NORDIK PUMPS

Horizontal Multistage Centrifugal Pump

Introduction

CM,SHM,SEM series non self-priming horizontal multistage centrifugal pump drives the fluid to rotate to complete the liquid transportation with the centrifugal force produced by the impeller of the rotary pump. The series is equipped with non-standard customized motor, which mounted on the same motor shaft to connect the impeller, diffuser and mechanical seal tightly, and is installed on the bottom plate for connection.

CM,SHM,SEM series horizontal multi-stage centrifugal pump with back pullout construction adopts the structure design of axial thread inlet and radial thread outlet. Its balanced impeller reduces the axial thrust of motor bearing and prolongs the service life of motor bearing. According to the special application and installation mode of household, industrial and construction service market, three design schemes of SHM, SEM, CM series provide a variety of solutions to meet different usage habits.

The CM series is compact in design: it is directly connected to the motor flange through a separate stainless steel inlet body, and the O-ring is used as the sealing casing pipe to reduce the possibility of leakage.

The segmental design of SHM, SEM series: the O-ring externally mounted diffuser is tightly closed by the pull rod and screwed to the motor flange.

Motor

- Totally enclosed, fan-cooled, 2-pole standard motors
- Enclosure class: IP55
- Insulation class: F
- Voltage: 3x220-240/380-415V
  1x220-240V
- Available with single-phase motors(0.37kW-2.2kW)

Liquid temperature °C

- Normal temperature pump: -15°C to +70°C
- Hot temperature pump: -15°C to +105°C

Performance curves

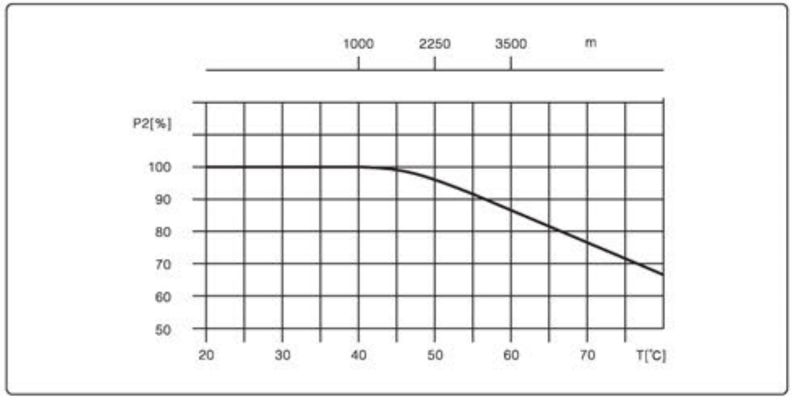
- The motors used for the measurements are based on 2900rpm or 2950 rpm
- Tolerances to ISO 9906
- Measurements have been made with airless water at a temperature of 20 °C
- The curves apply to the following kinematic viscosity: =1 mm²/s
- Select a best efficiency of the pump which is operating within the bold curve of the pump performance.

Pump operating conditions

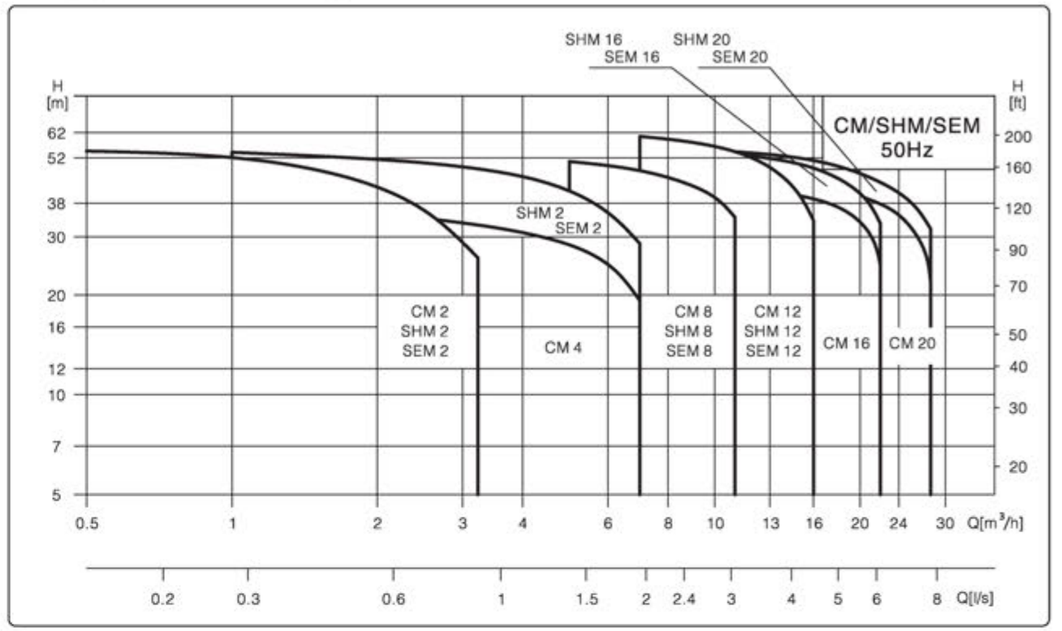
- Pumping liquids which are thin, clean, non-flammable, non-combustible or non-explosive liquids, not containing solid particles or fibers.
- Maximum ambient temperature: +40 °C
- Maximum altitude above sea level: 1000 m

Ambient temperature

If the ambient temperature exceeds the 40 °C or the pump is installed at an altitude exceeding 1000 m, the motor output power P2 will decrease. In such cases, it necessary to use a motor with a higher rated output.



