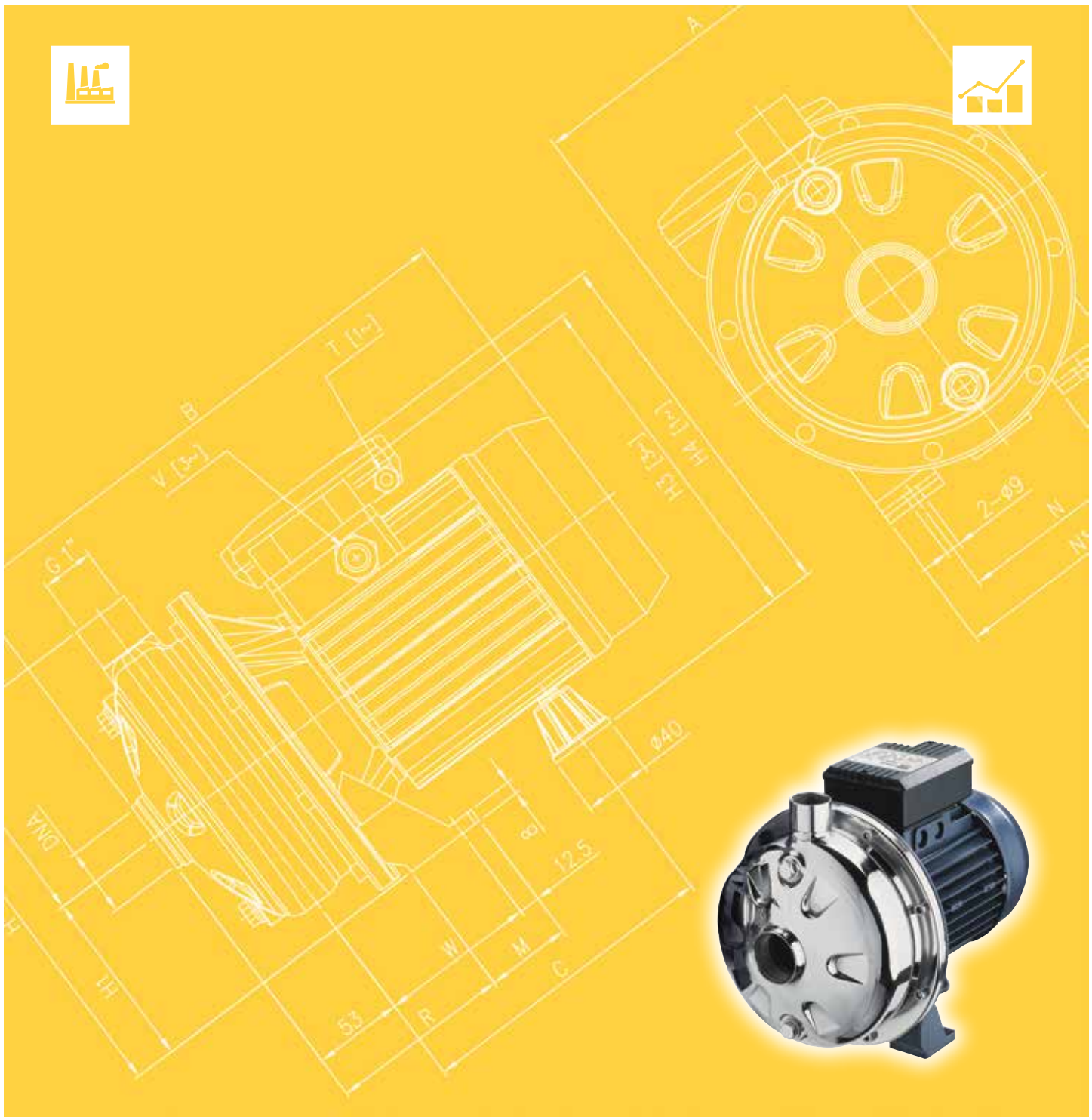




Japanese Technology since 1912

CDX

Data Book 50Hz



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SPECIFICATIONS

50Hz

Rev. Y

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
	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

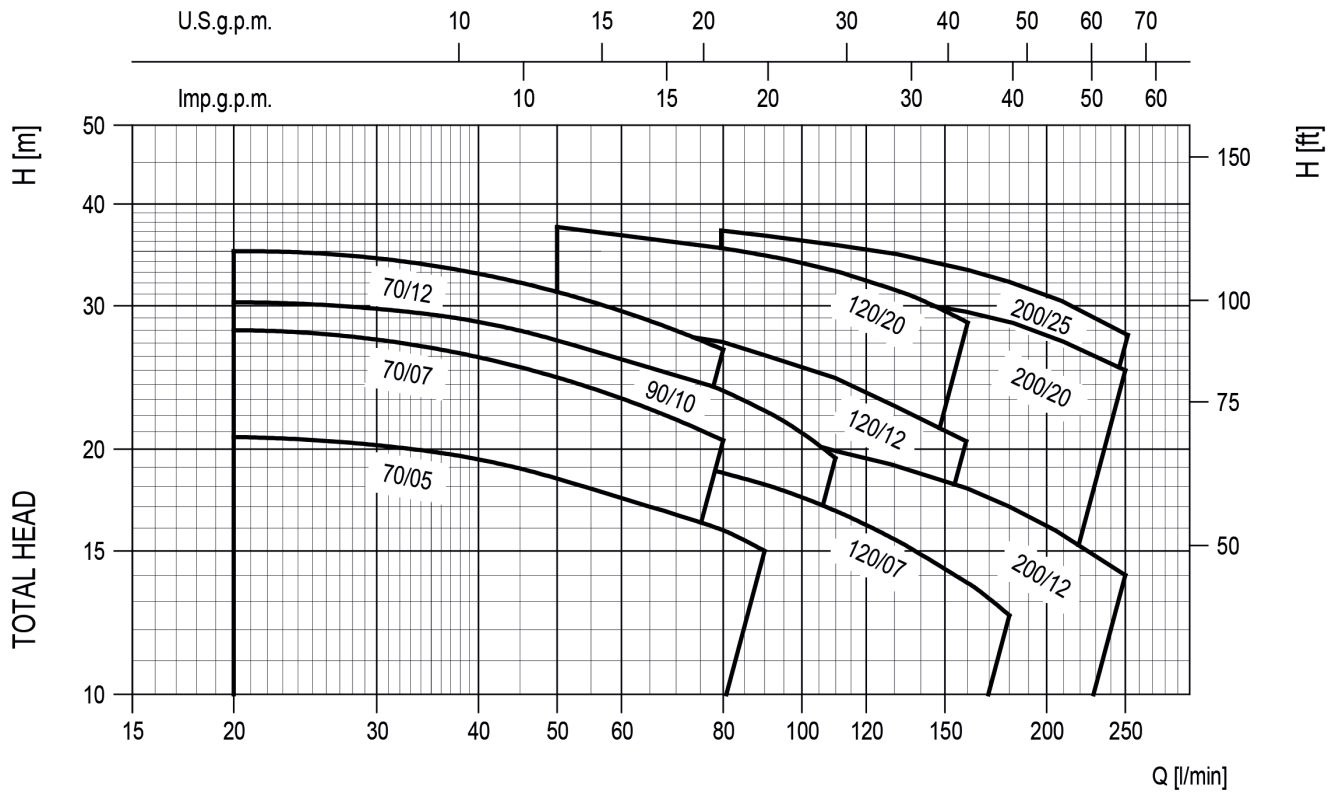
MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 1781/2019)	IE2	IE3
No. of Poles	2	
Rotation speed [min ⁻¹]	≈ 2800	
Insulation Class	F	
Protection degree (CEI EN 60034-5)	IP 55	
Power rating	[kW]	0.37 ÷ 1.5
	[HP]	0.5 ÷ 2
Frequency [Hz]	50	
Voltage [V]	230 ±10%	230/400 ±10%
Capacitor	Built in	-
Over load protection	Built in	Provided by the user
Casing material	Aluminium	
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. Y

