



**EBARA**

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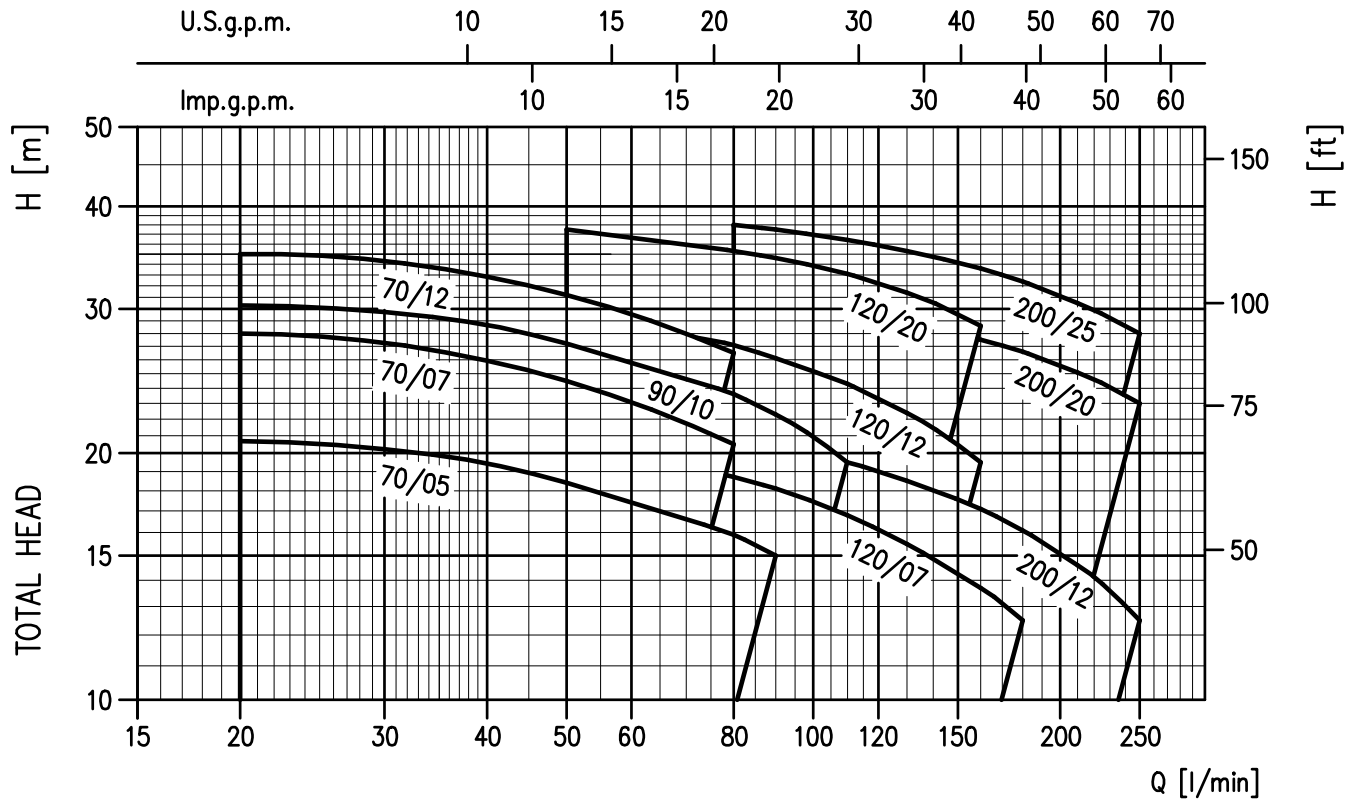
## SPECIFICATION