Pump performance range



Minimum inlet pressure, NPSH

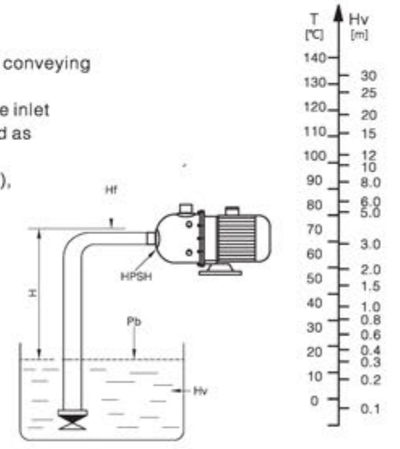
Cavitation may occur if the following conditions exist during the operation of the water pump:

- The water tank or pool is lower than the water pump inlet;

High liquid temperature;

- Actual flow significantly greater than rated flow;
- Pressure in the pump lower than the vaporization pressure of the conveying liquid.
- To avoid cavitation, make sure there is a minimum pressure on the inlet side of the pump. The maximum suction rage H (m) can be calculated as follows:

Pb=Atmospheric pressure (atmospheric pressure can be set to 1bar), in closed system, Pb is system pressure
Hf=Net positive suction head (can be read from the maximum possible flow rate of the pump on the NPSH curve)
Hf=Pipeline loss at inlet
Hv=Vaporization pressure
Hs=Safety margin=Minimum 0.5m head
If the calculated value of H is positive, the pump can be operated at the maximum suction rage H.
If the calculated H is negative, there must be a head with minimum inlet pressure H.



Minimum inlet pressure

Model specification

CM2/4/8/12/16/20

C M 4 - 40

- Horizontal multistage centrifugal pump
- Compact in design
- Rated capacity
- Number of stages×10

Applications

Water supply
- Water filter
- Supercharging
- Pressurization of hotels
- Industrial pressurization

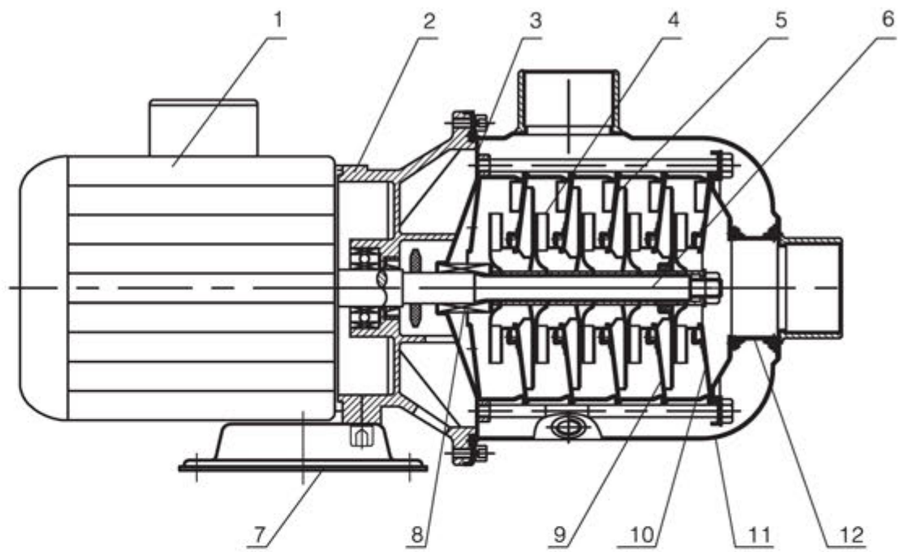
Industrial boosting
- Cleaning system
- High pressure flushing system
- Firefighting system
- Car cleaning equipment

Industrial liquid transport
- Cooling air conditioning system
- Boiler feed water
- Condensing system and cooling tower
- Machine tool cooling lubrication system

Water treatment
- Ultrafiltration system
- Reverse osmosis system
- Distillation system
- Separator
- Swimming pool

Irrigation
- Regional irrigation
- Sprinkler irrigation
- Drip irrigation
- Greenhouse irrigation

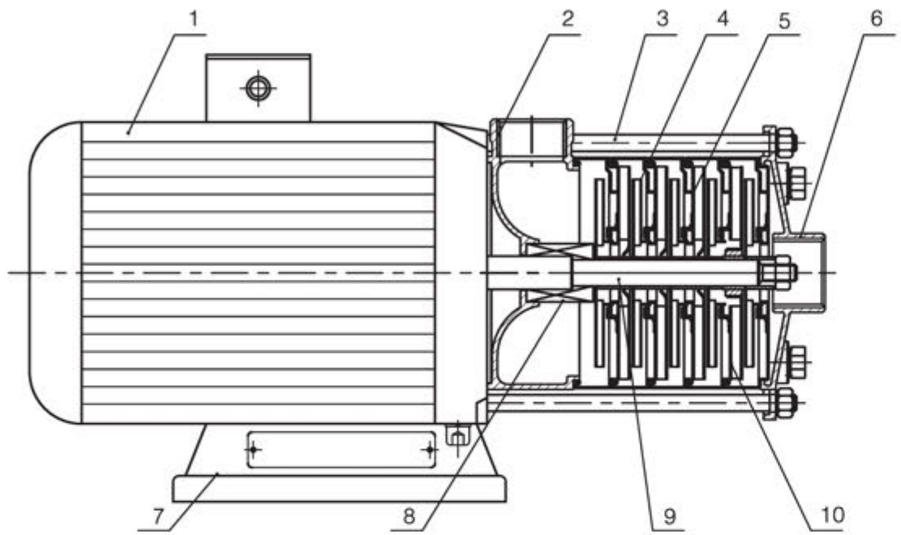
Structure CM2,4,8,12,16,20



Materials CM2,4,8,12,16,20

No.	Spare parts	Material	GB	EN/DIN	AISI/ASTM
1	Motor	/	/	/	/
2	Motor front cover	Aluminum alloy	/	/	/
3	Seal seat	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
4	Impeller	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
5	Diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
6	Extend shaft	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
7	Bottom seat	Steel	/	/	/
8	Mechanical seal	/	/	/	/
9	Support diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
10	Inlet diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
11	Chamber	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
12	Inlet pipe	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304

