



CEA-CIE, CA Series

SINGLE AND TWIN-IMPELLER CENTRIFUGAL ELECTRIC PUMPS MADE OF STAINLESS STEEL AISI 304 AND 316 EQUIPPED WITH **IE3** MOTOR

CEF Series

BARE SHAFT CENTRIFUGAL PUMPS

ErP 2009/125/EC

Ecodesign Directive 2009/125/CE

The **Directive 2005/32/EC** on energy-using products (**EuP**) and the subsequent **Directive 2009/125/EC** on energy-related products (**ErP**) established the ecodesign requirements for products to reduce their energy consumption and consequently their environmental impact.

These requirements apply to products placed and used in the European Economic Area (European Union plus Iceland, Liechtenstein and Norway) as a stand-alone unit or as integrated parts in other products.

The table shows the Regulations that define the requirements for Lowara products:

Product	Regulations	From	Target
Pumps*	(EU) N. 547/2012	1 January 2015	MEI $\geq 0,4$
Circulators**	(EC) N. 641/2009, (EU) N. 622/2012 e (EU) 2019/1781	1 August 2015	EEI $< 0,23$
Electric motors	(EU) 2019/1781 e 2021/341	1 July 2021	IE2 : three-phase motors with a rated output $\geq 0,12$ and $< 0,749$ kW IE3 : three-phase motors with a rated output $\geq 0,75$ and < 1000 kW
Variable speed drives (VSD)***	(EU) 2019/1781 e 2021/341	1 July 2021	IE2

* some types of pump, used for pumping clean water.

** circulators with a rated hydraulic output power of between 1 and 2500 W, designed for use in heating systems or in secondary circuits of cooling distribution systems.

*** variable speed drives with three-phase input and rated output power from 0,12 kW up to 1000 kW, rated for operating with motor included in the same regulations.

From 1 July 2023 it will be introduced additional requirements.

SOMMARIO

CEA-CIE SERIES

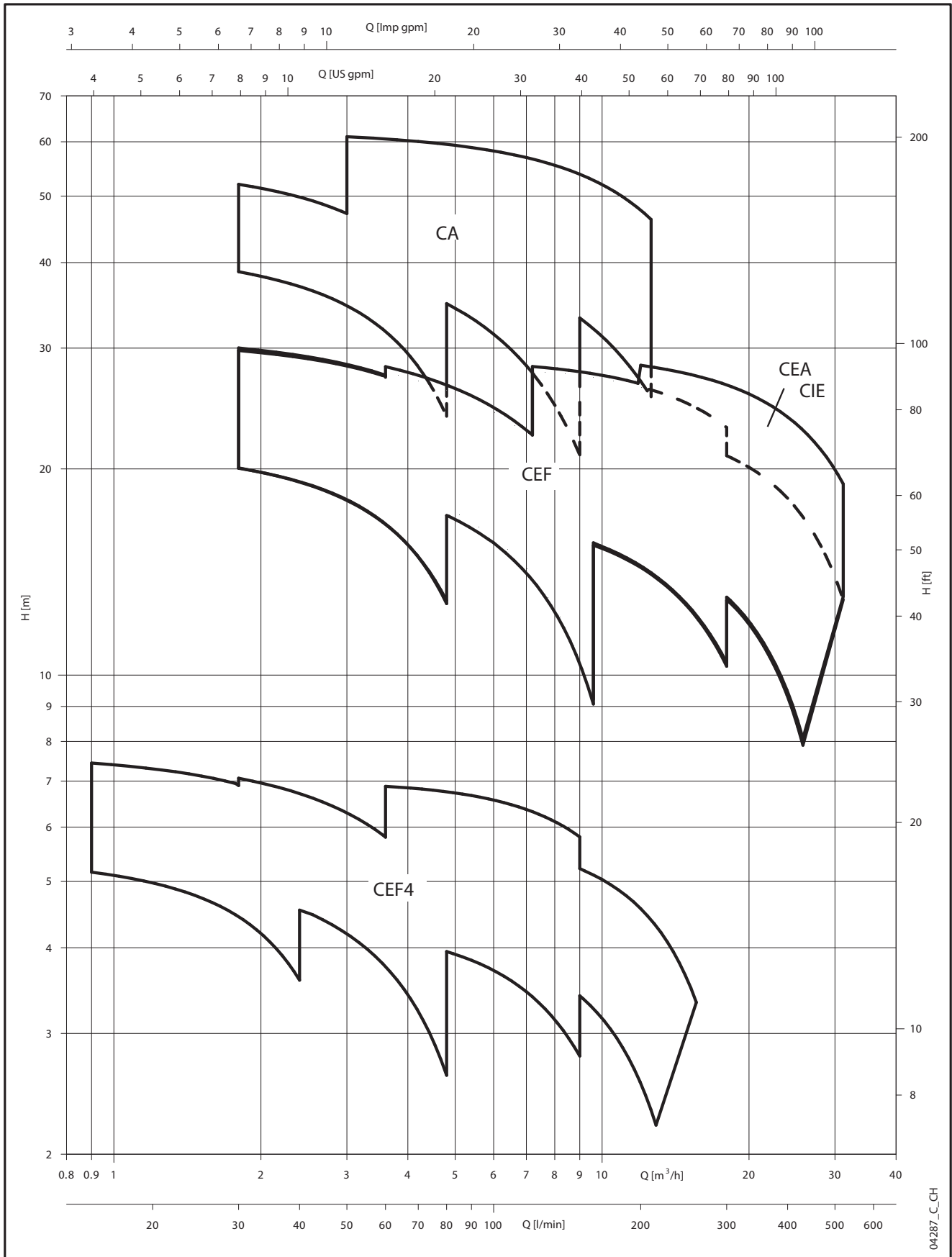
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**CEA-CIE, CA, CEF SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz**


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CEA-CIE SERIES GENERAL DESCRIPTION

Single impeller centrifugal electric pumps made of stainless steel

MARKET SECTORS

CIVIL, AGRICULTURAL,
INDUSTRIAL.

APPLICATIONS

CEA Version made of AISI 304

- Handling of chemically and mechanically non-aggressive water and liquids.
- Water supply.
- Irrigation.
- Water circulation (cold, hot, refrigerated).

CEA Version made of AISI 316 (“..N”)

- Reverse osmosis (where demineralized water is used).
- Industrial washing.
- Thermal waters.
- Chlorine dispensing in swimming pools.

CIE

- Heating systems.
- Cooling systems.
- Ventilation systems.

SPECIFICATION

PUMP

- Delivery up to **31 m³/h**.
- Head up to **32 m**.
- Temperature of pumped liquid:
from -10°C to +85°C for CEA and CIE standard version (NBR elastomers).
from -10°C to +110°C for CEA..N and CIE (N and V versions) (FPM elastomers).
- Maximum operating **pressure**: 8 bar (PN 8).
- Hydraulic performance compliant with ISO 9906:2012 (Grade 3B). (ex ISO 9906:1999 - Annex A).
- Counter-clockwise rotation facing the pump from the suction port.

MOTOR

- Asynchronous, squirrel cage rotor, close construction, external ventilation.
- Protection class:
IP55 as motor (EN 60034-1).
IPX5 as electric pump (EN 60335-1).
- **Class 155** (F) Insulation
- Performance to EN 60034-1 specifications.
- **Standard voltage**:
- Single-phase version:
220-240 V, 50 Hz
- Three-phase version:
220-240/380-415 V, 50 Hz.
- Condensate drain plugs in the standard version.



CONSTRUCTION CHARACTERISTICS

- Close-coupled, single-impeller centrifugal pump featuring axial suction and radial discharge.
- Compact construction, with pump coupled directly to motor; special motor shaft extension in common with the pump and supported by ball bearings.
- Rotating assembly with back pull-out design, eliminating the need to disconnect the pump body from the pipe line.
- Threaded suction and discharge ports (Rp ISO 7).
- High performance enclosed impeller made of **AISI 304** stainless steel (**AISI 316** for N version).
- **Mechanical seal** with Ceramic/Carbon rings, NBR elastomers, (EPDM for N version) other parts are made of AISI 304 stainless steel (AISI 316 for N version). Mounting dimensions according to EN 12756 (ex DIN 24960) and ISO 3069.
- **O-rings** made of NBR (EPDM for N version).
- **CIE version** with standard mechanical seal, motor with reinforced bearing and without fill/drain plugs for HVAC applications.

OPTIONAL FEATURES

- Different voltages.
- 60 Hz frequency (see 60 Hz catalog).
- Different material for the mechanical seal and O-rings.

CEA-CIE SERIES TYPICAL APPLICATIONS ELECTRIC PUMPS

Residential and Commercial Applications:

- Humidifiers
- Water supply.
- Heating, Cooling and Ventilation systems
- Water re-circulation
- Cooling towers
- Cooling systems
- Temperature control
- Chillers
- Induction heating
- Heat exchangers
- Water heating

General Industry:

- Spray booths
- Light chemical transfer
- Booster systems
- Commercial washers
- Car washer

Water Purification:

- Filtration
- De-ionized water
- Water treatment
- Commercial and residential pools

Plastic Industry:

- Temperature Regulators
- Extrusion machines
- Manufacture of polymers

Agricultural Applications:

- Irrigation
- Greenhouses
- Water supply



Medical:

- Laser cooling
- Massage
- Medical chillers
- Sanitary equipment

Machine Tool:

- Degreasing
- Parts washing
- Chemical treatment
- Heat treatment

Graphics:

- Film washing
- Cooling processes

Marine Sector:

- Water on board ships

Computers:

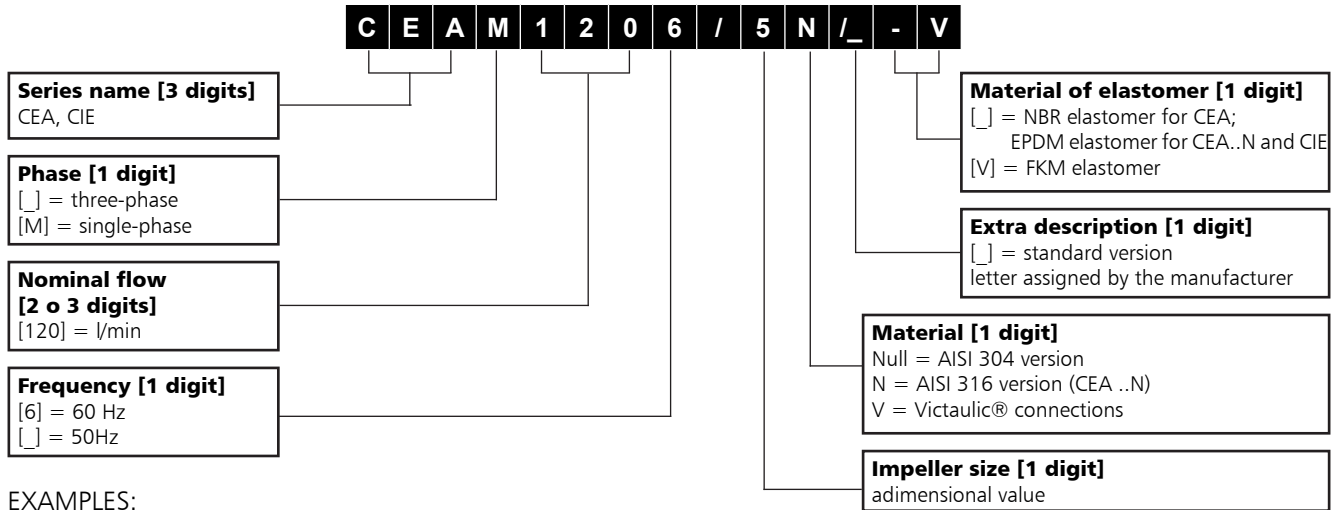
- Circuit board washing
- Unit cooling

Food and Drink:

- Food processing
- Bottle washing
- Citrus processing
- Dishwashing
- Brewing
- Sanitary ware



CEA-CIE SERIES IDENTIFICATION CODE



EXAMPLES:

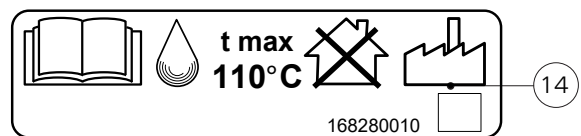
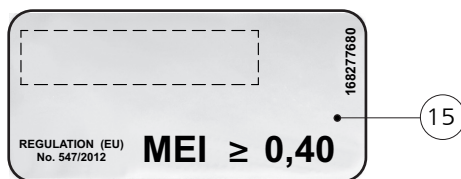
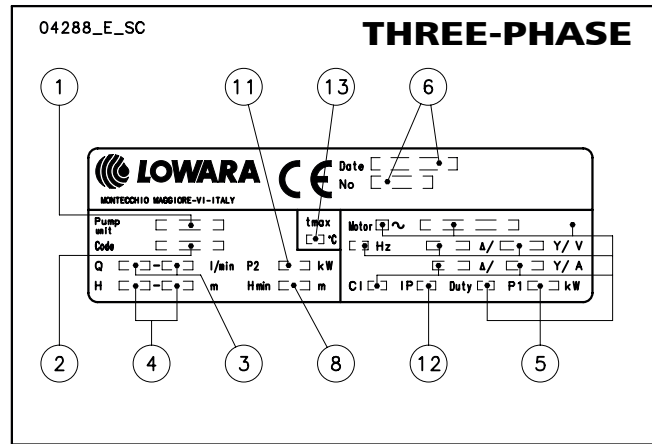
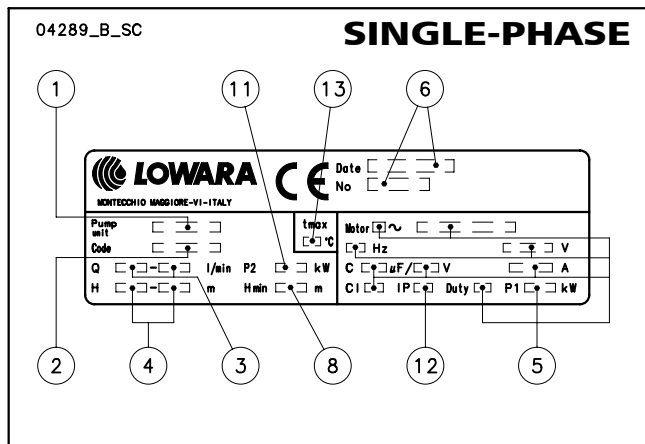
CEAM120/5/A-V

CEA series electric pump, single-phase, nominal flow 120 l/min, frequency 50 Hz, 1 impeller size 5, AISI 304 version, FKM (FPM) elastomers.

CIE370/1V/D

CIE series electric pump, three-phase, nominal flow 370 l/min, frequency 50 Hz, 1 impeller size 1, AISI 304 version and Victaulic® connections, FKM (FPM) elastomers.

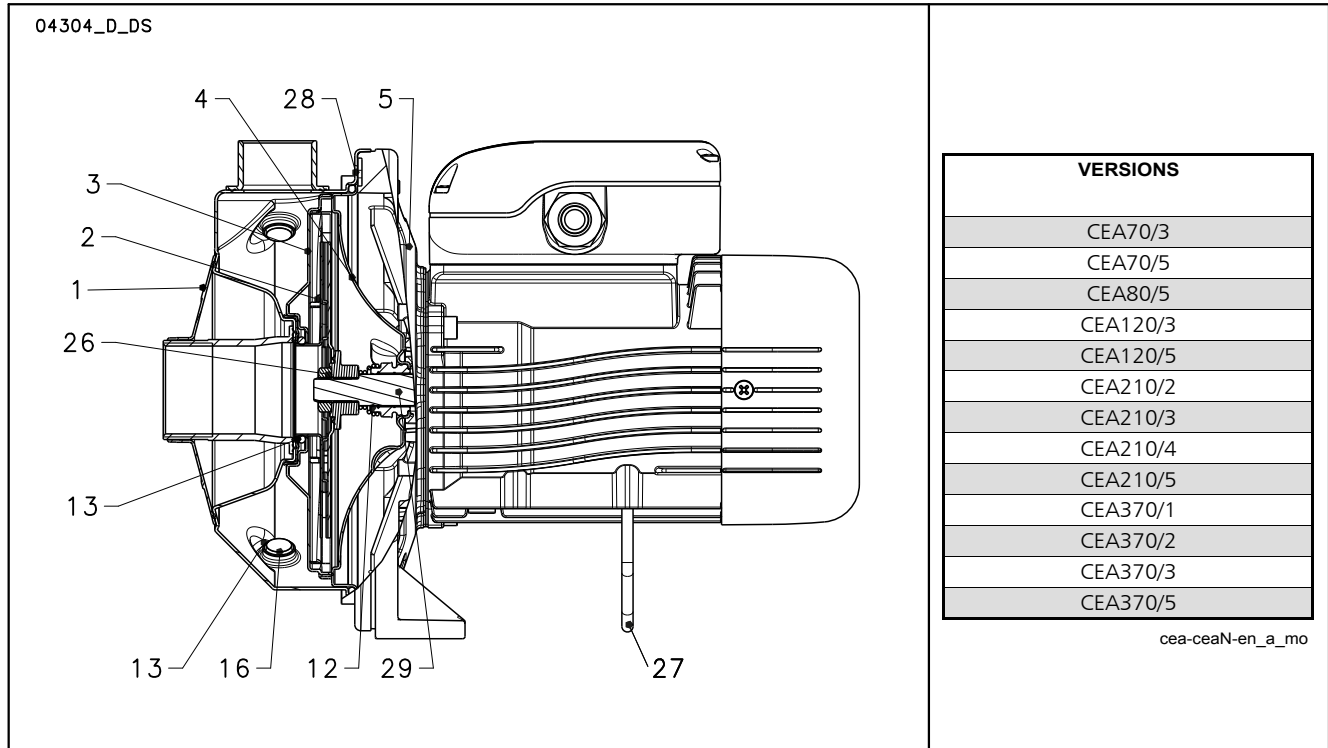
RATING PLATE



LEGEND

- | | |
|---|---|
| 1 - Electric pump unit type | 12 - Protection degree |
| 2 - Electric pump unit code | 13 - Maximum operating liquid temperature (uses as EN 60335-2-41) |
| 3 - Flow range | 14 - Maximum operating liquid temperature (for use other than EN 60335-2-41) |
| 4 - Head range | 15 - Minimum efficiency index MEI, as per Regulation (EU) No 547/2012 (50 Hz) |
| 5 - Electrical data | |
| 6 - Serial number (data + order number) | |
| 8 - Minimum head (EN 60335-2-41) | |
| 11 - Rated power | |

CEA SERIES ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS



CEA VERSION

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
2	Impeller	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
3	Diffuser	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
4	Seal housing	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
5	Adapter	Aluminium	EN 1706-AC-AISI8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
16	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
26	Impeller lock nut	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
27	Support foot	Galvanized steel		
28	Pump body fastening nuts and bolts	Galvanized steel		
29	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316

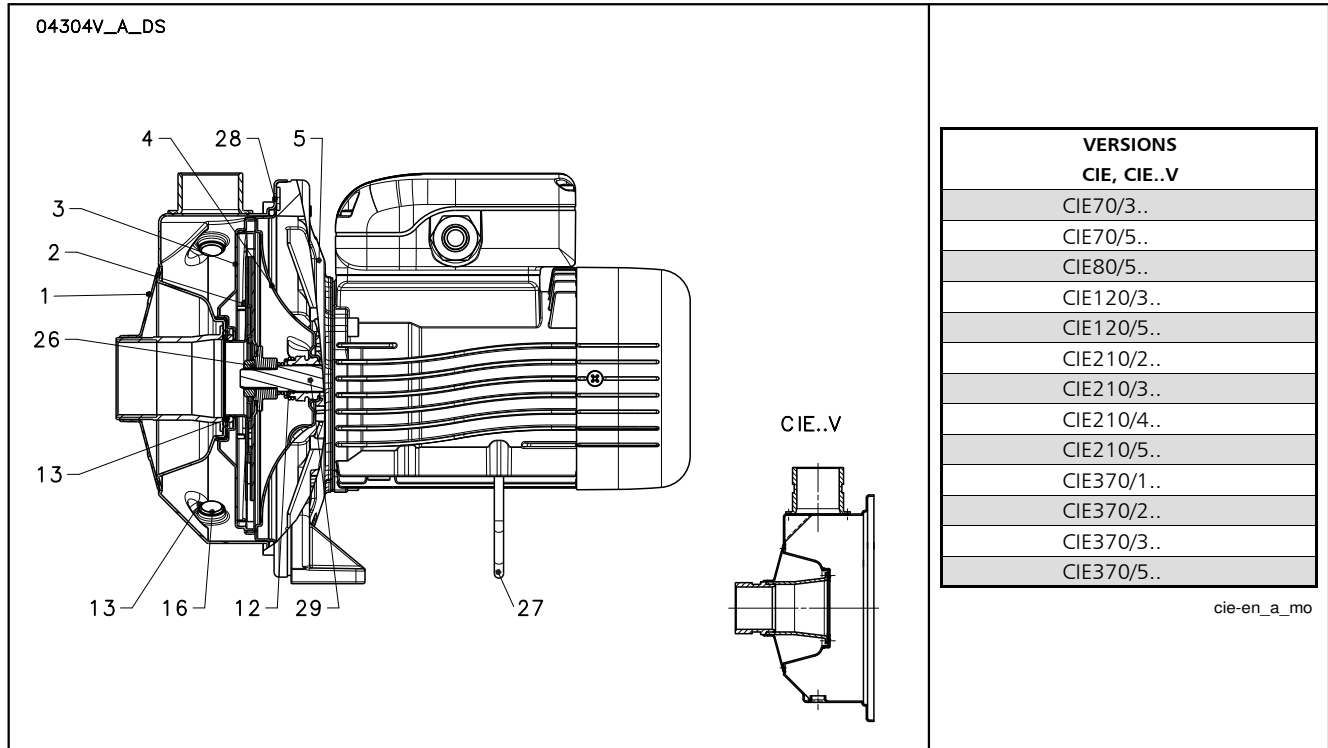
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CEA..N VERSION

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Adapter	Aluminium	EN 1706-AC-AISI8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Ceramic / Carbon /EPDM (standard version)		
13	Elastomers	EPDM (standard version)		
16	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
26	Impeller lock nut	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
27	Support foot	Galvanized steel		
28	Pump body fastening nuts and bolts	Galvanized steel		
29	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316

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CIE SERIES ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS



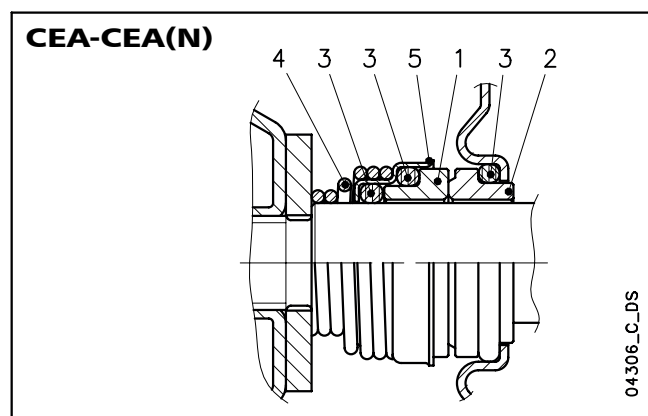
CIE VERSION

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
2	Impeller	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
3	Diffuser	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
4	Seal housing	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
5	Adapter	Aluminium	EN 1706-AC-AISI8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Ceramic / Ceramic / EPDM (standard version)		
13	Elastomers	EPDM (standard version)		
16	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
26	Impeller lock nut	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
27	Support foot	Galvanized steel		
28	Pump body fastening nuts and bolts	Galvanized steel		
29	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316

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CEA SERIES MECHANICAL SEAL

Mechanical seal with mounting dimensions according to EN12756 (ex DIN 24960) and ISO 3069.



LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B ₃ : Carbon graphite	P : NBR	G : AISI 316
C : Special resin impregnated carbon	E : EPDM	
Q ₁ : Silicon carbide	E ₂ : EPDM - WRAS	
U ₃ : Tungsten carbide	V : FPM (FKM)*	
V : Ceramic		

* For hot water: max 80°C

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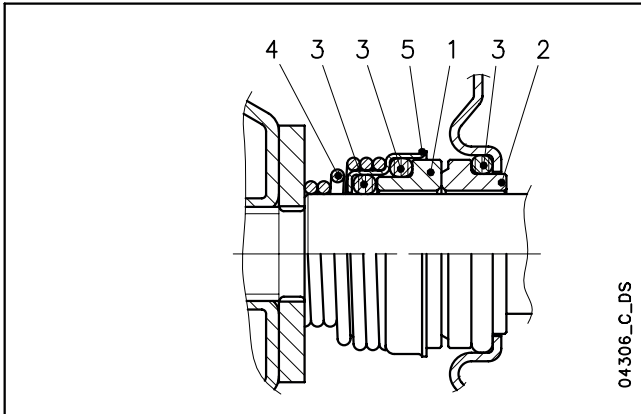
SEAL TYPES

SERIES	TYPE	POSITION					TEMPERATURE (°C)
		1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
CEA	STANDARD MECHANICAL SEAL						
	VB ₃ PGG	V	B ₃	P	G	G	-10...+85
	OTHER TYPES OF MECHANICAL SEAL						
	VB ₃ E ₂ GG	V	B ₃	E ₂	G	G	-10...+110
	VCEGG	V	C	E	G	G	
	Q ₁ Q ₁ EGG	Q ₁	Q ₁	E	G	G	
	U ₃ CEGG	U ₃	C	E	G	G	
	U ₃ U ₃ EGG	U ₃	U ₃	E	G	G	
	VB ₃ VGG	V	B ₃	V	G	G	
	VCVGG	V	C	V	G	G	
	Q ₁ Q ₁ VGG	Q ₁	Q ₁	V	G	G	
	U ₃ CVGG	U ₃	C	V	G	G	
U ₃ U ₃ VGG	U ₃	U ₃	V	G	G		
CEA..N	STANDARD MECHANICAL SEAL						
	VB ₃ E ₂ GG	V	B ₃	E ₂	G	G	-10...+110
	OTHER TYPES OF MECHANICAL SEAL						
	VCEGG	V	C	E	G	G	-10...+110
	Q ₁ Q ₁ EGG	Q ₁	Q ₁	E	G	G	
	VB ₃ VGG	V	B ₃	V	G	G	
VCVGG	V	C	V	G	G		
Q ₁ Q ₁ VGG	Q ₁	Q ₁	V	G	G		

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CIE SERIES MECHANICAL SEAL

Mechanical seal with mounting dimensions according to EN12756 (ex DIN 24960) and ISO 3069.



LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
Q ₁ : Silicon carbide	E : EPDM V : FPM (FKM)*	G : AISI 316

* For hot water: max 80°C

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SEAL TYPES

TYPE	POSITION					TEMPERATURE (°C)
	1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
STANDARD MECHANICAL SEAL						
Q ₆ Q ₆ EGG	Q ₆	Q ₆	E	G	G	-10...+110
Q ₆ Q ₆ VGG	Q ₆	Q ₆	V	G	G	-10...+110

cie_tipi-ten-mec-en_a_tc

CEA-CIE SERIES MOTORS (ErP 2009/125/EC)

- Short-circuit squirrel-cage motor, enclosed construction with external ventilation (TEFC).
- Rated power from 0,75 to 37 kW for 2-pole range and from 0,25 to 90 kW for 4-pole range.
- **IP55** protection degree.
- Insulation class **155 (F)**.
- Electrical performances according to EN 60034-1.
- **Supplied three-phase surface motors with IE2 (power < 0,75 kW) or IE3 (power ≥ 0,75 kW) efficiency level according to EN 60034-30:2009 and EN 60034-30-1:2014.**
- Metric cable gland according to EN 50262.
- PTC included as standard only for Lowara by Omega motors (one per phase, 155°C).
- **Single-phase** version:
220-240 V 50 Hz
Built-in automatic reset overload protection up to 1,5 kW. For higher powers the protection must be provided by the user.
Maximum ambient temperature: 40 °C.
- **Three-phase** version:
220-240/380-415 V 50 Hz for power up to 3 kW.
380-415/660-690 V 50 Hz for power above 3 kW.
Overload protection to be provided by the user.
Maximum ambient temperature: 40 o 50 °C (depending on model and power)

From 1 July 2021 in accordance with the **Regulations (EU) 2019/1781 and 2021/341**, the three-phase 50 Hz, 60 Hz or 50/60 Hz **surface motors** with **rated power ranging from 0,12 to 0,749 kW** must have a minimum level **IE2** efficiency; the ones with **rated power ranging from 0,75 and 1000 kW** must have a minimum level of **IE3** efficiency.

From 1 July 2023, additional requirements will be introduced.

The following tables also contain the mandatory information pursuant to Annex I, section 2, of the aforementioned Regulations.

SINGLE-PHASE MOTORS AT 50 Hz, 2 POLES

P _N kW	MOTOR TYPE	IEC SIZE	Construction Design	INPUT CURRENT I _n (A) 220-240 V	CAPACITOR		DATA FOR 230 V 50 Hz VOLTAGE							Operating conditions **		
					μF	V	min ⁻¹	I _s / I _n	η %	cosφ	T _n Nm	T _s /T _n	T _m /T _n	Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
0,40	SM63BG/1045	63	SPECIAL	2,79-2,85	14	450	2745	2,64	65,1	0,96	1,39	0,68	1,63	≤ 1000	-15 / 40	No
0,55	SM71BG/1055	71		3,76-3,99	16	450	2820	3,72	68,9	0,91	1,86	0,61	2,00			
0,75	SM71BG/1075	71		4,90-4,85	20	450	2765	3,42	70,1	0,96	2,59	0,58	1,75			
0,95	SM71BG/1095	71		6,25-5,89	25	450	2740	3,39	71,1	0,98	3,31	0,58	1,66			
1,10	SM80BG/1115	80		6,88-6,65	30	450	2800	3,89	74,7	0,96	3,75	0,46	1,72			
1,50	SM80BG/1155	80		9,21-8,58	40	450	2810	4,00	76,1	0,98	5,09	0,39	1,74			
2,20	PLM90CEA-CO/1225	90		12,5-11,6	70	450	2825	4,47	82,4	0,97	7,43	0,53	1,87			

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

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CEA-CIE SERIES THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P _N kW	Manufacturer		IEC SIZE	Construction Design	N. of Poles	f _N Hz	Data for 400 V / 50 Hz Voltage				
	Xylem Service Italia Srl Reg. No. 07520560967 Montecchio Maggiore Vicenza - Italia						cosφ	I _s / I _N	T _N Nm	T _s /T _N	T _m /T _N
	Model										
0,4	SM63BG/304		63	SPECIALE	2	50	0,64	4,35	1,37	4,14	4,10
0,55	SM71BG/305		71				0,71	6,25	1,84	3,96	3,97
0,75	SM80BG/307 PE		80				0,78	7,38	2,48	3,57	3,75
1,1	SM80BG/311 PE		80				0,79	8,31	3,63	3,95	3,95
1,5	SM80BG/315 PE		80				0,80	8,80	4,96	4,31	4,10
2,2	PLM90BG/322 E3		90				0,80	8,77	7,28	3,72	3,70
3	PLM90BG/330 E3		90				0,79	7,81	9,93	4,26	3,94

P _N kW	Voltage U _N V											n _N min ⁻¹	Operating conditions **		
	Δ			Y			Δ			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V				
0,4	2,03	2,18	2,32	1,17	1,26	1,34	-	-	-	-	-	2745 ÷ 2800	≤ 1000	-15 / 40	No
0,55	2,46	2,49	2,56	1,43	1,44	1,48	-	-	-	-	-	2835 ÷ 2865			
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98	2875 ÷ 2895			
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900			
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895			
2,2	7,97	7,90	7,98	4,6	4,56	4,61	4,57	4,54	4,57	2,64	2,62	2880 ÷ 2900			
3	11,0	11,0	11,2	6,35	6,33	6,44	6,29	6,27	6,34	3,63	3,62	2865 ÷ 2895			

P _N kW	Efficiency η _N																		IE
	Δ 220 V			Δ 230 V			Δ 240 V			Δ 380 V			Δ 400 V			Δ 415 V			
	Y 380 V			Y 400 V			Y 415 V			Y 660 V			Y 690 V						
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	
0,4	70,4	73,2	68,9	70,4	70,3	64,5	70,4	67,2	60,2	-	-	-	-	-	-	-	-	-	2
0,55	74,1	74,2	70,4	74,1	73,6	68,8	74,1	72,7	67,1	-	-	-	-	-	-	-	-	-	2
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	3
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1,5	85,6	86,5	85,8	85,9	86,4	84,9	86	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	
2,2	86,5	87,4	86,8	86,4	86,9	85,7	86,6	86,7	85	86,4	86,7	85	86,4	86,7	85	86,4	86,7	85	
3	87,2	88,5	88,3	87,5	88,2	87,5	87,5	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

cea-IE3-mott-2p50-en_c_te

**CEA-CIE SERIES
AVAILABLE VOLTAGES**

P _N kW	SINGLE-PHASE							
	50 Hz				60 Hz			
0,40	s	o	o	s	-	o	o	o
0,55	s	o	o	s	o	o	o	o
0,75	s	o	o	s	o	o	o	o
0,95	s	o	o	s	o	o	o	o
1,10	s	-	o	s	-	o	-	o
1,50	s	-	-	s	-	o	-	o
2,20	s	-	-	s	-	-	-	-
-	-	-	-	-	-	-	-	-

P _N kW	THREE-PHASE																	
	50 Hz								60 Hz								50/60 Hz	
0,40	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
0,55	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
0,75	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1,10	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
1,50	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
2,20	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	
3	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	

s = Standard voltage

o = voltage upon request

- = Not available

cea-volt-low-a-en_c_te

CEA-CIE SERIES PUMPS (ErP 2009/125/EC)

The **Commission Regulation (EU) No 547/2012** has implemented two directives with regard to ecodesign requirements for **some types of clean water pumps** placed on the market and put into service inside EU zone as self-alone units or integrated in other products.

For end-suction close-coupled in-line pumps (ESCC for the Regulation) the efficiency assessment refers to:

- just the pump and not the pump and motor assembly (electric or combustion);
- pumps with
 - one impeller;
 - a nominal pressure PN not higher than 16 bar (1600 kPa);
 - a minimum nominal flow not less than 6 m³/h;
 - a maximum nominal power at the shaft not higher than 150 kW;
 - a head not greater than 140 meters, with a speed of 2900 min⁻¹
 - a head not greater than 90 meters, with a speed of 1450 min⁻¹
- use with clean water at a temperature ranging from -10°C to 120°C (the test is performed with cold water at a temperature not higher than 40°C).

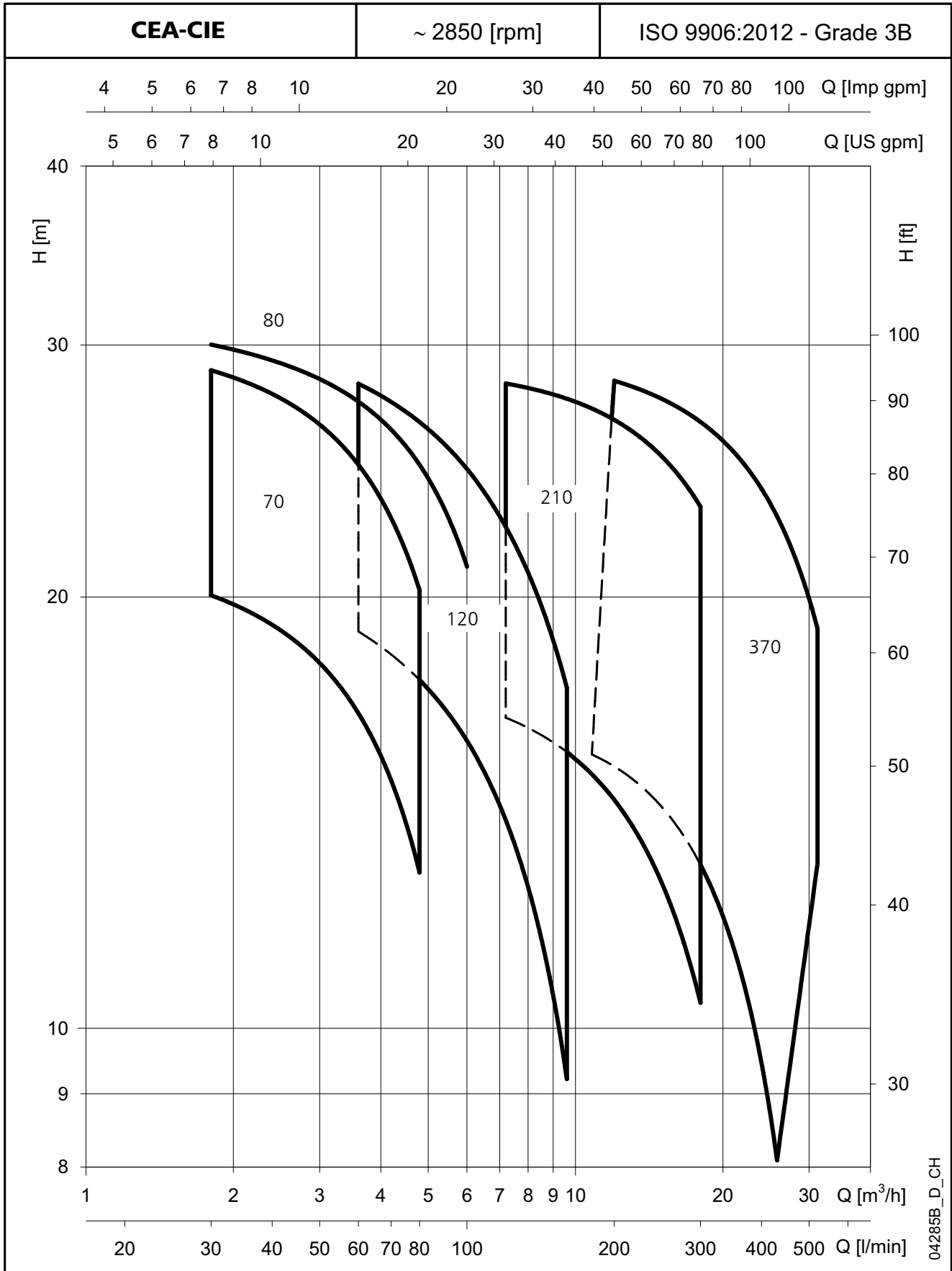
This regulation states that water pumps shall have a minimum index MEI coming from a dedicated formula which considers hydraulic efficiency values at 'best efficiency point' (BEP), 75 % of the flow at BEP (Part load – PL) and 110 % of the flow at BEP (Over load – OL).

The Regulation also establishes the following deadline:

from	minimum efficiency index (MEI)
1 st January 2015	MEI ≥ 0,4

Regulation (EU) n. 547/2012 – Annex II – point 2 (Product information requirements)

- 1) Minimum efficiency index: see MEI values in specific tables on following page.
- 2) The benchmark for most efficient water pumps is MEI ≥ 0,70.
- 3) Year of manufacture: see date on rating plate (≥ 2013).
- 4) Manufacturer: Xylem Service Italia Srl - Via dott. Vittorio Lombardi 14, 36075 Montecchio Maggiore (VI), Italia - Reg. No 07520560967.
- 5) Product type: see the PUMP TYPE column in the tables in the *Hydraulic performance* section.
- 6) Hydraulic pump efficiency with trimmed impeller: see η_p and \emptyset columns in the tables in the *Hydraulic performance* section.
- 7) Pump performance curves, including the performance curve: see the *Operating Characteristics* graphs in the following pages.
- 8) The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- 9) The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.
- 10) Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
- 11) "Designed for use below – 10 °C only": note not applicable to these products.
- 12) "Designed for use above 120 °C only": note not applicable to these products.
- 13) Specific instructions for pumps as per points 11 and 12: not applicable to these products.
- 14) "Information on benchmark efficiency is available at": www.europump.org (Ecodesign section).
- 15) The benchmark efficiency graphs with MEI = 0.7 and MEI = 0.4 are available at www.europump.org, (Ecodesign, Efficiency charts). Refer to "ESCC 1450 rpm", "ESCC 2900 rpm".

CEA-CIE SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES


04285B_D_CH

CEA-CIE SERIES TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

PUMP TYPE CEA.. CIE..	VERSION	MOTOR		ELECTRIC PUMP			MEI Δ (1)	Q = DELIVERY									
				* P ₁ kW	* I			l/min 0	30	40	60	80	100	120	140	160	
					220-240 V A	380-415 V A											m ³ /h 0
H = TOTAL HEAD IN METRES OF COLUMN OF WATER																	
70/3	1 ~	0,40	SM63BG/1045	0,60	2,72	-	-	22,1	20,0	18,7	16,6	13,8					
70/5		0,55	SM71BG/1055	0,97	4,55	-	-	31,1	28,8	27,2	24,8	21,5					
80/5		0,75	SM71BG/1075	1,07	4,87	-	-	32,1	30,0	28,9	27,4	25,5	23,0				
120/3		0,55	SM71BG/1055	0,91	4,33	-	0,40	22,5			18,9	17,9	16,8	15,5	14,0	12,3	9,1
120/5		0,95	SM71BG/1095	1,39	6,24	-	0,40	31,9			28,2	27,0	25,7	24,1	22,4	20,5	17,1
70/3	3 ~	0,40	SM63BG/304	0,61	2,51	1,45	-	22,1	20,0	18,7	16,6	13,8					
70/5		0,55	SM71BG/305	0,88	2,86	1,65	-	31,1	28,8	27,2	24,8	21,5					
80/5		0,75	SM80BG/307 PE	0,98	3,08	1,78	-	32,1	30,0	28,9	27,4	25,5	23,0				
120/3		0,55	SM71BG/305	0,82	2,74	1,58	0,40	22,5			18,9	17,9	16,8	15,5	14,0	12,3	9,1
120/5		1,10	SM80BG/311 PE	1,28	4,10	2,37	0,40	31,9			28,2	27,0	25,7	24,1	22,4	20,5	17,1

PUMP TYPE CEA.. CIE..	VERSION	MOTOR		ELECTRIC PUMP			MEI Δ (1)	Q = DELIVERY									
				* P ₁ kW	* I			l/min 0	120	140	160	180	200	250	300	301	302
					220-240 V A	380-415 V A											
H = TOTAL HEAD IN METRES OF COLUMN OF WATER																	
210/2	1 ~	0,75	SM71BG/1075	1,13	5,10	-	0,40	17,7	16,5	16,1	15,6	15,1	14,4	13,8	13,0	12,2	10,4
210/3		1,10	SM80BG/1115	1,48	6,68	-	0,40	20,8	19,7	19,4	19,0	18,6	18,0	17,5	16,8	16,1	14,4
210/4		1,50	SM80BG/1155	1,91	8,60	-	0,40	25,6	24,8	24,5	24,1	23,6	23,0	22,4	21,6	20,8	19,0
210/5		2,20	PLM90CEA-CO/1225	2,24	10,20	-	0,40	29,0	28,2	27,9	27,5	27,1	26,6	26,0	25,4	24,7	23,1
210/2	3 ~	0,75	SM80BG/307 PE	1,04	3,22	1,86	0,40	17,7	16,5	16,1	15,6	15,1	14,4	13,8	13,0	12,2	10,4
210/3		1,10	SM80BG/311 PE	1,35	4,24	2,45	0,40	20,8	19,7	19,4	19,0	18,6	18,0	17,5	16,8	16,1	14,4
210/4		1,50	SM80BG/315 PE	1,73	5,46	3,15	0,40	25,6	24,8	24,5	24,1	23,6	23,0	22,4	21,6	20,8	19,0
210/5		2,20	PLM90BG/322 E3	2,20	7,35	4,24	0,40	29,0	28,2	27,9	27,5	27,1	26,6	26,0	25,4	24,7	23,1

PUMP TYPE CEA.. CIE..	VERSION	MOTOR		ELECTRIC PUMP			MEI Δ (1)	Q = DELIVERY									
				* P ₁ kW	* I			l/min 0	180	200	250	300	350	400	430	480	520
					220-240 V A	380-415 V A											
H = TOTAL HEAD IN METRES OF COLUMN OF WATER																	
370/1	1 ~	1,10	SM80BG/1115	1,49	6,75	-	0,40	16,3	15,5	14,8	13,8	12,6	11,0	9,2			
370/2		1,50	SM80BG/1155	2,05	9,26	-	0,40	20,4		18,7	17,9	16,8	15,5	13,9	12,1		
370/3		2,2	PLM90CEA-CO/1225	2,45	11,10	-	0,40	24,4		22,5	21,7	20,7	19,5	18,1	16,3	14,3	13,0
370/1	3 ~	1,10	SM80BG/311 PE	1,40	4,35	2,51	0,40	16,3	15,5	14,8	13,8	12,6	11,0	9,2			
370/2		1,50	SM80BG/315 PE	1,95	5,94	3,43	0,40	20,4		18,7	17,9	16,8	15,5	13,9	12,1		
370/3		2,2	PLM90BG/322 E3	2,45	7,84	4,53	0,40	24,4		22,5	21,7	20,7	19,5	18,1	16,3	14,3	13,0
370/5		3	PLM90BG/330 E3	3,26	10,10	5,86	0,40	30,3		27,9	27,1	26,2	25,0	23,6	22,0	20,2	19,0

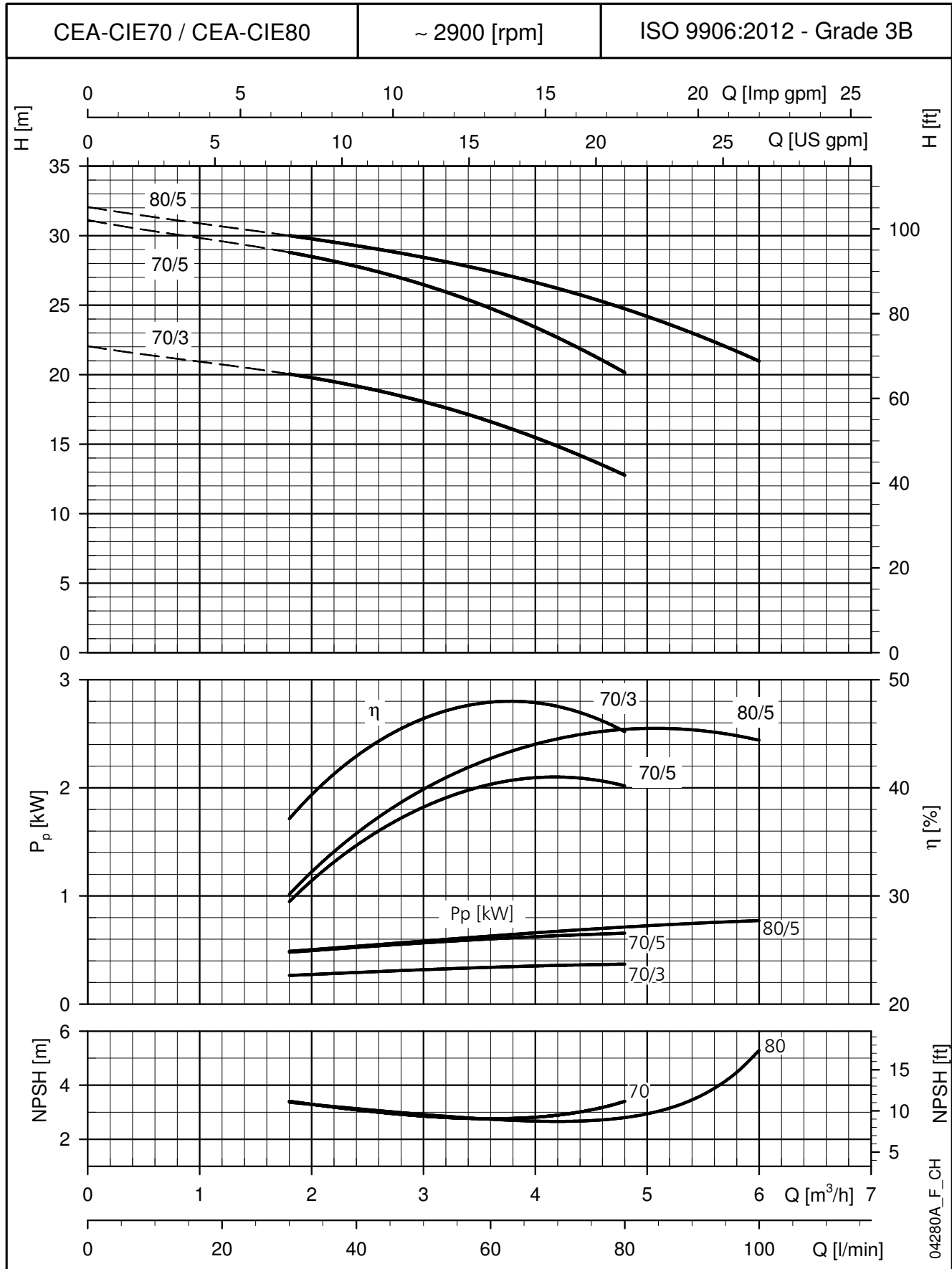
Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

(1) Minimum efficiency index MEI

cea-cie 2p50-en a th

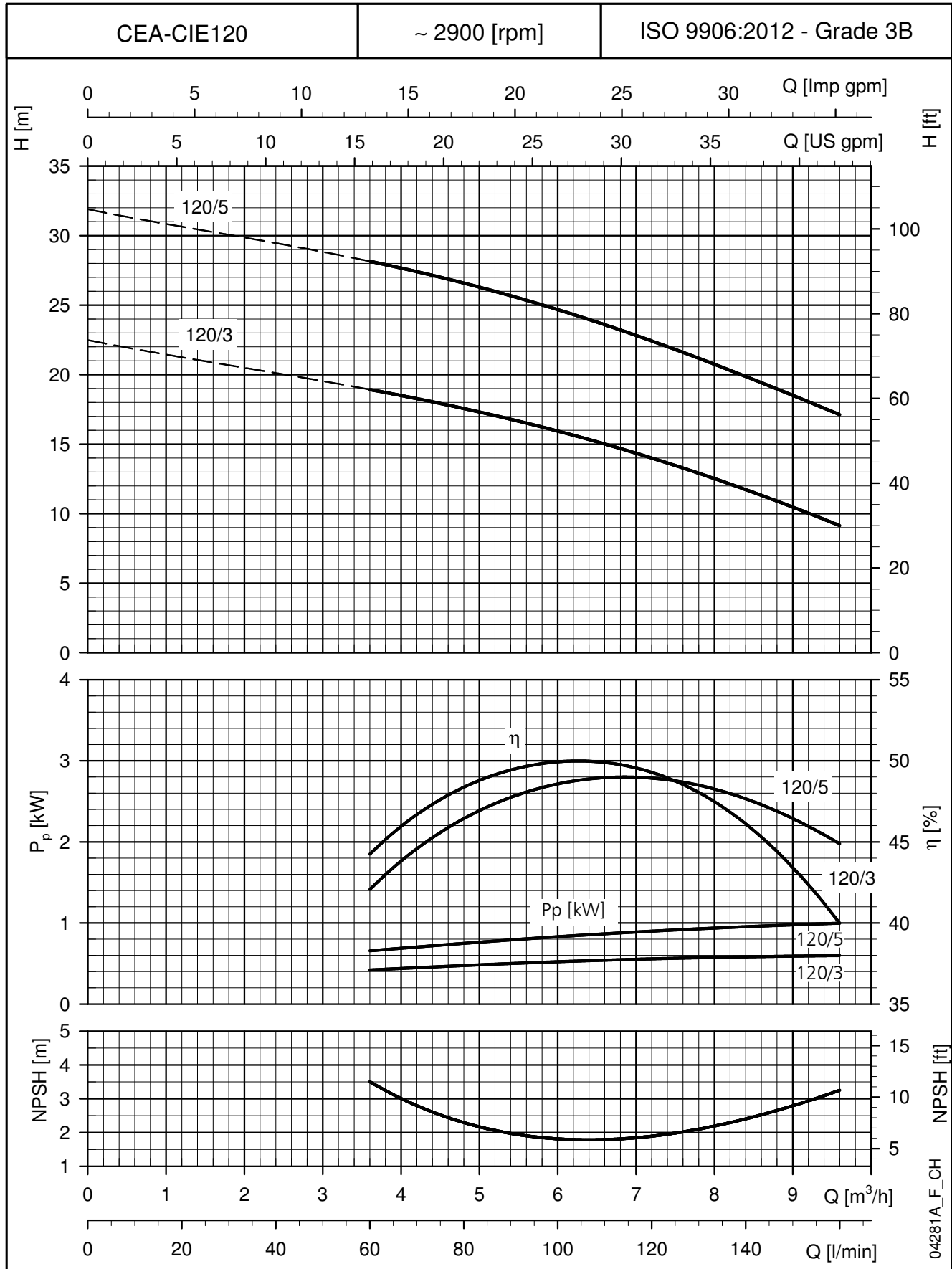
* Maximum value in specified range: P1 = input power; I = input current.