50Hz

Rev. I

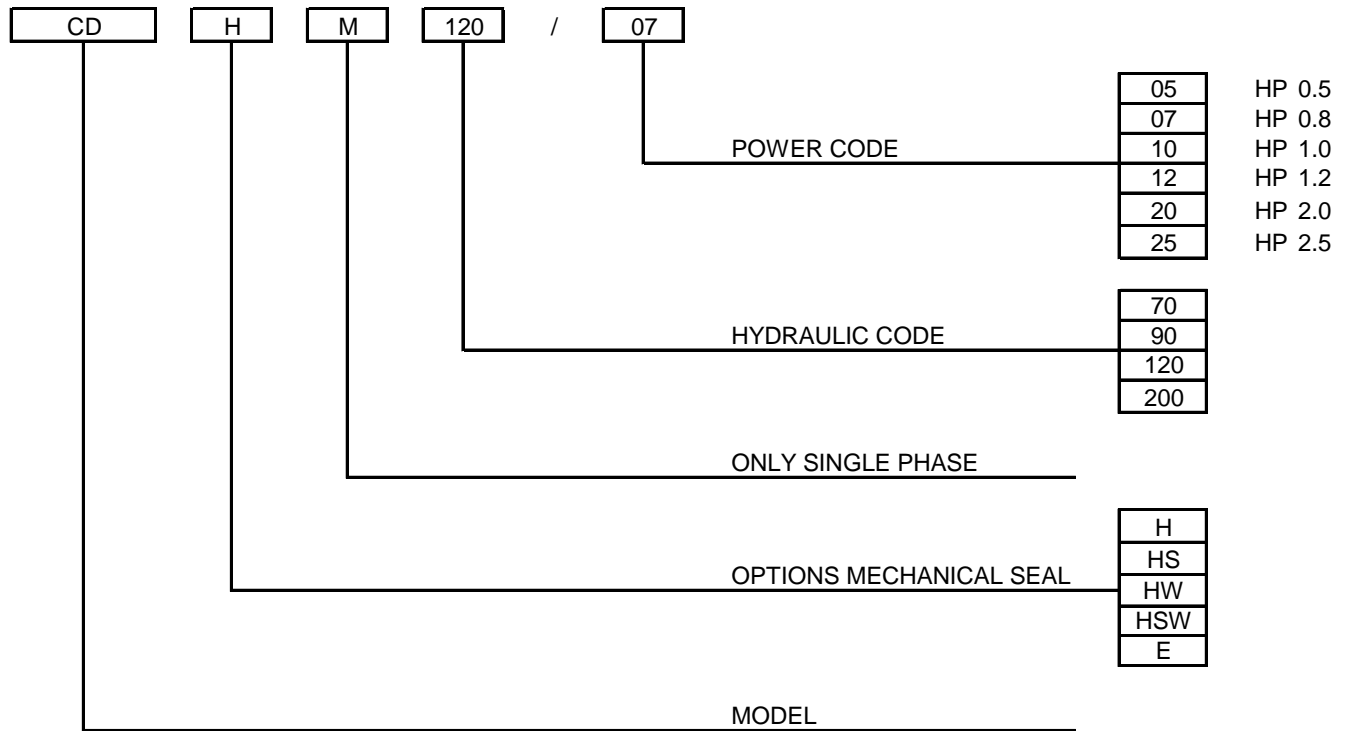
PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. -5 max. +60 (CD and CDE 70/05-70/07-90/10) max. +90 max. +110 (H-HS-HW-HSW) max. +120 (CDE 70/12, 120/07,120/12, 120/20, 200/12, 200/20, 200/25)
Maximum working pressure [MPa]		0.8
Construction	Impeller	Closed centrifugal type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	G 1¼, G 1½ (CD 200) UNI ISO 228
	Discharge	G 1 UNI ISO 228
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 CD) Ceramic/Carbon/FPM (for CDH) SiC/SiC/FPM (for CDHS) Tungsten Carbide/Tungsten Carbide/FPM (for CDHW) SiC/Tungsten Carbide/FPM (for CDHSW) Ceramic/Carbon/EPDM (for CDE)
	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
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈ 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	AISI 304	
Base material/motor support	AISI 304	
Dimensions of cable entry	PG11	



Pump type		Power		Q=Capacity											
Single Phase	Three Phase	[kW]	[HP]	l/min	0	20	50	80	90	110	130	160	180	210	250
				m <sup>3</sup> /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	32	-	29,5	27,1	26,1	24,3	22,4	19,5	-	-	-	-
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	23	-	-	20,7	20,2	19,5	18,5	17,1	16,1	14,6	12,5	-
CDM 200/20	CD 200/20	1,5	2	34	-	-	31	30,6	29,7	28,9	27,5	26,6	25,1	23	-
-	CD 200/25	1,8	2,5	41	-	-	38	37,5	36,4	35,3	33,6	32,4	30,5	28	-

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  $\nu = 1 \text{ mm}^2/\text{s}$  (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.

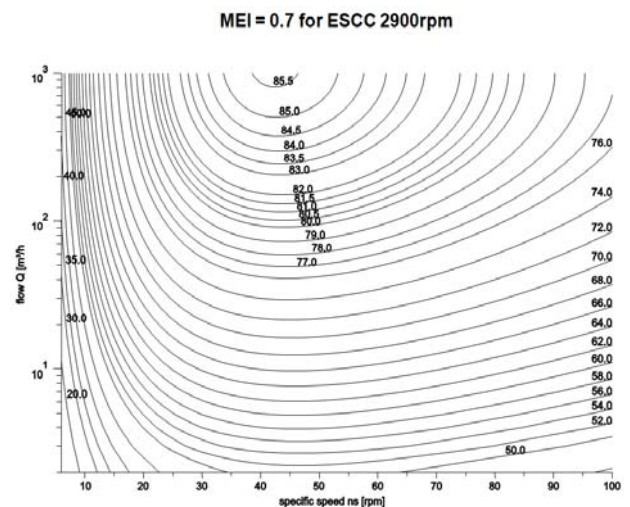
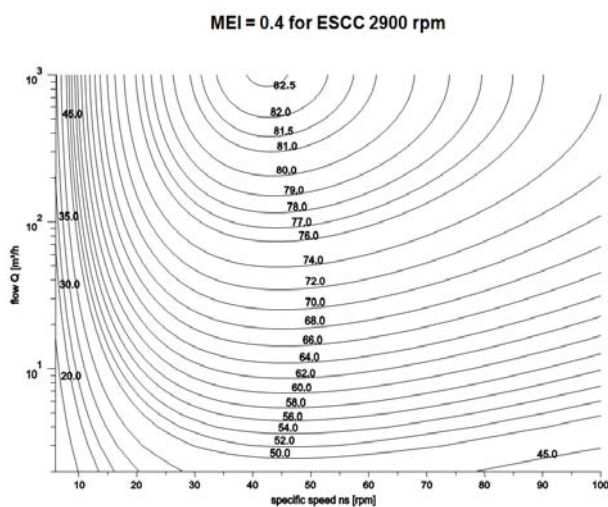
Symbols explanation:

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

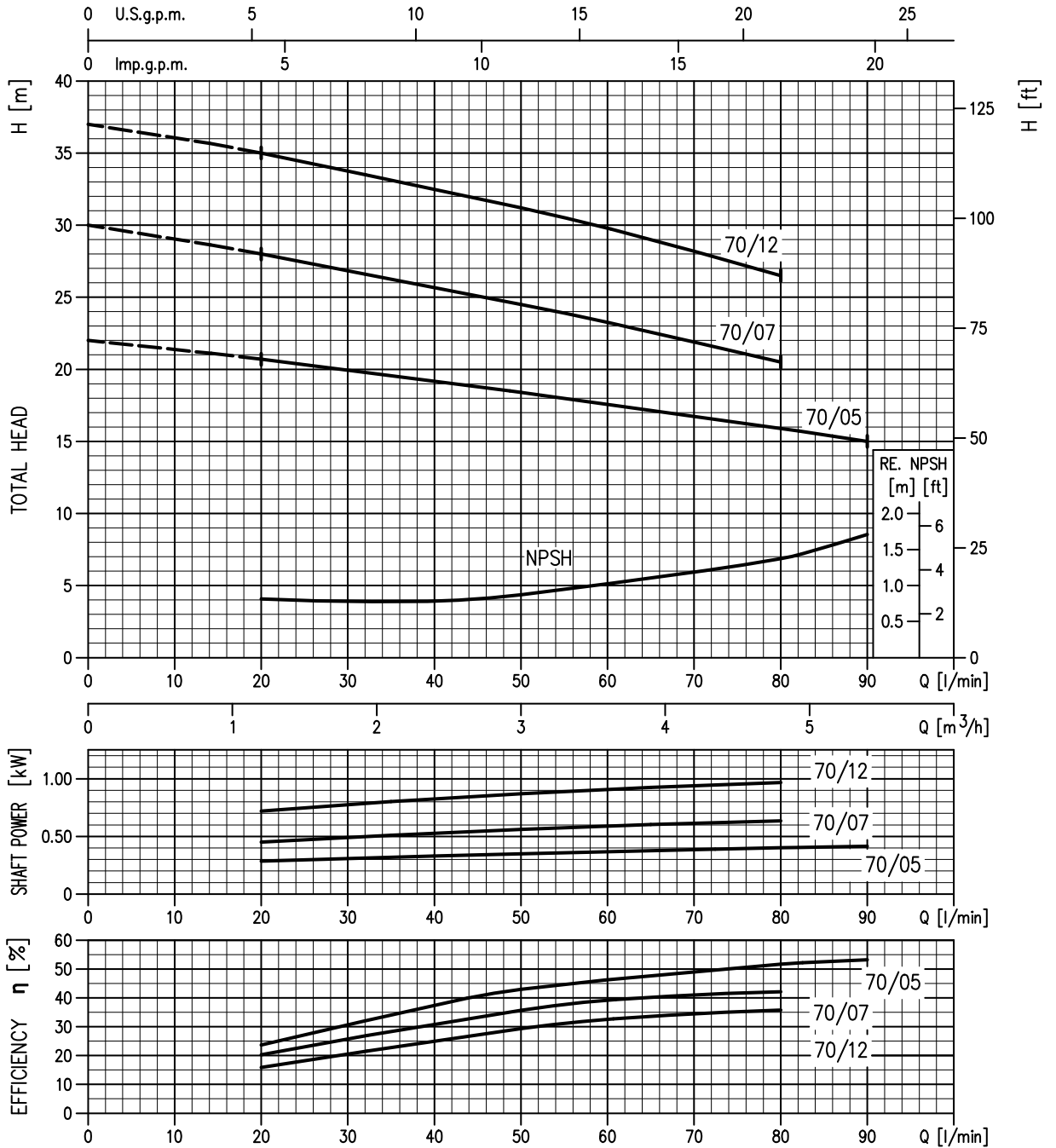
The minimum efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

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.

