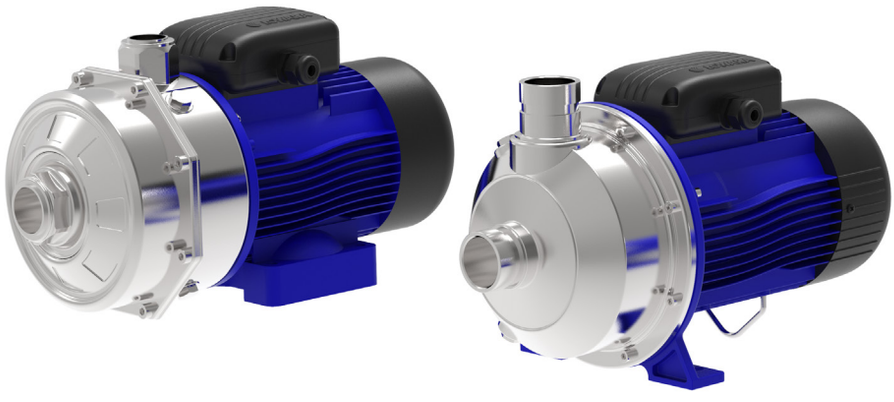
xylem
Let's Solve Water

60 Hz



CEA-CIE, CA Series

SINGLE AND TWIN-IMPELLER CENTRIFUGAL ELECTRIC PUMPS

ErP 2009/125/EC

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Cod. 191013651 Rev. E Ed.01/2025

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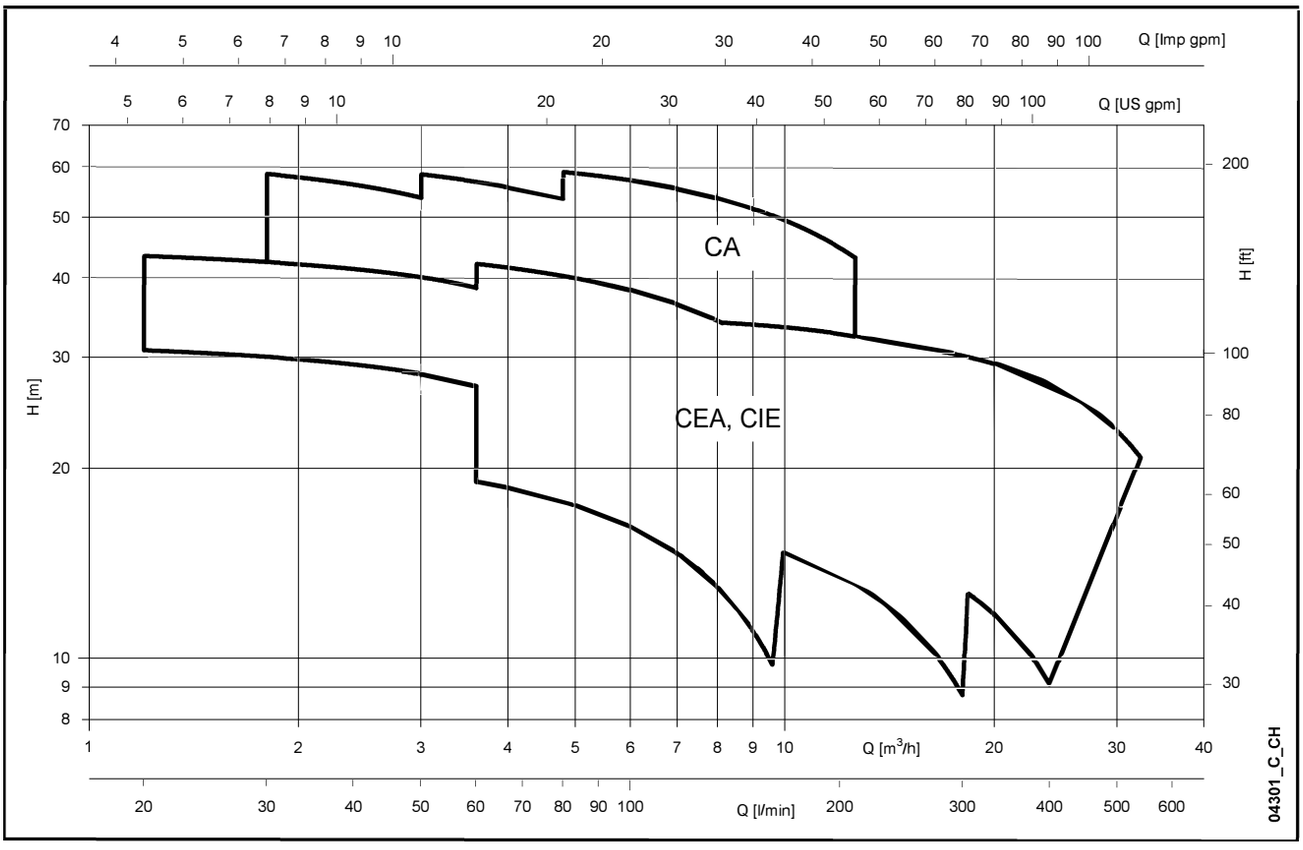
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CEA-CIE, CA SERIES
HYDRAULIC PERFORMANCE RANGE AT 60 Hz



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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 **32 m³/h**.
- Head up to **46 m**.
- Maximum ambient temperature:
  - **45 °C** with single-phase motor
  - **40 °C** with three-phase motor
- Temperature of pumped liquid: from -10°C to +110°C
- 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: 220-230 V, 60 Hz
  - Three-phase version: 220-230/380-400 V, 60 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).
- Victaulic® connections available on request
- High performance enclosed impeller made of **AISI 304** stainless steel (**AISI 316** for N version).
- **Mechanical seal** with Ceramic/Graphite rings, EPDM elastomers, 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** in EPDM
- **CIE version**:
  - SiC/SiC/EPDM mechanical seal,
  - motor with reinforced bearing (only for SM motors),
  - without fill/drain plugs for HVAC applications.

OPTIONAL FEATURES

- Different voltages.
- Different material for the mechanical seal and O-rings.

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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

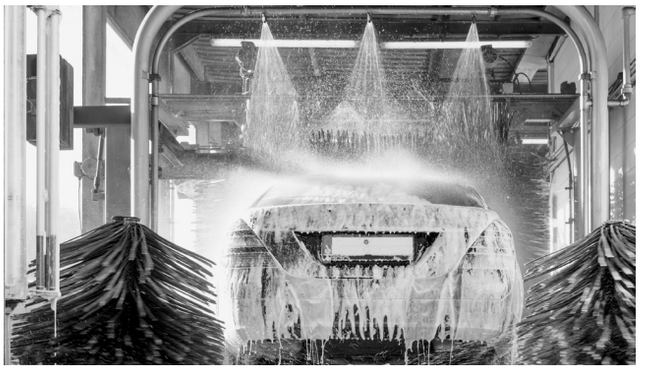
Machine Tool:
- Degreasing
- Parts washing
- Chemical treatment
- Heat treatment

Graphics:
- Film washing
- Cooling processes

Marine Sector:
- Water on board ships

Computers:
- Circuit board washing
- Unit cooling

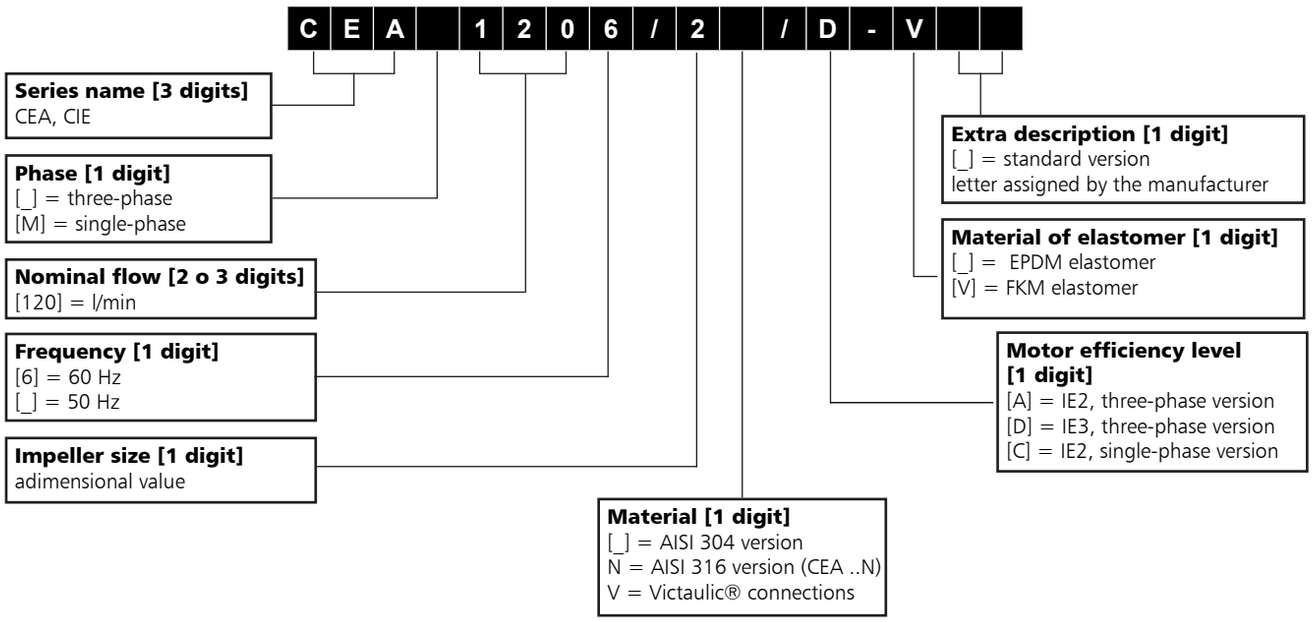
Food and Drink:
- Food processing
- Bottle washing
- Citrus processing
- Dishwashing
- Brewing
- Sanitary ware





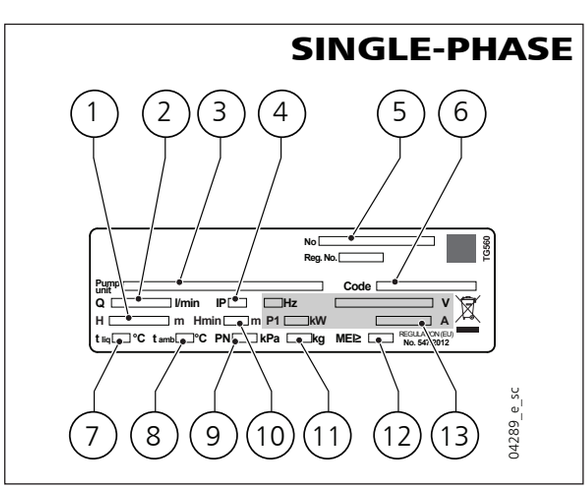
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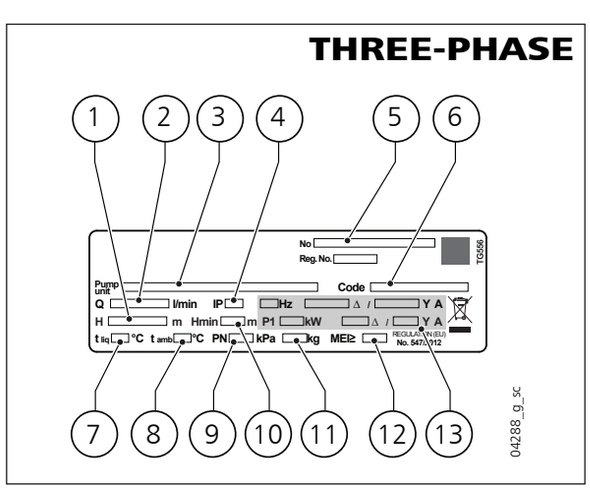
CEA-CIE SERIES
IDENTIFICATION CODE

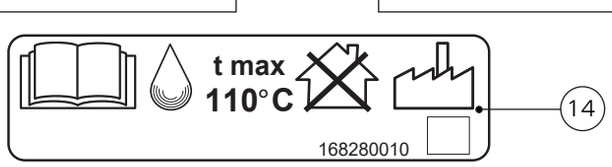


EXAMPLES:
CEA1206/2/D-V
CEA series electric pump, IE3 three-phase motor, nominal flow 120 l/min, frequency 60 Hz, 1 impeller size 2, AISI 304 version, FKM (FPM) elastomers.