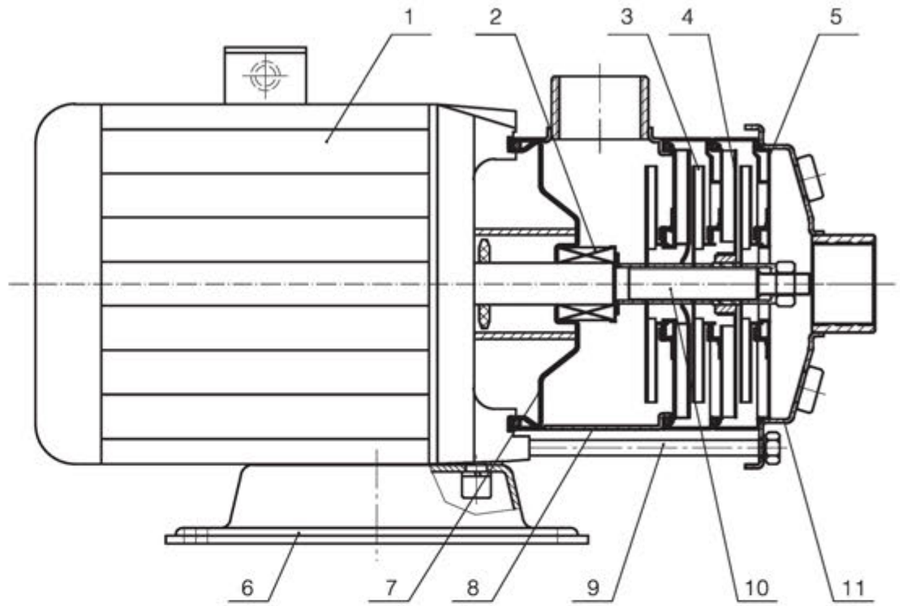
Structure SHM2,4,8,12,16,20



Materials SHM2,4,8,12,16,20

No.	Spare parts	Material	GB	EN/DIN	AISI/ASTM
1	Motor	/	/	/	/
2	Outlet	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
3	Tie rod	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
4	Impeller	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
5	Diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
6	Inlet	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
7	Bottom seat	Steel	/	/	/
8	Mechanical seal	/	/	/	/
9	Extend shaft	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
10	Support diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304

Structure SEM2,4,8,12,16,20



Materials SEM2,4,8,12,16,20

No.	Spare parts	Material	GB	EN/DIN	AISI/ASTM
1	Motor	/	/	/	/
2	Outlet	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
3	Tie rod	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
4	Impeller	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
5	Diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
6	Inlet suction	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
7	Bottom seat	Steel	/	/	/
8	Mechanical seal	/	/	/	/
9	Extend shaft	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304
10	Support diffuser	Stainless steel	GB/T20878-06Cr19Ni10	EN 10088-1.4301	AISI304

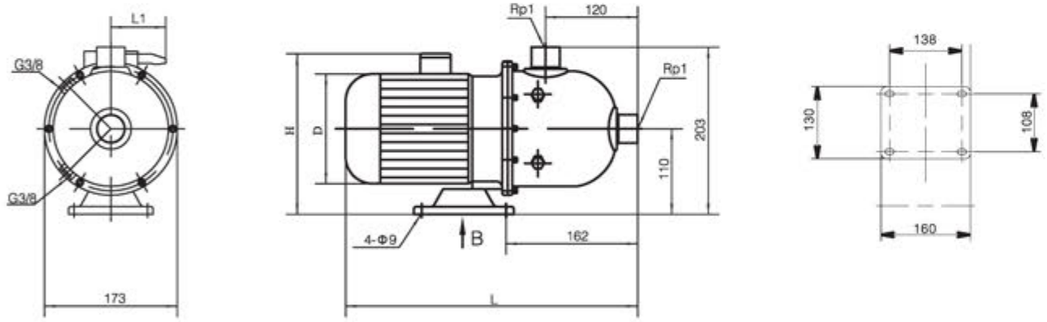
CM Proudct range introduction

Parameter	CM2	CM4	CM8	CM12	CM16	CM20
Rated flow rate [m^3/h]	2	4	8	12	16	20
Rated flow rate [l/s]	0.56	1.1	2.2	3.3	4.4	5.6
Flow rate [m^3/h]	0.6~3.2	1~7	5~11	7~16	8~22	10~28
Flow rate [l/s]	0.17~0.89	0.28~1.9	1.39~3	1.9 ~4.4	2.2~6.1	2.8~7.8
Maximum pressure [bar]	5.3	3.7	5	6	3.9	3.9
Power [kW]	0.37~0.75	0.37~0.75	0.75~2.2	1.2~3	2.2~3	2.2~4
Temperature range [℃]	-15~105					
Highest efficiency [%]	46	58	62	63	66	69
Thread connection						
Outlet	Rp1	Rp1	Rp2	Rp2	Rp2	Rp2
Inlet	Rp1	Rp1$\frac{1}{4}$	Rp2	Rp2	Rp2	Rp2

