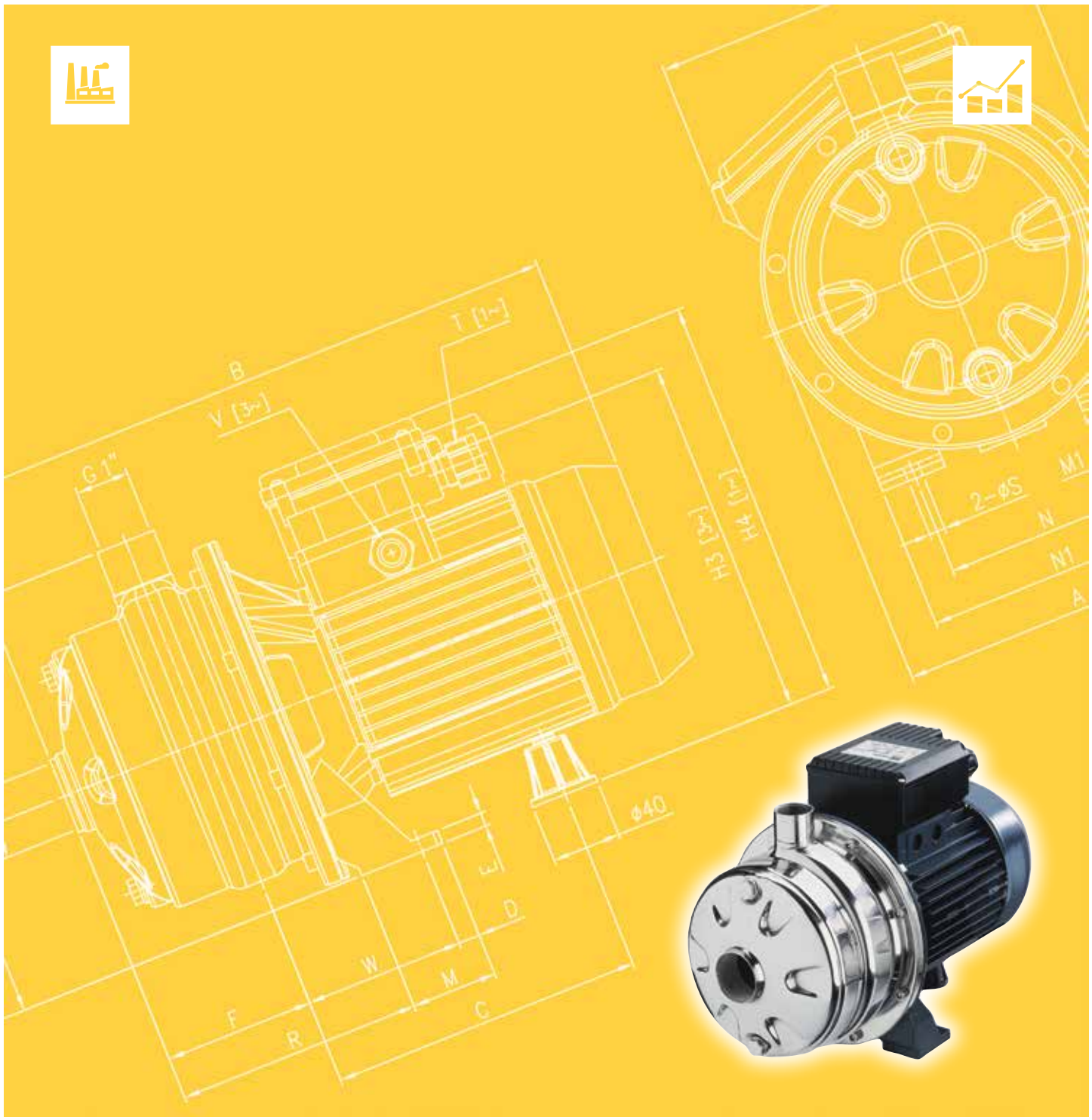




Japanese Technology since 1912

## 2CDX(L)

Data Book 50Hz



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**SPECIFICATIONS**

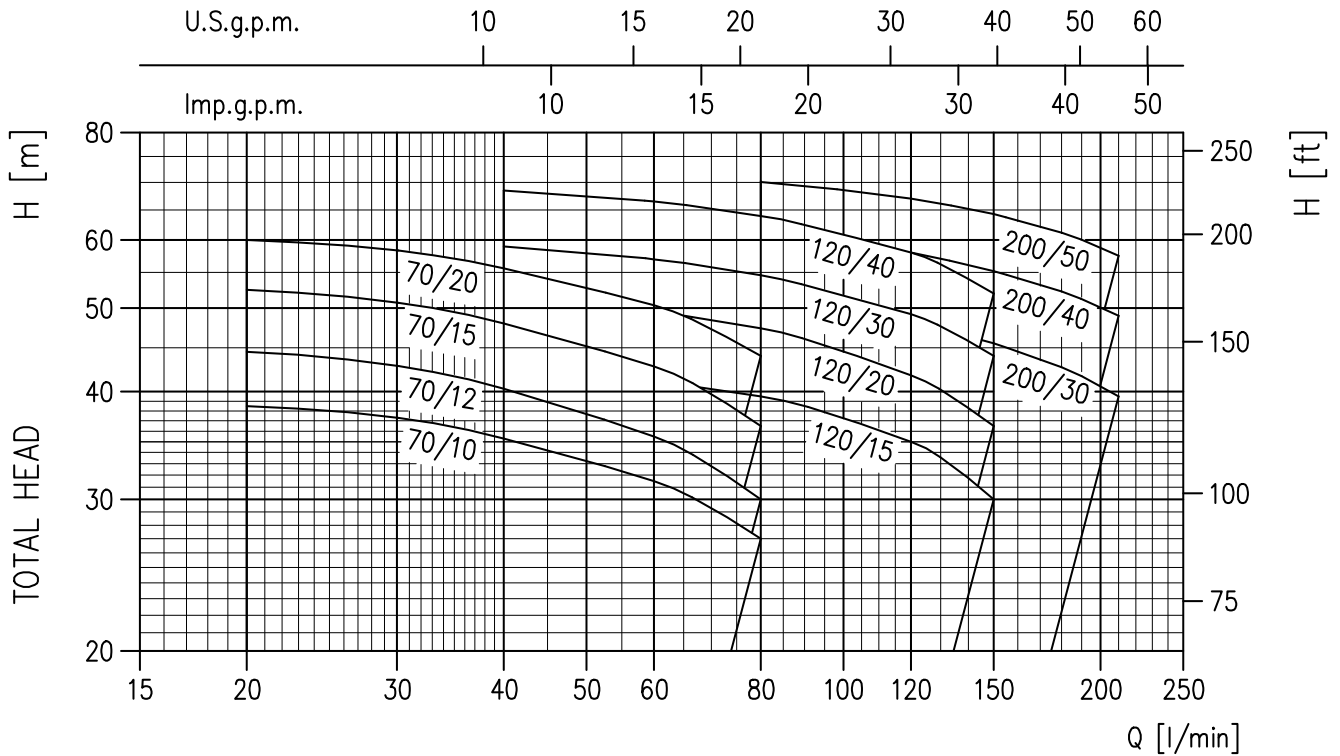
50Hz

Rev. S

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 (Twin)
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction [inch]	from G1 <sup>1</sup> / <sub>4</sub> to G1 <sup>1</sup> / <sub>2</sub> (2CDX 200) UNI ISO 228-1
	Discharge [inch]	G1" UNI ISO 228-1
Material	Casing	EN 1.4301 (AISI 304) - (AISI 316L only for "L" version)
	Impeller	EN 1.4301 (AISI 304) - (AISI 316L only for "L" version)
	Casing cover	EN 1.4301 (AISI 304) - (AISI 316L only for "L" version)
	Shaft seal	Ceramic/Carbon/NBR (for version see page 302)
	Shaft	AISI 304 / AISI 316L (Wet extension)
	Bracket	Aluminium (up to 1.5 kW included) Cast iron (2.2 kW and above)
	Diffuser	AISI 304 / AISI 316L
Applicable standard of test		ISO 9906:2012 – Grade 3B

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 1781/2019)	IE2	IE3 from 0.75 kW up to 4.0 kW
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈ 2800	
Insulation Class	F	
