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EBARA

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50Hz

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SPECIFICATIONS 50Hz

Rev. P

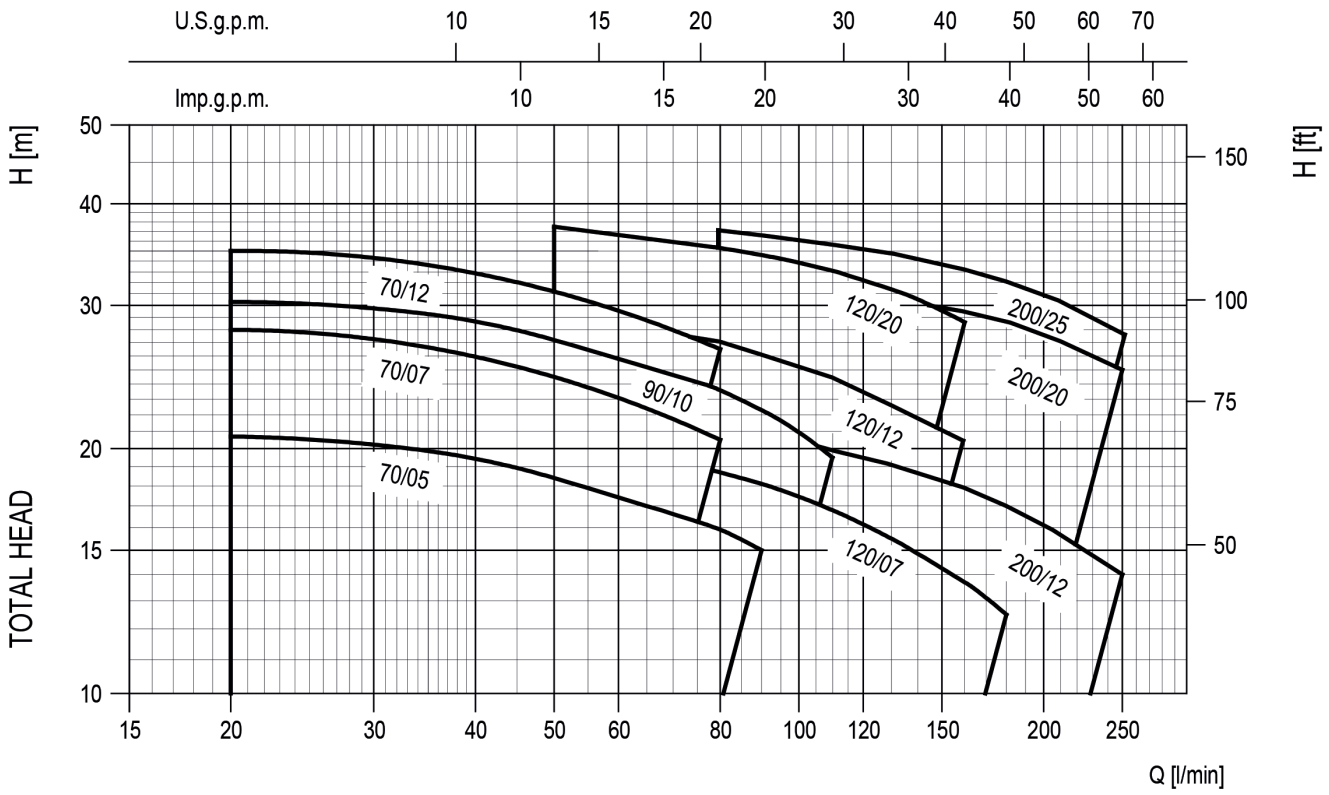
PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. -5 max. +60 only for model 70/05, 70/07, 90/10 max. +60 for model 70/05, 70/07, 90/10 version: E, Q1AEGG, VAEGG, U3U3EGG, Q1U3EGG, U3CEGG max. +90 max. +110 H – HS - HW - HSW max. +120 E, Q1AEGG, VAEGG, U3U3EGG, Q1U3EGG, U3CEGG
Maximum working pressure [MPa]		0.8
Construction	Impeller	Closed centrifugal type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	from G1"¼ to G1"½ UNI ISO 228-1
	Discharge	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 special versions see page 303)
	Shaft	AISI 303 / AISI 316L (Wet extension)
	Bracket	Aluminium
Applicable standard of test		ISO 9906:2012 – Grade 3B

MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level (Reg. 640/2009)		-	- from 0.37 kW up to 0.55 kW IE3 from 0.75 kW up to 1.8 kW
No. of Poles		2	
Rotation speed	[min^{-1}]	≈ 2800	
Insulation Class		F	
Protection degree (CEI EN 60034-5)		IP 55	
Power rating	[kW]	0.37 ÷ 1.5	0.37 ÷ 1.8
	[HP]	0.5 ÷ 2	0.5 ÷ 2.5
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	
Base material/motor support		Aluminium	
Dimensions of cable entry		PG11 - PG13.5 - M16x1.5 – M20x1.5 (see dimensions table page 400)	

