

CM, CME

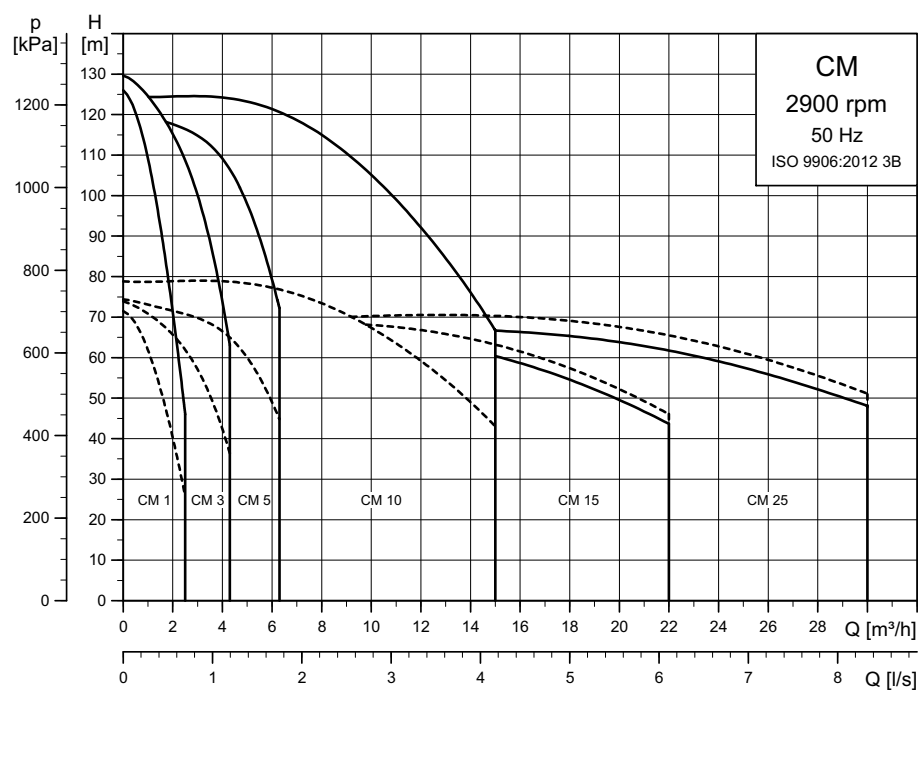
Horizontal, multistage centrifugal pumps

50/60 Hz



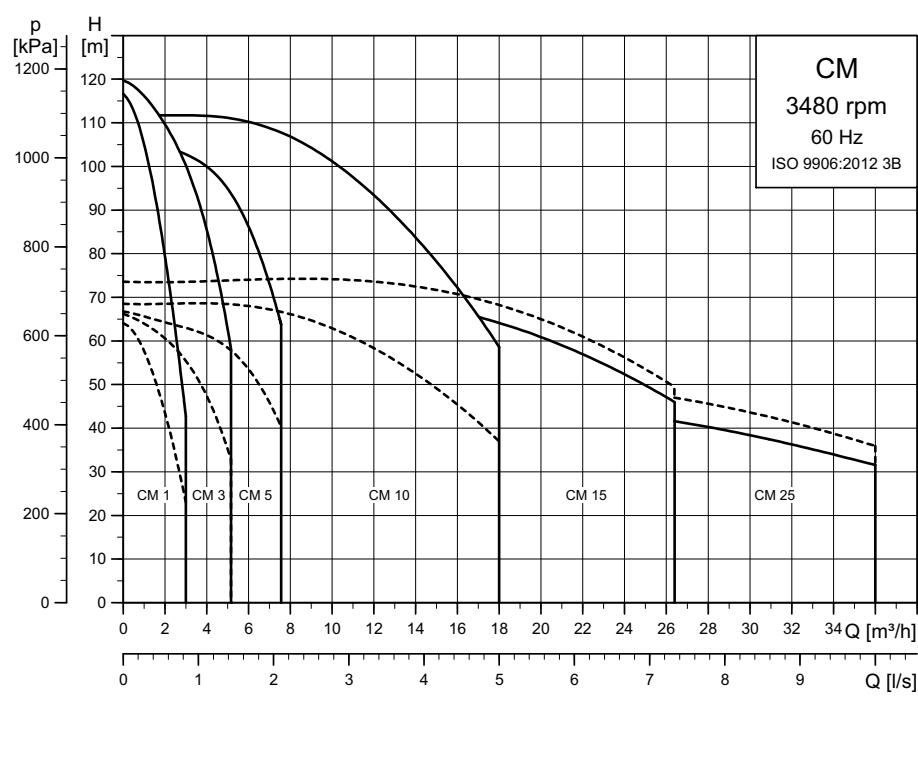
7. Performance range

CM, 50 Hz



TM04 3340 4616

CM, 60 Hz



TM04 3369 4616

8. Operating conditions

Ambient temperature

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

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

Minimum ambient temperature [°C]	Maximum ambient temperature [°C]	Liquid temperature [°C]	Pump type		
			CM	CM self-priming	CME ¹⁾
-20 °C ²⁾	55 °C	60 °C	•	•	-
	55 °C	90 °C	•	-	-
	50 °C	100 °C ¹⁾	•	-	•
	45 °C	110 °C ¹⁾	•	-	•
	40 °C	120 °C ¹⁾	•	-	•

¹⁾ CME (supply voltages S, T, U)

²⁾ Pumps for ambient temperatures below -20 °C are available on request.

CM mains-operated motors

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

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

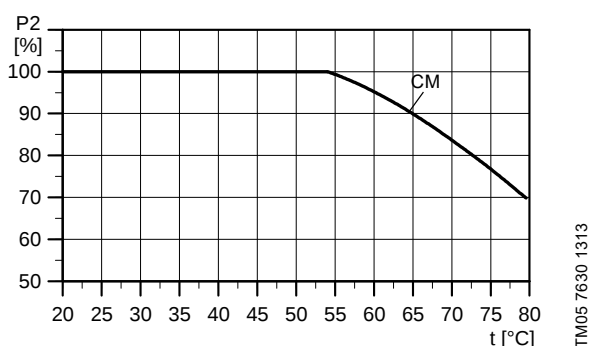


Fig. 10 Derating of CM pump, in relation to ambient temperature

CME speed-controlled motors

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

Maximum ambient temperature

CME, supply voltages S, T, U:

50 °C.

CME 0.37 to 7.5 kW, supply voltage V:

40 °C.

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

Storage and transport temperature

-30 to +60 °C.