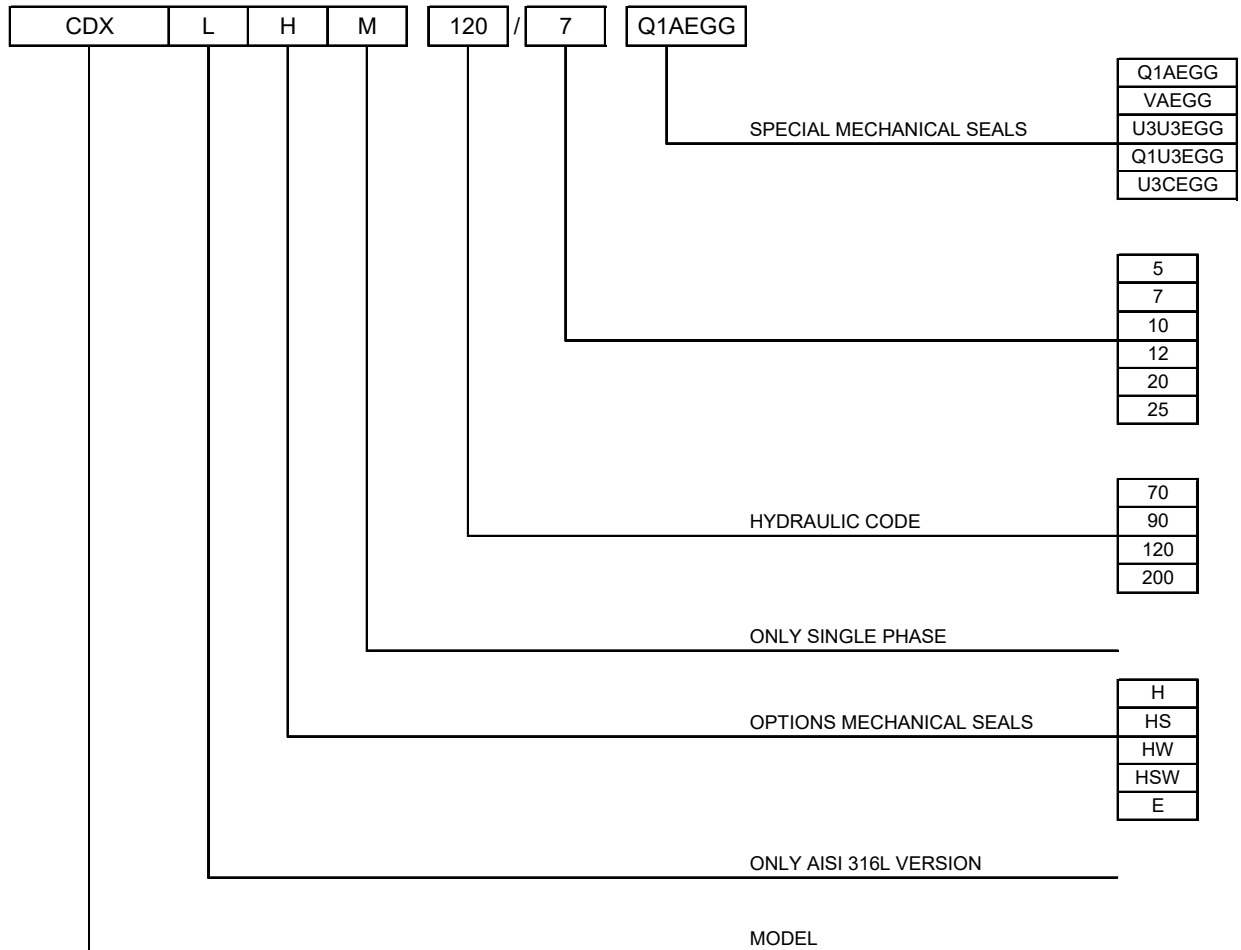
PERFORMANCE RANGE



SELECTION CHART

Pump Type		Q=Capacity											
		l/min	0	20	50	80	90	110	130	160	180	210	250
Single Phase	Three Phase	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	21,1	20,3	18,3	16,0	15,2	-	-	-	-	-	-	-
CDXM 70/07	CDX 70/07	29,7	28,1	25,5	22,4	-	-	-	-	-	-	-	-
CDXM 90/10	CDX 90/10	30,5	29,1	26,6	23,4	22,1	19,3	-	-	-	-	-	-
CDXM 120/07	CDX 120/07	23,1	-	21,1	19,7	19,2	18,2	17,1	15,2	13,8	-	-	-
CDXM 120/12	CDX 120/12	31,2	-	29,3	27,5	26,8	25,2	23,6	21,0	-	-	-	-
CDXM 120/20	CDX 120/20	40,5	-	38,5	37,2	36,8	35,8	34,7	32,7	-	-	-	-
CDXM 200/12	CDX 200/12	22,8	-	-	21,3	21,0	20,4	19,7	18,5	17,6	16,0	14,0	-
CDXM 200/20	CDX 200/20	34,5	-	-	32,6	32,3	31,7	31,0	30,0	29,2	28,0	26,2	-
-	CDX 200/25	41,0	-	-	39,1	38,8	38,0	37,3	36,0	35,0	33,4	30,9	-

