
EBARA

CONTENTS

50Hz

Rev. M

SELECTION CHART 50Hz

Rev. M

PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. -5 max. +60 (CD and CDE 70/05-70/07-90/10) max. +90 max. +110 (H-HS-HW-HSW) max. +120 (CDE 70/12, 120/07,120/12, 120/20, 200/12, 200/20, 200/25)
Maximum working pressure		[MPa]	0.8
Construction	Impeller		Closed centrifugal type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction		G 1¼, (G 1½ CD 200) UNI ISO 228-1
	Discharge		G 1 UNI ISO 228-1
Material	Casing		EN 1.4301 (AISI 304)
	Impeller		EN 1.4301 (AISI 304)
	Casing cover		EN 1.4301 (AISI 304)
	Shaft seal		Ceramic/Carbon/NBR (for version see page 301)
	Shaft		AISI 303 (Wet extension)
	Bracket		EN 1.4301 (AISI 304)
Applicable standard of test			ISO 9906 – Annex A

MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level (Reg. 640/2009)		-	- from 0.37 kW up to 0.55 kW IE2 from 0.75 kW up to 1.8 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		EN 1.4301 (AISI 304)	
Base material/motor support		EN 1.4301 (AISI 304)	
Dimensions of cable entry		PG11	

SELECTION CHART

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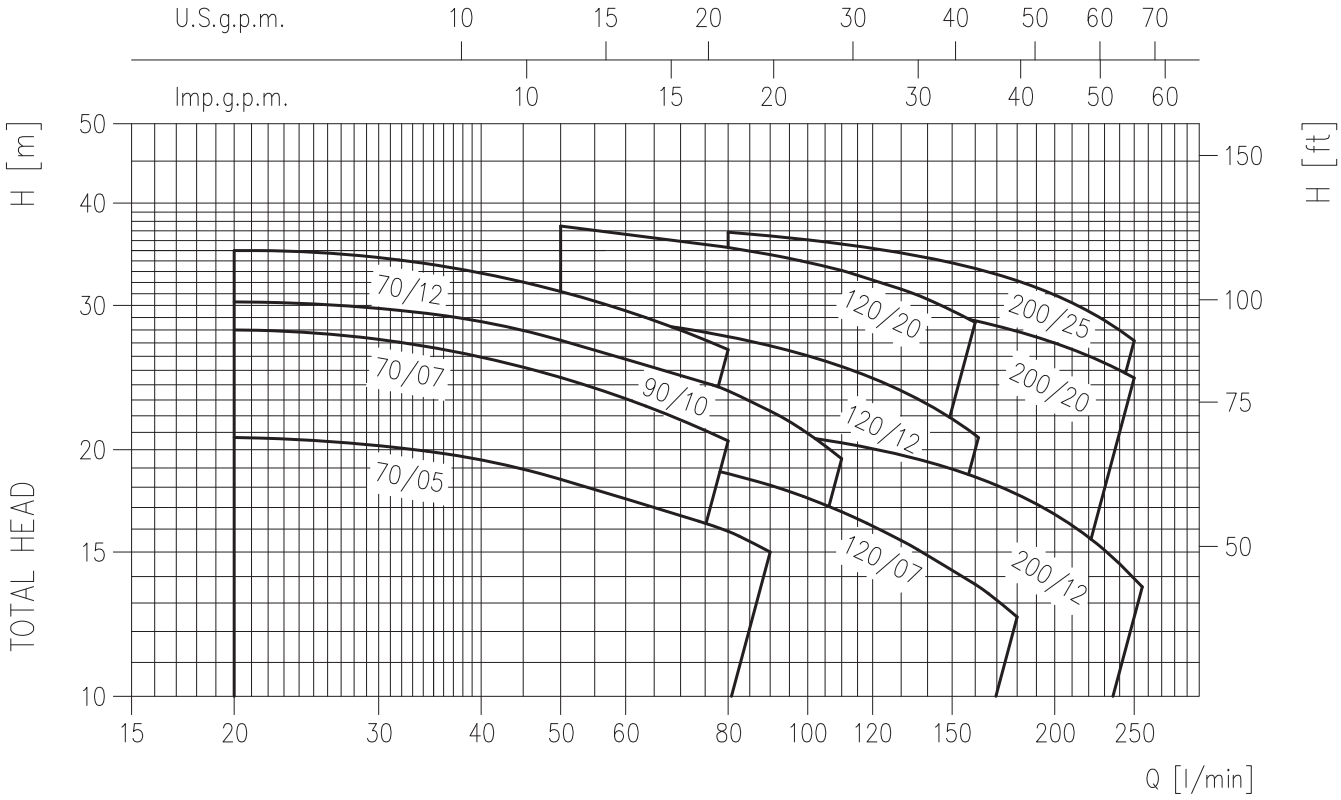
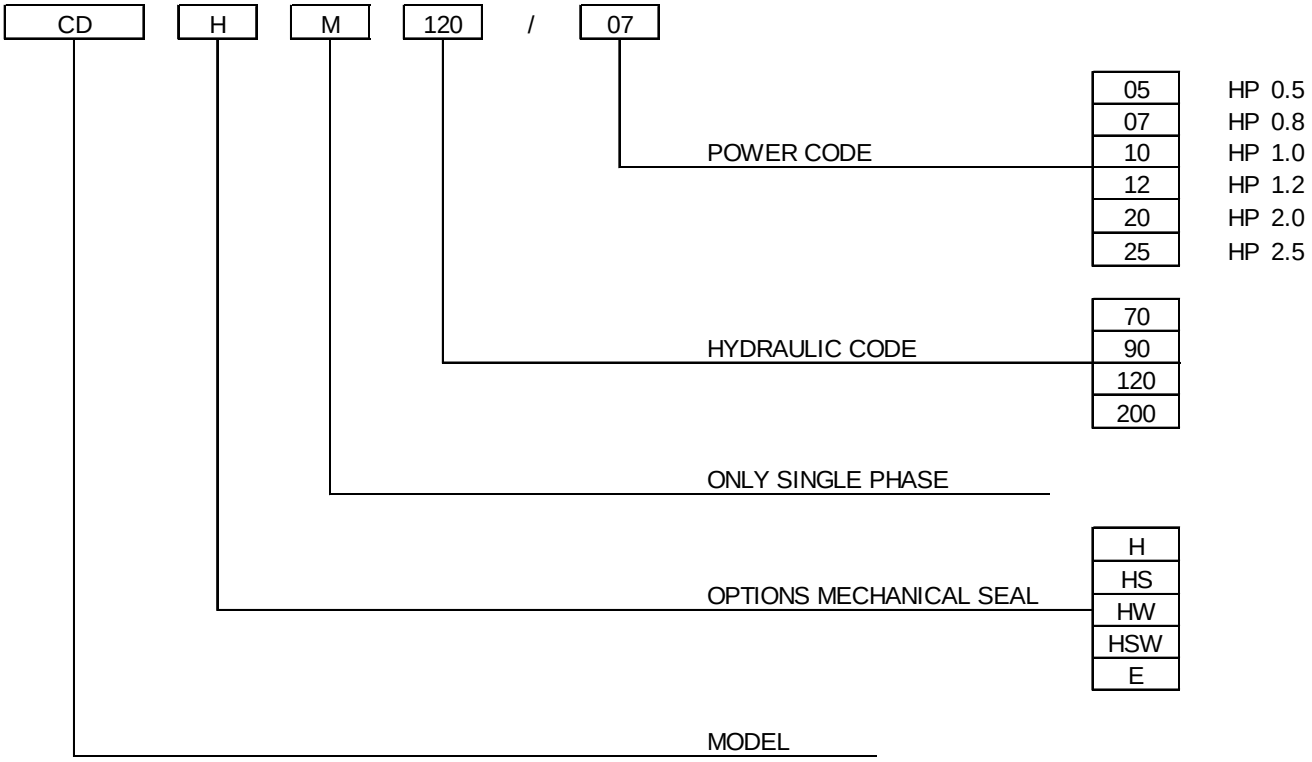