Performance data

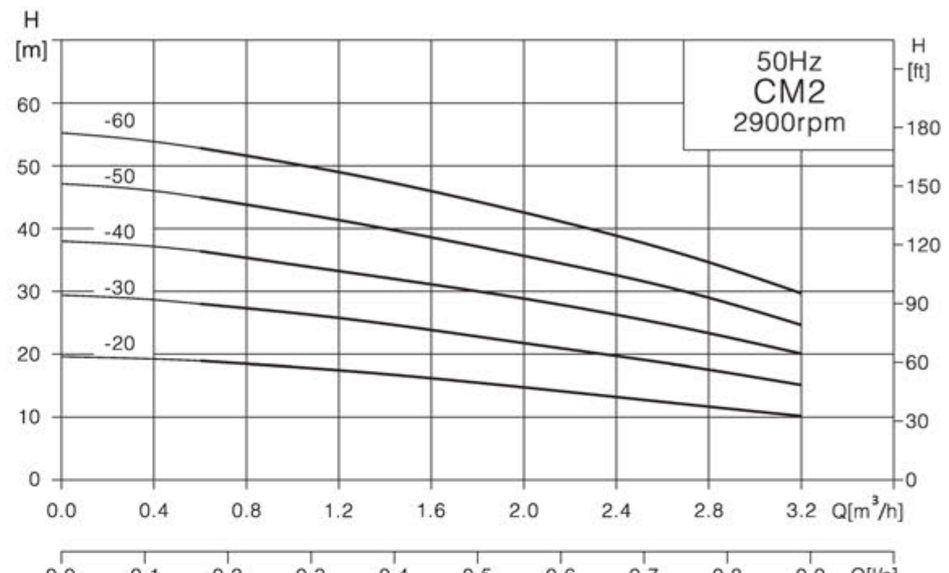
Model	Power (kW)	Power (HP)	Q (m^3/h)	0.6	1.2	1.6	2	2.4	2.8	3.2
CM2-20	0.37	0.5	H (m)	18.6	17.6	16	15	13.5	10.6	9.3
CM2-30	0.37	0.5		27.7	26	24	22	19.5	16.5	13.5
CM2-40	0.55	0.75		35.7	34	32	29	25.5	23.5	19
CM2-50	0.55	0.75		45	42	39	36	33	28	24.5
CM2-60	0.75	1		53	50	47.5	43.5	39	34	29.5

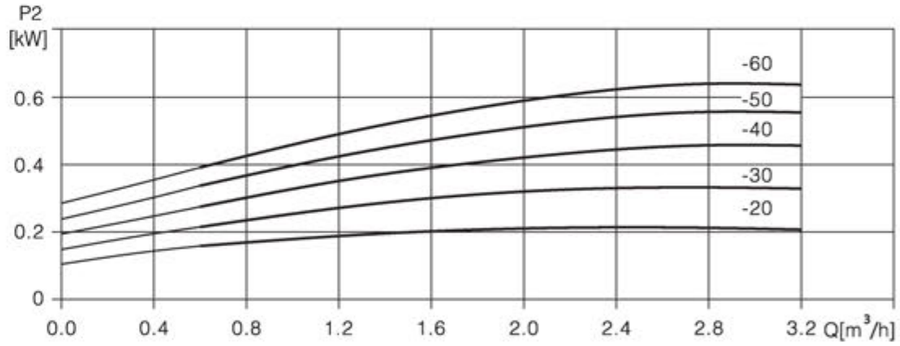
Installation dimensions and weight

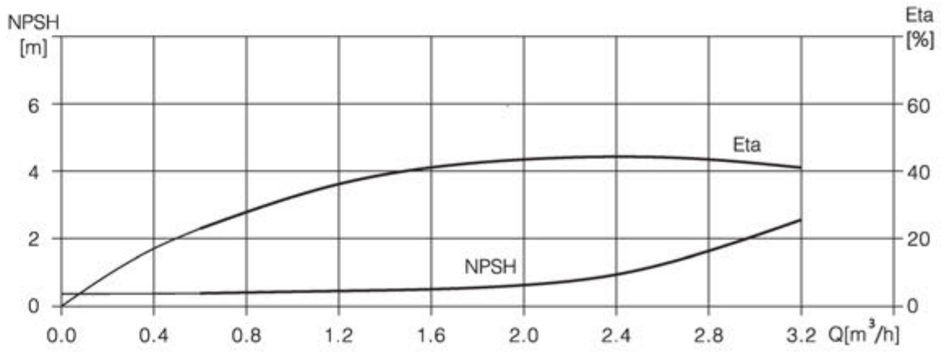


Motor	Model	Dimension (mm) L	D	H	L1	Weight (kg)
3ph/1ph	CM2-20	400	140	215/230	/96	13
	CM2-30	400	140	215/230	/96	13
	CM2-40	400	140	215/230	/96	13
	CM2-50	400	140	215/230	/96	13
	CM2-60	435	155	225/245	/100	14

