
EBARA

CONTENTS

50Hz

Rev. H

SPECIFICATION 50Hz

Rev. H

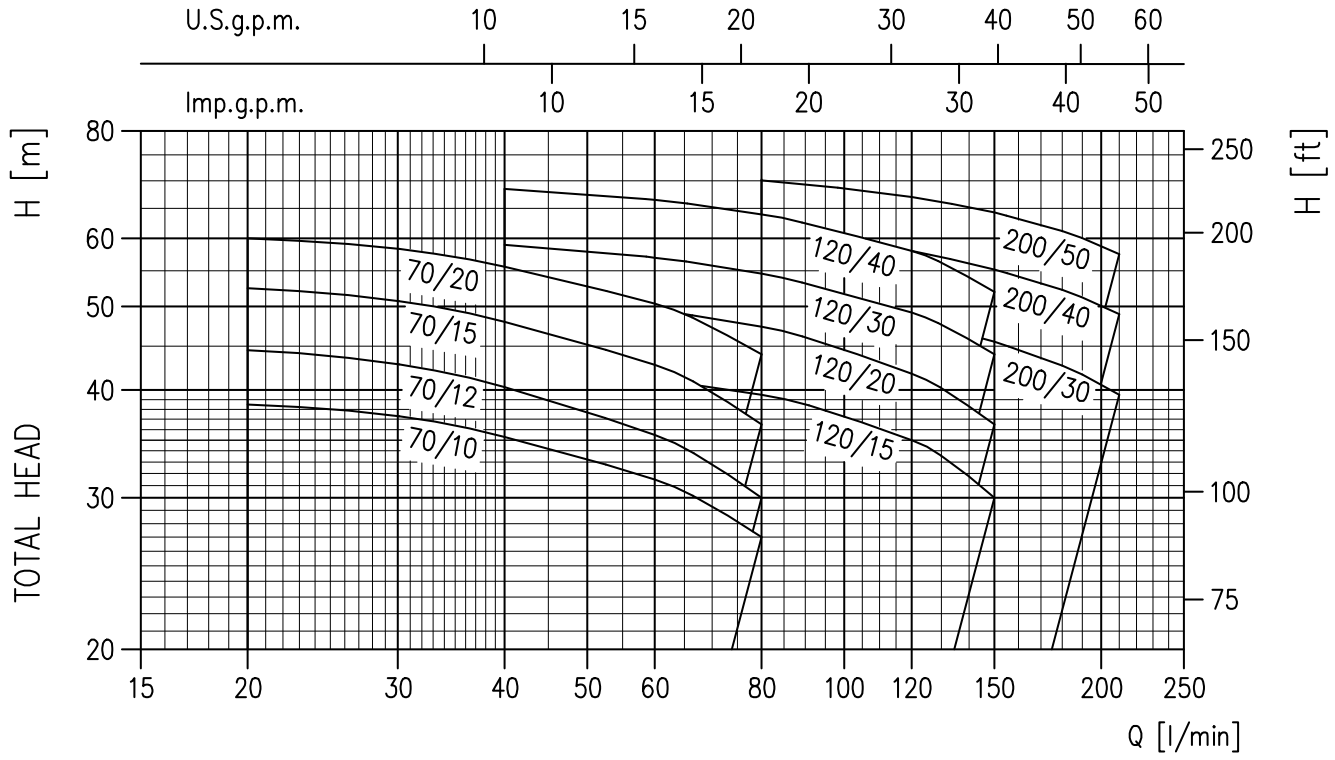
PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. -5 max. +60 max. +110 (H-HS-HW-HSW)
Maximum working pressure		[MPa]	0.8
Construction	Impeller		Closed centrifugal type (Twin)
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction	[inch]	from G 1"¼ to G 1"½ (2CDX 200) UNI ISO 228
	Discharge	[inch]	G 1" UNI ISO 228
Material	Casing		AISI 304
	Impeller		AISI 304
	Casing cover		AISI 304
	Shaft seal		Ceramic/Carbon/NBR (for 2CDX) Ceramic/Carbon/FPM (for 2CDXH) SiC/SiC/FPM (for 2CDXHS) Tungsten Carbide/Tungsten Carbide/FPM (for 2CDXHW) SiC/Tungsten Carbide/FPM (for 2CDXHSW)
	Shaft		AISI 304 (Wet extension)
	Bracket		Aluminium (up to 1.5 kW included) Cast iron (2.2 kW and above)
	Diffuser		AISI 304
Applicable standard of test			ISO 9906 – Annex A

MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level (Reg. 640/2009)		-	IE2 from 0.75 kW up to 4.0 kW
No. of Poles		2	
Rotation speed	[min^{-1}]	≈ 2800	
Insulation Class		F	
Protection degree (CEI EN 60034-5)		IP 55	
Power rating	[kW]	0.75 ÷ 2.2	0.75 ÷ 3.7
	[HP]	1 ÷ 2	1 ÷ 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	
Motor support		Aluminium	
Dimensions of cable entry		PG 11 – PG 13.5 – PG 16 (see dimensions page 400)	