Protection degree (CEI EN 60034-5)	IP 55	
Power rating	[kW]	0.75 ÷ 2.2
	[HP]	1 ÷ 2
Frequency [Hz]	50	
Voltage [V]	230 ±10%	230/400 ±10%
Capacitor	Built in	-
Over load protection	Built in	Provided by the user
Casing material	Aluminium	
Motor support	Aluminium	
Dimensions of cable entry	PG11 – PG13.5 – M16x1.5 – M20x1.5 (see dimensions table page 400)	

PERFORMANCE RANGE



SELECTION CHART

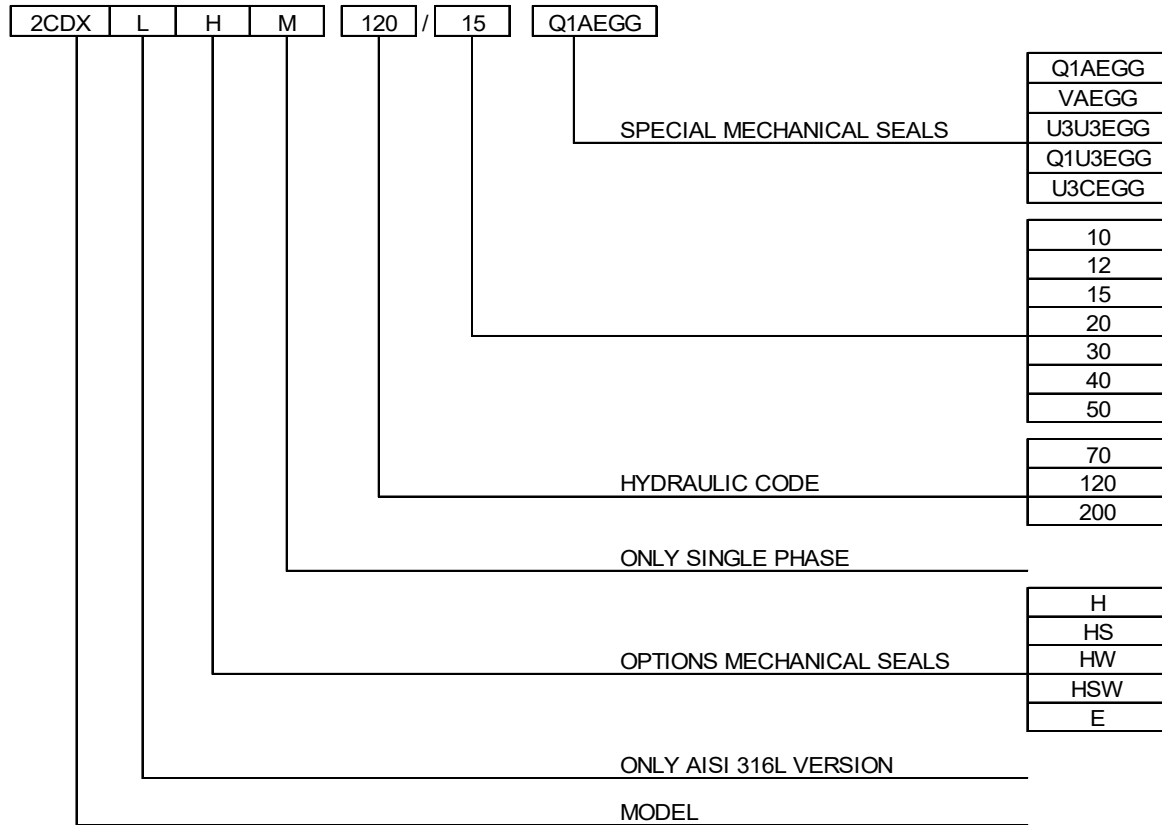
Pump Type		Q=Capacity									
		l/min	0	20	40	60	80	120	150	180	210
Single Phase	Three Phase	m³/h	0	1,2	2,4	3,6	4,8	7,2	9,0	10,8	12,6
H=Total manometric head in meters											
2CDXM 70/10	2CDX 70/10	41	38,5	35,3	31,5	27	-	-	-	-	-
2CDXM 70/12	2CDX 70/12	48	44,5	40,3	35,5	30	-	-	-	-	-
2CDXM 70/15	2CDX 70/15	56	52,5	48	42,8	36,5	-	-	-	-	-
2CDXM 70/20	2CDX 70/20	64	60	55,6	50,4	44	-	-	-	-	-
2CDXM 120/15	2CDX 120/15	46	-	42	41	39,5	35	30	-	-	-
2CDXM 120/20	2CDX 120/20	55	-	51,5	49,5	47,4	41,8	36,5	-	-	-
-	2CDX 120/30	63	-	59	57	54,6	49,2	44	-	-	-
-	2CDX 120/40	71,5	-	68,5	66,5	64	58	52	-	-	-
-	2CDX 200/30	55	-	-	52	50,8	48,1	45,5	42,7	39,5	-
-	2CDX 200/40	66	-	-	62,5	61,1	58	55,2	52,3	49	-
-	2CDX 200/50	75	-	-	71,5	70,1	67	64,3	61,2	57,5	-

