
EBARA

CONTENTS

60Hz

Rev. G

SPECIFICATION 60Hz

Rev. G

PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. -5 max. +60 (CDX 70/076-70/106-70/156) max. +90 max. +110 (H-HS-HW-HSW) max. +120 (E)
Maximum working pressure		[MPa]	0.8
Construction	Impeller		Closed centrifugal type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction	[inch]	from G 1¼ to G 1½ UNI ISO 228-1
	Discharge	[inch]	G 1 UNI ISO 228-1
Material	Casing		EN 1.4301 (AISI 304) - (AISI 316 only for "L" version)
	Impeller		EN 1.4301 (AISI 304) - (AISI 316 only for "L" version)
	Casing cover		EN 1.4301 (AISI 304) - (AISI 316 only for "L" version)
	Shaft seal		Ceramic/Carbon/NBR (for special versions see page 301)
	Shaft		AISI 303 / AISI 316 (Wet extension)
	Bracket		Aluminium
Applicable standard of test			ISO 9906 – Annex A

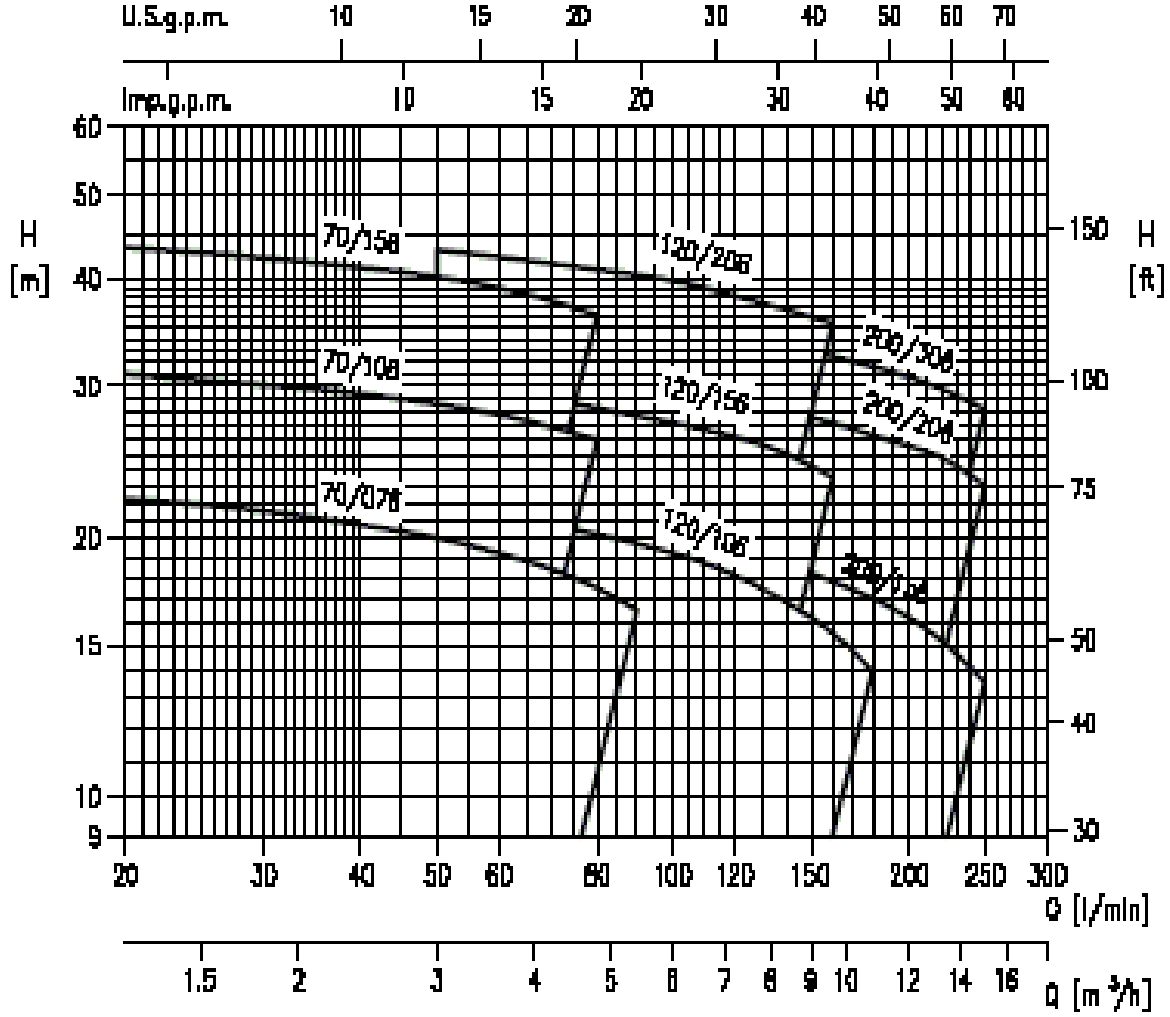
MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level		-	- 0.55 kW - from 0.75 kW up to 2.2 kW IE3* from 0.75 kW up to 2.2 kW
No. of Poles		2	
Rotation speed	[min^{-1}]	≈ 3450	
Insulation Class		F	
Protection degree (CEI EN 60034-5)		IP 55	
Power rating	[kW]	0.55 ÷ 1.5	0.55 ÷ 2.2
	[HP]	0.75 ÷ 2.0	0.75 ÷ 3.0
Frequency	[Hz]	60	
Voltage	[V]	110-115 ±6% 220-230 ±6%	220/380-460 -6% +10% (0.55 kW) 220/380-460 ±10% (IE3* from 0.75 kW up to 2.2 kW)
Capacitor		Built in	-
Over load protection		Built in	Provided by the user
Casing material		Aluminium	
Base material / Motor support		Aluminium	
Dimensions of cable entry		PG 11 - PG 13.5 - M16x1.5 - M20x1.5 (see dimensions page 400)	