Performance cruve



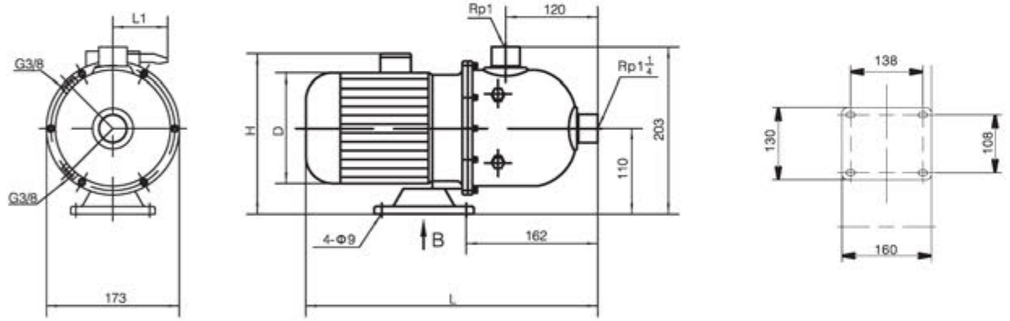




Performance data

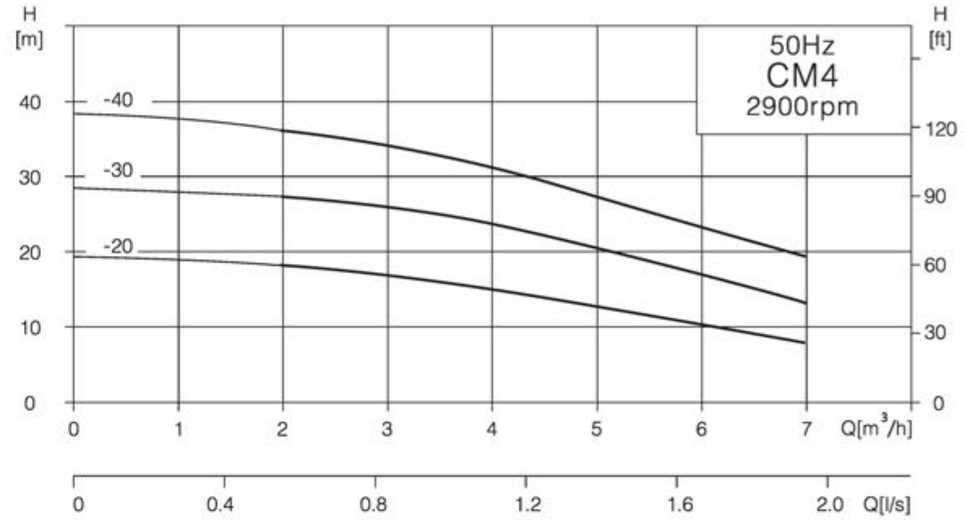
Model	Power		Q (m^3/h)	1	2	3	4	5	6	7
	(kW)	(HP)								
CM4-20	0.37	0.55	H (m)	19	18	17	15	12.5	10	7.5
CM4-30	0.55	0.75		28	27	26	23.5	20.5	17	13
CM4-40	0.75	1		37.5	36	34	31	27	23	19

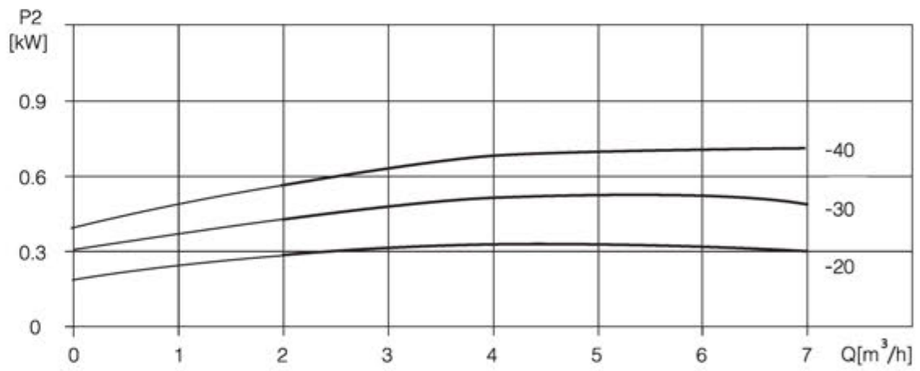
Installation dimensions and weight

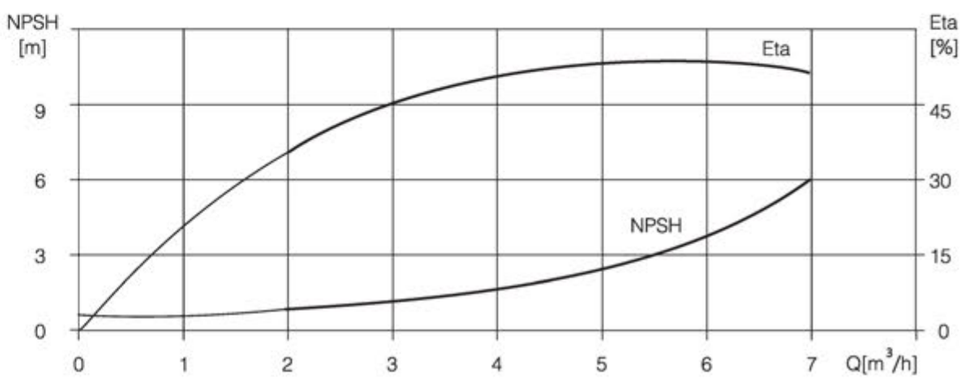


Motor	Model	Dimension (mm)				Weight (kg)
		L	D	H	L1	
3ph/1ph	CM4-20	400	140	215/230	/96	12
	CM4-30	400	140	215/230	/96	13
	CM4-40	435	155	225/245	/100	15