**TYPE KEY and CURVE SPECIFICATIONS**

50Hz

Rev. S

**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 50 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.

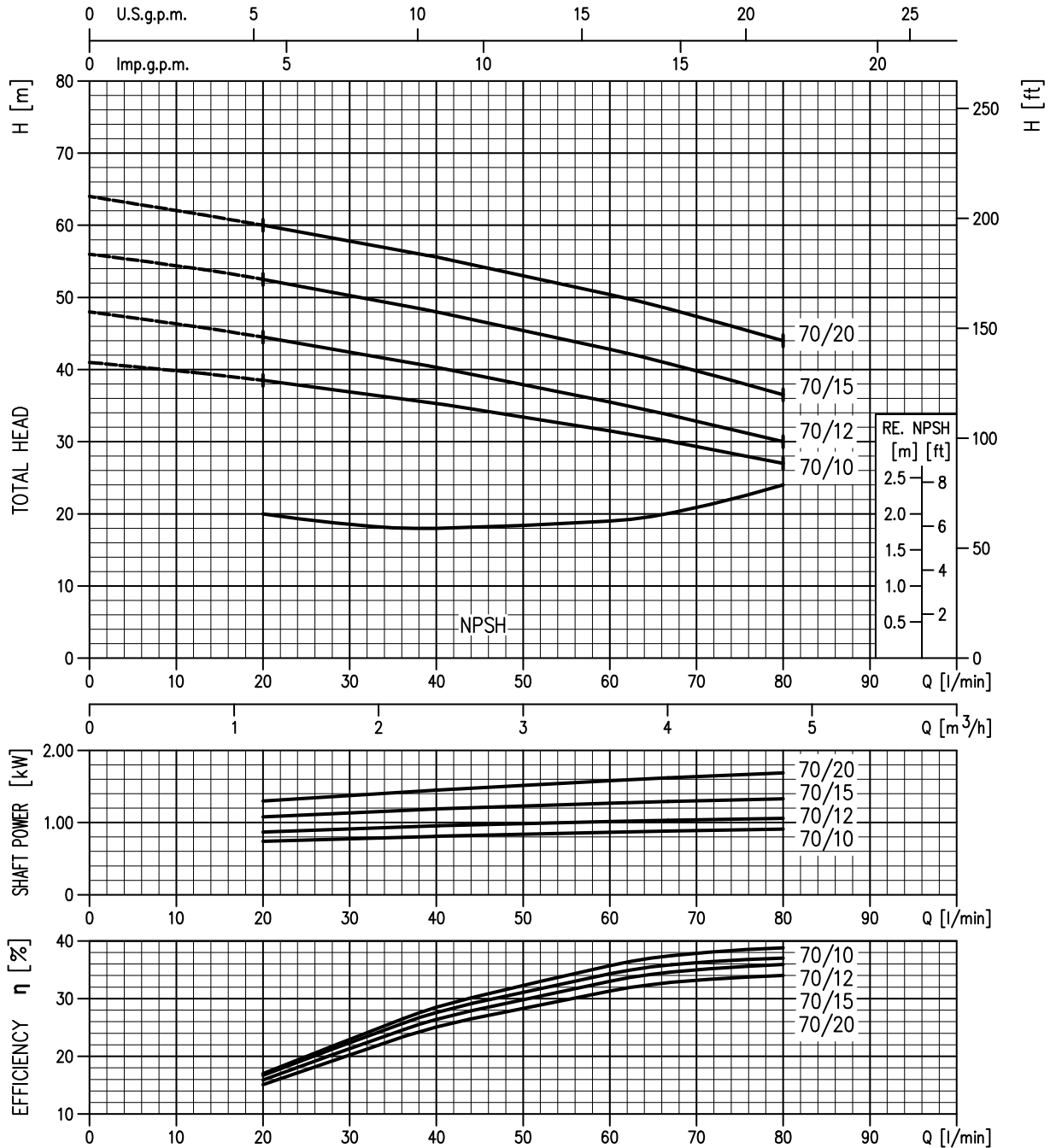
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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)
- $\eta$  = pump efficiency
- NPSH = net positive suction head required by the pump

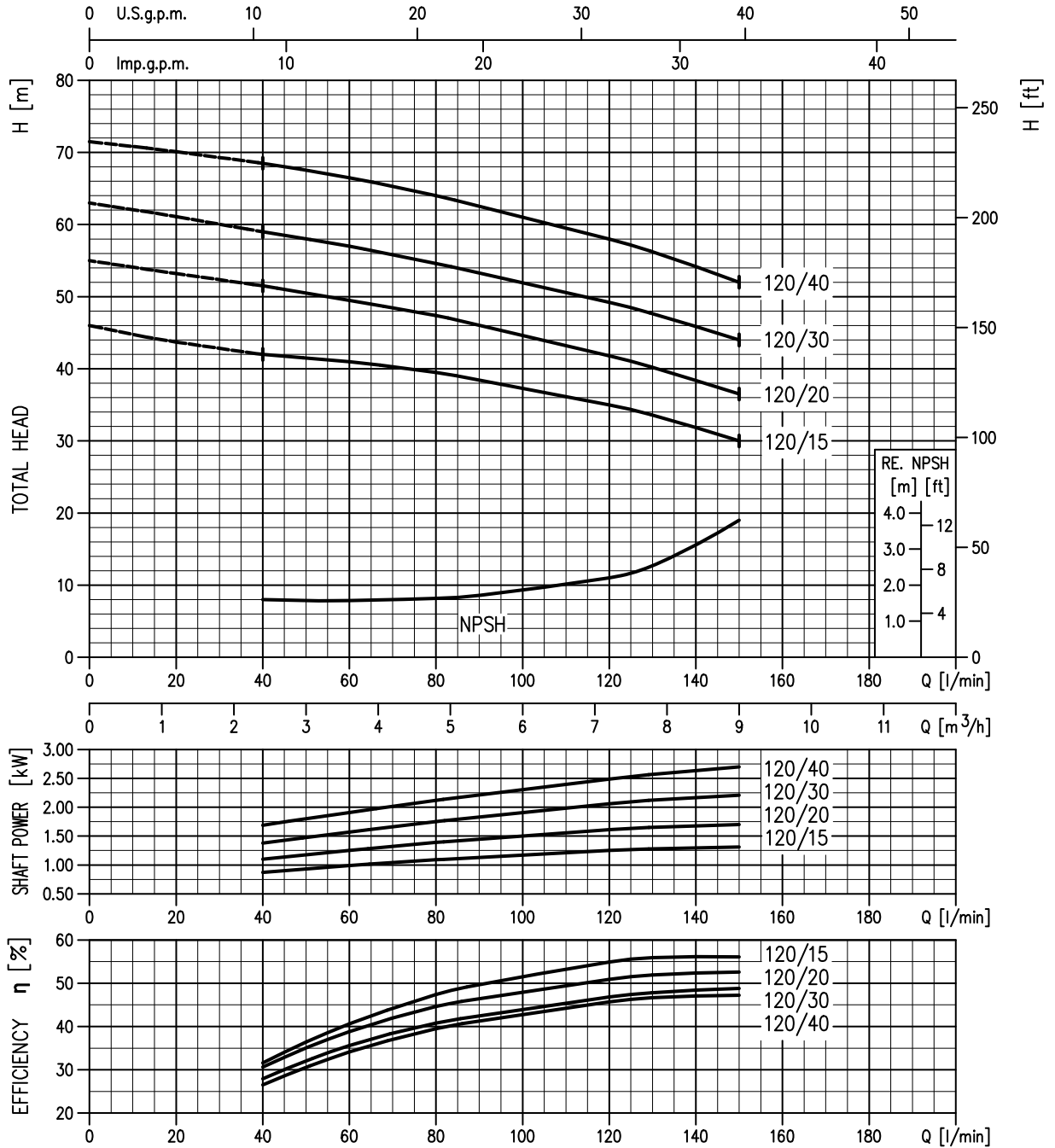
2CDX 70/10 - Impeller diameter = 132/132 mm  
 2CDX 70/12 - Impeller diameter = 153/132 mm  
 2CDX 70/15 - Impeller diameter = 153/153 mm  
 2CDX 70/20 - Impeller diameter = 153/176 mm