Pump type		Power		Q=Capacity										
				l/min	0	20	50	80	90	110	130	160	180	210	250
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	1.2	3.0	4.8	5.4	6.6	7.8	9.6	10.8	12.6	15.0
				H=Total manometric head in meters											
CDM 70/05	CD 70/05	0.37	0.5		22	20.7	18.4	15.9	15	-	-	-	-	-	-
CDM 70/07	CD 70/07	0.55	0.8		30	28	24.5	20.5	-	-	-	-	-	-	-
CDM 70/12	CD 70/12	0.9	1.2		37	35	31.2	26.5							
CDM 90/10	CD 90/10	0.75	1		32	30.3	27.2	23.6	22.3	19.5	-	-	-	-	-
CDM 120/07	CD 120/07	0.55	0.8		22.5	-	20.5	18.7	18.1	16.8	15.5	13.7	12.5	-	-
CDM 120/12	CD 120/12	0.9	1.2		31.2	-	29.3	27.5	26.8	25.2	23.6	21	-	-	-
CDM 120/20	CD 120/20	1.5	2		40.5	-	37.5	35.3	34.6	33.1	31.4	28.6	-	-	-
CDM 200/12	CD 200/12	0.9	1.2		22.8	-	-	21.3	21	20.4	19.7	18.5	17.6	16	14
CDM 200/20	CD 200/20	1.5	2		33	-	-	31.5	31.2	30.6	30	28.7	27.9	26.5	24.5
-	CD 200/25	1.8	2.5		39.4	-	-	36.8	36.5	35.6	34.7	33.3	32	30	27.2

TYPE KEY AND CURVE SPECIFICATIONS 50Hz

Rev. M

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:

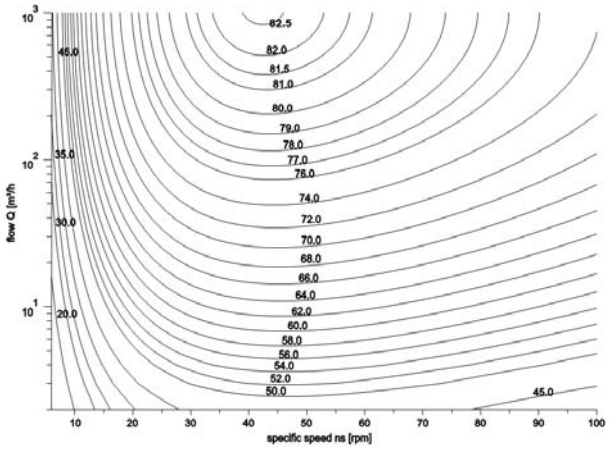
Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
NPSH	=	net positive suction head required by the pump
MEI	=	minimum efficiency index

The minimun 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.

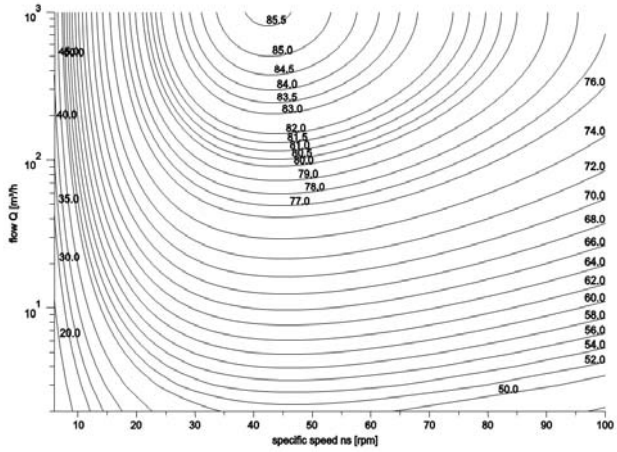
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variabile 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