Maximum operating pressure and permissible liquid temperature

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

CM, CME pumps

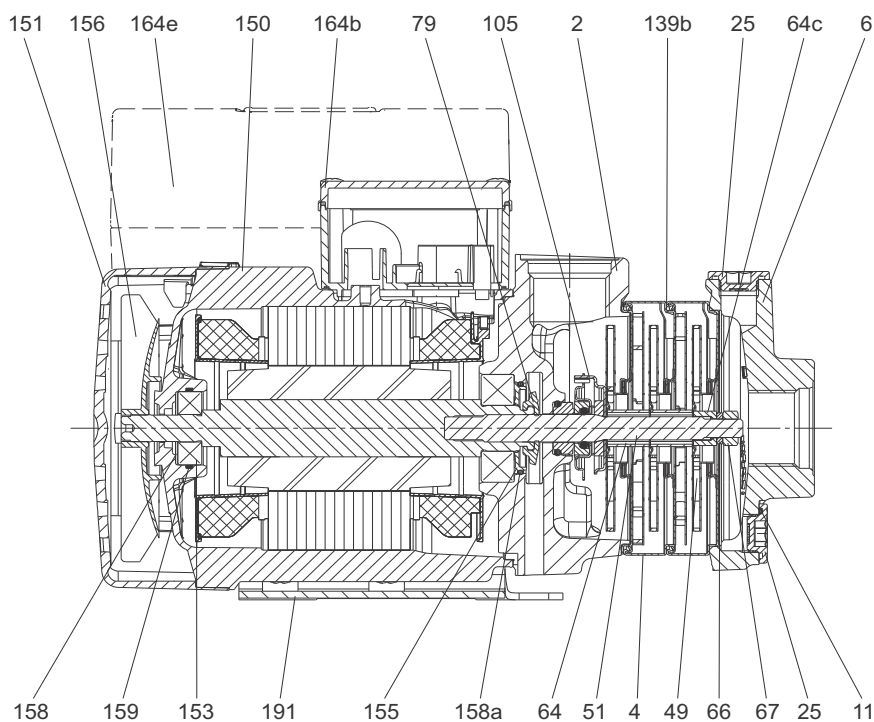
Material variant	Shaft seal	Permissible liquid temperature ¹⁾ [°C]	Maximum operating pressure [bar]
Cast iron (EN-GJL-200)	AVBx	-20 - +40 +41 - +90	10 6
	AQQx/AQBx	-20 - +90	10
	RUUx	-20 - +60	6
Stainless steel (EN 1.4301 / AISI 304)	AVBx	-20 - +40 +41 - +90	10 6
	AQQx/AQBx	-20 ²⁾ - +90 +91 - +120	16 10
	AUQX	-20 ²⁾ - +90	16
	RUUx	-20 - +60	6
Stainless steel (EN 1.4401 / AISI 316)	AVBx	-20 - +40 +41 - +90	10 6
	AQQx/AQBx	-20 ²⁾ - +90 +91 - +120	16 10
	AUQX	-20 ²⁾ - +90	16
	RUUx	-20 - +60	6

CM self-priming pumps

Material variant	Shaft seal	Permissible liquid temperature ¹⁾ [°C]	Max. operating pressure [bar]
Stainless steel (EN 1.4301 / AISI 304)	AVBx	0-40 41-60	10 6
	AQQx	0-60	16

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

²⁾ CM-I, -G and CME-I, -G pumps for liquid temperatures below -20 °C are available on request. Please contact Grundfos.

CM, CME 1-A**(A = cast iron EN-GJL-200)****Sectional drawing****Fig. 23** CM, CME 1-3 with MG, MGE 71 motor