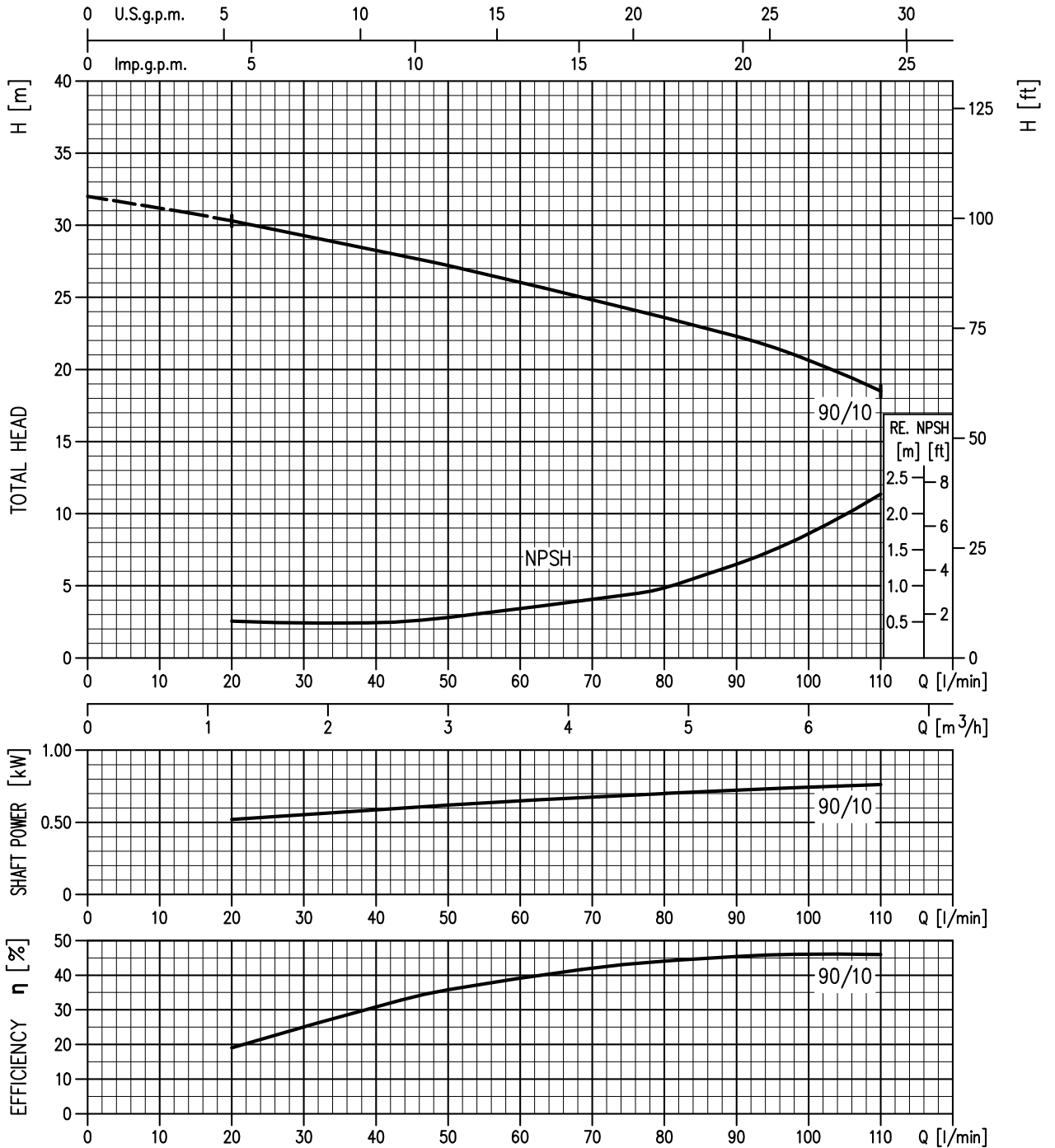


CD 70/05 (0.37 kW) - Impeller diameter = 132 mm  
 CD 70/07 (0.55 kW) - Impeller diameter = 157 mm  
 CD 70/12 (0.90 kW) - Impeller diameter = 176 mm



Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906 – Annex A

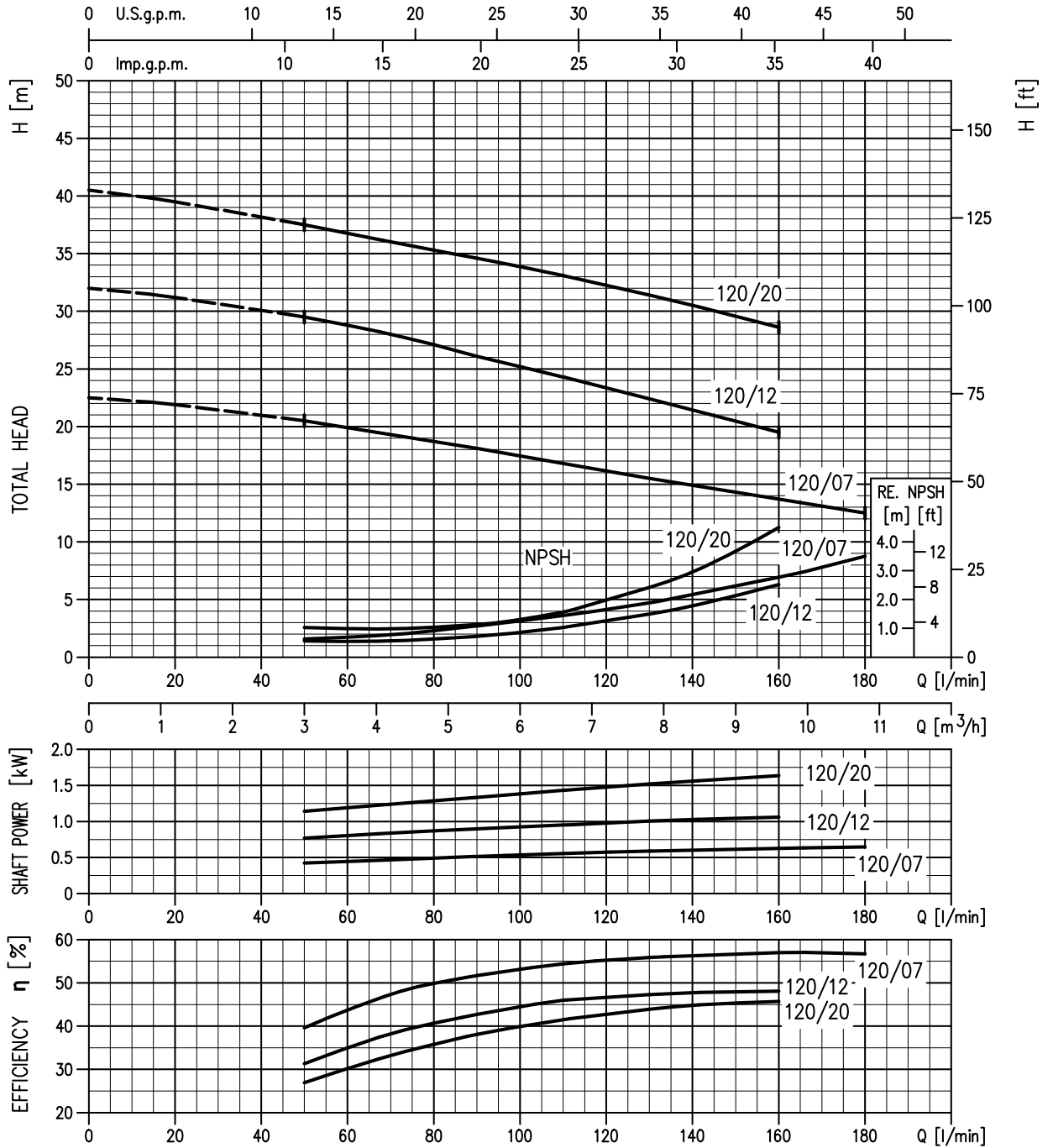
**CD 90/10 (0.75 kW) MEI > 0.70 - Impeller diameter = 157 mm**



Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906 – Annex A

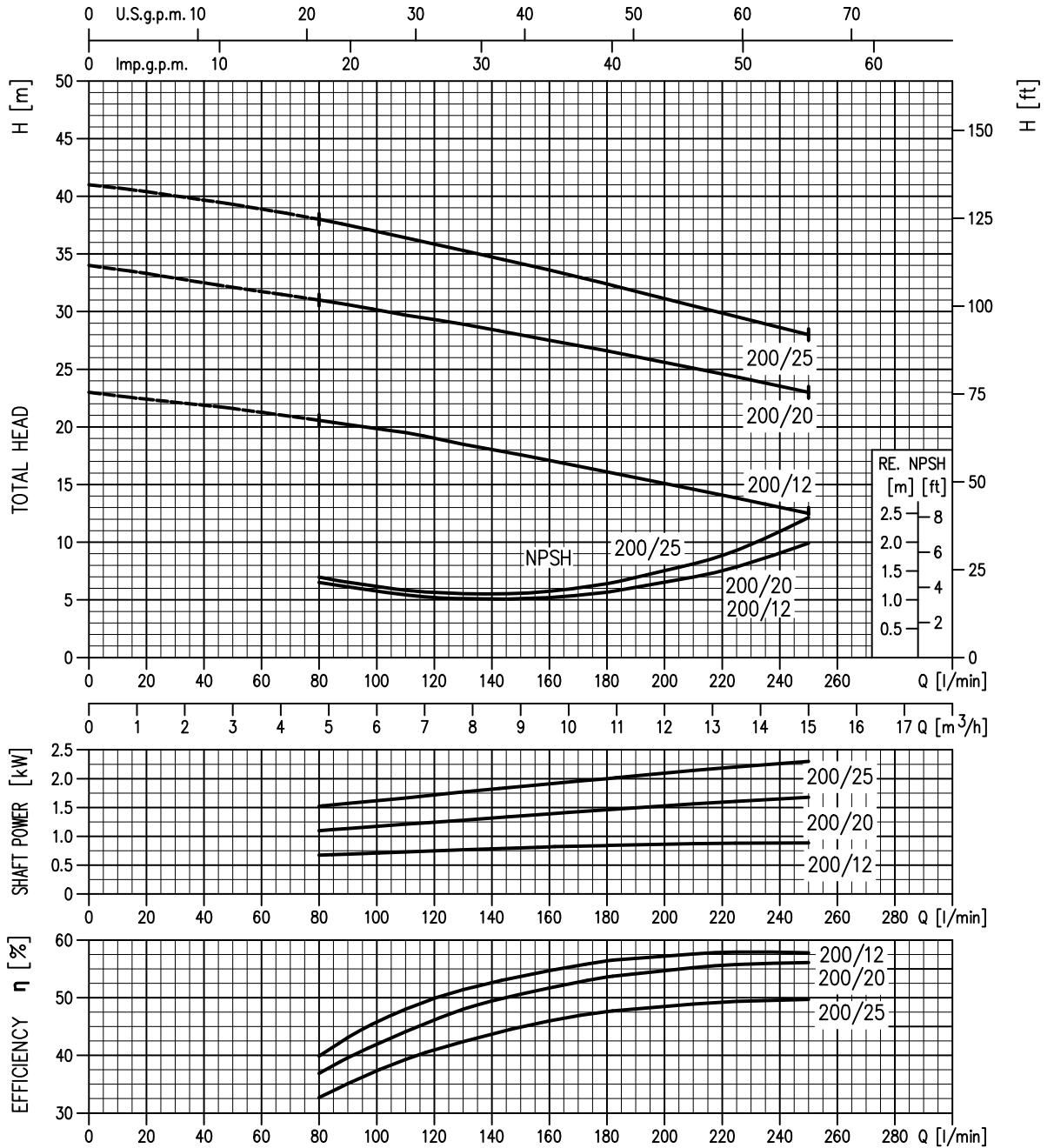


CD 120/07 (0.75 kW) MEI > 0.50 - Impeller diameter = 132 mm  
 CD 120/12 (0.90 kW) MEI > 0.30 - Impeller diameter = 157 mm  
 CD 120/20 (1.50 kW) MEI > 0.30 - Impeller diameter = 176 mm



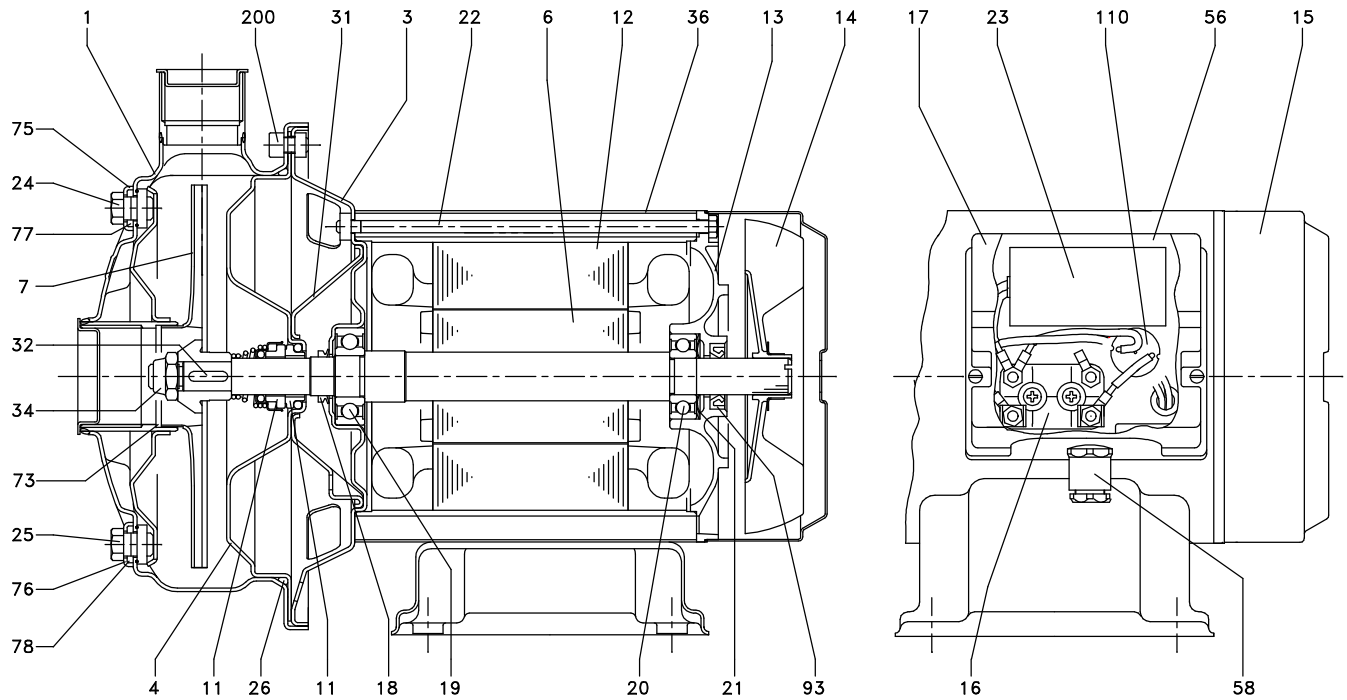
Rotation speed ≈ 2800 min<sup>-1</sup>  
 Test standard: ISO 9906 – Annex A