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:

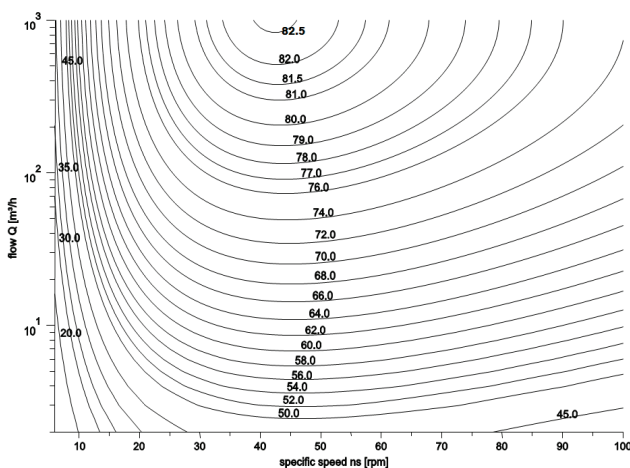
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump
- MEI = minimum efficiency index

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.

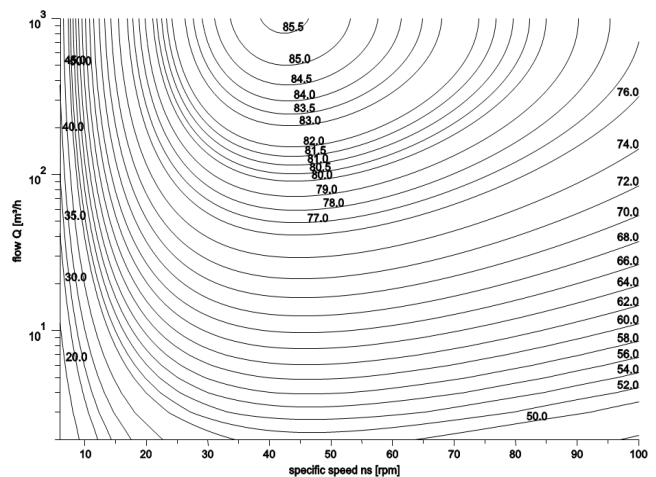
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