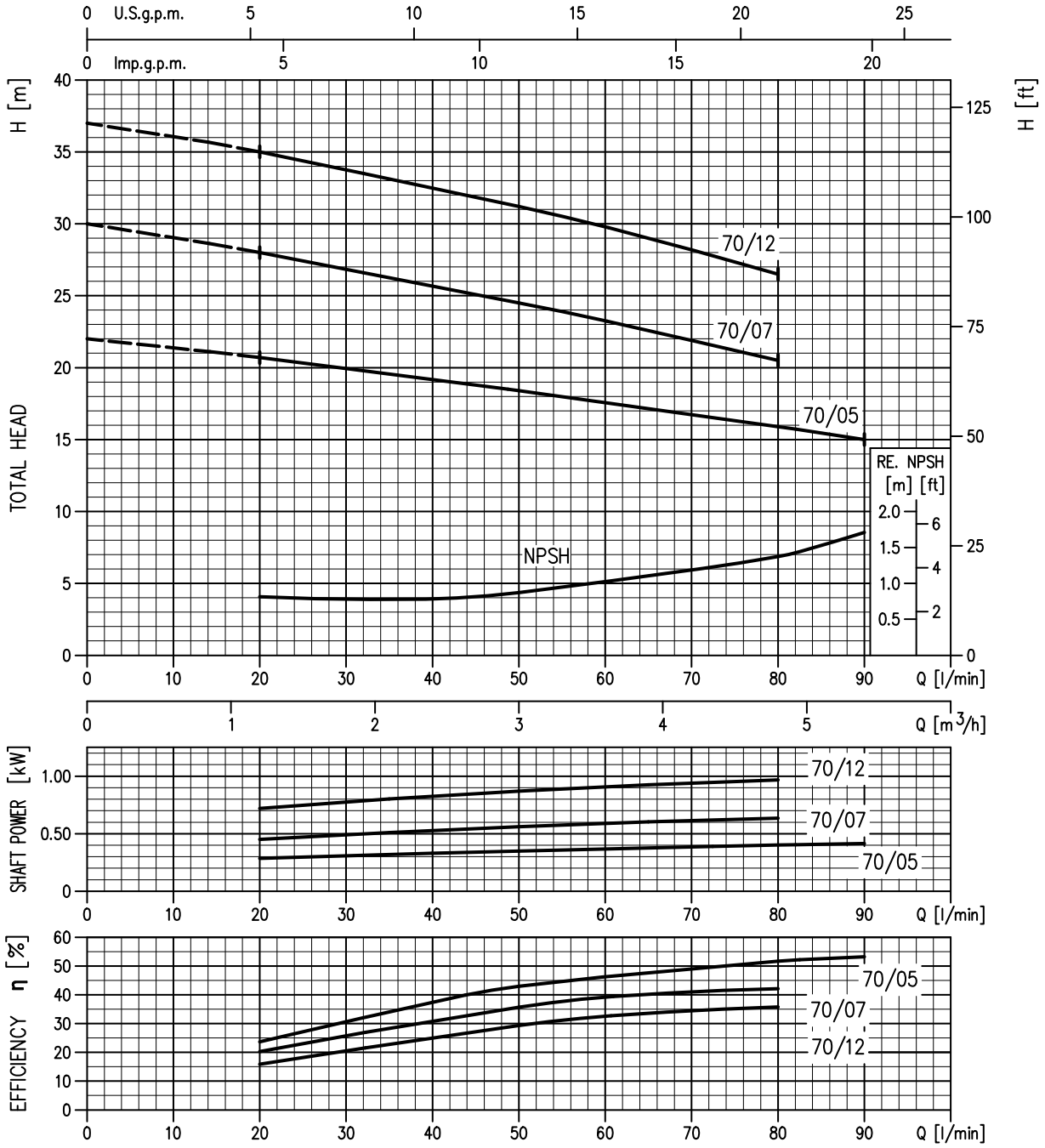


PERFORMANCE CURVE

50Hz

Rev. M

CD 70/05 (0.37 kW) - Impeller diameter = 132 mm
CD 70/07 (0.55 kW) - Impeller diameter = 157 mm
CD 70/12 (0.90 kW) - Impeller diameter = 176 mm



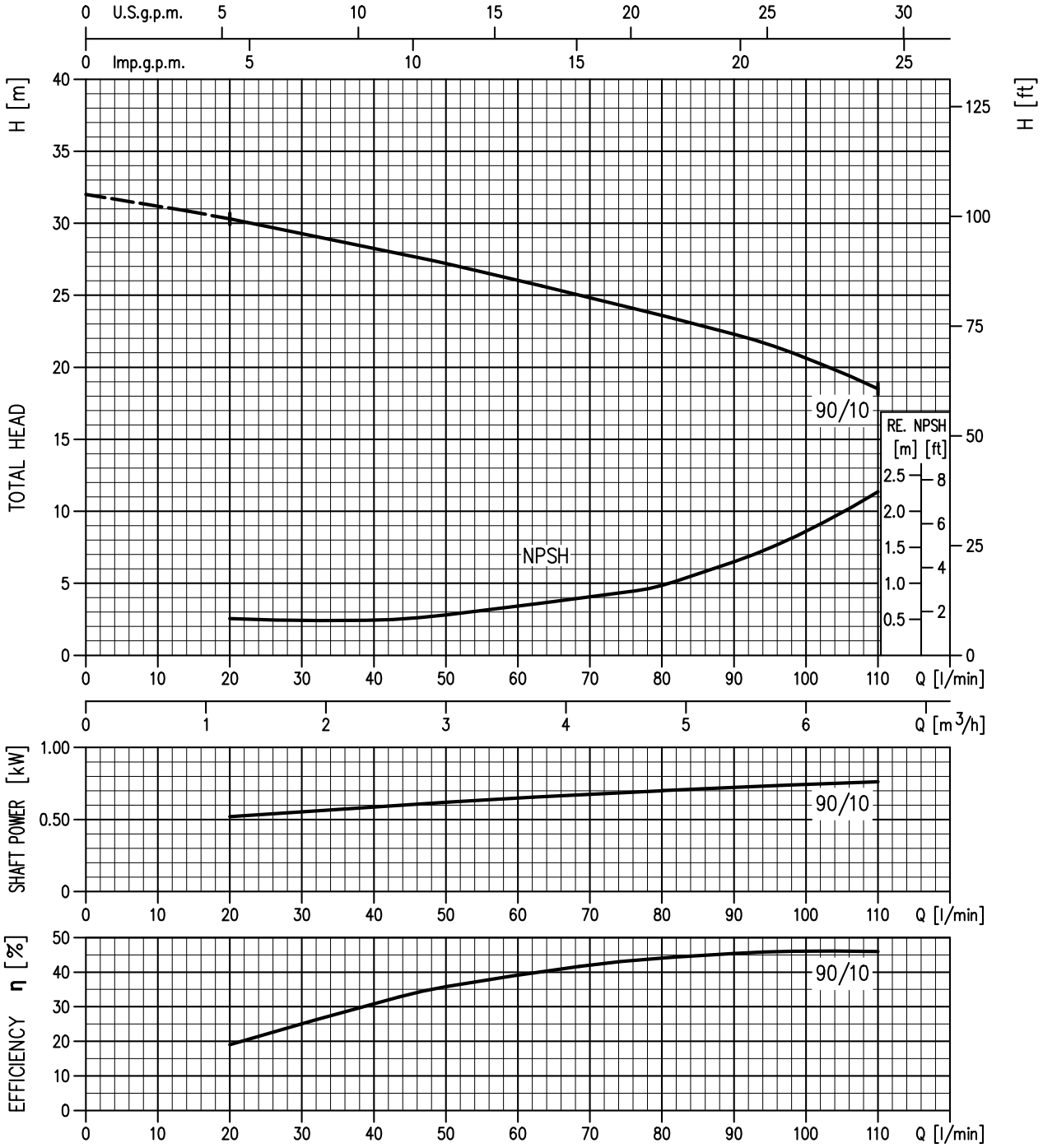
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