Performance cruve



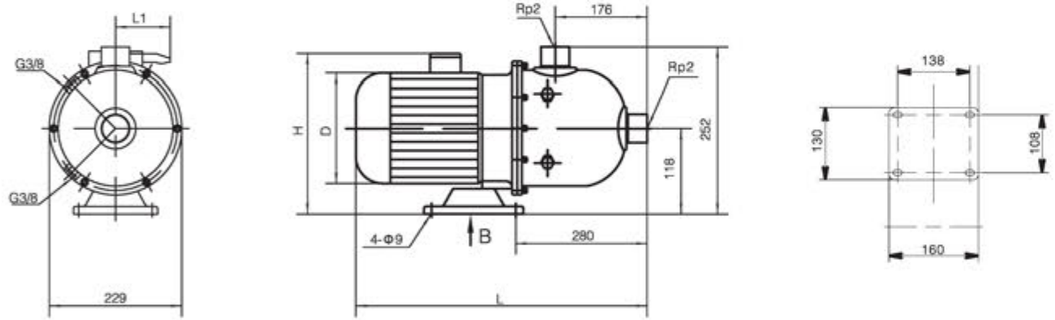




Performance data

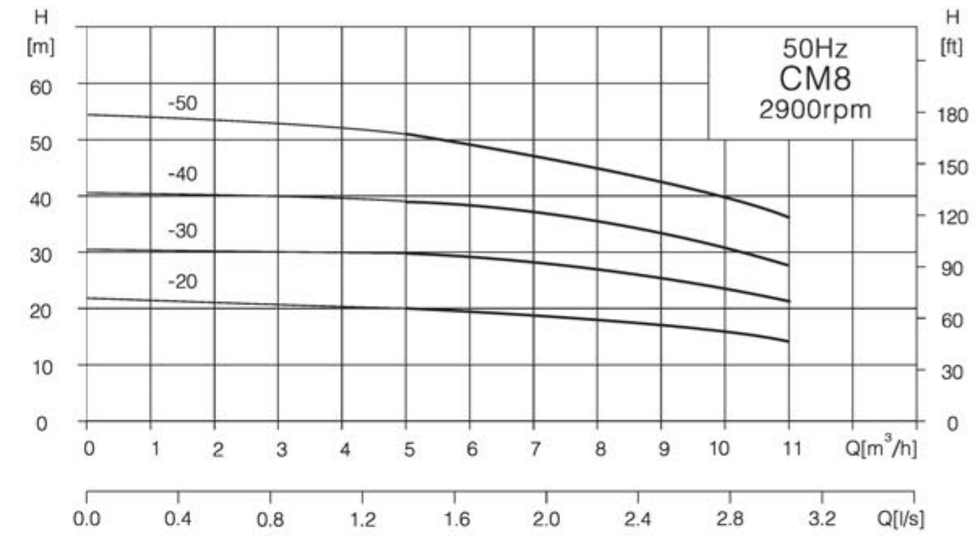
Model	Power (kW)	Power (HP)	Q (m^3/h)	5	6	7	8	9	10	11
CM8-20	0.75	1	H (m)	19.5	19	18.5	17.5	16.5	15	13.5
CM8-30	1.1	1.5		29	28.5	27.5	26.5	24	22	20
CM8-40	1.5	2		39	38	36.5	35	32	29.5	26
CM8-50	2.2	3		50.5	49	46.5	44	41	38	33

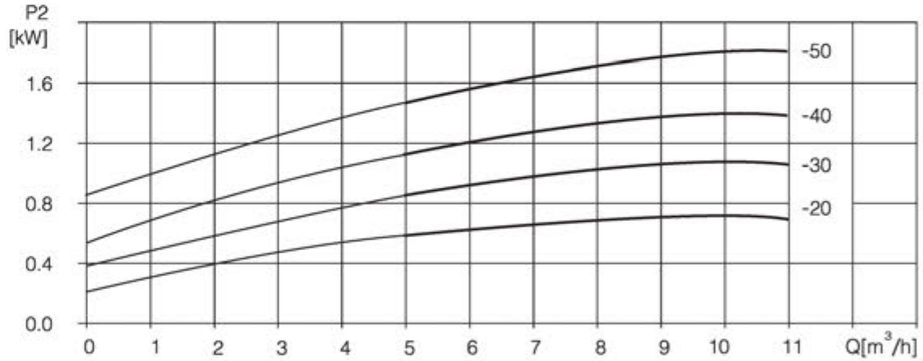
Installation dimensions and weight

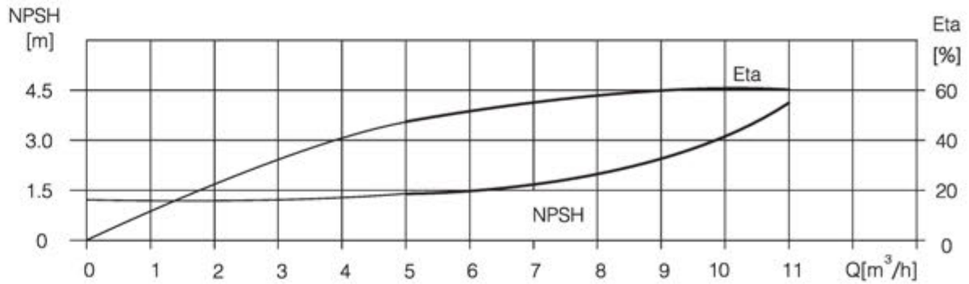


Motor	Model	Dimension (mm) L	D	H	L1	Weight (kg)
3ph/1ph	CM8-20	560	170	230/265	/100	20
	CM8-30	560	170	230/265	/100	23
	CM8-40	580	180	240/270	/100	25
	CM8-50	580	180	240/270	/100	29