CEA-CIE SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



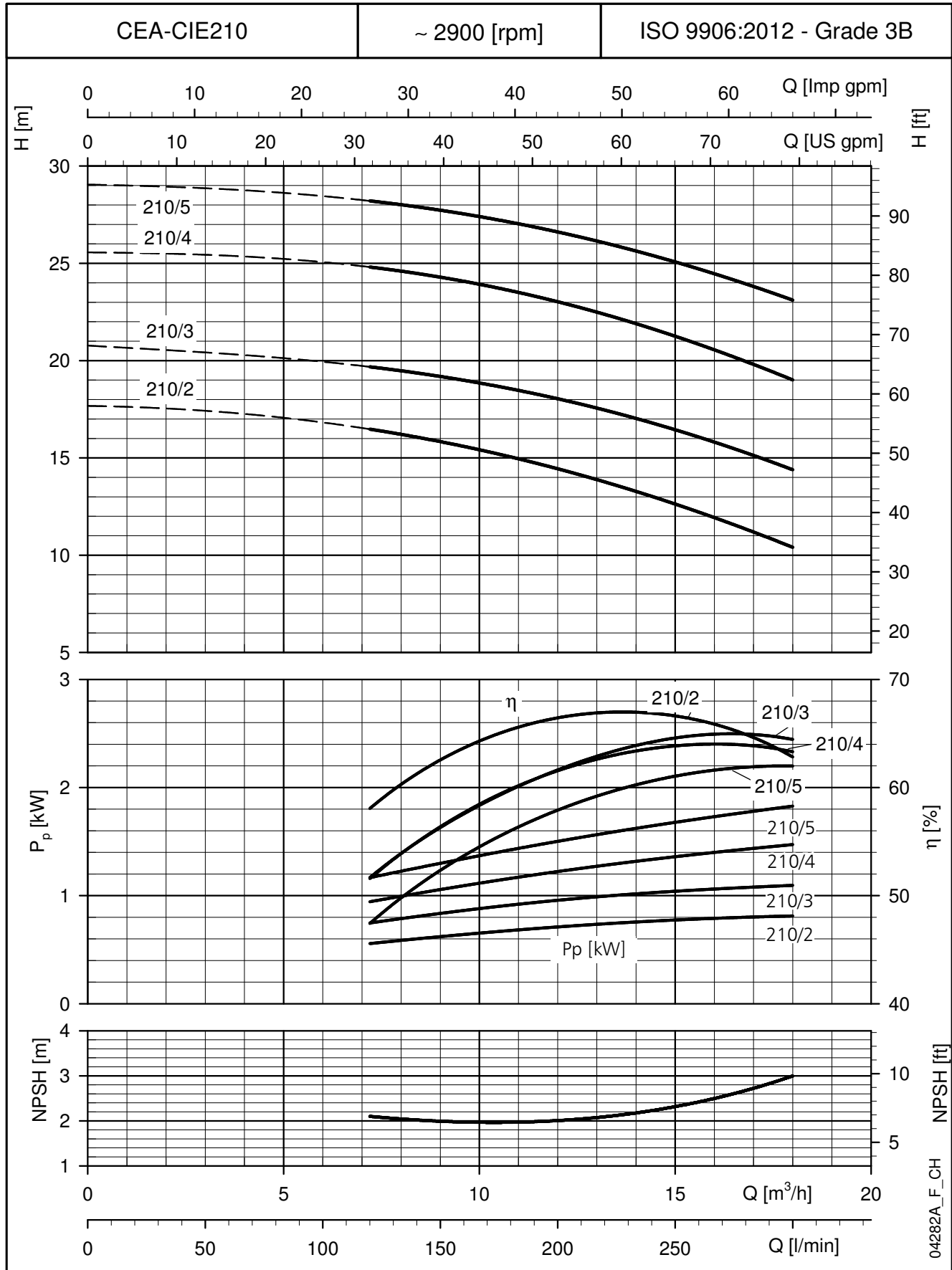
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEA-CIE SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



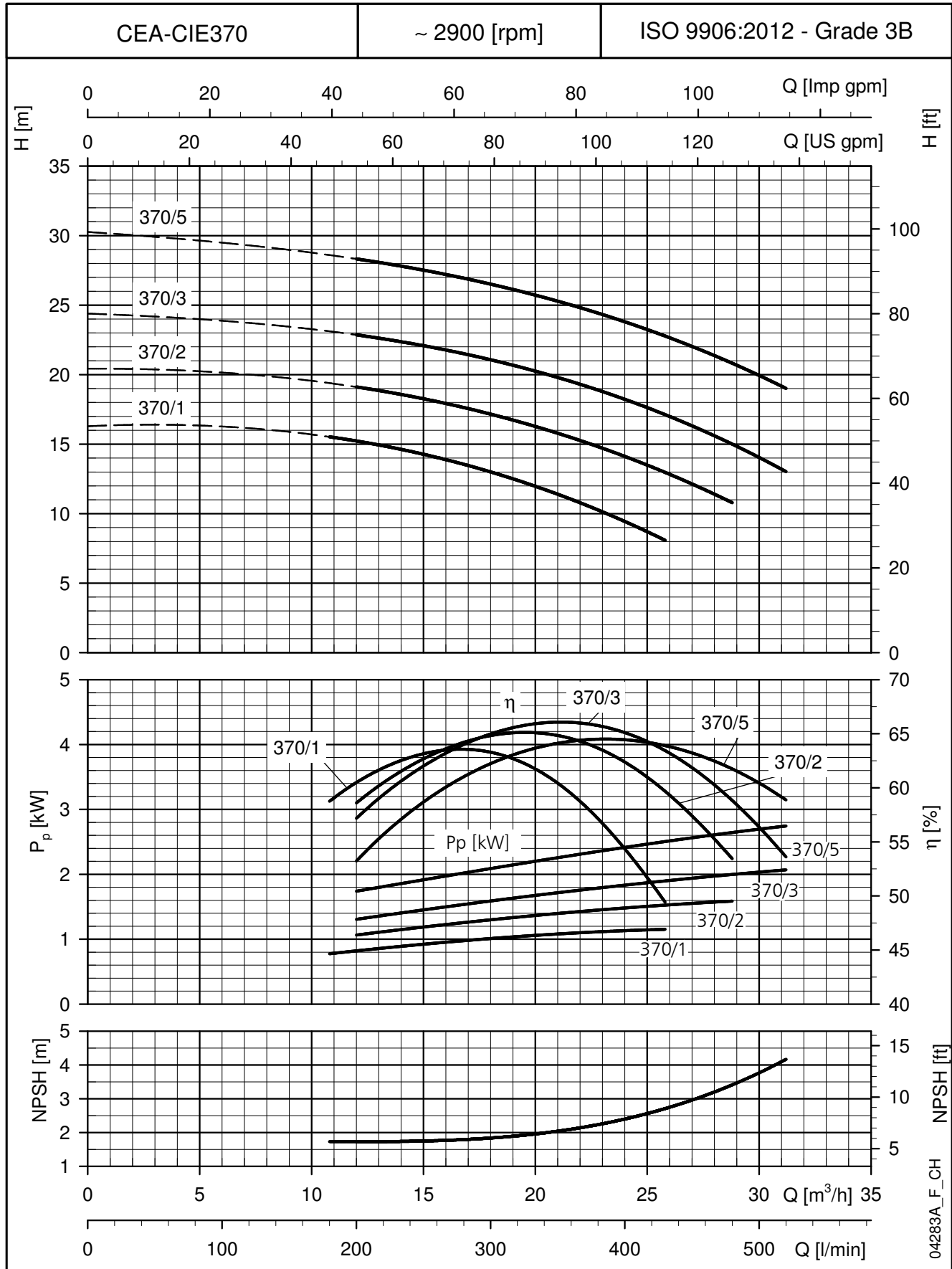
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEA-CIE SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



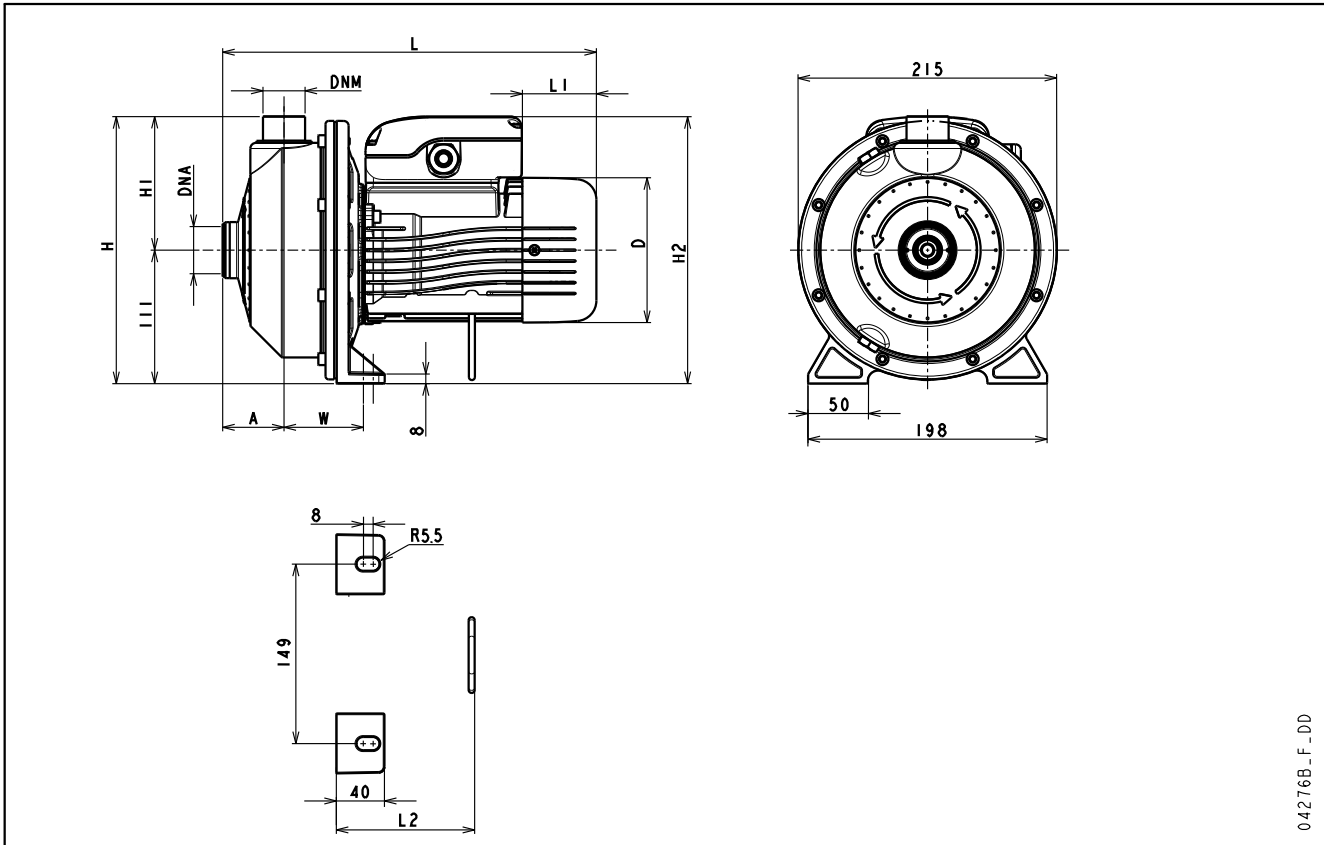
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEA-CIE SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEA-CIE SERIES DIMENSIONS AND WEIGHTS AT 50 Hz

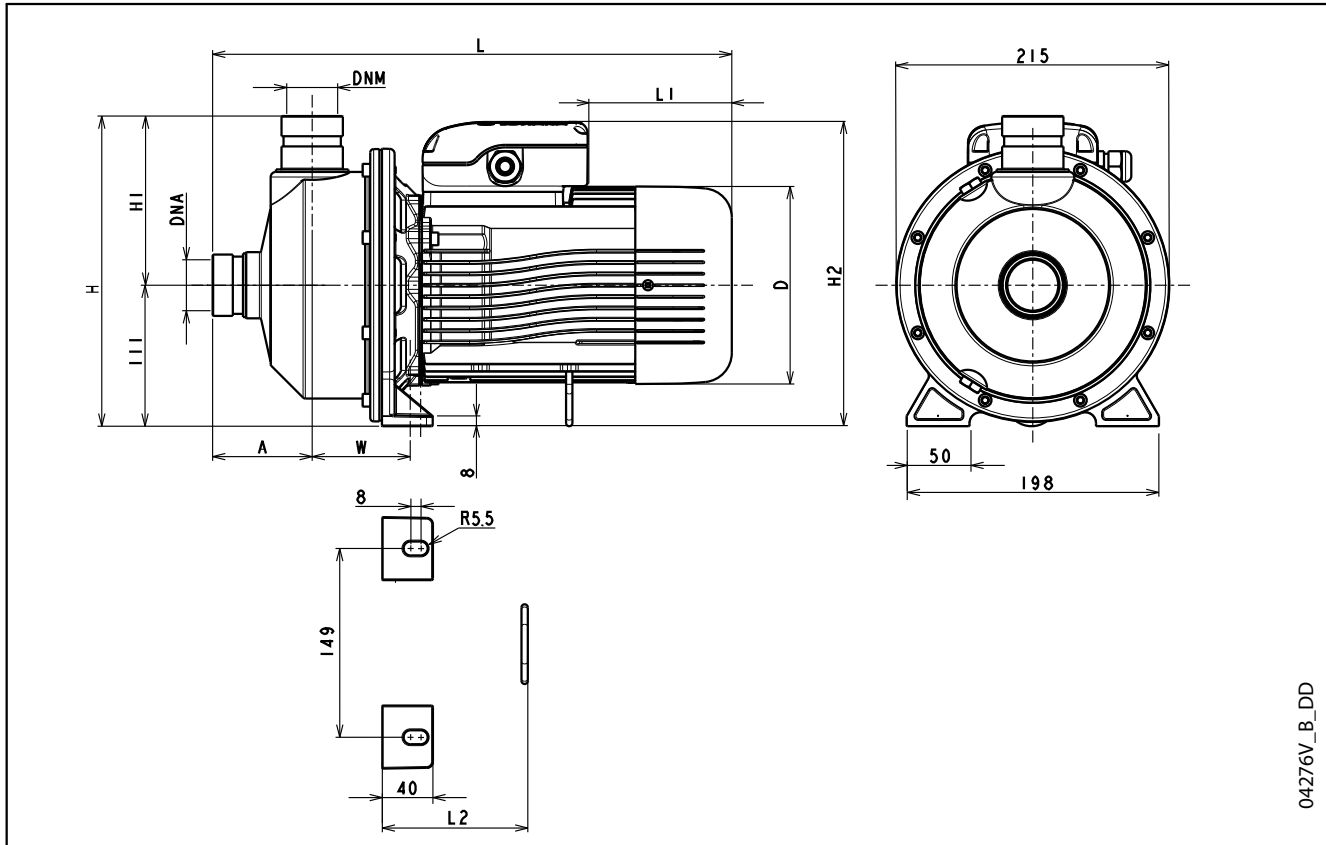


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PUMP TYPE CEA.. CIE..	VERSION	MOTOR		DIMENSIONS (mm)									DNA	DNM	WEIGHT kg	
		KW	SIZE	A	D	H	H1	H2	L	L1	L2	W				
70/3/A	1 ~	0,40	63	51	120	222	111	222	311	62	115	65	Rp 1¼	Rp 1	8,7	
70/5/A		0,55	71	51	140	222	111	232	325	76	117	65	Rp 1¼	Rp 1	10,6	
80/5/A		0,75	71	51	140	222	111	232	325	76	117	65	Rp 1¼	Rp 1	11,5	
120/3/A		0,55	71	51	140	222	111	232	325	76	117	65	Rp 1¼	Rp 1	10,5	
120/5/A		0,95	71	51	140	222	111	241	325	31	117	65	Rp 1¼	Rp 1	12,0	
210/2/A		0,75	71	54	140	224	113	232	339	76	117	76	Rp 1½	Rp 1¼	12,0	
210/3/A		1,10	80	54	156	224	113	248	385	69	150	76	Rp 1½	Rp 1¼	13,5	
210/4/A		1,50	80	54	156	224	113	248	385	69	150	76	Rp 1½	Rp 1¼	15,1	
210/5/P		2,20	90	54	174	224	113	262	429	84	197	76	Rp 1½	Rp 1¼	16,0	
370/1/A		1,10	80	54	156	224	113	248	385	69	150	76	Rp 2	Rp 1¼	13,0	
370/2/A		1,50	80	54	156	224	113	248	385	69	150	76	Rp 2	Rp 1¼	15,1	
370/3/P		2,20	90	54	174	224	113	262	429	84	197	76	Rp 2	Rp 1¼	19,0	
70/3/A		3 ~	0,40	63	51	120	222	111	222	311	62	115	65	Rp 1¼	Rp 1	8,7
70/5/A			0,55	71	51	140	222	111	232	325	76	117	65	Rp 1¼	Rp 1	10,6
80/5/D	0,75		80	51	155	222	111	240	371	114	150	65	Rp 1¼	Rp 1	13,4	
120/3/A	0,55		71	51	140	222	111	232	325	76	117	65	Rp 1¼	Rp 1	10,5	
120/5/D	1,10		80	51	155	222	111	240	371	114	150	65	Rp 1¼	Rp 1	13,6	
210/2/D	0,75		80	54	155	224	113	240	385	114	150	76	Rp 1½	Rp 1¼	13,6	
210/3/D	1,10		80	54	155	224	113	240	385	114	150	76	Rp 1½	Rp 1¼	15,4	
210/4/D	1,50		80	54	155	224	113	240	385	114	150	76	Rp 1½	Rp 1¼	16,9	
210/5/D	2,20		90	54	174	224	113	245	429	172	197	76	Rp 1½	Rp 1¼	20,0	
370/1/D	1,10		80	54	155	224	113	240	385	114	150	76	Rp 2	Rp 1¼	14,8	
370/2/D	1,50		80	54	155	224	113	240	385	114	150	76	Rp 2	Rp 1¼	16,9	
370/3/D	2,20		90	54	174	224	113	245	429	172	197	76	Rp 2	Rp 1¼	20,0	
370/5/D	3		90	54	174	224	113	245	429	172	197	76	Rp 2	Rp 1¼	20,0	

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SERIE CIE..V - VICTAULIC DIMENSIONS AND WEIGHTS AT 50 Hz



04276V_B_DD

PUMP TYPE	VERSION	MOTOR		DIMENSIONS (mm)									VICTAULIC		WEIGHT kg
		KW	SIZE	A	D	H	H1	H2	L	L1	L2	W	DNA	DNM	
CIEM 70/3V/A	1 ~	0,4	63	73,5	120	244,2	133,2	222	333,5	62	115	65	1 1/2"	1"	8,7
CIEM 70/5V/A		0,55	71	73,5	140	244,2	133,2	232	347,5	76	117	65	1 1/2"	1"	10,6
CIEM 80/5V/A		0,75	71	73,5	140	244,2	133,2	232	347,5	76	117	65	1 1/2"	1"	11,5
CIEM 120/3V/A		0,55	71	73,5	140	244,2	133,2	232	347,5	76	117	65	1 1/2"	1"	10,5
CIEM 120/5V/A		0,95	71	73,5	140	244,2	133,2	241	347,5	31	117	65	1 1/2"	1"	12,0
CIEM 210/2V/A		0,75	71	78,5	140	244,2	133,2	232	363,5	76	117	76	1 1/2"	1 1/2"	12,0
CIEM 210/3V/A		1,1	80	78,5	156	244,2	133,2	248	409,5	69	150	76	1 1/2"	1 1/2"	13,5
CIEM 210/4V/A		1,5	80	78,5	156	244,2	133,2	248	409,5	69	150	76	1 1/2"	1 1/2"	15,1
CIEM 210/5V/P		2,2	90	78,5	174	244,2	133,2	262	453,5	84	197	76	1 1/2"	1 1/2"	16,0
CIEM 370/1V/A		1,1	80	78,5	156	244,2	133,2	248	409,5	69	150	76	1 1/2"	1 1/2"	13,0
CIEM 370/2V/A		1,5	80	78,5	156	244,2	133,2	248	409,5	69	150	76	1 1/2"	1 1/2"	15,1
CIEM 370/3V/P		2,2	90	78,5	174	244,2	133,2	262	453,5	84	197	76	1 1/2"	1 1/2"	19,0
CIE 70/3V/A	3 ~	0,4	63	73,5	120	244,2	133,2	222	333,5	62	115	65	1 1/2"	1"	8,7
CIE 70/5V/A		0,55	71	73,5	140	244,2	133,2	232	347,5	76	117	65	1 1/2"	1"	10,6
CIE 80/5V/D		0,75	80	73,5	155	244,2	133,2	240	393,5	114	150	65	1 1/2"	1"	13,4
CIE 120/3V/A		0,55	71	73,5	140	244,2	133,2	232	347,5	76	117	65	1 1/2"	1"	10,5
CIE 120/5V/D		1,1	80	73,5	155	244,2	133,2	240	393,5	114	150	65	1 1/2"	1"	13,6
CIE 210/2V/D		0,75	80	78,5	155	244,2	133,2	240	409,5	114	150	76	1 1/2"	1 1/2"	13,6
CIE 210/3V/D		1,1	80	78,5	155	244,2	133,2	240	409,5	114	150	76	1 1/2"	1 1/2"	15,4
CIE 210/4V/D		1,5	80	78,5	155	244,2	133,2	240	409,5	114	150	76	1 1/2"	1 1/2"	16,9
CIE 210/5V/D		2,2	90	78,5	174	244,2	133,2	245	453,5	172	197	76	1 1/2"	1 1/2"	20,0
CIE 370/1V/D		1,1	80	78,5	155	244,2	133,2	240	409,5	114	150	76	1 1/2"	1 1/2"	14,8
CIE 370/2V/D		1,5	80	78,5	155	244,2	133,2	240	409,5	114	150	76	1 1/2"	1 1/2"	16,9
CIE 370/3V/D		2,2	90	78,5	174	244,2	133,2	245	453,5	172	197	76	1 1/2"	1 1/2"	20,0
CIE 370/5V/D	3	90	78,5	174	244,2	133,2	245	453,5	172	197	76	1 1/2"	1 1/2"	20,0	

cieV-2p50-en_b_td

CA SERIES GENERAL DESCRIPTION

Twin impeller centrifugal electric pumps made of stainless steel

MARKET SECTORS

CIVIL, AGRICULTURAL,
INDUSTRIAL.

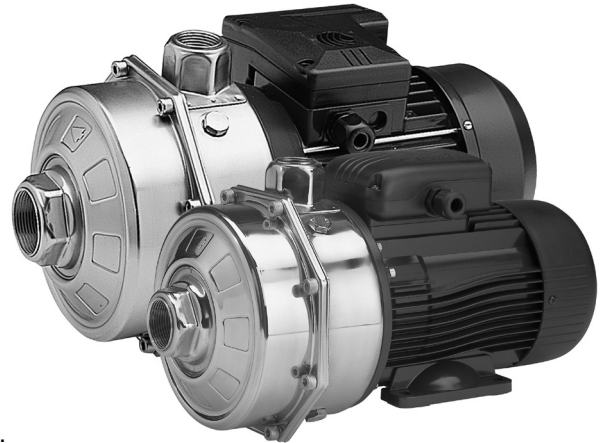
APPLICATIONS

Version made of AISI 304

- Handling of chemically and mechanically non-aggressive water and liquids.
- Water supply.
- Irrigation.
- Water circulation (cold, hot, refrigerated).

Version made of AISI 316 (“..N”)

- Reverse osmosis (where demineralized water is used).
- Industrial washing.
- Thermal waters.
- Chlorine dispensing in swimming pools.



SPECIFICATION

PUMP

- Delivery up to **12,5 m³/h**.
- Head up to **62 m**.
- Temperature of pumped liquid:
from -10°C to +85°C for CA standard version (NBR elastomers).
from -10°C to +110°C for CA and CA..N (EPDM elastomer for N version, FPM elastomers for V version).
- Maximum operating **pressure**: 8 bar (PN 8).
- Hydraulic performance compliant with ISO 9906:2012 (Grade 3B). (ex ISO 9906:1999 - Annex A).
- Counter-clockwise rotation facing the pump from the suction port.

MOTOR

- Asynchronous, squirrel cage rotor, close construction, external ventilation.
- Protection class: **IP55**.
- **Class 155** (F) Insulation
- Performance to EN 60034-1 specifications.
- **Standard voltage**:
- Single-phase version:
220-240 V, 50 Hz
- Three-phase version:
220-240/380-415 V, 50 Hz.
- Condensate drain plugs in the standard version.

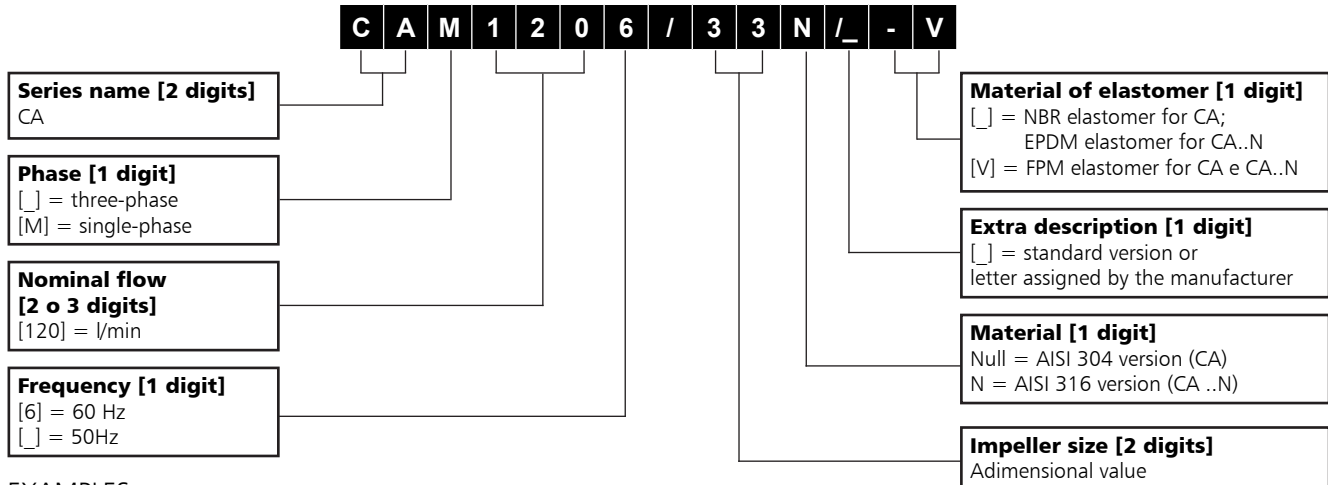
CONSTRUCTION CHARACTERISTICS

- Close-coupled, single-impeller centrifugal pump featuring axial suction and radial discharge.
- Compact construction, with pump coupled directly to motor; special motor shaft extension in common with the pump and supported by ball bearings.
- Threaded suction and discharge ports (Rp EN 10226-1 and ISO 7-1).
- High performance enclosed impeller made of **AISI 304** stainless steel (**AISI 316** for N version).
- **Mechanical seal** with Ceramic/Carbon rings, NBR elastomers, (EPDM for N version) other parts are made of AISI 304 stainless steel (AISI 316 for N version). Mounting dimensions according to EN 12756 (ex DIN 24960) and ISO 3069.
- **O-rings** made of NBR (EPDM for N version).
- Mounting pedestal on motor.