50Hz

Rev. M

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



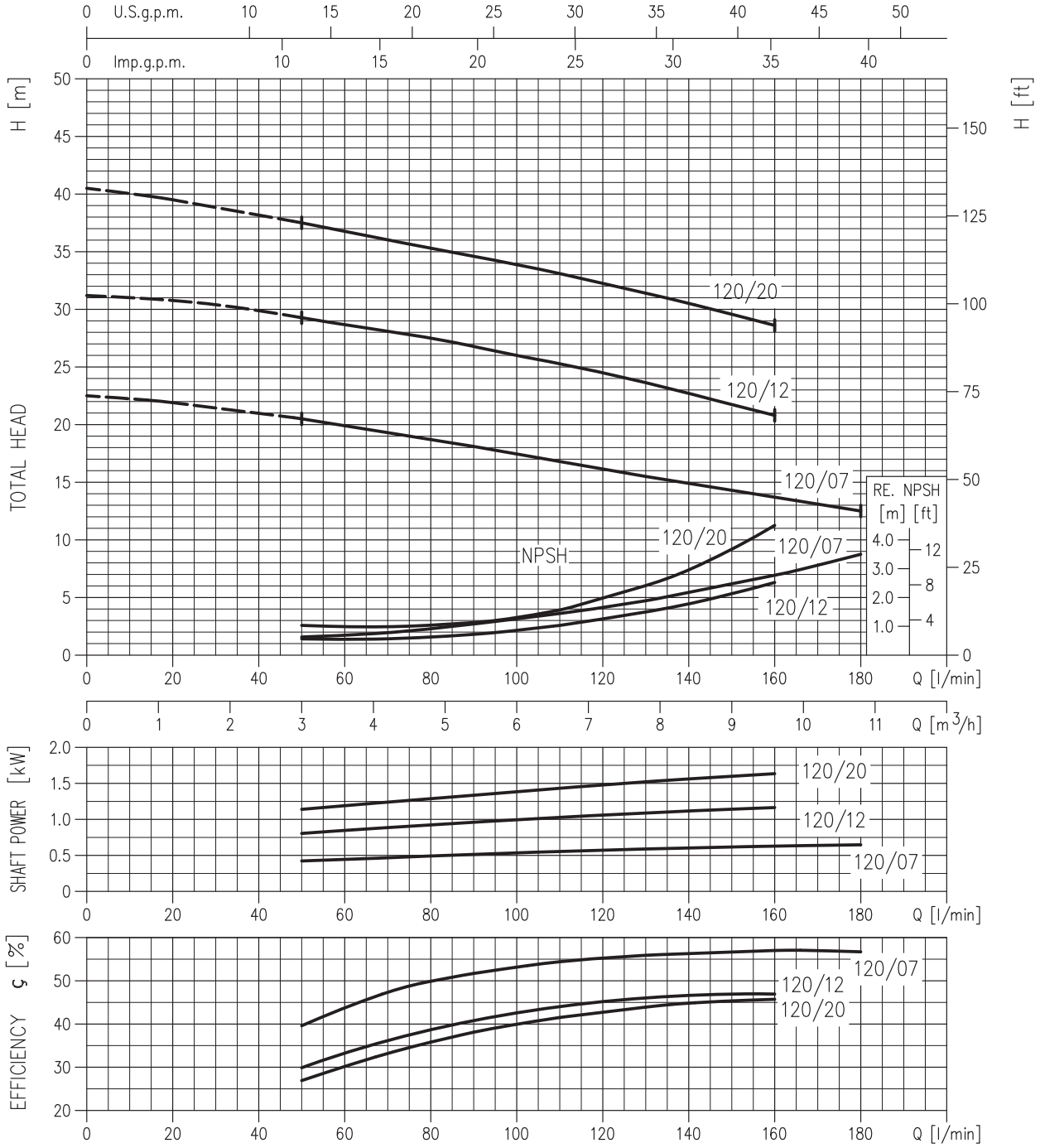
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

50Hz

Rev. M

CD 120/07 (0.75 kW) MEI > 0.50 - Impeller diameter = 132 mm
CD 120/12 (0.90 kW) MEI > 0.40 - Impeller diameter = 157 mm
CD 120/20 (1.50 kW) MEI > 0.40 - Impeller diameter = 176 mm



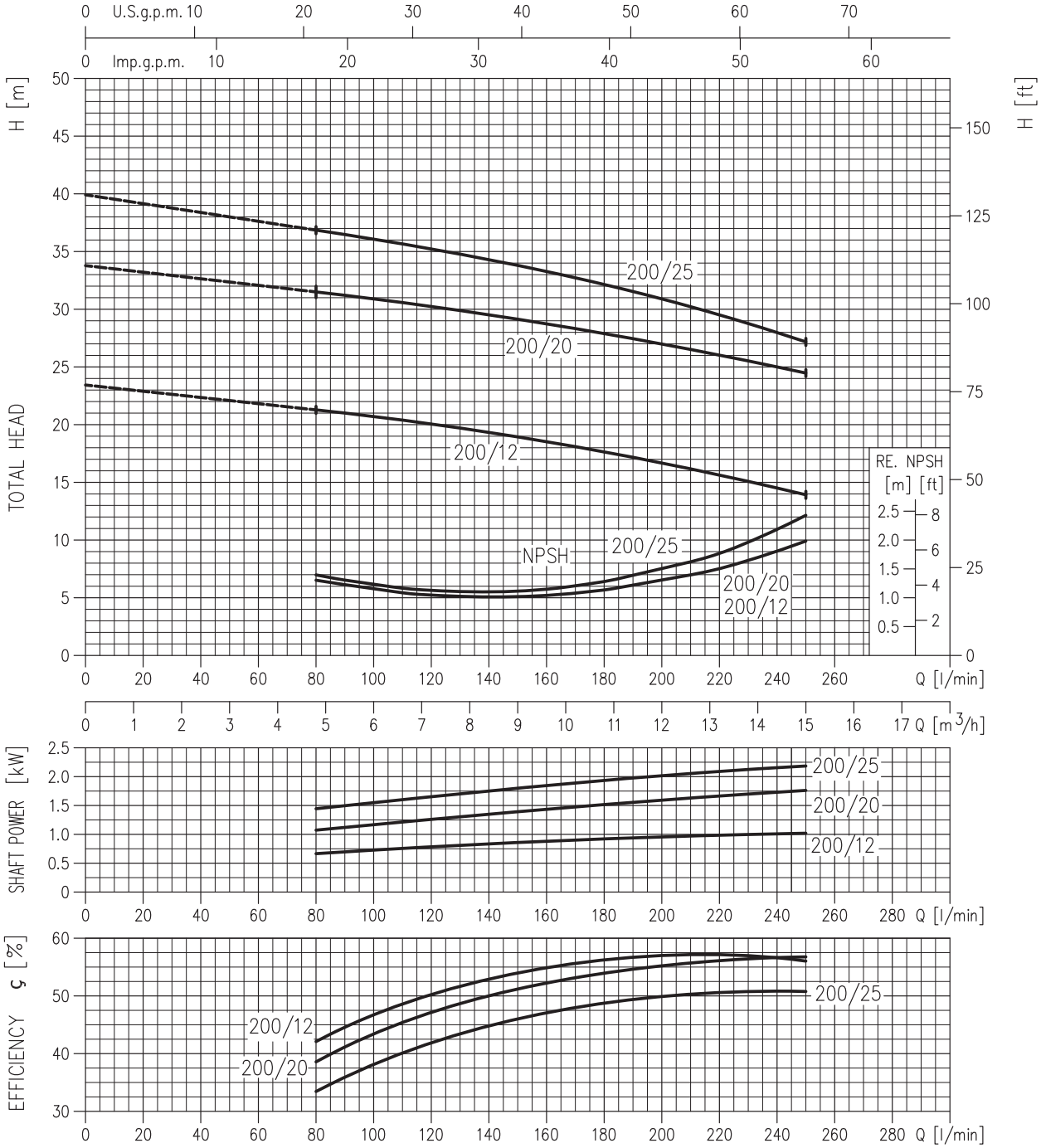
Rotation speed ≈ 2800 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