RATING PLATE





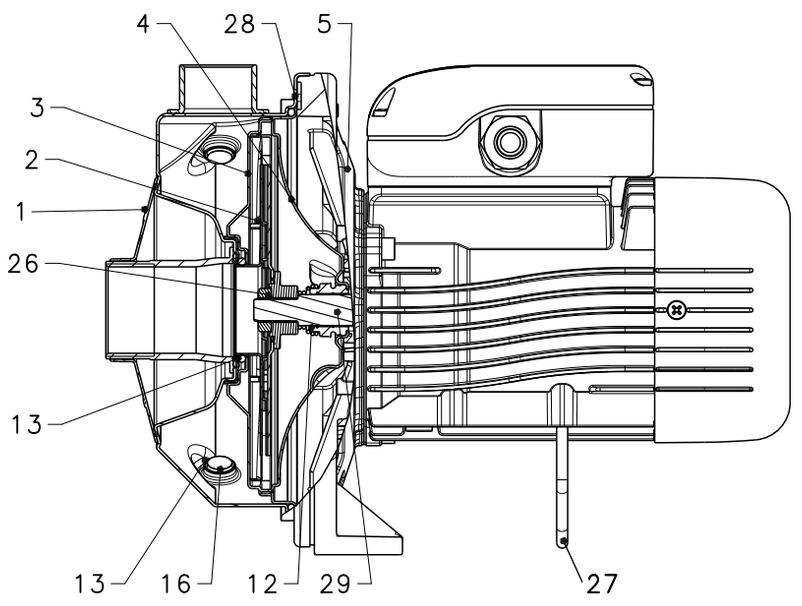


LEGEND

1 - Head range
2 - Flow range
3 - Electric pump unit type
4 - Electric pump unit type
5 - Serial number (data + order number)
6 - Electric pump unit code
7 - Maximum operating liquid temperature (uses as EN 60335-2-41)
8 - Maximum operating ambient temperature
9 - Maximum operating pressure
10 - Minimum head (EN 60335-2-41)
11 - Weight
12 - MEI Index (Regulation (EU) No 547/2012 - 50 Hz)
13 - Electrical data
14 - Maximum operating liquid temperature (for use other than EN 60335-2-41)

CEA - CEA(N) SERIES
LIST OF MODELS AND TABLE OF MATERIALS

04304_D_DS



VERSIONS
CEA706/3
CEA706/4
CEA706/5
CEA1206/1
CEA1206/2
CEA1206/3
CEA1206/4
CEA1206/5
CEA2106/0
CEA2106/1
CEA2106/2
CEA2106/3
CEA2106/4
CEA3706/0
CEA3706/0A
CEA3706/1
CEA3706/2
CEA3706/3

cea-ceaN-2p60-en_b_mo

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-AlSi8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Ceramic / Graphite / 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

cea-cea-en_d_tm

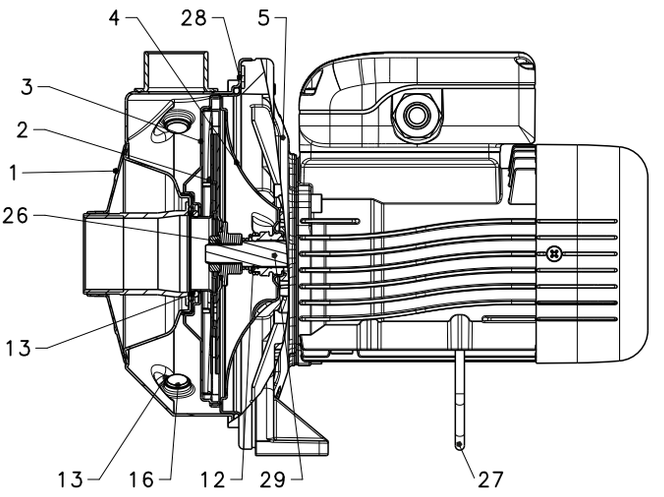
CEA..N VERSION

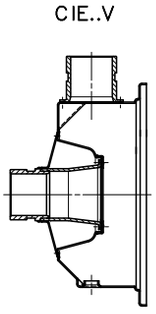
REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Adapter	Aluminium	EN 1706-AC-AlSi8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Ceramic / Graphite /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

cea-ceaN-en_d_tm

CIE SERIES
ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS

04304V_A_DS





VERSIONS CIE, CIE..V
CIE706/3..
CIE706/4..
CIE706/5..
CIE1206/1..
CIE1206/2..
CIE1206/3..
CIE1206/4..
CIE1206/5..
CIE2106/0..
CIE2106/1..
CIE2106/2..
CIE2106/3..
CIE2106/4..
CIE3706/0..
CIE3706/0A..
CIE3706/1..
CIE3706/2..
CIE3706/3..

cie-2P60_en_a_mo

CIE VERSION

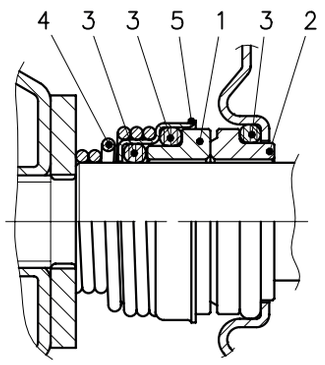
REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
2	Impeller	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
3	Diffuser	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
4	Seal housing	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
5	Adapter	Aluminium	EN 1706-AC-AlSi8Cu3 (Fe) (AC46200)	-
12	Mechanical seal	Silicon carbide / Silicon carbide / 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

cie-en_b_tm

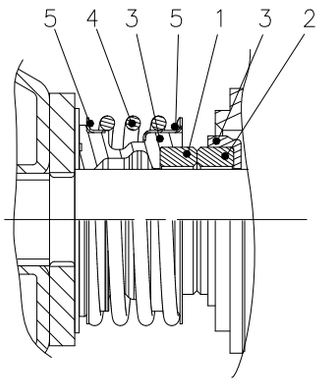
CEA-CEA(N) SERIES
MECHANICAL SEAL

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

Pusher



Bellow



LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
V : Ceramic	E : EPDM	G : AISI 316
B : Graphite	V : FPM (FKM)*	
Q : Silicon Carbide	K : FFKM	
U : Carburo di tungsteno		

* For hot water: max 80°C

cea-ca_ten-mec-en_d_tm

SEAL TYPES

SERIES	TYPE	CONSTRU-CTION	POSITION 1 ROTATING ASSEMBLY	POSITION 2 FIXED ASSEMBLY	POSITION 3 ELASTOMERS	POSITION 4 SPRINGS	POSITION 5 OTHER COMPONENTS	TEMPERATURE (°C)
CEA	STANDARD MECHANICAL SEAL							
	VBEGG [a]	PUSHER	V	B	E	G	G	-10...+110
	OTHER TYPES OF MECHANICAL SEAL							
	VBVGG	PUSHER	V	B	V	G	G	-10...+110
	QQEGG	BELLOW	Q	Q	E	G	G	
	UQEGG	PUSHER	U	Q	E	G	G	
	UQVGG	PUSHER	U	Q	V	G	G	
	QQVGG	BELLOW	Q	Q	V	G	G	
	QQKGG [b]	PUSHER	Q	Q	K	G	G	
CEA..N	STANDARD MECHANICAL SEAL							
	VBEGG [a]	PUSHER	V	B	E	G	G	-10...+110
	OTHER TYPES OF MECHANICAL SEAL							
	VBVGG	PUSHER	V	B	V	G	G	-10...+110
	QQEGG	BELLOW	Q	Q	E	G	G	
	QQVGG	BELLOW	Q	Q	V	G	G	
	QQKGG [b]	PUSHER	Q	Q	K	G	G	

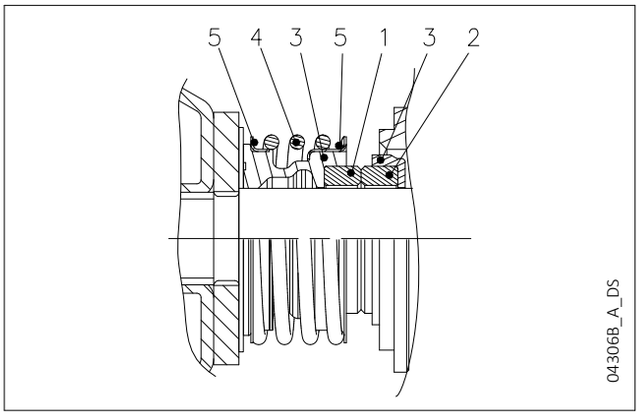
a) Suitable for potable water usage

b) Long tail version

cea_tipi-ten-mec-en_e_tc

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 : Silicon carbide	E : EPDM	G : AISI 316
	V : FPM (FKM)*	

* For hot water: max 80°C

cie_ten-mec-en_b_tm

SEAL TYPES

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

cie tipi-ten-mec-en b tc

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

- Short-circuit squirrel-cage motor, enclosed construction with external ventilation (TEFC).
- **IP55** protection degree.
- Insulation class **155 (F)**.
- Electrical performances according to EN 60034-1.
- Supplied **single-phase** surface motors with **IE2** efficiency level
- Supplied **three-phase** surface motors with **IE2** efficiency level (power < 0,75 kW) or **IE3** efficiency level (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.
- **Single-phase** version:
  from 0,55 to 0,75 kW (2 poles)
  220-230 V 60 Hz
  Built-in automatic reset overload protection.
- **Three-phase** version:
  from 0,55 to 3 kW (2 poles)
  220-230/380-400 V 60 Hz
  Overload protection to be provided by the user.

From 1 July 2023 in accordance with the **Regulations (EU) 2019/1781 and (EU) 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 to 74,9 kW** must have a minimum level of **IE3** efficiency. The single-phase **surface motors** with **power outputs ranging from 0,12 kW** must have a minimum level **IE2** efficiency.

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

SINGLE-PHASE MOTORS AT 60 Hz, 2 POLES

P_N kW	MOTOR TYPE	IEC Size	Construction Design	INPUT CURRENT In (A) 220-230 V	CAPACITOR µF	CAPACITOR V	DATA FOR 230 V 60 Hz VOLTAGE min^{-1}	Is / In	η %	cosφ	Tn Nm	Ts/Tn	Tm/Tn	Operating conditions Altitude above sea level (m)	Operating conditions T. amb min/max (°C)	ATEX
0,55	SM80CEA/1076 E2	71	SPECIAL	3,38-3,31	14	450	3455	5,64	74,0	0,97	1,52	0,74	2,81	≤1000	-15/45	No
0,75	SM71CEA/1056 E2	80		4,55-4,47	30	450	3495	6,25	75,5	0,96	2,05	0,60	2,83			

sm_motm_2p60-en_a_te

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CEA-CIE SERIES
THREE-PHASE MOTORS AT 60 Hz, 2 POLES

P_N kW	Manufacturer: Xylem Service Italia Srl, Reg. No. 07520560967, Montecchio Maggiore Vicenza - Italia — Model	IEC SIZE	Construction Design	N. of Poles	f_N Hz	Data for 380 V / 60 Hz: cosj	Is / I_N	TN Nm	Ts/T_N	Tm/Tn
0,55	SM71BG /305	71	SPECIAL	2	60	0,71	7,26	1,52	4,39	4,48
0,75	SM80BG /307 PE	80				0,79	8,25	2,05	3,80	4,02
0,9	SM80BG /311 PE	80				0,80	9,11	3,01	4,15	4,29
1,1	SM80BG /311 PE	80				0,80	9,11	3,01	4,15	4,29
1,5	SM80BG /315 PE	80				0,82	9,79	4,10	4,36	4,37
1,85	PLM90BG /322 E3	90				0,79	9,80	6,01	3,80	4,01
2,2	PLM90BG /322 E3	90				0,79	9,80	6,01	3,80	4,01
3	PLM90BG /330 E3	90				0,78	9,35	8,21	4,26	4,10

P_N kW	Voltage U_N V: Δ 220 V	Δ 230 V	Y 380 V	Y 400 V	Δ 380 V	Δ 400 V	Y 660 V	Y 690 V	η_N min^{-1}	Operating conditions **: Altitudine s.l.m. m	T. amb min/max °C	ATEX
	I_N (A)											
0,55	2,54	2,25	1,47	1,30	-	-	-	-	3465 ÷ 3475	≤ 1000 VI	-15 / 40	No
0,75	3,03	3,01	1,75	1,74	1,75	1,74	1,01	1,00	3490 ÷ 3500			
0,9	4,24	4,24	2,45	2,45	2,44	2,43	1,41	1,40	3490 ÷ 3505			
1,1	4,24	4,24	2,45	2,45	2,44	2,43	1,41	1,40	3490 ÷ 3505			
1,5	5,58	5,53	3,22	3,19	3,23	3,22	1,86	1,86	3485 ÷ 3505			
1,85	7,97	7,93	4,60	4,58	4,59	4,57	2,65	2,64	3490 ÷ 3505			
2,2	7,97	7,93	4,60	4,58	4,59	4,57	2,65	2,64	3490 ÷ 3505			
3	10,9	10,8	6,30	6,23	6,32	6,29	3,65	3,63	3485 ÷ 3500			

P_N kW	Efficiency h_N %: Δ 220 ç Y 380 V 4/4	3/4	2/4	Δ 230 ç Y 400 V 4/4	3/4	2/4	Δ 380 ç Y 660 V 4/4	3/4	2/4	Δ 400 ç Y 690 V 4/4	3/4	2/4	IE
0,55	74,0	72,8	66,4	74,0	72,8	66,4	-	-	-	-	-	-	2
0,75	83,4	82,4	79,0	83,4	82,4	79,0	83,4	82,4	79,0	83,4	82,4	79,0	3
0,9	85,6	85,0	82,1	85,6	85,0	82,1	85,6	85,0	82,1	85,6	85,0	82,1	
1,1	85,6	85,0	82,1	85,6	85,0	82,1	85,6	85,0	82,1	85,6	85,0	82,1	
1,5	87,2	87,0	84,6	87,2	87,0	84,6	87,2	87,0	84,6	87,2	87,0	84,6	
1,85	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	
2,2	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	
3	89,1	88,8	86,9	89,1	88,8	86,9	89,1	88,8	86,9	89,1	88,8	86,9	

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

cea-ie3-mott-2p60-en_b_te

CEA-CIE SERIES
AVAILABLE VOLTAGES

SINGLE-PHASE	50 Hz	60 Hz
PN kW	1 x 220-240	1 x 220-230
0,40	s	-
0,55	s	s
0,75	s	s
1,1	s	-
1,5	s	-

THREE-PHASE	50 Hz			60 Hz				50/60 Hz	
PN kW	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 440-460/-	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 230/400 50 Hz 3 x 265/460 60 Hz	3 x 400/690 50 Hz 3 x 460/- 60 Hz
0,40	s	o	o	s	o	o	o	o	o
0,55	s	o	o	s	o	o	o	o	o
0,75	s	o	o	s	o	o	o	o	o
1,1	s	o	o	s	o	o	o	o	o
1,5	s	o	o	s	o	o	o	o	o
2,2	s	o	o	s	o	o	o	o	o
3	s	o	o	s	o	o	o	o	o

s = Standard voltage

o = voltage upon request

cea-volt-lowa-en_e_te

Please contact the sales network to check other available voltages.

Tolerances on nominal voltages

- **50 Hz**:

± 10% on the single voltage value shown on the rating plate.
± 5% on voltage range shown on the rating plate.