OPTIONAL FEATURES

- Different voltages.
- 60 Hz frequency (see 60 Hz catalog).
- Different material for the mechanical seal and O-rings.

CA SERIES IDENTIFICATION CODE



EXAMPLES:

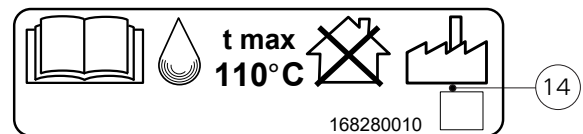
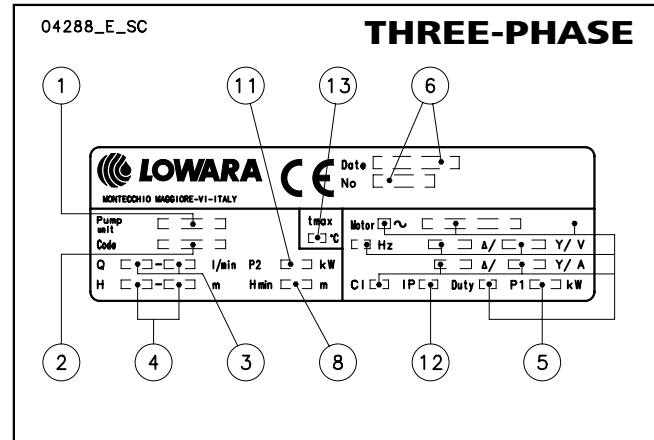
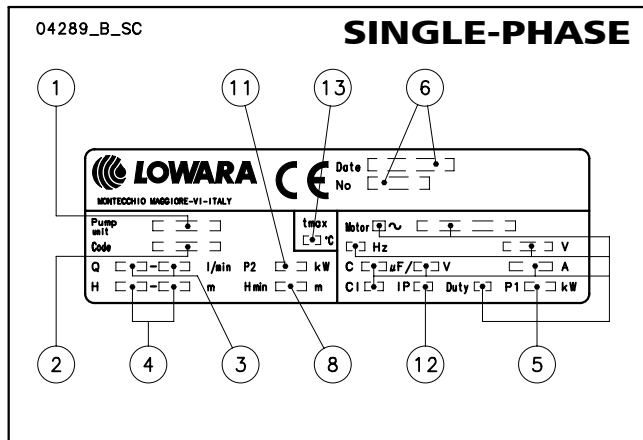
CAM120/33/B-V

CA series electric pump, single-phase, nominal flow 120 l/min, frequency 50 Hz, two impellers size 3, stainless steel AISI 304 version, FPM elastomer.

CA120/35N/B

CA series electric pump, three-phase, nominal flow 120 l/min, frequency 50 Hz, 1 impeller size 3 + 1 impeller size 5, stainless steel AISI 316 version, EPDM elastomer.

RATING PLATE

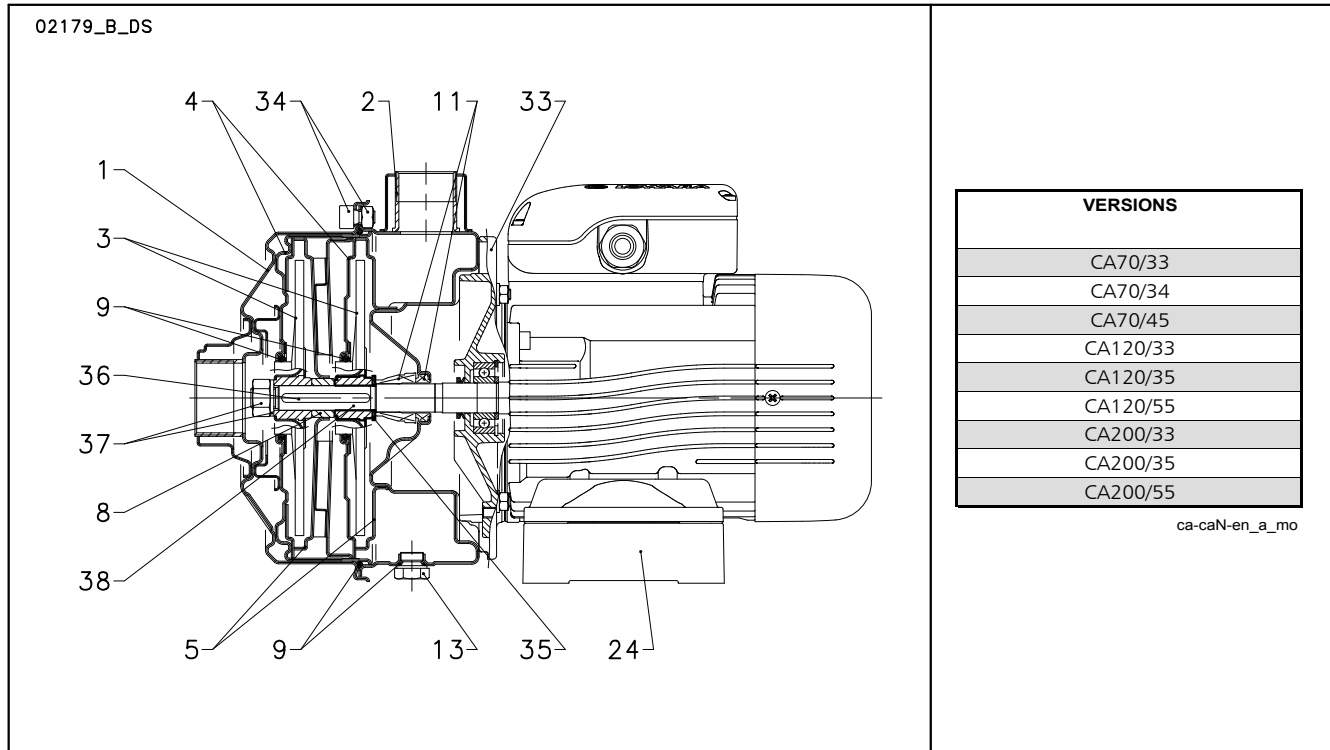


LEGEND

- 1 - Electric pump unit type
- 2 - Electric pump unit code
- 3 - Flow range
- 4 - Head range
- 5 - Electrical data
- 6 - Serial number (data + order number)
- 8 - Minimum head (EN 60335-2-41)
- 11 - Rated power

- 12 - Protection degree
- 13 - Maximum operating liquid temperature (uses as EN 60335-2-41)
- 14 - Maximum operating liquid temperature (for use other than EN 60335-2-41)

CA SERIES ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS



CA VERSION

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Suction flange	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
2	Pump body	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
3	Impeller	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
4	Diffuser cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
5	Diffuser cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
8	Impeller spacer	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
9	Elastomers	NBR (standard version)		
11	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
24	Mounting pedestal	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
33	Adapter	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
34	Pump body fastening nuts and bolts	Zinc-plated steel		
35	Impeller shoulder washer	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
36	Key	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
37	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
38	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316

CA..N VERSION

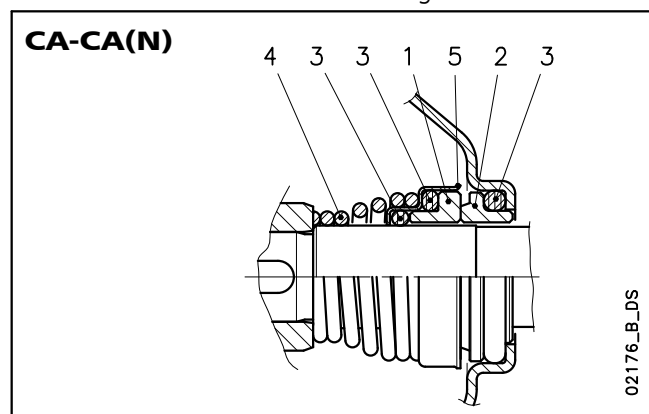
ca-ca-en_b_tm

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Suction flange	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Diffuser cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller spacer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Elastomers	EPDM (standard version)		
11	Mechanical seal	Ceramic / Carbon / EPDM (standard version)		
13	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
24	Mounting pedestal	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
33	Adapter	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
34	Pump body fastening nuts and bolts	Zinc-plated steel		
35	Impeller shoulder washer	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
36	Key	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
37	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
38	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316

ca-caN-en_a_tm

CA SERIES MECHANICAL SEALS

Elastomer bellow seal with mounting dimensions according to EN 12756 and ISO 3069



LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	P : NBR	F : AISI 304
C : Special resin impregnated carbon	E : EPDM	G : AISI 316
Q₁ : Silicon carbide	V : FPM	
U₃ : Tungsten carbide		
V : Ceramic		

cea-ca_ten-mec-en_b_tm

SEAL TYPES

SERIES	TYPE	POSITION					TEMPERATURE (°C)
		1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
CA	STANDARD MECHANICAL SEAL						-10...+110
	VBPGF	V	B	P	G	F	
	OTHER TYPES OF MECHANICAL SEAL						
	VBEGF	V	B	E	G	F	
	VCEGG	V	C	E	G	G	
	Q ₁ Q ₁ EGF	Q ₁	Q ₁	E	G	F	
	U ₃ BEGF	U ₃	B	E	G	F	
	U ₃ CEGF	U ₃	C	E	G	F	
	U ₃ U ₃ EGF	U ₃	U ₃	E	G	F	
	VBVGF	V	B	V	G	F	
	VCVGF	V	C	V	G	F	
	Q ₁ Q ₁ VGF	Q ₁	Q ₁	V	G	F	
	U ₃ CVGF	U ₃	C	V	G	F	
U ₃ U ₃ VGF	U ₃	U ₃	V	G	F		
CA..N	STANDARD MECHANICAL SEAL						-10...+110
	VBEGG	V	B	E	G	G	
	OTHER TYPES OF MECHANICAL SEAL						
	VCEGG	V	C	E	G	G	
	Q ₁ Q ₁ EGG	Q ₁	Q ₁	E	G	G	
	VCVGG	V	C	V	G	G	
	Q ₁ Q ₁ VGG	Q ₁	Q ₁	V	G	G	

ca_tipi-ten-mec-en_c_tc

CA SERIES MOTORS (ErP 2009/125/EC)

- Short-circuit squirrel-cage motor, enclosed construction with external ventilation (TEFC).
- Rated power from 1,1 to 200 kW for 2-pole range and from 0,25 to 355 kW for 4-pole range.
- **IP55** protection degree.
- Insulation class **155 (F)**.
- Electrical performances according to EN 60034-1.
- **Supplied three-phase surface motors with IE2 efficiency level (for power < 0,75 kW) or IE3 efficiency level (for power ≥ 0,75 kW) as standard according to EN 60034-30:2009 and EN 60034-30-1:2014.**
- Metric cable gland according to EN 50262.
- PTC included in motors from IEC size 200 and above (one per phase, 155°C).
- **Single-phase** version:
220-240 V 50 Hz
Built-in automatic reset overload protection.
Maximum ambient temperature: 40 °C.
- **Three-phase** version:
220-240/380-415 V 50 Hz for power up to 3 kW.
380-415/660-690 V 50 Hz for power above 3 kW.
Overload protection to be provided by the user.
Maximum ambient temperature: 40° or 50 °C, (depending on model and power)

From 1 July 2021 in accordance with the **Regulations (EU) 2019/1781 and 2021/341**, the three-phase 50 Hz, 60 Hz or 50/60 Hz **surface motors** with **power outputs ranging from 0,12 to 0,749 kW** must have a minimum level **IE2** efficiency; the ones with power outputs ranging **from 0,75 and 1000 kW** must have a minimum level of **IE3** efficiency.

From 1 July 2023, it will be introduced additional requirements.

The following tables also contain the mandatory information pursuant to Annex I, section 2, of the aforementioned Regulations.

SINGLE-PHASE MOTORS AT 50 Hz, 2 POLES

P _N kW	MOTOR TYPE	IEC SIZE	Construction Design	INPUT CURRENT		CAPACITOR		DATA FOR 230 V 50 Hz VOLTAGE						Operating conditions **		
				220-240 V	In (A)	μF	V	min ⁻¹	Is / In	η %	cosφ	Tn Nm	Ts/Tn	Tm/Tn	Altitude Above Sea Level (m)	T. amb min/max °C
0,75	SM71CA/1075	71	SPECIAL	4,90-4,85	20	450	2765	3,42	70,1	0,96	2,59	0,58	1,75	≤ 1000	-15 / 40	No
0,95	SM71CA/1095	71		6,25-5,89	25	450	2740	3,39	71,1	0,98	3,31	0,58	1,66			
1,1	SM80CA/1115	80		6,88-6,65	30	450	2800	3,89	74,7	0,96	3,75	0,46	1,72			
1,5	SM80CA/1155	80		9,21-8,58	40	450	2810	4,00	76,1	0,98	5,09	0,39	1,74			
1,85	PLM80CA/1225	90		12,5-11,6	70	450	2825	4,47	82,4	0,97	7,43	0,53	1,87			
2,2	PLM90CA/1225	90		12,5-11,6	70	450	2825	4,47	82,4	0,97	7,43	0,53	1,87			

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

ca-motm-2p50-en_b_te

CA SERIES

THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P _N kW	Manufacturer		IEC SIZE	Construction Design	N. of Poles	f _N Hz	Data for 400 V / 50 Hz Voltage				
	Xylem Service Italia Srl Reg. No. 07520560967 Montecchio Maggiore Vicenza - Italia						cosφ	I _s / I _N	T _N Nm	T _s /T _N	T _m /T _N
	Model										
0,75	SM80CA/307 PE		80	SPECIAL	2	50	0,78	7,38	2,48	3,57	3,75
0,95	SM80CA/311 PE		80				0,79	8,31	3,63	3,95	3,95
1,1	SM80CA/311 PE		80				0,79	8,31	3,63	3,95	3,95
1,5	SM80CA/315 PE		80				0,80	8,80	4,96	4,31	4,10
1,85	PLM90CA/322 E3		90				0,80	8,77	7,28	3,72	3,70
2,2	PLM90CA/322 E3		90				0,80	8,77	7,28	3,72	3,70
3	PLM90CA/330 E3		90				0,79	7,81	9,93	4,26	3,94

P _N kW	Voltage U _N V												n _N min ⁻¹	Operating conditions **			
	Δ			Y			Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX	
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V						
	I _N (A)																
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98	2875 ÷ 2895			≤ 1000	-15 / 40	No
0,95	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900					
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900					
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895					
1,85	7,97	7,90	7,98	4,6	4,56	4,61	4,57	4,54	4,57	2,64	2,62	2880 ÷ 2900					
2,2	7,97	7,90	7,98	4,6	4,56	4,61	4,57	4,54	4,57	2,64	2,62	2880 ÷ 2900					
3	11,0	11,0	11,2	6,35	6,33	6,44	6,29	6,27	6,34	3,63	3,62	2865 ÷ 2895					

P _N kW	Efficiency η _N %																		IE
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V			
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	3
0,95	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	
1,5	85,6	86,5	85,8	85,9	86,4	84,9	86,0	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	
1,85	86,5	87,4	86,8	86,4	86,9	85,7	86,6	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	
2,2	86,5	87,4	86,8	86,4	86,9	85,7	86,6	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	
3	87,2	88,5	88,3	87,5	88,2	87,5	87,5	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

ca-ie3-mott-2p50-en_b_te

AVAILABLE VOLTAGES FOR SM AND PLM MOTORS

P _N kW	SINGLE-PHASE								THREE-PHASE																			
	50 Hz				60 Hz				50 Hz								60 Hz				50/60 Hz							
	1 x 220-240	1 x 100	1 x 110-120	1 x 220-230	1 x 100	1 x 110-115	1 x 120-127	1 x 200-210	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 200-208/346-360	3 x 255-265/440-460	3 x 290-300/500-525	3 x 440-460/-	3 x 500-525/-	3 x 220-230/380-400	3 x 255-265-277/440-460-480	3 x 380-400/660-690	3 x 440-460-480/-	3 x 110-115/190-200	3 x 200-208/346-360	3 x 330-346/575-600	3 x 575/-	3 x 230/400 50 Hz	3 x 265/460 60 Hz	3 x 400/690 50 Hz	3 x 460/- 60 Hz	
0,75	s	o	o	s	o	o	o	o	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o
0,95	s	o	o	s	o	o	o	o	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o
1,1	s	-	o	s	-	o	-	o	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o
1,5	s	-	-	s	-	o	-	o	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o
2,2	s	-	-	s	-	-	-	-	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o
3									s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o	o	o	o

s = Standard voltage

o = voltage upon request

- = Not available

ca-volt-low-a-en_b_te

CA SERIES PUMPS (ErP 2009/125/EC)

The **Commission Regulation (EU) No 547/2012** has implemented two directives with regard to ecodesign requirements for **some types of clean water pumps** placed on the market and put into service inside EU zone as self-alone units or integrated in other products.

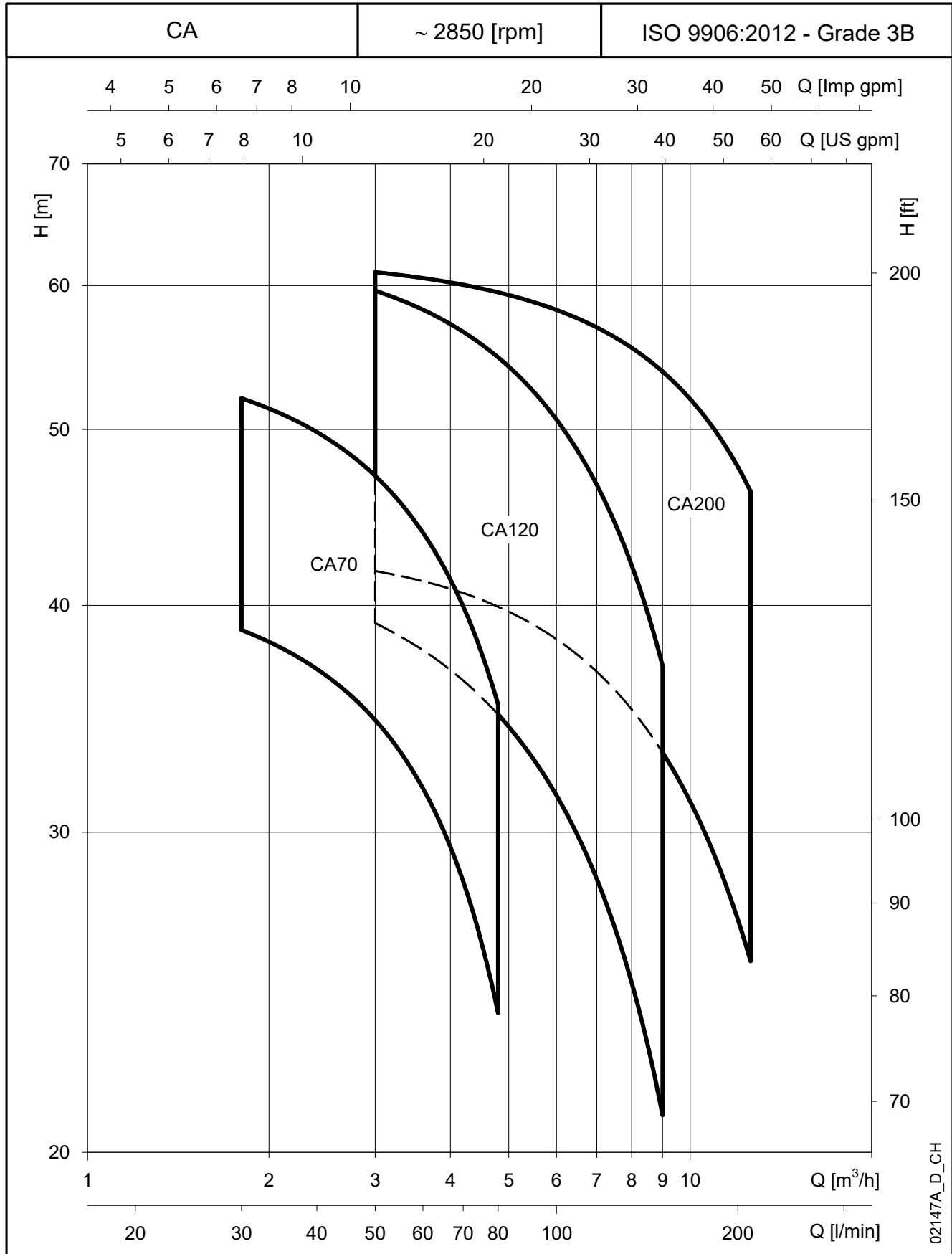
For end-suction close-coupled in-line pumps (ESCC for the Regulation) the efficiency assessment refers to:

- just the pump and not the pump and motor assembly (electric or combustion);
- pumps with
 - one impeller;
 - a nominal pressure PN not higher than 16 bar (1600 kPa);
 - a minimum nominal flow not less than 6 m³/h;
 - a maximum nominal power at the shaft not higher than 150 kW;
 - a head not greater than 140 meters, with a speed of 2900 min⁻¹
 - a head not greater than 90 meters, with a speed of 1450 min⁻¹
- use with clean water at a temperature ranging from -10°C to 120°C (the test is performed with cold water at a temperature not higher than 40°C).

According to the definitions established by the Regulations, **the CA Series does not fall into any of the subject categories, despite having a good hydraulic performance.**

CA SERIES

HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



02147A_D_CH

CA SERIES

TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		MEI Δ (1)	Q = DELIVERY													
				l/min	0	30	40	50	60	70	80	100	120	150	180	210	
	m ³ /h	0		1,8	2,4	3	3,6	4,2	4,8	6	7,2	9	10,8	12,6			
kW		HP	H = TOTAL HEAD METRES COLUMN OF WATER														
CA70/33 *	0,75	1	-	42,9	38,8	36,9	34,6	31,7	28,2	23,9							
CA70/34 *	0,95	1,3	-	48,8	45,1	43,2	40,7	37,7	34,0	29,5							
CA70/45 *	1,1	1,5	-	56,2	52,0	49,8	47,1	43,9	39,9	35,3							
CA120/33 *	1,1	1,5	-	44,3			39,1	37,8	36,4	34,8	31,4	27,6	21,0				
CA120/35 *	1,5	2	-	54,0			49,4	48,1	46,6	44,9	41,2	36,8	29,3				
CA120/55 *	2,2	3	-	63,8			59,6	58,2	56,6	54,8	50,6	45,7	37,1				
CA200/33 *	1,85	2,5	-	43,2			41,8	41,2	40,6	39,9	38,3	36,4	33,2	29,5	25,5		
CA200/35 *	2,2	3	-	53,5			52,4	51,9	51,4	50,7	49,2	47,5	44,3	40,6	36,5		
CA200/55	3	4	-	62,6			61,0	60,6	60,1	59,5	58,2	56,6	53,8	50,4	46,2		

* A single-phase version (CAM) is also available

(1) MEI Minimum Efficiency Index

ca-2p50-en_e_th

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

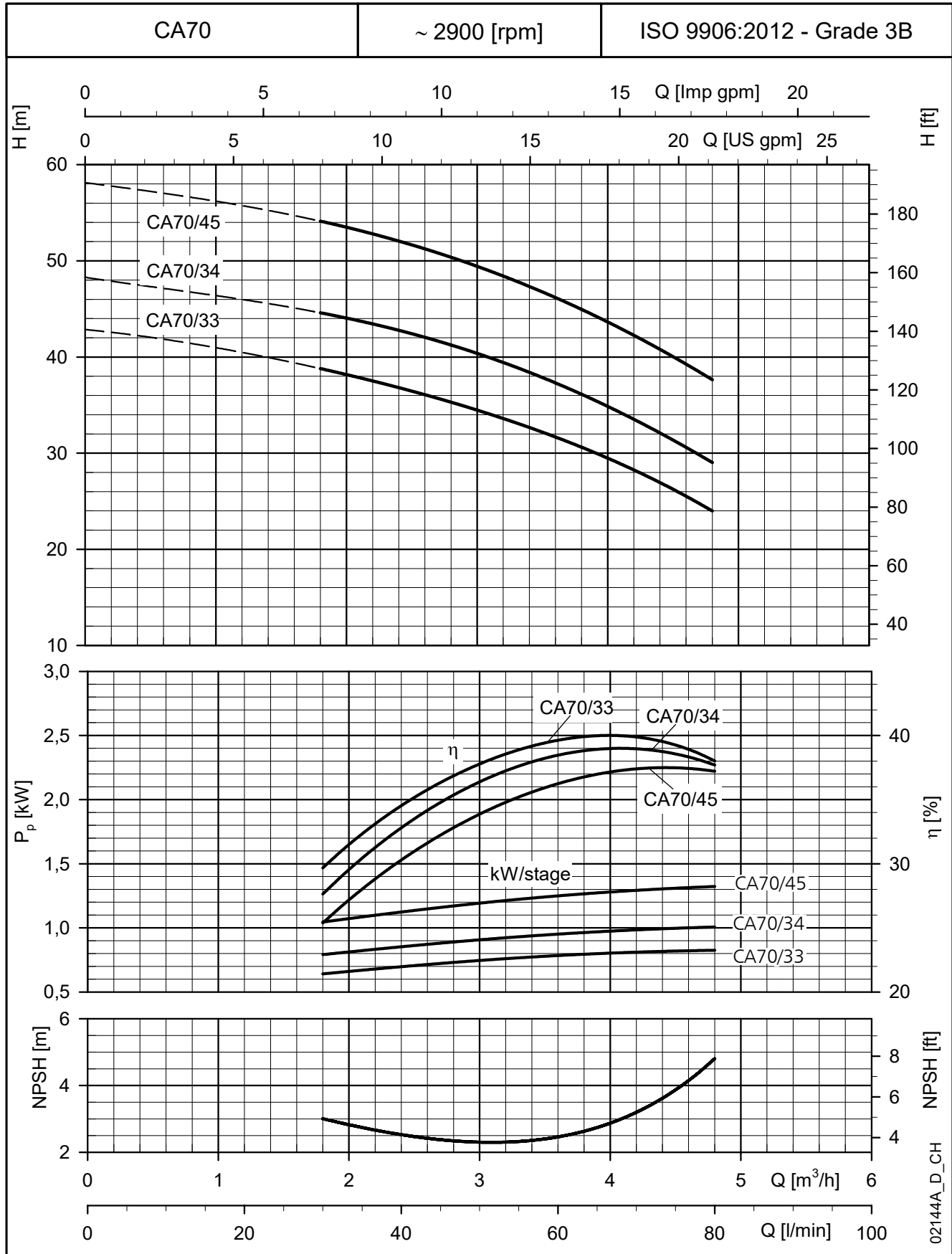
ELECTRICAL DATA AT 50 Hz, 2 POLES

PUMP TYPE	MOTOR TYPE	INPUT POWER*	INPUT CURRENT*		CAPACIT.	PUMP TYPE	MOTOR TYPE	INPUT POWER*	INPUT CURRENT*	
			220-240 V						220-240 V	380-415 V
1 ~		kW	A	μ F / 450 V	3 ~		kW	A	A	
CAM70/33	SM71CA/1075	1,15	5,16	20	CA70/33	SM80CA/307 PE	1,05	3,24	1,87	
CAM70/34	SM71CA/1095	1,39	6,22	25	CA70/34	SM80CA/311 PE	1,29	4,10	2,37	
CAM70/45	SM80CA/1115	1,76	7,92	30	CA70/45	SM80CA/311 PE	1,64	4,90	2,83	
CAM120/33	SM80CA/1115	1,67	7,53	30	CA120/33	SM80CA/311 PE	1,56	4,71	2,72	
CAM120/35	SM80CA/1155	2,18	9,87	40	CA120/35	SM80CA/315 PE	2,06	6,18	3,57	
CAM120/55	PLM90CA/1225	2,54	11,5	70	CA120/55	PLM90CA/322 E3	2,56	7,97	4,60	
CAM200/33	PLM90CA/1225	2,29	10,4	70	CA200/33	PLM90CA/322 E3	2,33	7,45	4,30	
CAM200/35	PLM90CA/1225	2,94	12,6	70	CA200/35	PLM90CA/322 E3	3,14	9,30	5,37	
-	-	-	-	-	CA200/55	PLM90CA/330 E3	3,77	11,7	6,76	

*Maximum value in specified range.

