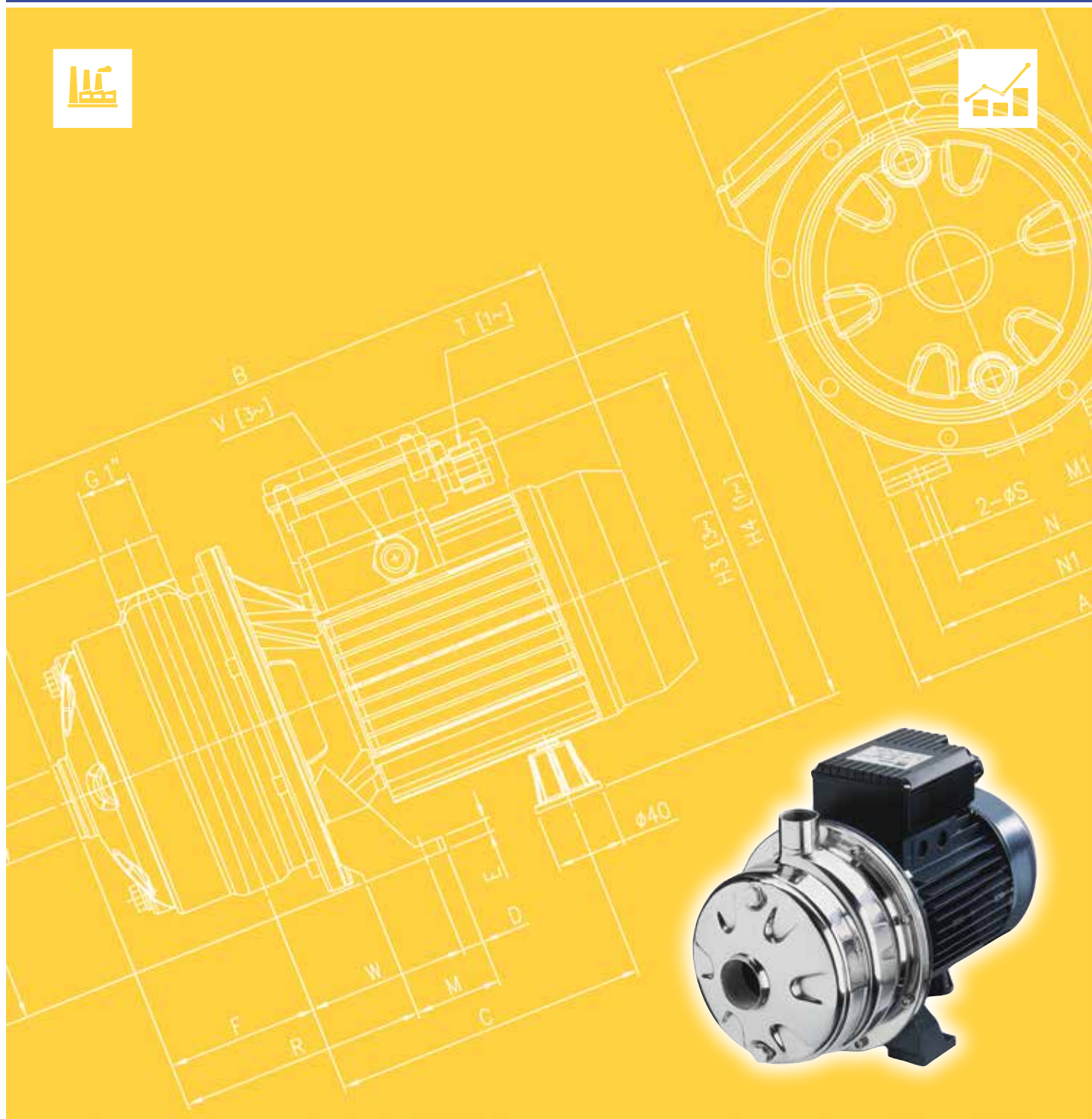




Japanese Technology since 1912

2CDX

Data Book 60Hz



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SPECIFICATIONS

60Hz

Rev. Q

PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. -5 max. +120 For full details see section "FLUID TEMPERATURE RANGE"
Maximum working pressure [MPa]		0.8
Construction	Impeller	Closed centrifugal type (Two)
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction [inch]	from G1" ¼ to G1" ½ UNI ISO 228
	Discharge [inch]	G1" UNI ISO 228
Material	Casing	AISI 304
	Impeller	AISI 304
	Casing cover	AISI 304
	Shaft seal	Ceramic / Carbon / NBR (for versions see page 302)
	Shaft	AISI 304-316L (Wet extension)
	Bracket	Aluminium (up to 2.2 kW included) Cast iron (3.0 kW and above)
	Diffuser	AISI 304
Applicable standard of test		ISO 9906:2012 - Grade 3B

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency Level	IE2**	IE3*
No. of Poles	2	
Rotation speed [min ⁻¹]	≈ 3400	
Insulation Class	F	
Protection degree (CEI EN 60034-5)	IP 55	
Power rating	[kW]	0.9 ÷ 1.8
	[HP]	1.2 ÷ 2.4
Frequency [Hz]	60	
Voltage [V]	220-230 ±6%	220/380-460 ±10%
Capacitor	Built in	-
Over load protection	Built in	Provided by the user
Casing material	Aluminium	
Base Material / Motor support	Aluminium	
Dimensions of cable entry	PG11 – PG13.5 – M16x1.5 – M20x1.5 (see dimensions table page 400)	