* only for 460 V

SELECTION CHART

60Hz

Rev. G

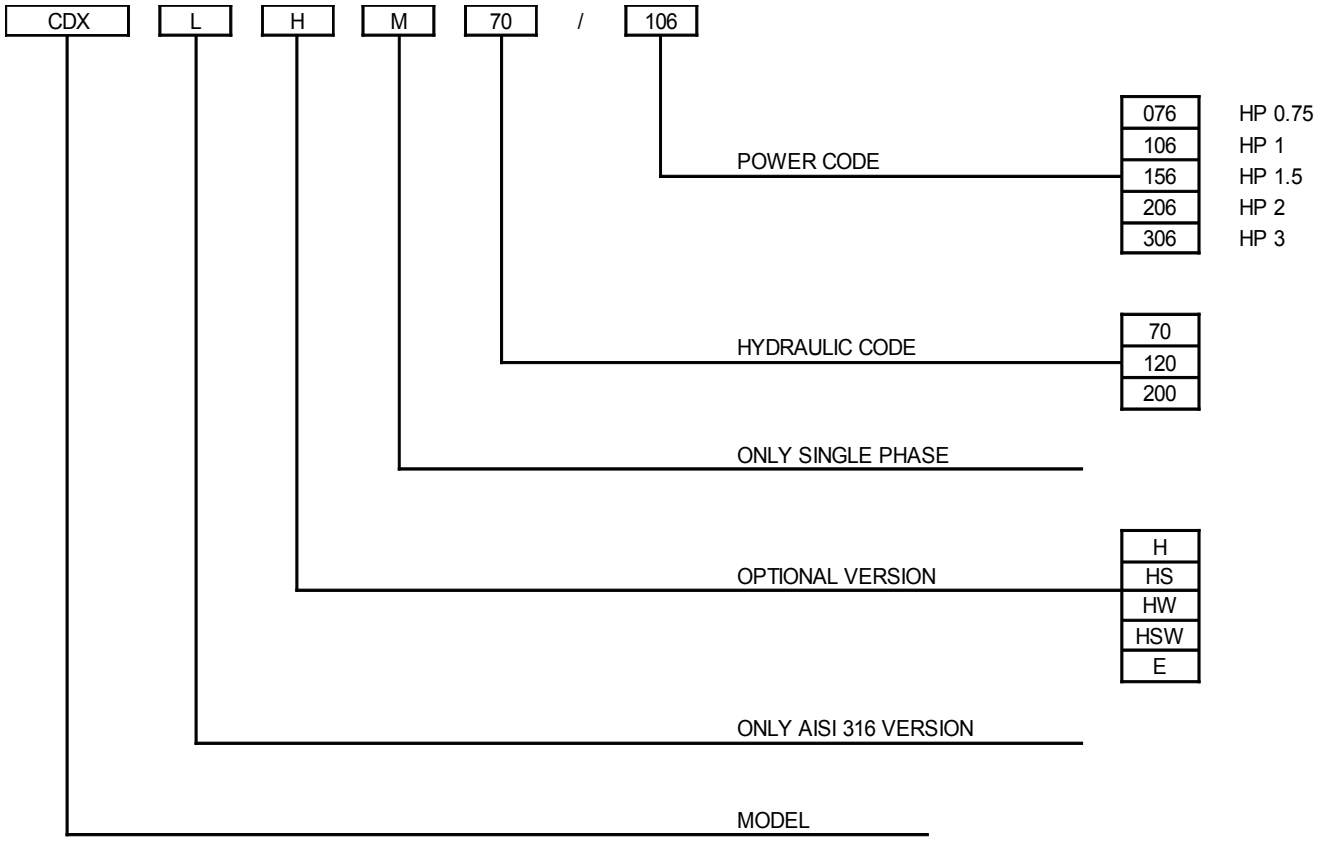


Pump type		Power		Q=Capacity											
				l/min	0	20	50	80	90	120	140	160	180	220	250
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	1,2	3	4,8	5,4	7,2	8,4	9,6	10,8	13,2	15
				H=Total manometric head in meters											
CDXM 70/076	CDX 70/076	0,55	0,75		23,5	22,2	20	17,5	16,5	-	-	-	-	-	-
CDXM 70/106	CDX 70/106	0,75	1		32,3	31	28,6	26	-	-	-	-	-	-	-
CDXM 70/156	CDX 70/156	1,1	1,5		44,5	43,5	40,2	36,3	-	-	-	-	-	-	-
CDXM 120/106	CDX 120/106	0,75	1		23,8	-	21,8	20,2	19,7	18,1	16,8	15,5	14	-	-
CDXM 120/156	CDX 120/156	1,1	1,5		32	-	29,8	28,3	27,7	26,2	25	23,5	-	-	-
CDXM 120/206	CDX 120/206	1,5	2		45,5	-	43,2	41	40,4	38,2	36,8	35,5	-	-	-
CDXM 200/156	CDX 200/156	1,1	1,5		23,3	-	-	20,8	20,4	19,4	18,6	17,8	17	15,2	13.5
CDXM 200/206	CDX 200/206	1,5	2		32	-	-	30	29,5	28,6	27,9	27,2	26,3	24,6	23
-	CDX 200/306	2,2	3		38,8	-	-	35,5	35,1	34	33,3	32,5	31,6	29,8	28.3

TYPE KEY AND CURVE SPECIFICATIONS 60Hz

Rev. G

TYPE KEY



PERFORMANCE CURVE SPECIFICATIONS

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

Tolerances according to ISO 9906 Annex A
The curves refer to effective speed of asynchronous motors at 60 Hz
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of ν = 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:

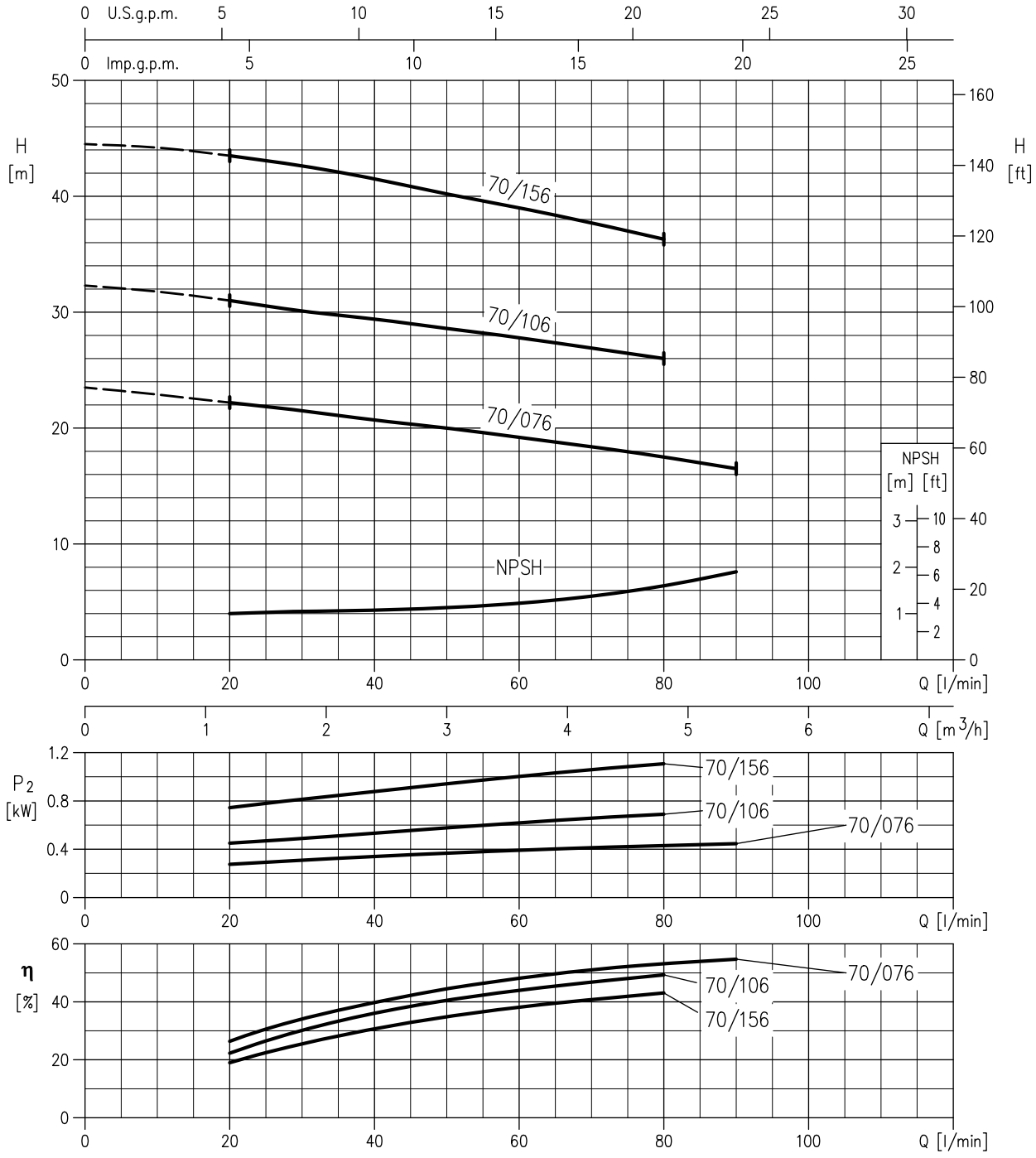
Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
NPSH	=	net positive suction head required by the pump

PERFORMANCE CURVE

60Hz

Rev. G

CDX 70/076 (0.55 kW) - Impeller diameter = 115 mm
CDX 70/106 (0.75 kW) - Impeller diameter = 132 mm
CDX 70/156 (1.1 kW) - Impeller diameter = 157 mm