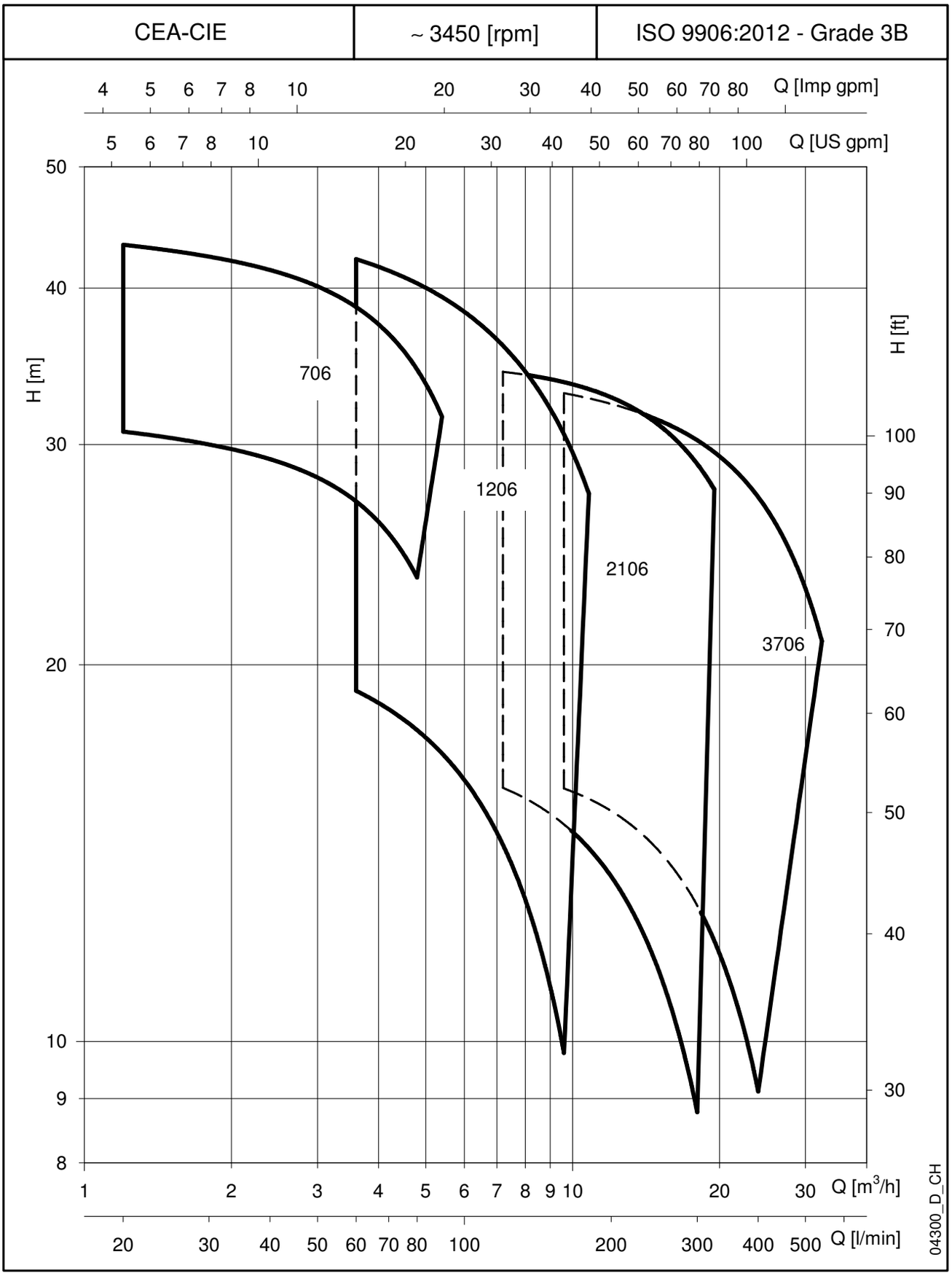
- **60 Hz**:

± 10% on the voltage values shown on the rating plate.

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CEA-CIE SERIES
HYDRAULIC PERFORMANCE RANGE AT 60 Hz, 2 POLES

CEA-CIE	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



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CEA-CIE SERIES
TABLE OF HYDRAULIC PERFORMANCES AT 60 Hz, 2 POLES

POMPA TIPO CEA, CIE	VERSIONE	MOTORE P_N kW	MOTORE TIPO	Q = PORTATA l/min 0	20	40	60	80	100	120	140	160	180
				m^3/h 0	1,2	2,4	3,6	4,8	6,0	7,2	8,4	9,6	10,8
				H = PREVALENZA TOTALE IN METRI COLONNA ACQUA									
706/3/C E2	1 ~	0,75	SM80CEA/1076	33,0	31,5	30,1	28,1	24,8					
1206/1/C E2		0,55	SM71CEA/1056	22,3			19,5	18,2	16,7	14,9	12,9	10,4	
1206/2/C E2		0,75	SM80CEA/1076	28,2			24,8	23,5	21,9	20,1	18,0	15,5	
706/3/D	3 ~	0,75	SM80BG/307	32,3	30,7	29,2	27,0	23,5					
706/4/D		1,1	SM80BG/311	39,2	37,5	35,7	33,4	29,9					
706/5/D		1,1	SM80BG/311	45,2	43,3	41,4	38,6	34,4					
1206/1/C		0,55	SM71BG/305(CEA-CO)	22,1			19,1	17,7	16,2	14,4	12,2	9,8	
1206/2/D		0,75	SM80BG/307	27,8			24,1	22,6	21,0	19,1	16,9	14,3	
1206/3/D		1,1	SM80BG/311	32,8			29,1	27,7	26,0	24,1	22,0	19,6	
1206/4/D		1,5	SM80BG/315	40,5			36,3	34,6	32,8	30,6	28,2	25,4	
1206/5/D		2,2	PLM90BG/322	46,6			42,2	40,4	38,3	36,0	33,4	30,6	27,4

POMPA TIPO CEA, CIE	VERSIONE	MOTORE P_N kW	MOTORE TIPO	Q = PORTATA l/min 0	120	145	170	195	220	245	270	295	325
				m^3/h 0	7,2	8,7	10,2	11,7	13,2	14,7	16,2	17,7	19,5
				H = PREVALENZA TOTALE IN METRI COLONNA ACQUA									
2106/0/C E2	1 ~	0,75	SM80CEA/1086	17,2	16,5	16,0	15,3	14,5	13,6	12,5	11,2	9,9	
2106/0/D	3 ~	0,75	SM80BG/307	17,0	15,9	15,3	14,6	13,7	12,7	11,6	10,4	9,1	
2106/1/D		1,1	SM80BG/311	21,1	20,4	19,9	19,3	18,5	17,7	16,7	15,5	14,3	
2106/2/D		1,5	SM80BG/315	25,3	24,5	24,0	23,5	22,8	22,0	21,1	20,1	19,0	
2106/3/D		2,2	PLM90BG/322	30,0	29,4	29,0	28,6	28,0	27,3	26,5	25,6	24,5	
2106/4/D		2,2	PLM90BG/322	35,0	34,3	34,0	33,5	32,9	32,1	31,2	30,2	29,1	27,7

POMPA TIPO CEA, CIE	VERSIONE	MOTORE P_N kW	MOTORE TIPO	Q = PORTATA l/min 0	160	210	260	310	360	410	460	510	540
				m^3/h 0	9,6	12,6	15,6	18,6	21,6	24,6	27,6	30,6	32,4
				H = PREVALENZA TOTALE IN METRI COLONNA ACQUA									
3706/0/D	3 ~	1,1	SM80BG/311	16,9	15,9	15,1	14,0	12,5	10,8				
3706/0A/D		1,5	SM80BG/315	19,8	19,4	18,9	18,1	16,9	15,4	13,4			
3706/1/D		2,2	PLM90BG/322	23,6	22,8	22,2	21,4	20,1	18,5	16,6	14,3		
3706/2/D		3	PLM90BG/330	29,6	29,0	28,4	27,5	26,3	24,9	23,1	21,0		
3706/3/D		3	PLM90BG/330	35,0	33,0	32,1	31,2	30,0	28,6	26,9	24,9	22,5	20,9

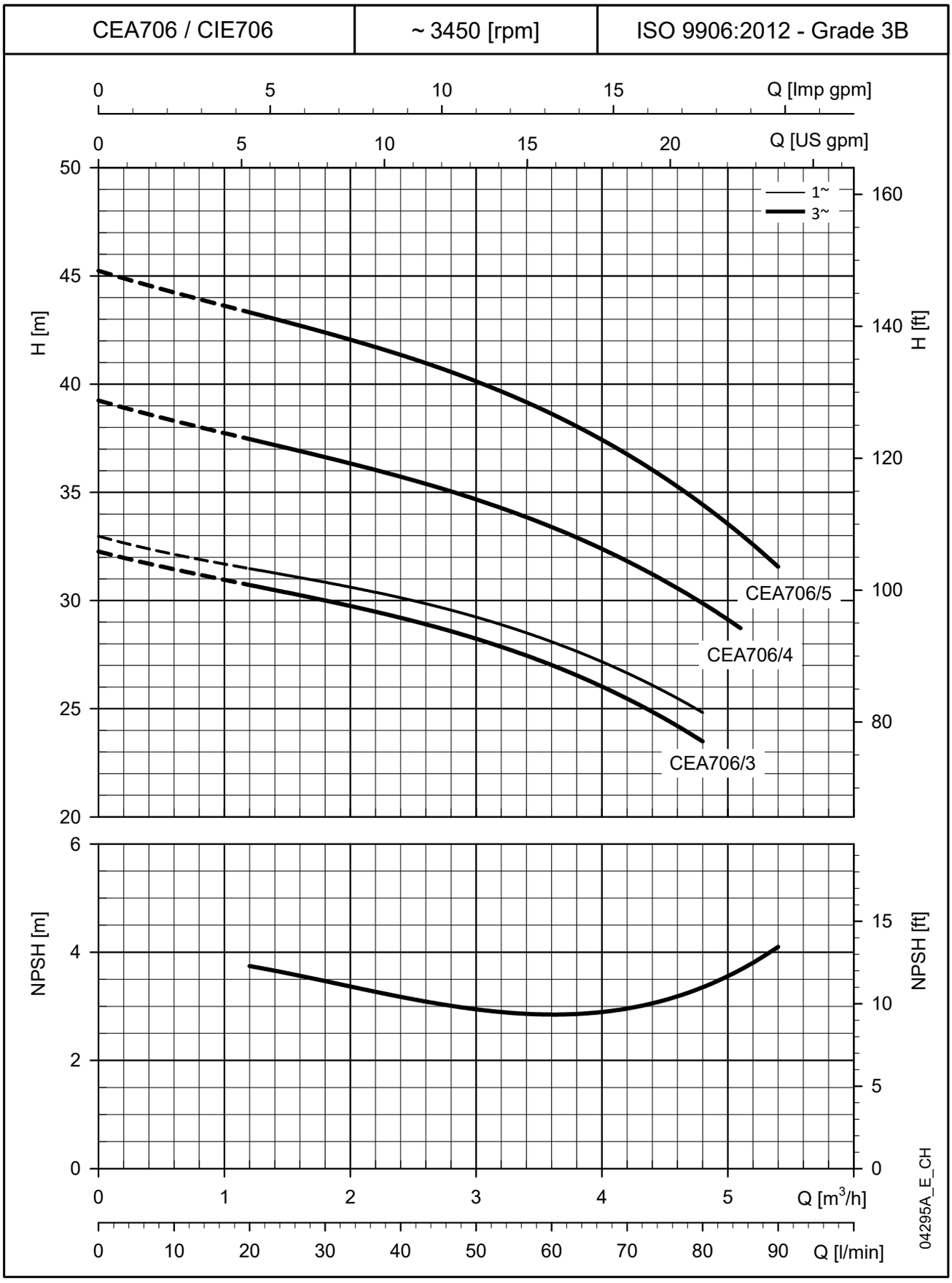
Prestazioni idrauliche conformi ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

cea-2p60-en_a_th

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CEA-CIE706 SERIES
OPERATING CHARACTERISTICS AT 60 Hz, 2 POLES

CEA706 / CIE706	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B

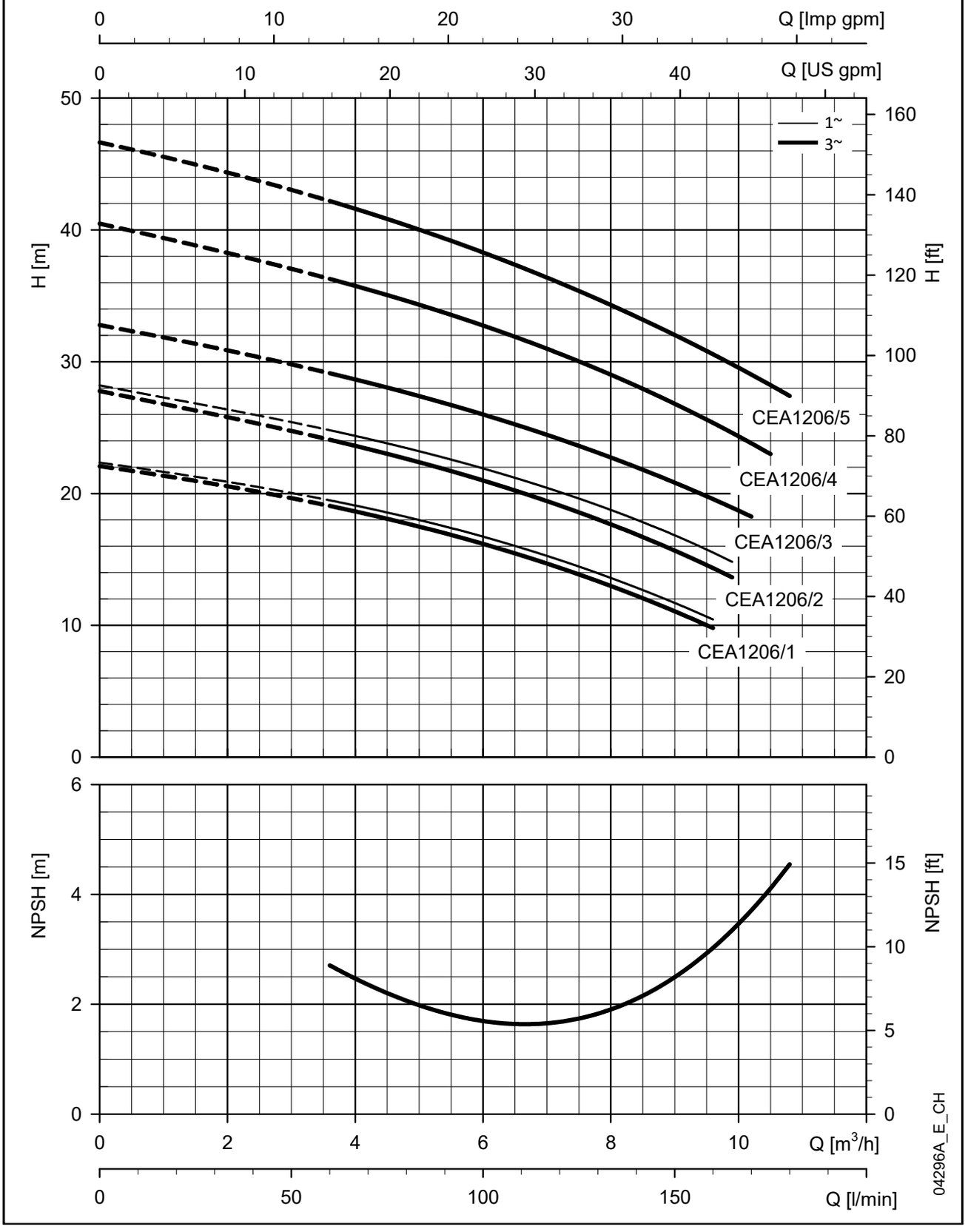


These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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a xylem brand