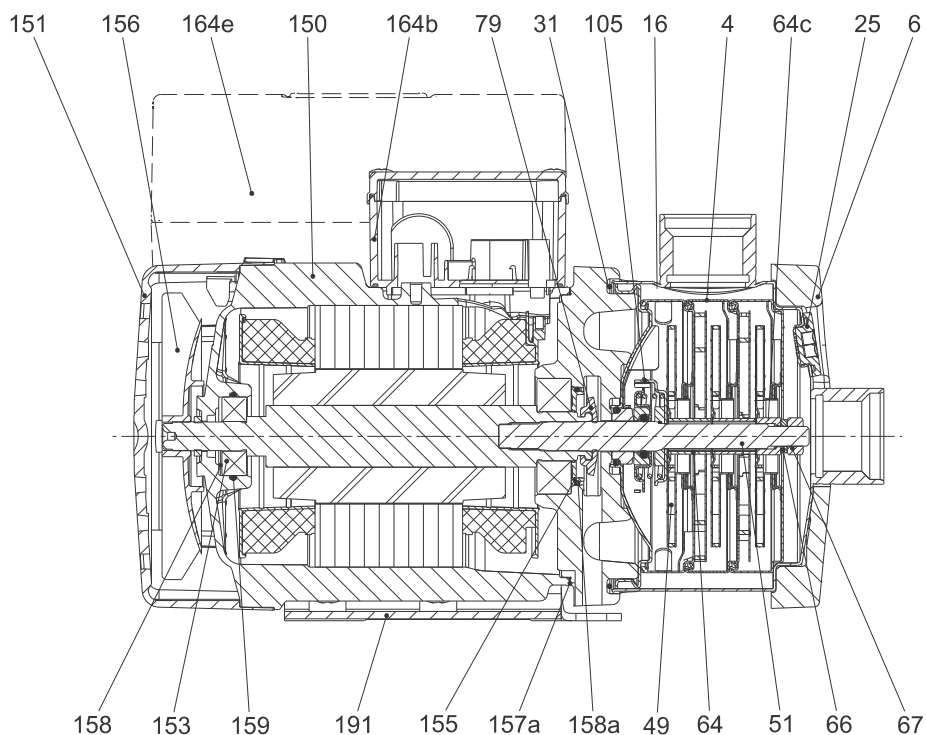
TM04 3723 1920

Components

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

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

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

Sectional drawing

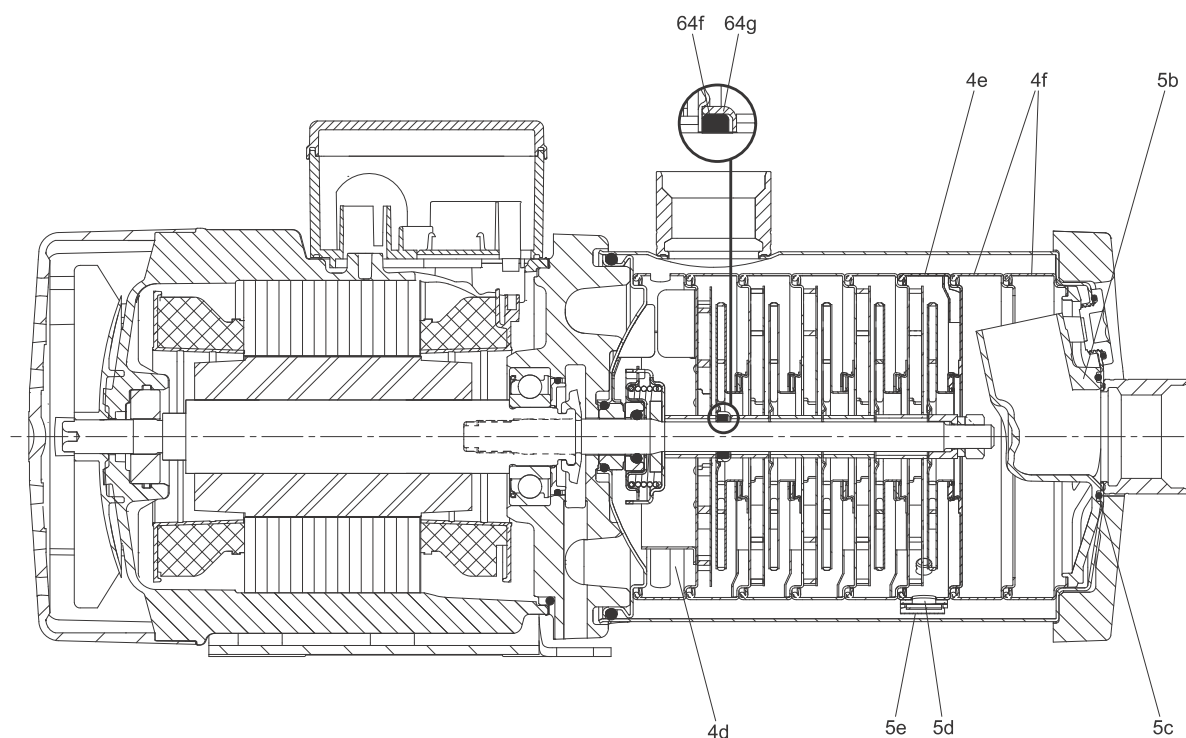
TM04 3722 3809

Fig. 24 CM, CME 1-3 with MG, MGE 71 motor**Components**

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

CM self-priming

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