* From 1.1kW up to 4kW at 220/380V efficiency level is IE2; IE3 only at 460V

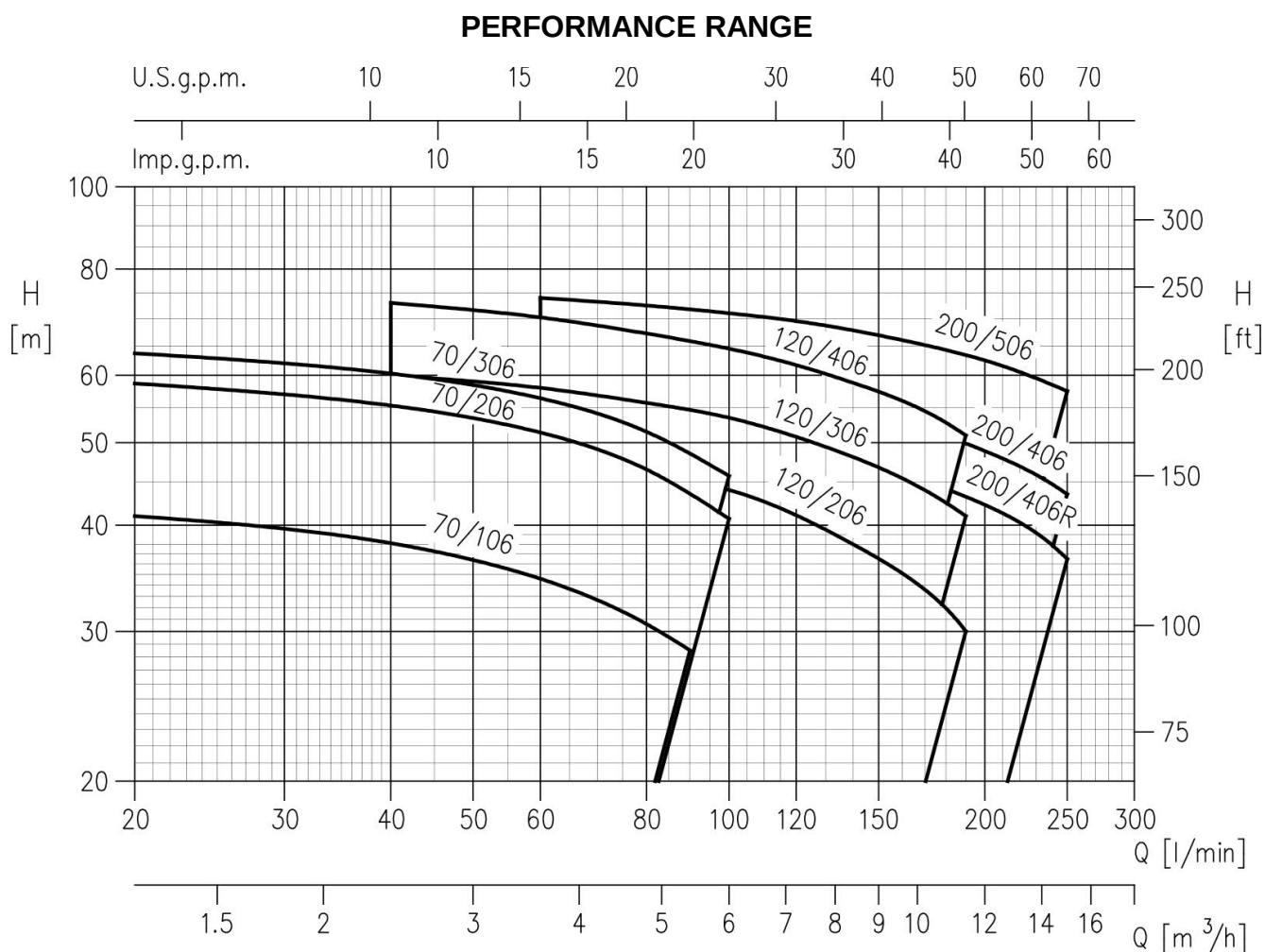
** Only for 2CDXM 70/106

2CDXM 70/206 and 2CDXM 70/306 not available for the European market

PERFORMANCE RANGE and SELECTION CHART

60Hz

Rev. Q



SELECTION CHART

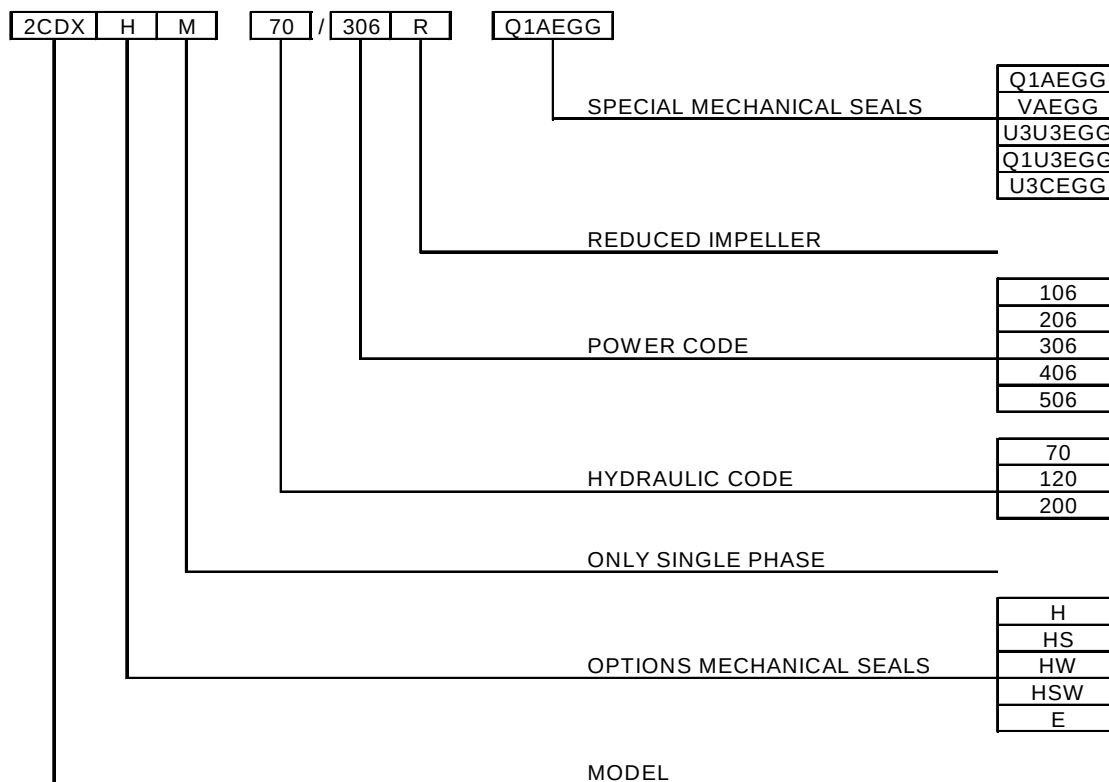
Pump type		Q=Capacity												
		l/min	0	20	40	60	90	100	120	140	160	190	240	250
Single Phase	Three Phase	m³/h	0	1.2	2.4	3.6	5.4	6.0	7.2	8.4	9.6	11.4	14.4	15
H=Total manometric head in meters														
2CDXM 70/106	2CDX 70/106	43	41	38.1	34.6	28.5	-	-	-	-	-	-	-	-
2CDXM 70/206	2CDX 70/206	62	58.5	55.5	51.5	44	40.5	-	-	-	-	-	-	-
2CDXM 70/306	2CDX 70/306	67	63.5	60.5	56.5	49	45.5	-	-	-	-	-	-	-
-	2CDX 120/206	54.5	-	50.5	48.5	45	44	41.5	38.6	35.6	30	-	-	-
-	2CDX 120/306	64.5	-	60	58	54.5	53.5	51	48.5	45.5	41	-	-	-
-	2CDX 120/406	78	-	73	70	66	64.5	62	59	56	51	-	-	-
-	2CDX 200/406	65	-	-	60	58	57	55.5	54	52.5	50	45	43.5	-
-	2CDX 200/406R	57.5	-	-	53.5	51.5	51	49.5	47.5	46	43	37.9	36.5	-
-	2CDX 200/506	79	-	-	74	72	71	69.5	68	66	63.5	58.5	57.5	-

TYPE KEY and CURVE SPECIFICATIONS

60Hz

Rev. Q

TYPE KEY



PERFORMANCE CURVE SPECIFICATIONS

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9906:2012 - Grade 3B

The curves refer to effective speed of asynchronous motors at 60 Hz, 2 poles.

Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

The NPSH curve is an average curve obtained in the same conditions of performance curves.

The continuous curves indicate the recommended working range. The dotted curve is only a guide.

In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.

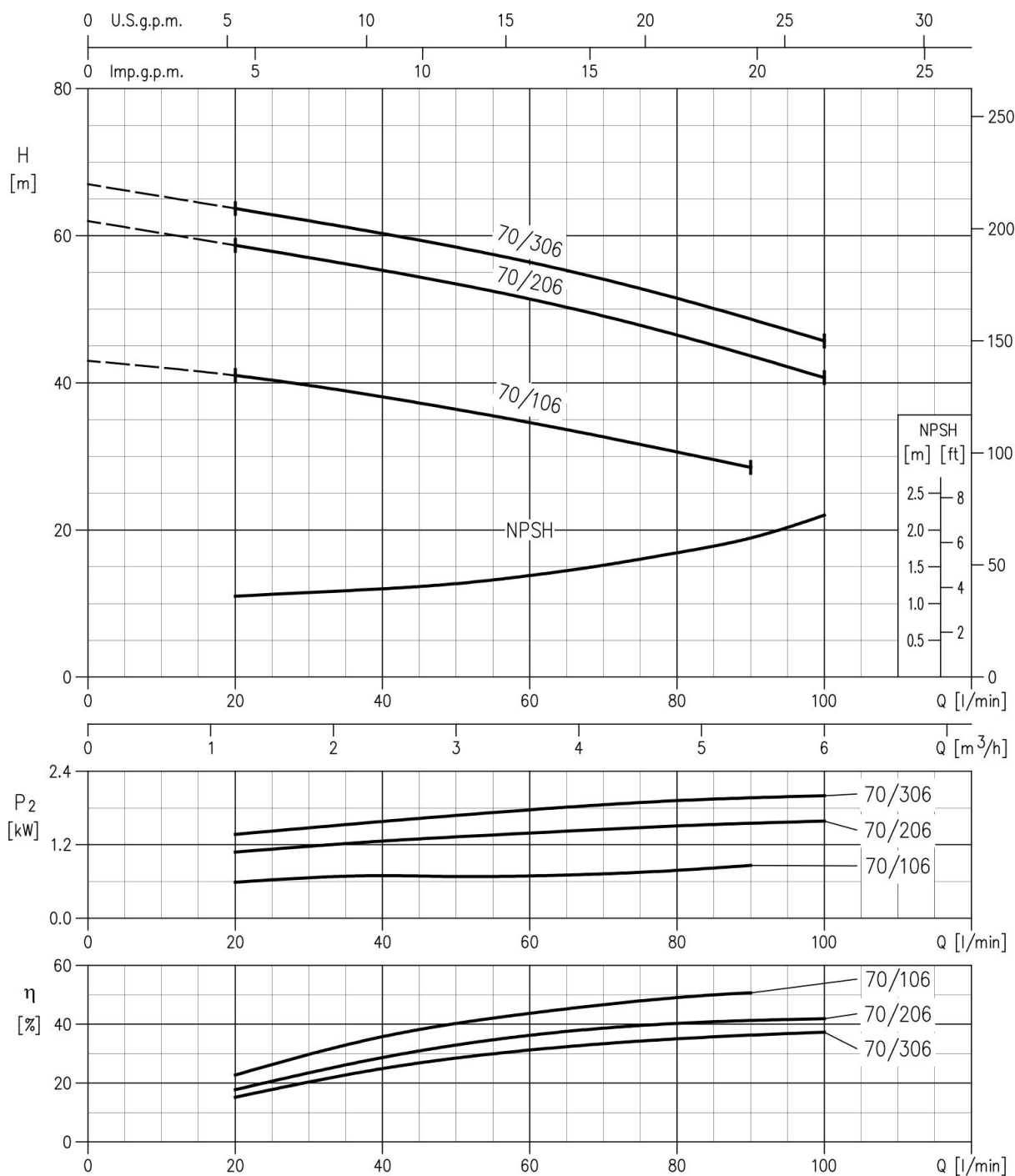
Symbols explanation:

- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump

2CDX 70/106 - Impeller diameter = 115/115 mm

2CDX 70/206 - Impeller diameter = 132/132 mm

2CDX 70/306 - Impeller diameter = 132/153 mm

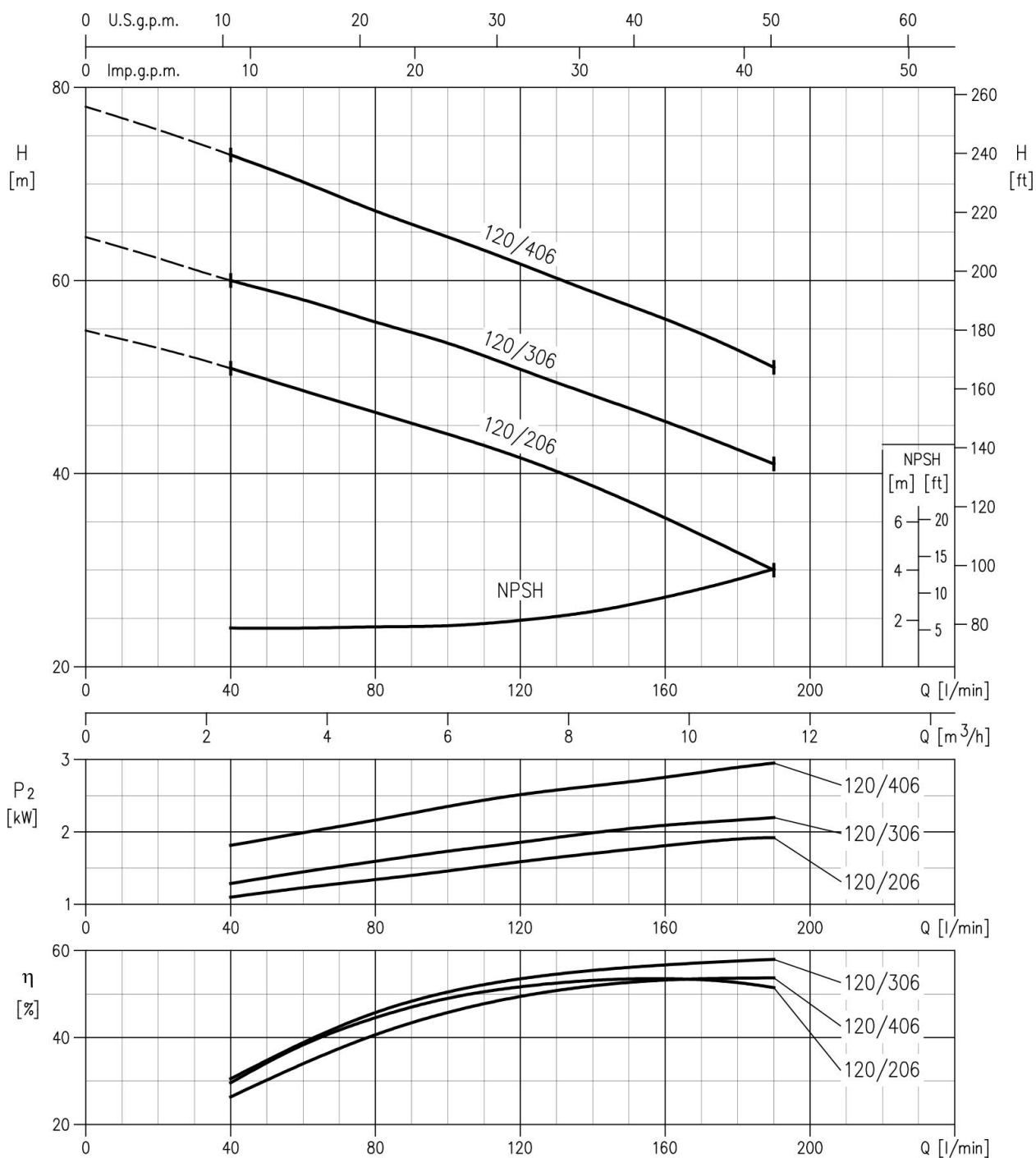
Rotation speed $\approx 3400 \text{ min}^{-1}$

Test standard: ISO 9906:2012 - Grade 3B

2CDX 120/206 - Impeller diameter = 115/132 mm

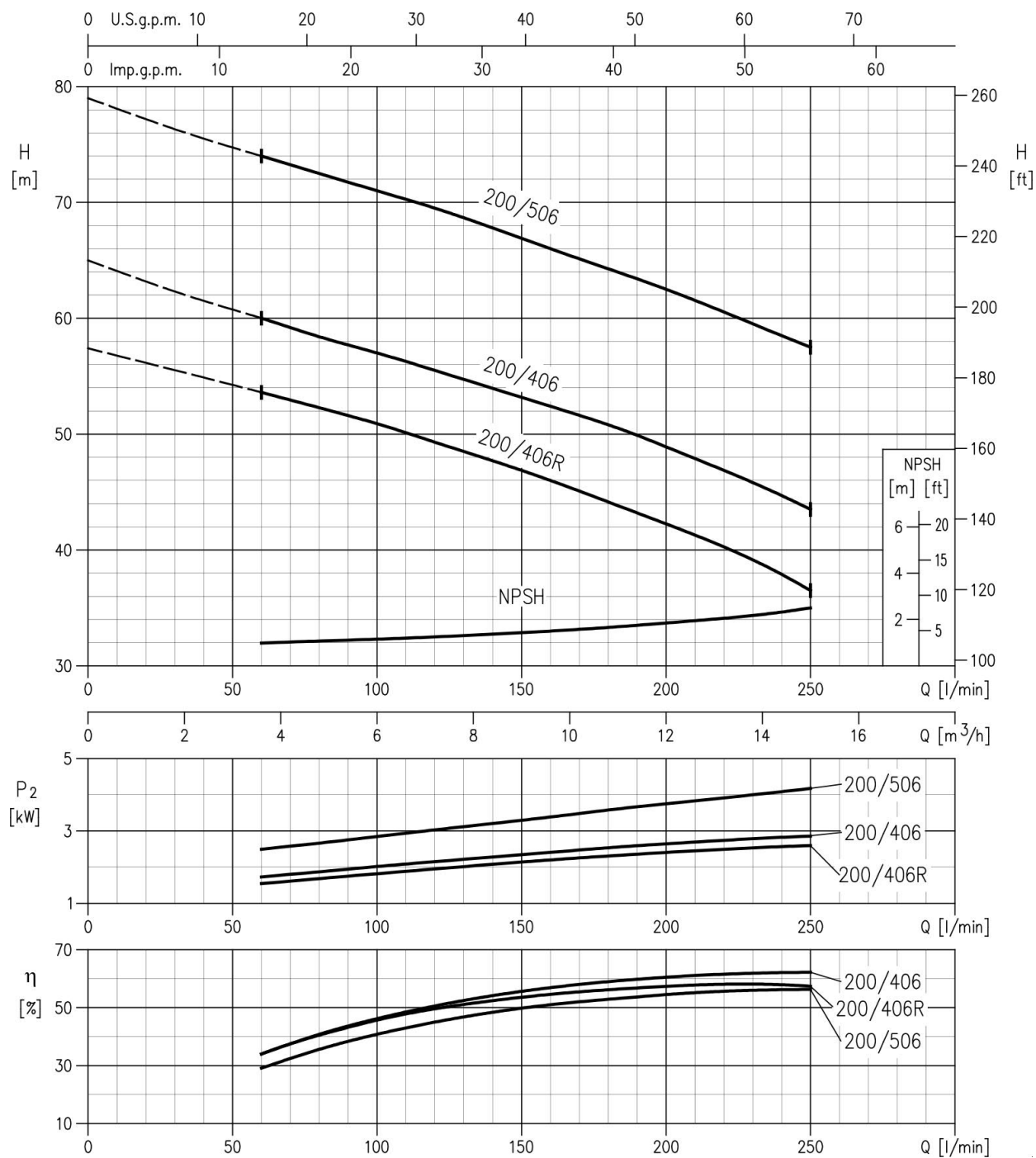
2CDX 120/306 - Impeller diameter = 132/132 mm