PERFORMANCE RANGE and SELECTION CHART 50Hz

Rev. P

PERFORMANCE RANGE



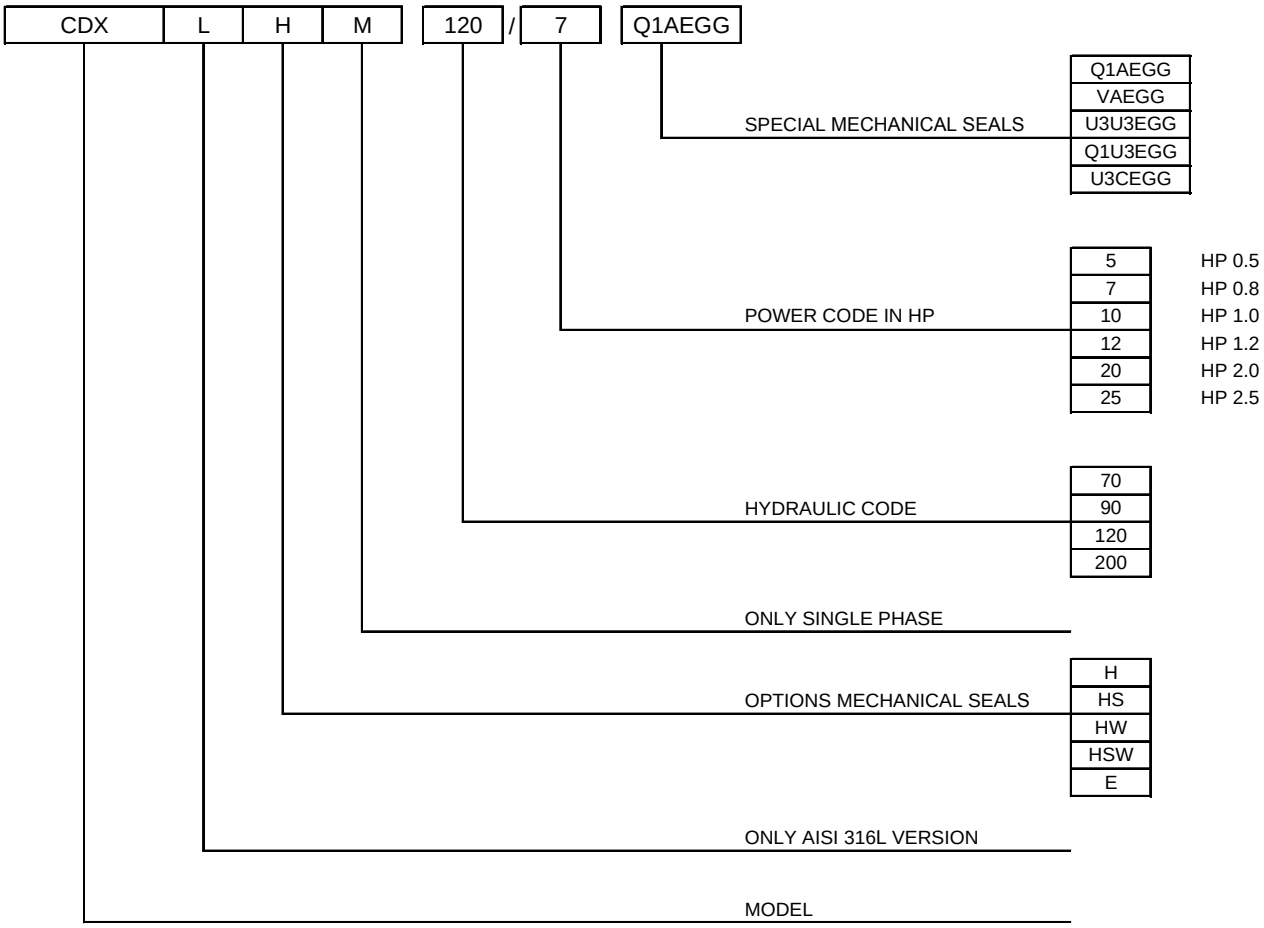
SELECTION CHART

Pump Type		Power		Q=Capacity										
				l/min	0	20	50	80	90	110	130	160	180	210	250
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	1.2	3	4.8	5.4	6.6	7.8	9.6	10.8	12.6	15
				H=Total manometric head in meters											
CDXM 70/05	CDX 70/05	0.37	0.5	22	20.7	18.4	15.9	15	-	-	-	-	-	-	
CDXM 70/07	CDX 70/07	0.55	0.75	30	28	24.5	20.5	-	-	-	-	-	-	-	
CDXM 90/10	CDX 90/10	0.75	1	32	30.3	27.2	23.6	22.3	19.5	-	-	-	-	-	
CDXM 120/07	CDX 120/07	0.55	0.75	22.5	-	20.5	18.7	18.1	16.8	15.5	13.7	12.5	-	-	
CDXM 120/12	CDX 120/12	0.9	1.2	31.2	-	29.3	27.5	26.8	25.2	23.6	21	-	-	-	
CDXM 120/20	CDX 120/20	1.5	2	40.5	-	37.5	35.3	34.6	33.1	31.4	28.6	-	-	-	
CDXM 200/12	CDX 200/12	0.9	1.2	22.8	-	-	21.3	21	20.4	19.7	18.5	17.6	16	14	
CDXM 200/20	CDX 200/20	1.5	2	33	-	-	31.5	31.2	30.6	30	28.7	27.9	26.5	24.5	
-	CDX 200/25	1.8	2.5	39.4	-	-	36.8	26.5	35.6	34.7	33.3	32	30	27.2	

TYPE KEY and CURVE SPECIFICATIONS 50Hz

Rev. P

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℃ of temperature and with a kinematic viscosity of $\nu = 1\ mm^2/s$ (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:

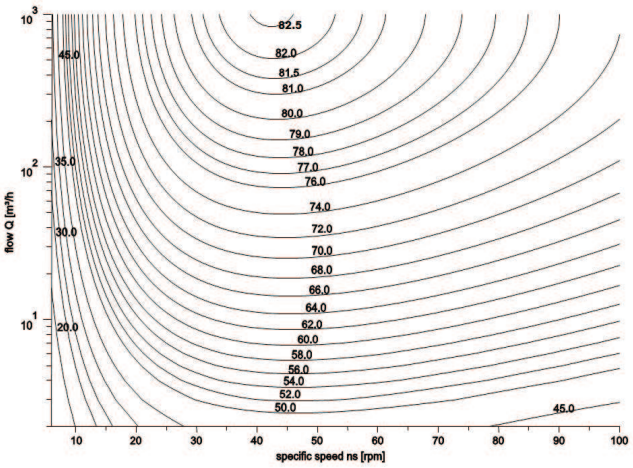
Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
NPSH	=	net positive suction head required by the pump
MEI	=	minimum efficiency index

The minimum efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

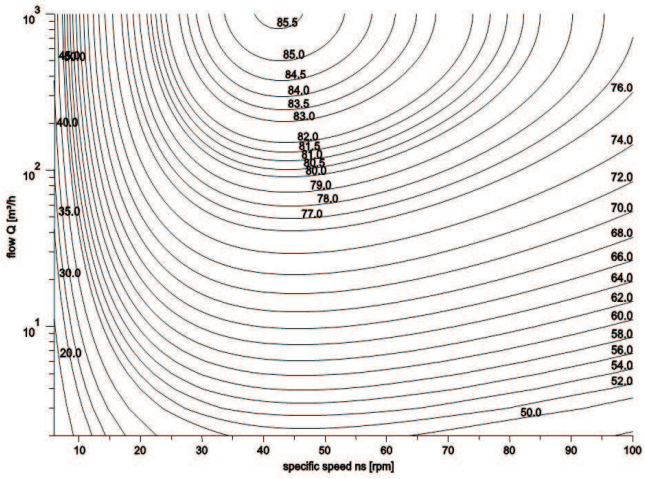
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variable duty points may be more efficient end economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

MEI = 0.4 for ESCC 2900 rpm



MEI = 0.7 for ESCC 2900rpm



PERFORMANCE CURVE

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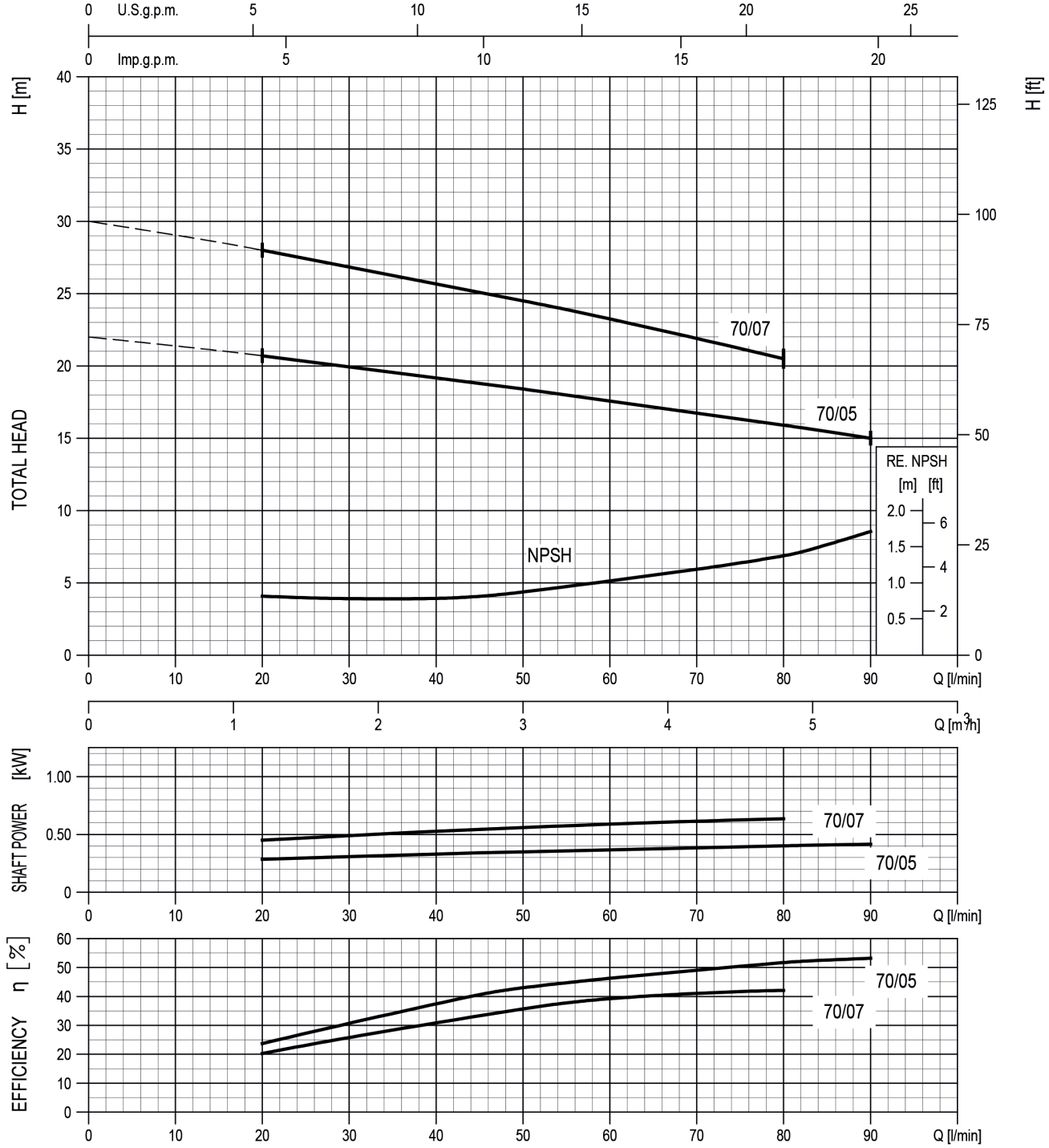
CDX 70/05 (0.37 kW) - Impeller diameter = 132 mm
CDX 70/07 (0.55 kW) - Impeller diameter = 157 mm