50Hz

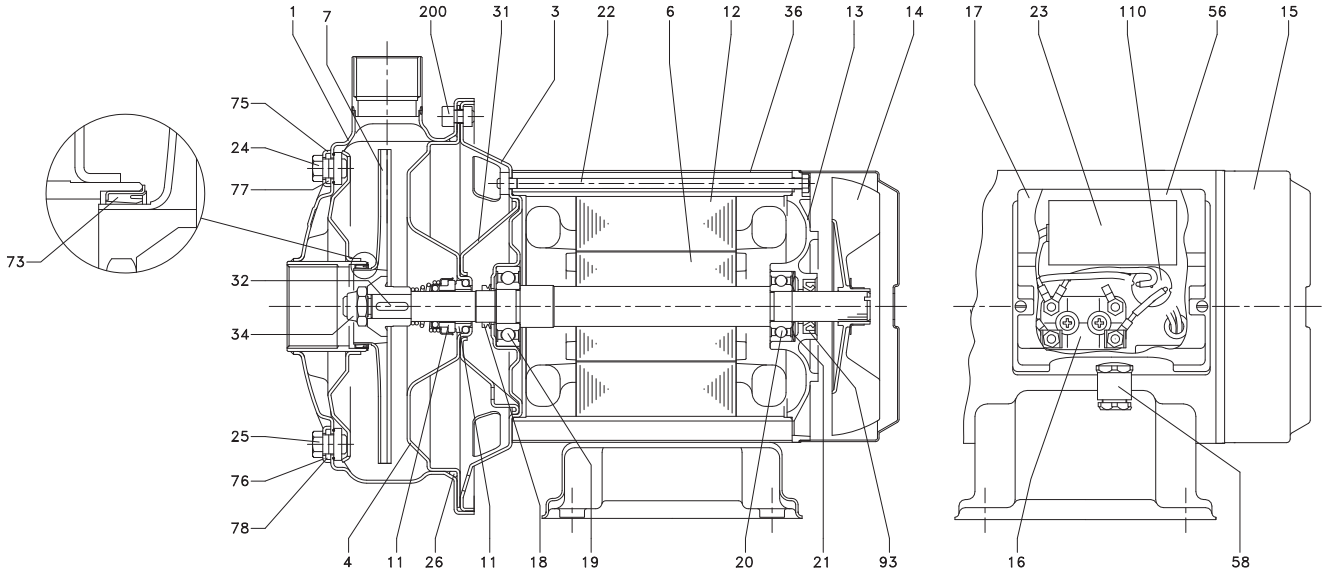
Rev. M

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



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

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



N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304			1
3	Motor bracket	AISI 304			1
4	Casing cover	AISI 304			1
6	Shaft with rotor	AISI 303 (Wet extension)			1
7	Impeller	AISI 304			1
11	Mechanical seal	Ceramic/Carbon/NBR	see page 301		1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	AISI 304			1
16	Terminal board	-			1
17	Terminal box cover	PA66 glass fibre reinforced class V-0			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
23	Capacitor [1]	-			1
24	Priming plug	AISI 304			1

N°	PART NAME		MATERIAL	DIMENSION	STANDARD	Q.TY
25	Drain plug		AISI 304			1
26	O-ring [2]		NBR			1
31	Thrust flange		AISI 304			1
32	Key		AISI 316	4x4x14	UNI 6604	1
34	Impeller nut		Stainless steel A2-70	M10X1,25	UNI 7474	1
36	Motor casing		AISI 304			1
56	Box gasket		NBR			1
58	Cable entry		-			1
73	Casing ring [3]		NBR			1
75	Washer		AISI 304			1
76	Washer		AISI 304			1
77	O-ring [2]		NBR			1
78	O-ring [2]		NBR			1
93	Lip seal		NBR			1
110	Protector [1]		-			1
200	Screw	70/05, 70/07, 90/10,	Stainless steel A2-70	M6X12	UNI 5931	8
		70/12		M8X14		