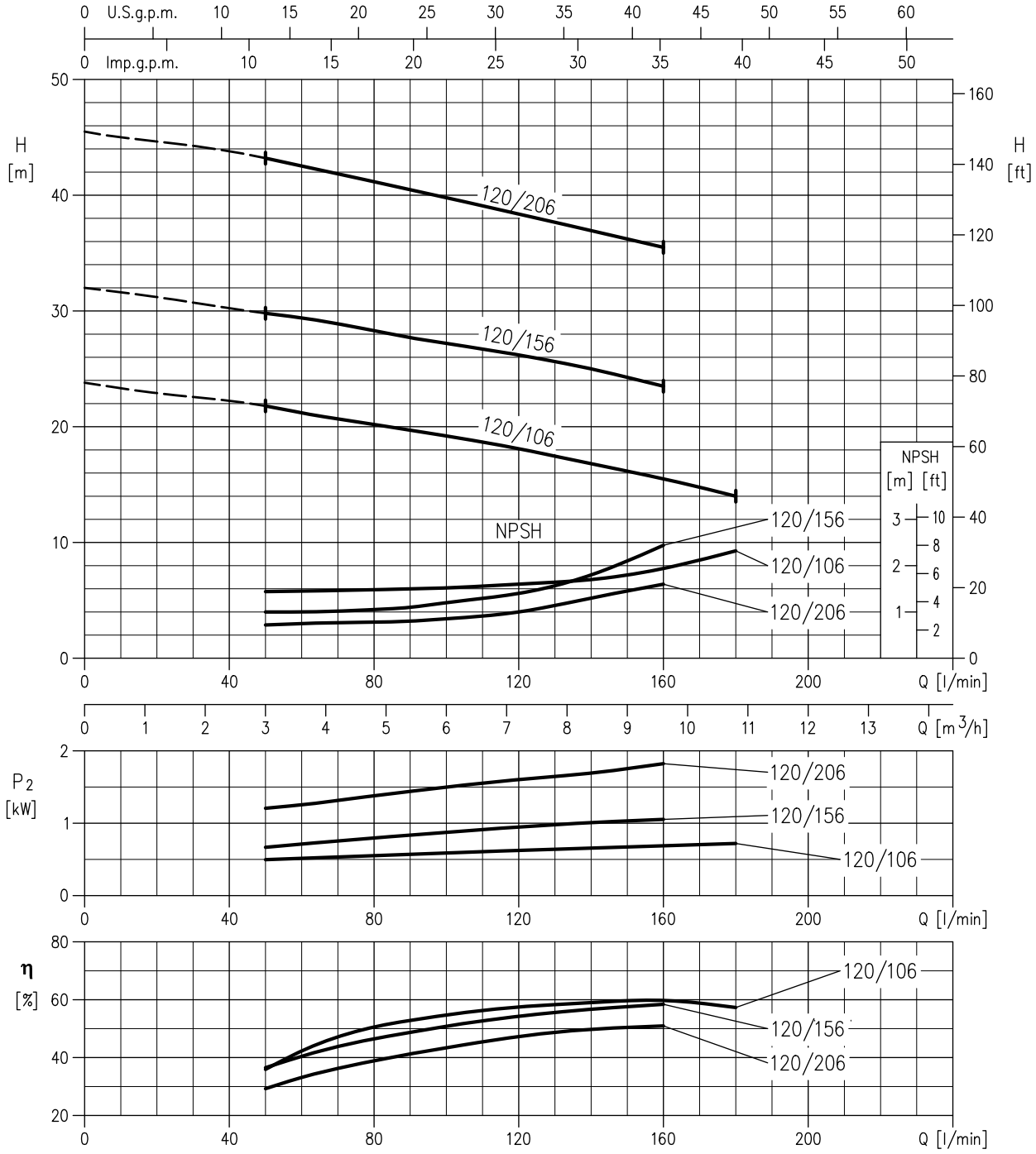


Rotation speed ≈ 3450 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE 60Hz

Rev. G

CDX 120/106 (0.75 kW) - Impeller diameter = 115 mm
CDX 120/156 (1.1 kW) - Impeller diameter = 132 mm
CDX 120/206 (1.5 kW) - Impeller diameter = 157 mm



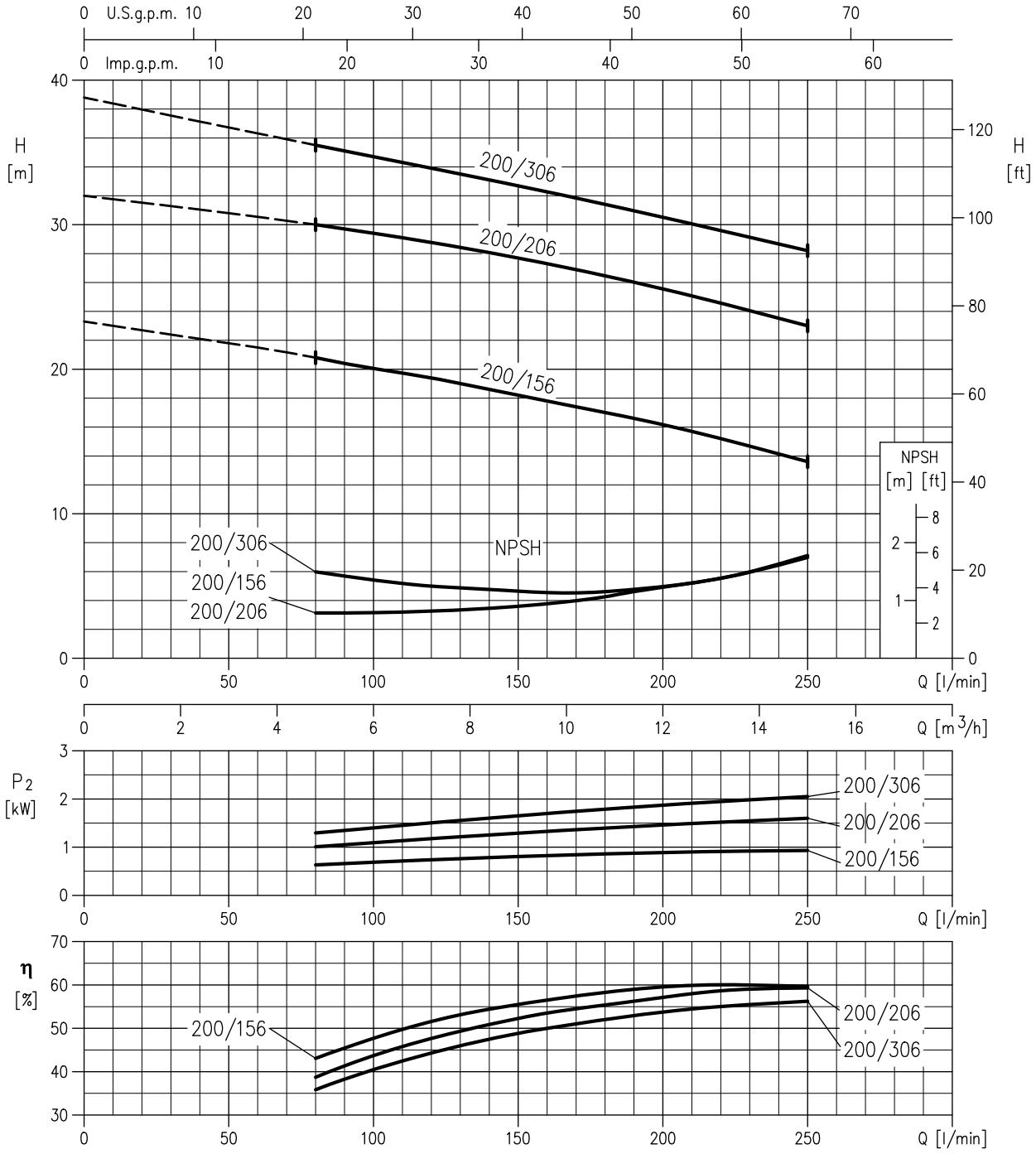
Rotation speed ≈ 3450 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