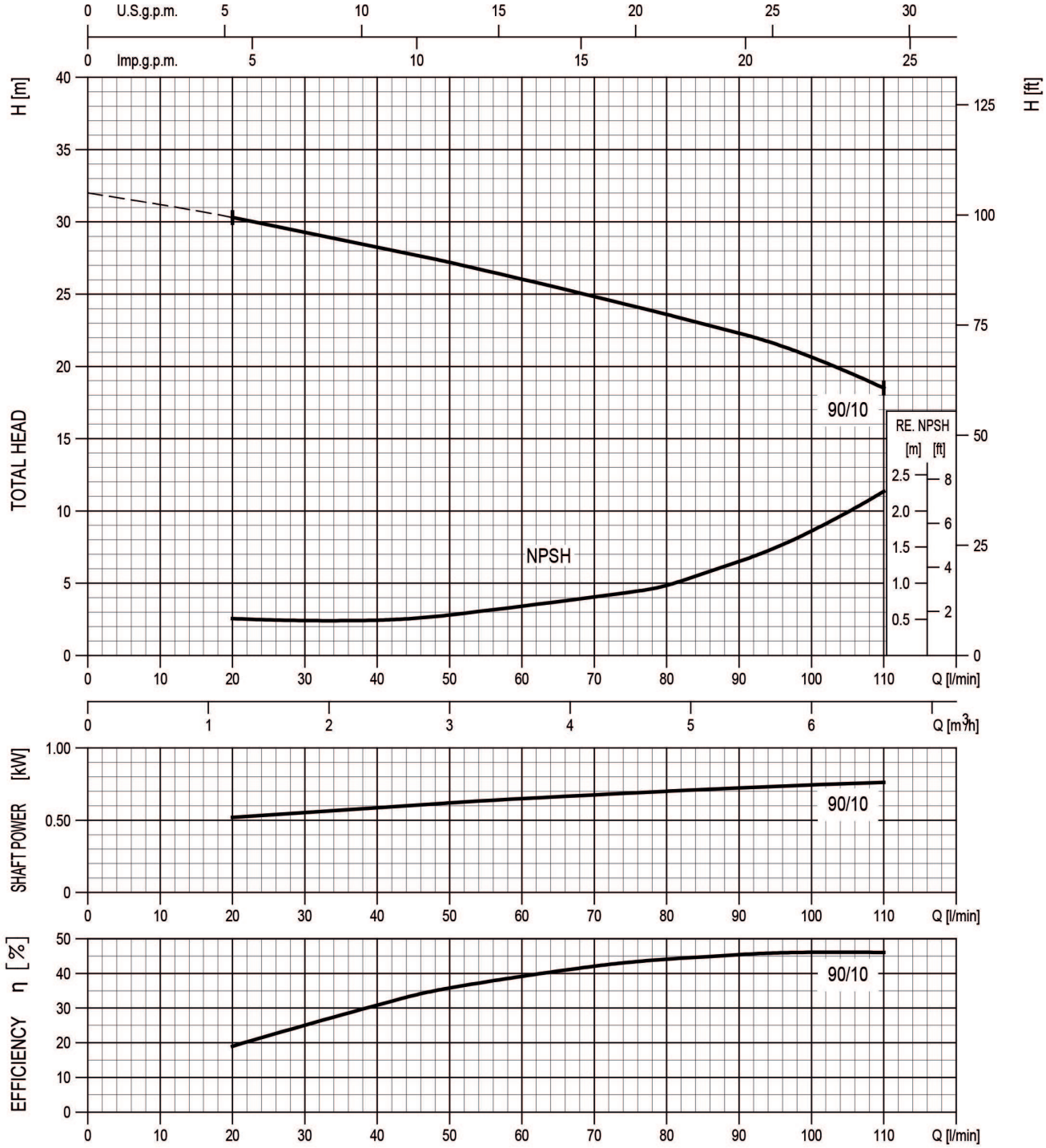
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906:2012 – Grade 3B

PERFORMANCE CURVE

50Hz

Rev. P

CDX 90/10 (0.75 kW) MEI > 0.50 - Impeller diameter = 157 mm



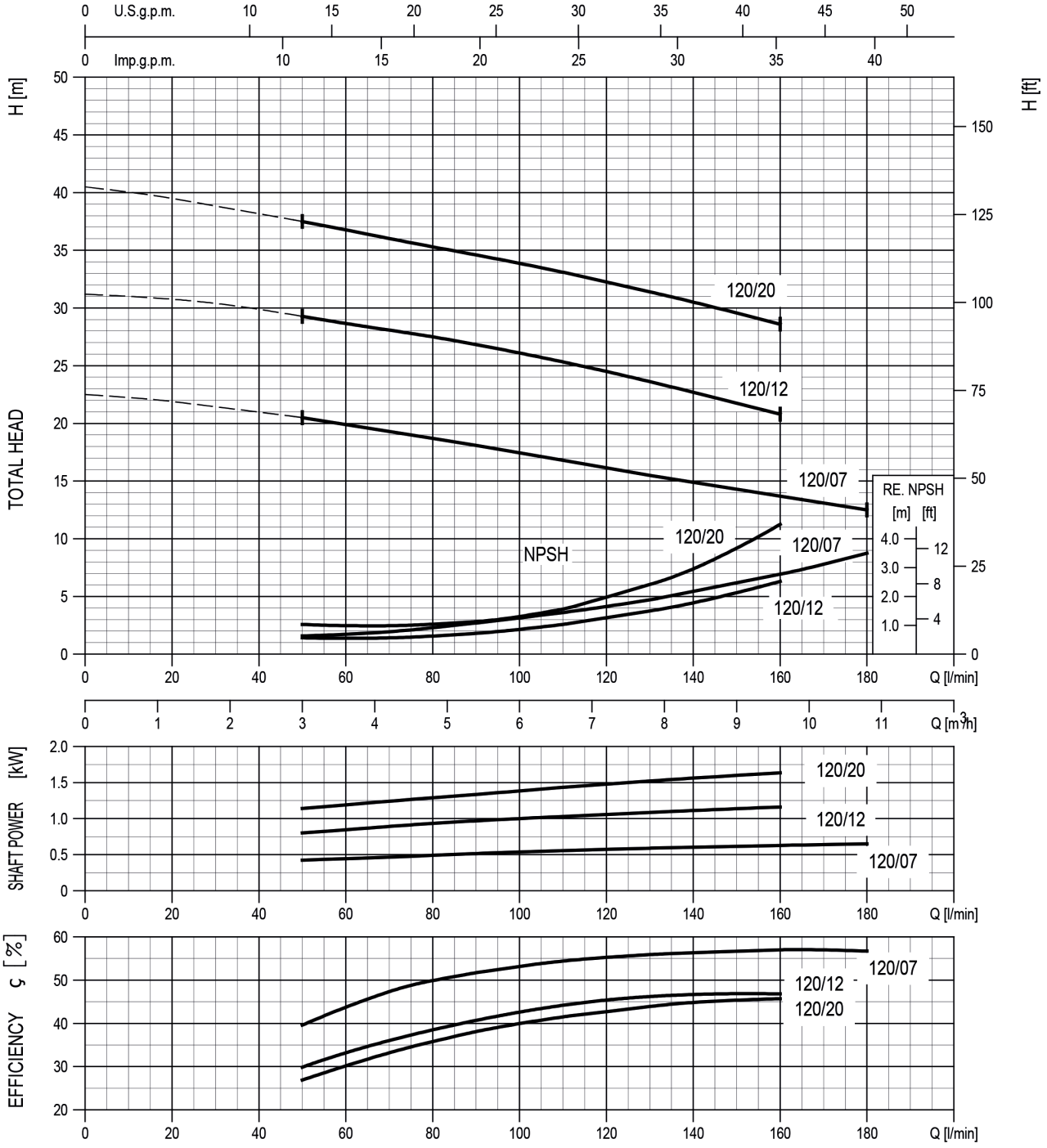
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906:2012 – Grade 3B