[1] Only for single phase
[2] FPM for H-HS-HW-HSW
EPDM for E

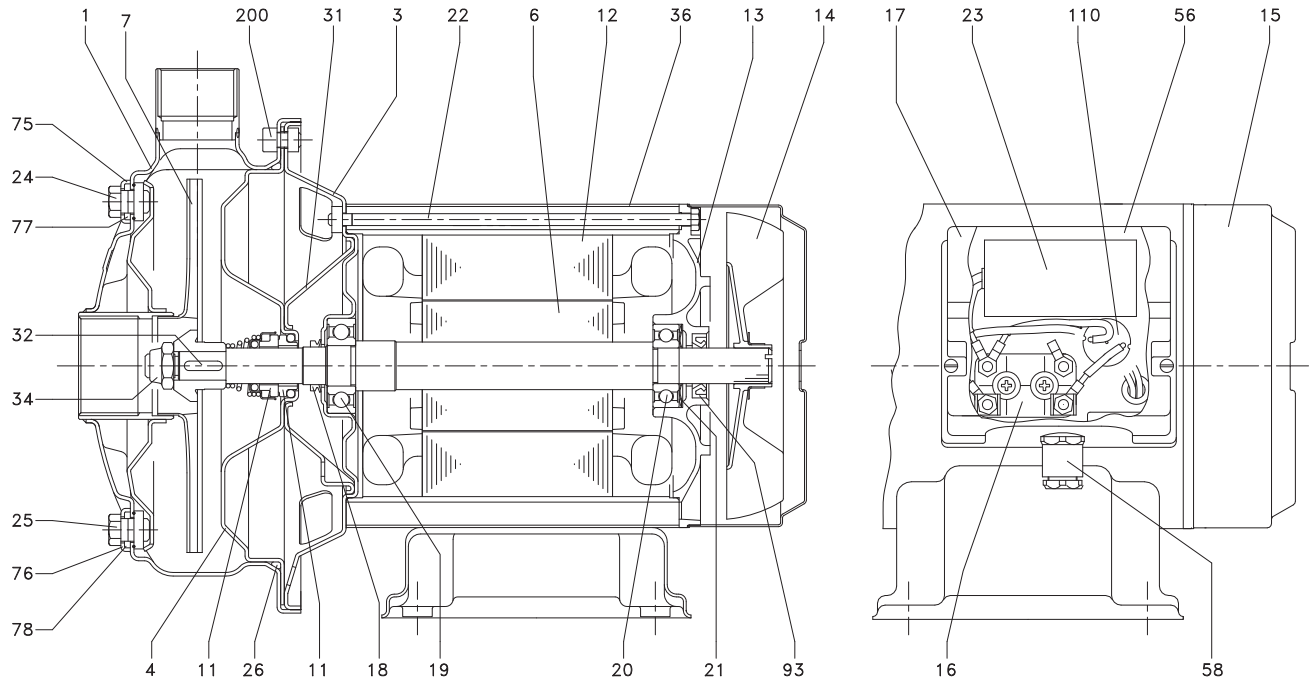
[3] FPM for CDH 70/05, CDHS 70/05, CDHW 70/05, CDHSW 70/05, CDH 70/07, CDHS 70/07, CDHW 70/07, CDHSW 70/07, CDH 90/10, CDHS 90/10, CDHW 90/10, CDHSW 90/10
NBR for CDE 70/05, 70/07, 90/10

CONSTRUCTION

50Hz

Rev. M

SECTIONAL VIEW CD 70/12 - 120/07 - 120/20



N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304			1
3	Motor bracket	AISI 304			1
4	Casing cover	AISI 304			1
6	Shaft with rotor	AISI 303 (Wet extension)			1
7	Impeller	AISI 304			1
11	Mechanical seal	Ceramic/Carbon/NBR	see page 301		1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	AISI 304			1
16	Terminal board	-			1
17	Terminal box cover	PA66 glass fibre reinforced class V-0			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
23	Capacitor [1]	-			1
24	Priming plug	AISI 304			1

N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
25	Drain plug	AISI 304			1
26	O-ring [2]	NBR			1
31	Thrust flange	AISI 304			1
32	Key	AISI 316	4x4x14	UNI 6604	1
34	Impeller nut	Stainless steel A2-70	M10X1,25	UNI 7474	1
36	Motor casing	AISI 304			1
56	Box gasket	NBR			1
58	Cable entry	-			1
73	Casing ring	-			1
75	Washer	AISI 304			1
76	Washer	AISI 304			1
77	O-ring [2]	NBR			1
78	O-ring [2]	NBR			1
93	Lip seal	NBR			1
110	Protector [1]	-			1
200	Screw	120/07	Stainless steel A2-70	M6X12	UNI 5931	8
		70/12, 120/20		M8X14		

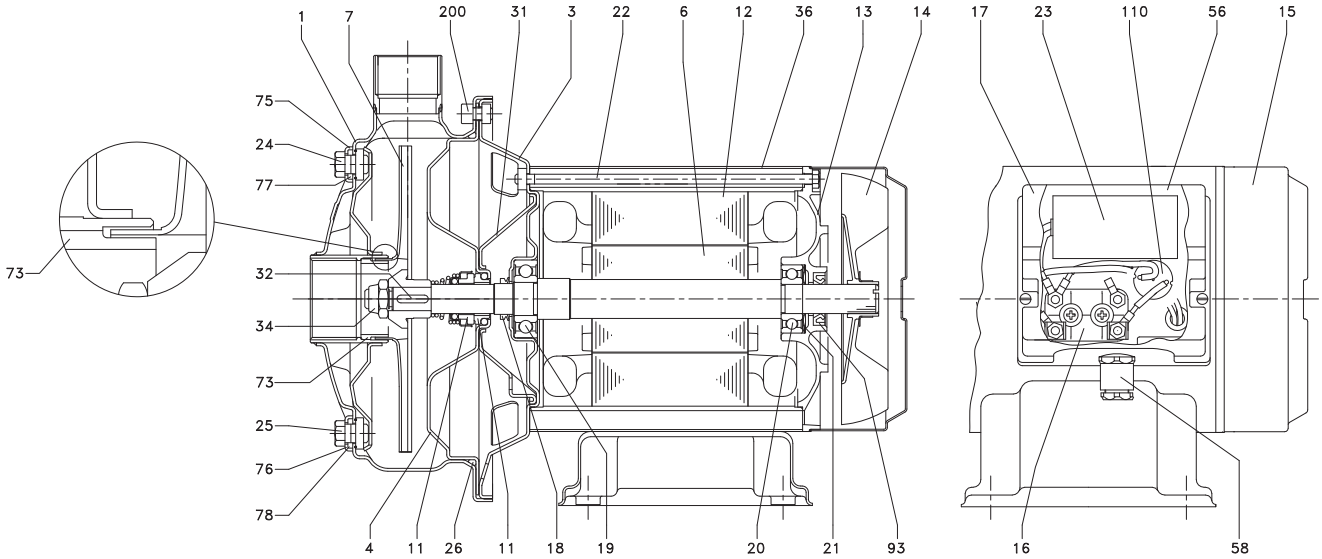
[1] Only for single phase
[2] FPM for H-HS-HW-HSW
EPDM for E