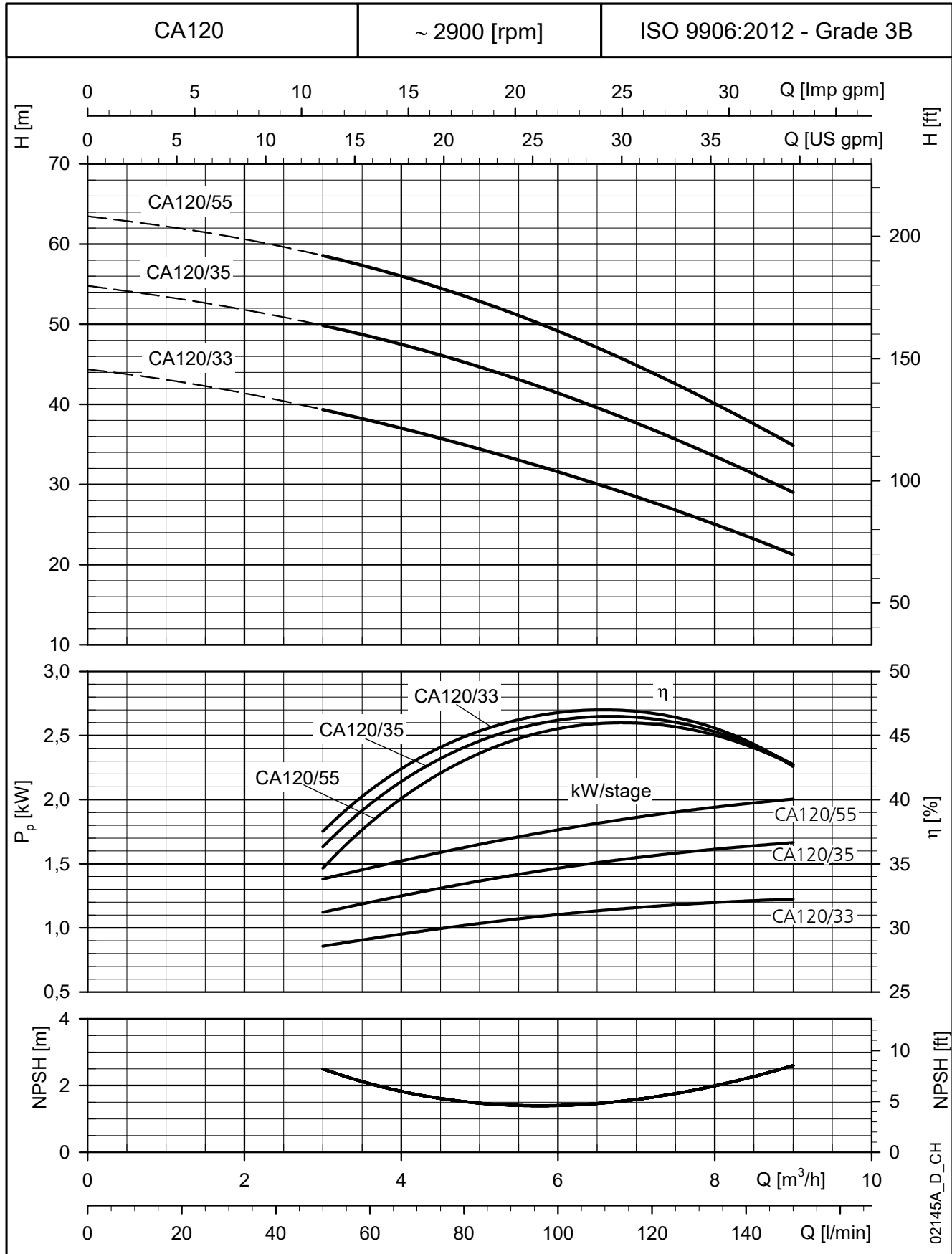
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CA SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

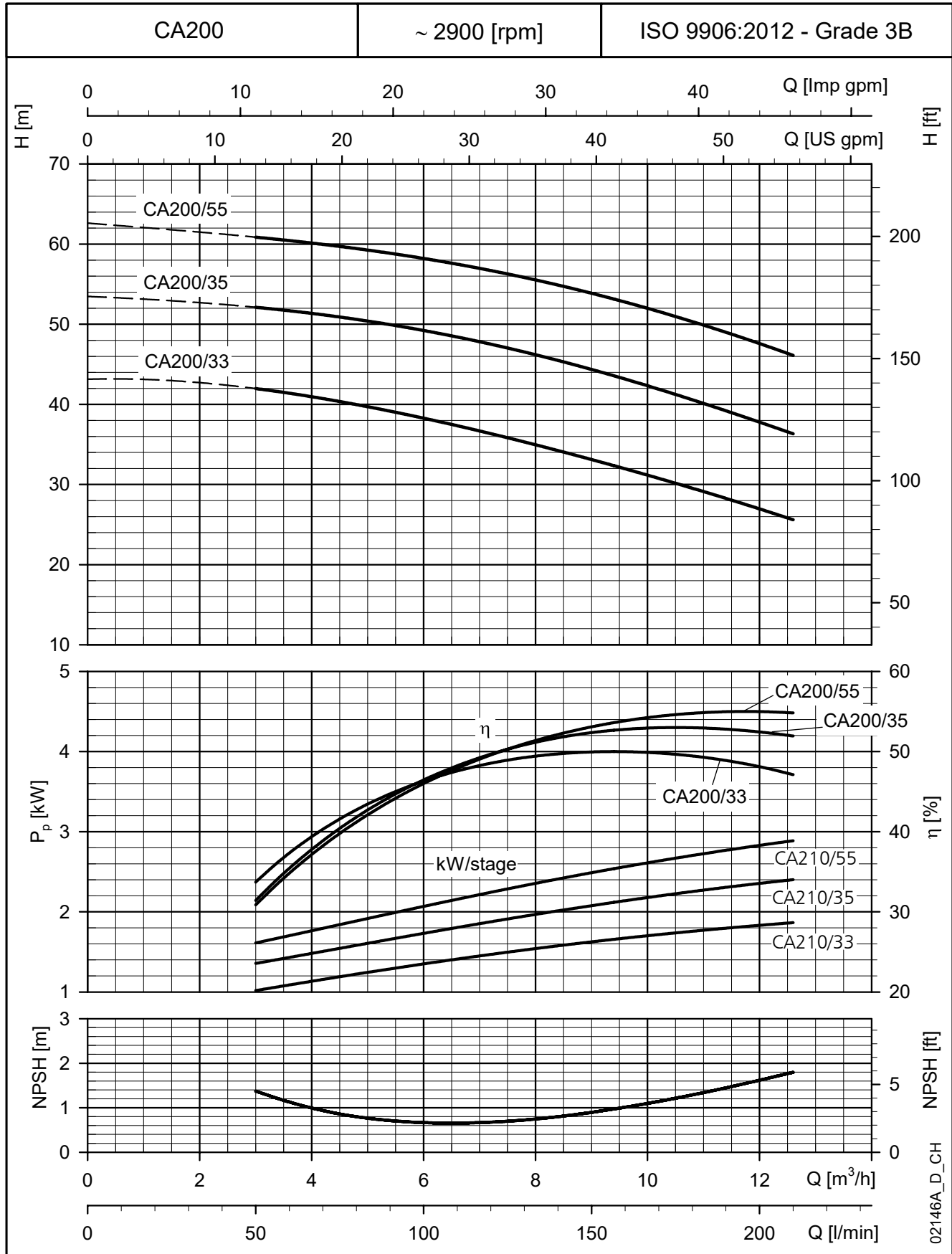
CA SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



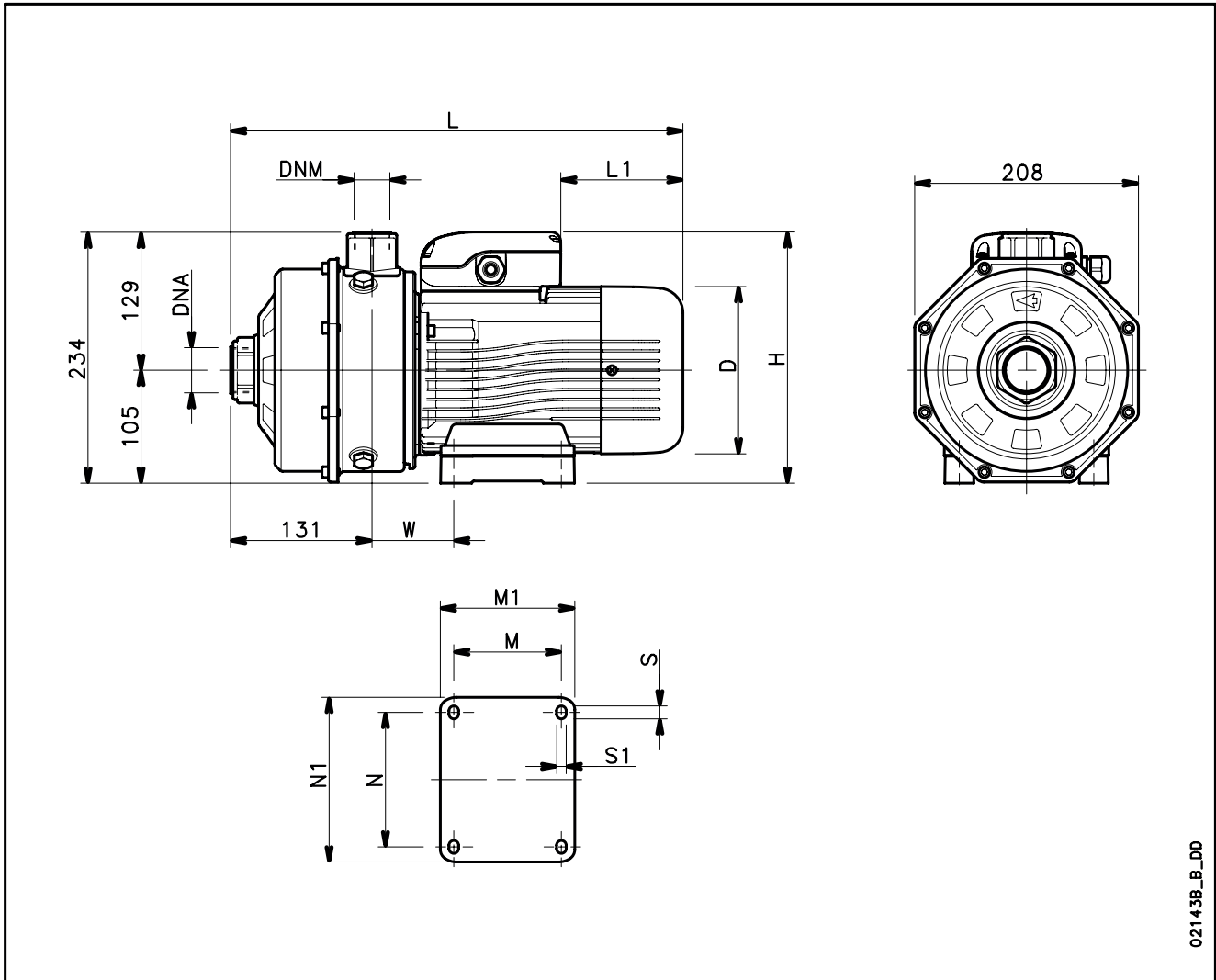
02145A_D_CH

These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CA SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CA SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz


02143B_B_DD

PUMP TYPE	DIMENSIONS (mm)											DNA	DNM	WEIGHT
	D	H	L	L1	M	M1	N	N1	S	S1	W			
CAM 70/33/B	140	226	383	76	90	113	112	135	12	7	66	Rp 1¼	Rp 1	15
CAM 70/34/B	140	235	383	31	90	113	112	135	12	7	66	Rp 1¼	Rp 1	15,8
CAM 70/45/B	156	242	420	69	100	125	125	153	12	9	76	Rp 1¼	Rp 1	18,5
CAM 120/33/B	156	242	420	69	100	125	125	153	12	9	76	Rp 1¼	Rp 1	18,4
CAM 120/35/B	156	242	420	69	100	125	125	153	12	9	76	Rp 1¼	Rp 1	20,2
CAM 120/55/P	174	265	454	58	125	155	140	170	13	10	98	Rp 1¼	Rp 1	27
CAM 200/33/P	174	265	454	58	125	155	140	170	13	10	98	Rp 1½	Rp 1	27
CAM 200/35/P	174	265	454	58	125	155	140	170	13	10	98	Rp 1½	Rp 1	27
CA 70/33/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	16,7
CA 70/34/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	17,4
CA 70/45/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	18,7
CA 120/33/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	18,7
CA120/35/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	20,4
CA 120/55/D	174	239	454	172	125	155	140	170	13	10	98	Rp 1¼	Rp 1	25
CA 200/33/D	174	239	454	172	125	155	140	170	13	10	98	Rp 1½	Rp 1	25
CA 200/35/D	174	239	454	172	125	155	140	170	13	10	98	Rp 1½	Rp 1	25
CA 200/55/D	174	239	454	172	125	155	140	170	13	10	98	Rp 1½	Rp 1	27

ca-2p50-en_m_td

CEF SERIES GENERAL DESCRIPTION

Bare shaft centrifugal pumps made of stainless steel with closed impeller

MARKET SECTORS

CIVIL, AGRICULTURAL,
INDUSTRIAL.

APPLICATIONS

- Handling of chemically and mechanically non-aggressive water and liquids.
- Water supply.
- Irrigation.
- Water circulation (cold, hot, refrigerated).
- * For aggressive liquids please contact our sales network.

SPECIFICATION

PUMP

- Delivery up to **31 m³/h** at 2900 rpm.
- Head up to **29 m** at 2900 rpm.
- Temperature of pumped liquid: from -10°C to +110°C for standard version.
- Maximum operating **pressure**: 8 bar (PN 8).
- Counter-clockwise rotation facing the pump from the suction port.

CONSTRUCTION

FEATURES

- Close-coupled, single-impeller centrifugal pump featuring axial intake and radial discharge.
- The CEF series pumps are available in the following constructions:
 - Pump coupled by adapter to the bare shaft support; special shaft extensions in common with pump are supported by ball bearing. The pump can be coupled with 2 or 4 poles motor.
 - Pump on basement, coupled to a 2-pole motor with an elastic coupling. **IE3 motors are supplied as standard according to regulation (EC) n.640/2009 and IEC 60034-30.**
- Back pull-out design; no need to disconnect the pump body from the system pipes.
- Threaded suction and delivery ports (Rp ISO 7).



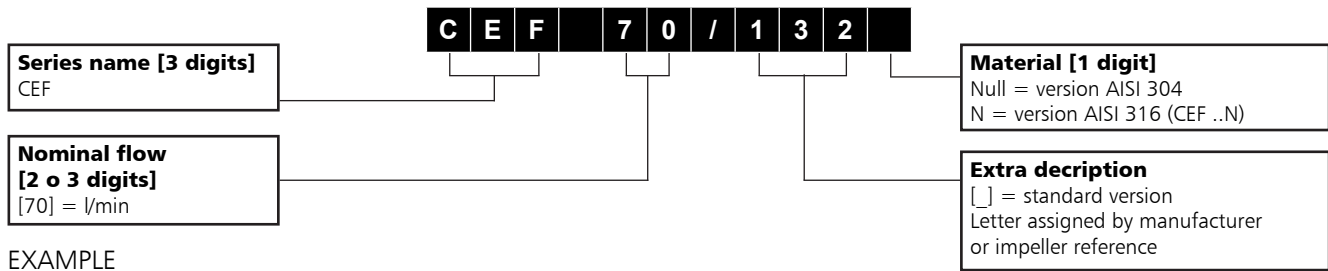
- **In the standard version, all parts in contact with pumped liquid are made of stainless steel**
- High performance closed **impeller** made of **AISI 304** stainless steel (**AISI 316 for N version**).
- **Mechanical seal** with Carbon/Ceramic faces, FKM* elastomers, other parts are made of AISI 316.
- **FKM* O-rings.**
- **Sturdy support with permanently lubricated bearings**

* Fluoro-elastomer: FPM (old ISO), FKM (ASTM & new ISO).

OPTIONAL FEATURES

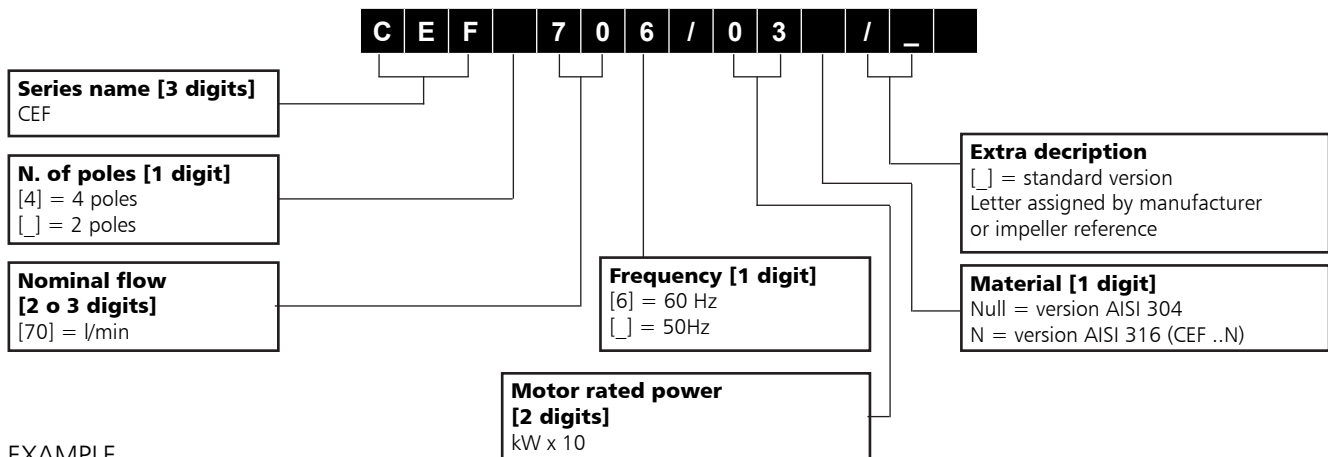
- Different materials for the mechanical seal and O-rings.

CEF SERIES IDENTIFICATION CODE PUMP



EXAMPLE
CEF 70/132
CEF Pump Series, flow rate 70 l/min, impeller reference 132

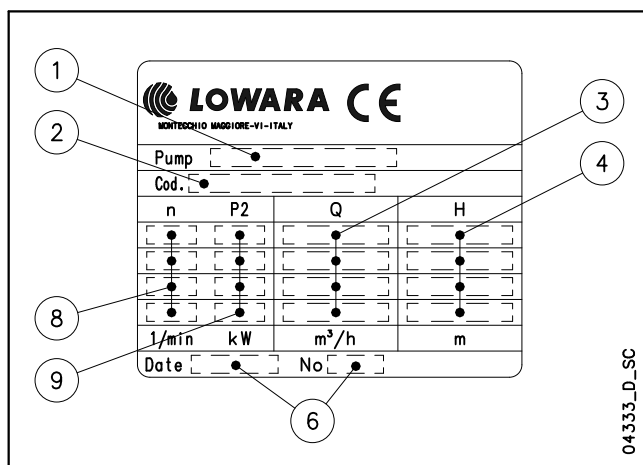
ELECTRIC PUMP



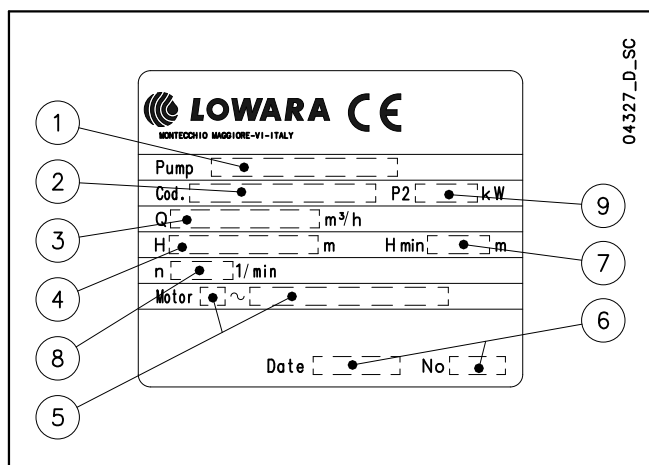
EXAMPLE
CEF 70/03
CEF Electric pump Series, flow rate 70 l/min, motor rated power 0,37 kW, 50 Hz version.