Rotation speed ≈ 2800 min<sup>-1</sup>

Test standard: ISO 9906:2012 - Grade 3B

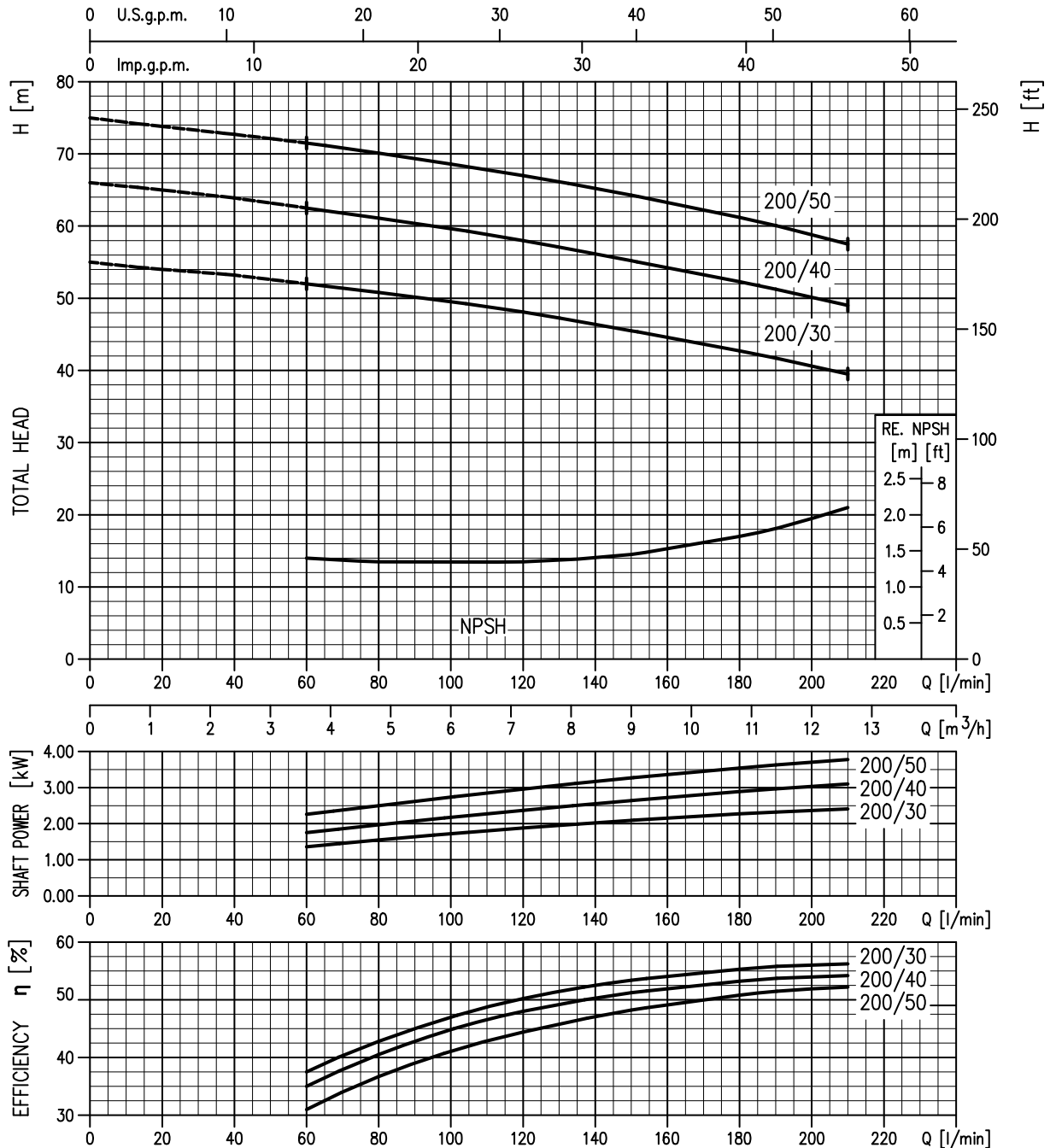
2CDX 120/15 - Impeller diameter = 132/132 mm  
 2CDX 120/20 - Impeller diameter = 157/132 mm  
 2CDX 120/30 - Impeller diameter = 157/157 mm  
 2CDX 120/40 - Impeller diameter = 176/157 mm