CONSTRUCTION

50Hz

Rev. M

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

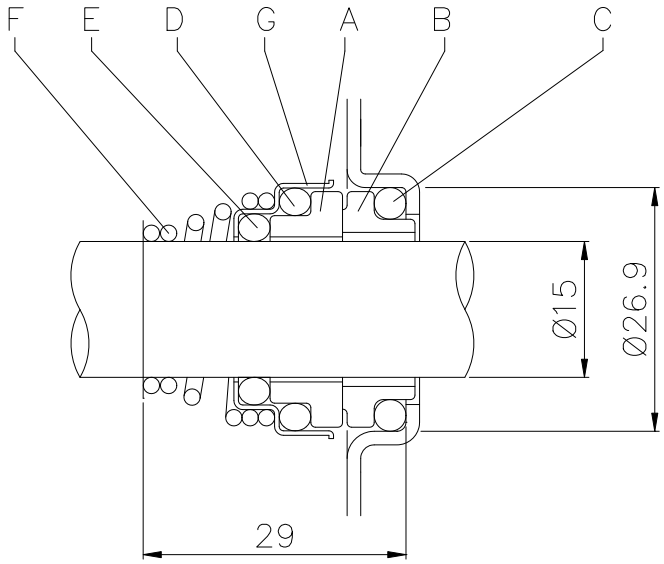


N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304			1
3	Motor bracket	AISI 304			1
4	Casing cover	AISI 304			1
6	Shaft with rotor	AISI 303 (Wet extension)			1
7	Impeller	AISI 304			1
11	Mechanical seal	Ceramic/Carbon/NBR	see page 301		1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	AISI 304			1
16	Terminal board	-			1
17	Terminal box cover	PA66 glass fibre reinforced class V-0			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
23	Capacitor [1]	-			1
24	Priming plug	AISI 304			1

N°	PART NAME		MATERIAL	DIMENSION	STANDARD	Q.TY
25	Drain plug		AISI 304			1
26	O-ring [2]		NBR			1
31	Thrust flange		AISI 304			1
32	Key		AISI 316	4x4x14	UNI 6604	1
34	Impeller nut		Stainless steel A2-70	M10X1,25	UNI 7474	1
36	Motor casing		AISI 304			1
56	Box gasket		NBR			1
58	Cable entry		-			1
73	Double ring		AISI 304			1
75	Washer		AISI 304			1
76	Washer		AISI 304			1
77	O-ring [2]		NBR			1
78	O-ring [2]		NBR			1
93	Lip seal		NBR			1
110	Protector [1]		-			1
200	Screw	120/12,200/12,200/20	Stainless steel A2-70	M6X12	UNI 5931	8
		200/25		M8X14		

[1] Only for single phase
[2] FPM for H-HS-HW-HSW
EPDM for E

MECHANICAL SEAL



REF	PART NAME	MATERIAL					
		Standard version	Optional				
		(CD)	(CDH)	(CDHS)	(CDHW)	(CDHSW)	(CDE)
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
CDM 70/05	CD 70/05	6203 2RSH	-	6202 2RSH	-
CDM 70/07	CD 70/07	6203 2RSH	-	6202 2RSH	-
CDM 70/12	CD 70/12	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDM 90/10	CD 90/10	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDM 120/07	CD 120/07	6203 2RSH	-	6202 2RSH	-
CDM 120/12	CD 120/12	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDM 120/20	CD 120/20	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
CDM 200/12	CD 200/12	6203 2RSH	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CDM 200/20	CD 200/20	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
-	CD 200/25	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3