60Hz

Rev. G

CDX 200/156 (1.1 kW) - Impeller diameter = 115 mm
CDX 200/206 (1.5 kW) - Impeller diameter = 132 mm
CDX 200/306 (2.2 kW) - Impeller diameter = 144 mm

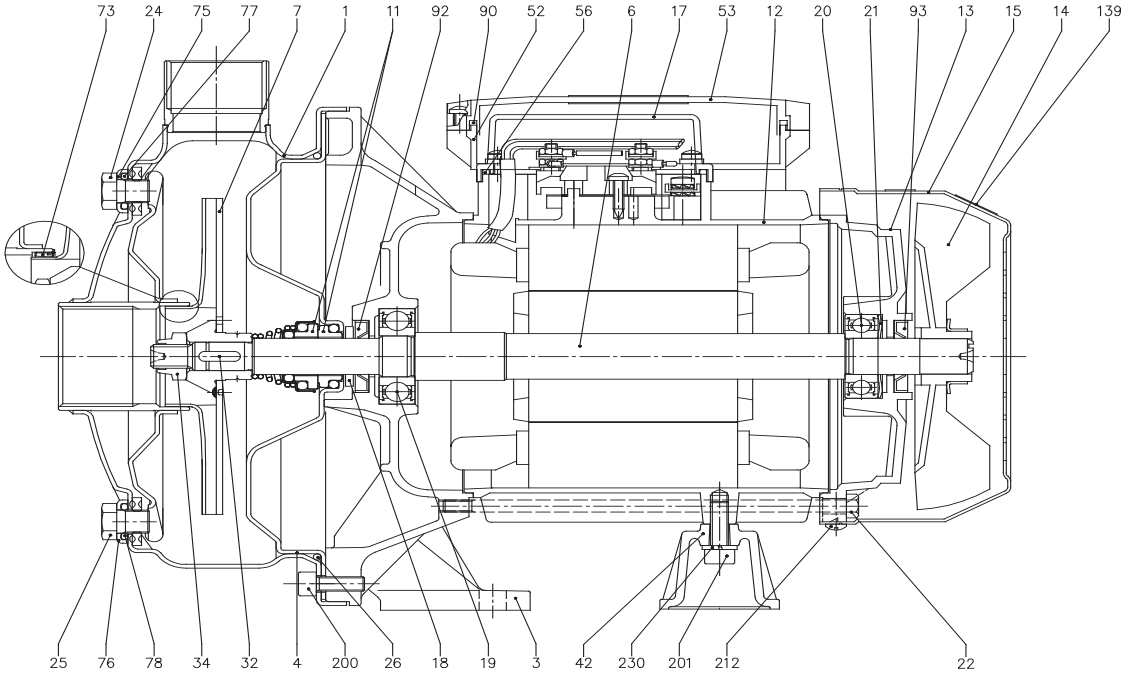


Rotation speed ≈ 3450 min^{-1}
Test standard: ISO 9906 – Annex A

CONSTRUCTION 60Hz

Rev. G

SECTIONAL VIEW



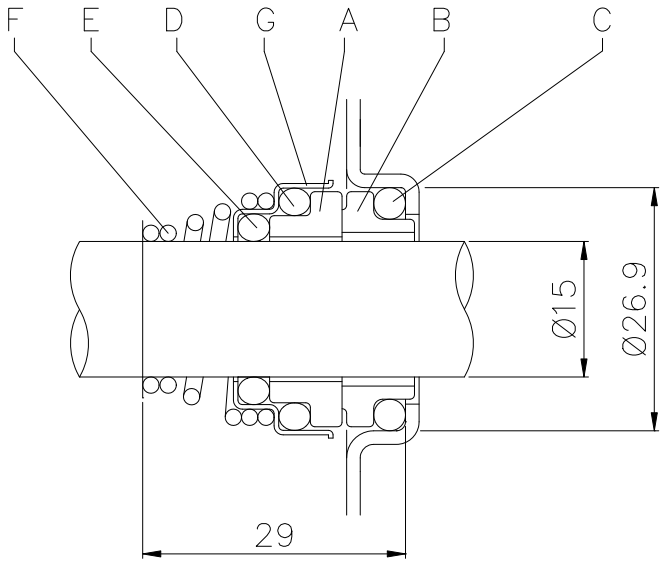
N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304 / AISI 316 [7]	1	25	Drain plug	AISI 303 / AISI 316 [7]	1
3	Motor bracket	Aluminium	1	26	O-ring [3]	NBR	1
4	Casing cover	AISI 304 / AISI 316 [7]	1	32	Key	AISI 316	1
6	Shaft with rotor	AISI 303 / AISI 316 [8] (Wet extension)	1	34	Impeller nut	AISI 304 / AISI 316 [7]	1
7	Impeller	AISI 304 / AISI 316 [7]	1	42	Motor support	Aluminium	1
11	Mechanical seal [3]	Carbon/Ceramic/NBR	1	52	Terminal box [1]	ABS class V0	1
12	Motor frame with stator	-	1	53	Terminal box cover [5]	ABS class V0	1
13	Motor cover	Aluminium	1	56	Box gasket	NBR	1
14	Fan	PA	1	73	Casing ring [4]	AISI 304 / AISI 316 [7]	1
15	Fan cover	Fe P04 Zincate	1	75	Washer	AISI 304	1
16	Terminal board	-	1	76	Washer	AISI 304	1
17	Terminal box cover [2]	Aluminium	1	77	O-ring [3]	NBR	1
18	Splash ring	NBR	1	78	O-ring [3]	NBR	1
19	Pump side ball bearing	-	1	90	Terminal box cover gasket [6]	NBR	1
20	Fan side ball bearing	-	1	92	Lip seal	-	1
21	Adjusting ring	Steel C70	1	93	Lip seal	-	1
22	Tie rod	Fe 420 Zincate	4	110	Protector [1]	-	1
23	Capacitor [1]	-	1	200	Screw	Stainless steel A2 UNI7323	8
24	Priming plug	AISI 303 / AISI 316 [7]	1				