Rotation speed ≈ 2800 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

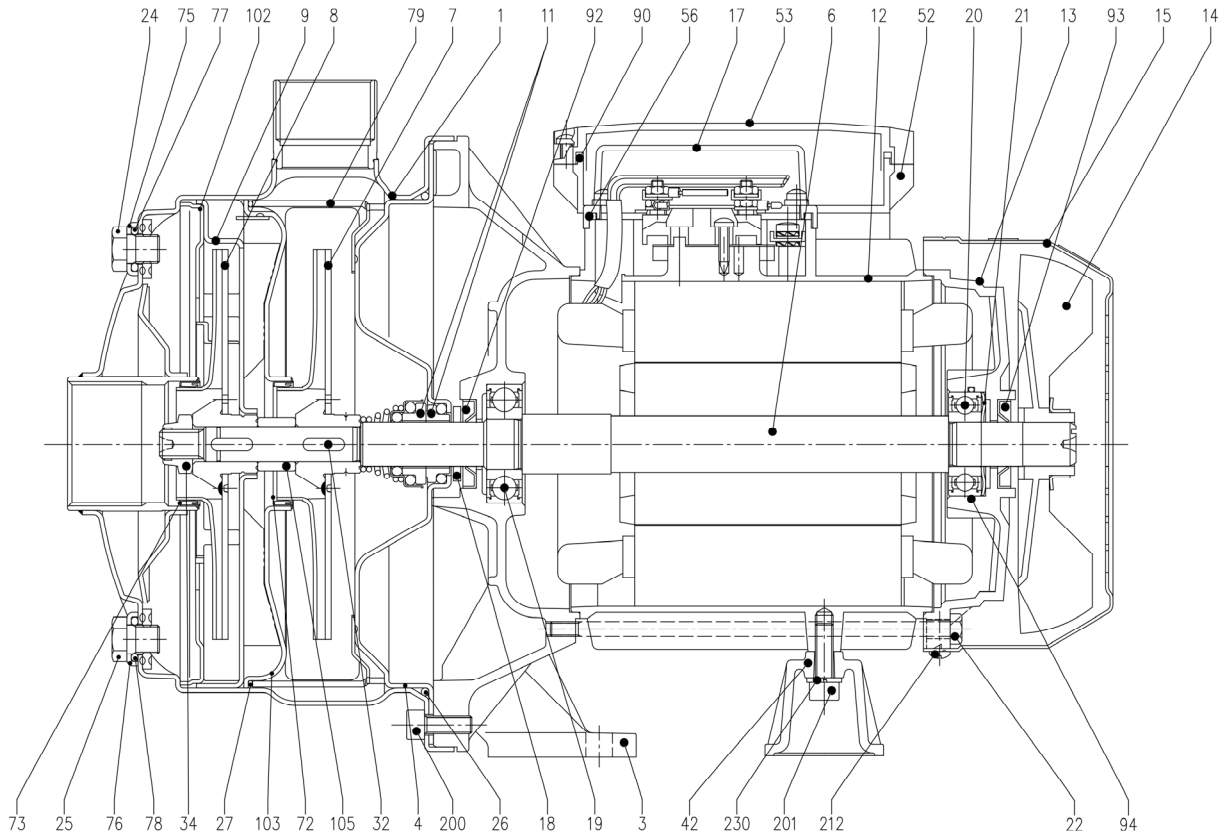


2CDX 200/30 - Impeller diameter = 157/132 mm  
 2CDX 200/40 - Impeller diameter = 157/157 mm  
 2CDX 200/50 - Impeller diameter = 176/157 mm



Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906:2012 - Grade 3B

### SECTIONAL VIEW



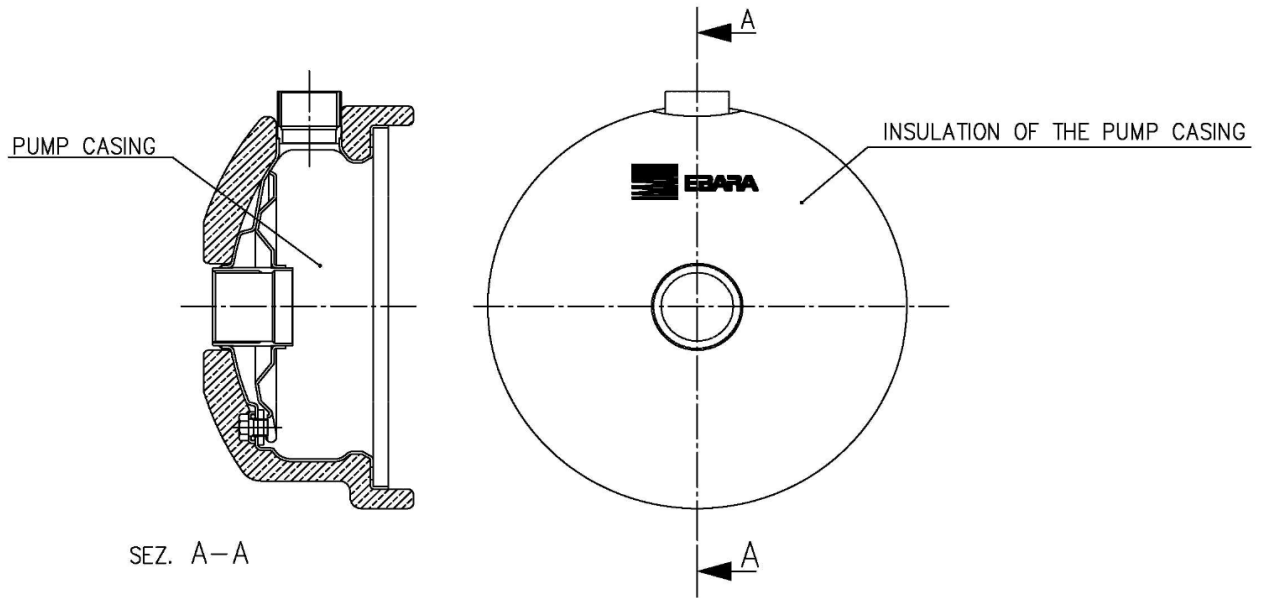
N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304 / AISI 316L [6]			1
3	Motor bracket	[4]			1
4	Casing cover	AISI 304 / AISI 316L [6]			1
6	Shaft with rotor	AISI 303 / AISI 316L [6] (Wet extension)			1
7	Impeller	AISI 304 / AISI 316L [6]			1
8	Impeller	AISI 304 / AISI 316L [6]			1
9	Diffuser	AISI 304 / AISI 316L [6]			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 F04 Galvanized			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 Galvanized			4
24	Priming plug	AISI 304 / AISI 316 [6]			1
25	Drain plug	AISI 304 / AISI 316 [6]			1
26	O-ring [3]	NBR			1
27	O-ring [3]	NBR			1
32	Key	AISI 316			2
34	Impeller nut	Stainless steel A2-70	M10X1,25	UNI 7474	1