SELECTION CHART

50Hz

Rev. H

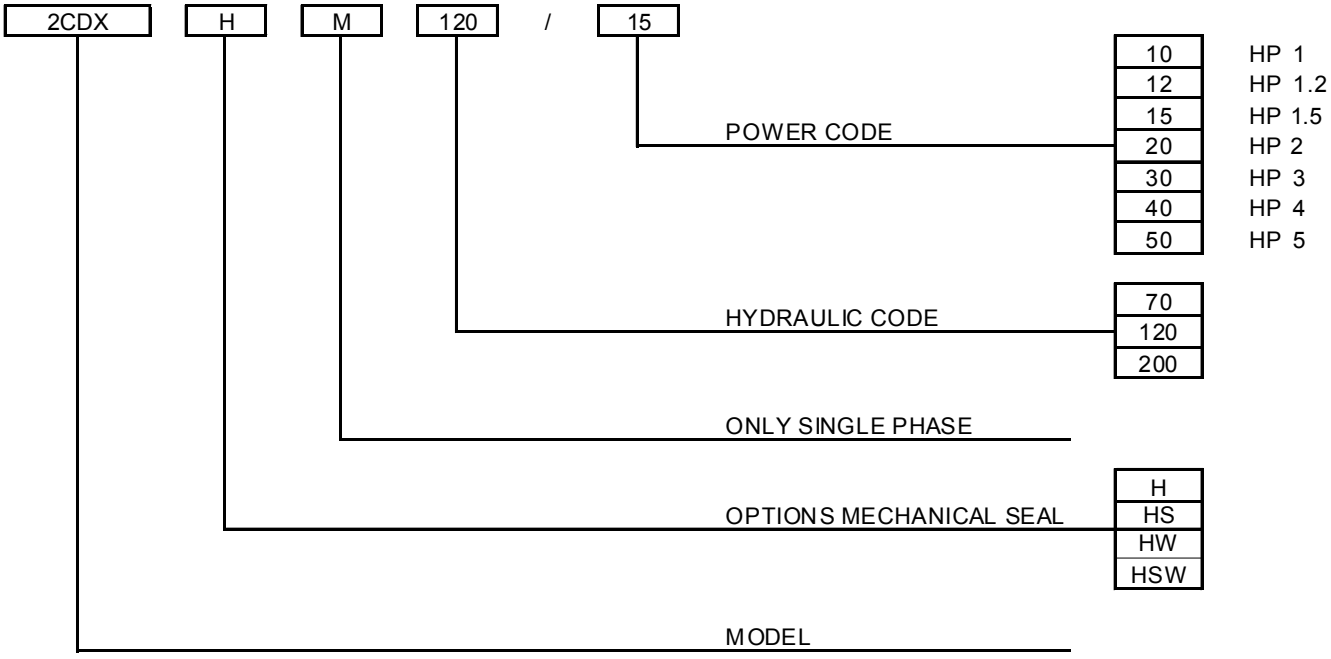


Pump Type		Power		Q=Capacity									
				l/min	0	20	40	60	80	120	150	180	210
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	1.2	2.4	3.6	4.8	7.2	9.0	10.8	12.6
				H=Total manometric head in meters									
2CDXM 70/10	2CDX 70/10	0.75	1		41	38.5	35.3	31.5	27	-	-	-	-
2CDXM 70/12	2CDX 70/12	0.9	1.2		48	44.5	40.3	35.5	30	-	-	-	-
2CDXM 70/15	2CDX 70/15	1.1	1.5		56	52.5	48	42.8	36.5	-	-	-	-
2CDXM 70/20	2CDX 70/20	1.5	2		64	60	55.6	50.4	44	-	-	-	-
2CDXM 120/15	2CDX 120/15	1.1	1.5		46	-	42	41	39.5	35	30	-	-
2CDXM 120/20	2CDX 120/20	1.5	2		55	-	51.5	49.5	47.4	41.8	36.5	-	-
-	2CDX 120/30	2.2	3		63	-	59	57	54.6	49.2	44	-	-
-	2CDX 120/40	3	4		71.5	-	68.5	66.5	64	58	52	-	-
-	2CDX 200/30	2.2	3		55	-	-	52	50.8	48.1	45.5	42.7	39.5
-	2CDX 200/40	3	4		66	-	-	62.5	61.1	58	55.2	52.3	49
-	2CDX 200/50	3.7	5		75	-	-	71.5	70.1	67	64.3	61.2	57.5

TYPE KEY AND CURVE SPECIFICATIONS 50Hz

Rev. H

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 50 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:

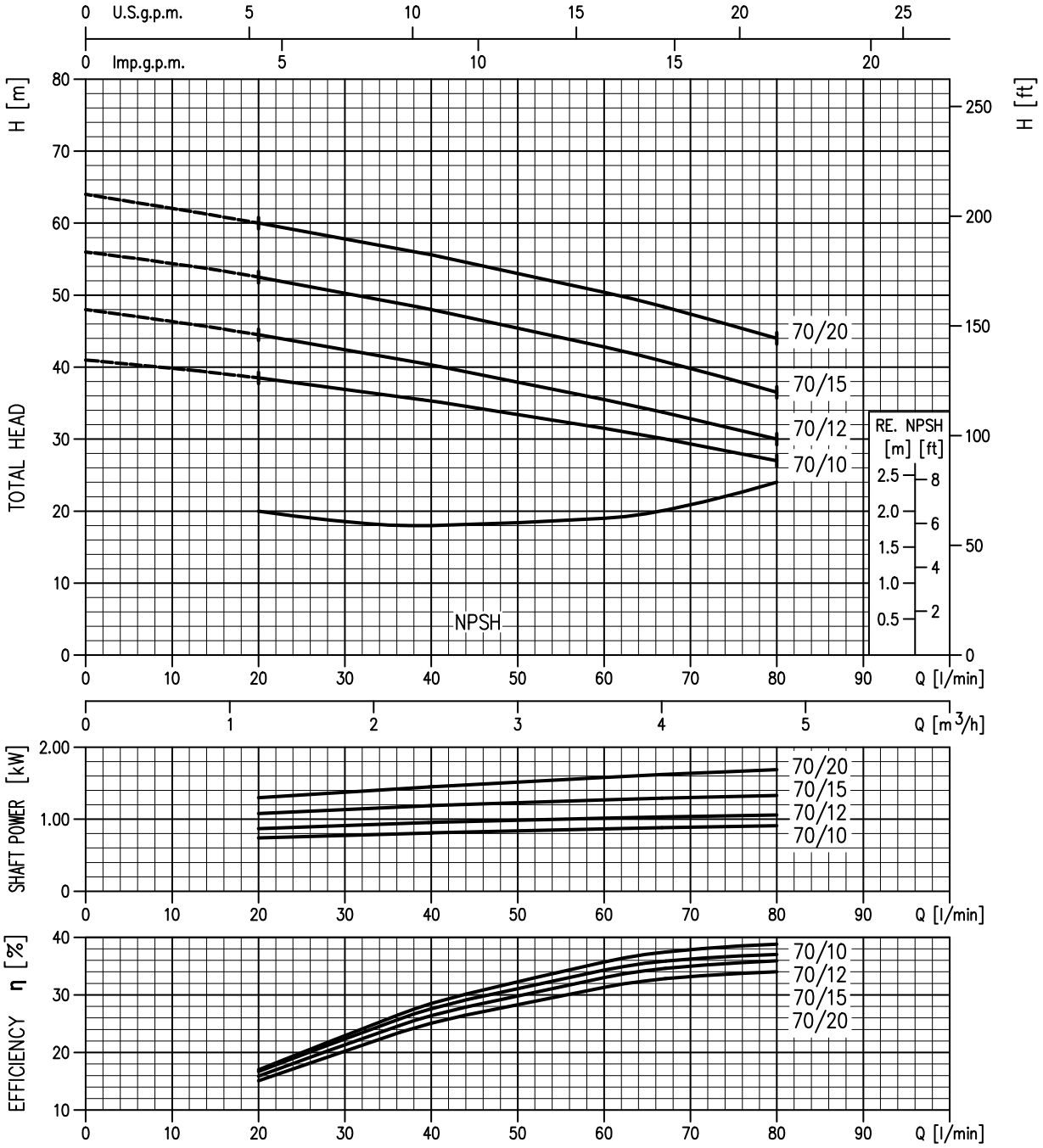
Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
NPSH	=	net positive suction head required by the pump

PERFORMANCE CURVE

50Hz

Rev. H

2CDX 70/10 (0.75 kW) - Impeller diameter = 132/132 mm
2CDX 70/12 (0.9 kW) - Impeller diameter = 153/132 mm
2CDX 70/15 (1.1 kW) - Impeller diameter = 153/153 mm
2CDX 70/20 (1.5 kW) - Impeller diameter = 153/176 mm