[1] Only for single phase
[2] Only for three phase
[3] FPM for CDX H-HS-HW-HSW
EPDM for CDX E
[4] NBR for CDX 70/076-70/106-70/156
FPM for CDX H-HS-HW-HSW of the CDX 70/076-70/106-70/156
[5] Whit gasket in NBR only for version single phase CDXM 70/076, 70/106, 70/156, 120/106, 120/156, 200/156
[6] Only for version single phase CDXM 120/206, 200/206
[7] Only for “L” version

CONSTRUCTION 60Hz

Rev. G

MECHANICAL SEAL



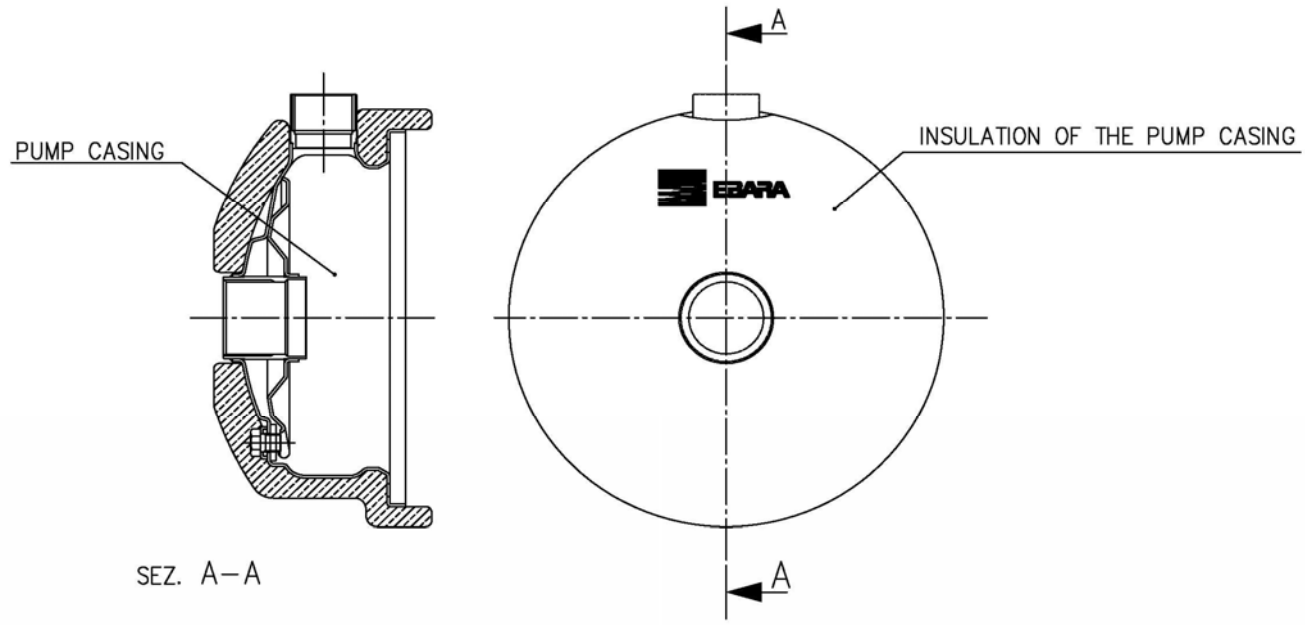
REF	PART NAME	MATERIAL					
		Standard version	Optional				
		(CDX)	(CDXH)	(CDXHS)	(CDXHW)	(CDXHSW)	(CDXE)
A	Rotary seal ring	Ceramic	Ceramic	Silicon carbide	Tungsten carbide	Silicon carbide	Ceramic
B	Stationary seal ring	Carbon graphite	Carbon graphite	Silicon carbide	Tungsten carbide	Tungsten carbide	Carbon graphite
C	O Ring	NBR	FPM	FPM	FPM	FPM	EPDM
D	O Ring	NBR	FPM	FPM	FPM	FPM	EPDM
E	O Ring	NBR	FPM	FPM	FPM	FPM	EPDM
F	Self driving spring	AISI 316	AISI 316	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 304	AISI 304	AISI 316	AISI 316	AISI 316	AISI 316