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

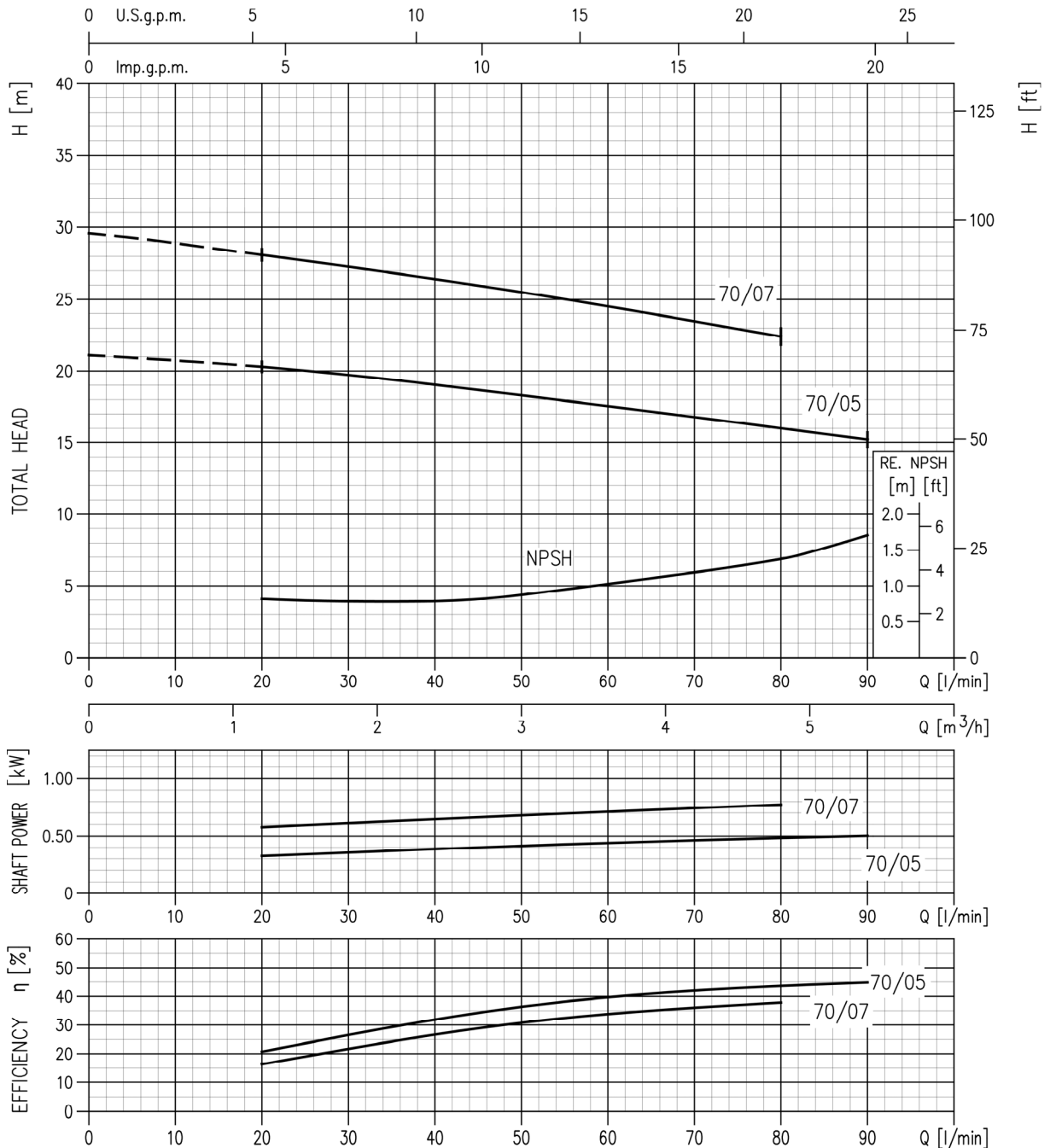
MEI = 0.4 for ESCC 2900 rpm



MEI = 0.7 for ESCC 2900rpm

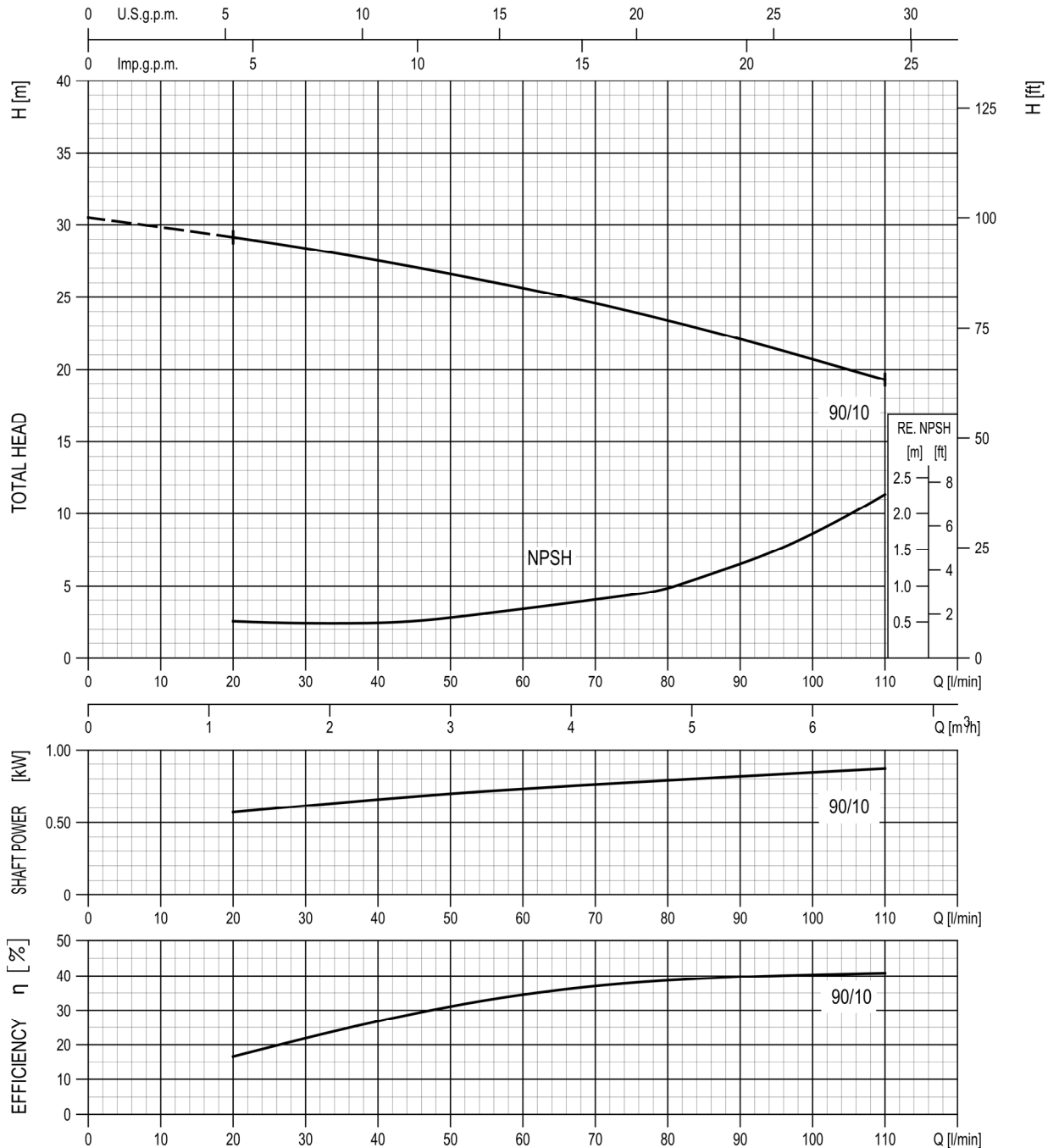


CDX 70/05 - Impeller diameter = 132 mm
 CDX 70/07 - Impeller diameter = 157 mm



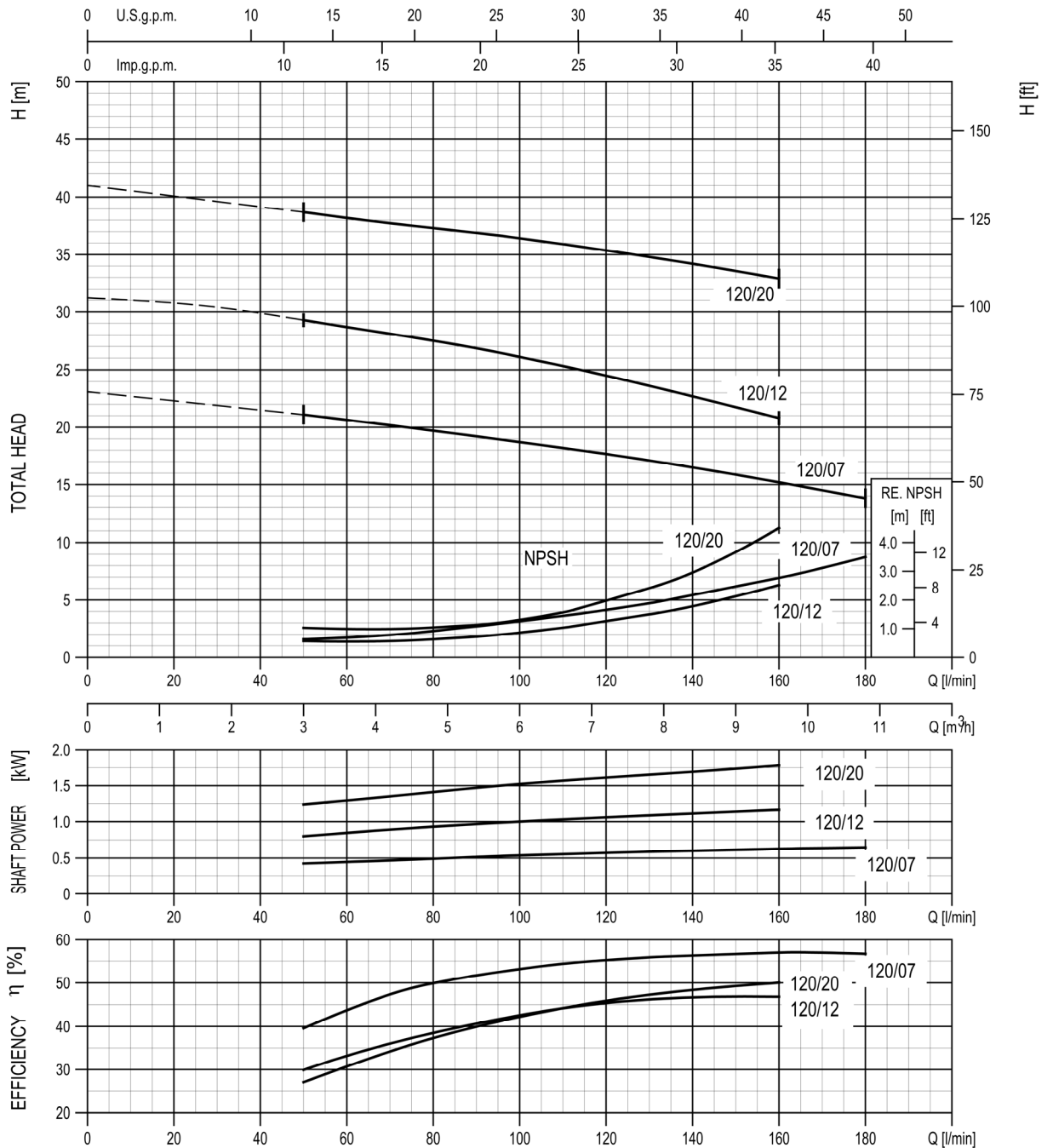
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