2CDX 120/406 - Impeller diameter = 132/157 mm

Rotation speed $\approx 3400 \text{ min}^{-1}$

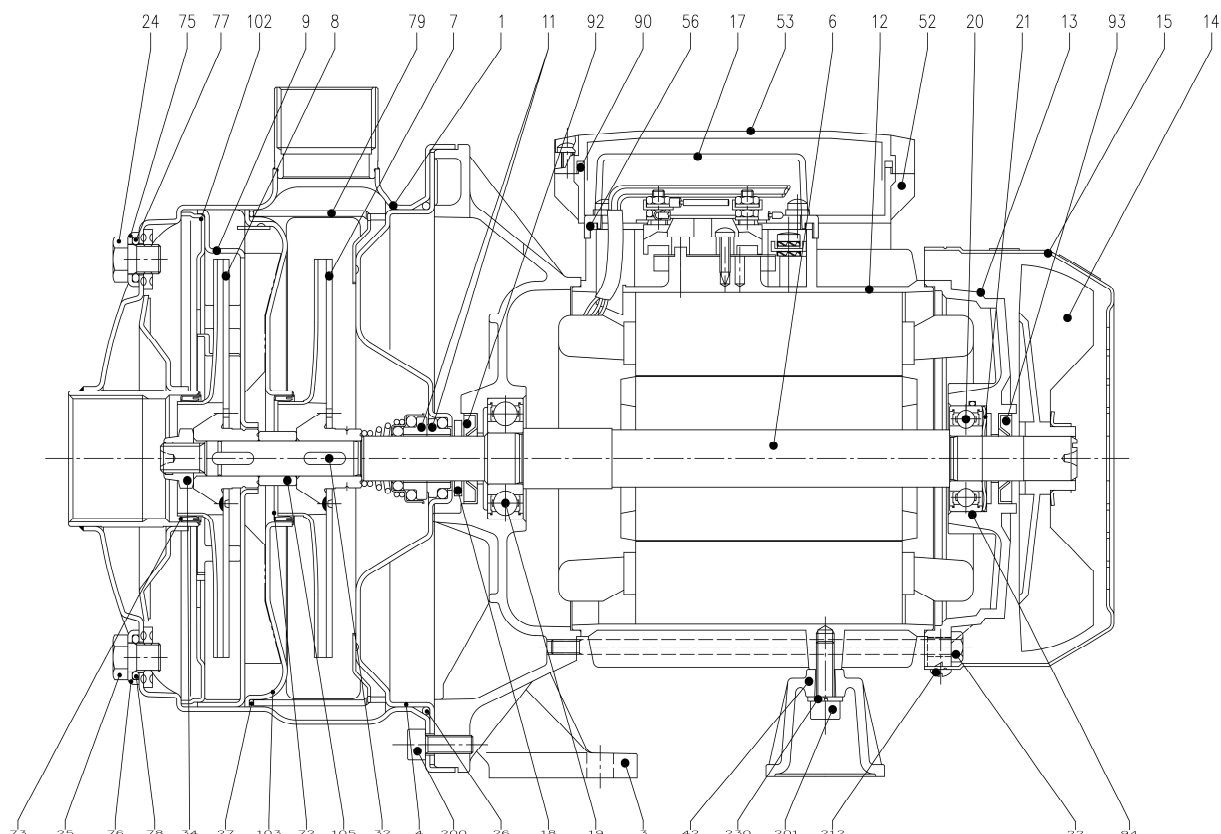
Test standard: ISO 9906:2012 - Grade 3B

2CDX 200/406 - Impeller diameter = 132/132 mm
 2CDX 200/406R - Impeller diameter = 115/132 mm
 2CDX 200/506 - Impeller diameter = 132/157 mm



Rotation speed $\approx 3400 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 - Grade 3B

SECTIONAL VIEW



N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1
3	Motor bracket	[5]	1
4	Casing cover	AISI 304	1
6	Shaft with rotor (wet extension)	AISI 304-316L [10]	1
7	Impeller	AISI 304	1
8	Impeller	AISI 304	1
9	Diffuser	AISI 304	1
11	Mechanical seal [7]	Ceramic/Carbon/NBR	1
12	Motor frame with stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PA	1
15	Fan cover	Fe P04 Zincate	1
16	Terminal board	-	1
17	Terminal box cover [2]	Aluminium	1
18	Splash ring	NBR	1
19	Pump side ball bearing	-	1
20	Fan side ball bearing	-	1
21	Adjusting ring	Steel C70	1
22	Tie rod	Fe 420 Zincate	4
23	Capacitor [1]	-	1
24	Priming plug	AISI 304	1
25	Drain plug	AISI 304	1
26	O-ring [3]	NBR	1
27	O-ring [3]	NBR	1

[1] Only for single phase

[2] Only for three phases

[3] FPM for H, HS, HW, HSW version; EPDM for E and Special Mechanical Seal

[4] FPM for H, HS, HW, HSW

[5] Material: Aluminium for version up to 2.2 kW included
Cast iron for version 3.0 kW and above

[6] With gasket in NBR only for version single phase
2CDXM 70/106

N°	PART NAME	MATERIAL	Q.TY
32	Key	AISI 316	2
34	Impeller nut	AISI 304	1
42	Motor support	Aluminium	1
52	Capacitor box [1]	ABS class V-0	1
53	Capacitor box cover [6]	ABS class V-0	1
56	Box gasket	NBR	1
72	Casing ring [4]	EPDM	1
73	Casing ring [4]	EPDM	1
75	Washer	AISI 304	1
76	Washer	AISI 304	1
77	O-ring [3]	NBR	1
78	O-ring [3]	NBR	1
79	Space diffuser	AISI 304	1
90	Terminal box cover gasket [8]	NBR	1
92	Lip seal	-	1
93	Lip seal	-	1
94	O-ring [9]	NBR	1
102	Suction cover	AISI 304	1
103	Conveyor cover	AISI 304	1
105	Sleeve	AISI 304	1
110	Protector [1]	-	1
200	Screw	Stainless steel A2 UNI7323	8
201	Screw	Zincate Steel	4
212	Screw	Zincate Steel	1