BEARINGS

Pump type		Ball Bearing			
Single Phase	Three Phase	Pump side	(*) Pump side	Fan side	(*) Fan side
CDXM 70/076	CDX 70/076	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 70/106	CDX 70/106	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 70/156	CDX 70/156	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/106	CDX 120/106	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/156	CDX 120/156	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 120/206	CDX 120/206	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
CDXM 200/156	CDX 200/156	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDXM 200/206	CDX 200/206	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
-	CDX 200/306	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3

(*) Only for IE3 Motors

THERMAL INSULATION



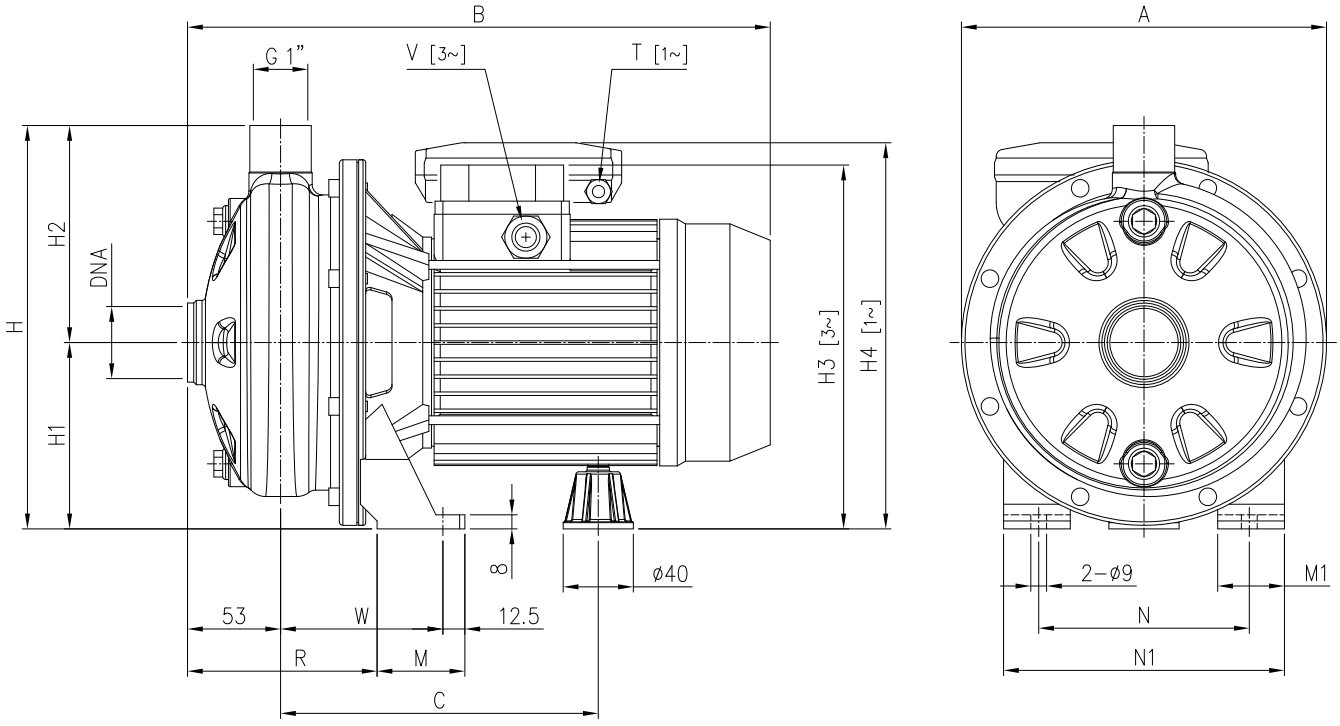
Pump type	INSULATION OF THE PUMP CASING
CDX 70/076	ON REQUEST
CDX 70/106	
CDX 70/156	
CDX 120/106	
CDX 120/156	
CDX 120/206	
CDX 200/156	
CDX 200/206	
CDX 200/306	

DIMENSIONS AND WEIGHT

60Hz

Rev. G

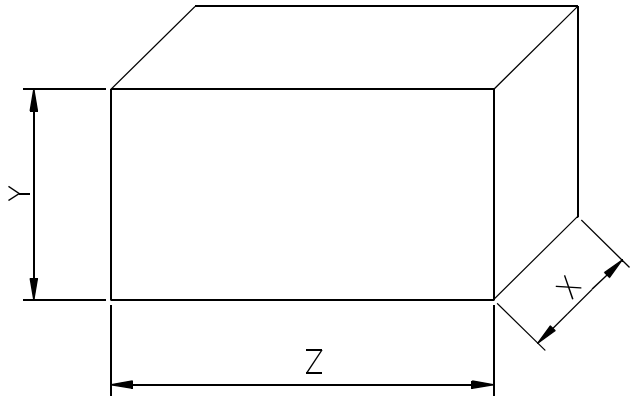
PUMP



Pump type	Dimensions [mm]																				Weight [kgf]		
CDXM CDX	A	B			C	H	H1	H2	H3	H4	M	M1	N	N1	R	T	V		W	DNA			
		[1~]	[3~]	(*) [3~]					[3~]	[1~]						[1~]	[3~]	(*) [3~]			[1~]	[3~]	(*) [3~]
70/076	208	321	320	-	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	-	92,5	G 1"¼	8,5	8	-
70/106	208	321	320	320	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	M16x1.5	92,5	G 1"¼	9,5	10	10
70/156	208	321	332	332	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	M16x1.5	92,5	G 1"¼	11,7	13	13
120/106	208	321	320	320	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	M16x1.5	92,5	G 1"¼	9,5	10	10
120/156	208	321	332	332	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	M16x1.5	92,5	G 1"¼	11,7	12	12
120/206	208	347	359	372	198,5	229,5	106	123,5	225	249	55	40	140	180	105,5	PG 13.5	PG 11	M20x1.5	95	G 1"¼	15,3	15	15
200/156	208	321	320	320	181	229,5	106	123,5	207	216	50	38	120	160	108	PG 11	PG 11	M16x1.5	92,5	G 1"½	11	11	11
200/206	208	347	359	372	198,5	229,5	106	123,5	225	237	55	40	140	180	105,5	PG 13.5	PG 11	M20x1.5	95	G 1"½	15	16	17
200/306	232	-	359	372	198,5	250	118	132	237	-	55	40	140	180	105,5	-	PG 11	M20x1.5	95	G 1"½	-	17	18