CEA-CIE1206 SERIES
OPERATING CHARACTERISTICS AT 60 Hz, 2 POLES

CEA1206	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B

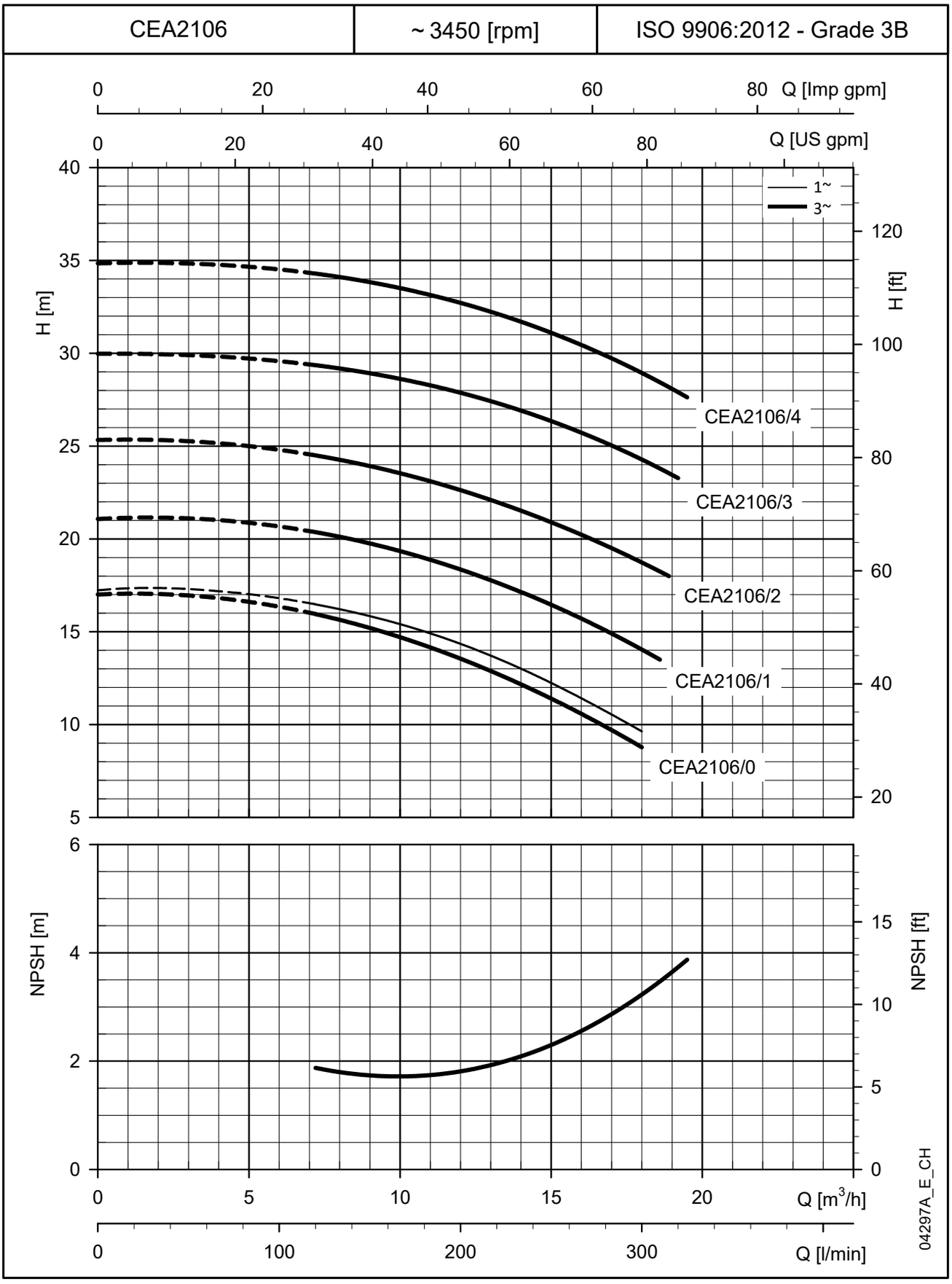


These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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a xylem brand

CEA-CIE2106 SERIES
OPERATING CHARACTERISTICS AT 60 Hz, 2 POLES

CEA2106	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B

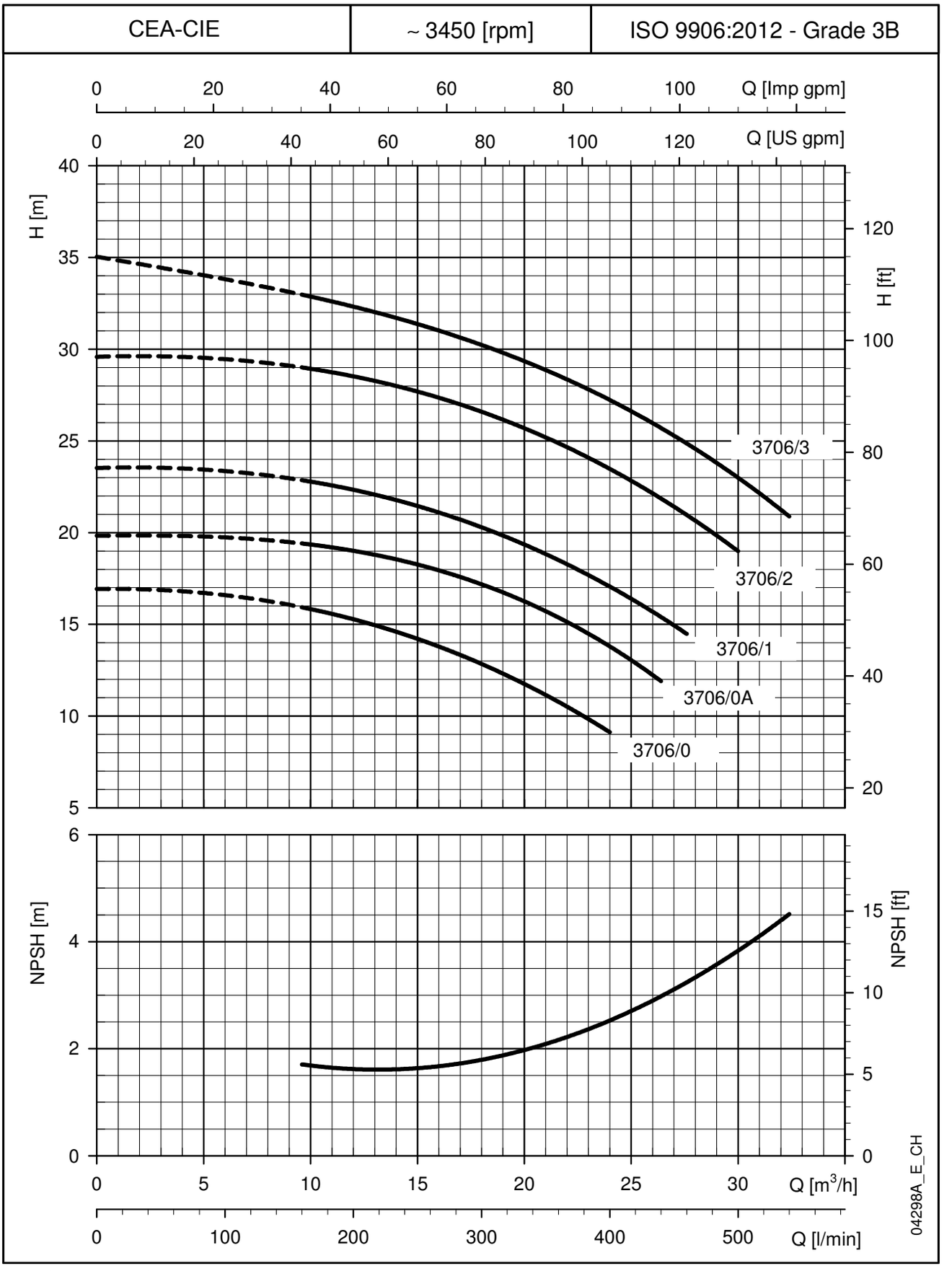


These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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a xylem brand

CEA-CIE3706 SERIES
OPERATING CHARACTERISTICS AT 60 Hz, 2 POLES

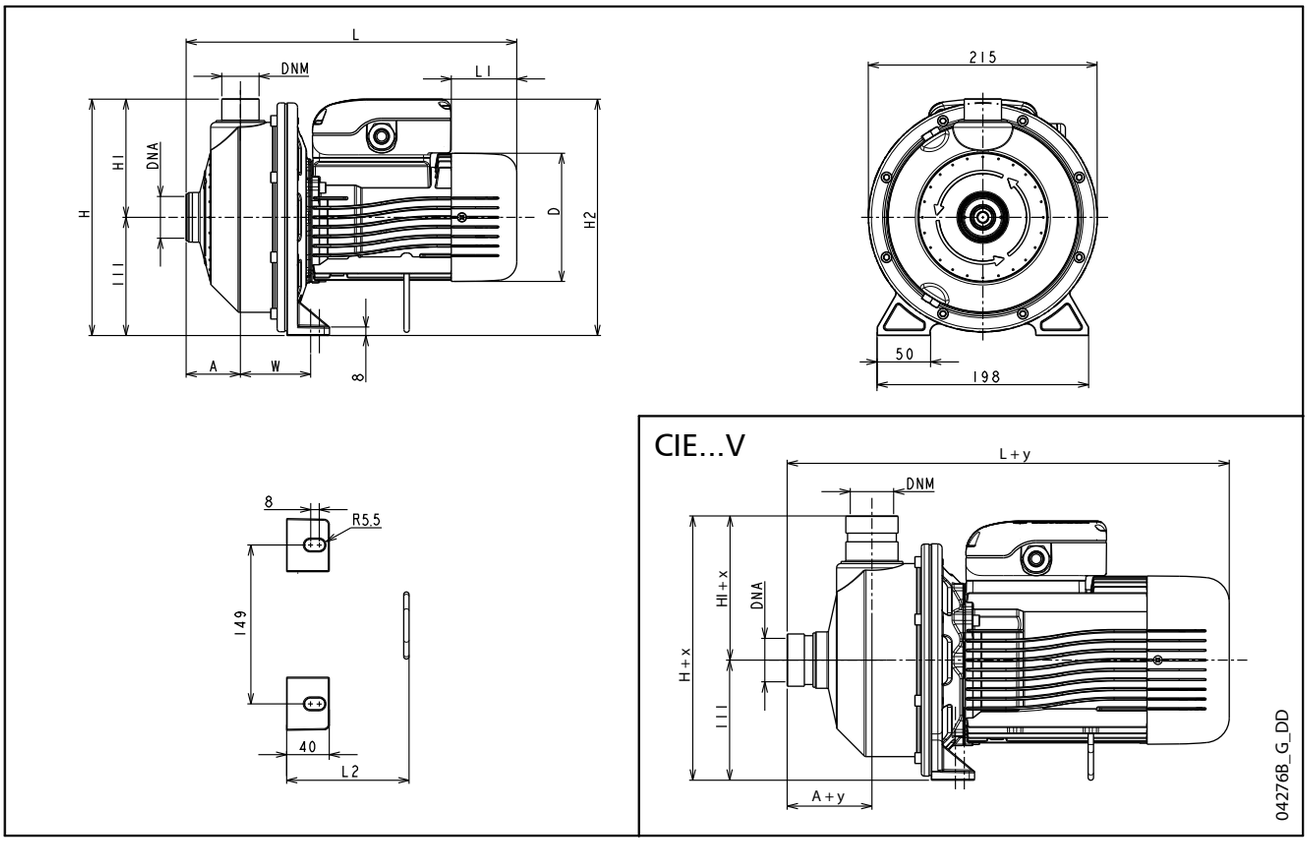
CEA-CIE	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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CEA-CIE SERIES
DIMENSIONS AND WEIGHTS AT 60 Hz