CD 200/12 (0.90 kW) MEI > 0.30 - Impeller diameter = 132 mm  
 CD 200/20 (1.50 kW) MEI > 0.30 - Impeller diameter = 157 mm  
 CD 200/25 (1.80 kW) MEI > 0.30 - Impeller diameter = 176 mm



Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906 – Annex A

### SECTIONAL VIEW



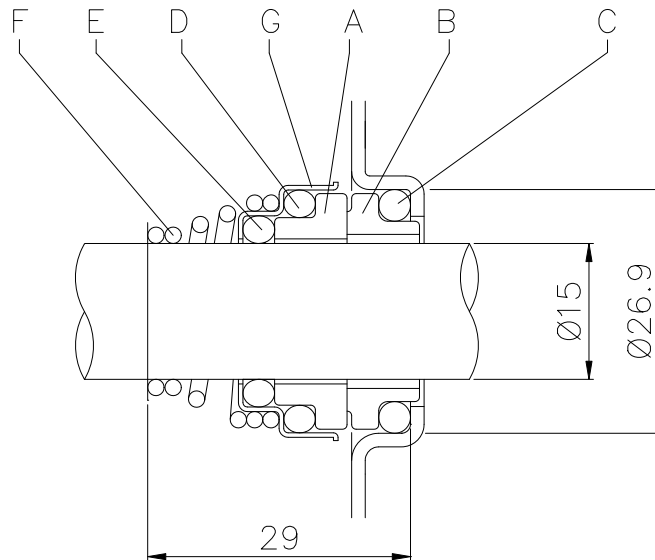
N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY	N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304			1	25	Drain plug	AISI 304			1
3	Motor bracket	AISI 304			1	26	O-ring [2]	NBR			1
4	Casing cover	AISI 304			1	31	Thrust flange	AISI 304			1
6	Shaft with rotor	AISI 303 (Wet extension)			1	32	Key	AISI 316	4x4x14	UNI 6604	1
7	Impeller	AISI 304			1	34	Impeller nut	Stainless steel A2-70	M10X1,25	UNI 7474	1
11	Mechanical seal	Ceramic/Carbon/NBR	see page 301		1	36	Motor casing	AISI 304			1
12	Motor frame with stator	-			1	56	Box gasket	NBR			1
13	Motor cover	Aluminium			1	58	Cable entry	-			1
14	Fan	PA			1	73	Casing ring [3]	NBR			1
15	Fan cover	AISI 304			1	75	Washer	AISI 304			1
16	Terminal board	-			1	76	Washer	AISI 304			1
17	Terminal box cover	PA66 glass fibre reinforced			1	77	O-ring [2]	NBR			1
18	Splash ring	NBR			1	78	O-ring [2]	NBR			1
19	Pump side ball bearing	-			1	93	Lip seal	NBR			1
20	Fan side ball bearing	-			1	110	Protector [1]	-			1
21	Adjusting ring	Steel C70			1	200	Screw	70/05, 70/07, 90/10,	Stainless steel A2-70	M6X12	UNI 5931
22	Tie rod	Fe 420 Galvanized		4	120/07, 120/12,						
23	Capacitor [1]	-		1	200/12, 200/20						
24	Priming plug	AISI 304		1	70/12, 120/20, 200/25			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