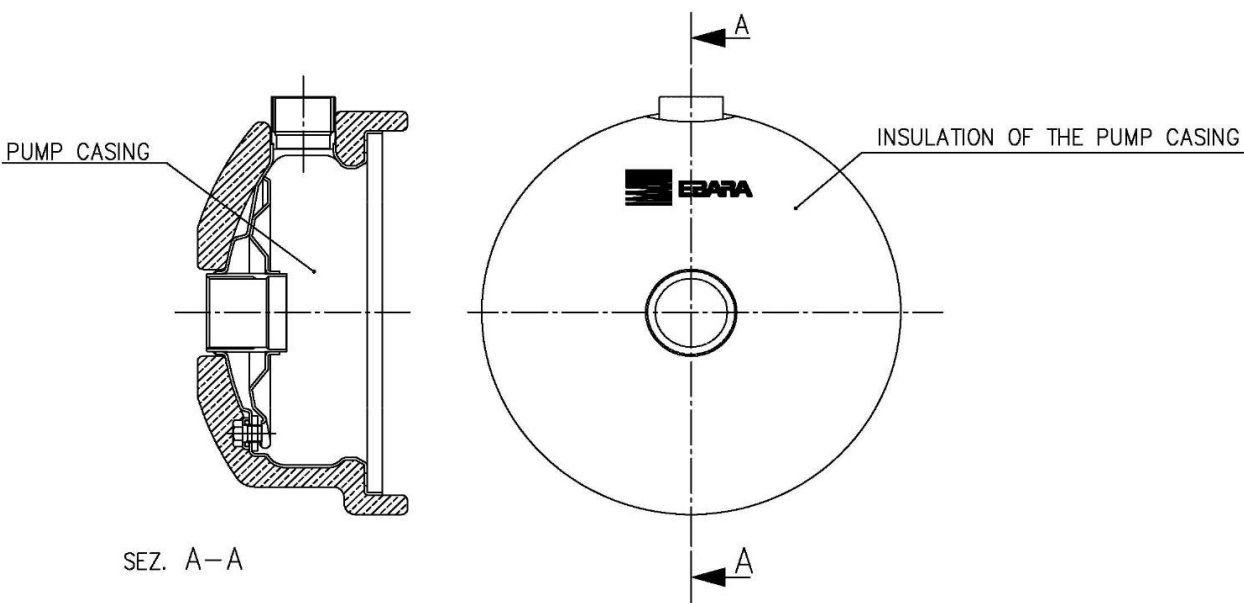
[7] See **MECHANICAL SEAL** pages 302-303

[8] Only for version single phase 2CDXM 70/206; 2CDXM 70/306

[9] Only for 2CDXM 70/10

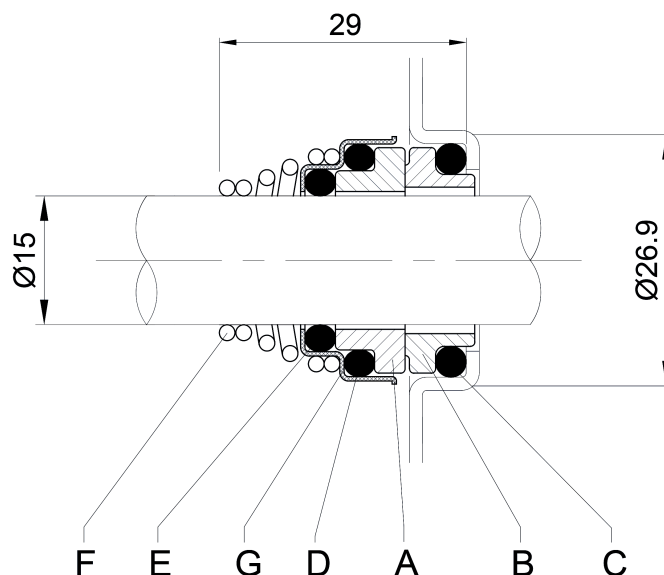
[10] AISI 316L for 2CDX(M) 70/206, 70/306, 120/206, 120/306, 120/406, 200/306, 200/406, 200/506

THERMAL INSULATION



Pump Type	Insulation of the pump casing
2CDX 70/106	ON REQUEST
2CDX 70/206	
2CDX 70/306	
2CDX 120/206	
2CDX 120/306	
2CDX 120/406	
2CDX 200/406	
2CDX 200/406R	
2CDX 200/506	

MECHANICAL SEAL



STANDARD

REF	PART NAME	MATERIAL
A	Rotary seal ring	Ceramic
B	Stationary seal ring	Carbon graphite
C	O-Ring	NBR
D	O-Ring	NBR
E	O-Ring	NBR
F	Self-driving spring	AISI 316
G	Frame	AISI 304

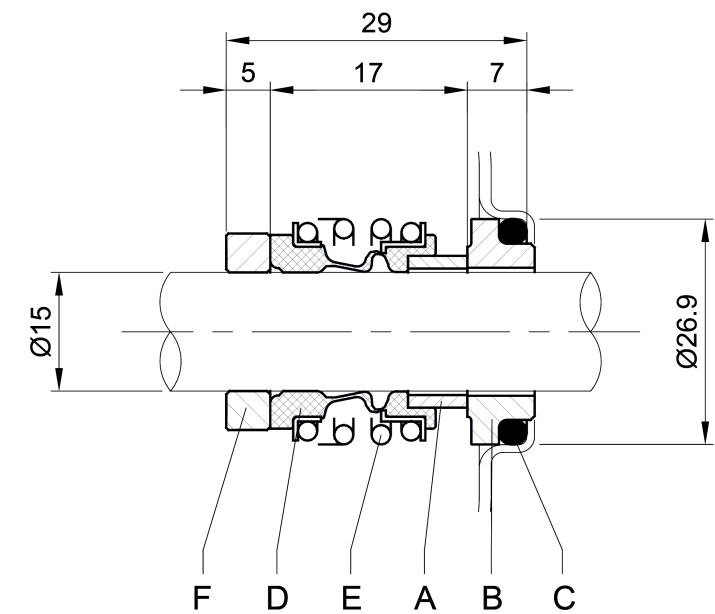
OPTIONAL

REF	PART NAME	MATERIAL			
		H	HW	HSW	E
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Ceramic
B	Stationary seal ring	Carbon graphite	Tungsten carbide	Tungsten carbide	Carbon graphite
C	O-Ring	FPM	FPM	FPM	EPDM
D	O-Ring	FPM	FPM	FPM	EPDM
E	O-Ring	FPM	FPM	FPM	EPDM
F	Self-driving spring	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 304	AISI 316	AISI 316	AISI 316