N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
42	Motor support	Aluminium			1
52	Capacitor box [1]	ABS class V-0			1
53	Capacitor box cover [1]	ABS class V-0			1
56	Box gasket	NBR			1
72	Casing ring [5]	EPDM			1
73	Casing ring [5]	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 / AISI 316 [6]			1
90	Terminal box cover gasket [1]	NBR			1
92	Lip seal	NBR			1
93	Lip seal	NBR			1
94	O-ring [8]	NBR	34.65x1.78		1
102	Suction cover	AISI 304 / AISI 316 [6]			1
103	Conveyor cover	AISI 304 / AISI 316 [6]			1
105	Sleeve	AISI 304 / AISI 316 [6]			1
200	Screw	Stainless steel A2-70	M6X16	UNI 5931	8
			70/10, 120/15, 120/20, 200/30		
201	Screw	Zn. Steel cl.8.8		UNI 5931	1
			70/12, 70/15, 70/20, 120/30, 120/40, 200/40, 200/50		
212	Screw	Stainless steel A2	3.5X9.5	UNI 6954	4
230	Washer	Steel C70	6,4	UNI 1751	1

- [1] Only for single phase
- [2] Only for three phase
- [3] FPM for H-HS-HW-HSW  
EPDM for E and Special Mechanical Seals
- [4] Material: Aluminium for version up to 1.5 kW included  
Cast iron for version 2.2 kW and above

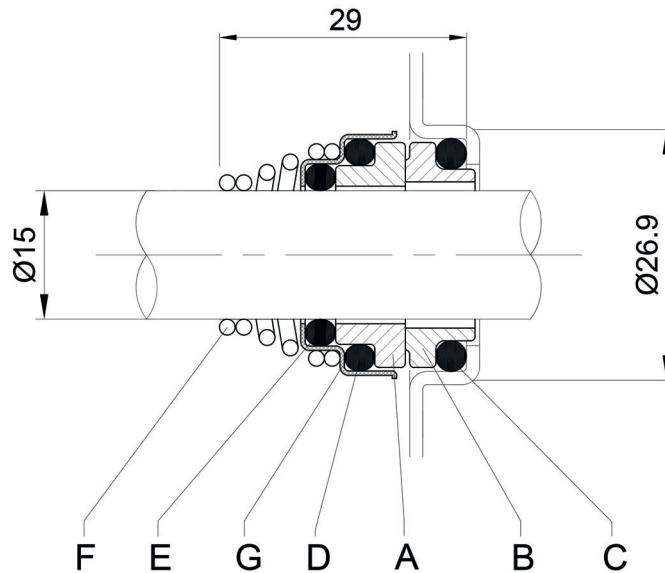
- [5] FPM for H-HS-HW-HSW
- [6] Only for "L" version
- [7] See **MECHANICAL SEAL** pages 302-303
- [8] Only for 2CDX 70/12, 2CDXM 70/10, 2CDXM 70/12 model

THERMAL INSULATION



Pump Type	Insulation of the pump casing
2CDX 70/10	ON REQUEST
2CDX 70/12	
2CDX 70/15	
2CDX 70/20	
2CDX 120/15	
2CDX 120/20	
2CDX 120/30	
2CDX 120/40	
2CDX 200/30	
2CDX 200/40	
2CDX 200/50	

MECHANICAL SEAL



STANDARD  
+  
"L" version

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

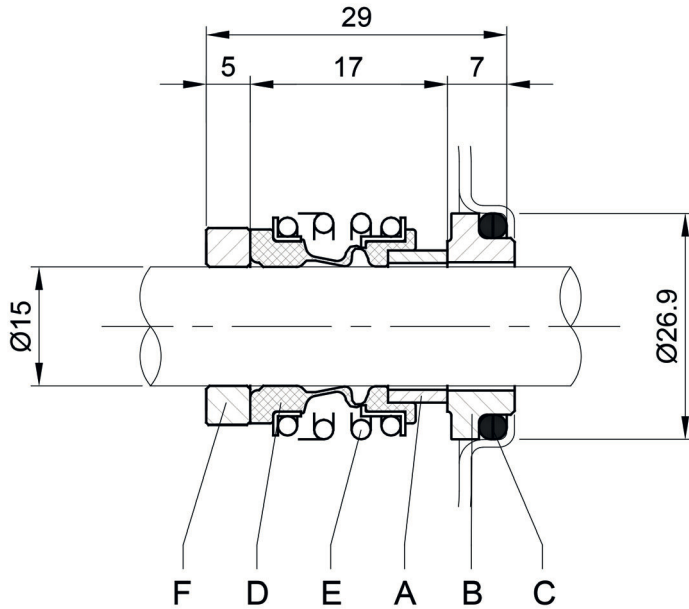
REF	PART NAME	MATERIAL			
		H	HW	HSW	E
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Ceramic
B	Stationary seal ring	Carbon graphite	Tungsten carbide	Tungsten carbide	Carbon graphite
C	O-Ring	FPM	FPM	FPM	EPDM
D	O-Ring	FPM	FPM	FPM	EPDM
E	O-Ring	FPM	FPM	FPM	EPDM
F	Self-driving spring	AISI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

OPTIONAL

SPECIAL

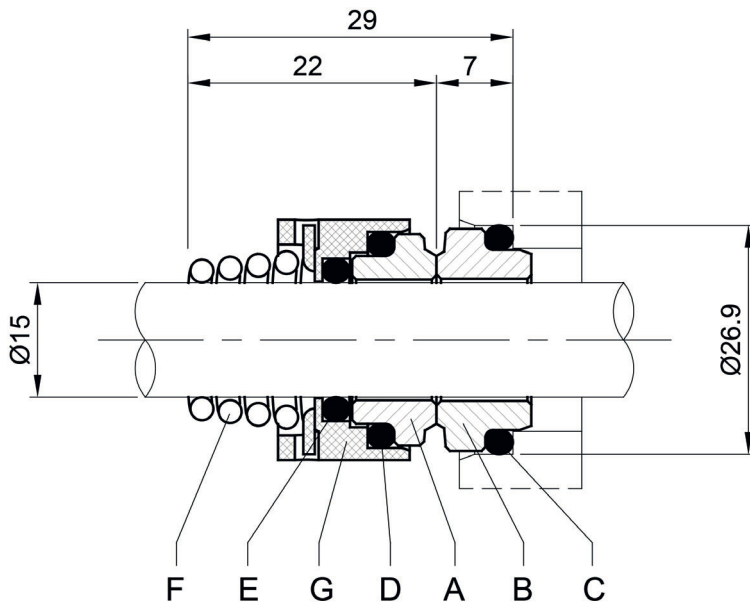
REF	PART NAME	MATERIAL			
		VAEGG	U3U3EGG	Q1U3EGG	U3CEGG
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Tungsten carbide
B	Stationary seal ring	Metallised carbon	Tungsten carbide	Tungsten carbide	special Carbon
C	O-Ring	EPDM	EPDM	EPDM	EPDM
D	O-Ring	EPDM	EPDM	EPDM	EPDM
E	O-Ring	EPDM	EPDM	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 fluid temperature range depends on:

- Material of the elastomers
- Type of fluid pumped
- Material of the sealing faces

for each combination of these parameters the fluid temperature range may be different.