Sectional drawing

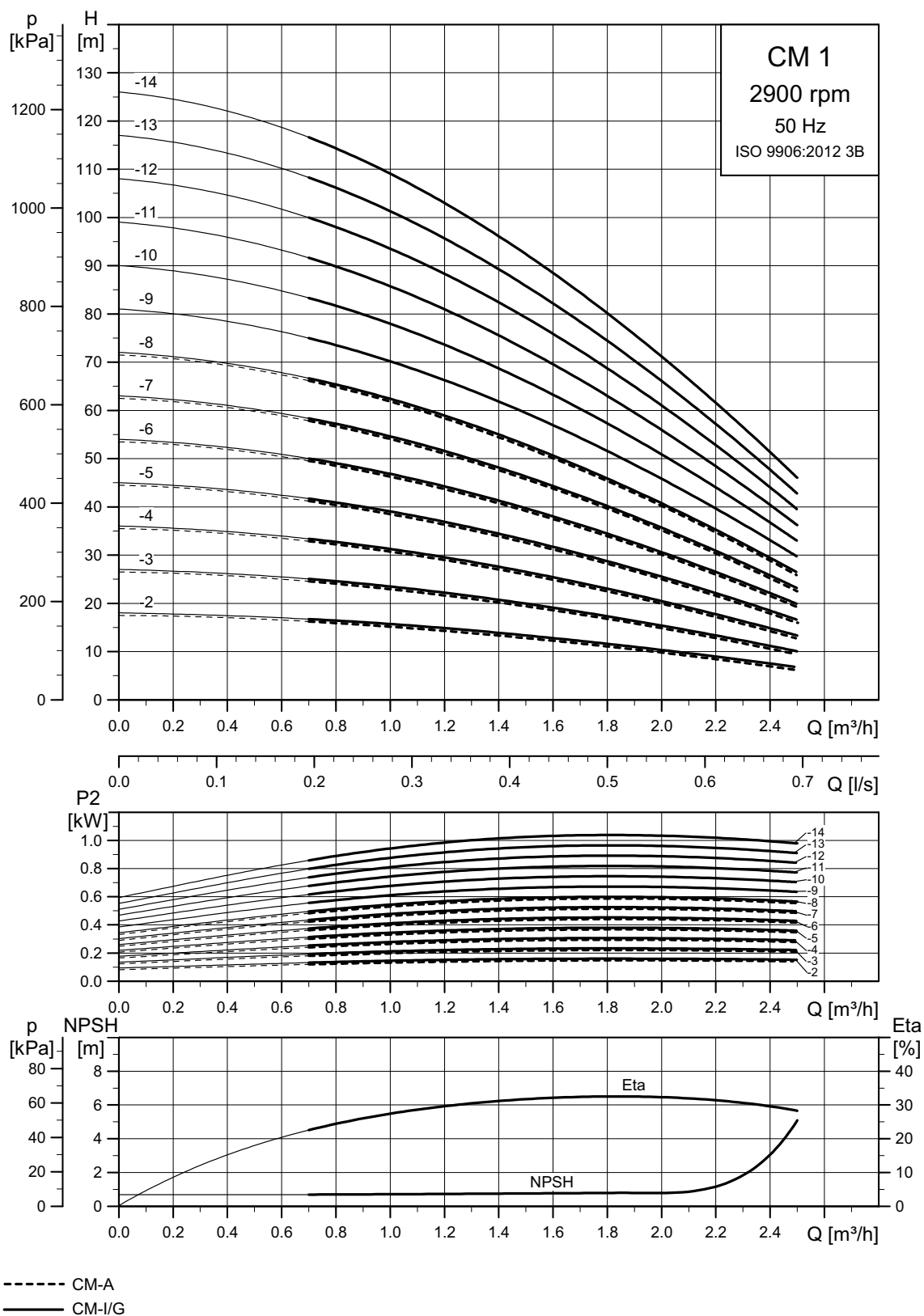
TM05 8874 2813

Fig. 25 CM 1-3 (self-priming version)**Components**

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

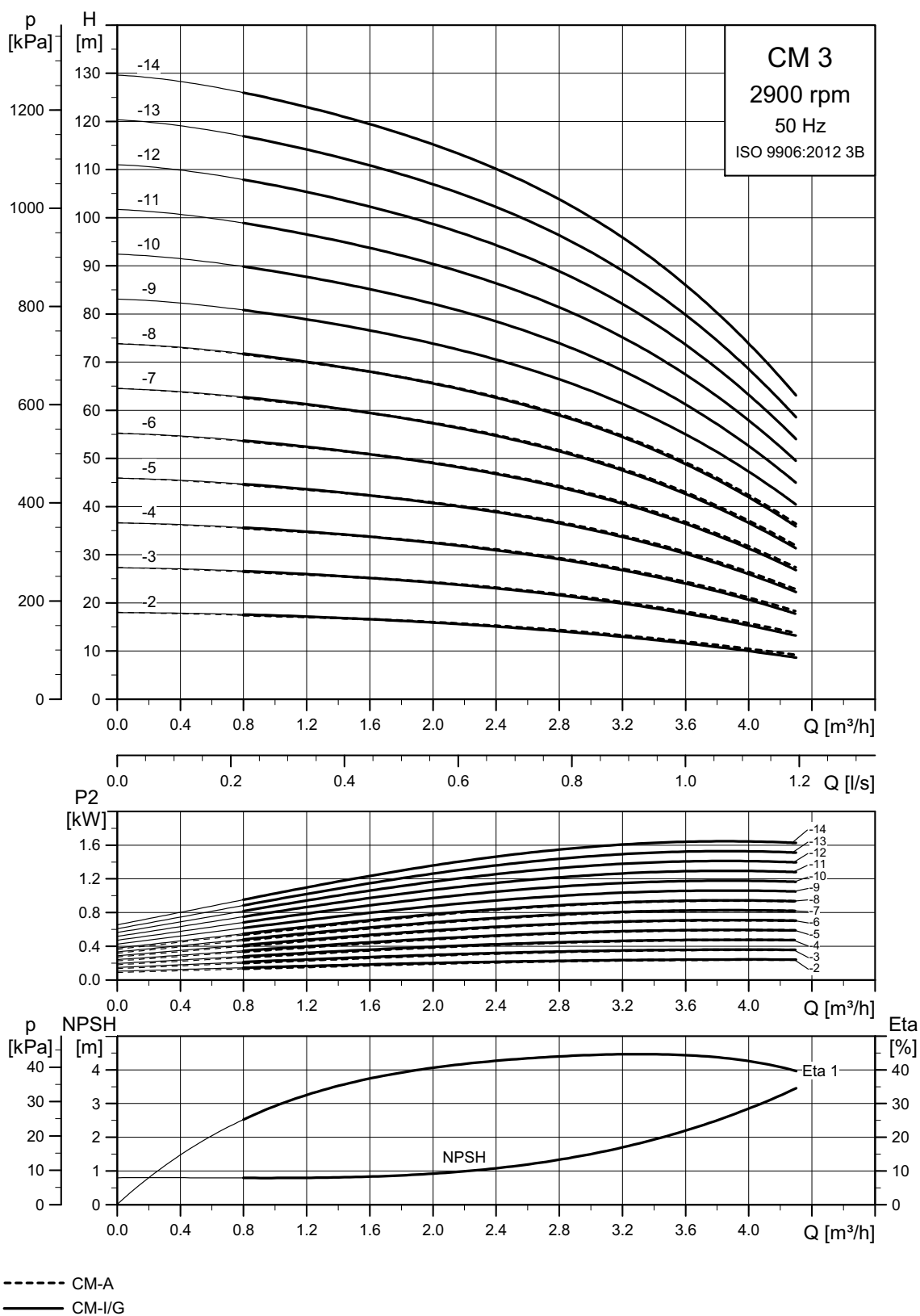
17. Performance curves, CM 50 Hz

CM 1



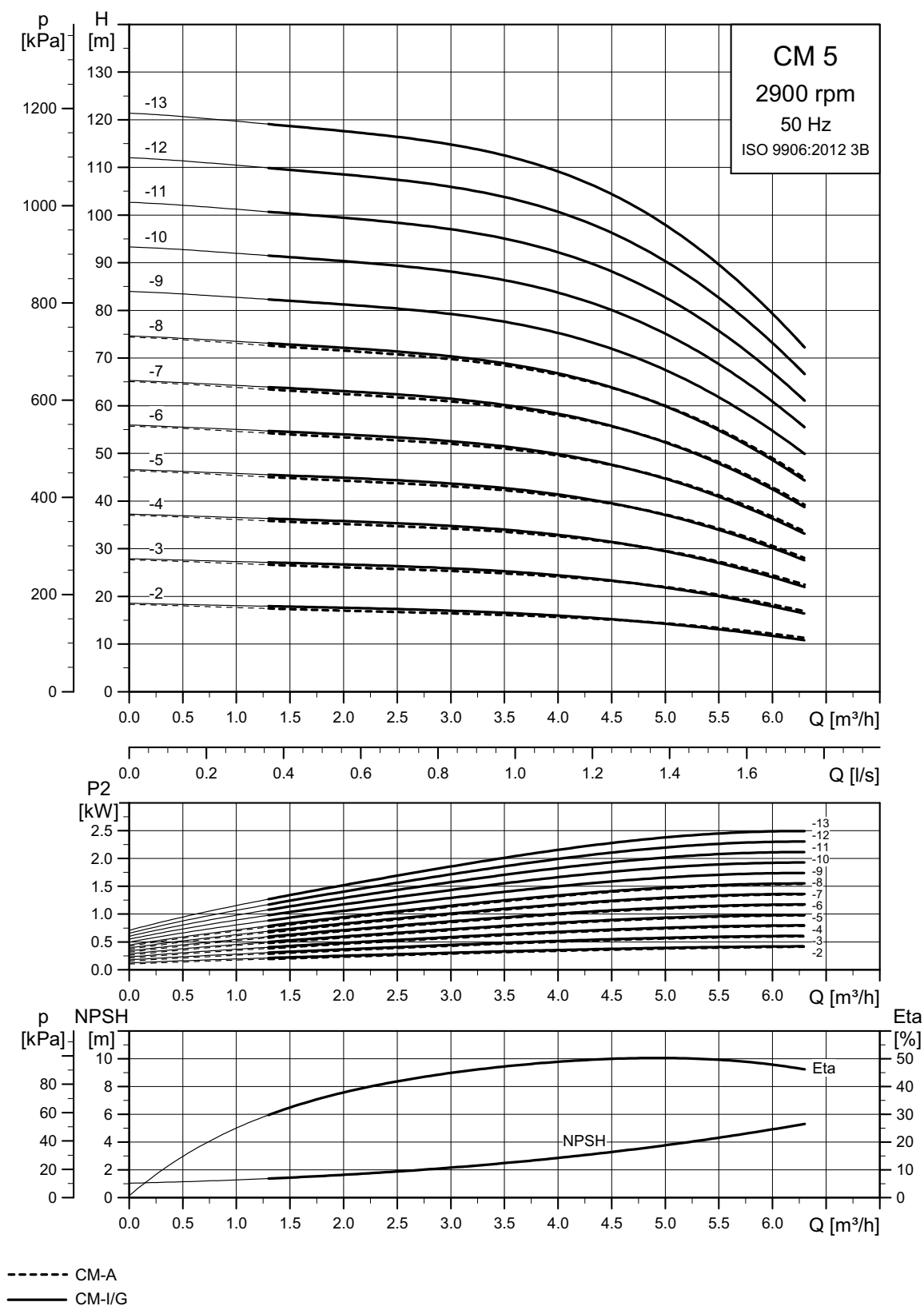
TM04 3334 3920

CM 3



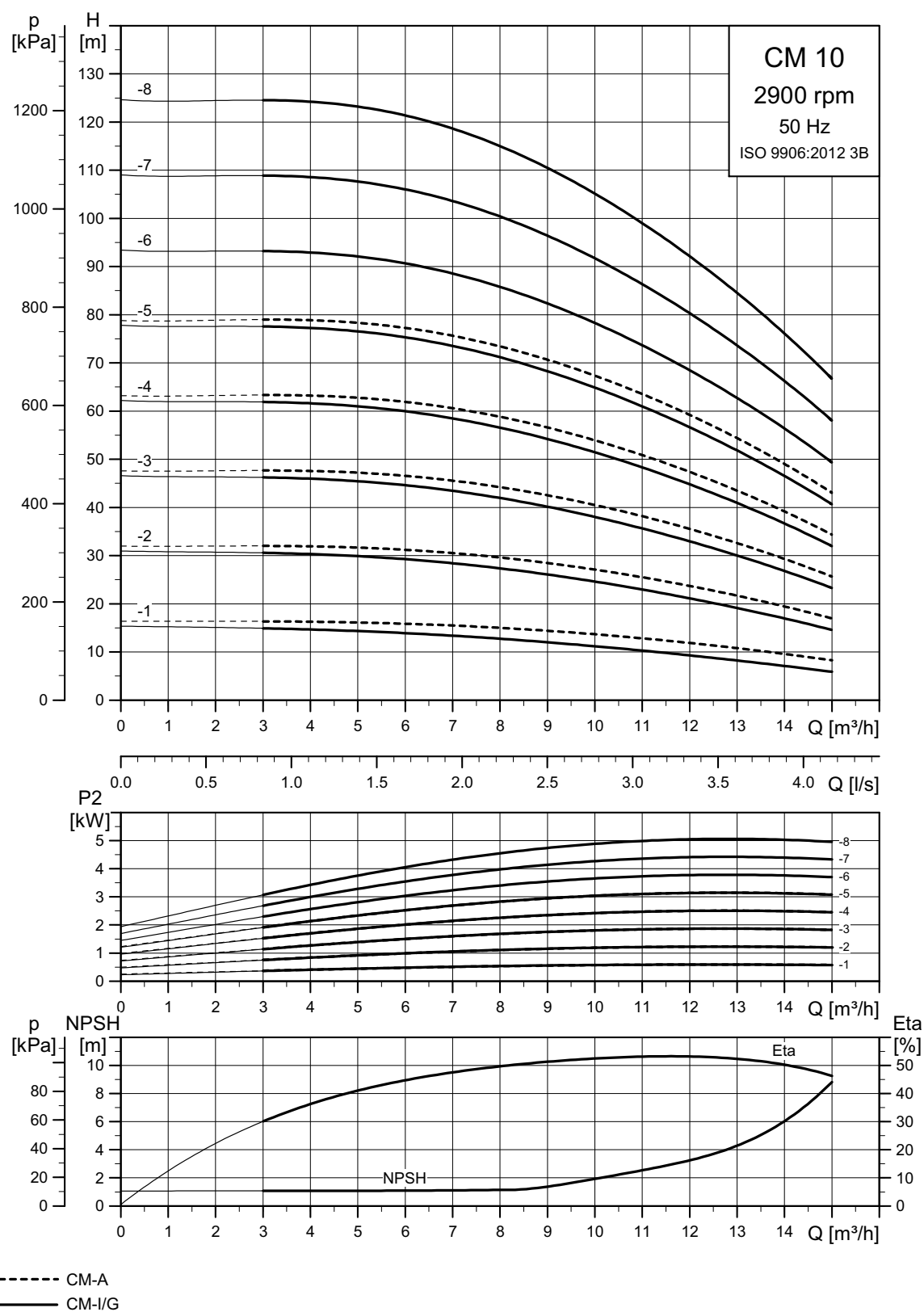
TM04 3335 3920

CM 5



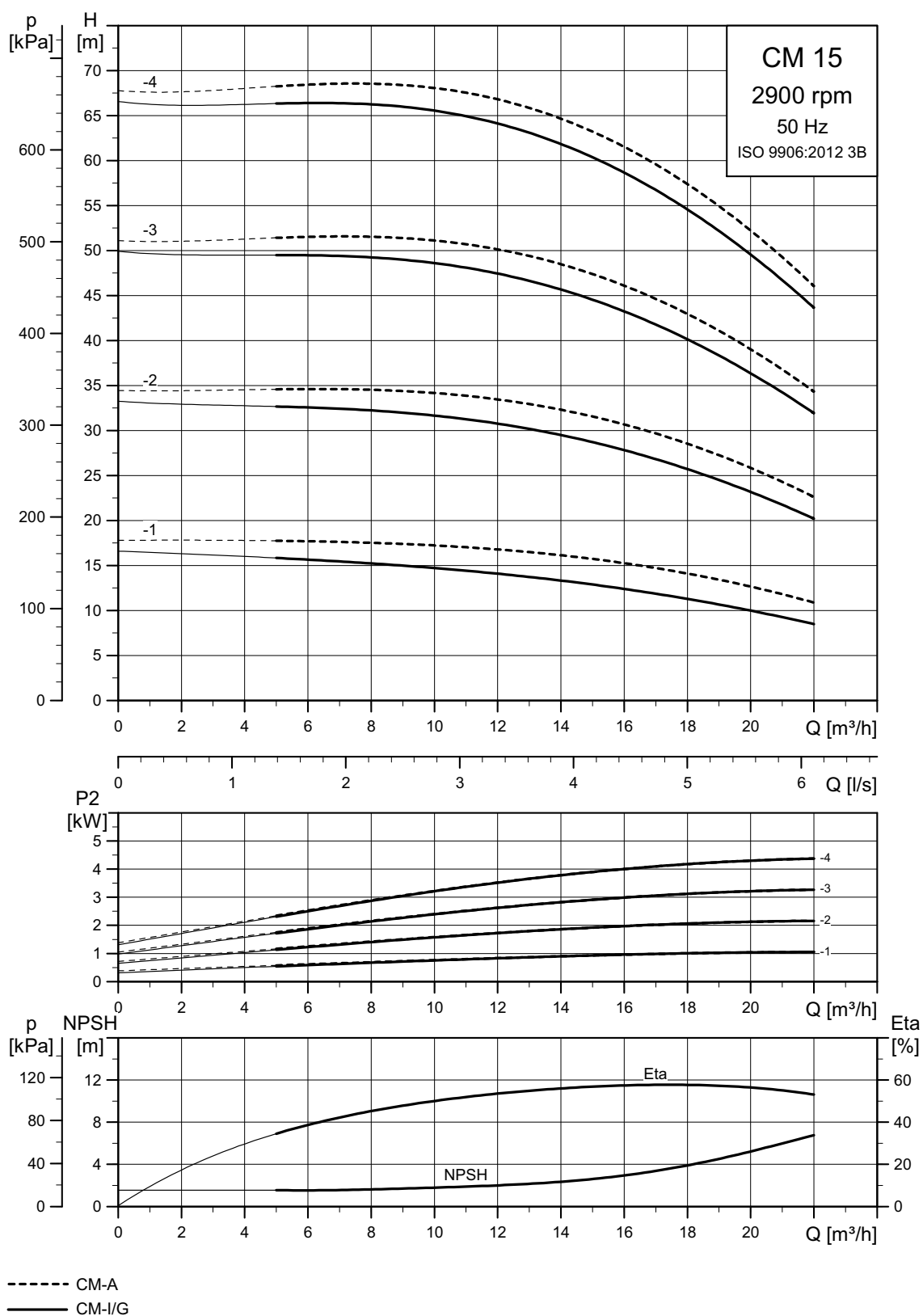
TM04 3336 3920

CM 10



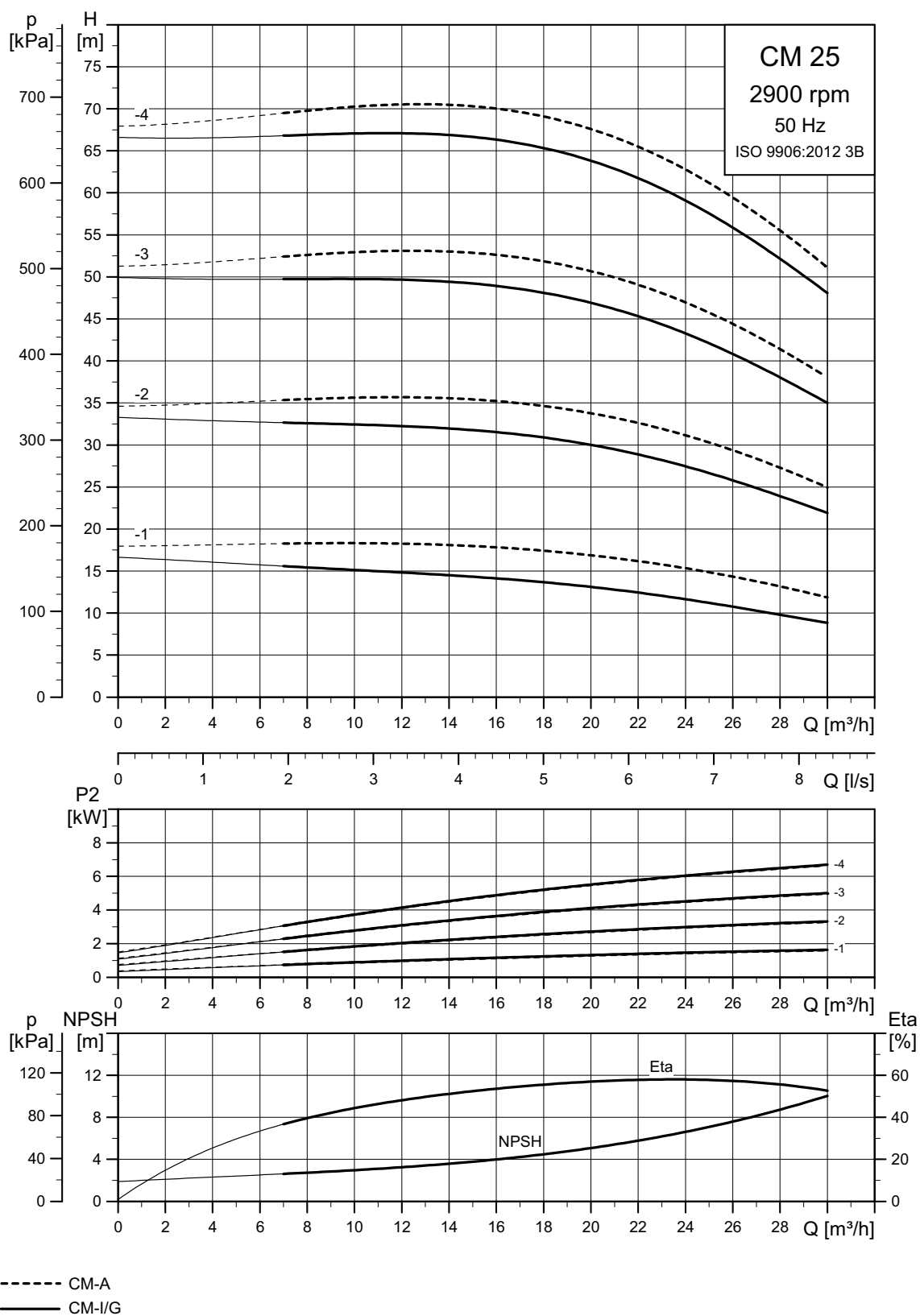