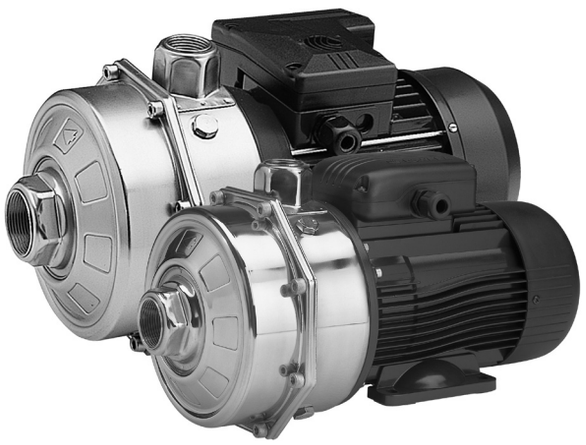


PUMP TYPE CEA.., CIE..	VERSION	DIMENSIONS (mm)										DNA (VICTAULIC)	DNM (VICTAULIC)	WEIGHT
		A	D	H	H1	H2	L	L1	x	y	W			kg
706/3/C E2	1~	51	155	222	111	248	371	69	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (1")	15
1206/1/C E2		51	140	222	111	232	325	76	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (1")	11,7
1206/2/C E2		51	155	222	111	248	371	69	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (1")	14
2106/0/C E2		54	155	222	113	248	385	69	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1(Rp 1 1/2)	15
706/3/D	3~	51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	15
706/4/D		51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	15,5
706/5/D		51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	16,5
1206/1/C		51	140	222	111	232	325	76	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	11,7
1206/2/D		51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	14
1206/3/D		51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	15
1206/4/D		51	155	222	111	240	371	114	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	16
1206/5/D		51	174	222	111	245	420	175	22	22,5	65	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1)	23
2106/0/D		54	155	222	113	240	385	114	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1 1/2)	15
2106/1/D		54	155	222	113	240	385	114	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1 1/2)	16
2106/2/D		54	155	222	113	240	385	114	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1 1/2)	17,7
2106/3/D		54	174	222	113	245	435	175	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1 1/2)	23
2106/4/D		54	174	222	113	245	435	175	22,5	24,5	76	Rp 1¼ (Rp 1 1/2)	Rp 1 (Rp 1 1/2)	23,5
3706/0/D		54	155	224	113	240	385	114	22,5	24,5	76	Rp 2 (Rp 1 1/2)	Rp 1¼ (Rp 1 1/2)	16
3706/0A/D		54	155	224	113	240	385	114	22,5	24,5	76	Rp 2 (Rp 1 1/2)	Rp 1¼ (Rp 1 1/2)	17,7
3706/1/D		54	174	224	113	245	435	175	22,5	24,5	76	Rp 2 (Rp 1 1/2)	Rp 1¼ (Rp 1 1/2)	23
3706/2/D		54	174	224	113	245	435	175	22,5	24,5	76	Rp 2 (Rp 1 1/2)	Rp 1¼ (Rp 1 1/2)	24
3706/3/D		54	174	224	113	245	435	175	22,5	24,5	76	Rp 2 (Rp 1 1/2)	Rp 1¼ (Rp 1 1/2)	25

cea-2p60-en_g_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**.
- Maximum ambient temperature: **40 °C**.
- 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**:
  Three-phase version: 220-230/380-400 V, 60 Hz
- Condensate drain plugs in the standard version.

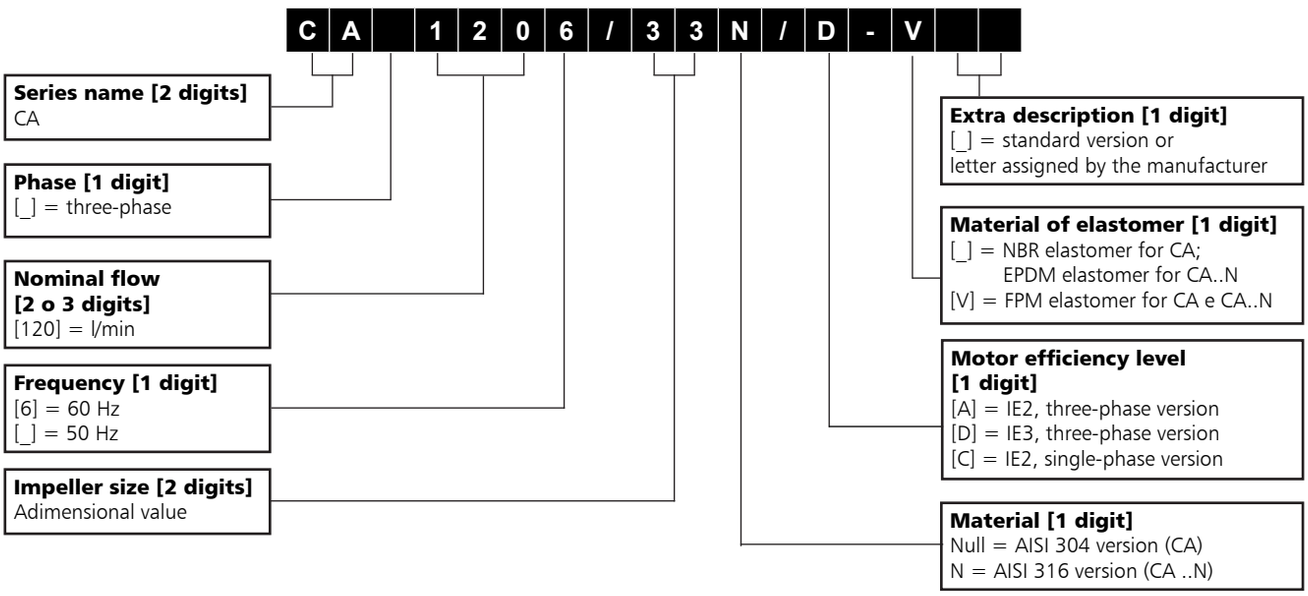
CONSTRUCTION CHARACTERISTICS

- Close-coupled, twin-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).
- Victaulic® connections available on request
- 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

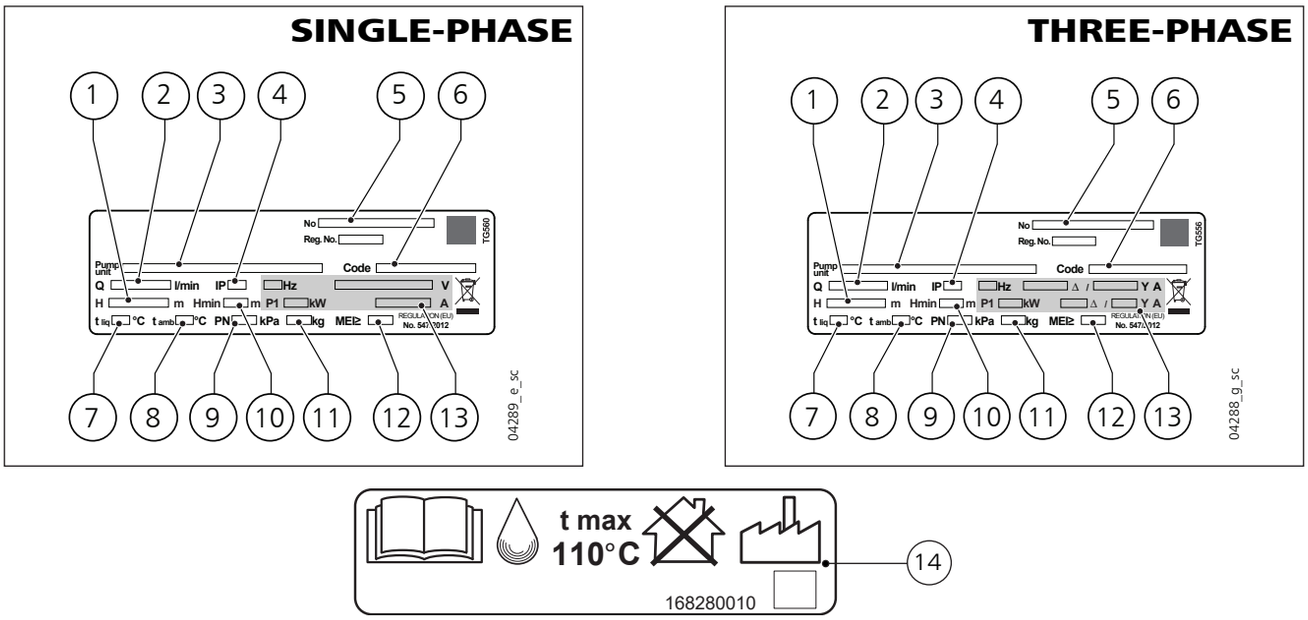
- Different voltages.
- Different material for the mechanical seal and O-rings.

CA-CA(N) SERIES
IDENTIFICATION CODE



EXAMPLE:
CA1206/33N/D-V
CA series electric pump, IE3 three-phase motor, flow rate 120 l/min, frequency 60 Hz, Impeller size 33, AISI 316 version, FPM elastomer.

RATING PLATE

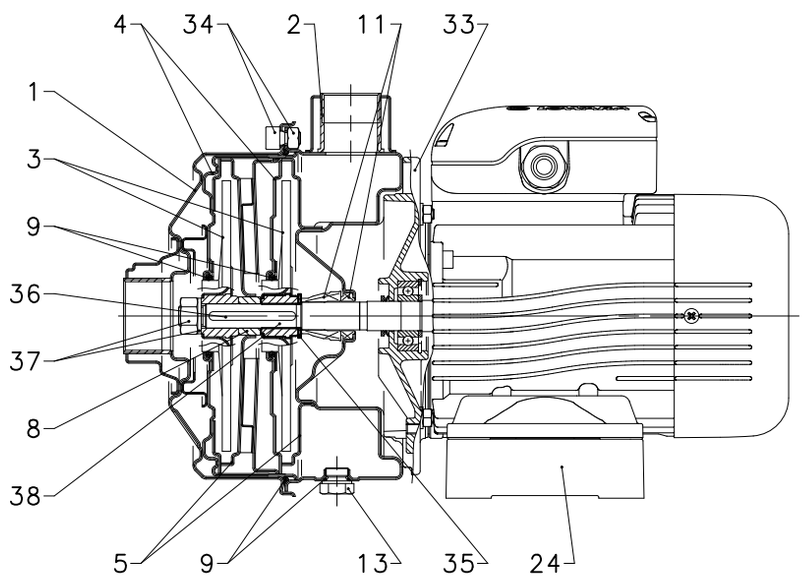


LEGEND

1 - Head range
2 - Flow range
3 - Electric pump unit type
4 - Electric pump unit type
5 - Serial number (data + order number)
6 - Electric pump unit code
7 - Maximum operating liquid temperature (uses as EN 60335-2-41)
8 - Maximum operating ambient temperature
9 - Maximum operating pressure
10 - Minimum head (EN 60335-2-41)
11 - Weight
12 - MEI Index (Regulation (EU) No 547/2012 - 50 Hz)
13 - Electrical data
14 - Maximum operating liquid temperature (for use other than EN 60335-2-41)

CA - CA(N) SERIES
ELECTRIC PUMP CROSS-SECTION AND MAIN COMPONENTS

02179_B_DS



VERSIONS
CA706/33
CA1206/33
CA2006/33

ca-caN-2p60-en_a_mo

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-AlSi11Cu2 (Fe) (AC46100)	-
33	Adapter	Aluminium	EN 1706-AC-AlSi11Cu2 (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-ca-en_b_tm

CA..N VERSION

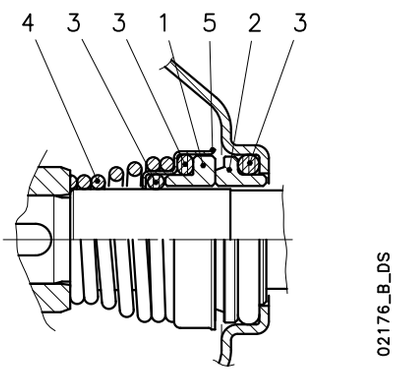
REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Suction flange	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Diffuser cover	Stainless 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-AlSi11Cu2 (Fe) (AC46100)	-
33	Adapter	Aluminium	EN 1706-AC-AlSi11Cu2 (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-CA(N) SERIES
MECHANICAL SEALS

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

CA-CA(N)



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
Q : Silicon carbide	V : FPM	
U : Tungsten carbide		
V : Ceramic		

ca ten-mec-en b tm

SEAL TYPES

SERIES	TYPE	POSITION 1 ROTATING ASSEMBLY	POSITION 2 FIXED ASSEMBLY	POSITION 3 ELASTOMERS	POSITION 4 SPRINGS	POSITION 5 OTHER COMPONENTS	TEMPERATURE (°C)
CA	STANDARD MECHANICAL SEAL						
	VBPGF	V	B	P	G	F	-10...+110
	OTHER TYPES OF MECHANICAL SEAL						
	VBEGF	V	B	E	G	F	-10...+110
	VCEGG	V	C	E	G	G	
	QQEGF	Q	Q	E	G	F	
	UBEGF	U	B	E	G	F	
	UCEGF	U	C	E	G	F	
	UUEGF	U	U	E	G	F	
	VBVGF	V	B	V	G	F	
	VCVGF	V	C	V	G	F	
	QQVGF	Q	Q	V	G	F	
	UCVGF	U	C	V	G	F	
	UUVGF	U	U	V	G	F	
CA..N	STANDARD MECHANICAL SEAL						
	VBEGG	V	B	E	G	G	-10...+110
	OTHER TYPES OF MECHANICAL SEAL						
	VCEGG	V	C	E	G	G	-10...+110
	QQEGG	Q	Q	E	G	G	
	VCVGG	V	C	V	G	G	
	QQVGG	Q	Q	V	G	G	

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CA-CA(N) SERIES
MOTORS (ErP 2009/125/EC)

- Short-circuit squirrel-cage motor, enclosed construction with external ventilation (TEFC).
- **IP55** protection degree.
- Insulation class **155 (F)**.
- **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.**
- Electrical performances according to EN 60034-1.
- Metric cable gland according to EN 50262.
- **Three-phase** version:
  220-230/380-400 V 60 Hz
  Overload protection to be provided by the user.

From 1 July 2023 in accordance with the **Regulations (EU) 2019/1781 and (EU) 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 to 74,9 kW** must have a minimum level of **IE3** efficiency. The single-phase **surface motors** with **power outputs ranging from 0,12 kW** must have a minimum level **IE2** efficiency.

