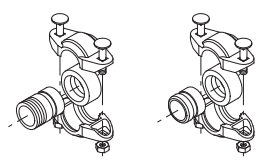
PJE connection	Pump type	Pump thread	D [mm]	L* [mm]	Product number
	CM 1 CM 3	1" x 1" NPT	33.7	48.5	96904706
	CM 5	1.25" x 1" NPT	42.4	48.5	96904709
	CM 10	1.5" x 1.5" NPT	48.3	48.5	96904712
	CM 15 CM 25	2" x 2" NPT	60.3	50.1	96904715
TM03 3865 0309					

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

PJE connector adapter sets consist of two (2) PJE connection adapters, two (2) EPDM O-rings, and two (2) FKM O-rings.

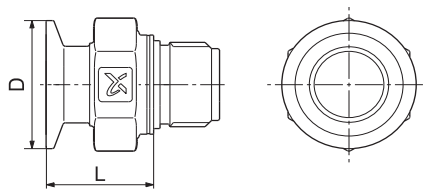
PJE coupling sets for CM(E)

Parts in contact with the pumped liquid are made of stainless steel, EN 1.4401/AISI 316, and rubber.

Coupling and pipe stub	Pump type	Pipe stub	PN	Pipework connection	Rubber parts	Number of coupling sets required	Product number	
	CM(E) 15 CM(E) 25	Threaded	1015 psi (70 bar)	2" NPT	EPDM	2	331301	
					FKM	2	01D00128	
			For welding	1015 psi (70 bar)	DN 50	EPDM	2	00339910
						FKM	2	00339917
TM00 3808 1094								

A PJE coupling set consists of two coupling halves (Victaulic, type 77), one gasket, one pipe stub (for welding or threaded), bolts and nuts.

Tri-Clamp® connections for CM(E)

Tri-Clamp®	Pump type	Pump thread	Tri-Clamp®	D [in (mm)]	L* [in (mm)]	Product number
	CM 1 CM 3	NPT	1.5"	2.0 (50.4)	1.6 (40.3)	96904707
	CM 5	NPT	1.5"	2.0 (50.4)	1.4 (35.3)	96904710
	CM 10	NPT	1.5"	2.0 (50.4)	1.5 (37.4)	96904713
	CM 15 CM 25	NPT	2"	2.5 (63.9)	1.5 (37.4)	96904716

TM04 3866 0309

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

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

Pump type	Nominal diameter [mm]	Clamping ring		Pipe stub				Gasket	
		A [in (mm)]	B [in (mm)]	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	A [in (mm)]	B [in (mm)]
CM(E) 1, 3, 5, 10	1.5 (38.0)	3.7 (92.0)	2.4 (59.5)	0.9 (21.5)	2.9 (50.5)	1.4 (35.6)	1.6 (38.6)	1.4 (35.3)	2.0 (50.5)
CM(E) 15, 25	2.0 (51.0)	4.1 (104.4)	3.0 (74.0)	0.9 (21.5)	2.6 (64.0)	2.0 (48.6)	2.1 (51.6)	1.9 (48.0)	2.6 (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 [psi (bar)]	Number of coupling sets required	Product number
CM(E) 1, 3, 5, 10	DN 32	Stainless steel	EPDM	232 (16)	2	96515374
			PTFE		2	96515375
EPDM	2		96515376			
PTFE	2		96515377			
CM(E) 15, 25	DN 50					

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	00625468

CIU communication interface units for CME



GrA 6118

Fig. 33 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 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 300	BACnet MS/TP	Contact Grundfos

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

R100 remote control



GrA5953

Fig. 34 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	00625333

Sensors for CME

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

DPI differential-pressure sensor kit	Pressure range		Product number
	[psi]	[bar]	
Kit includes:			
• 1 sensor incl. 3 ft (0.9 m) screened cable (7/16" connections)	0 - 9	0 - 0.6	96611522
• 1 original DPI bracket (for wall mounting)			
• 1 Grundfos bracket (for mounting on motor)	0 - 14.5	0 - 1.0	96611523
• 2 M4 screws for mounting of sensor on bracket			
• 1 M6 screw (self-cutting) for mounting on MGE 90/100	0 - 23	0 - 1.6	96611524
• 1 M8 screw (self-cutting) for mounting on MGE 112/132			
• 3 capillary tubes (short/long)	0 - 36	0 - 2.5	96611525
• 2 fittings (1/4" - 7/16")			
• 5 cable clips (black)	0 - 58	0 - 4.0	96611526
• Installation and operating instructions (480675)			
• Service kit instructions	0 - 87	0 - 6.0	96611527
	0 - 145	0 - 10	96611550