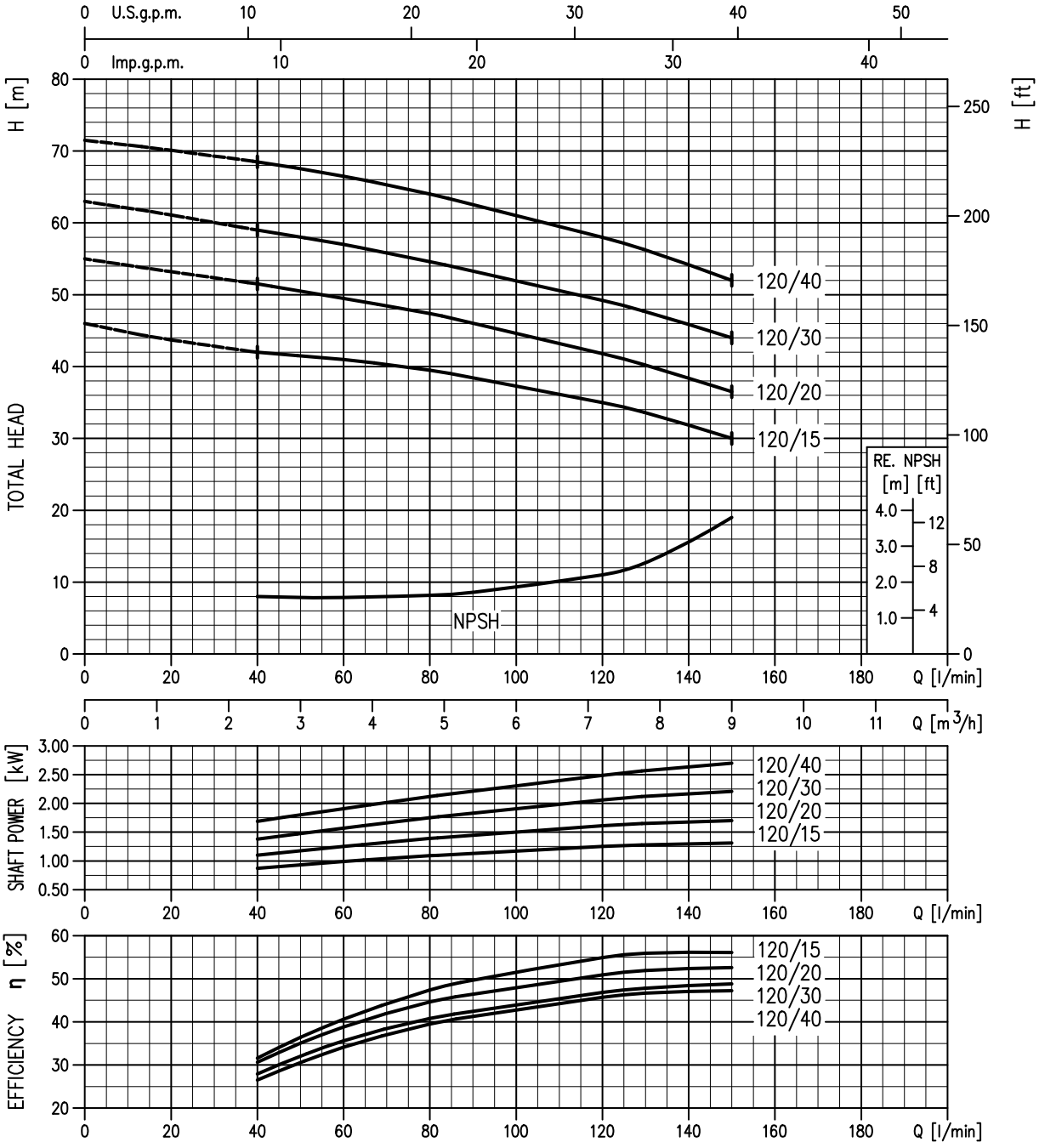
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

50Hz

Rev. H

2CDX 120/15 (1.1 kW) - Impeller diameter = 132/132 mm
2CDX 120/20 (1.5 kW) - Impeller diameter = 157/132 mm
2CDX 120/30 (2.2 kW) - Impeller diameter = 157/157 mm
2CDX 120/40 (3.0 kW) - Impeller diameter = 176/157 mm



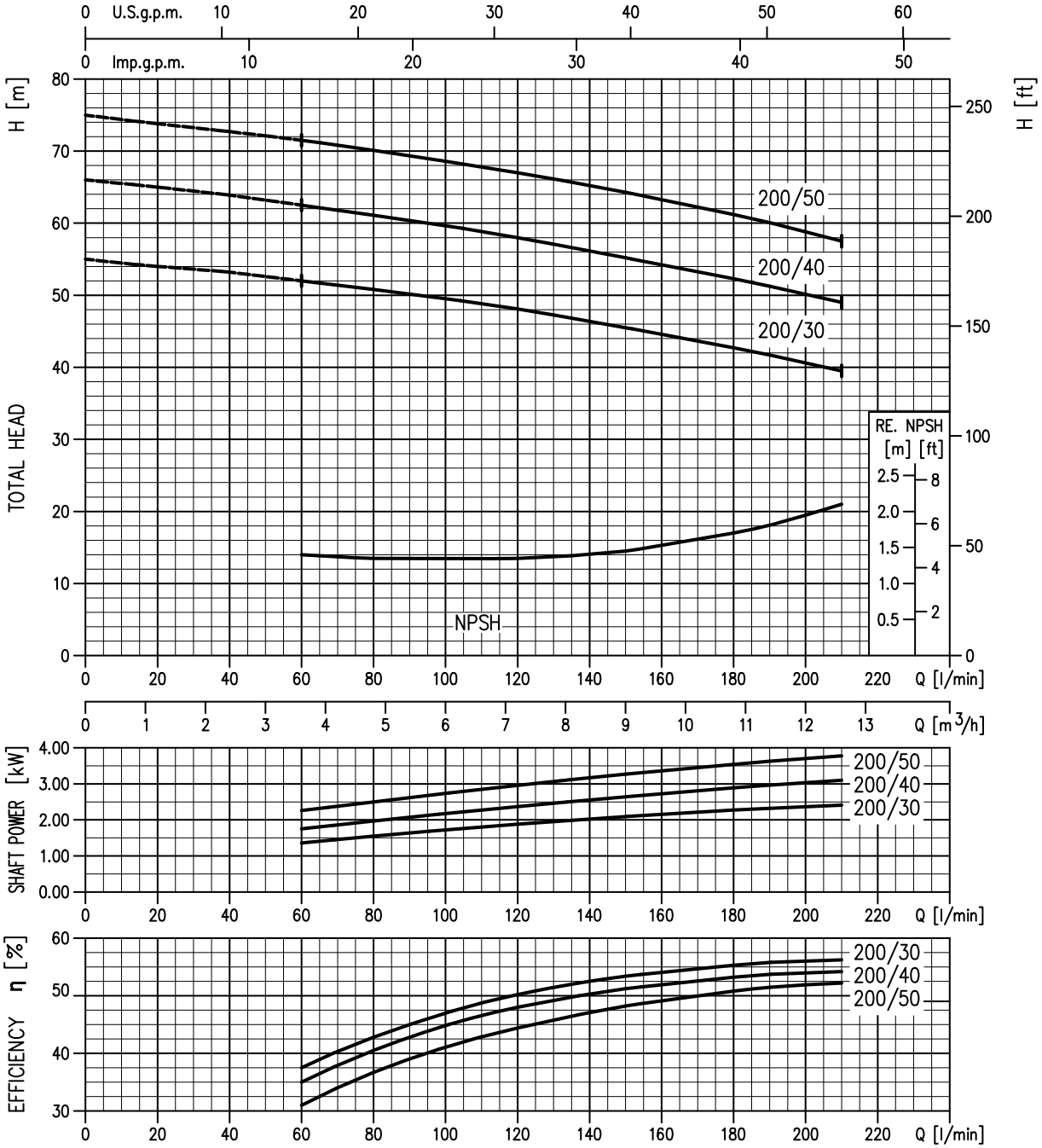
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