CDX 90/10 MEI > 0.40 - Impeller diameter = 157 mm



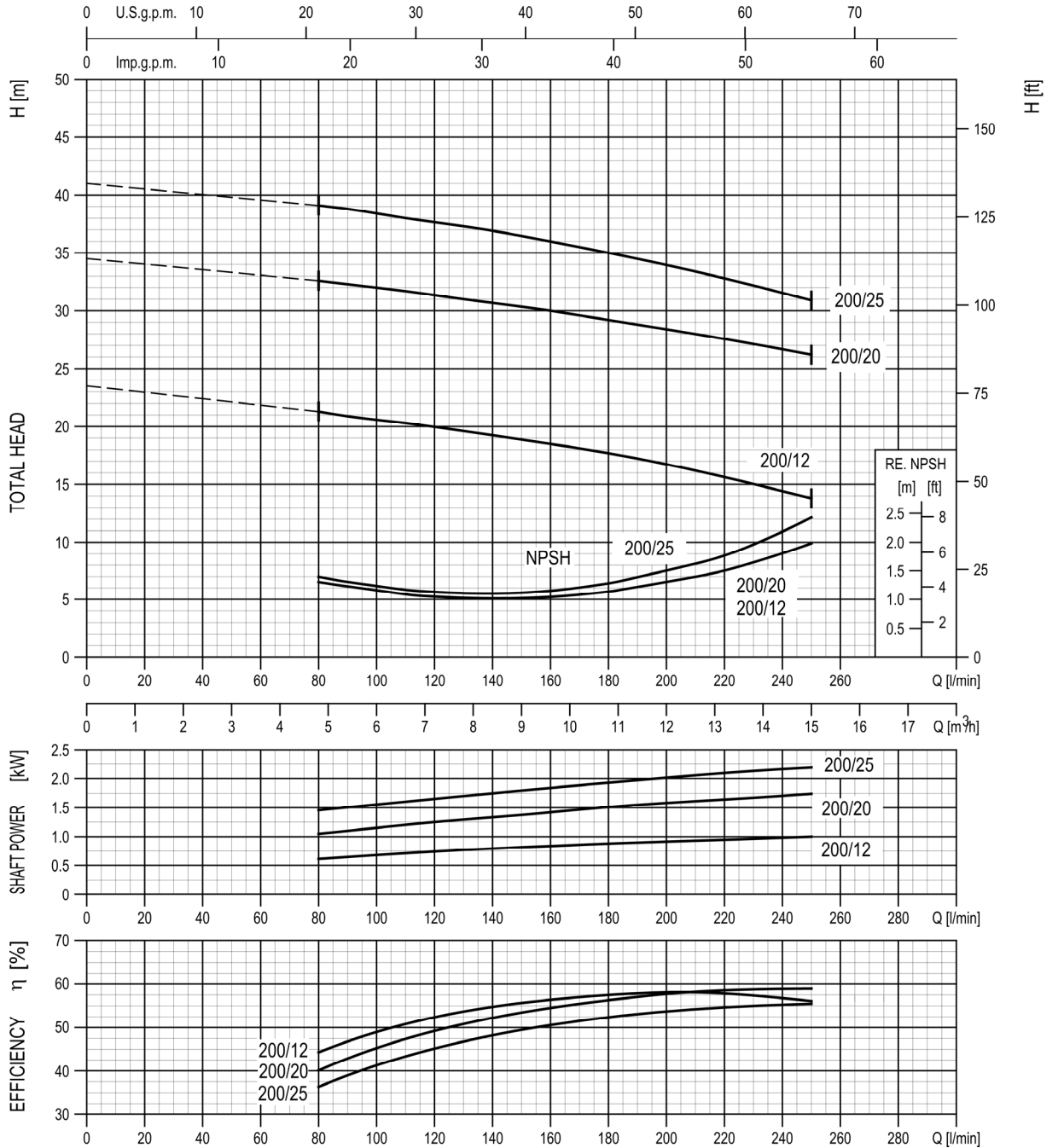
Rotation speed ≈ 2800 min⁻¹
 Test standard: ISO 9906:2012 – Grade 3B

CDX 120/07 MEI > 0.70 - Impeller diameter = 132 mm
 CDX 120/12 MEI > 0.40 - Impeller diameter = 157 mm
 CDX 120/20 MEI > 0.70 - Impeller diameter = 176 mm