SPECIAL

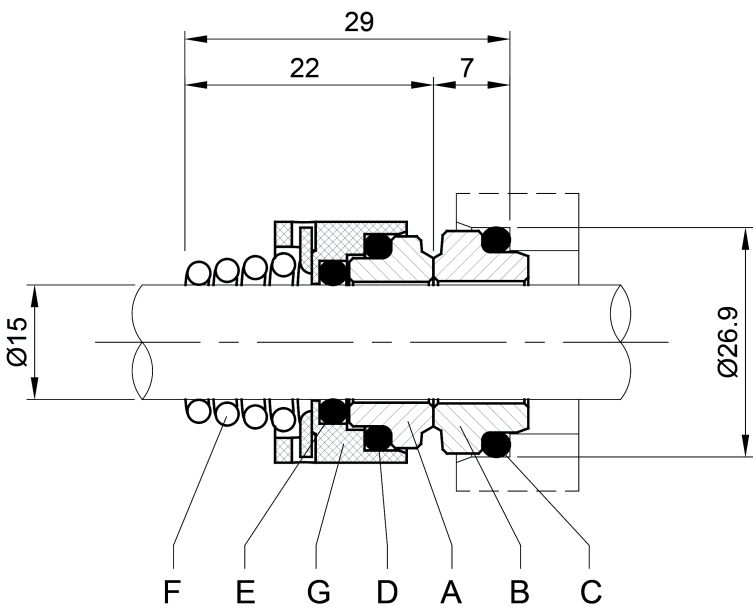
REF	PART NAME	MATERIAL			
		VAEGG	U3U3EGG	Q1U3EGG	U3CEGG
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Tungsten carbide
B	Stationary seal ring	Metallised carbon	Tungsten carbide	Tungsten carbide	special Carbon
C	O-Ring	EPDM	EPDM	EPDM	EPDM
D	O-Ring	EPDM	EPDM	EPDM	EPDM
E	O-Ring	EPDM	EPDM	EPDM	EPDM
F	Self-driving spring	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 316	AISI 316	AISI 316	AISI 316

MECHANICAL SEAL



OPTIONAL

REF	PART NAME	MATERIAL HS
A	Rotary seal ring	Silicon carbide
B	Stationary seal ring	Silicon carbide
C	O-Ring	FPM
D	Bellows	FPM
E	Frame + Spring	AISI 316
F	Spacer ring	AISI 316



SPECIAL

REF	PART NAME	MATERIAL Q1AEGG
A	Rotary seal ring	Silicon carbide
B	Stationary seal ring	Metallised carbon
C	O-Ring	EPDM
D	O-Ring	EPDM
E	O-Ring	EPDM
F	Self-driving spring	AISI 316
G	Frame	AISI 316

FLUID TEMPERATURE RANGE

The maximum allowable temperature for the pumped fluid is a determining factor for the operational life of the pump. A primary role in this limitation is played by the materials of the mechanical seals (rings and elastomers), whose thermal resistance often defines the upper limit. The general construction materials of the pump (casing, impeller) and the lubricant used also contribute to defining the maximum temperature. Although the fluid properties and operating conditions have an impact, the choice of suitable seal materials for the operating temperature is crucial to prevent leaks and ensure the reliability of the pumping system.

To preserve optimal performance and prevent failures, we recommend to operate within the following limits:

STANDARD mechanical seal	TEMPERATURE	
	MIN	MAX
STANDARD	-5 °C	90 °C

OPTIONAL mechanical seal	TEMPERATURE	
	MIN	MAX
H *	-5 °C	110 °C
HS *	-5 °C	110 °C
HW *	-5 °C	110 °C
HSW *	-5 °C	110 °C
E	-5 °C	120 °C

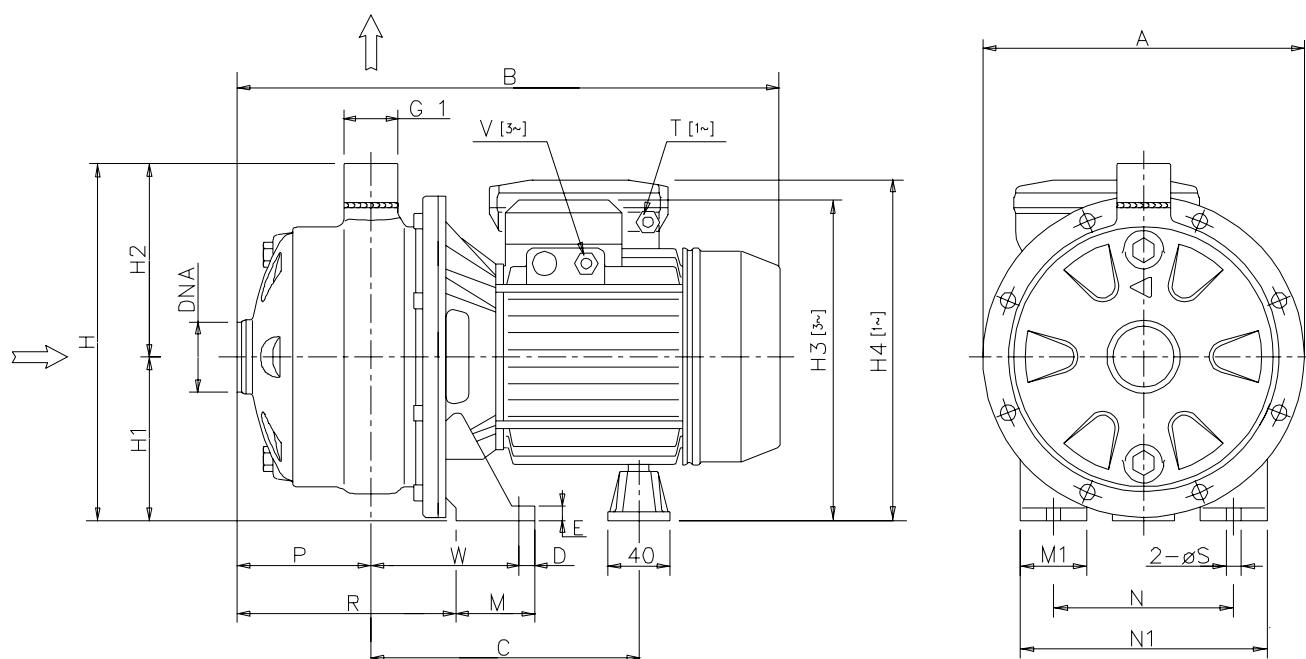
SPECIAL mechanical seal	TEMPERATURE	
	MIN	MAX
Q1AEGG	-5 °C	120 °C
VAEGG	-5 °C	90 °C
U3U3EGG	-5 °C	120 °C
Q1U3EGG	-5 °C	120 °C
U3CEGG	-5 °C	120 °C

* in case the pumped fluid is water in combination to FPM elastomers, a maximum temperature fluid of 75°C is recommended in order to guarantee a longer life of the sealing parts

BEARINGS

Pump type		Ball Bearing			
Single Phase	Three Phase	Pump side		Fan side	
		[1~]	[3~]	[1~]	[3~]
2CDXM 70/106	2CDX 70/106	6203	6203	6202	6202
2CDXM 70/206	2CDX 70/206	6204	6204	6203	6203
2CDXM 70/306	2CDX 70/306	6204	6204	6203	6203
-	2CDX 120/206	-	6204	-	6203
-	2CDX 120/306	-	6204	-	6203
-	2CDX 120/406	-	6205	-	6205
-	2CDX 200/406	-	6205	-	6205
-	2CDX 200/406R	-	6205	-	6205
-	2CDX 200/506	-	6206	-	6205