RATING PLATE

PUMP



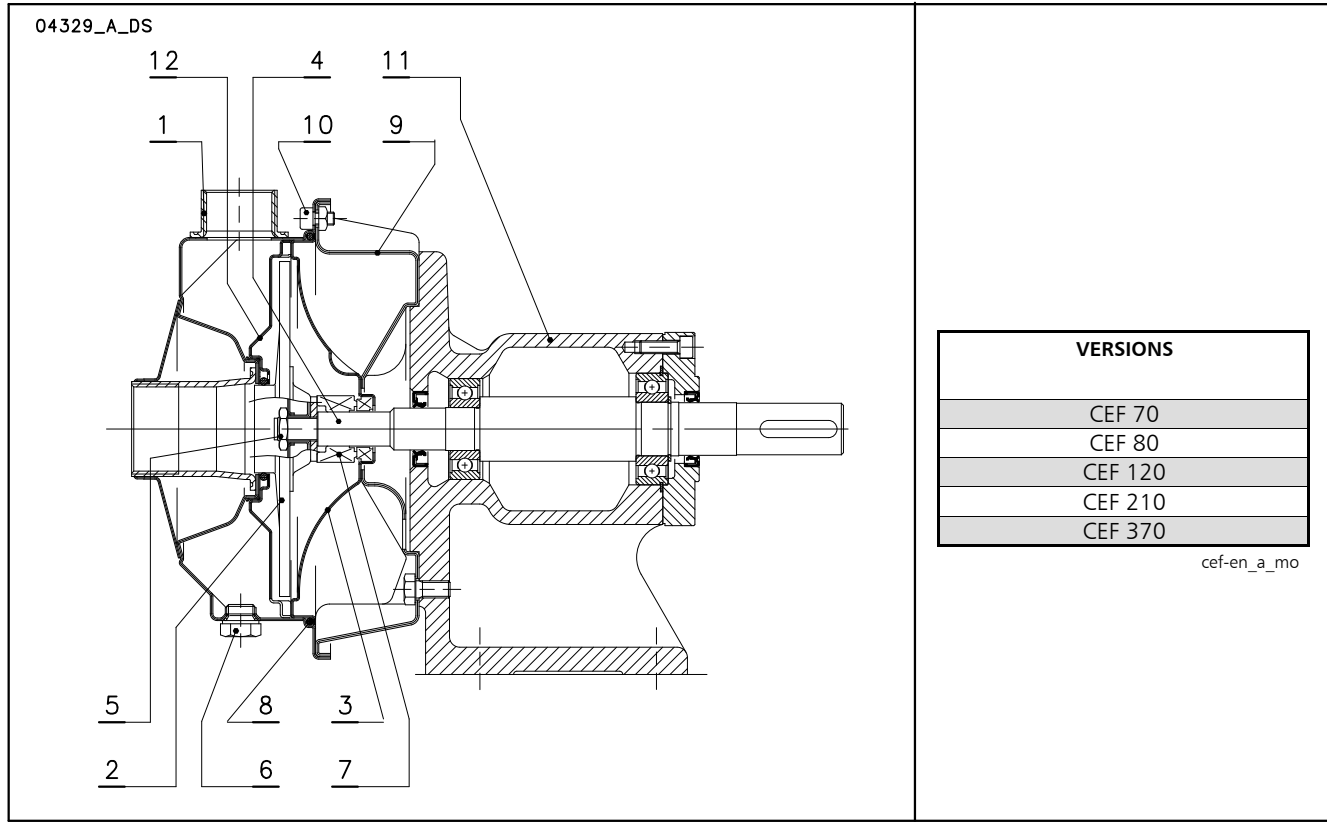
ELECTRIC PUMP



LEGEND

- 1 - Electric pump unit type
- 2 - Electric pump unit code
- 3 - Flow range
- 4 - Head range
- 5 - Motory type
- 6 - Serial number (data + order number)
- 7 - Minimum head (EN 60335-2-41)
- 8 - Speed
- 9 - Rated power
- 10 - Maximum operating temperature

CEF SERIES ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS



CEF VERSION

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Mechanical seal	Ceramic / resin impregnated Carbon / FKM (standard version)		
8	Elastomers	FKM (standard version)		
9	Motor pump bracket	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
10	Pump body fastening bolts & screws	Galvanized steel		
11	Bracket casing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
12	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L

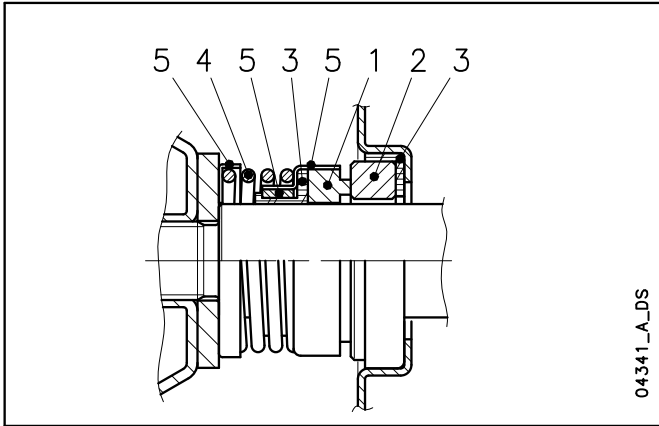
cef-en_b_tm

CEF.N VERSION

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Mechanical seal	Ceramic / resin impregnated Carbon / FKM (standard version)		
8	Elastomers	FKM (standard version)		
9	Motor pump bracket	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
10	Pump body fastening bolts & screws	Galvanized steel		
11	Bracket casing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
12	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L

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**CEF SERIES
MECHANICAL SEAL**



04341_A_DS

LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	E : EPDM	G : AISI 316
V : Ceramic	V : FKM (FPM)	
Q₁ : Silicon Carbide		
U₃ : Tungsten Carbide		

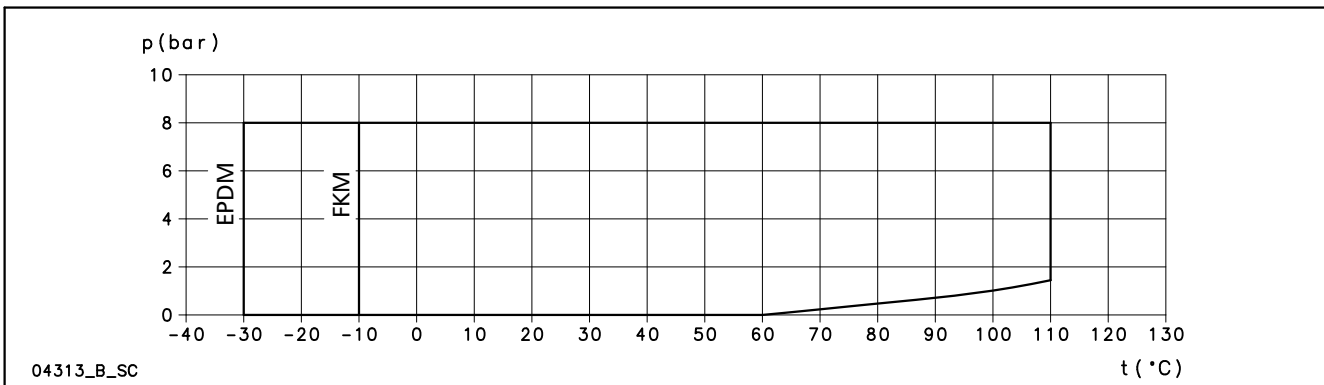
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SEAL TYPES

TYPE	POSITION					TEMPERATURE (°C)
	1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
STANDARD MECHANICAL SEAL						
VBVGG	V	B	V	G	G	-10 +110
OTHER MECHANICAL SEAL TYPES						
Q ₁ BEGG	Q ₁	B	E	G	G	-30 +110
Q ₁ Q ₁ EGG	Q ₁	Q ₁	E	G	G	-30 +110
U ₃ Q ₁ VGG	U ₃	Q ₁	V	G	G	-10 +110

cof_tipi-ten-mec-j-c-21-en_c_tc

COMPLETE PUMP PRESSURE / TEMPERATURE OPERATING LIMITS



04313_B_SC

CEF SERIES MOTORS (ErP 2009/125/EC)

- Short-circuit squirrel-cage motor, enclosed construction with external ventilation (TEFC).
- Rated power from 1,1 to 200 kW for 2-pole range and from 0,25 to 355 kW for 4-pole range.
- **IP55** protection degree.
- Insulation class **155 (F)**.
- Electrical performances according to EN 60034-1.
- **Supplied three-phase surface motors with IE2 efficiency level (for power < 0,75 kW) or IE3 efficiency level (for power ≥ 0,75 kW) as standard according to EN 60034-30:2009 and EN 60034-30-1:2014.**
- Metric cable gland according to EN 50262.
- PTC included in motors from IEC size 200 and above (one per phase, 155°C).
- **Single-phase** version:
220-240 V 50 Hz
Built-in automatic reset overload protection.
Maximum ambient temperature: 40 °C.
- **Three-phase** version:
220-240/380-415 V 50 Hz for power up to 3 kW.
380-415/660-690 V 50 Hz for power above 3 kW.
Overload protection to be provided by the user.
Maximum ambient temperature: 40° or 50 °C,
(depending on model and power)

From 1 July 2021 in accordance with the **Regulations (EU) 2019/1781 and 2021/341**, the three-phase 50 Hz, 60 Hz or 50/60 Hz **surface motors** with **power outputs ranging from 0,12 to 0,749 kW** must have a minimum level **IE2** efficiency; the ones with power outputs ranging **from 0,75 and 1000 kW** must have a minimum level of **IE3** efficiency.

From 1 July 2023, it will be introduced additional requirements.

The following tables also contain the mandatory information pursuant to Annex I, section 2, of the aforementioned Regulations.

THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P _N kW	Manufacturer		IEC SIZE	Construction Design	N. of Poles	f _N Hz	Data for 400 V / 50 Hz Voltage				
	Xylem Service Italia Srl Reg. No. 07520560967 Montecchio Mag. Vicenza - Italia						cosφ	Is / I _N	T _N Nm	Ts/T _N	Tm/Tn
Model											
0,4	SM63BG/304		63	SPECIALE	2	50	0,66	4,32	1,38	4,14	3,13
0,55	SM71BG/305		71				0,74	5,97	1,85	3,74	3,56
0,75	SM80BG/307 PE		80				0,78	7,38	2,48	3,57	3,75
0,95	SM80BG/311 PE		80				0,79	8,31	3,63	3,95	3,95
1,1	SM80BG/311 PE		80				0,79	8,31	3,63	3,95	3,95
1,5	SM80BG/315 PE		80				0,80	8,80	4,96	4,31	4,10
2,2	PLM90BG/322 E3		90				0,80	8,77	7,28	3,72	3,70
3	PLM90BG/330 E3		90				0,79	7,81	9,93	4,26	3,94

P _N kW	Voltage U _N (V)											n _N min ⁻¹	Operating conditions **		
	Δ			Y			Δ			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V				
	I _N (A)														
0,4	2,20	2,34	2,51	1,27	1,35	1,45	-	-	-	-	-	2740 ÷ 2790	≤ 1000	-15 / 40	No
0,55	2,56	2,56	2,62	1,48	1,48	1,51	-	-	-	-	-	2825 ÷ 2850			
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98	2875 ÷ 2895			
0,95	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900			
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900			
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895			
2,2	7,97	7,90	7,98	4,60	4,56	4,61	4,57	4,54	4,57	2,64	2,62	2880 ÷ 2900			
3	11,0	11,0	11,2	6,35	6,33	6,44	6,29	6,27	6,34	3,63	3,62	2865 ÷ 2895			

P _N kW	Efficiency η _N (%)																		IE
	Δ 220 V			Δ 230 V			Δ 240 V			Δ 380 V			Δ 400 V			Δ 415 V			
	Y 380 V			Y 400 V			Y 415 V			Y 660 V			Y 690 V						
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	
0,4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	3
0,95	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	
1,5	85,6	86,5	85,8	85,9	86,4	84,9	86,0	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	
2,2	86,5	87,4	86,8	86,4	86,9	85,7	86,6	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	86,4	86,7	85,0	
3	87,2	88,5	88,3	87,5	88,2	87,5	87,5	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	87,2	87,8	86,4	

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

co-ie3-mott-2p50-en_a_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

CEF SERIES MOTOR NOISE

The tables below show the mean sound pressure levels (Lp) measured at 1 meter distance in a free field according to EN ISO 11203.

The noise values are measured on 50 Hz motors and have a tolerance of 3 dB (A) according to EN ISO 4871.

MOTORS 2 POLES 50 Hz

POWER kW	MOTOR TYPE IEC SIZE	NOISE LpA dB
0,37	71	<70
0,55	71	<70
0,75	80	<70
0,95	80	<70
1,1	80	<70
1,5	90	<70
1,85	90	<70
2,2	90	<70
3	100	<70

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AVAILABLE VOLTAGES

P _N kW	THREE-PHASE - 2 POLES															
	50 Hz							60 Hz							50/60 Hz	
	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 200-208/346-360	3 x 255-265/440-460	3 x 290-300/500-525	3 x 440-460/-	3 x 500-525/-	3 x 220-230/380-400	3 x 255-265-277/440-460-480	3 x 380-400/660-690	3 x 440-460-480/-	3 x 110-115/190-200	3 x 200-208/346-360	3 x 330-346/575-600	3 x 575/-	3 x 230/400 50 Hz 3 x 265/460 60 Hz
0,37	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
0,55	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
0,75	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
0,95	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
1,1	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
1,5	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
2,2	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o
3	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o

s = Standard voltage

o = Optional voltage

- = Not available

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CEF SERIES

HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 and 4 POLES

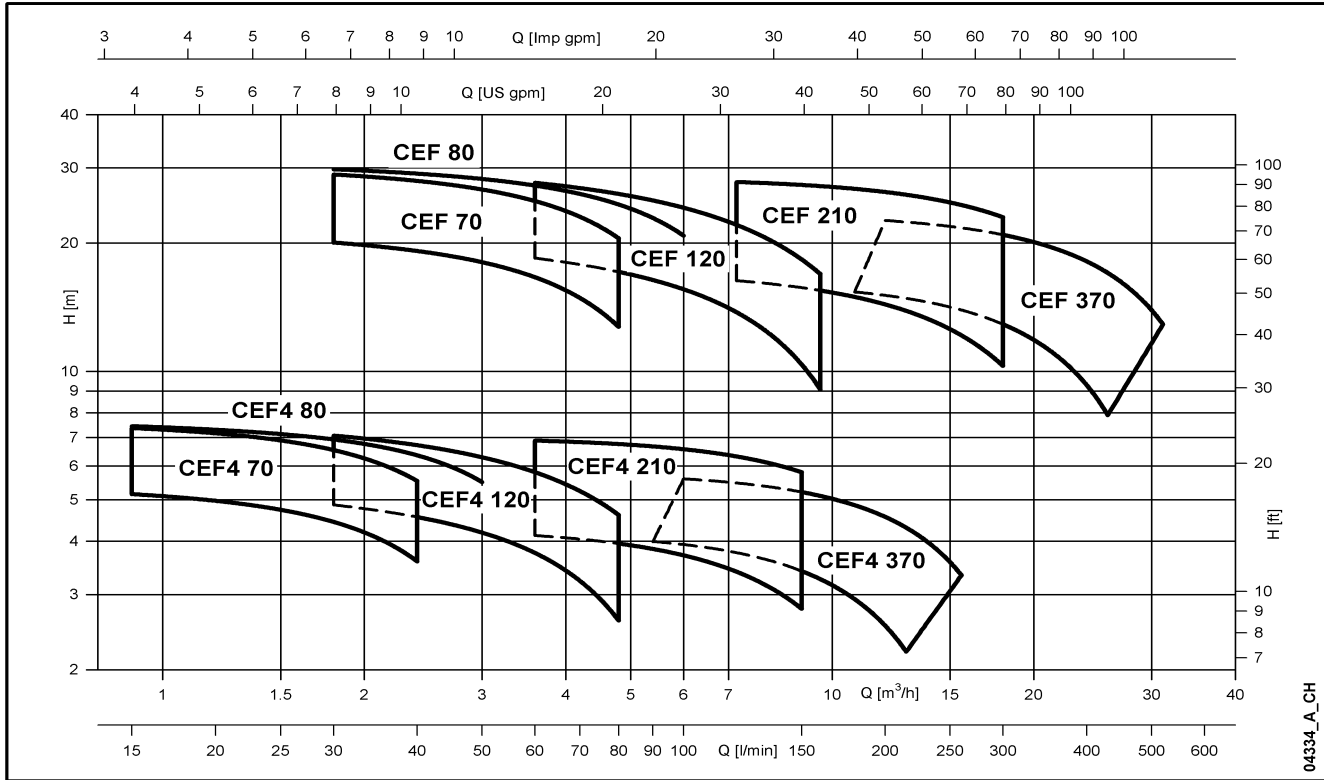


TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

ELECTRIC PUMP TYPE	IMPELLER DIAMETER mm	RATED POWER		Q = DELIVERY																		
		kW	HP	l/min 0	30	40	60	80	100	120	140	160	180	200	250	300	350	400	430	480	520	
				m ³ /h 0	1,8	2,4	3,6	4,8	6	7,2	8,4	9,6	10,8	12	15	18	21	24	26	29	31	
H = TOTAL HEAD METRES COLUMN OF WATER																						
CEF 70/03	132	0,37	0,5	21,9	20,0	19,2	16,6	12,7														
CEF 70/05	156	0,55	0,75	30,9	28,9	28,0	25,1	20,5														
CEF 80/07	156	0,75	1	31,4	29,8	29,1	27,3	24,6	20,8													
CEF 120/05	132	0,55	0,75	21,6			18,4	17,1	15,6	13,8	11,6	9,1										
CEF 120/09	156	0,9	1,2	31,0			27,7	26,1	24,2	22,1	19,6	16,9										
CEF 210/07	121	0,75	1	17,3						16,3	15,9	15,5	15,0	14,4	12,6	10,3						
CEF 210/11	130	1,1	1,5	20,3						19,4	19,1	18,7	18,3	17,8	16,3	14,2						
CEF 210/15	148	1,5	2,2	24,9						24,4	24,1	23,7	23,2	22,7	21,0	18,8						
CEF 210/18	156	1,85	2,5	28,4						27,8	27,5	27,2	26,8	26,3	24,9	23,0						
CEF 370/11	121	1,1	1,5	15,9									15,3	15,1	14,1	12,9	11,3	9,3	7,9			
CEF 370/15	130	1,5	2,2	19,9										18,8	18,0	16,9	15,6	13,9	12,7	10,5		
CEF 370/22	134	1,85	2,5	23,9											22,6	21,9	20,9	19,7	18,1	17,0	14,9	12,9

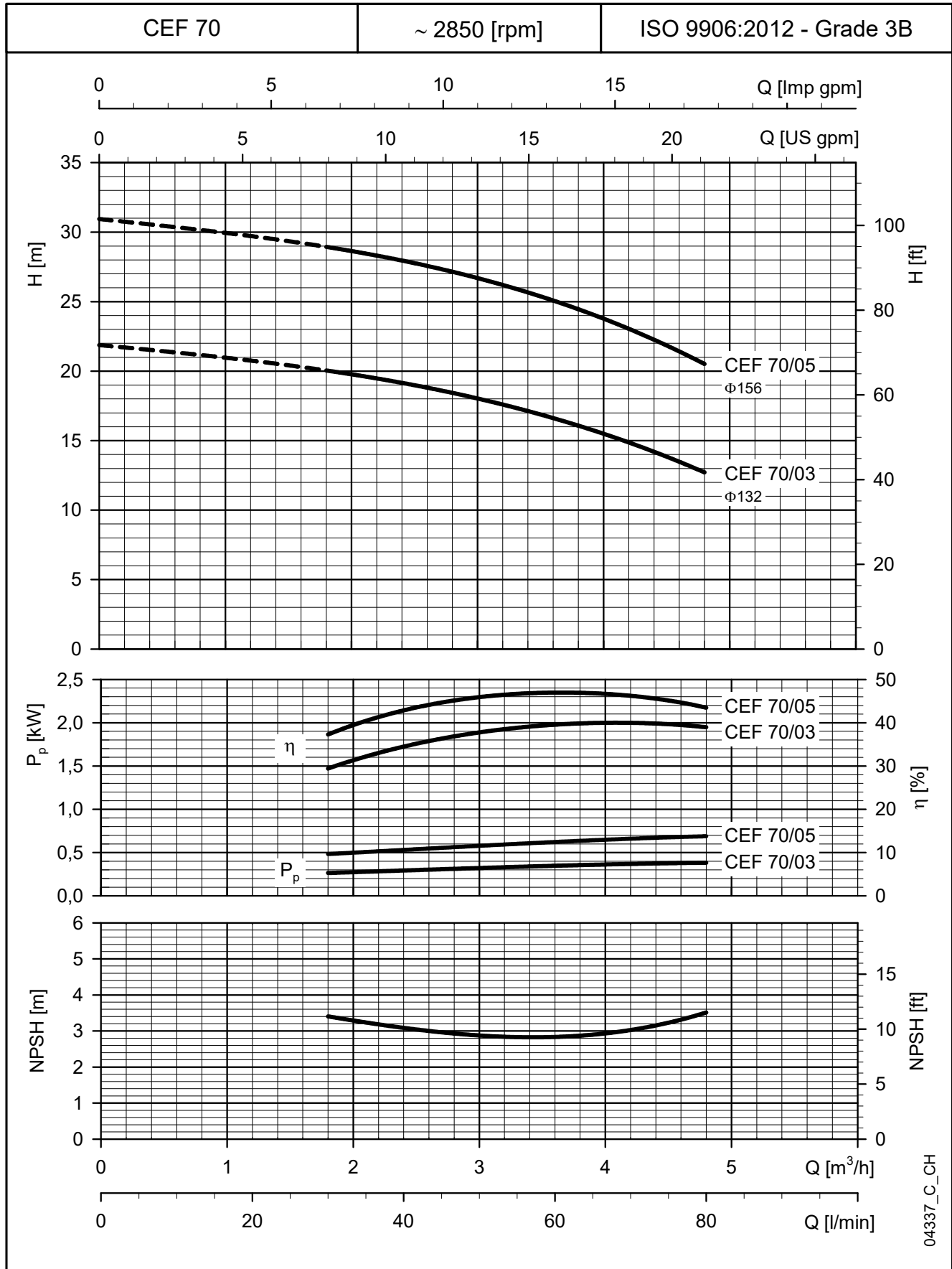
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TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 4 POLES

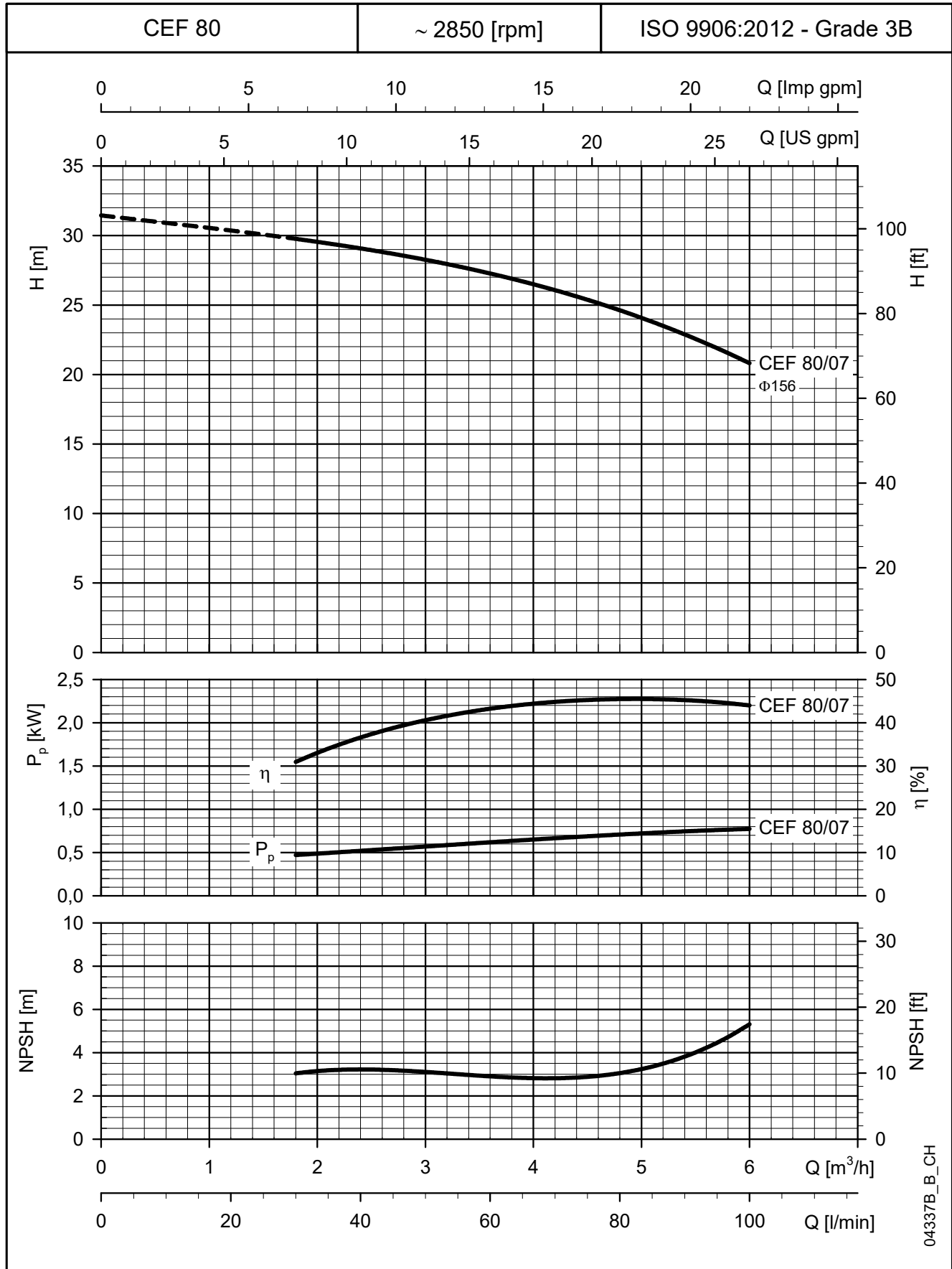
PUMP TYPE	PUMP MAX INPUT POWER kW	Q = DELIVERY																	
		l/min 0	15	20	25	30	40	50	60	70	80	90	100	130	150	190	215	240	260
		m ³ /h 0	0,9	1,2	1,5	1,8	2,4	3	3,6	4,2	4,8	5,4	6	7,8	9	11,4	13	14	16
H = TOTAL HEAD METRES COLUMN OF WATER																			
CEF4 70/132	0,05	5,5	5,2	5,0	4,7	4,4	3,6												
CEF4 70/156	0,09	7,8	7,4	7,2	6,9	6,5	5,5												
CEF4 80/156	0,10	7,8	7,4	7,3	7,1	6,9	6,4	5,5											
CEF4 120/132	0,08	5,6				4,9	4,6	4,2	3,8	3,2	2,6								
CEF4 120/156	0,13	7,8				7,1	6,7	6,3	5,8	5,2	4,6								
CEF4 210/121	0,11	4,3							4,1	4,0	3,9	3,8	3,7	3,2	2,8				
CEF4 210/130	0,14	5,0							4,9	4,8	4,7	4,6	4,5	4,1	3,7				
CEF4 210/148	0,19	6,1							6,1	6,0	5,9	5,8	5,7	5,2	4,8				
CEF4 210/156	0,23	7,0							6,9	6,8	6,8	6,7	6,6	6,2	5,8				
CEF4 370/121	0,15	4,0										4,0	3,9	3,7	3,4	2,7	2,2	1,6	
CEF4 370/130	0,21	5,0											4,8	4,6	4,4	3,8	3,4	2,9	
CEF4 370/134	0,26	5,8											5,6	5,4	5,2	4,7	4,3	3,8	3,3

cef4-4p50-en_c_th

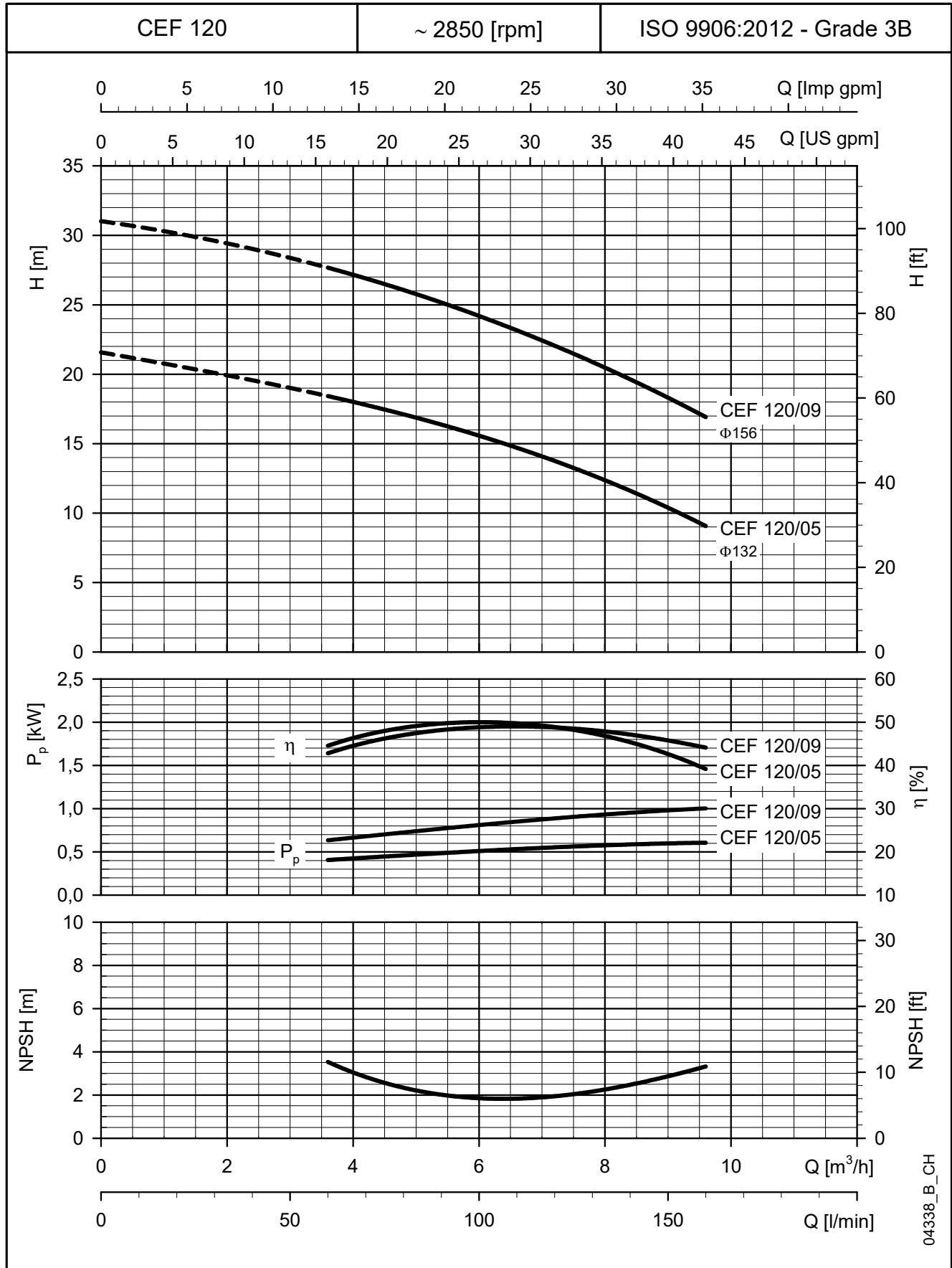
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES


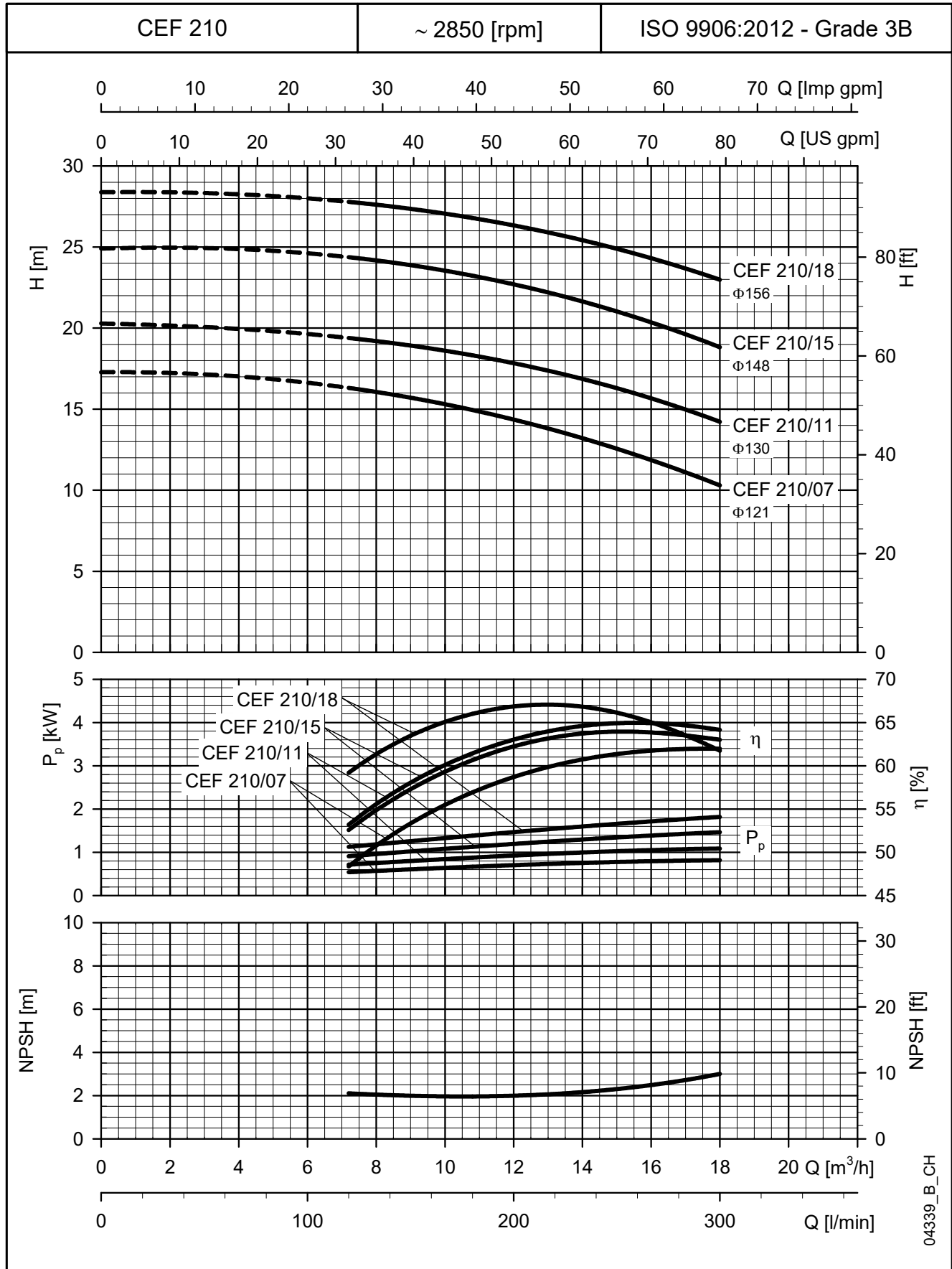
The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES


04338_B_CH

The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

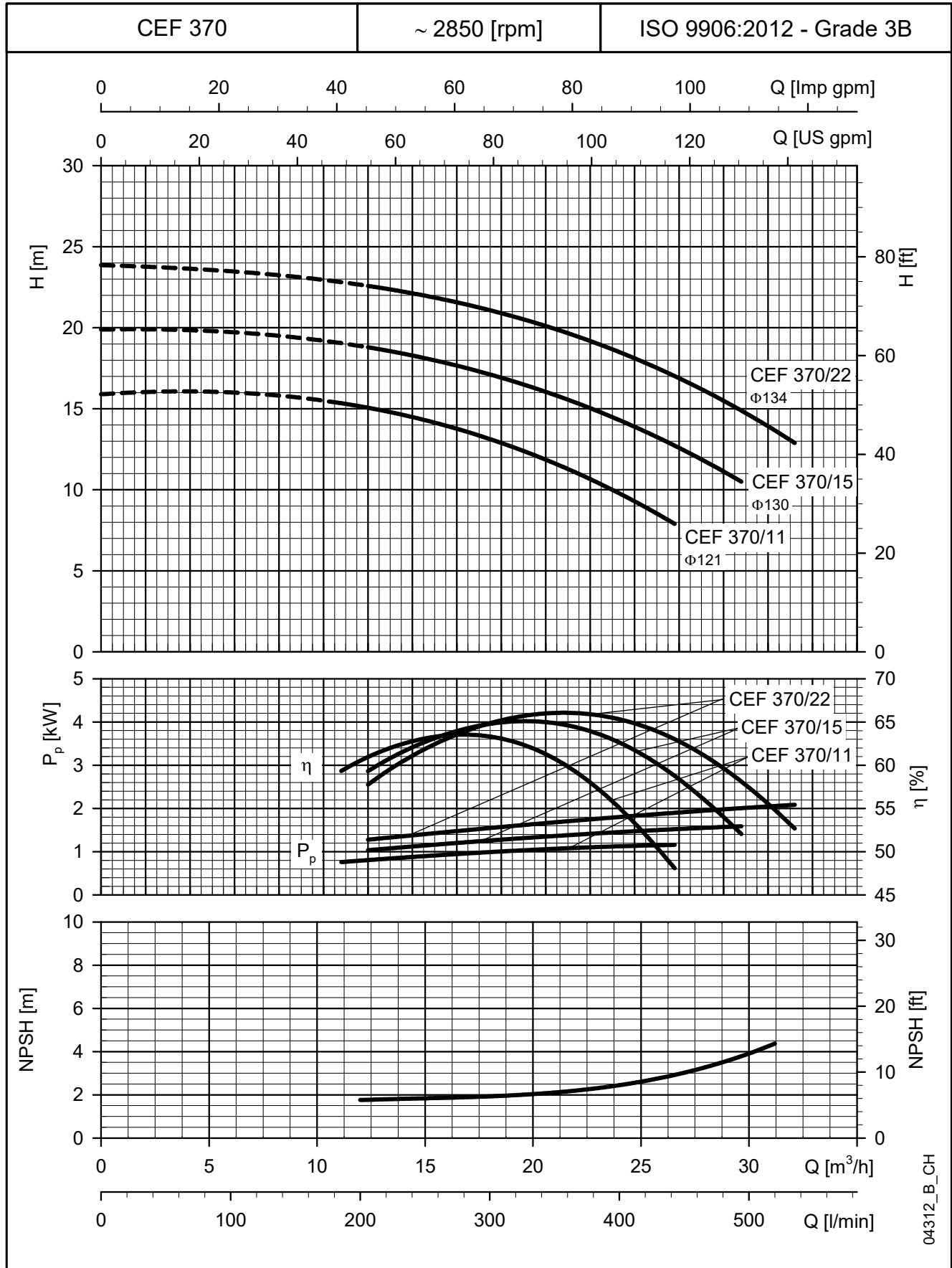
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04339_B_CH

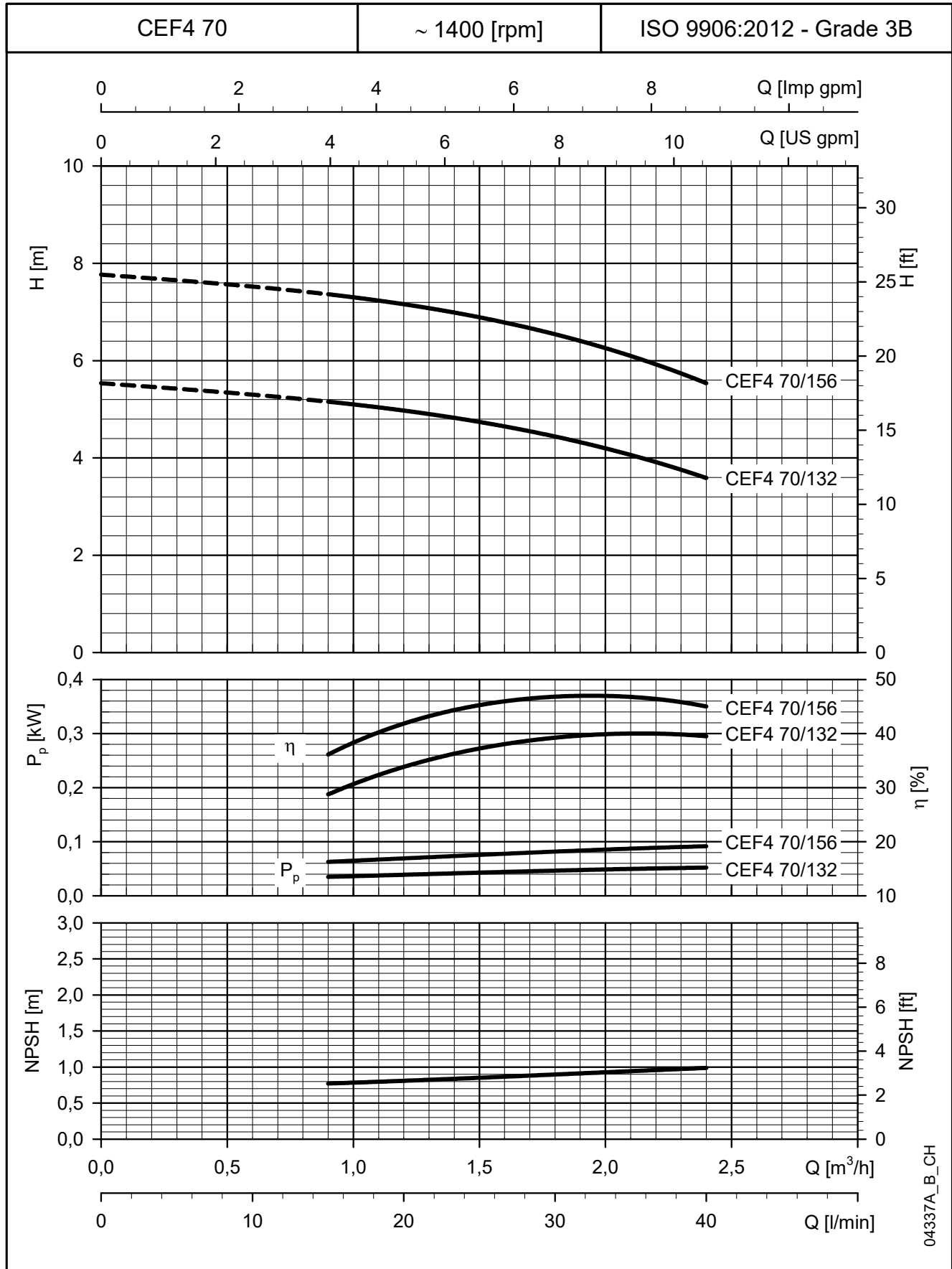
The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

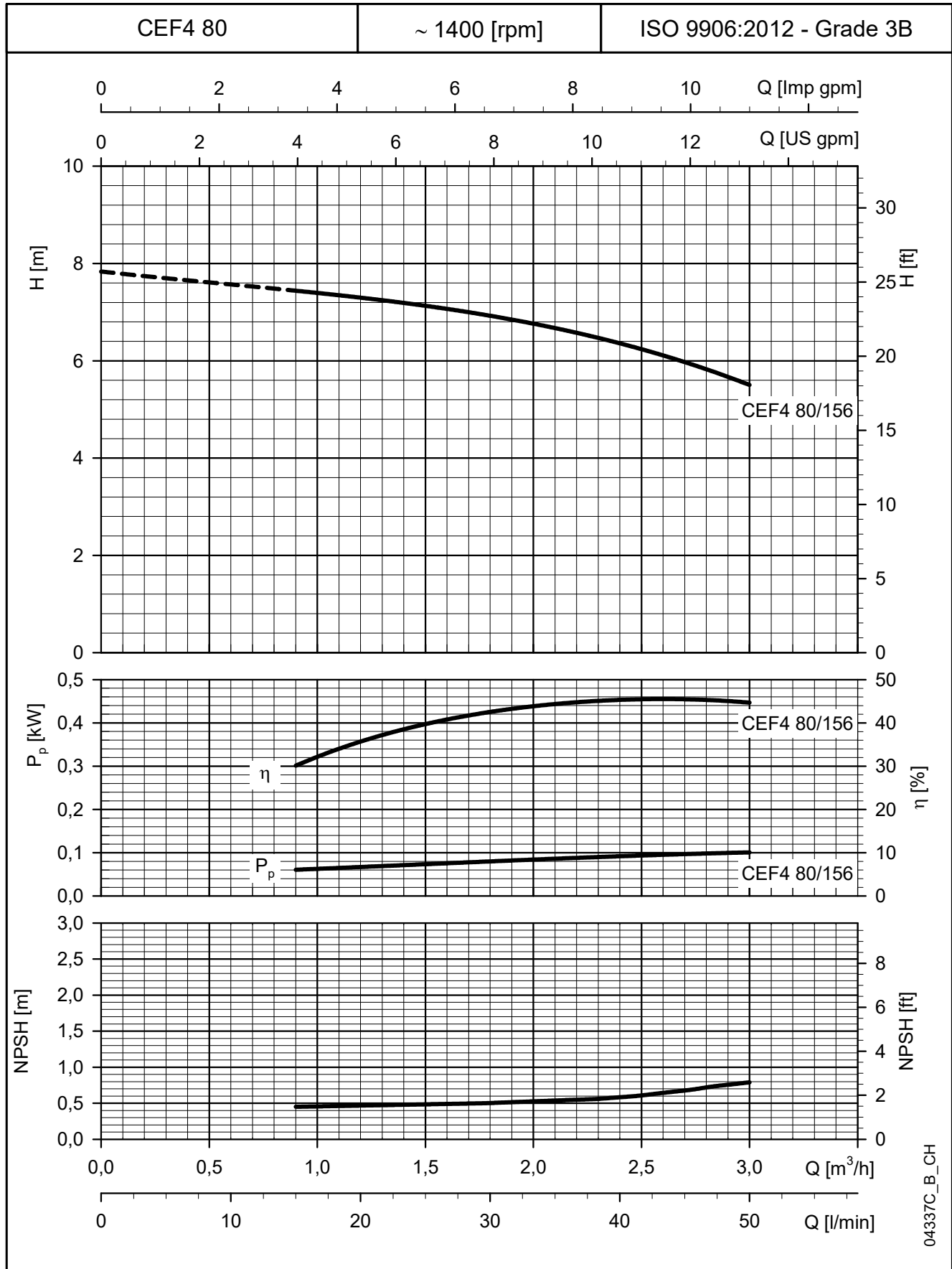
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04337A_B_CH

The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

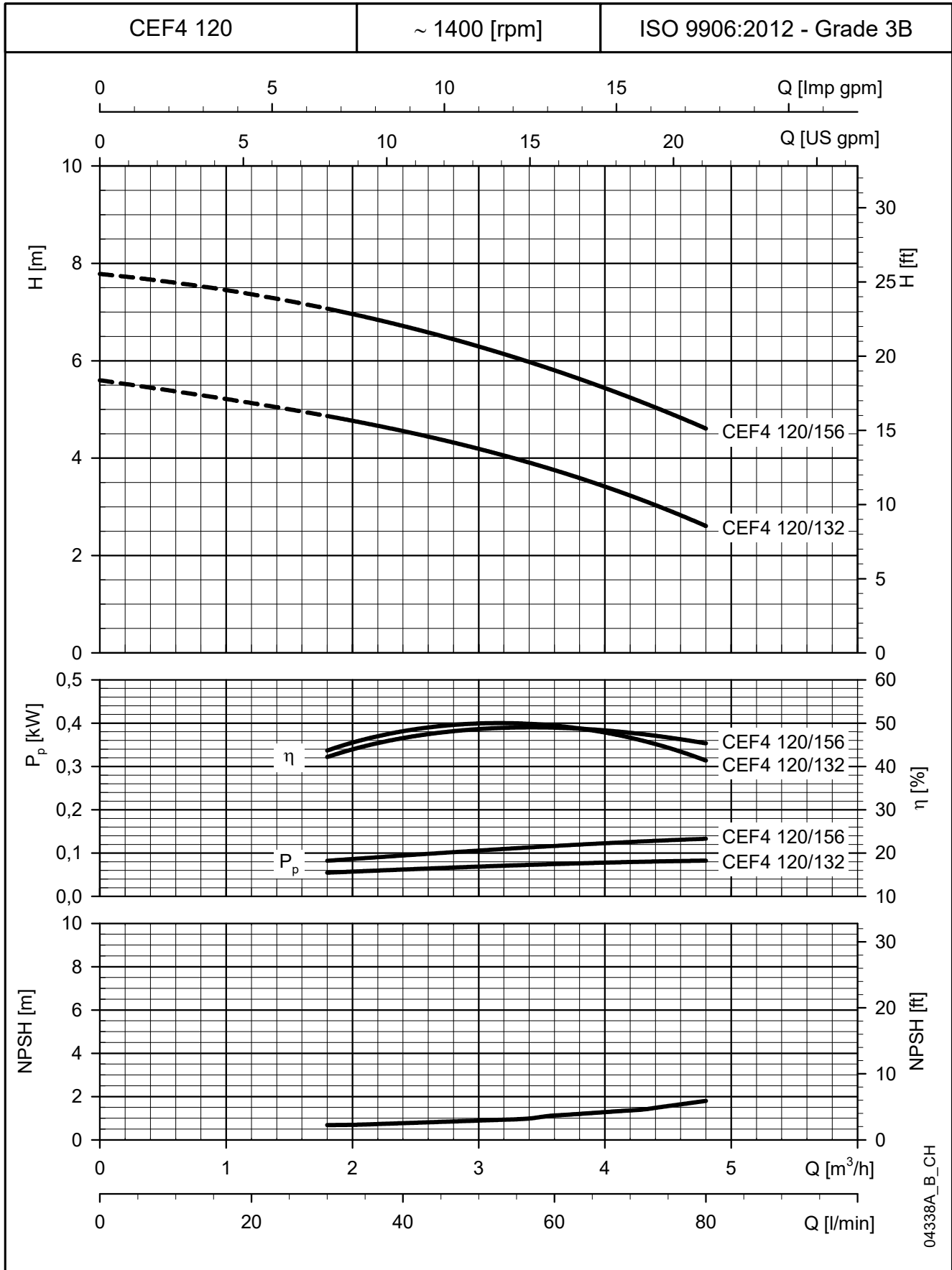
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04337C_B_CH

The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

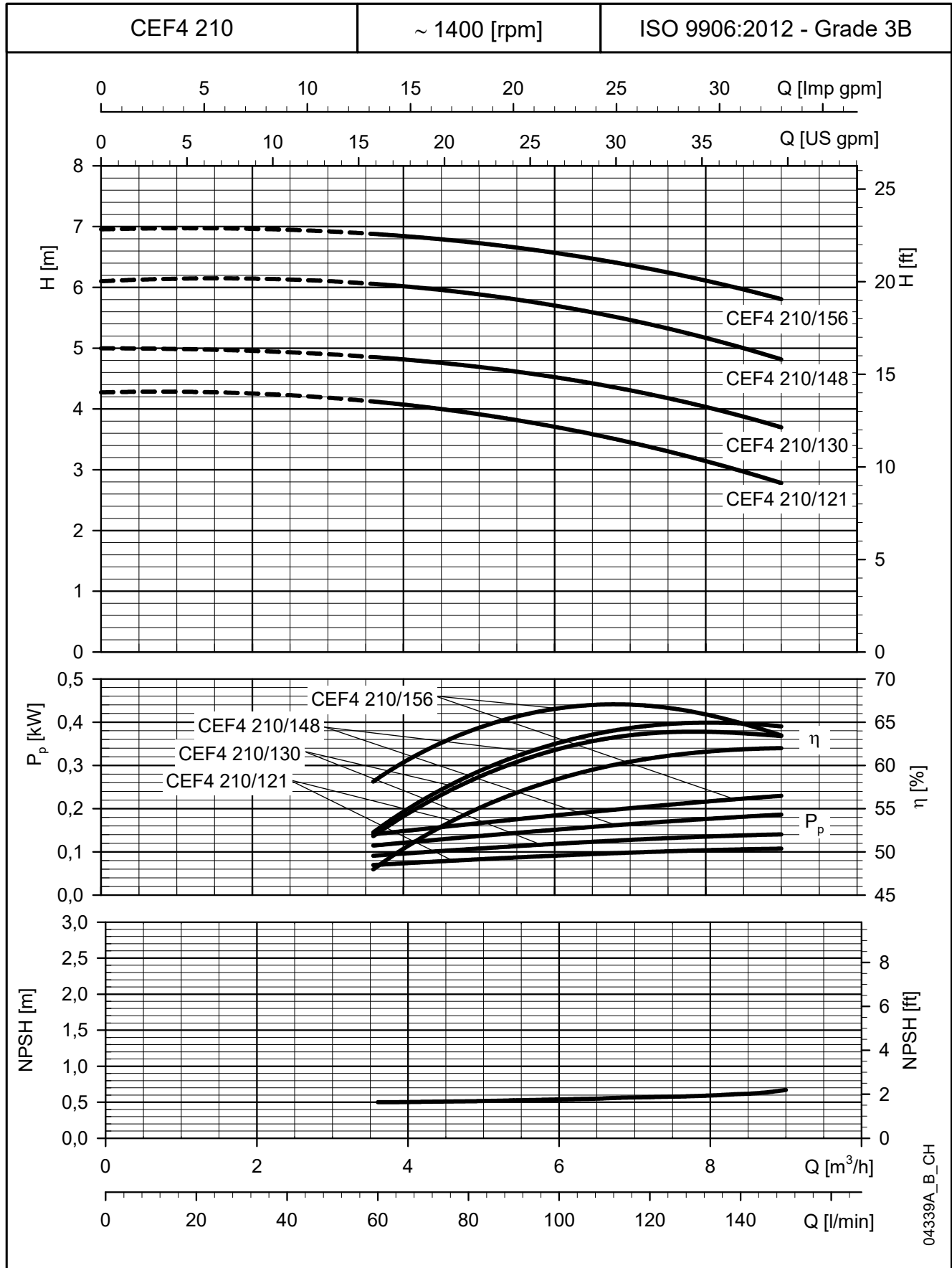
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04338A_B_CH