PERFORMANCE CURVE

50Hz

Rev. P

CDX 120/07 (0.55 kW) MEI > 0.50 - Impeller diameter = 132 mm
CDX 120/12 (0.90 kW) MEI > 0.40 - Impeller diameter = 157 mm
CDX 120/20 (1.50 kW) MEI > 0.40 - Impeller diameter = 176 mm



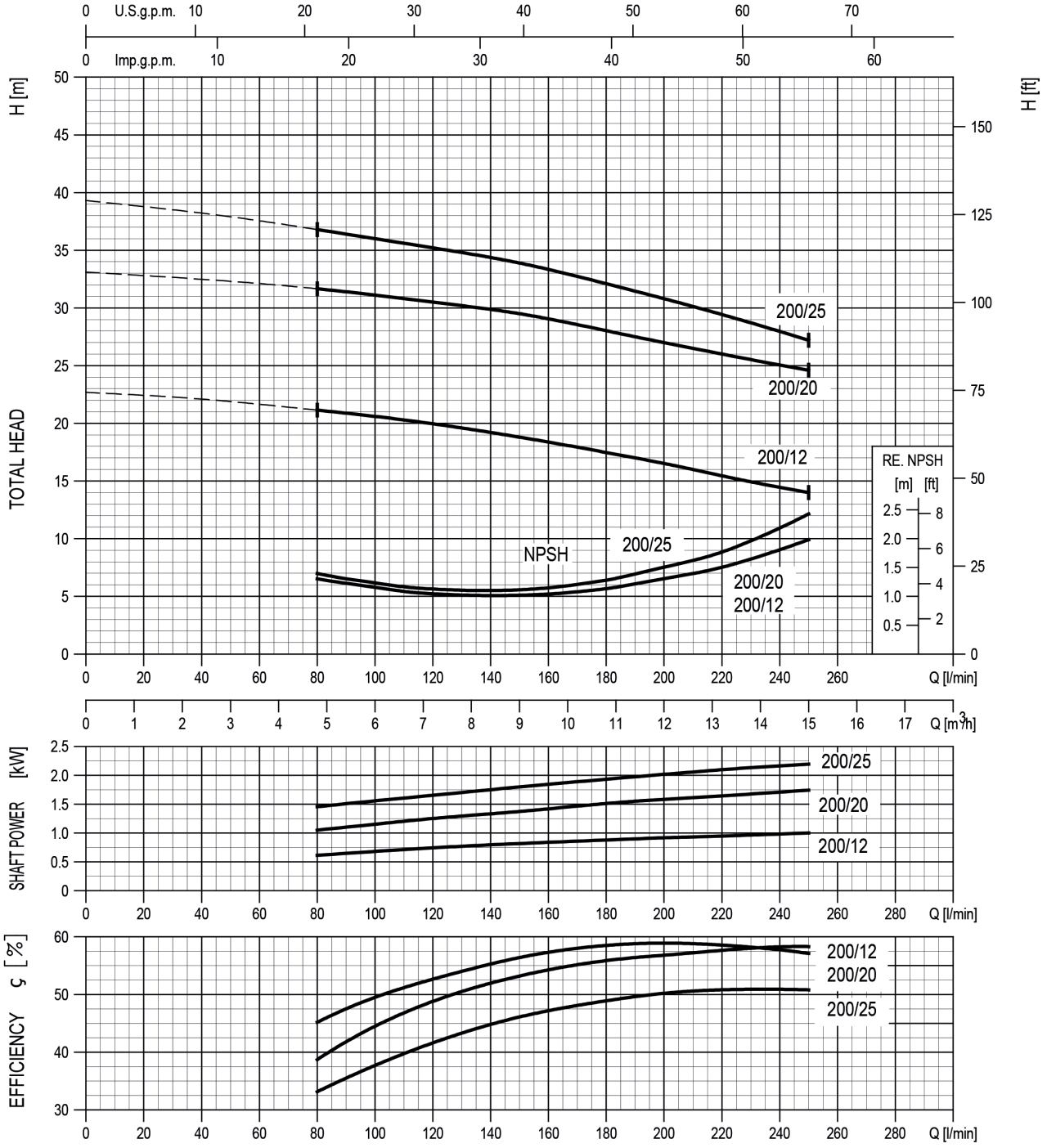
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906:2012 – Grade 3B

PERFORMANCE CURVE

50Hz

Rev. P

CDX 200/12 (0.90 kW) MEI > 0.50 - Impeller diameter = 132 mm
CDX 200/20 (1.50 kW) MEI > 0.60 - Impeller diameter = 157 mm
CDX 200/25 (1.80 kW) MEI > 0.40 - Impeller diameter = 176 mm