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

CA SERIES
THREE-PHASE MOTORS AT 60 Hz, 2 POLES

P_N kW	Manufacturer: Xylem Service Italia Srl, Reg. No. 07520560967, Montecchio Maggiore Vicenza - Italia. Model	IEC SIZE	Construction Design	N. of Poles	f_N Hz	Data for 380 V / 60 Hz: cosφ	Is / I_N	TN Nm	Ts/T_N	Tm/Tn
1,5	SM80BG /315 PE	80	SPECIAL	2	60	0,82	9,79	4,10	4,36	4,37
2,2	PLM90BG /322 E3	90				0,79	9,80	6,01	3,80	4,01
3	PLM90BG /330 E3	90				0,78	9,35	8,21	4,26	4,10

P_N kW	Voltage U_N V: Δ 220 V	Δ 230 V	Y 380 V	Y 400 V	Δ 380 V	Δ 400 V	Y 660 V	Y 690 V	n_N min^{-1}	Operating conditions **: Altitudine s.l.m. m	T. amb min/max °C	ATEX
	I_N (A)											
1,5	5,58	5,53	3,22	3,19	3,23	3,22	1,86	1,86	3485 ÷ 3505	≤ 1000	-15 / 40	No
2,2	7,97	7,93	4,60	4,58	4,59	4,57	2,65	2,64	3490 ÷ 3505			
3	10,90	10,80	6,30	6,23	6,32	6,29	3,65	3,63	3485 ÷ 3500			

P_N kW	Efficiency η_N % — Δ 220 V Y 380 V: 4/4	3/4	2/4	Δ 230 V Y 400 V: 4/4	3/4	2/4	Δ 380 V Y 660 V: 4/4	3/4	2/4	Δ 400 V Y 690 V: 4/4	3/4	2/4	IE
1,5	87,2	87,0	84,6	87,2	87,0	84,6	87,2	87,0	84,6	87,2	87,0	84,6	3
2,2	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	87,7	87,2	84,7	
3	89,1	88,8	86,9	89,1	88,8	86,9	89,1	88,8	86,9	89,1	88,8	86,9	

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

ca-ie3-mott-2p60-en_a_te

AVAILABLE VOLTAGES FOR SM AND PLM MOTORS

SINGLE-PHASE	50 Hz	60 Hz
PN kW	1 x 220-240	1 x 220-230
0,40	s	-
0,55	s	-
0,75	s	-
1,1	s	-
1,5	s	-

THREE-PHASE	50 Hz			60 Hz				50/60 Hz	
PN kW	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 440-460/-	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 230/400 50 Hz 3 x 265/460 60 Hz	3 x 400/690 50 Hz 3 x 460/- 60 Hz
0,40	s	o	o	s	o	o	o	o	o
0,55	s	o	o	s	o	o	o	o	o
0,75	s	o	o	s	o	o	o	o	o
1,1	s	o	o	s	o	o	o	o	o
1,5	s	o	o	s	o	o	o	o	o
2,2	s	o	o	s	o	o	o	o	o
3	s	o	o	s	o	o	o	o	o

s = Standard voltage o = voltage upon request ca-volt-lowa-en_e_te

Please contact the sales network to check other available voltages.

Tolerances on nominal voltages

- **50 Hz**:

± 10% on the single voltage value shown on the rating plate.
± 5% on voltage range shown on the rating plate.

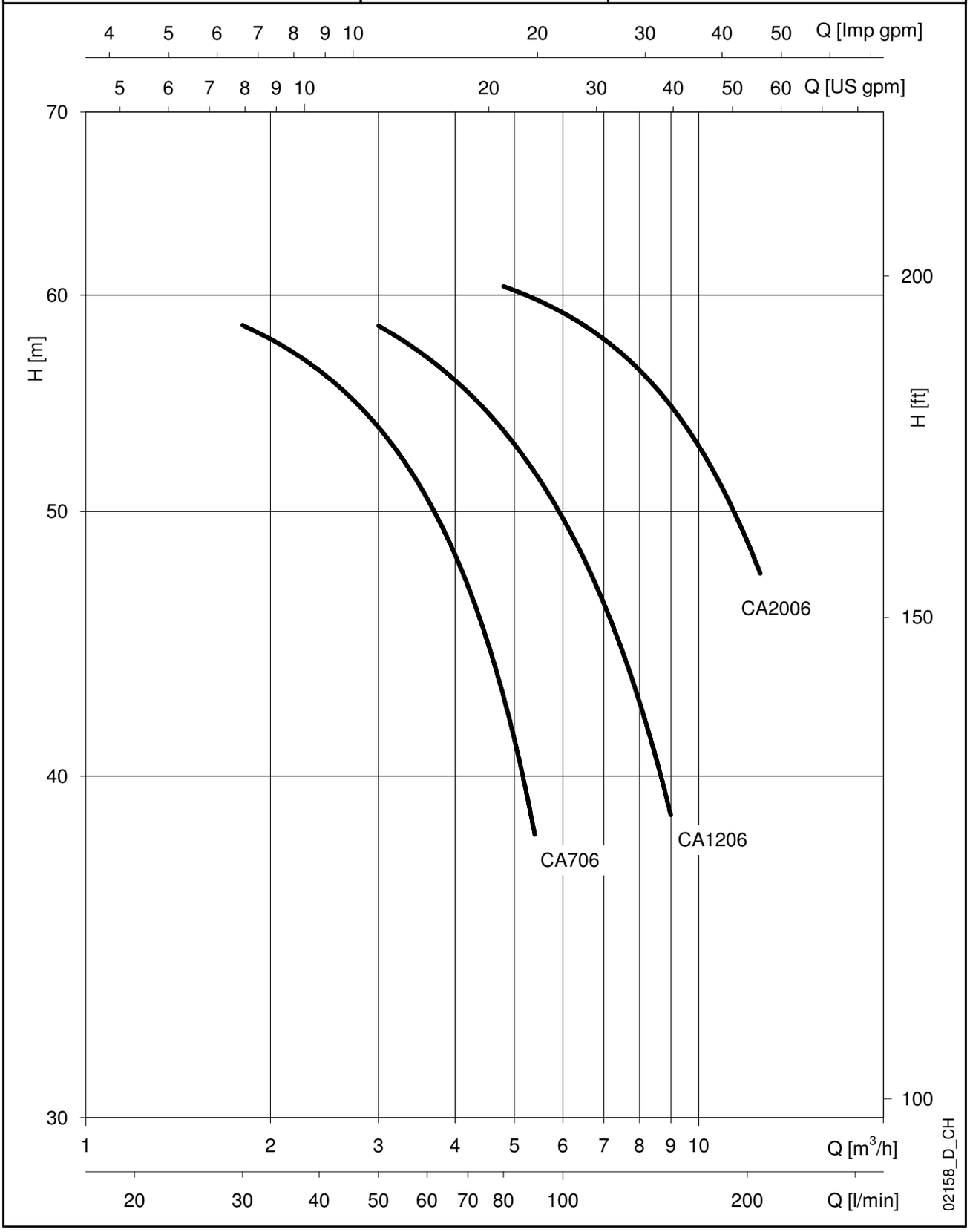
- **60 Hz**:

± 10% on the voltage values shown on the rating plate.

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CA-CA(N) SERIES
HYDRAULIC PERFORMANCE RANGE AT 60 Hz, 2 POLES

CA	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



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CA-CA(N) SERIES
HYDRAULIC PERFORMANCE TABLE AT 60 Hz, 2 POLES

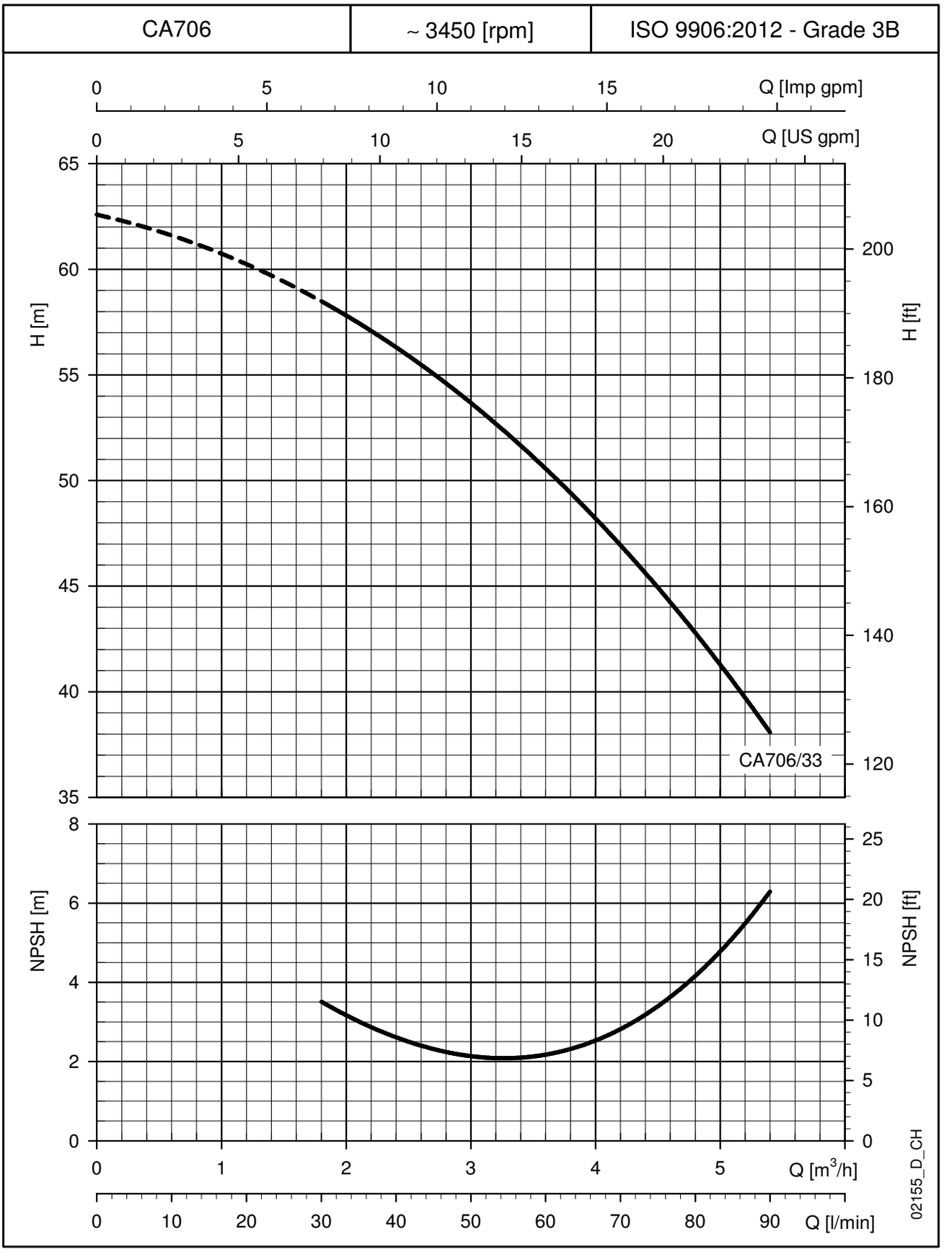
PUMP TYPE	RATED POWER		Q = DELIVERY											
			l/min	0	30	40	50	60	70	80	90	120	150	180	210
			m^3/h	0	1,8	2,4	3	3,6	4,2	4,8	5,4	7,2	9	10,8	12,6
	kW	HP	H = TOTAL HEAD METRES COLUMN OF WATER												
CA 706/33	1,5	2		62,6	58,5	56,3	53,7	50,6	46,9	42,8	38,1				
CA 1206/33	2,2	3		64,2			58,5	56,9	55,3	53,5	51,7	45,5	38,7		
CA 2006/33	3	4		63,9						60,4	59,8	57,5	54,7	51,3	47,4

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CA706 SERIES
OPERATING CHARACTERISTICS AT 60 HZ, 2 POLES

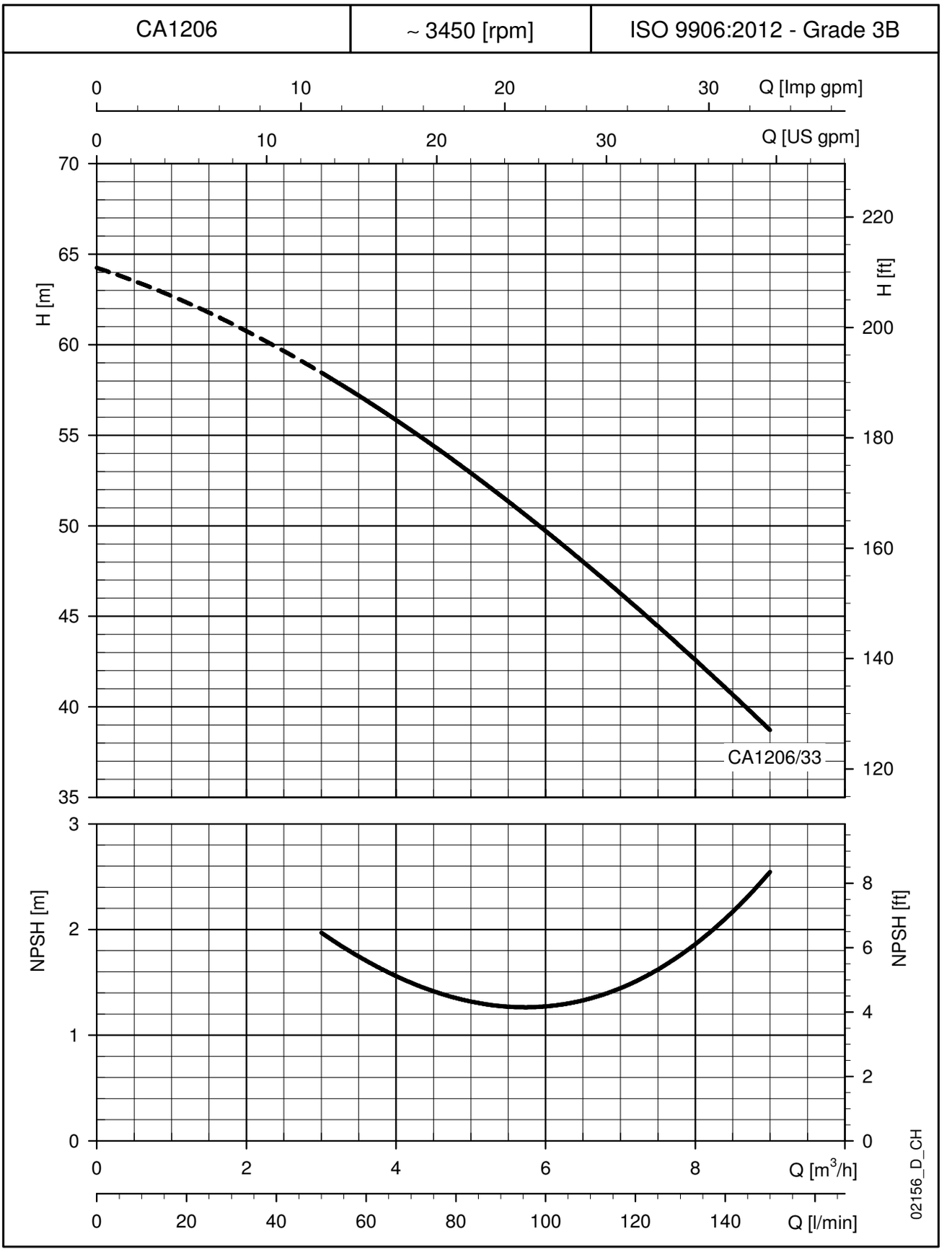
CA706	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