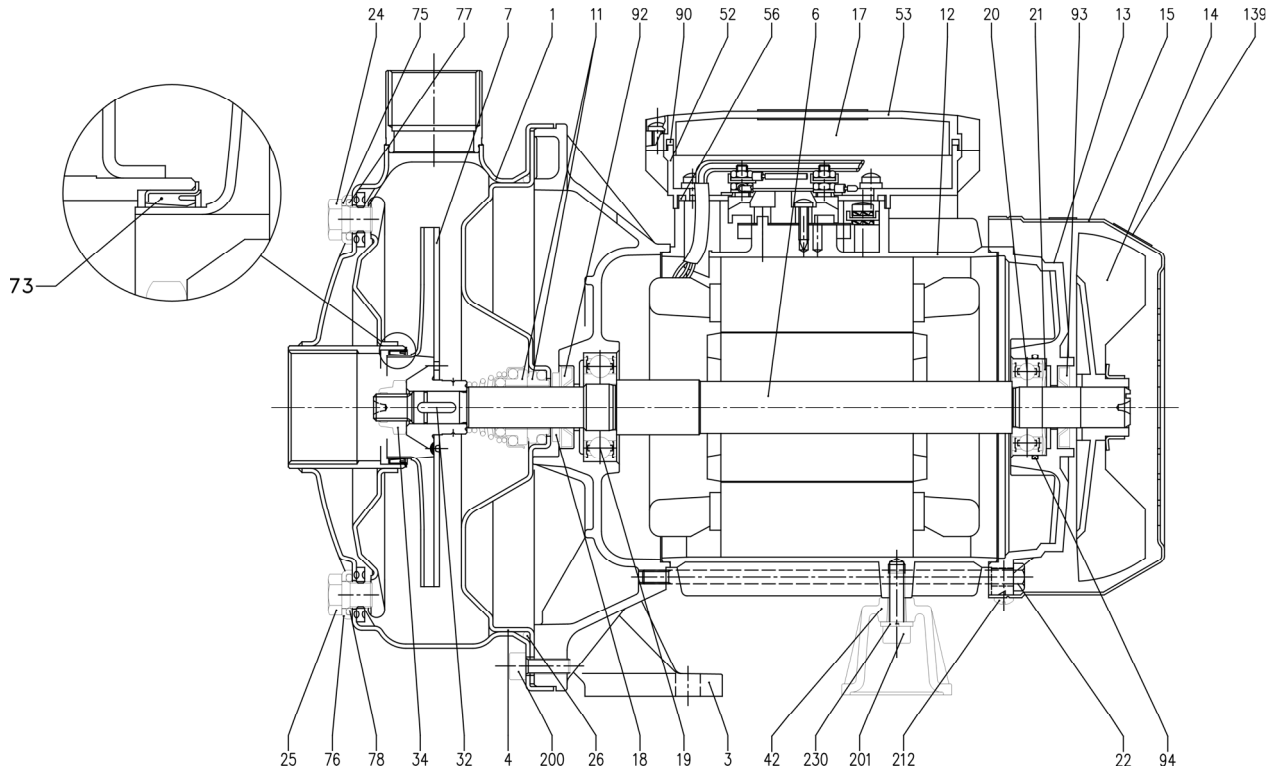
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

CDX 200/12 MEI > 0.50 - Impeller diameter = 132 mm
 CDX 200/20 MEI > 0.60 - Impeller diameter = 157 mm
 CDX 200/25 MEI > 0.50 - Impeller diameter = 176 mm



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

SECTIONAL VIEW



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]	EPDM	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
94	O-ring [7]	NBR	1
200	Screw	Stainless steel A2 UNI7323	8

[1] Only for single phase

[2] Only for three phases

[3] FPM for H-HS-HW-HSW
EPDM for E and Special Mechanical Seal

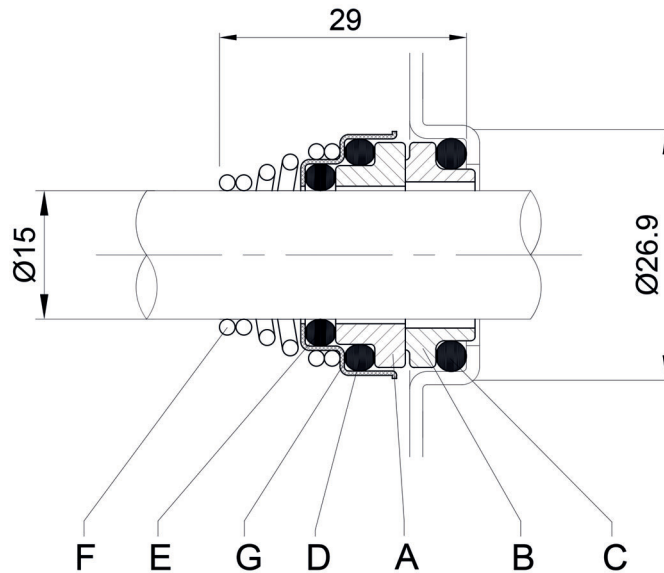
[4] FPM for H-HS-HW-HSW

[5] Only for "L" version

[6] See **MECHANICAL SEAL** pages 301-302

[7] Only for CDX 120/12; CDX 200/12; CDXM 90/10; CDXM 120/12; CDXM 200/12 models

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

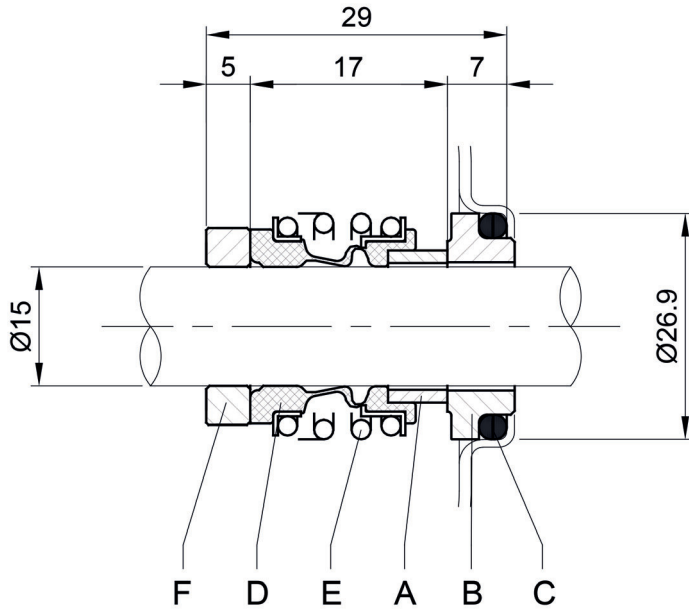
REF	PART NAME	MATERIAL			
		H	HW	HSW	E
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Ceramic
B	Stationary seal ring	Carbon graphite	Tungsten carbide	Tungsten carbide	Carbon graphite
C	O-Ring	FPM	FPM	FPM	EPDM
D	O-Ring	FPM	FPM	FPM	EPDM
E	O-Ring	FPM	FPM	FPM	EPDM
F	Self-driving spring	AISI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