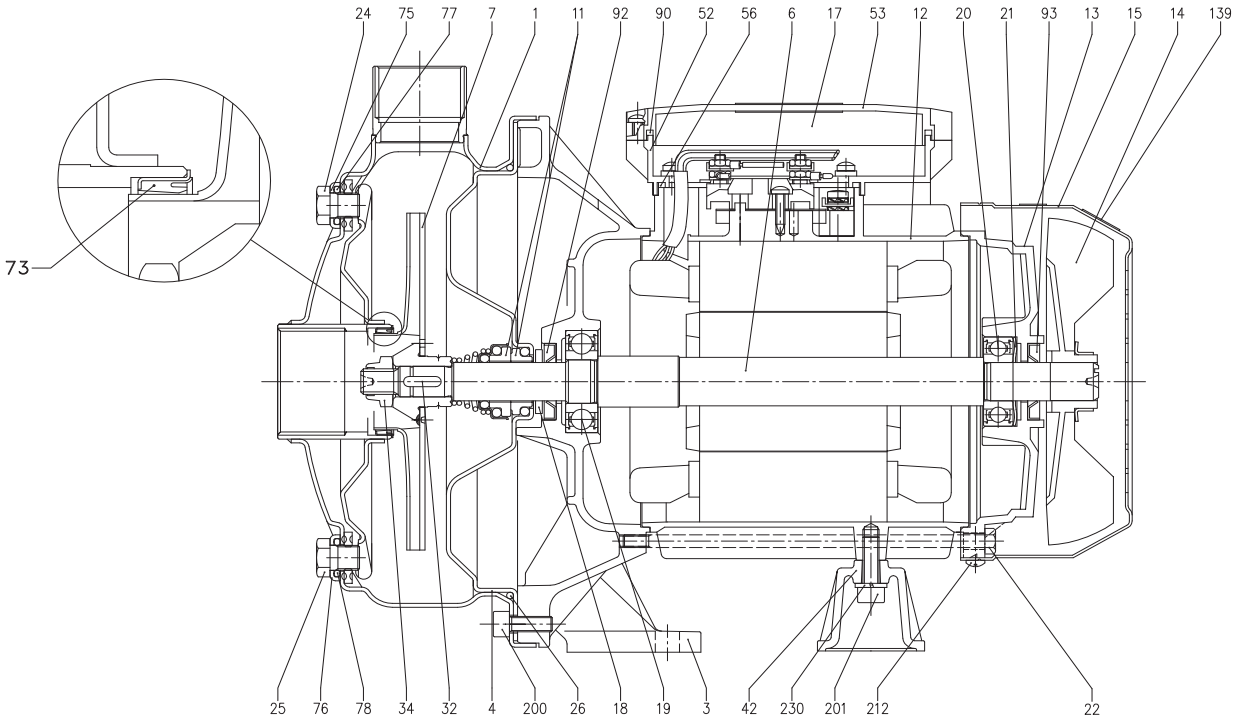
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906:2012 – Grade 3B

CONSTRUCTIONS

50Hz

Rev. P

SECTIONAL VIEW CDX 70/05 - 70/07 - 90/10



N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304 / AISI 316L [5]	1
3	Motor bracket	Aluminium	1
4	Casing cover	AISI 304 / AISI 316L [5]	1
6	Shaft with rotor	AISI 303 / AISI 316L [5] (Wet extension)	1
7	Impeller	AISI 304 / AISI 316L [5]	1
11	Mechanical seal [6]	Carbon/Ceramic/NBR	1
12	Motor frame with stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PA	1
15	Fan cover	Fe P04 Zincate	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
24	Priming plug	AISI 304 / AISI 316 [5]	1

N°	PART NAME	MATERIAL	Q.TY
25	Drain plug	AISI 304 / AISI 316 [5]	1
26	O-ring [3]	NBR	1
32	Key	AISI 316	1
34	Impeller nut	AISI 304 / AISI 316 [5]	1
42	Motor support	Aluminium	1
52	Terminal box [1]	ABS class V-0	1
53	Terminal box cover [1]	ABS class V-0	1
56	Box gasket	NBR	1
73	Casing ring [4]	NBR	1
75	Washer	AISI 304	1
76	Washer	AISI 304	1
77	O-ring [3]	NBR	1
78	O-ring [3]	NBR	1
90	Terminal box cover gasket [1]	NBR	1
92	Lip seal	-	1
93	Lip seal	-	1
200	Screw	Stainless steel A2 UNI7323	8

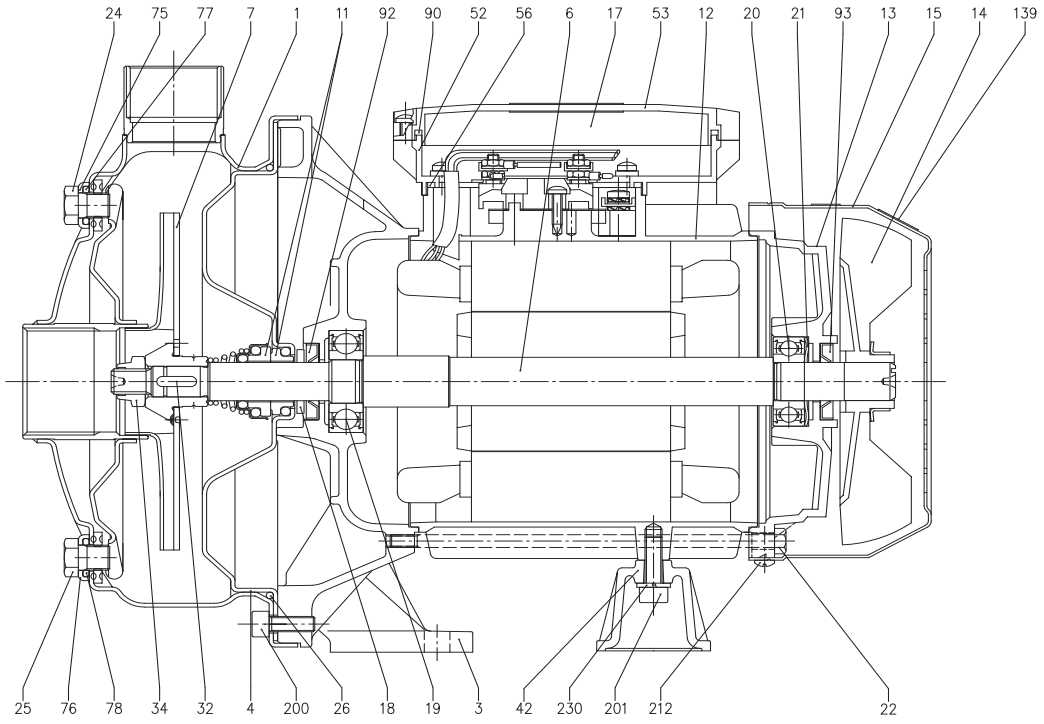
[1] Only for single phase
[2] Only for three phase
[3] FPM for H-HS-HW-HSW
EPDM for E and Special Mechanical Seal
[4] NBR for CDX 70/05, 70/07, 90/10
FPM for CDX H-HS-HW-HSW 70/05, 70/07, 90/10
[5] Only for “L” version
[6] See **MECHANICAL SEAL** pages 303-304

CONSTRUCTIONS

50Hz

Rev. P

SECTIONAL VIEW CDX 120/07 - 120/20



N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304 / AISI 316L [4]	1
3	Motor bracket	Aluminium	1
4	Casing cover	AISI 304 / AISI 316L [4]	1
6	Shaft with rotor	AISI 303 / AISI 316L [4] (Wet extension)	1
7	Impeller	AISI 304 / AISI 316L [4]	1
11	Mechanical seal [5]	Carbon/Ceramic/NBR	1
12	Motor frame with stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PA	1
15	Fan cover	Fe P04 Zincate	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
24	Priming plug	AISI 304 / AISI 316 [4]	1

N°	PART NAME	MATERIAL	Q.TY
25	Drain plug	AISI 304 / AISI 316 [4]	1
26	O-ring [3]	NBR	1
32	Key	AISI 316	1
34	Impeller nut	AISI 304 / AISI 316 [4]	1
42	Motor support	Aluminium	1
52	Terminal box [1]	ABS class V-0	1
53	Terminal box cover [1]	ABS class V-0	1
56	Box gasket	NBR	1
73	Casing ring	-	1
75	Washer	AISI 304	1
76	Washer	AISI 304	1
77	O-ring [3]	NBR	1
78	O-ring [3]	NBR	1
90	Terminal box cover gasket [1]	NBR	1
92	Lip seal	-	1
93	Lip seal	-	1
200	Screw	Stainless steel A2 UNI7323	8