		SEALING FACES MATERIAL			
		CERAMIC-CARBON		ALL (except ceramic-carbon)	
ELASTOMER	NBR	-5 °C	90°C	-5 °C	90°C
	EPDM	-5 °C	90°C	-5 °C	120°C
	FPM	-5 °C	75°C	-5 °C	75°C <sup>1</sup>
		MIN	MAX	MIN	MAX
FLUID TEMPERATURE RANGE					

<sup>1</sup>In case of fluids not containing water, the temperature limit could be increased to 110°C

Therefore, the fluid temperature range is related to the choice of the mechanical seal and its materials.

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

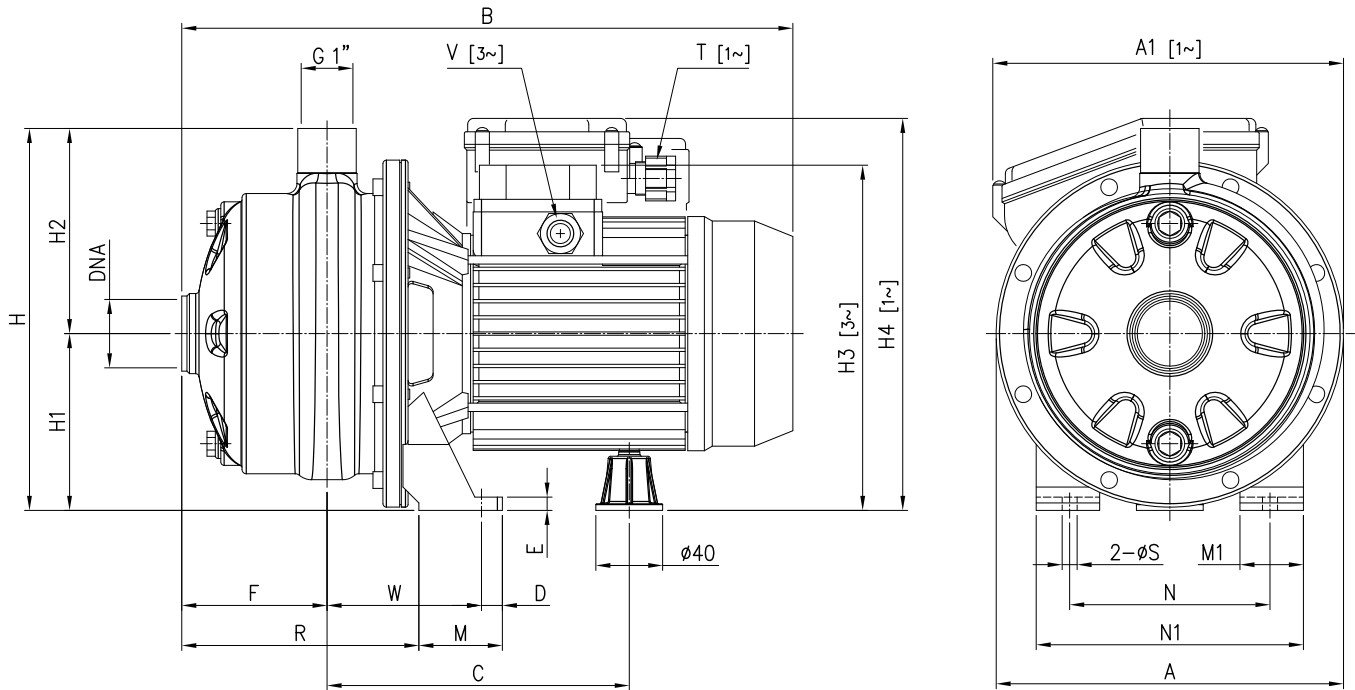
OPTIONAL mechanical seal	TEMPERATURE	
	MIN	MAX
H	-5 °C	75 °C
HS	-5 °C	75 °C
HW	-5 °C	75 °C
HSW	-5 °C	75 °C
E	-5 °C	90 °C

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

**BEARINGS**

Pump type		Ball Bearing	
Single Phase	Three Phase	Pump side	Fan side
2CDXM 70/10	2CDX 70/10	6203	6202
2CDXM 70/12	2CDX 70/12	6203	6202
2CDXM 70/15	2CDX 70/15	6204	6203
2CDXM 70/20	2CDX 70/20	6204	6203
2CDXM 120/15	2CDX 120/15	6204	6203
2CDXM 120/20	2CDX 120/20	6204	6203
-	2CDX 120/30	6305	6205
-	2CDX 120/40	6305	6205
-	2CDX 200/30	6205	6205
-	2CDX 200/40	6305	6205
-	2CDX 200/50	6206	6205

### PUMP



Pump type		Dimensions [mm]																				Weight [kgf]				
Single Phase	Three Phase	A	A1* [1~]	B [3~]	C	D	E	F	H	H1	H2	H3 [3~]	H4 [1~]	M	M1	N	N1	R	T [1~]	V [3~]	W	S	DNA	[1~]	[3~]	
2CDXM 70/10	2CDX 70/10	208	-	367	354	181	12.5	8	87	229	106	123	207	216	50	38	120	160	142	PG 11	M16x1.5	92.5	9	G1 1/4"	14	12.6
2CDXM 70/12	2CDX 70/12	208	210	367	366	181	12.5	8	87	229	106	123	207	235	50	38	120	160	142	PG 13.5	M16x1.5	92.5	9	G1 1/4"	14	13.7
2CDXM 70/15	2CDX 70/15	232	-	408	407	198.5	12.5	8	89	250	118	132	237	248.5	55	40	140	180	141.5	PG 13.5	M20x1.5	95	9	G1 1/4"	20	17
2CDXM 70/20	2CDX 70/20	232	-	395	407.5	198.5	12.5	8	89	250	118	132	237	248.5	55	40	140	180	141.5	PG 13.5	M20x1.5	95	9	G1 1/4"	20	20.1
2CDXM 120/15	2CDX 120/15	208	210	408	407	198.5	12.5	8	89	229	106	123	225	236.5	55	40	140	180	141.5	PG 13.5	M20x1.5	95	9	G1 1/4"	18.5	15.6
2CDXM 120/20	2CDX 120/20	208	210	395	407.5	198.5	12.5	8	89	229	106	123	225	236.5	55	40	140	180	141.5	PG 13.5	M20x1.5	95	9	G1 1/4"	18.5	18.3
-	2CDX 120/30	232	-	-	405	198.5	12.5	10	87	250	118	132	237	-	65	40	140	180	143.5	-	M20x1.5	95	9	G1 1/4"	-	26.1
-	2CDX 120/40	232	-	-	458	223.5 ÷ 234.5	12.5	10	87	250	118	132	242	-	65	40	140	180	143.5	-	M20x1.5	109	9	G1 1/4"	-	27.8
-	2CDX 200/30	208	-	-	458	223.5 ÷ 234.5	12.5	10	87	229	106	123	230	-	65	40	140	180	143.5	-	M20x1.5	109	9	G1 1/2"	-	26.6
-	2CDX 200/40	232	-	-	458	223.5 ÷ 234.5	12.5	10	87	250	118	132	242	-	65	40	140	180	143.5	-	M20x1.5	109	9	G1 1/2"	-	27.6
-	2CDX 200/50	232	-	-	481	232.5	16	12	87	250	118	132	259	-	68	50	160	210	143.5	-	M20x1.5	108.5	12	G1 1/2"	-	35.6