OPTIONAL

SPECIAL

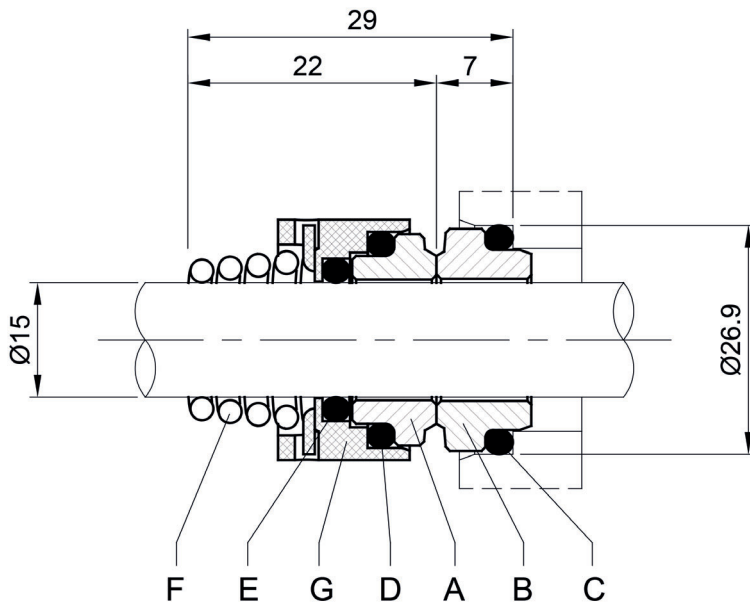
REF	PART NAME	MATERIAL			
		VAEGG	U3U3EGG	Q1U3EGG	U3CEGG
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Tungsten carbide
B	Stationary seal ring	Metallised carbon	Tungsten carbide	Tungsten carbide	special Carbon
C	O-Ring	EPDM	EPDM	EPDM	EPDM
D	O-Ring	EPDM	EPDM	EPDM	EPDM
E	O-Ring	EPDM	EPDM	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 ¹
		MIN	MAX	MIN	MAX
FLUID TEMPERATURE RANGE					