**MECHANICAL SEAL**

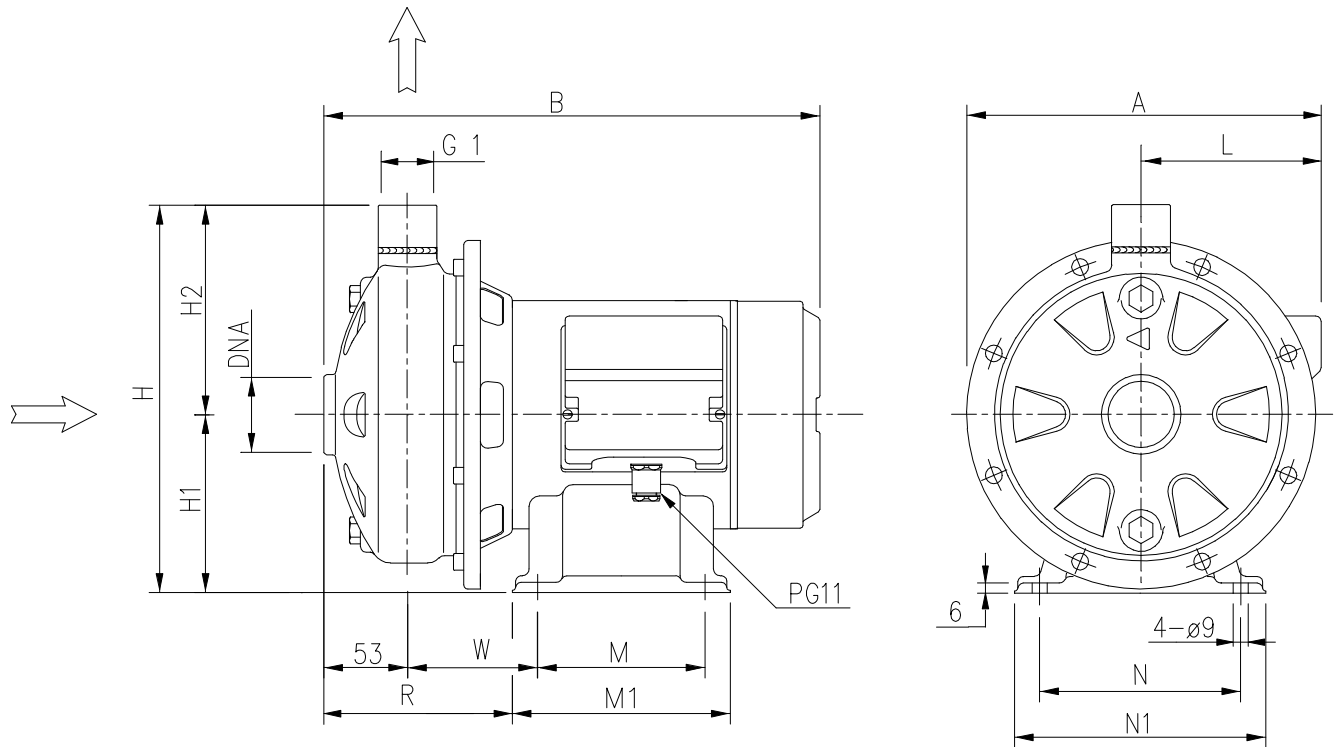


REF	PART NAME	MATERIAL					
		Standard version (CD)	(CDH)	(CDHS)	Optional (CDHW)	(CDHSW)	(CDE)
A	Rotary seal ring	Ceramic	Ceramic	Silicon carbide	Tungsten carbide	Silicon carbide	Ceramic
B	Stationary seal ring	Carbon graphite	Carbon graphite	Silicon carbide	Tungsten carbide	Tungsten carbide	Carbon graphite
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	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	6202 2RSH
CDM 90/10	CD 90/10	6203 2RSH	6202 2RSH
CDM 120/07	CD 120/07	6203 2RSH	6202 2RSH
CDM 120/12	CD 120/12	6203 2RSH	6202 2RSH
CDM 120/20	CD 120/20	6204 2RSH	6203 2RSH
CDM 200/12	CD 200/12	6203 2RSH	6202 2RSH
CDM 200/20	CD 200/20	6204 2RSH	6203 2RSH
-	CD 200/25	6204 2RSH	6203 2RSH

### PUMP

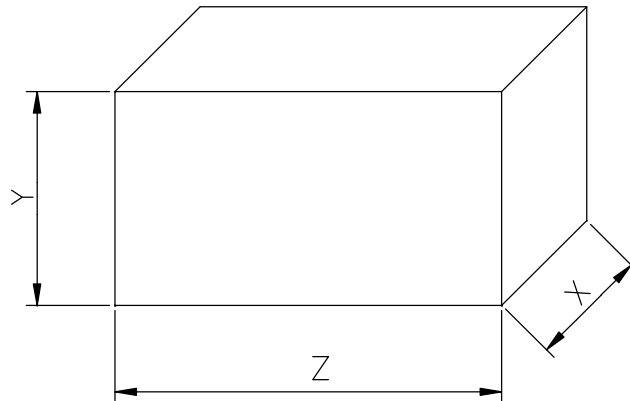


Pump type CDM-CD	Dimensions [mm]																		Weight [kgf]	
	A		B		H	H1	H2	L		M		M1		N	N1	R	W	DNA	[1-]	[3-]
	[1-]	[3-]	[1-]	[3-]				[1-]	[3-]	[1-]	[3-]	[1-]	[3-]							
70/05	209	208	298	298	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	77.5	G1 1/4	8.7	8.7
70/07	209	208	298	298	229.5	106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

[1-] Single phase

[3-] Three phase

PACKING



Pump type		Packing [mm]			Weight [kgf]	
Single Phase	Three Phase	X	Y	Z	[1~]	[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	279	382	13.8	14.6
CDM 90/10	CD 90/10	239	250	362	12.2	12.4
CDM 120/07	CD 120/07	239	250	362	10.5	11.3
CDM 120/12	CD 120/12	239	250	362	13	13.7
CDM 120/20	CD 120/20	244	279	382	17.5	18.3
CDM 200/12	CD 200/12	239	250	362	12.8	13.4
CDM 200/20	CD 200/20	239	250	362	16.6	17.6
-	CD 200/25	239	250	362	-	18.4

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

### MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load)			Input		Full load current			Locked rotor current		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase	Three Phase	Three phase			Single Phase	Three Phase	[A]			[A]		
								[μF]	[V]	50%			75%	100%	230 V	230 V	400 V	230 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
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
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
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
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
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 200/25	1.85	2.5	-	IE2	-	-	83.0	84.4	83.8	-	2.87	-	8.7	5.0	-	59.0	34.3

### NOISE DATA

Pump type		Power		L <sub>pA</sub> - 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.  
Tolerance ± 2.5 dB.