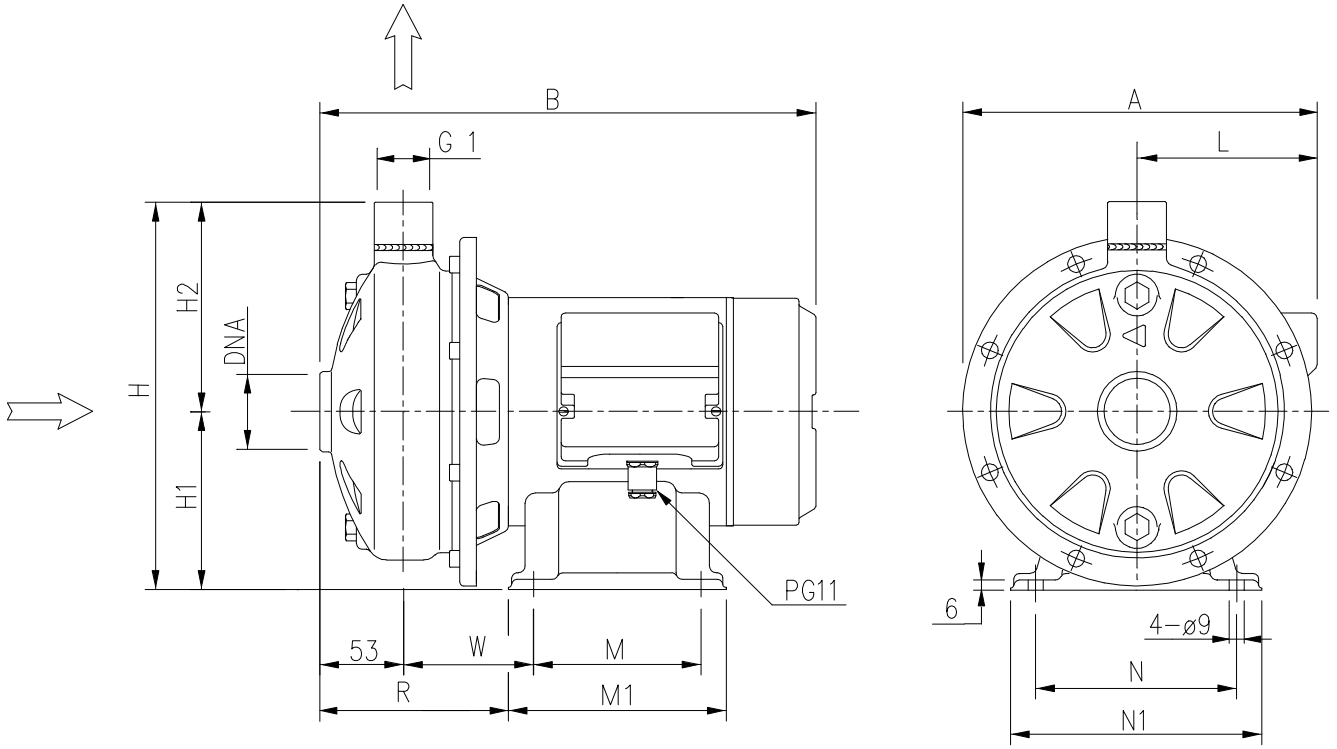
(*) Only for IE3 Motors

DIMENSIONS AND WEIGHT

50Hz

Rev. M

PUMP



Pump type CDM-CD	Dimensions [mm]																			Weight [kgf]		
	A		B		(*)	H	H1	H2	L		M		M1		N	N1	R	W	DNA			
	[1~]	[3~]	[1~]	[3~]	[3~]				[1~]	[3~]	[1~]	[3~]	[1~]	[3~]						[1~]	[3~]	[3~]
70/05	209	208	298	298	-	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	77.5	G1 1/4	8.7	8.7	-
70/07	209	208	298	298	-	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	77.5	G1 1/4	10	10	-
70/12	208	208	328	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	130.5	92.5	G1 1/4	13.2	13.7	13.7
90/10	209	208	328	328	328	229.5	106	123.5	105	104	100	100	130	130	120	150	130.5	92.5	G1 1/4	11.5	11.6	11.6
120/07	209	208	298	298	-	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	77.5	G1 1/4	10	10.5	-
120/12	208	208	328	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	130.5	92.5	G1 1/4	12.3	12.9	12.9
120/20	232	232	356	366	376	250	118	132	116	116	120	120	150	150	140	170	133	95	G1 1/4	15.3	17.4	18.3
200/12	208	208	328	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	130.5	92.5	G1 1/2	12	12.6	12.6
200/20	213	213	356	366	376	229.5	106	123.5	109	109	120	120	150	150	140	170	133	95	G1 1/2	15.8	16.6	17.5
200/25	-	232	-	366	376	250	118	132	-	116	-	120	-	150	140	170	138	100	G1 1/2	-	17.4	18.3

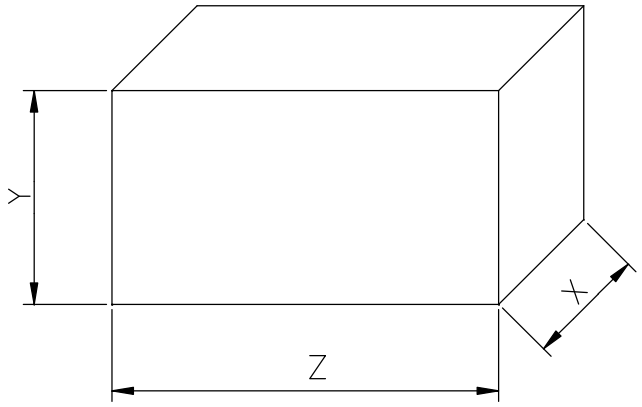
[1~] Single phase
[3~] Three phase
(*) Only for IE3 Motors

DIMENSIONS AND WEIGHT

50Hz

Rev. M

PACKING



Pump type		Packing [mm]						Weight [kgf]		
		X		Y		Z				(*)
Single Phase	Three Phase		(*)		(*)		(*)	[1~]	[3~]	[3~]
CDM 70/05	CD 70/05	239	-	250	-	362	-	9.6	9.6	-
CDM 70/07	CD 70/07	239	-	250	-	362	-	10.8	10.8	-
CDM 70/12	CD 70/12	244	244	279	279	382	382	13.8	14.6	14.6
CDM 90/10	CD 90/10	239	239	250	250	362	362	12.2	12.4	12.4
CDM 120/07	CD 120/07	239	-	250	-	362	-	10.5	11.3	-
CDM 120/12	CD 120/12	239	239	250	250	362	362	13	13.7	13.7
CDM 120/20	CD 120/20	244	252	279	279	382	402	17.5	18.3	19.2
CDM 200/12	CD 200/12	239	239	250	250	362	362	12.8	13.4	13.4
CDM 200/20	CD 200/20	239	252	250	279	362	402	16.6	17.6	18.5
-	CD 200/25	239	252	250	279	362	402	-	18.4	19.3

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

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
CDM 70/05	CD 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
CDM 70/07	CD 70/07	0.55	0.75	-	-	16	450	-	-	-	1.1	1.0	5.0	3.5	2.0	16.1	17.0	9.7
CDM 70/12	CD 70/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.5	1.35	6.5	4.3	2.5	24.5	31.0	17.8
-	CD 70/12	0.9	1.2	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CDM 90/10	CD 90/10	0.75	1.0	-	IE2	20	450	77.2	80.9	81.3	1.2	1.05	5.6	3.3	1.9	22.7	22.0	12.9
-	CD 90/10	0.75	1.0	-	IE3	-	-	80.9	82.3	82.1	-	0.91	-	3.0	1.7	-	19.7	11.4
CDM 120/07	CD 120/07	0.55	0.75	-	-	16	450	-	-	-	1.0	1.0	4.6	3.2	1.85	16.1	17.0	9.7
CDM 120/12	CD 120/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.6	1.45	6.9	4.5	2.6	25	31.0	17.8
-	CD 120/12	0.9	1.2	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CDM 120/20	CD 120/20	1.5	2.0	-	IE2	40	450	80.3	83.4	83.8	2.1	2.09	9.3	7.0	4.0	43	34.3	20.0
-	CD 120/20	1.5	2.0	-	IE3	-	-	84.2	86.8	86.9	-	2.01	-	7.1	4.1	-	66.6	38.4
CDM 200/12	CD 200/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.4	1.35	6.3	4.3	2.5	25	31.0	17.8
-	CD 200/12	0.9	1.2	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CDM 200/20	CD 200/20	1.5	2.0	-	IE2	40	450	80.3	83.4	83.8	2.3	2.22	10.2	7.4	4.3	43	34.3	20.0
-	CD 200/20	1.5	2.0	-	IE3	-	-	84.2	86.8	86.9	-	2.01	-	7.1	4.1	-	66.6	38.4
-	CD 200/25	1.85	2.5	-	IE2	-	-	83.0	84.4	83.8	-	2.87	-	8.7	5.0	-	59.0	34.3
-	CD 200/25	1.85	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]	
CDM 70/05	CD 70/05	0.37	0.5	<70
CDM 70/07	CD 70/07	0.55	0.75	
CDM 70/12	CD 70/12	0.9	1.2	
CDM 90/10	CD 90/10	0.75	1.0	
CDM 120/07	CD 120/07	0.55	0.75	
CDM 120/12	CD 120/12	0.9	1.2	
CDM 120/20	CD 120/20	1.5	2.0	
CDM 200/12	CD 200/12	0.9	1.2	
CDM 200/20	CD 200/20	1.5	2.0	
-	CD 200/25	1.85	2.5	

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