TM04 3337 3920

CM 15



TM04 3338 3920

CM 25

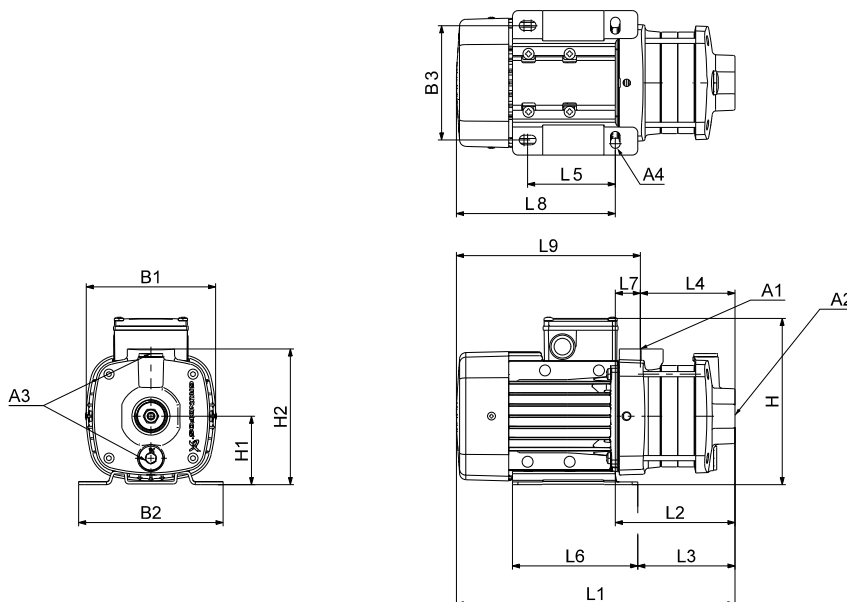


TM04 3339 3920

22. Dimensions, CM 50 Hz

CM 1-A

(A = cast iron EN-GJL-200)



TM06 7509 3616

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM1-2	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM1-3	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM1-4	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	322	148	124	121	96	137	27	174	201