[1~] = Single phase
[3~] = Three phase
(*) Only for IE3 Motors

PACKING



Type pumps		Packing [mm]						Weight [kgf]		
		X		Y		Z				(*)
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]	[3~]
CDXM 70/076	CDX 70/076	247	247	289	289	402	402	9	9	-
CDXM 70/106	CDX 70/106	247	247	289	289	402	402	10	10	10
CDXM 70/156	CDX 70/156	247	247	289	289	402	402	12	13	13
CDXM 120/106	CDX 120/106	247	247	289	289	402	402	10	10	10
CDXM 120/156	CDX 120/156	247	247	289	289	402	402	12	13	13
CDXM 120/206	CDX 120/206	244	244	308	308	452	452	16	15	15
CDXM 200/156	CDX 200/156	244	244	308	308	452	452	12	11	11
CDXM 200/206	CDX 200/206	244	244	308	308	452	452	16	16	17
-	CDX 200/306	-	244	-	308	-	452	-	18	19

[1~] Single phase
[3~] Three phase
(*) Only for IE3 Motors

MOTOR DATA

Pump type		Power		Efficiency		Capacitor				Efficiency (% load) Three phase (380 V) η %			Efficiency (% load) Three phase (460 V) η %			Input [kW]		Full load current [A]					Locked rotor current [A]				
						110-115 V		220-230 V										Single Phase		Three Phase			Single Phase		Three Phase		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	[µF]	[V]	[µF]	[V]	50%	75%	100%	50%	75%	100%	Single Phase	Three Phase	110-115 V	220-230 V	220 V	380 V	460 V	110-115 V	220-230 V	220 V	380 V	460 V
CDXM 70/076	CDX 70/076	0.55	0.75	-	-	45	250	12.5	450	-	-	-	-	-	-	0.70	0.74	7.5	3.4	2.0	1.2	1.2	28.1	15.0	9.6	5.5	6.4
CDXM 70/106	CDX 70/106	0.75	1.0	-	-	60	250	14	450	-	-	-	-	-	-	1.05	0.97	9.4	5.1	2.9	1.7	1.6	48.8	22.0	15.0	8.5	13.0
CDXM 70/156	CDX 70/156	1.1	1.5	-	-	-	-	25	450	80.7	82.3	81.5	77.9	81.7	82.7	1.56	1.50	-	7.5	3.8	2.2	2.2	-	35.0	28.8	16.6	19.1
-	CDX 70/156	1.1	1.5	-	IE3*	-	-	-	-	84.8	84.5	82.7	82.0	84.4	84.5	-	1.30	-	-	4.0	2.3	2.2	-	-	24.6	14.2	17.2
CDXM 120/106	CDX 120/106	0.75	1.0	-	-	60	250	14	450	-	-	-	-	-	-	1.06	0.99	10.4	5.2	2.9	1.7	1.7	48.8	22.0	15.0	8.5	13.0
CDXM 120/156	CDX 120/156	1.1	1.5	-	-	-	-	25	450	80.7	82.3	81.5	77.9	81.7	82.7	1.50	1.50	-	7.2	3.8	2.2	2.2	-	35.0	28.8	16.6	19.1
-	CDX 120/156	1.1	1.5	-	IE3*	-	-	-	-	84.8	84.5	82.7	82.0	84.4	84.5	-	1.30	-	-	4.0	2.3	2.2	-	-	24.6	14.2	17.2
CDXM 120/206	CDX 120/206	1.5	2.0	-	-	-	-	35	450	82.4	83.0	82.2	79.5	82.9	83.8	2.34	2.90	-	11.3	8.1	4.7	4.3	-	69.0	54.4	31.4	38
-	CDX 120/206	1.5	2.0	-	IE3*	-	-	-	-	88.9	88.8	87.2	86.3	88.5	88.4	-	2.48	-	-	7.5	4.3	4.1	-	-	55.7	32.2	38.93
CDXM 200/156	CDX 200/156	1.1	1.5	-	-	-	-	20	450	77.2	79.5	79.3	76.6	80.9	82.3	1.35	1.00	-	6.6	2.9	1.7	1.6	-	32.0	20.6	11.9	13.6
-	CDX 200/156	1.1	1.5	-	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
CDXM 200/206	CDX 200/206	1.5	2.0	-	-	-	-	35	450	82.4	83.0	82.2	79.5	82.9	83.8	2.06	2.90	-	10.0	8.1	4.7	4.3	-	69.0	54.4	31.4	38
-	CDX 200/206	1.5	2.0	-	IE3*	-	-	-	-	88.9	88.8	87.2	86.3	88.5	88.4	-	2.48	-	-	7.5	4.3	4.1	-	-	55.7	32.2	38.93
-	CDX 200/306	2.2	3.0	-	-	-	-	-	-	82.4	83.0	82.2	79.5	82.9	83.8	-	2.90	-	-	8.1	4.7	4.3	-	-	54.4	31.4	38
-	CDX 200/306	2.2	3.0	-	IE3*	-	-	-	-	88.9	88.8	87.2	86.3	88.5	88.4	-	2.48	-	-	7.5	4.3	4.1	-	-	55.7	32.2	38.93

*only for 460 V