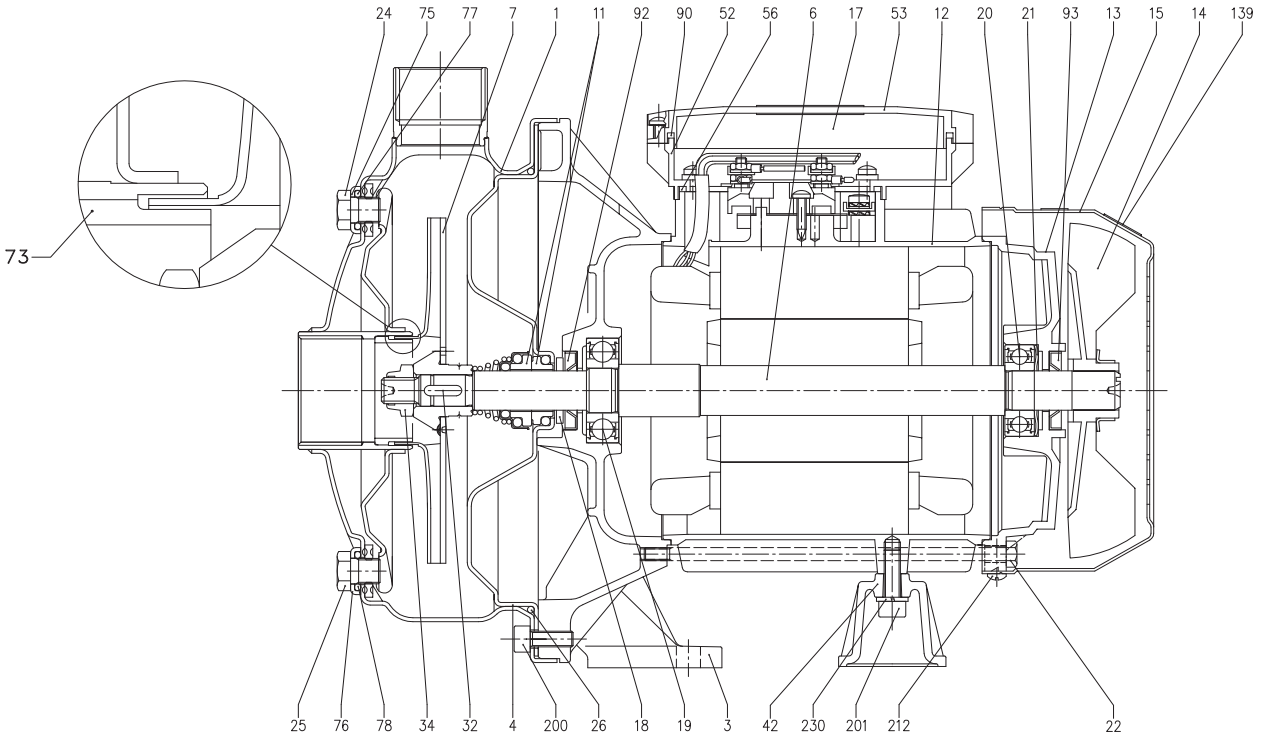
[1] Only for single phase
[2] Only for three phase
[3] FPM for H-HS-HW-HSW
EPDM for E and Special Mechanical Seal
[4] Only for "L" version
[5] See **MECHANICAL SEAL** pages 303-304

CONSTRUCTIONS

50Hz

Rev. P

SECTIONAL VIEW CDX 120/12 - 200/12 - 200/20 - 200/25

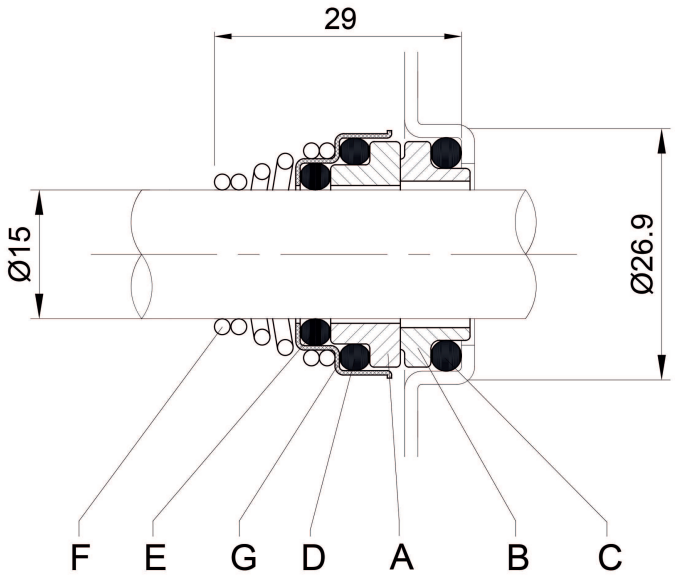


N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304 / AISI 316L [4]	1
3	Motor bracket	Aluminium	1
4	Casing cover	AISI 304 / AISI 316L [4]	1
6	Shaft with rotor	AISI 303 / AISI 316L [4] (Wet extension)	1
7	Impeller	AISI 304 / AISI 316L [4]	1
11	Mechanical seal [5]	Carbon/Ceramic/NBR	1
12	Motor frame with stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PA	1
15	Fan cover	Fe P04 Zincate	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
24	Priming plug	AISI 304 / AISI 316 [4]	1

N°	PART NAME	MATERIAL	Q.TY
25	Drain plug	AISI 304 / AISI 316 [4]	1
26	O-ring [3]	NBR	1
32	Key	AISI 316	1
34	Impeller nut	AISI 304 / AISI 316 [4]	1
42	Motor support	Aluminium	1
52	Terminal box [1]	ABS class V-0	1
53	Terminal box cover [1]	ABS class V-0	1
56	Box gasket	NBR	1
73	Double ring	AISI 304 / AISI 316 [4]	1
75	Washer	AISI 304	1
76	Washer	AISI 304	1
77	O-ring [3]	NBR	1
78	O-ring [3]	NBR	1
90	Terminal box cover gasket [1]	NBR	1
92	Lip seal	-	1
93	Lip seal	-	1
200	Screw	Stainless steel A2 UNI7323	8

[1] Only for single phase
[2] Only for three phase
[3] FPM for H-HS-HW-HSW
EPDM for E and Special Mechanical Seal
[4] Only for "L" version
[5] See **MECHANICAL SEAL** pages 303-304