50Hz

Rev. H

2CDX 200/30 (2.2 kW) - Impeller diameter = 157/132 mm
2CDX 200/40 (3.0 kW) - Impeller diameter = 157/157 mm
2CDX 200/50 (3.7 kW) - Impeller diameter = 176/157 mm



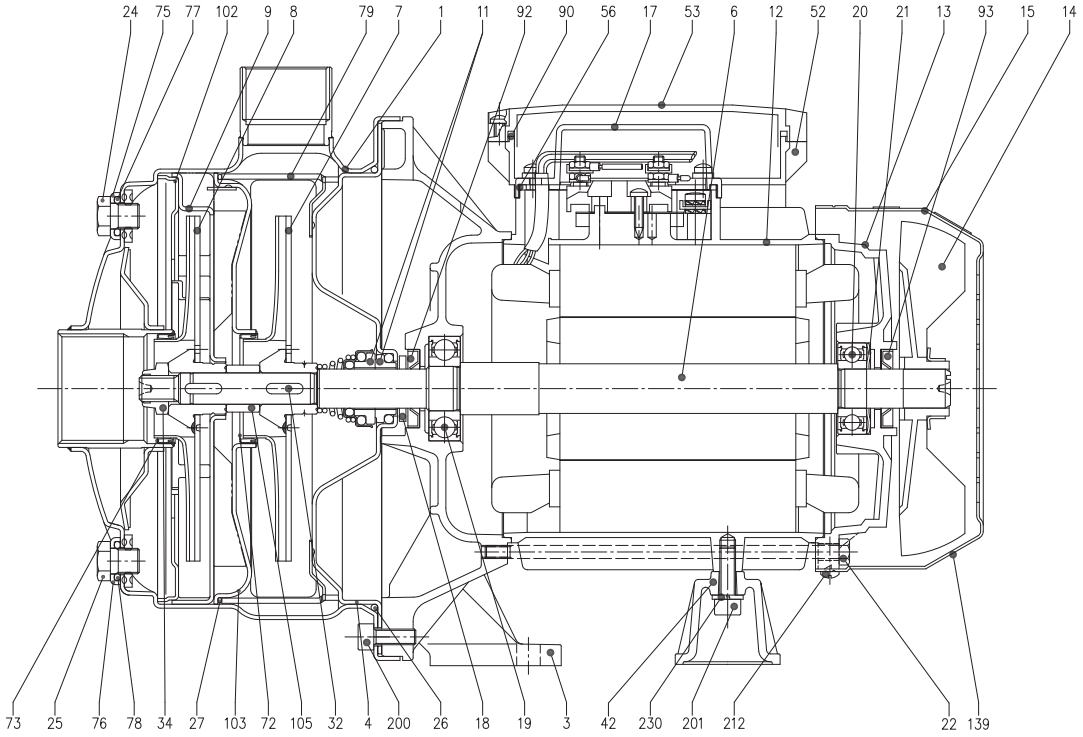
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