Performance cruve



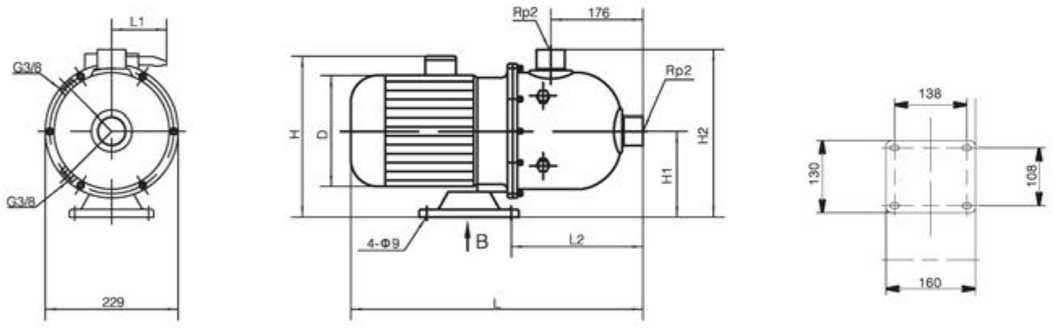




Performance data

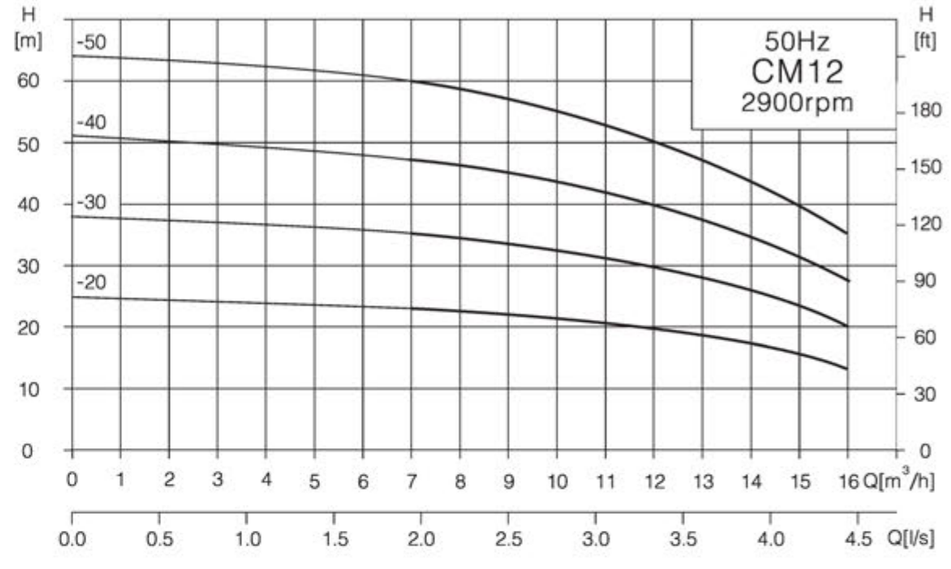
Model	Power		Q (m^3/h)	7	9	11	12	13	15	16
	(kW)	(HP)								
CM12-20	1.2	1.6	H (m)	23	22	20.5	19.5	18.5	15.5	13
CM12-30	1.8	2.4		35	33.5	31	29.5	28	23.5	20
CM12-40	2.4	3.3		47	45	41.5	39.5	37.5	31.5	27.5
CM12-50	3	4		60	56.5	52.5	50	47	40	35

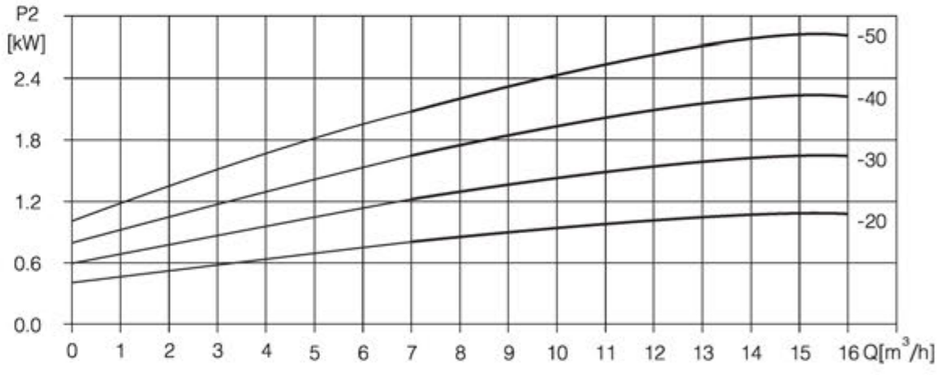
Installation dimensions and weight

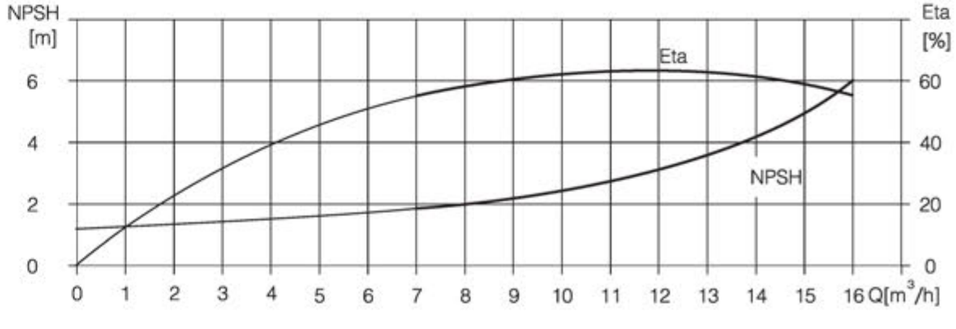


Motor	Model	Dimension (mm)							Weight (kg)
		L	L1	L2	H	H1	H2	D	
3ph/1ph	CM12-20	560	/100	280	230/265	118	252	170	21
	CM12-30	580	/100	280	240/270	118	252	170	25
	CM12-40	580	/100	280	240/270	118	252	180	28
	CM12-50	610		270	270/	126	261	180	33