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

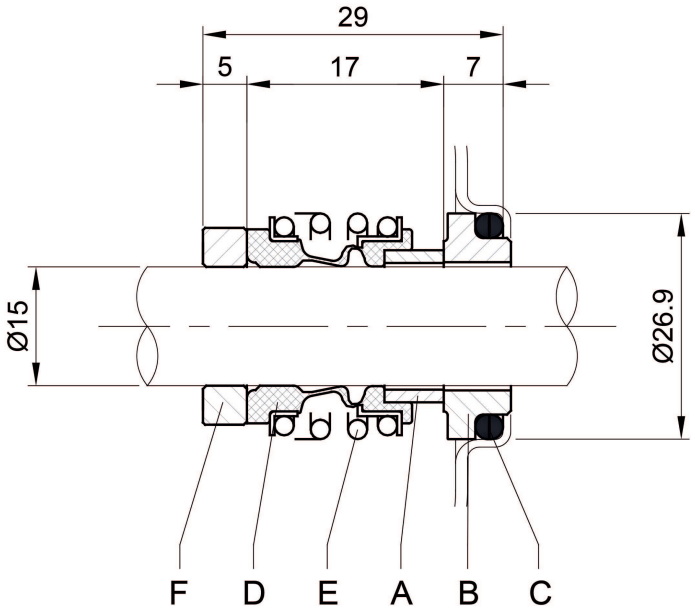
OPTIONAL

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

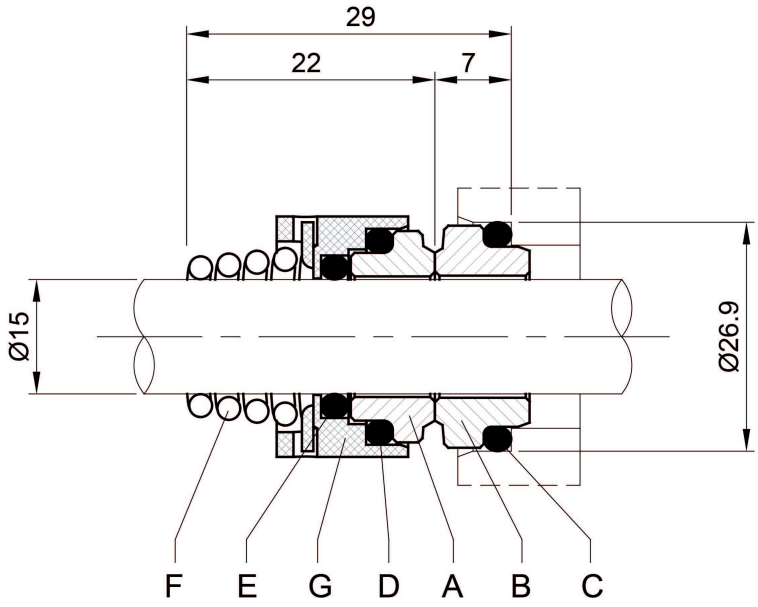
REF	PART NAME	MATERIAL			
		Q1U3EGG	**VAEGG**	**U3U3EGG**	**U3CEGG**
A	Rotary seal ring	Silicon carbide	Ceramic	Tungsten carbide	Tungsten carbide
B	Stationary seal ring	Tungsten carbide	Metallised carbon	Tungsten carbide	special Carbon
C	O-Ring	EPDM	EPDM	EPDM	EPDM
D	O-Ring	EPDM	EPDM	EPDM	EPDM
E	O-Ring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

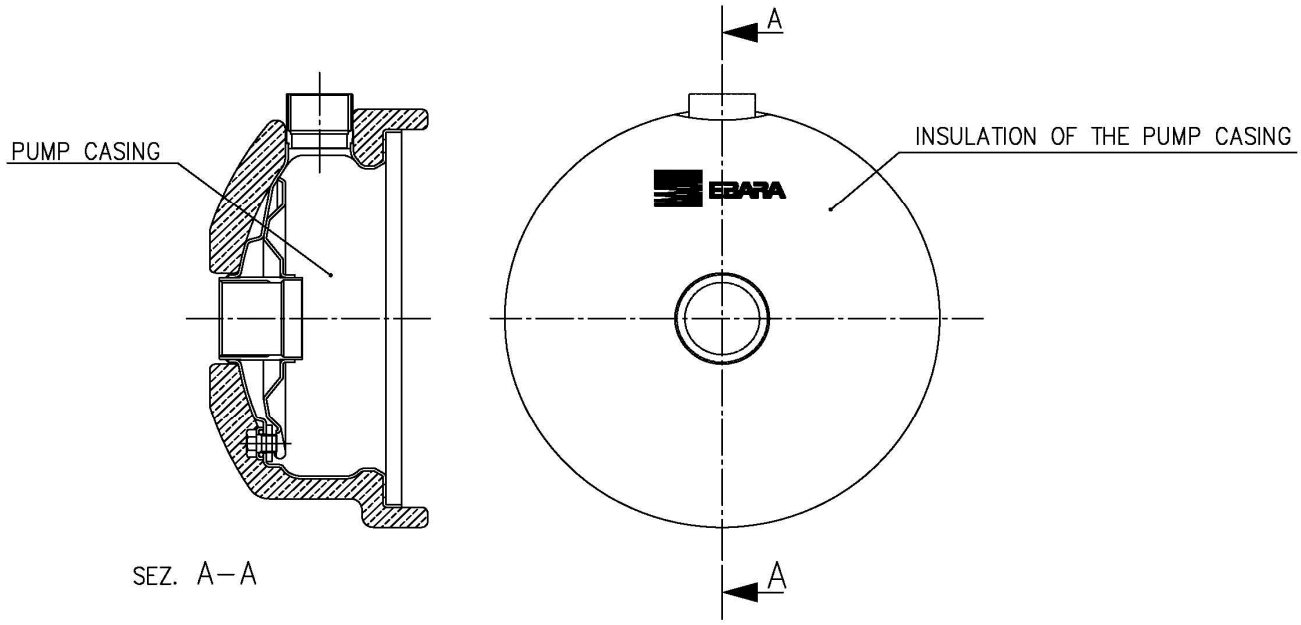
REF	PART NAME	MATERIAL **Q1AEGG**
A	Rotary seal ring	Silicon carbide
B	Stationary seal ring	Metallised carbon
C	O-Ring	EPDM
D	O-Ring	EPDM
E	O-Ring	EPDM
F	Self-driving spring	AISI 316
G	Frame	AISI 316

BEARINGS

Pump type		Ball Bearing			
		Pump side		Fan side	
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]
CDXM 70/05	CDX 70/05	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 70/07	CDX 70/07	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 90/10	CDX 90/10	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/07	CDX 120/07	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/12	CDX 120/12	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/20	CDX 120/20	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
CDXM 200/12	CDX 200/12	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 200/20	CDX 200/20	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
-	CDX 200/25	-	6204-ZZ C3	-	6203-ZZ C3

[1~] Single phase
[3~] Three phase

THERMAL INSULATION



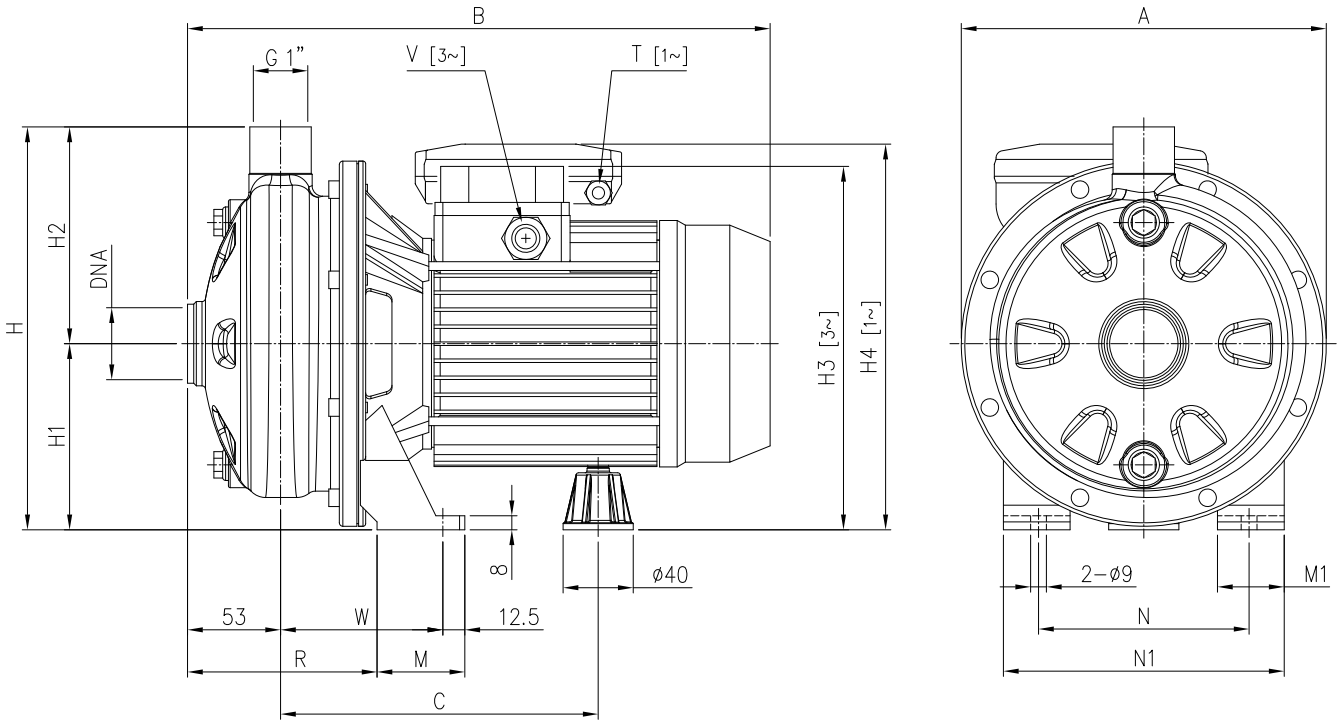
Pump Type	Insulation of the pump casing
CDX 70/05	ON REQUEST
CDX 70/07	
CDX 90/10	
CDX 120/07	
CDX 120/12	
CDX 120/20	
CDX 200/12	
CDX 200/20	
CDX 200/25	