CONSTRUCTION

50Hz

Rev. H

SECTIONAL VIEW



N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1	27	O-ring [3]	NBR	1
3	Motor bracket	[4]	1	32	Key	AISI 316	2
4	Casing cover	AISI 304	1	34	Impeller nut	AISI 304	1
6	Shaft with rotor	AISI 304 (Wet extension)	1	42	Motor support	Aluminium	1
7	Impeller	AISI 304	1	52	Capacitor box [1]	ABS	1
8	Impeller	AISI 304	1	53	Capacitor box cover [1] [5]	ABS [5]	1
9	Diffuser	AISI 304	1	56	Box gasket	NBR	1
11	Mechanical seal [3] [6]	Ceramic/Carbon/NBR	1	72	Casing ring [3]	NBR	1
12	Motor frame with stator	-	1	73	Casing ring [3]	NBR	1
13	Motor cover	Aluminium	1	75	Washer	AISI 304	1
14	Fan	PA	1	76	Washer	AISI 304	1
15	Fan cover	Fe P04 Zincate	1	77	O-ring [3]	NBR	1
16	Terminal board	-	1	78	O-ring [3]	NBR	1
17	Terminal box cover [2]	Aluminium	1	79	Space diffuser	AISI 304	1
18	Splash ring	NBR	1	90	Terminal box cover gasket [1]	NBR	1
19	Pump side ball bearing	-	1	92	Lip seal	-	1
20	Fan side ball bearing	-	1	93	Lip seal	-	1
21	Adjusting ring	Steel C70	1	102	Suction cover	AISI 304	1
22	Tie rod	Fe 420 Zincate	4	103	Conveyor cover	AISI 304	1
23	Capacitor [1]	-	1	105	Sleeve	AISI 304	1
24	Priming plug	AISI 303	1	110	Protector [1]	-	1
25	Drain plug	AISI 303	1	200	Screw	Stainless steel A2 UNI7323	8
26	O-ring [3]	NBR	1				

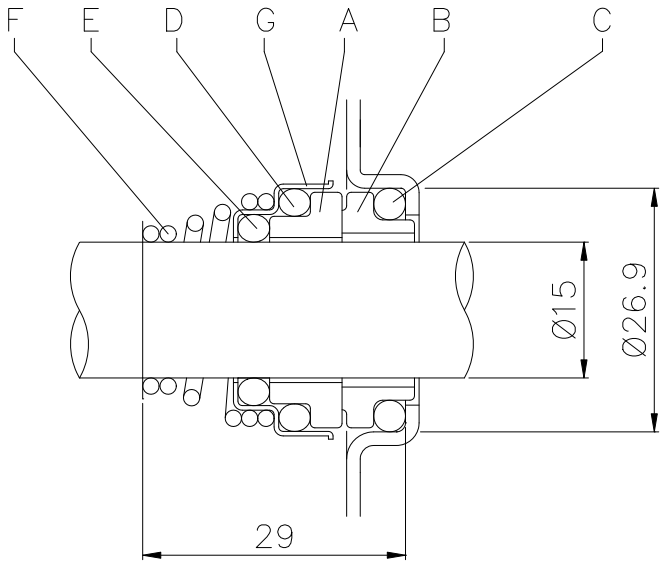
[1] Only for single phase
[2] Only for three phase
[3] FPM for H-HS-HW-HSW
[4] Material: Aluminium for version up to 1.5 kW included
Cast iron for version 2.2 kW and above
[5] Whit gasket in NBR only for version single phase 2CDXM 70/10
[6] Special version: see page 301

CONSTRUCTION

50Hz

Rev. H

MECHANICAL SEAL



REF	PART NAME	MATERIAL				
		Standard version	Optional			
		(2CDX)	(2CDXH)	(2CDXHS)	(2CDXHW)	(2CDXHSW)
A	Rotary seal ring	Ceramic	Ceramic	Silicon carbide	Tungsten carbide	Silicon carbide
B	Stationary seal ring	Carbon graphite	Carbon graphite	Silicon carbide	Tungsten carbide	Tungsten carbide
C	O Ring	NBR	FPM	FPM	FPM	FPM
D	O Ring	NBR	FPM	FPM	FPM	FPM
E	O Ring	NBR	FPM	FPM	FPM	FPM
F	Self driving spring	AISI 316	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 304	AISI 304	AISI 316	AISI 316	AISI 316