CM1-5	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	340	166	142	139	96	137	27	174	201
CM1-6	71	0.46	1"	1"	3/8"	10.5	141	158	125	184	75	149	358	184	160	157	96	137	27	174	201
CM1-7	71	0.65	1"	1"	3/8"	10.5	141	158	125	184	75	149	376	202	178	175	96	137	27	174	201
CM1-8	71	0.65	1"	1"	3/8"	10.5	141	158	125	184	75	149	394	220	196	193	96	137	27	174	201

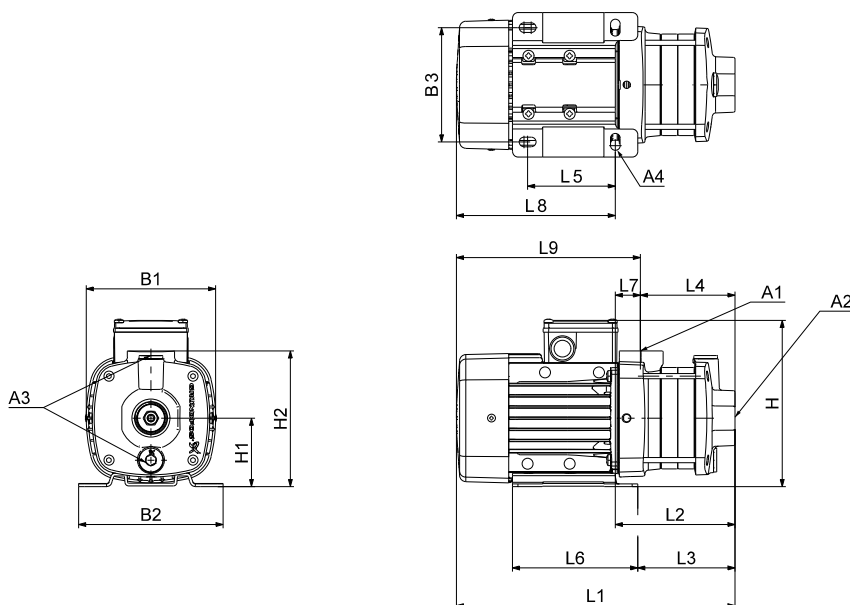
1 x 220-240 V, 50 Hz (supply voltage C)

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

All dimensions are in mm unless otherwise stated.