Pressure sensor	Measuring range		Product number
	[psi]	[bar]	
Kit includes:	0 - 87	0 - 6	91136169
Pressure sensor	0 - 145	0 - 10	91136170
Connection: 1/4" NPT	0 - 232	0 - 16	91136171
Includes a 6 ft (1.8 m) cable with removable potted plug in addition to a standard plug for remote mounting.	0 - 362	0 - 25	91136172
	0 - 580	0 - 40	91136173
	0 - 200	0 - 45	91120777

Gauges

Accessory	Measuring range	Product number
	[psi]	
Liquid filled pressure gauge • AISI 304/Copper	30" Hg - 30 psi	91123566
	0 - 60 psi	00ID8562
	0 - 100 psi	00ID8563
	0 - 160 psi	00ID8564
	0 - 200 psi	00ID8565
	0 - 300 psi	00ID8566
	0 - 400 psi	00ID8567
	0 - 600 psi	00ID8568
	30" Hg - 30 psi	91130835
	0 - 30 psi	00ID8569
Liquid filled pressure gauge • AISI 316	0 - 60 psi	00ID8570
	0 - 100 psi	00ID8571
	0 - 160 psi	00ID8572
	0 - 200 psi	00ID8573
	0 - 300 psi	00ID8574
	0 - 400 psi	00ID8575
	0 - 600 psi	00ID8576

MP 204 motor protector



TM03 1471 2205

Fig. 35 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 ($\cos \varphi$)
- current unbalance.

Warnings

- Overload
- underload
- temperature
- overvoltage
- undervoltage
- power factor ($\cos \varphi$)
- run capacitor (single-phase operation)
- starting capacitor (single-phase operation)
- loss of communication in network
- harmonic distortion.

Learning function

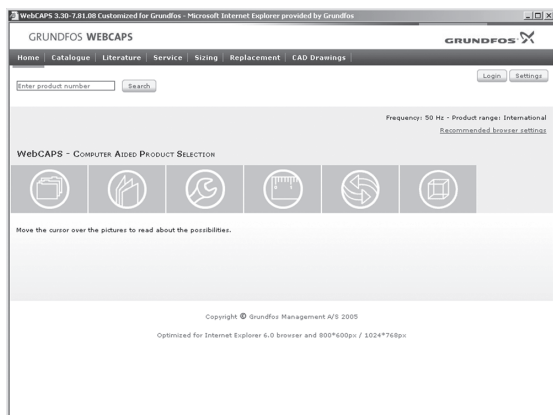
- Phase sequence (three-phase operation)
- run capacitor (single-phase operation)
- starting capacitor (single-phase operation)
- identification and measurement of Pt100/Pt1000 sensor circuit.

Product number

Description	Product number
MP 204 motor protection	96079927

16. Further product documentation

WebCAPS

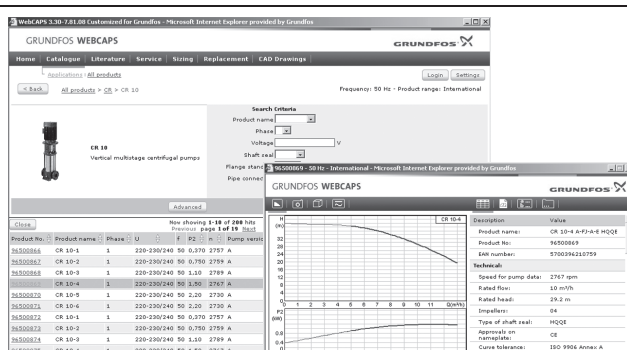


WebCAPS is a **Web-based Computer Aided Product Selection** program available on www.grundfos.com.