BEARINGS

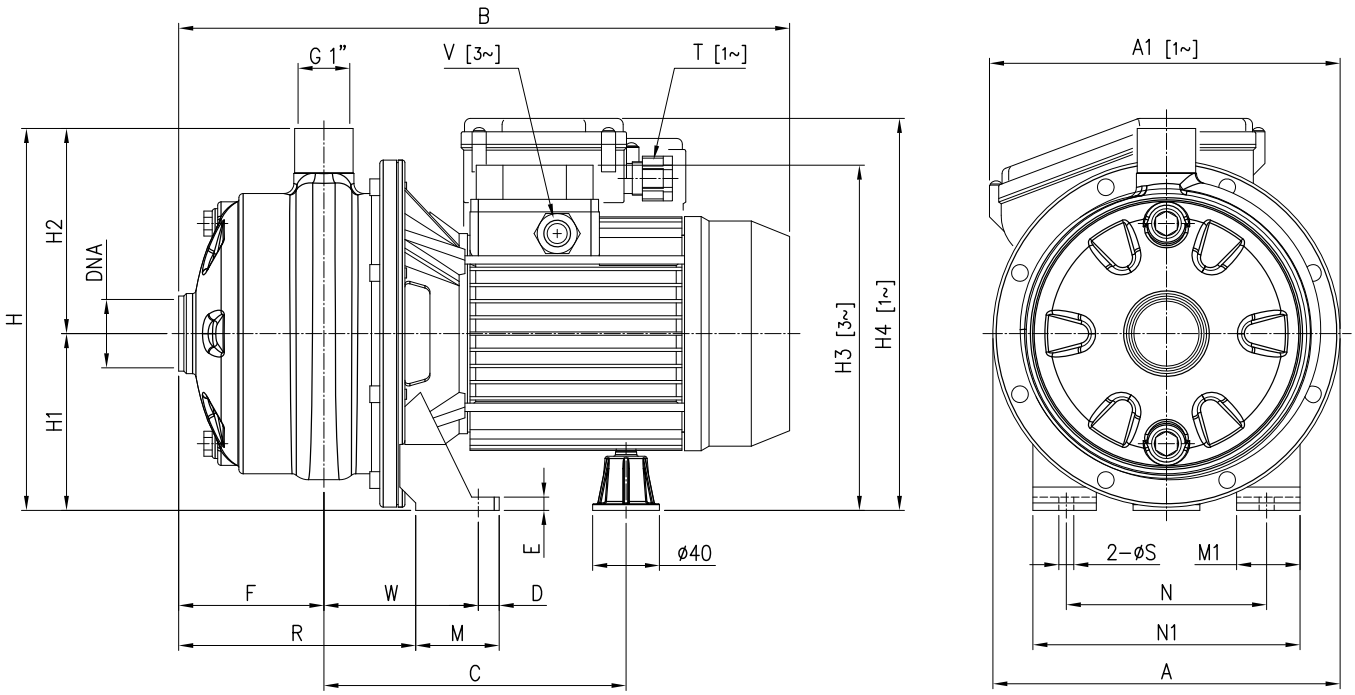
Pump type		Ball Bearing	
Single Phase	Three Phase	Pump side	Fan side
2CDXM 70/10	2CDX 70/10	6203 2RSH	6202 2RSH
2CDXM 70/20	2CDX 70/20	6204 2RSH	6203 2RSH
2CDXM 70/30	2CDX 70/30	6204 2RSH	6203 2RSH
-	2CDX 120/20	6204 2RSH	6203 2RSH
-	2CDX 120/30	6204 2RSH	6203 2RSH
-	2CDX 120/40	6205 2RSH	6205 2RSH
-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

DIMENSIONS AND WEIGHT

50Hz

Rev. H

PUMP



Pump type	Dimensions [mm]																						Weight	
2CDXM	A	A1 *	B		C	D	E	F	H	H1	H2	H3	H4	M	M1	N	N1	R	T	V	W	S	DNA	[kgf]	
2CDX		[1~]	[1~]	[3~]								[3~]	[1~]						[1~]	[3~]				[1~]	[3~]
70/10	208	-	355	354	181	12.5	8	87	229	106	123	207	216	50	38	120	160	142	PG 11	PG 11	92.5	9	G1¼	12.7	12.6
70/12	208	210	355	366	181	12.5	8	87	229	106	123	207	235	50	38	120	160	142	PG 13.5	PG 11	92.5	9	G1¼	13.3	13.8
70/15	232	-	395.5	382	198.5	12.5	8	89	250	118	132	237	248.5	55	40	140	180	141.5	PG 13.5	PG 11	95	9	G1¼	18	17.4
70/20	232	-	382.5	395	198.5	12.5	8	89	250	118	132	237	248.5	55	40	140	180	141.5	PG 13.5	PG 11	95	9	G1¼	18.5	19.2
120/15	208	210	395.5	382	198.5	12.5	8	89	229	106	123	225	236.5	55	40	140	180	141.5	PG 13.5	PG 11	95	9	G1¼	16.8	16.1
120/20	208	210	382.5	395	198.5	12.5	8	89	229	106	123	225	236.5	55	40	140	180	141.5	PG 13.5	PG 11	95	9	G1¼	17	17.9
120/30	232	-	-	419	223.5 ÷ 234.5	12.5	10	87	250	118	132	242	-	65	40	140	180	143.5	-	PG 13.5	109	9	G1¼	-	25.1
120/40	232	-	-	458	223.5 ÷ 234.5	12.5	10	87	250	118	132	242	-	65	40	140	180	143.5	-	PG 13.5	109	9	G1¼	-	27.1
200/30	208	-	-	458	223.5 ÷ 234.5	12.5	10	87	229	106	123	230	-	65	40	140	180	143.5	-	PG 13.5	109	9	G1½	-	25.7
200/40	232	-	-	458	223.5 ÷ 234.5	12.5	10	87	250	118	132	242	-	65	40	140	180	143.5	-	PG 13.5	109	9	G1½	-	27.6
200/50	232	-	-	481	232.5	16	12	87	250	118	132	259	-	68	50	160	210	143.5	-	PG 16	108.5	12	G1½	-	35.7