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CA1206 SERIES
OPERATING CHARACTERISTICS AT 60 HZ, 2 POLES

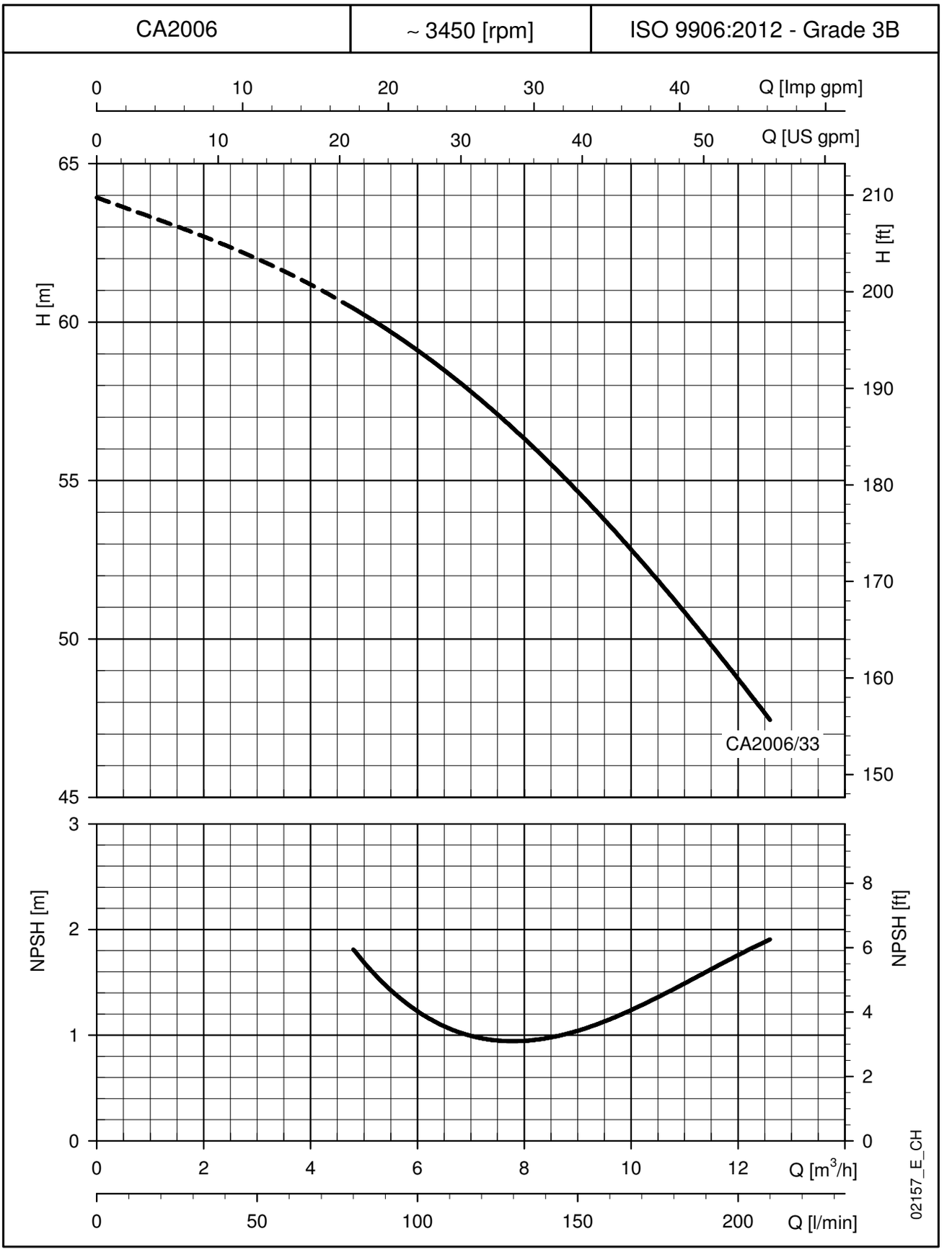
CA1206	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



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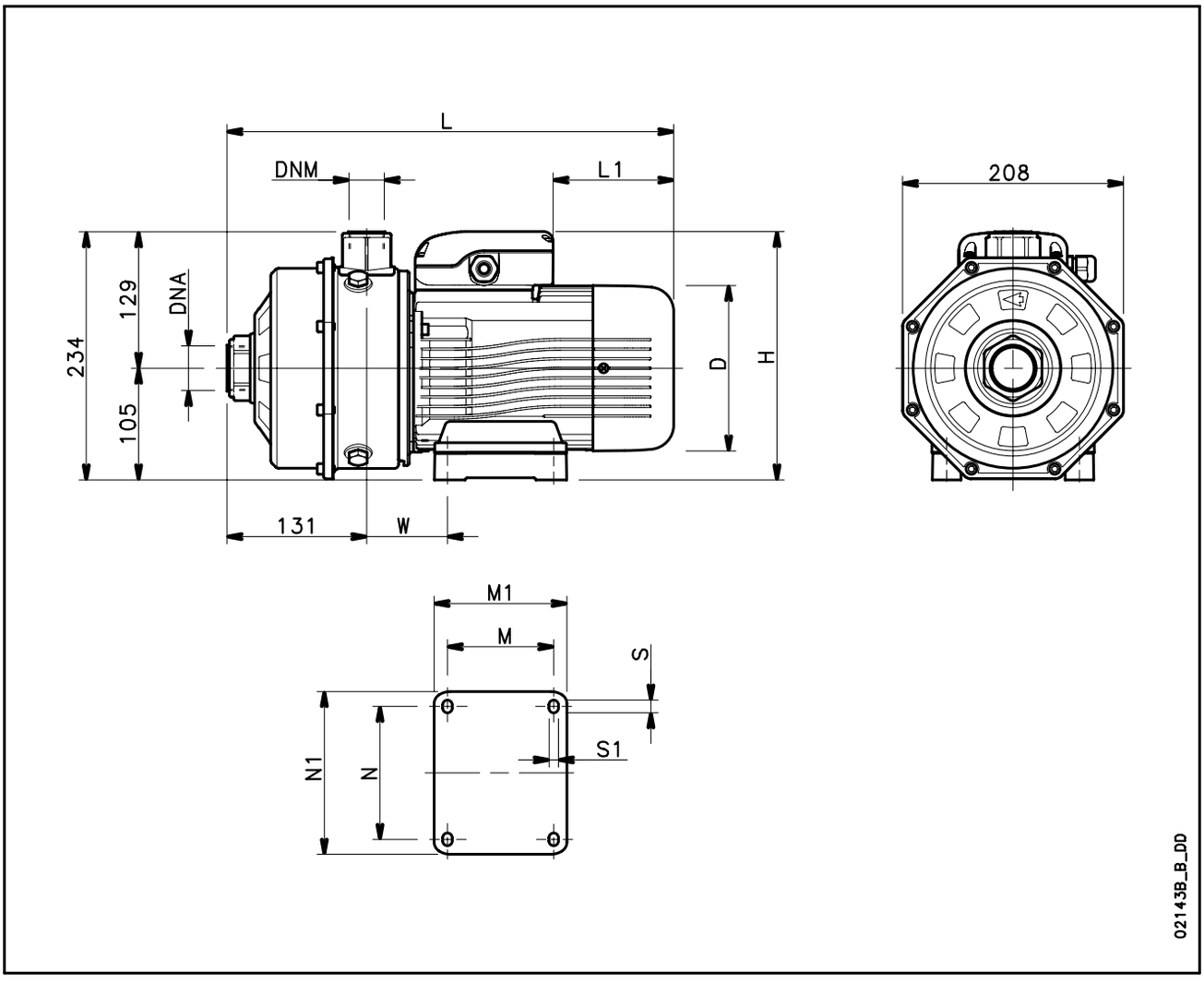
CA2006 SERIES
OPERATING CHARACTERISTICS AT 60 HZ, 2 POLES

CA2006	~ 3450 [rpm]	ISO 9906:2012 - Grade 3B



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CA-CA(N) SERIES
DIMENSIONS AND WEIGHTS AT 60 Hz, 2 POLES



PUMP TYPE	DIMENSIONS (mm)											DNA	DNM	WEIGHT
	D	H	L	L1	M	M1	N	N1	S	S1	W			kg
CA 706/33/D	155	234	420	114	100	125	125	153	12	9	76	Rp 1¼	Rp 1	19,5
CA 1206/33/D	174	242	460	176	125	155	140	170	13	10	98	Rp 1¼	Rp 1	25
CA 2006/33/D	174	242	460	176	125	155	140	170	13	10	98	Rp 1½	Rp 1	27

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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 hz at which to install the machine under safe conditions, the following formula must be verified:

hp + hz $\geq$ **(NPSHr + 0.5) + hf + hpv** ①

where:

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

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

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

hpv is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. hpv is the quotient between the Pv 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 $\gamma = 1$ kg/dm^3
Flow rate required: 25 m^3/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 m^3/h, of 2 m.

For water at 15 °C

hp = Pa / γ = 10,33m, hpv = Pv / γ = 0,174m (0,01701 bar)

The Hf flow resistance in the suction line with foot valves is ~ 1,2 m.
By substituting the parameters in formula 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.

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VAPOUR PRESSURE
VAPOUR PRESSURE ps AND ρ DENSITY OF WATER TABLE

t	T	ps	ρ
°C	K	bar	kg/dm³
0	273,15	0,00611	0,9998
1	274,15	0,00657	0,9999
2	275,15	0,00706	0,9999
3	276,15	0,00758	0,9999
4	277,15	0,00813	1,0000
5	278,15	0,00872	1,0000
6	279,15	0,00935	1,0000
7	280,15	0,01001	0,9999
8	281,15	0,01072	0,9999
9	282,15	0,01147	0,9998
10	283,15	0,01227	0,9997
11	284,15	0,01312	0,9997
12	285,15	0,01401	0,9996
13	286,15	0,01497	0,9994
14	287,15	0,01597	0,9993
15	288,15	0,01704	0,9992
16	289,15	0,01817	0,9990
17	290,15	0,01936	0,9988
18	291,15	0,02062	0,9987
19	292,15	0,02196	0,9985
20	293,15	0,02337	0,9983
21	294,15	0,24850	0,9981
22	295,15	0,02642	0,9978
23	296,15	0,02808	0,9976
24	297,15	0,02982	0,9974
25	298,15	0,03166	0,9971
26	299,15	0,03360	0,9968
27	300,15	0,03564	0,9966
28	301,15	0,03778	0,9963
29	302,15	0,04004	0,9960
30	303,15	0,04241	0,9957
31	304,15	0,04491	0,9954
32	305,15	0,04753	0,9951
33	306,15	0,05029	0,9947
34	307,15	0,05318	0,9944
35	308,15	0,05622	0,9940
36	309,15	0,05940	0,9937
37	310,15	0,06274	0,9933
38	311,15	0,06624	0,9930
39	312,15	0,06991	0,9927
40	313,15	0,07375	0,9923
41	314,15	0,07777	0,9919
42	315,15	0,08198	0,9915
43	316,15	0,09639	0,9911
44	317,15	0,09100	0,9907
45	318,15	0,09582	0,9902
46	319,15	0,10086	0,9898
47	320,15	0,10612	0,9894
48	321,15	0,11162	0,9889
49	322,15	0,11736	0,9884
50	323,15	0,12335	0,9880
51	324,15	0,12961	0,9876
52	325,15	0,13613	0,9871
53	326,15	0,14293	0,9862
54	327,15	0,15002	0,9862

t	T	ps	ρ
°C	K	bar	kg/dm³
55	328,15	0,15741	0,9857
56	329,15	0,16511	0,9852
57	330,15	0,17313	0,9846
58	331,15	0,18147	0,9842
59	332,15	0,19016	0,9837
60	333,15	0,1992	0,9832
61	334,15	0,2086	0,9826
62	335,15	0,2184	0,9821
63	336,15	0,2286	0,9816
64	337,15	0,2391	0,9811
65	338,15	0,2501	0,9805
66	339,15	0,2615	0,9799
67	340,15	0,2733	0,9793
68	341,15	0,2856	0,9788
69	342,15	0,2984	0,9782
70	343,15	0,3116	0,9777
71	344,15	0,3253	0,9770
72	345,15	0,3396	0,9765
73	346,15	0,3543	0,9760
74	347,15	0,3696	0,9753
75	348,15	0,3855	0,9748
76	349,15	0,4019	0,9741
77	350,15	0,4189	0,9735
78	351,15	0,4365	0,9729
79	352,15	0,4547	0,9723
80	353,15	0,4736	0,9716
81	354,15	0,4931	0,9710
82	355,15	0,5133	0,9704
83	356,15	0,5342	0,9697
84	357,15	0,5557	0,9691
85	358,15	0,5780	0,9684
86	359,15	0,6011	0,9678
87	360,15	0,6249	0,9671
88	361,15	0,6495	0,9665
89	362,15	0,6749	0,9658
90	363,15	0,7011	0,9652
91	364,15	0,7281	0,9644
92	365,15	0,7561	0,9638
93	366,15	0,7849	0,9630
94	367,15	0,8146	0,9624
95	368,15	0,8453	0,9616
96	369,15	0,8769	0,9610
97	370,15	0,9094	0,9602
98	371,15	0,9430	0,9596
99	372,15	0,9776	0,9586
100	373,15	1,0133	0,9581
102	375,15	1,0878	0,9567
104	377,15	1,1668	0,9552
106	379,15	1,2504	0,9537
108	381,15	1,3390	0,9522
110	383,15	1,4327	0,9507
112	385,15	1,5316	0,9491
114	387,15	1,6362	0,9476
116	389,15	1,7465	0,9460
118	391,15	1,8628	0,9445