DIMENSIONS and WEIGHT

50Hz

Rev. P

PUMP



Pump type		Dimensions [mm]																	Weight [kgf]	
Single Phase	Three Phase	A	B [1~]	B [3~]	C	H	H1	H2	H3 [3~]	H4 [1~]	M	M1	N	N1	R	T [1~]	V [3~]	W	DNA	[1~]	[3~]
CDXM 70/05	CDX 70/05	208	321	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	PG11	92.5	G 1"1/4	8.3	8.3
CDXM 70/07	CDX 70/07	208	321	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	PG11	92.5	G 1"1/4	9.8	9.7
CDXM 90/10	CDX 90/10	208	321	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	M16X1.5	92.5	G 1"1/4	11	11
CDXM 120/07	CDX 120/07	208	321	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	PG11	92.5	G 1"1/4	9.6	9.5
CDXM 120/12	CDX 120/12	208	321	332	181	229.5	106	123.5	207	235	50	38	120	160	108	PG11	M16X1.5	92.5	G 1"1/4	11.8	12.4
CDXM 120/20	CDX 120/20	232	346.5	371.5	198.5	250	118	132	237	248.5	55	40	140	180	105.5	PG13.5	M20X1.5	95	G 1"1/4	16.5	18.1
CDXM 200/12	CDX 200/12	208	321	332	181	229.5	106	123.5	207	235	50	38	120	160	108	PG13.5	M16X1.5	92.5	G 1"1/2	11.4	12.2
CDXM 200/20	CDX 200/20	208	346.5	371.5	198.5	229.5	106	123.5	225	236.5	55	40	140	180	105.5	PG13.5	M20X1.5	95	G 1"1/2	15.3	17
-	CDX 200/25	232	-	371.5	198.5	250	118	132	237	-	55	40	140	180	105.5	-	M20X1.5	95	G 1"1/2	-	16.8

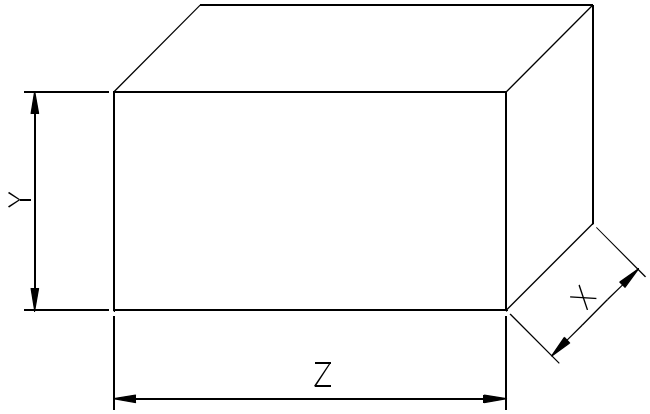
[1~] Single phase
[3~] Three phase

DIMENSIONS and WEIGHT

50Hz

Rev. P

PACKING



Pump type		Packing [mm]						Weight [kgf]	
		X		Y		Z			
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]
CDXM 70/05	CDX 70/05	247	247	289	289	402	402	9	9
CDXM 70/07	CDX 70/07	247	247	289	289	402	402	10.4	10.4
CDXM 90/10	CDX 90/10	247	247	289	289	402	402	11.7	11.6
CDXM 120/07	CDX 120/07	247	247	289	289	402	402	10.2	10.4
CDXM 120/12	CDX 120/12	244	244	308	308	452	452	12.5	13.2
CDXM 120/20	CDX 120/20	244	244	308	308	452	452	17.2	18.9
CDXM 200/12	CDX 200/12	244	244	308	308	452	452	12.1	12.9
CDXM 200/20	CDX 200/20	244	244	308	308	452	452	16	17.7
-	CDX 200/25	-	244	-	308	-	452	-	17.6

[1~] Single phase
[3~] Three phase

TECHNICAL DATA 50Hz

Rev. P

MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load) Three phase η %			Input [kW]		Full load current [A]			Locked rotor current [A]		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase [µF]	[V]	50%	75%	100%	Single Phase	Three Phase	Single Phase 230 V	Three Phase 230 V	Three Phase 400 V	Single Phase 230 V	Three Phase 230 V	Three Phase 400 V
CDXM 70/05	CDX 70/05	0.37	0.5	-	-	12.5	450	-	-	-	0.75	0.68	3.4	2.4	1.4	10.1	11.0	6.15
CDXM 70/07	CDX 70/07	0.55	0.75	-	-	16	450	-	-	-	1.1	1.0	5.0	3.5	2.0	16.1	17.0	9.7
CDXM 90/10	CDX 90/10	0.75	1.0	-	IE3	20	450	80.9	82.3	82.1	1.20	1.05	5.6	3.3	1.9	22.7	19.7	11.4
CDXM 120/07	CDX 120/07	0.55	0.75	-	-	16	450	-	-	-	1.00	1.0	4.6	3.2	1.85	16.1	17.0	9.7
CDXM 120/12	CDX 120/12	0.9	1.2	-	IE3	31.5	450	81.7	83.1	82.4	1.60	1.34	6.9	4.3	2.5	25.0	28.8	16.6
CDXM 120/20	CDX 120/20	1.5	2.0	-	IE3	40	450	84.2	86.8	86.9	2.10	2.01	9.3	7.1	4.1	43.0	66.6	38.4
CDXM 200/12	CDX 200/12	0.9	1.2	-	IE3	31.5	450	81.7	83.1	82.4	1.40	1.34	6.3	4.3	2.5	25.0	28.8	16.6
CDXM 200/20	CDX 200/20	1.5	2.0	-	IE3	40	450	84.2	86.8	86.9	2.30	2.01	10.2	7.1	4.1	43.0	66.6	38.4
-	CDX 200/25	1.8	2.5	-	IE3	-	-	86.2	87.0	86.0	-	2.55	-	8.2	4.7	-	66.6	38.43

NOISE DATA

Pump type		Power		L_{pA} - dB(A) *
Single Phase	Three Phase	[kW]	[HP]	
CDXM 70/05	CDX 70/05	0.37	0.5	61
CDXM 70/07	CDX 70/07	0.55	0.75	62
CDXM 90/10	CDX 90/10	0.75	1	
CDXM 120/07	CDX 120/07	0.55	0.75	
CDXM 120/12	CDX 120/12	0.9	1.2	
CDXM 120/20	CDX 120/20	1.5	2	64
CDXM 200/12	CDX 200/12	0.9	1.2	62
CDXM 200/20	CDX 200/20	1.5	2	64
-	CDX 200/25	1.8	2.5	65

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