¹In 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

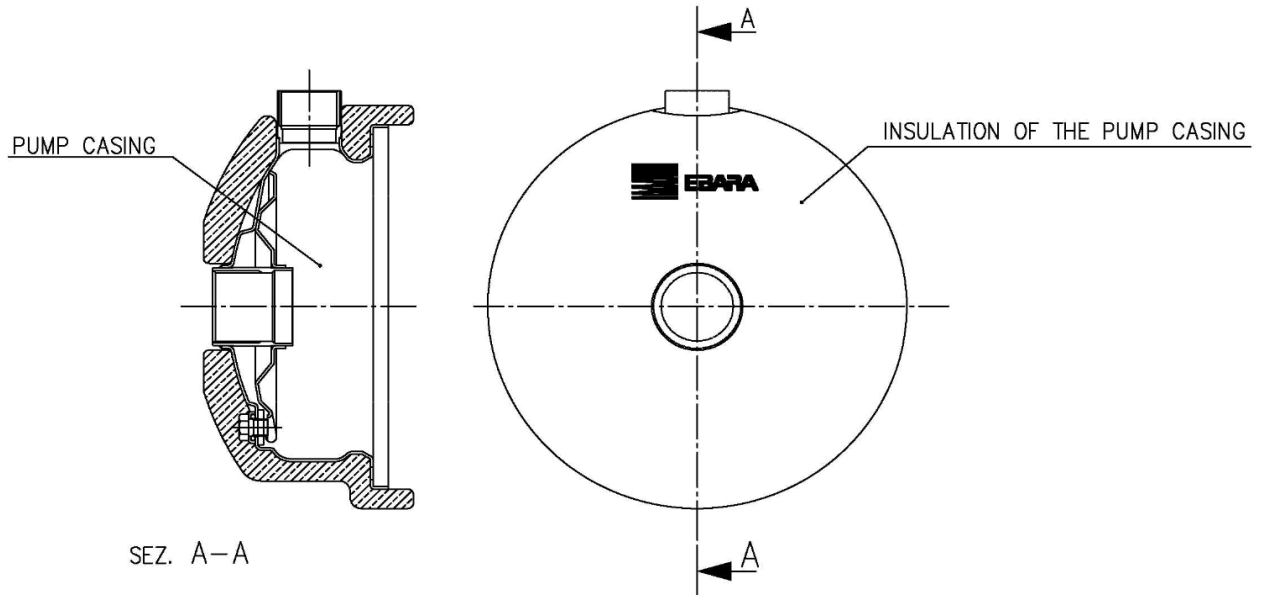
BEARINGS

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

[1~] Single phase

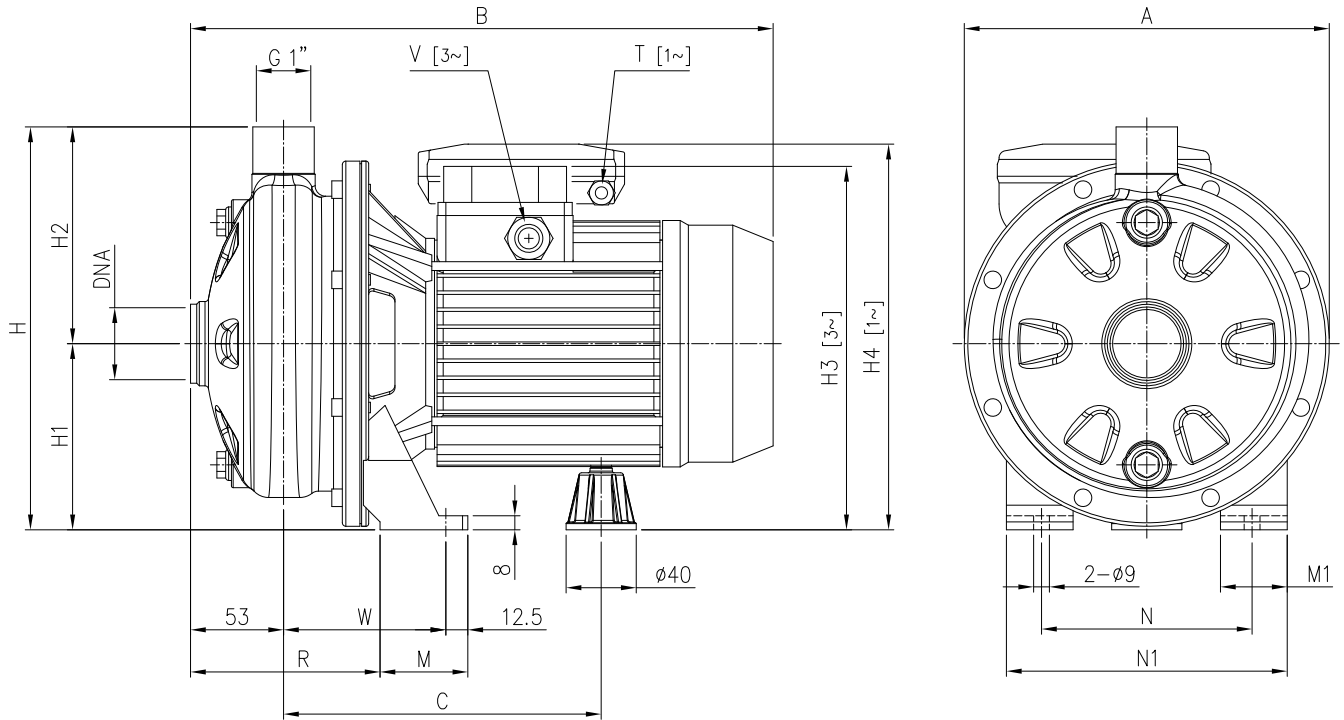
[3~] Three phase

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	

PUMP

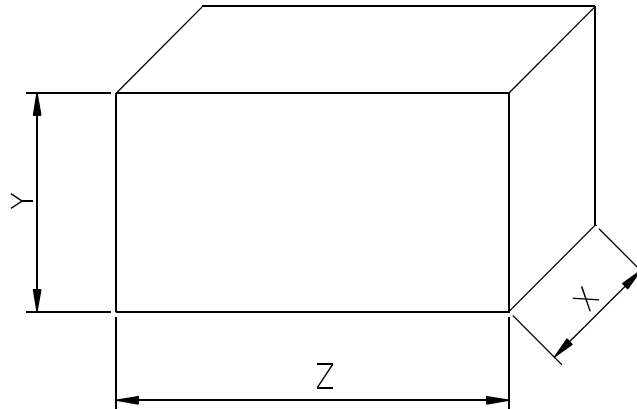


Pump type		Dimensions [mm]																		Weight [kgf]	
Single Phase	Three Phase	A	B		C	H	H1	H2	H3	H4	M	M1	N	N1	R	T	V	W	DNA	Weight [kgf]	
			[1~]	[3~]					[3~]	[1~]						[1~]	[3~]			[1~]	[3~]
CDXM 70/05	CDX 70/05	208	321	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	M16X1.5	92.5	G 1"1/4	9.0	9.1
CDXM 70/07	CDX 70/07	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	11.0	11.1
CDXM 90/10	CDX 90/10	208	333	320	181	229.5	106	123.5	207	216	50	38	120	160	108	PG11	M16X1.5	92.5	G 1"1/4	12.5	11
CDXM 120/07	CDX 120/07	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	11.0	10.1
CDXM 120/12	CDX 120/12	208	333	332	181	229.5	106	123.5	207	235	50	38	120	160	108	PG11	M16X1.5	92.5	G 1"1/4	12.5	12.4
CDXM 120/20	CDX 120/20	232	359	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	18.0	18.1
CDXM 200/12	CDX 200/12	208	333	332	181	229.5	106	123.5	207	235	50	38	120	160	108	PG13.5	M16X1.5	92.5	G 1"1/2	12.5	12.2
CDXM 200/20	CDX 200/20	208	359	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	17.0	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

PACKING



Pump type		Packing [mm]						Weight [kgf]	
Single Phase	Three Phase	X		Y		Z		[1~]	[3~]
		[1~]	[3~]	[1~]	[3~]	[1~]	[3~]		
CDXM 70/05	CDX 70/05	245	245	310	310	450	450	10	9.8
CDXM 70/07	CDX 70/07	245	245	310	310	450	450	12.5	11.9
CDXM 90/10	CDX 90/10	245	245	310	310	450	450	13.5	11.6
CDXM 120/07	CDX 120/07	245	245	310	310	450	450	12.5	11.9
CDXM 120/12	CDX 120/12	245	245	315	315	510	510	15	13.2
CDXM 120/20	CDX 120/20	245	245	315	315	510	510	19.5	18.9
CDXM 200/12	CDX 200/12	245	245	315	315	510	510	14	12.9
CDXM 200/20	CDX 200/20	245	245	315	315	510	510	18.5	17.7
-	CDX 200/25	-	245	-	315	-	510	-	17.6

[1~] Single phase

[3~] Three phase

MOTOR DATA

Pump type Single Phase	Power		Efficiency	Capacitor		Efficiency (% load)				Input [kW]	Full load current		Locked rotor current [A]
	[kW]	[HP]		[μF]	[V]	η %			cos-φ		230 V		
				50%	75%	100%							
CDXM 70/05	0.45	0.6	IE2	14	450	55.7	65.6	72.5	0.94	0.65	3.0	13.4	
CDXM 70/07	0.75	1.0	IE2	25	450	61.0	70.8	79.2	0.93	0.95	4.4	24.0	
CDXM 90/10	0.9	1.2	IE2	31.5	450	67.0	75.3	79.0	0.92	1.15	5.4	31.3	
CDXM 120/07	0.75	1.0	IE2	25	450	61.0	70.8	79.2	0.93	0.95	4.4	24.0	
CDXM 120/12	1.1	1.5	IE2	31.5	450	71.9	77.7	79.6	0.94	1.40	6.6	31.3	
CDXM 120/20	1.8	2.4	IE2	40	450	73.1	78.8	82.2	0.93	2.20	10.5	65.2	
CDXM 200/12	1.1	1.5	IE2	31.5	450	71.9	77.7	79.6	0.94	1.40	6.6	31.3	
CDXM 200/20	1.8	2.4	IE2	40	450	73.1	78.8	82.2	0.93	2.20	10.5	65.2	

Pump type Three Phase	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
CDX 70/05	0.37	0.5	IE3	75.1	78.5	78.0	0.71	2.4	1.4	12.7	7.3
CDX 70/07	0.55	0.75	IE3	80.2	82.8	82.9	0.91	3.0	1.7	20.5	11.8
CDX 90/10	0.75	1.0	IE3	80.9	82.3	82.1	1.05	3.3	1.9	19.7	11.4
CDX 120/07	0.55	0.75	IE3	80.2	82.8	82.9	0.91	3.0	1.7	20.5	11.8
CDX 120/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6
CDX 120/20	1.5	2.0	IE3	84.2	86.8	86.9	2.01	7.1	4.1	66.6	38.4
CDX 200/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6
CDX 200/20	1.5	2.0	IE3	84.2	86.8	86.9	2.01	7.1	4.1	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		L _{pA} - dB(A) *
Single Phase	Three Phase	
CDXM 70/05	CDX 70/05	61
CDXM 70/07	CDX 70/07	
CDXM 90/10	CDX 90/10	
CDXM 120/07	CDX 120/07	62
CDXM 120/12	CDX 120/12	
CDXM 120/20	CDX 120/20	
CDXM 200/12	CDX 200/12	64
CDXM 200/20	CDX 200/20	62
CDXM 200/20	CDX 200/20	64
-	CDX 200/25	65

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



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