PUMP

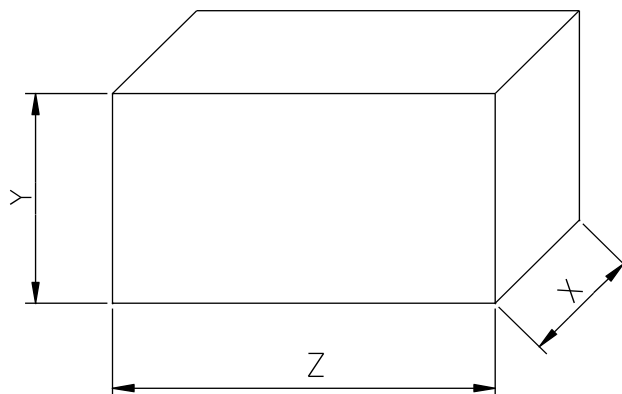


Pump type		Dimensions [mm]																						Weight [kgf]	
		A	B [1~]	B [3~]	C	D	E	H	H1	H2	H3 [3~]	H4 [1~]	M	M1	N	N1	P	R	S	T [1~]	V [3~]	W	DNA	[1~]	[3~]
Single Phase	Three Phase																								
2CDXM 70/106	2CDX 70/106	208	366	354	181	12.5	8	229	106	123	208	216	50	38	120	160	87	142	Ø9	PG11	M16x1.5	93	G 1"¼	14	12
2CDXM 70/206	2CDX 70/206	208	393	405	199	12.5	8	229	106	123	225	242	55	40	140	180	87	140	Ø9	PG 13.5	M20x1.5	95	G 1"¼	16.6	17
2CDXM 70/306	2CDX 70/306	208	393	405	199	12.5	8	229	106	123	225	242	55	40	140	180	87	140	Ø9	PG 13.5	M20x1.5	95	G 1"¼	16.9	17
-	2CDX 120/206	208	-	407.5	199	12.5	8	229	106	123	225	-	55	40	140	180	89	142	Ø9	-	M20x1.5	95	G 1"¼	-	18.4
-	2CDX 120/306	208	-	407.5	199	12.5	8	229	106	123	225	-	55	40	140	180	89	142	Ø9	-	M20x1.5	95	G 1"¼	-	21
-	2CDX 120/406	208	-	459	224/235	12.5	8	229	106	123	230	-	65	40	140	180	89	146	Ø9	-	M20x1.5	109	G 1"¼	-	25.9
-	2CDX 200/406	208	-	457	224/235	12.5	8	229	106	123	230	-	65	40	140	180	87	144	Ø9	-	M20x1.5	109	G 1"½	-	25.7
-	2CDX 200/406R	208	-	457	224/235	12.5	8	229	106	123	230	-	65	40	140	180	87	144	Ø9	-	M20x1.5	109	G 1"½	-	25.7
-	2CDX 200/506	208	-	492	233	16	12	241	118	123	259	-	68	50	160	210	87	144	Ø12	-	M20x1.5	109	G 1"½	-	35.7

[1~] Single phase

[3~] Three phase

PACKING



Pump type		Packing [mm]			Weight [kgf]	
Single Phase	Three Phase	X	Y	Z	[1~]	[3~]
2CDXM 70/106	2CDX 70/106	245	315	510	15	12.9
2CDXM 70/206	2CDX 70/206	245	315	590	17.5	17.8
2CDXM 70/306	2CDX 70/306	245	315	590	17.8	16.9
-	2CDX 120/206	245	315	590	-	19.3
-	2CDX 120/306	245	315	590	-	21.8
-	2CDX 120/406	245	315	590	-	26.7
-	2CDX 200/406	245	315	590	-	26.5
-	2CDX 200/406R	245	315	590	-	26.5
-	2CDX 200/506	245	315	590	-	36.6

[1~] Single phase

[3~] Three phase

MOTOR DATA

Pump type Single Phase	Power		Efficiency [IE]	Capacitor		Efficiency (% load) and power factor				Input [kW]	Full load current		Locked rotor current	
	[kW]	[HP]		[μF]	[V]	η %			cos- φ		[A]		[A]	
						50%	75%	100%			110 V	220 V	110 V	220 V
2CDXM 70/106	0.9	1.2	IE2	31.5	450	64.1	73.2	79.4	0.86	1.17	-	5.9	-	45.3
2CDXM 70/206	1.8	2.4	-	40	450	-	-	-	0.95	2.29	-	10.5	-	69.0
2CDXM 70/306	1.8	2.4	-	40	450	-	-	-	0.95	2.29	-	10.5	-	69.0

Pump type	Power		Efficiency	Efficiency (% load)			Efficiency (% load)			Input [kW]	Full load current			Locked rotor current		
	Three Phase [kW]	[HP]		Three phase (380 V) η %			Three phase (460 V) η %				[A]			[A]		
				50%	75%	100%	50%	75%	100%		Three Phase 220 V 380 V 460 V	Three Phase 220 V 380 V 460 V	Three Phase 220 V 380 V 460 V			
2CDX 70/106	0.75	1.0	IE3	80.7	81.9	81.3	78.4	81.6	83.1	0.90	2.8	1.6	1.5	16.9	9.7	11.8
2CDX 70/206	2.2	3.0	IE3	86.5	86.8	86.2	86.9	87.8	87.4	2.48	7.5	4.3	4.1	55.7	32.2	38.9
2CDX 70/306	2.2	3.0	IE3	86.5	86.8	86.2	86.9	87.8	87.4	2.48	7.5	4.3	4.1	55.7	32.2	38.9
2CDX 120/206	2.2	3.0	IE3	86.5	86.8	86.2	86.9	87.8	87.4	2.48	7.5	4.3	4.1	55.7	32.2	38.9
2CDX 120/306	2.2	3.0	IE3	86.5	86.8	86.2	86.9	87.8	87.4	2.48	7.5	4.3	4.1	55.7	32.2	38.9
2CDX 120/406	3.0	4.0	IE3	86.8	87.0	87.5	87.0	87.9	88.5	3.42	10.2	5.9	5.6	75.7	43.7	52.8
2CDX 200/406	3.0	4.0	IE3	86.8	87.0	87.5	87.0	87.9	88.5	3.42	10.2	5.9	5.6	75.7	43.7	52.8
2CDX 200/506	3.7	5.0	IE3	89.7	89.6	88.6	86.1	88.4	88.5	4.52	13.5	7.8	7.6	107.1	61.8	74.9



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