CM 3-A

(A = cast iron EN-GJL-200)



TM06 7509 3616

Dimensions

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

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

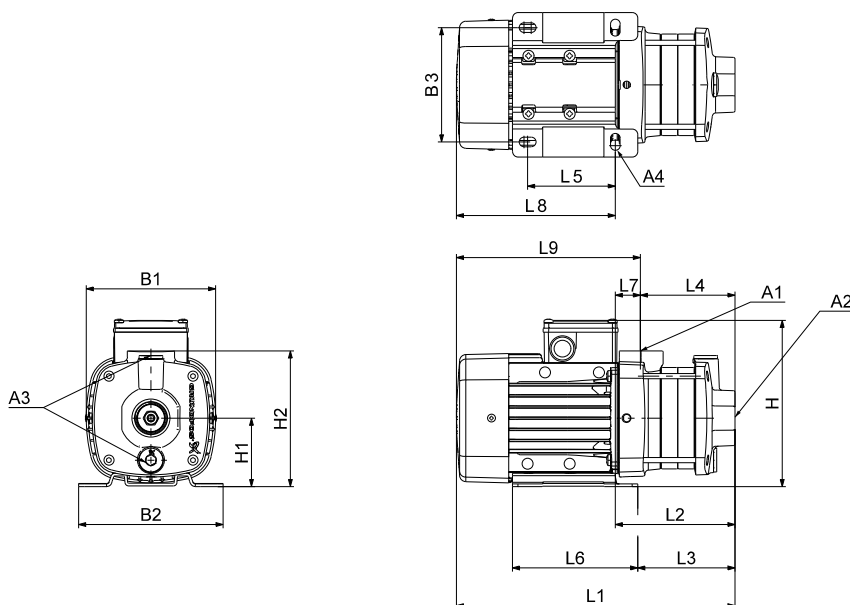
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM3-2	71	0.30	1"	1"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM3-3	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM3-4	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	322	148	124	121	96	137	27	174	201
CM3-5	71	0.50	1"	1"	3/8"	10.5	141	158	125	208	75	149	340	166	142	139	96	137	27	174	201
CM3-6	80	0.67	1"	1"	3/8"	10.5	141	158	125	208	75	149	398	184	160	157	96	137	27	214	241
CM3-7	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	149	416	202	178	175	96	137	27	214	241
CM3-8	80	0.90	1"	1"	3/8"	10.5	141	158	125	208	75	149	434	220	196	193	96	137	27	214	241

All dimensions are in mm unless otherwise stated.

CM 5-A

(A = cast iron EN-GJL-200)



TM06 7509 3616

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.46	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	286	112	88	85	96	137	27	174	201
CM5-3	71	0.65	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	304	130	106	103	96	137	27	174	201
CM5-4	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	382	148	124	121	96	137	27	234	261
CM5-5	80	1.10	1"	1 1/4"	3/8"	10.5	141	158	125	184	75	149	400	166	142	139	96	137	27	234	261
CM5-6	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	449	225	210	144	125	155	81	224	306
CM5-7	90	1.50	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	467	243	228	162	125	155	81	224	306
CM5-8	90	2.20	1"	1 1/4"	3/8"	10.0	178	178	140	200	90	201	525	261	246	180	125	155	81	264	346

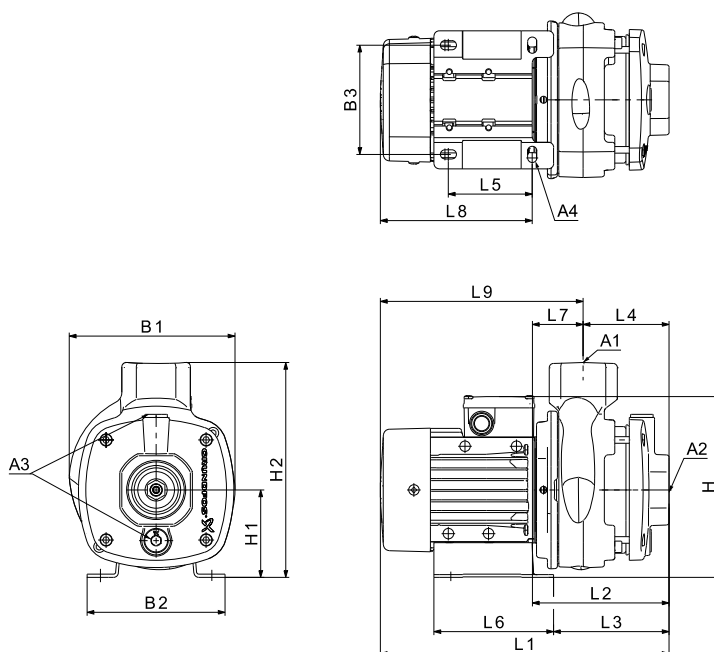
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM5-2	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	286	112	88	85	96	137	27	174	201
CM5-3	71	0.50	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	304	130	106	103	96	137	27	174	201
CM5-4	80	0.67	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	362	148	124	121	96	137	27	214	241
CM5-5	80	0.90	1"	1 1/4"	3/8"	10.5	141	158	125	208	75	149	380	166	142	139	96	137	27	214	241
CM5-6	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	449	225	210	144	125	155	81	224	306
CM5-7	90	1.30	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	467	243	228	162	125	155	81	224	306
CM5-8	90	1.70	1"	1 1/4"	3/8"	10.0	178	178	140	229	90	201	485	261	246	180	125	155	81	224	306

All dimensions are in mm unless otherwise stated.

CM 10-A

(A = cast iron EN-GJL-200)



TM06 7512 3616

Dimensions

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

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	71	0.65	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	209	100	242	330	156	131	97	95	137	59	174	232
CM10-2	90	1.50	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	210	100	242	411	179	164	97	140	170	82	232	314
CM10-3	90	2.20	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	210	100	242	481	209	194	127	140	170	82	272	354
CM10-4	100	3.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	242	527	254	239	157	140	170	97	273	370
CM10-5	100	3.0	1 1/2"	1 1/2"	3/8"	12.0	198	199	160	220	100	242	557	284	269	187	140	170	97	273	370

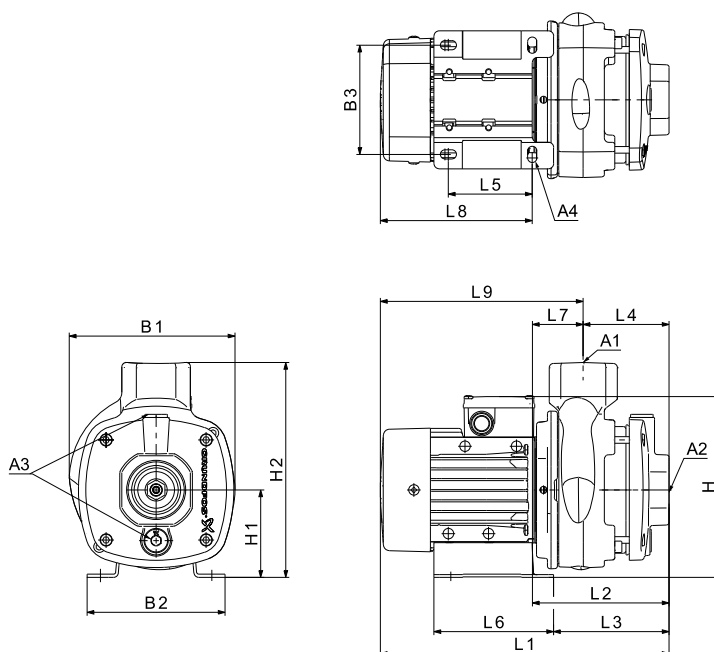
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM10-1	80	0.67	1 1/2"	1 1/2"	3/8"	10.5	190	158	125	233	100	242	370	156	131	97	95	137	59	214	272
CM10-2	90	1.30	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314
CM10-3	90	1.70	1 1/2"	1 1/2"	3/8"	12.0	190	199	160	239	100	242	441	209	194	127	140	170	82	232	314

All dimensions are in mm unless otherwise stated.