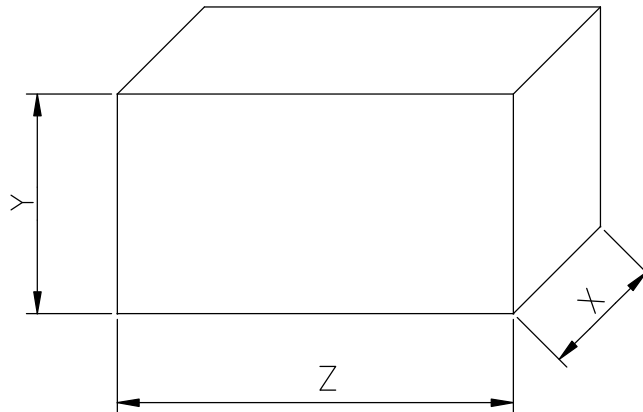
(\* ) Specified only if higher than "A"

[1~] Single phase

[3~] Three phase



PACKING



Pump type		Packing [mm]						Weight [kgf]	
Single Phase	Three Phase	X		Y		Z		[1~]	[3~]
		[1~]	[3~]	[1~]	[3~]	[1~]	[3~]		
2CDXM 70/10	2CDX 70/10	245	245	315	315	510	510	15	13.3
2CDXM 70/12	2CDX 70/12	245	245	315	315	510	510	15	14.6
2CDXM 70/15	2CDX 70/15	245	245	315	315	590	590	21	17.8
2CDXM 70/20	2CDX 70/20	245	245	315	315	590	590	21.5	21
2CDXM 120/15	2CDX 120/15	245	245	315	315	590	590	19.5	16.4
2CDXM 120/20	2CDX 120/20	245	245	315	315	590	590	20	19.3
-	2CDX 120/30	-	245	-	315	-	590	-	26.7
-	2CDX 120/40	-	245	-	315	-	590	-	28.8
-	2CDX 200/30	-	245	-	315	-	590	-	28.5
-	2CDX 200/40	-	245	-	315	-	590	-	28.6
-	2CDX 200/50	-	245	-	315	-	590	-	37.5

[1~] Single phase

[3~] Three phase

MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load)				Input [kW]	Full load current [A] 230 V	Locked rotor current [A] 230 V
	[kW]	[HP]		[μF]	[V]	η %			cos-φ			
						50%	75%	100%				
2CDXM 70/10	0.9	1.2	IE2	31.5	450	67.0	75.3	79.0	0.92	1.15	5.4	31.3
2CDXM 70/12	1.1	1.5	IE2	31.5	450	71.9	77.7	79.6	0.94	1.4	6.6	31.3
2CDXM 70/15	1.5	2.0	IE2	40	450	69.8	76.6	81.3	0.92	1.9	9.0	65.2
2CDXM 70/20	1.8	2.4	IE2	40	450	73.1	78.8	82.2	0.93	2.2	10.5	65.2
2CDXM 120/15	1.5	2.0	IE2	40	450	69.8	76.6	81.3	0.92	1.9	9.0	65.2
2CDXM 120/20	1.8	2.4	IE2	40	450	73.1	78.8	82.2	0.93	2.2	10.5	65.2

Pump type	Power		Efficiency	Efficiency (% load)			Input [kW]	Full load current		Locked rotor current	
	[kW]	[HP]		η %				[A]		[A]	
				50%	75%	100%		230 V	400 V	230 V	400 V
2CDX 70/10	0.75	1.0	IE3	80.9	82.3	82.1	1.11	3.4	2.0	19.7	11.4
2CDX 70/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6
2CDX 70/15	1.1	1.5	IE3	83.5	84.3	84.6	1.77	5.8	3.3	47.4	27.4
2CDX 70/20	1.5	2.0	IE3	84.2	86.8	86.9	2.30	7.8	4.5	66.6	38.4
2CDX 120/15	1.1	1.5	IE3	83.5	84.3	84.6	1.77	5.8	3.3	47.4	27.4
2CDX 120/20	1.5	2.0	IE3	84.2	86.8	86.9	2.30	7.8	4.5	66.6	38.4
2CDX 120/30	2.2	3.0	IE3	86.2	87.0	86.0	2.55	8.2	4.7	66.6	38.4
2CDX 120/40	3.0	4.0	IE3	85.9	87.5	87.1	3.44	11.1	6.4	90.0	52.0
2CDX 200/30	3.0	4.0	IE3	85.9	87.5	87.1	3.76	11.2	6.5	90.0	52.0
2CDX 200/40	3.0	4.0	IE3	85.9	87.5	87.1	3.76	11.2	6.5	90.0	52.0
2CDX 200/50	3.7	5.0	IE3	85.8	88.3	88.4	4.52	15.1	8.7	131.8	76.1

NOISE DATA

Pump type		L <sub>pA</sub> - dB(A) *
Single Phase	Three Phase	
2CDXM 70/10	2CDX 70/10	62
2CDXM 70/12	2CDX 70/12	
2CDXM 70/15	2CDX 70/15	
2CDXM 70/20	2CDX 70/20	
2CDXM 120/15	2CDX 120/15	64
2CDXM 120/20	2CDX 120/20	
-	2CDX 120/30	68
-	2CDX 120/40	
-	2CDX 200/30	
-	2CDX 200/40	
-	2CDX 200/50	

\* Mean value of several measures at 1m distance around the  
Tolerance ± 2.5 dB.



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