The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

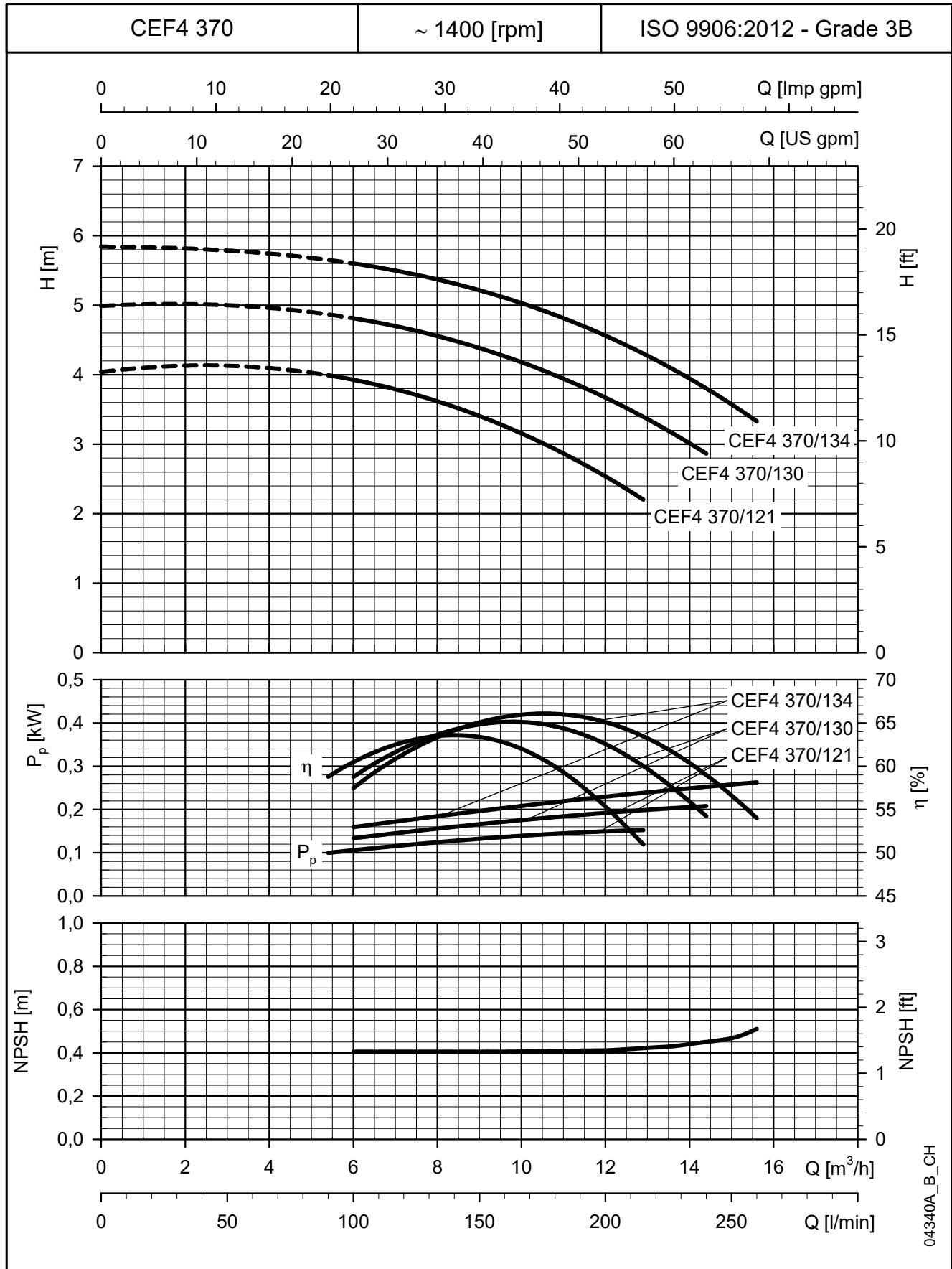
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04339A_B_CH

The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

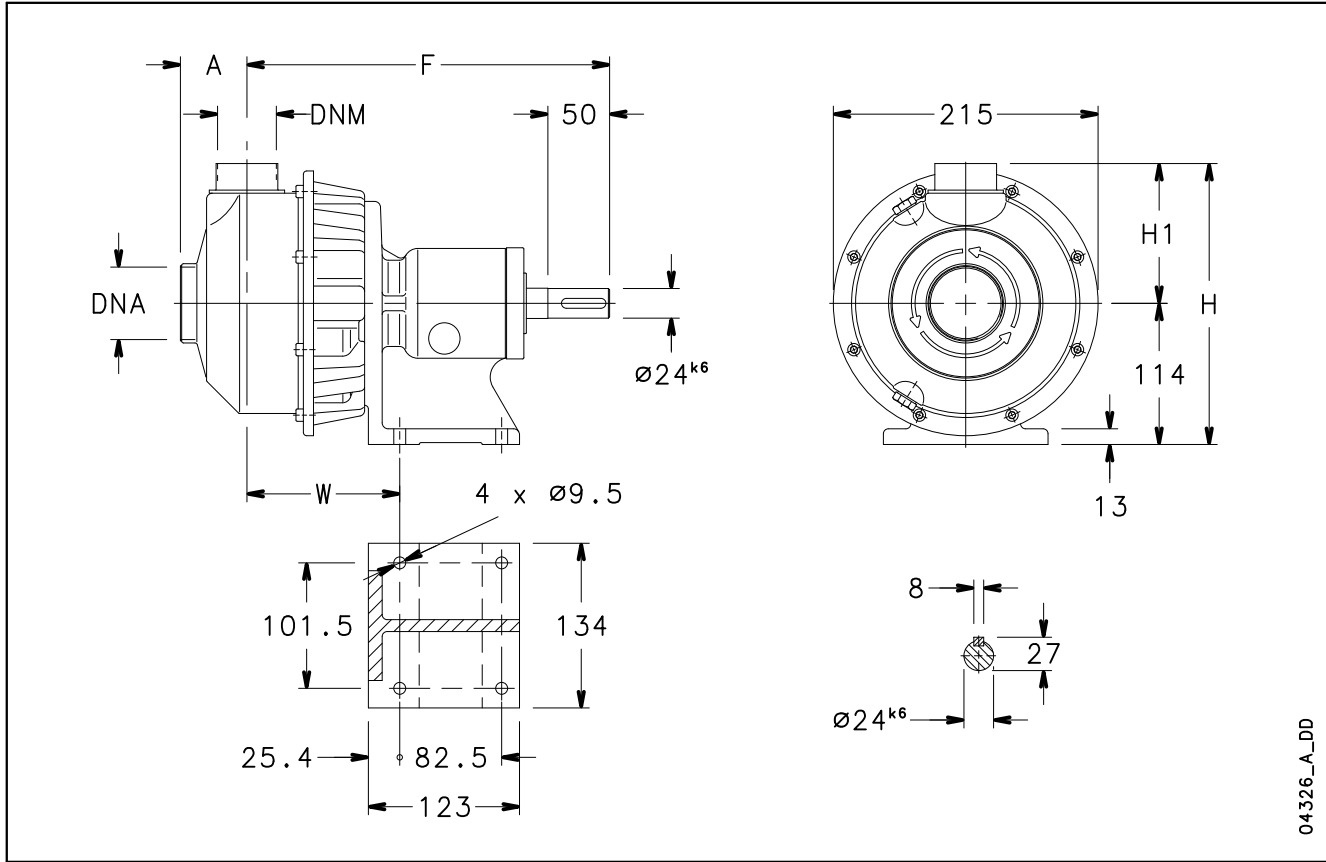
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04340A_B_CH

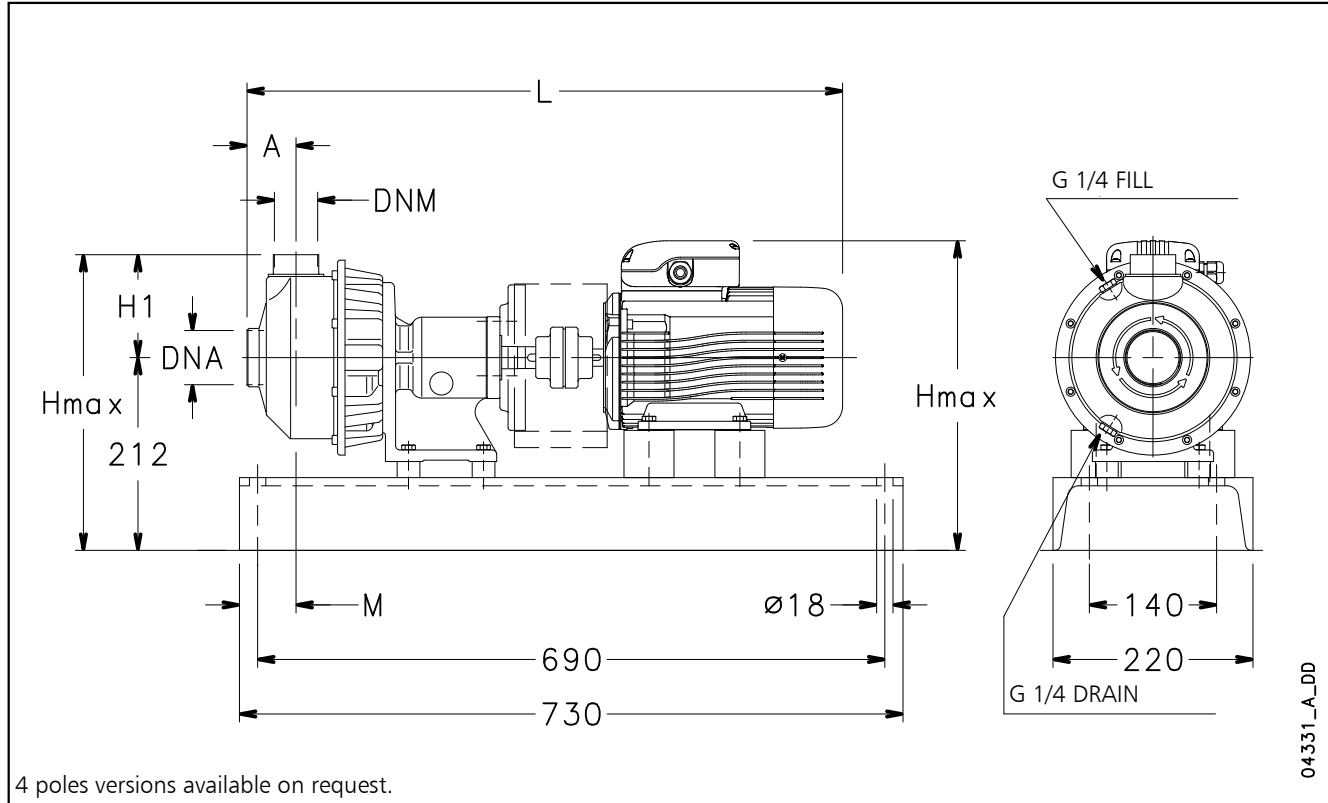
The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**CEF - BARE SHAFT SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz**



PUMP TYPE	DIMENSIONS (mm)					DNA	DNM	WEIGHT kg
	A	F	H	H1	W			
CEF 70/132	51	282	225	111	112,5	Rp 1 1/4	Rp 1	11,5
CEF 70/156	51	282	225	111	112,5	Rp 1 1/4	Rp 1	11,5
CEF 80/156	51	282	225	111	112,5	Rp 1 1/4	Rp 1	11,5
CEF 120/132	51	282	225	111	112,5	Rp 1 1/4	Rp 1	11,5
CEF 120/156	51	282	225	111	112,5	Rp 1 1/4	Rp 1	11,5
CEF 210/121	54	293	227	113	123,7	Rp 1 1/2	Rp 1 1/4	12
CEF 210/130	54	293	227	113	123,7	Rp 1 1/2	Rp 1 1/4	12
CEF 210/148	54	293	227	113	123,7	Rp 1 1/2	Rp 1 1/4	12
CEF 210/156	54	293	227	113	123,7	Rp 1 1/2	Rp 1 1/4	12
CEF 370/121	54	293	227	113	123,7	Rp 2	Rp 1 1/4	12
CEF 370/130	54	293	227	113	123,7	Rp 2	Rp 1 1/4	12
CEF 370/134	54	293	227	113	123,7	Rp 2	Rp 1 1/4	12

cef-pompa-en_b_td

**CEF SERIES - BASE-MOUNTED
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**


ELECTRIC PUMP TYPE	DIMENSIONS (mm)					DNA	DNM	WEIGHT kg
	A	H max	H1	L	M			
CEF 70/03/A	51	333	111	600	73	Rp 1/4	Rp 1	41
CEF 70/05/A	51	333	111	600	73	Rp 1/4	Rp 1	42
CEF 80/07/D	51	341	111	642	73	Rp 1/4	Rp 1	46
CEF 120/05/A	51	333	111	600	73	Rp 1/4	Rp 1	42
CEF 120/09/D	51	341	111	642	73	Rp 1/4	Rp 1	47
CEF 210/07/D	54	341	113	656	62	Rp 1/2	Rp 1/4	46
CEF 210/11/D	54	341	113	656	62	Rp 1/2	Rp 1/4	48
CEF 210/15/P	54	346	113	700	62	Rp 1/2	Rp 1/4	53
CEF 210/18/P	54	346	113	700	62	Rp 1/2	Rp 1/4	54
CEF 370/11/D	54	341	113	656	62	Rp 2	Rp 1/4	48
CEF 370/15/P	54	346	113	700	62	Rp 2	Rp 1/4	53
CEF 370/22/P	54	346	113	700	62	Rp 2	Rp 1/4	54

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TECHNICAL APPENDIX

NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height h_z at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (NPSH_r + 0.5) + h_f + h_{pv} \quad \textcircled{1}$$

where:

h_p is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid; h_p is the quotient between the barometric pressure and the specific weight of the liquid.

h_z is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.; h_z is negative when the liquid level is lower than the pump axis.

h_f is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.

h_{pv} is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. h_{pv} is the quotient between the P_v vapour pressure and the liquid's specific weight.

0,5 is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

Water temperature (°C)	20	40	60	80	90	110	120
Suction loss (m)	0,2	0,7	2,0	5,0	7,4	15,4	21,5

Elevation above sea level (m)	500	1000	1500	2000	2500	3000
Suction loss (m)	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables Flow Resistance of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

Liquid: water at ~15°C $\gamma = 1 \text{ kg/dm}^3$

Flow rate required: 25 m³/h

Head for required delivery: 70 m.

Suction lift: 3,5 m.

The selection is an 33SV3G075T pump whose NPSH required value is, at 25 m³/h, of 2 m.

For water at 15 °C

$$h_p = P_a / \gamma = 10,33\text{m}, h_{pv} = P_v / \gamma = 0,174\text{m} (0,01701 \text{ bar})$$

The H_f flow resistance in the suction line with foot valves is ~ 1,2 m.

By substituting the parameters in formula $\textcircled{1}$ with the numeric values above, we have:

$$10,33 + (-3,5) \geq (2 + 0,5) + 1,2 + 0,17$$

from which we have: 6,8 > 3,9

The relation is therefore verified.

VAPOUR PRESSURE

VAPOUR PRESSURE p_s AND ρ DENSITY OF WATER TABLE

t °C	T K	p_s bar	ρ kg/dm ³	t °C	T K	p_s bar	ρ kg/dm ³	t °C	T K	p_s bar	ρ kg/dm ³
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	443,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

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TABLE OF FLOW RESISTANCE IN 100 m OF STRAIGHT CAST IRON PIPELINE (HAZEN-WILLIAMS FORMULA C=100)

FLOW RATE		NOMINAL DIAMETER in mm and inches																		
m ³ /h	l/min		15	20	25	32	40	50	65	80	100	125	150	175	200	250	300	350	400	
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2	2 1/2"	3"	4"	5"	6"	7"	8"	10"	12"	14"	16"	
0,6	10	v	0,94	0,53	0,34	0,21	0,13													
		hr	16	3,94	1,33	0,40	0,13													
0,9	15	v	1,42	0,80	0,51	0,31	0,20													
		hr	33,9	8,35	2,82	0,85	0,29													
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17												
		hr	57,7	14,21	4,79	1,44	0,49	0,16												
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21												
		hr	87,2	21,5	7,24	2,18	0,73	0,25												
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25												
		hr	122	30,1	10,1	3,05	1,03	0,35												
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30												
		hr	162	40,0	13,5	4,06	1,37	0,46												
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20											
		hr		51,2	17,3	5,19	1,75	0,59	0,16											
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25											
		hr		77,4	26,1	7,85	2,65	0,89	0,25											
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30											
		hr		108	36,6	11,0	3,71	1,25	0,35											
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35											
		hr		144	48,7	14,6	4,93	1,66	0,46											
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40											
		hr		185	62,3	18,7	6,32	2,13	0,59											
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30										
		hr			77,5	23,3	7,85	2,65	0,74	0,27										
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33										
		hr			94,1	28,3	9,54	3,22	0,90	0,33										
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41										
		hr			142	42,8	14,4	4,86	1,36	0,49										
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32									
		hr				59,9	20,2	6,82	1,90	0,69	0,23									
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37									
		hr				79,7	26,9	9,07	2,53	0,92	0,31									
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42									
		hr				102	34,4	11,6	3,23	1,18	0,40									
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34								
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20								
18	300	v				3,98	2,55	1,51	1,00	0,64	0,41									
		hr				72,8	24,6	8,85	2,49	0,84	0,28									
24	400	v				5,31	3,40	2,01	1,33	0,85	0,54	0,38								
		hr				124	41,8	11,66	4,24	1,43	0,48	0,20								
30	500	v				6,63	4,25	2,51	1,66	1,06	0,68	0,47								
		hr				187	63,2	17,6	6,41	2,16	0,73	0,30								
36	600	v					5,10	3,02	1,99	1,27	0,82	0,57	0,42							
		hr					88,6	24,7	8,98	3,03	1,02	0,42	0,20							
42	700	v					5,94	3,52	2,32	1,49	0,95	0,66	0,49							
		hr					118	32,8	11,9	4,03	1,36	0,56	0,26							
48	800	v					6,79	4,02	2,65	1,70	1,09	0,75	0,55							
		hr					151	42,0	15,3	5,16	1,74	0,72	0,34							
54	900	v					7,64	4,52	2,99	1,91	1,22	0,85	0,62							
		hr					188	52,3	19,0	6,41	2,16	0,89	0,42							
60	1000	v					5,03	3,32	2,12	1,36	0,94	0,69	0,53							
		hr					63,5	23,1	7,79	2,63	1,08	0,51	0,27							
75	1250	v					6,28	4,15	2,65	1,70	1,18	0,87	0,66							
		hr					96,0	34,9	11,8	3,97	1,63	0,77	0,40							
90	1500	v					7,54	4,98	3,18	2,04	1,42	1,04	0,80							
		hr					134	48,9	16,5	5,57	2,29	1,08	0,56							
105	1750	v					8,79	5,81	3,72	2,38	1,65	1,21	0,93							
		hr					179	65,1	21,9	7,40	3,05	1,44	0,75							
120	2000	v					6,63	4,25	2,72	1,89	1,39	1,06	0,68							
		hr					83,3	28,1	9,48	3,90	1,84	0,96	0,32							
150	2500	v					8,29	5,31	3,40	2,36	1,73	1,33	0,85							
		hr					126	42,5	14,3	5,89	2,78	1,45	0,49							
180	3000	v						6,37	4,08	2,83	2,08	1,59	1,02	0,71						
		hr						59,5	20,1	8,26	3,90	2,03	0,69	0,28						
210	3500	v					7,43	4,76	3,30	2,43	1,86	1,19	0,83							
		hr					79,1	26,7	11,0	5,18	2,71	0,91	0,38							
240	4000	v						8,49	5,44	3,77	2,77	2,12	1,36	0,94						
		hr						101	34,2	14,1	6,64	3,46	1,17	0,48						
300	5000	v						6,79	4,72	3,47	2,65	1,70	1,18							
		hr						51,6	21,2	10,0	5,23	1,77	0,73							
360	6000	v						8,15	5,66	4,16	3,18	2,04	1,42							
		hr						72,3	29,8	14,1	7,33	2,47	1,02							
420	7000	v							6,61	4,85	3,72	2,38	1,65	1,21						
		hr							39,6	18,7	9,75	3,29	1,35	0,64						
480	8000	v							7,55	5,55	4,25	2,72	1,89	1,39						
		hr							50,7	23,9	12,49	4,21	1,73	0,82						
540	9000	v							8,49	6,24	4,78	3,06	2,12	1,56	1,19					
		hr							63,0	29,8	15,5	5,24	2,16	1,02	0,53					
600	10000	v								6,93	5,31	3,40	2,36	1,73	1,33					

FLOW RESISTANCE

TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate valve	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Foot check valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

G-a-pcv-en_b_th

The table is valid for the Hazen Williams coefficient $C=100$ (cast iron pipework);

for steel pipework, multiply the values by 1,41;

for stainless steel, copper and coated cast iron pipework, multiply the values by 1,85;

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by manufacturers.

VOLUMETRIC CAPACITY

Litres per minute l/min	Cubic metres per hour m ³ /h	Cubic feet per hour ft ³ /h	Cubic feet per minute ft ³ /min	Imperial gallon per minute Imp. gal/min	U.S. gallon per minute US gal/min
1,000	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	1,000	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	1,000	0,0167	0,1038	0,1247
28,3168	1,6990	60,0000	1,000	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	1,000	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	1,000

PRESSURE AND HEAD

Newton per square metre N/m ²	kilo Pascal kPa	bar bar	Pound force per square inch psi	Metre of water m H ₂ O	Millimetre of mercury mm Hg
1,000	0,0010	1×10^{-5}	$1,45 \times 10^{-4}$	$1,02 \times 10^{-4}$	0,0075
1 000,0000	1,000	0,0100	0,1450	0,1020	7,5006
1×10^5	100,0000	1,000	14,5038	10,1972	750,0638
6 894,7570	6,8948	0,0689	1,000	0,7031	51,7151
9 806,6500	9,8067	0,0981	1,4223	1,000	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	1,000

LENGTH

Millimetre mm	Centimetre cm	Metre m	Inch in	Foot ft	Yard yd
1,000	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	1,000	0,0100	0,3937	0,0328	0,0109
1 000,0000	100,0000	1,000	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	1,000	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	1,000	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	1,000

VOLUME

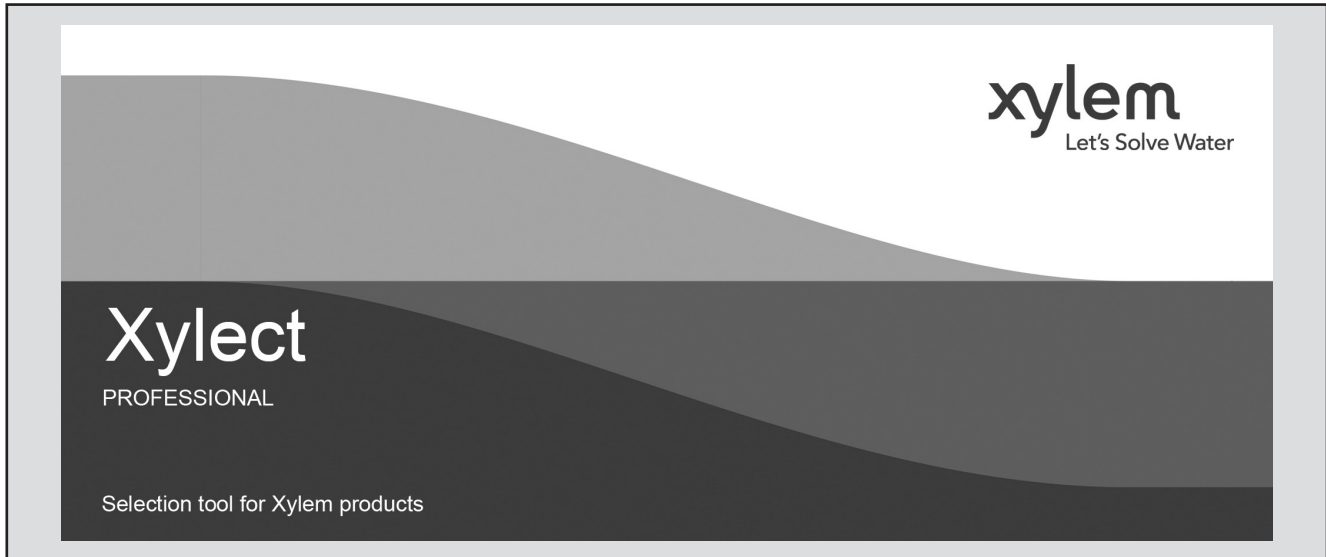
Cubic metre m ³	Litre L	Millilitre ml	Imperial gallon imp. gal.	U.S. gallon US gal.	Cubic foot ft ³
1,000	1 000,0000	1×10^6	219,9694	264,1720	35,3147
0,0010	1,000	1 000,0000	0,2200	0,2642	0,0353
1×10^{-6}	0,0010	1,000	$2,2 \times 10^{-4}$	$2,642 \times 10^{-4}$	$3,53 \times 10^{-5}$
0,0045	4,5461	4 546,0870	1,000	1,2009	0,1605
0,0038	3,7854	3 785,4120	0,8327	1,000	0,1337
0,0283	28,3168	28 316,8466	6,2288	7,4805	1,000

TEMPERATURE

Water	Kelvin K	Celsius °C	Fahrenheit °F	$^{\circ}\text{F} = ^{\circ}\text{C} \times \frac{9}{5} + 32$ $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times \frac{5}{9}$
icing	273,1500	0,0000	32,0000	
boiling	373,1500	100,0000	212,0000	

G-at_pp-en_b_sc

**FURTHER PRODUCT SELECTION
AND DOCUMENTATION**
Xylect



Xylect is pump solution selection software with an extensive online database of product information across the entire Lowara range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

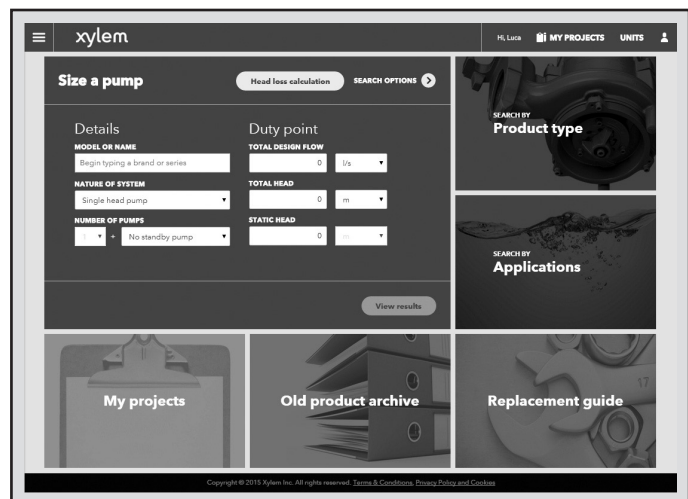
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



The search by application guides users not familiar with the product range to the right choice.

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



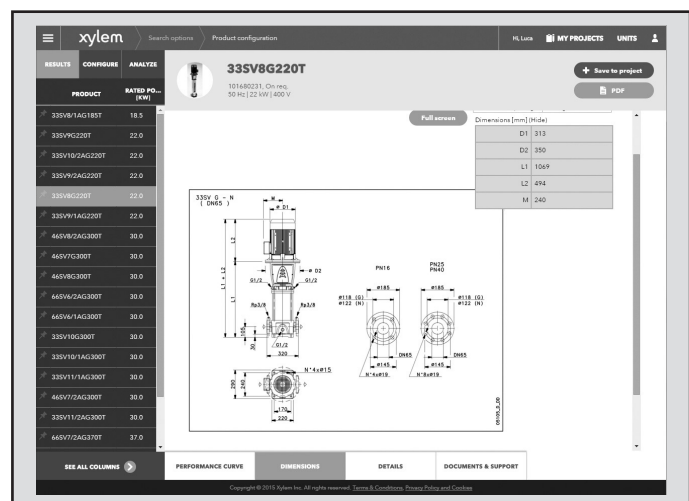
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Xylect is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Xylect users

Every registered user has a proper space, where all projects are saved.

For more information about Xylect please contact our sales network or visit www.xylect.com.



Dimensional drawings appear on the screen and can be downloaded in dxf format.

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com.



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