Performance cruve



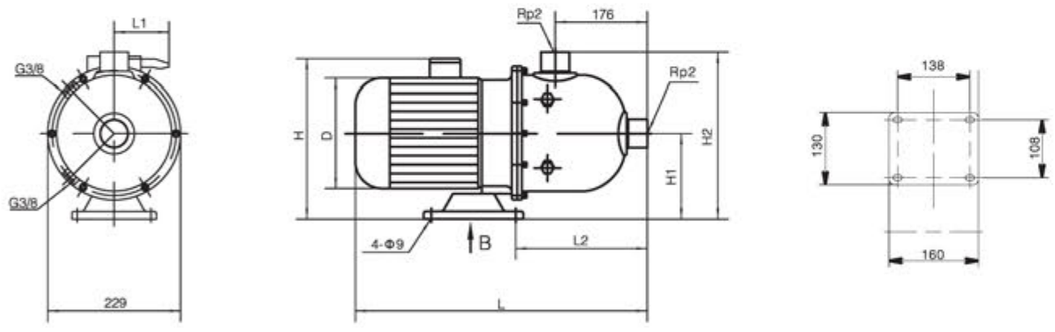




Performance data

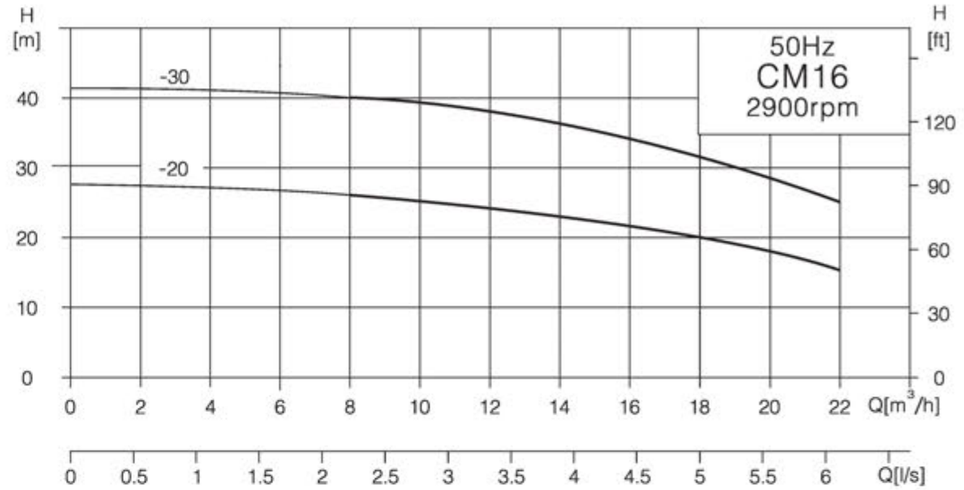
Model	Power		Q (m^3/h)	8	10	12	14	16	18	20	22
	(kW)	(HP)									
CM16-20	2.2	3	H (m)	26	25	24	23	21.6	20	18	15.5
CM16-30	3	4		40	39	38	36	34	31.5	29	25

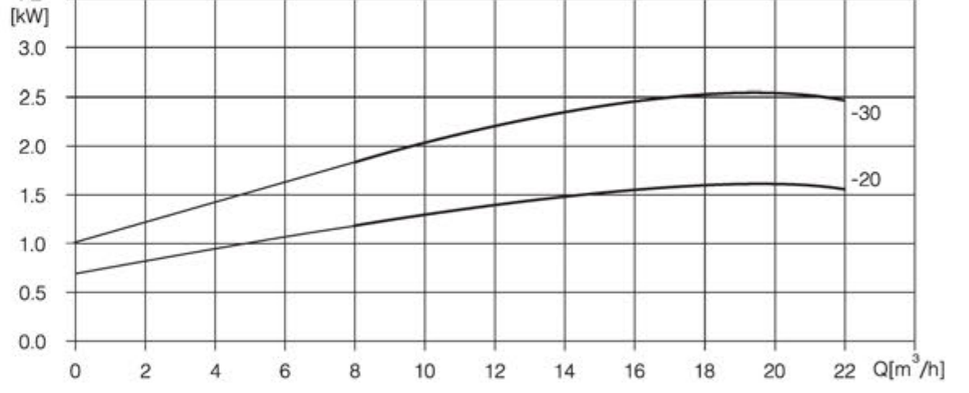
Installation dimensions and weight

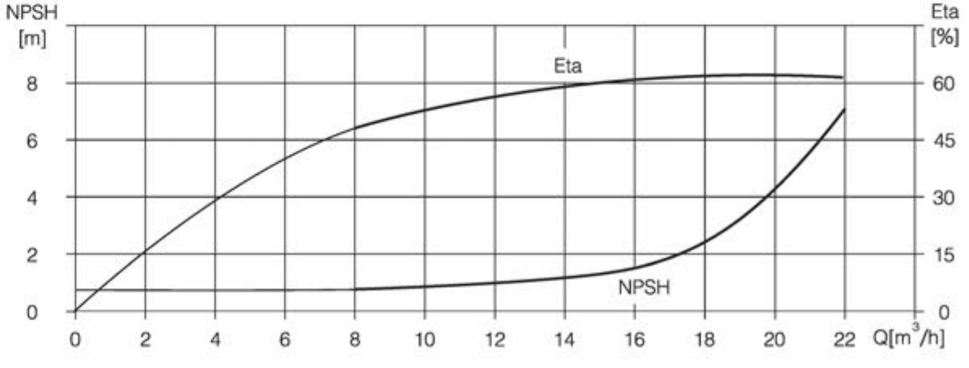


Motor	Model	Dimension (mm)							Weight (kg)
		L	L1	L2	H	H1	H2	D	
3ph/1ph	CM16-20	580	/100	280	240/270	118	252	180	26
	CM16-30	610		270	270/	126	261	195	33

Performance cruve



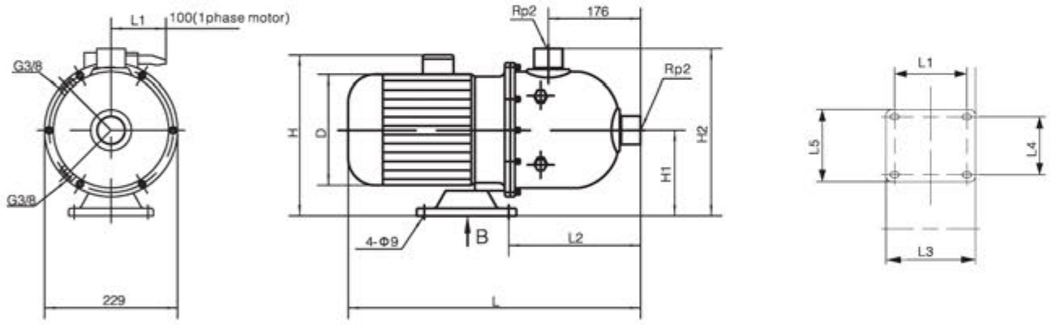




Performance data

Model	Power		Q (m^3/h)	10	14	16	18	20	22	24	28
	(kW)	(HP)									
CM20-20	2.2	3	H (m)	27	25.5	25	23.5	22	20.5	18.5	14.5
CM20-30	4	5.5		39.5	38	37.5	35.5	34	31	29	23

Installation dimensions and weight



Model	Dimension (mm)											Weight (kg)
	L	L1	L2	L3	L4	L5	H 3ph	H 1ph	H1	H2	D	
CM20-20	580	138	280	160	108	130	240	270	118	252	180	28
CM20-30	650	140	360	170	190	230	270		120	261	220	41

Performance cruve