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

In WebCAPS, all information is divided into 6 sections:

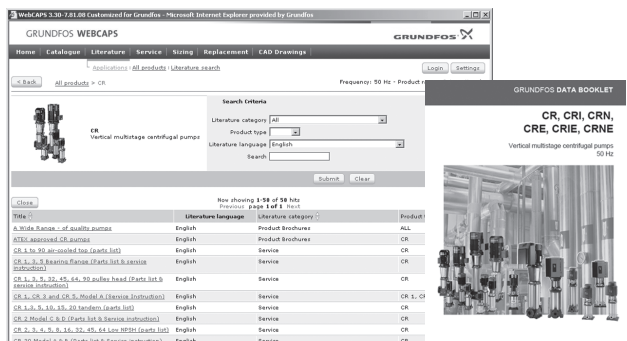
- Catalog
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalog

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

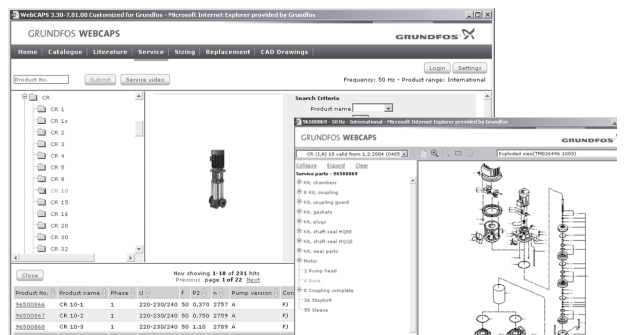
- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

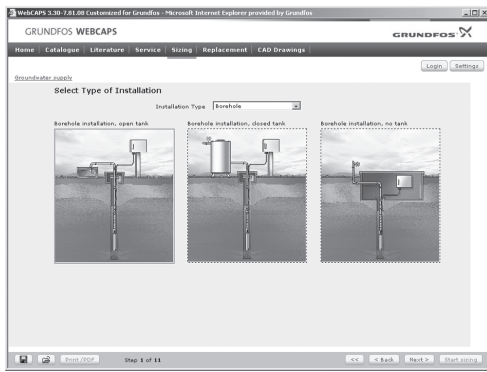
- product guides
- installation and operating instructions
- service documentation, such as Service kit catalog and Service kit instructions
- quick guides
- product brochures, etc.



Service

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

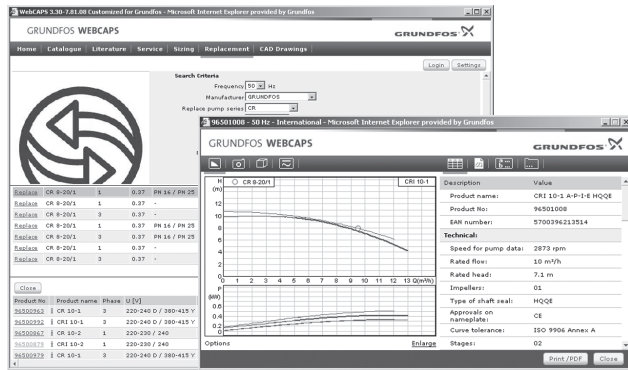
Furthermore, this section contains service videos showing you how to replace service parts.



Sizing

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

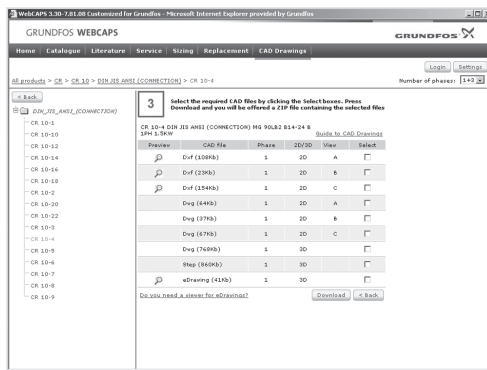
- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications,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



Replacement

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

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



CAD drawings

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

These formats are available in WebCAPS:

- 2-dimensional drawings:
- .dxf, wireframe drawings
 - .dwg, wireframe drawings.
- 3-dimensional drawings:
- .dwg, wireframe drawings (without surfaces)
 - .stp, solid drawings (with surfaces)
 - .eprt, E-drawings.

WinCAPS



Fig. 36 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

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

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





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GRUNDFOS Pumps Corporation
17100 West 118th Terrace
Olathe, Kansas 66061
Phone: +1-913-227-3400
Telefax: +1-913-227-3500

GRUNDFOS Canada Inc.
2941 Brighton Road
Oakville, Ontario L6H 6C9
Canada
Phone: +1-905 829 9533
Telefax: +1-905 829 9512

Bombas GRUNDFOS de Mexico S.A. de C.V.
Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto
Apodaca, N.L. Mexico 66600
Phone: +52-81-8144 4000
Telefax: +52-81-8144 4010

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