t	T	ps	ρ
°C	K	bar	kg/dm³
120	393,15	1,9854	0,9429
122	395,15	2,1145	0,9412
124	397,15	2,2504	0,9396
126	399,15	2,3933	0,9379
128	401,15	2,5435	0,9362
130	403,15	2,7013	0,9346
132	405,15	2,867	0,9328
134	407,15	3,041	0,9311
136	409,15	3,223	0,9294
138	411,15	3,414	0,9276
140	413,15	3,614	0,9258
145	418,15	4,155	0,9214
155	428,15	5,433	0,9121
160	433,15	6,181	0,9073
165	438,15	7,008	0,9024
170	433,15	7,920	0,8973
175	448,15	8,924	0,8921
180	453,15	10,027	0,8869
185	458,15	11,233	0,8815
190	463,15	12,551	0,8760
195	468,15	13,987	0,8704
200	473,15	15,550	0,8647
205	478,15	17,243	0,8588
210	483,15	19,077	0,8528
215	488,15	21,060	0,8467
220	493,15	23,198	0,8403
225	498,15	25,501	0,8339
230	503,15	27,976	0,8273
235	508,15	30,632	0,8205
240	513,15	33,478	0,8136
245	518,15	36,523	0,8065
250	523,15	39,776	0,7992
255	528,15	43,246	0,7916
260	533,15	46,943	0,7839
265	538,15	50,877	0,7759
270	543,15	55,058	0,7678
275	548,15	59,496	0,7593
280	553,15	64,202	0,7505
285	558,15	69,186	0,7415
290	563,15	74,461	0,7321
295	568,15	80,037	0,7223
300	573,15	85,927	0,7122
305	578,15	92,144	0,7017
310	583,15	98,70	0,6906
315	588,15	105,61	0,6791
320	593,15	112,89	0,6669
325	598,15	120,56	0,6541
330	603,15	128,63	0,6404
340	613,15	146,05	0,6102
350	623,15	165,35	0,5743
360	633,15	186,75	0,5275
370	643,15	210,54	0,4518
374,15	647,30	221,20	0,3154

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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	6,85	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
		hr												36,2	18,9	6,36	2,62	1,24	0,65

The hr values must be multiplied by:

0,71 for galvanized or painted steel pipes

0,54 for stainless steel or copper pipes

0,47 for PVC or PE pipes

hr = flow resistance for 100 m of straight pipeline (m)

V = water speed (m/s)

G-at-pct-en_b_th

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
1,0000	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	**1,0000**	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	**1,0000**	0,0167	0,1038	0,1247
28,3168	1,6990	60,0000	**1,0000**	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	**1,0000**	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	**1,0000**

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_2O	Millimetre of mercury mm Hg
1,0000	0,0010	1×10^{-5}	$1,45 \times 10^{-4}$	$1,02 \times 10^{-4}$	0,0075
1 000,0000	**1,0000**	0,0100	0,1450	0,1020	7,5006
1×10^5	100,0000	**1,0000**	14,5038	10,1972	750,0638
6 894,7570	6,8948	0,0689	**1,0000**	0,7031	51,7151
9 806,6500	9,8067	0,0981	1,4223	**1,0000**	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	**1,0000**

LENGTH

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

VOLUME

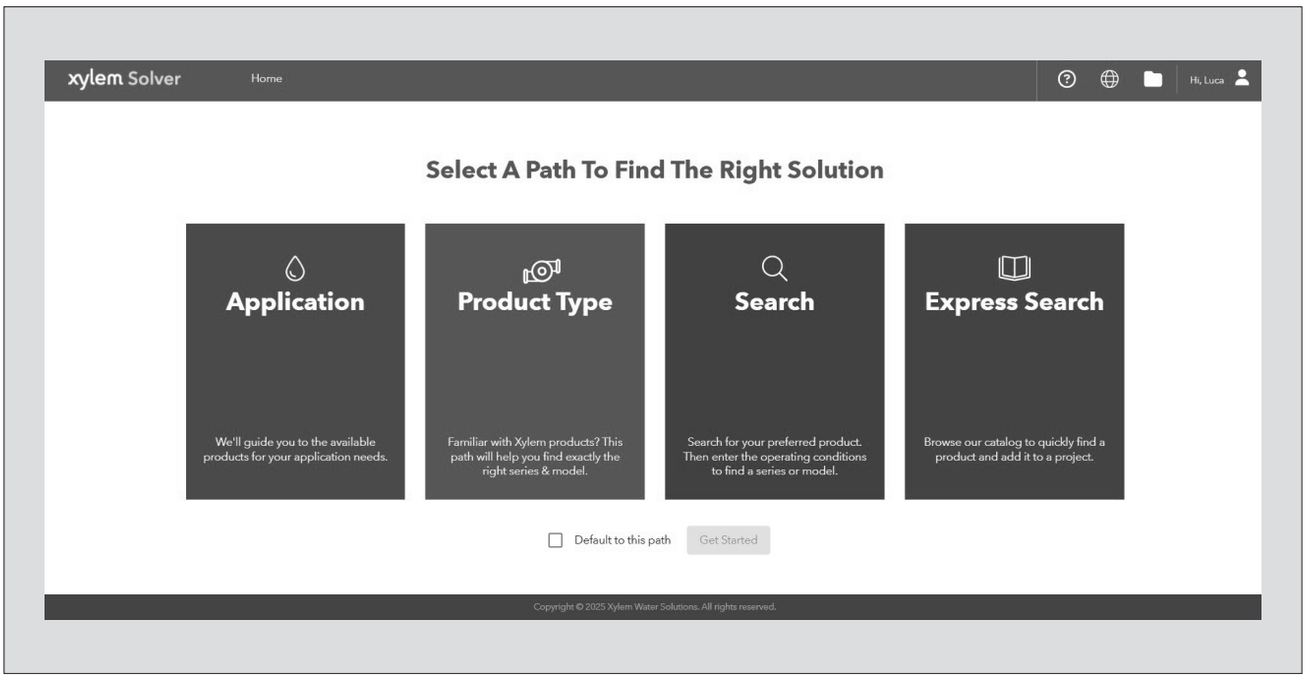
Cubic metre m^3	Litre L	Millilitre ml	Imperial gallon imp. gal.	U.S. gallon US gal.	Cubic foot ft^3
1,0000	1 000,0000	1×10^6	219,9694	264,1720	35,3147
0,0010	**1,0000**	1 000,0000	0,2200	0,2642	0,0353
1×10^{-6}	0,0010	**1,0000**	$2,2 \times 10^{-4}$	$2,642 \times 10^{-4}$	$3,53 \times 10^{-5}$
0,0045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

TEMPERATURE

Water	Kelvin K	Celsius °C	Fahrenheit °F	$°F = °C \times \frac{9}{5} + 32$ $°C = (°F - 32) \times \frac{5}{9}$
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
Xylem Solver



Xylem Solver is pump solution selection software with an extensive online database of product information across the entire Xylem 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.

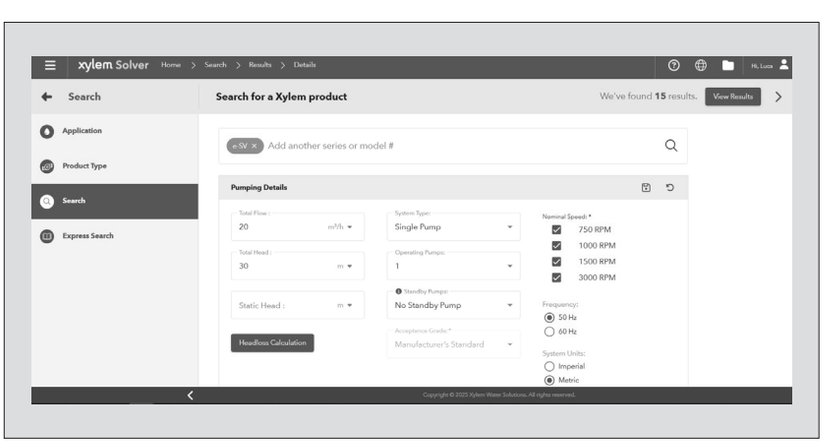
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Xylem products.

The search can be made by:

- Application
- Product type
- Duty point

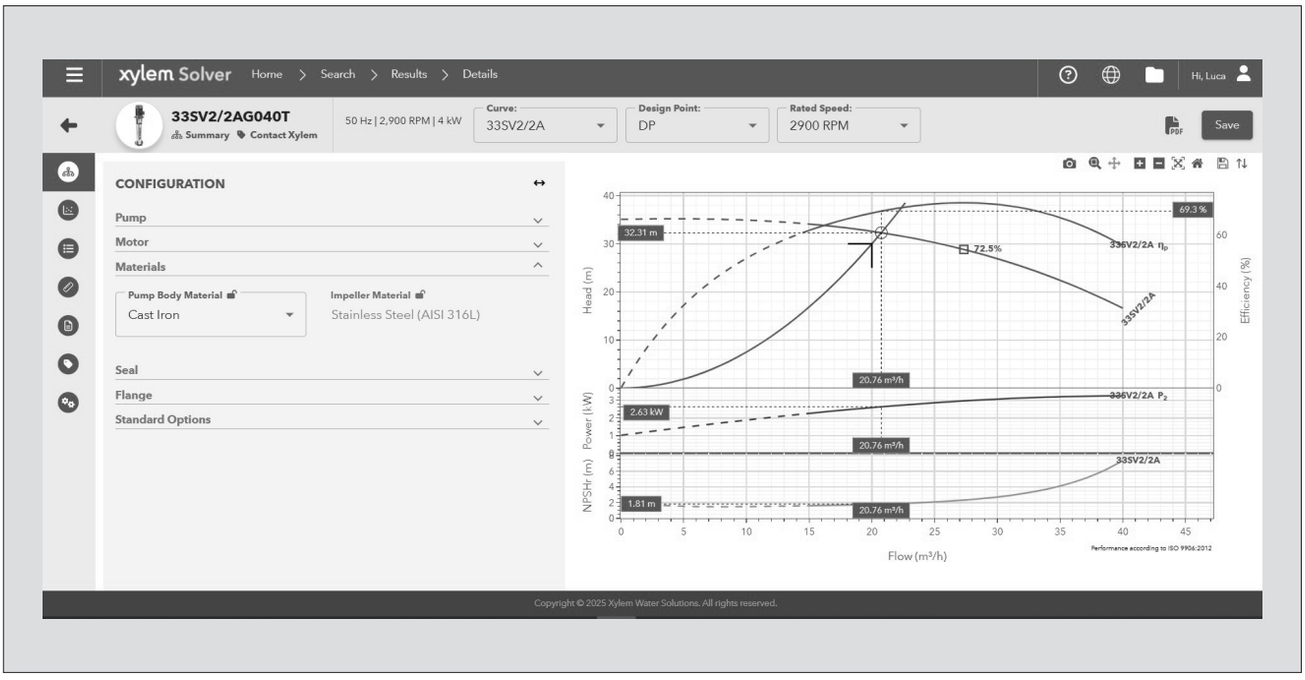
Xylem Solver gives a detailed output:

- List with search results in which you can compare up to four products
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf, stp and BIM files



Once a product series has been selected, input design criteria to select pumps that meet the design requirements.

FURTHER PRODUCT SELECTION AND DOCUMENTATION
Xylem Solver



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

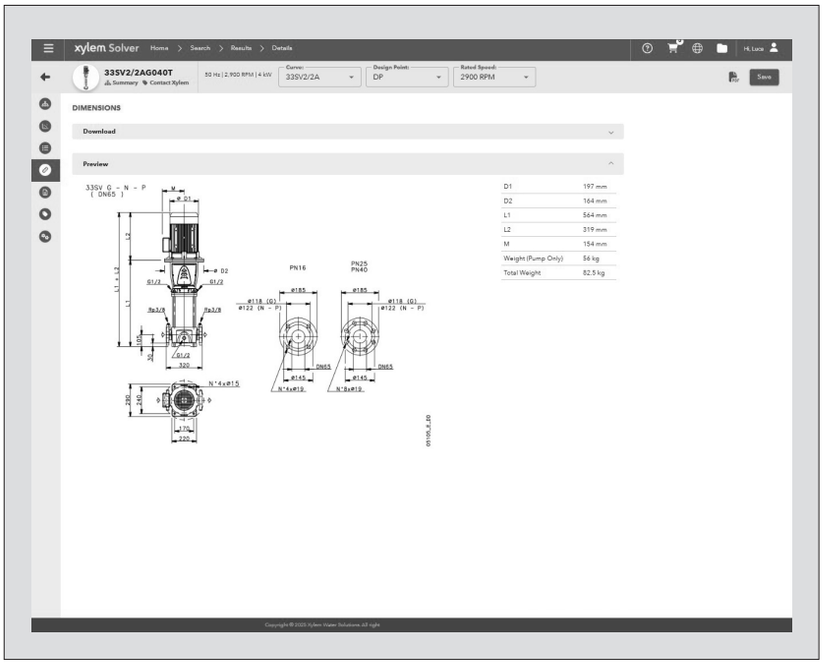
The best way to work with Xylem Solver is to create a personal account.

This makes it possible to:

- Set own standard units
- Create and save projects

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

For more information about Xylem Solver please contact our sales network or visit **https://solver.xylem.com.**



The dimensions tab shows technical drawings, dimensions, and CAD files when available.

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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