CM 15-A

(A = cast iron EN-GJL-200)



TM06 7512 3616

Dimensions

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

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

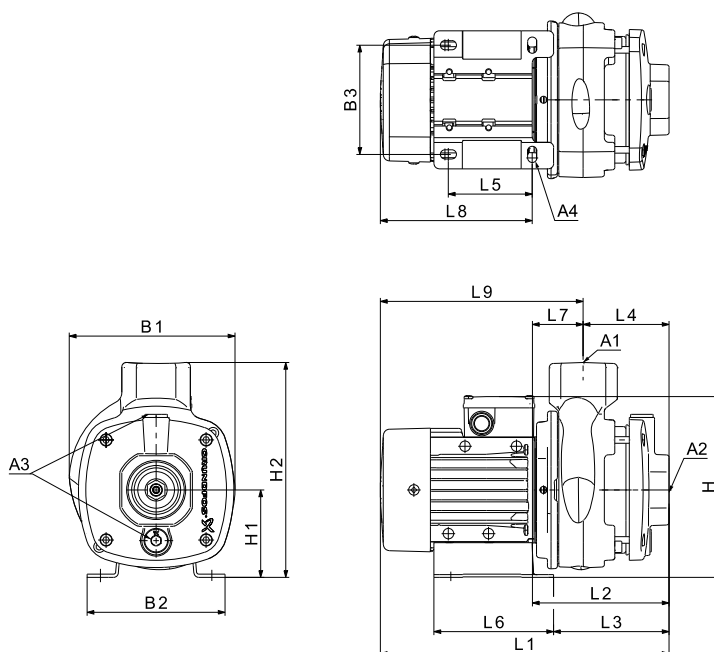
1 x 220-240 V, 50 Hz (supply voltage C)

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM15-1	90	1.30	2"	2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314
CM15-2	90	1.70	2"	2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314

All dimensions are in mm unless otherwise stated.

CM 25-A

(A = cast iron EN-GJL-200)



TM06 7512 3616

Dimensions

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

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

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

Pump type	Frame size	P ₂ [kW]	Dimensions [mm]																		
			A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM25-1	90	1.70	2"	2"	3/8"	12.0	190	199	160	239	100	242	411	179	164	97	140	170	82	232	314

All dimensions are in mm unless otherwise stated.

27. Electrical data

Mains-operated motors, 50 Hz

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

Frame size	P ₂ [kW]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71A	0.3	1.8 / 2.4	0.95 - 0.86	67.4 - 61.4	6.1 - 8.2	2.800 - 2.830
71B	0.5	3.1 / 2.8	0.97 - 0.99	74 - 70	16.4 - 14.8	2.730 - 2.740
80A	0.67	4.4 / 4.0	0.99 - 0.99	71.8 - 73	17.2 - 15.6	2.720 - 2.800
80B	0.9	5.4 / 5.0	0.98 - 0.98	76 - 74	23.2 - 21.5	2.750 - 2.790
90SA	1.3	8.4 / 8.0	0.98 - 0.98	71 - 71	28.6 - 27.2	2.710 - 2.710
90SB	1.7	11.2 / 10.0	0.99 - 0.98	72.5 - 73.5	41.4 - 37.0	2.740 - 2.755

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

Frame size	P ₂ [kW]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
71A	0.46	2.0 - 2.2 / 1.0 - 1.2	0.83 - 0.75	73.4 - 73.6	9.8 - 11.7 / 4.9 - 6.4	2.770 - 2.820
71B	0.65	2.8 - 3.1 / 1.6 - 1.8	0.82 - 0.72	73.9 - 72.9	16.2 - 19.2 / 9.3 - 11.2	2.770 - 2.820
80C	1.1	4.4 - 4.5 / 2.55 - 2.6	0.82 - 0.74	83.1 - 83.4	31.7 - 35.1 / 18.4 - 20.3	2.830 - 2.860
90SD	1.50	5.70 - 5.70 / 3.30 - 3.30	0.84 - 0.78	84.2 - 84.2	40.5 - 45.0 / 23.4 - 26.1	2.890 - 2.910
90LE	2.20	8.00 - 8.00 / 4.60 - 4.60	0.86 - 0.80	85.9 - 85.9	67.2 - 73.6 / 38.6 - 42.3	2.890 - 2.910
100LC	3.0	11.0 - 11.0 / 6.30 - 6.30	0.87 - 0.82	87.2 - 87.1	92.4 - 101.2 / 52.9 - 58.0	2.900 - 2.920
112MC	4.0	13.8 - 13.2 / 8.00 - 7.65	0.89 - 0.86	89.2 - 89.2	154.6 - 162.4 / 89.6 - 94.1	2.920 - 2.940
132SC	5.5	19.0 - 19.0 / 11.0 - 11.0	0.87 - 0.82	89.9 - 90.2	212.8 - 243.2 / 123.2 - 140.8	2.920 - 2.940
132SB	7.5	25.0 - 24.2 / 14.4 - 14.0	0.88 - 0.82	90.1 - 90.4	195.0 - 220.2 / 112.3 - 127.4	2.910 - 2.920

Mains-operated motors, 60 Hz

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

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

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

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
	[kW]	[hp]							
71BA	0.60	0.8	1	7.6 / 3.9	7.6 / 3.9	0.76	69	19.8 / 10.1	3.240
80AA	0.78	1.06	1	10.6 / 5.4	10.6 / 5.4	0.65	69	31.8 / 16.2	3.240
80BA	1.10	1.50	1	14.6 / 7.3	14.6 / 7.3	0.94	71	46.7 / 23.4	3.320
90CC	1.50	2.03	1	18.8 / 9.8	18.8 / 9.8	0.97	72.9	75.2 / 39.2	3.360

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

Frame size	P ₂		Service factor	I _{1/1} [A]	Service factor current	Cos φ _{1/1}	η [%]	I _{start} [A]	Speed [min ⁻¹]
	[kW]	[hp]							
71BA	0.60	0.8	1	3.9	3.9	0.76	66	10.1	3.240
80AA	0.78	1.06	1	5.4	5.4	0.65	68	16.2	3.240
80BA	1.10	1.50	1	7.3	7.3	0.94	69	23.4	3.320
90CC	1.50	2.03	1	9.8	9.8	0.97	69	39.2	3.360

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