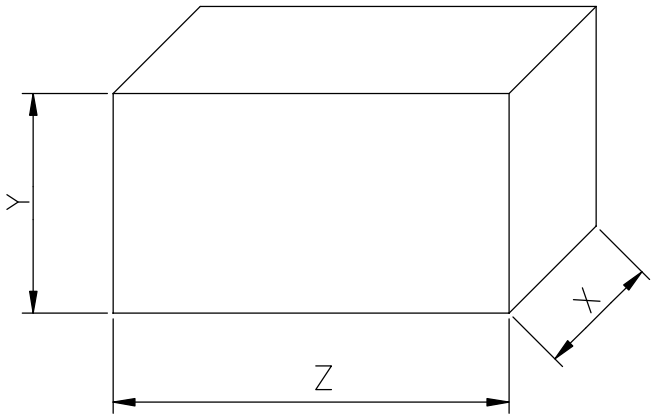
(*) Specified only if higher than “A”
[1~] Single phase
[3~] Three phase

DIMENSIONS AND WEIGHT

50Hz

Rev. H

PACKING



Pump type		Packing [mm]						Weight [kgf]	
		X		Y		Z			
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]
2CDXM 70/10	2CDX 70/10	225	225	278	278	373	387	13.3	13.3
2CDXM 70/12	2CDX 70/12	225	244	278	308	373	427	13.9	14.4
2CDXM 70/15	2CDX 70/15	244	244	308	308	427	427	18.9	18.1
2CDXM 70/20	2CDX 70/20	244	244	308	308	427	427	19.5	20.1
2CDXM 120/15	2CDX 120/15	244	244	308	308	427	427	17.5	16.9
2CDXM 120/20	2CDX 120/20	244	244	308	308	427	427	17.7	18.8
-	2CDX 120/30	-	244	-	308	-	427	-	25.6
-	2CDX 120/40	-	244	-	313	-	507	-	27.4
-	2CDX 200/30	-	244	-	313	-	507	-	26.6
-	2CDX 200/40	-	244	-	313	-	507	-	28.5
-	2CDX 200/50	-	244	-	313	-	507	-	37.7

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

TECHNICAL DATA 50Hz

Rev. H

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
2CDXM 70/10	2CDX 70/10	0.75	1.0	-	IE2	20	450	77.2	80.9	81.3	1.30	0.92	6.0	2.9	1.7	22.7	22.0	12.9
2CDXM 70/12	2CDX 70/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.55	1.35	7.0	4.3	2.5	25.5	31.0	17.8
2CDXM 70/15	2CDX 70/15	1.1	1.5	-	IE2	40	450	79.7	82.5	83.0	1.80	1.80	8.1	5.5	3.2	43.0	45.0	25.7
2CDXM 70/20	2CDX 70/20	1.5	2.0	-	IE2	40	450	80.3	83.4	83.8	2.30	2.09	10.0	6.9	4.0	43.0	34.3	20.0
2CDXM 120/15	2CDX 120/15	1.1	1.5	-	IE2	40	450	79.7	82.5	83.0	1.80	1.80	8.3	5.5	3.2	43.0	45.0	25.7
2CDXM 120/20	2CDX 120/20	1.5	2.0	-	IE2	40	450	80.3	83.4	83.8	2.35	2.28	10.2	7.3	4.2	43.0	34.3	20.0
-	2CDX 120/30	2.2	3.0	-	IE2	-	-	83.1	85.7	86.2	-	2.90	-	8.8	5.1	-	75.0	43.5
-	2CDX 120/40	3.0	4.0	-	IE2	-	-	85.0	86.7	86.3	-	3.48	-	10.6	6.1	-	100.0	57.7
-	2CDX 200/30	2.2	3.0	-	IE2	-	-	85.0	86.7	86.3	-	3.48	-	10.6	6.1	-	100.0	57.7
-	2CDX 200/40	3.0	4.0	-	IE2	-	-	85.0	86.7	86.3	-	3.48	-	10.6	6.1	-	100.0	57.7
-	2CDX 200/50	3.7	5.0	-	IE2	-	-	84.3	87.2	87.8	-	4.56	-	15.1	8.7	-	151.0	87.0

NOISE DATA

Pump type		Power		L_{pA} - dB(A) *
Single Phase	Three Phase	[kW]	[HP]	
2CDXM 70/10	2CDX 70/10	0.75	1.0	<70
2CDXM 70/12	2CDX 70/12	0.9	1.2	
2CDXM 70/15	2CDX 70/15	1.1	1.5	
2CDXM 70/20	2CDX 70/20	1.5	2.0	
2CDXM 120/15	2CDX 120/15	1.1	1.5	
2CDXM 120/20	2CDX 120/20	1.5	2.0	
-	2CDX 120/30	2.2	3.0	
-	2CDX 120/40	3.0	4.0	
-	2CDX 200/30	2.2	3.0	
-	2CDX 200/40	3.0	4.0	
-	2CDX 200/50	3.7	5.0	

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