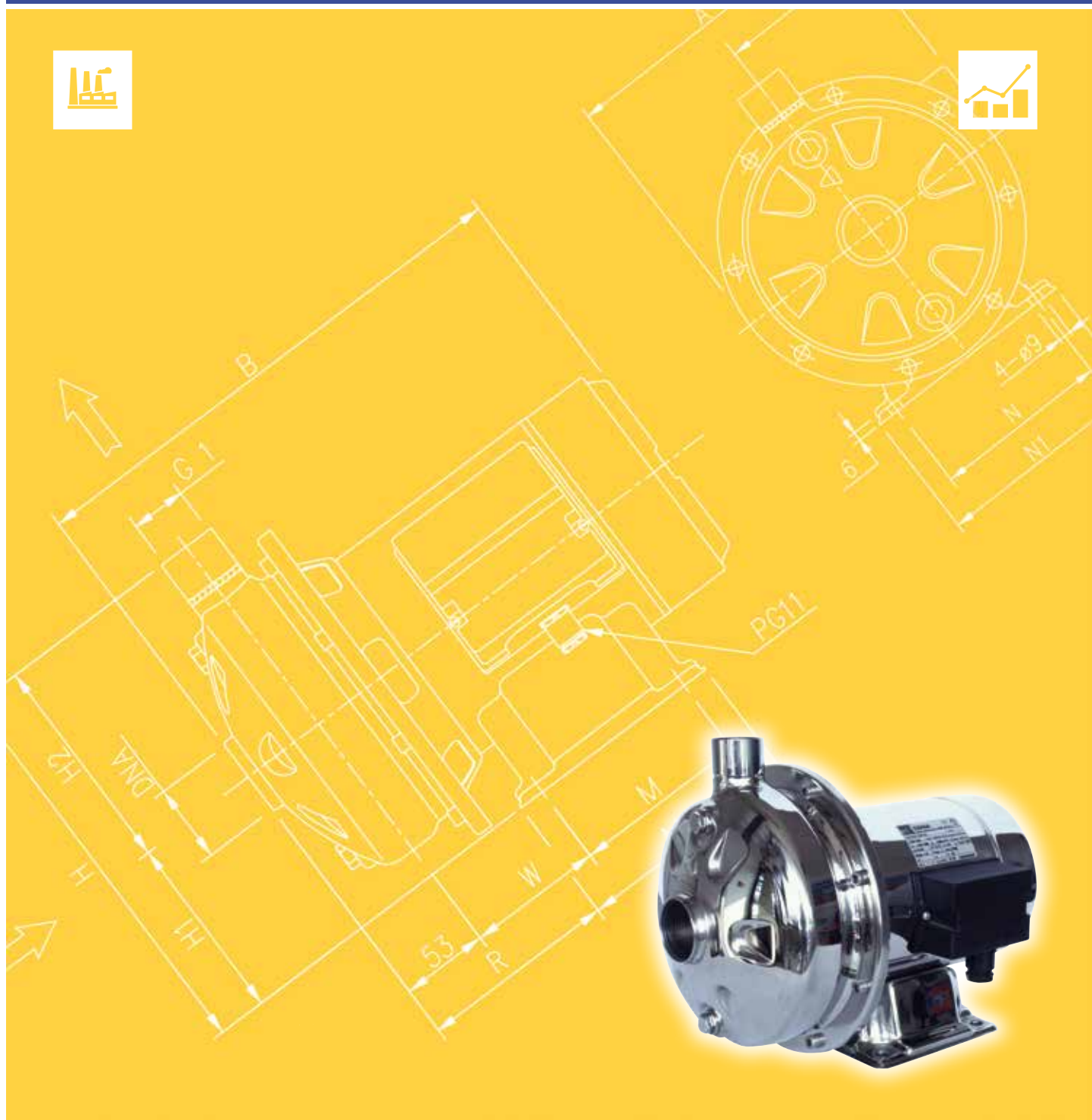




Japanese Technology since 1912

CD

Data Book 50Hz



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SPECIFICATIONS

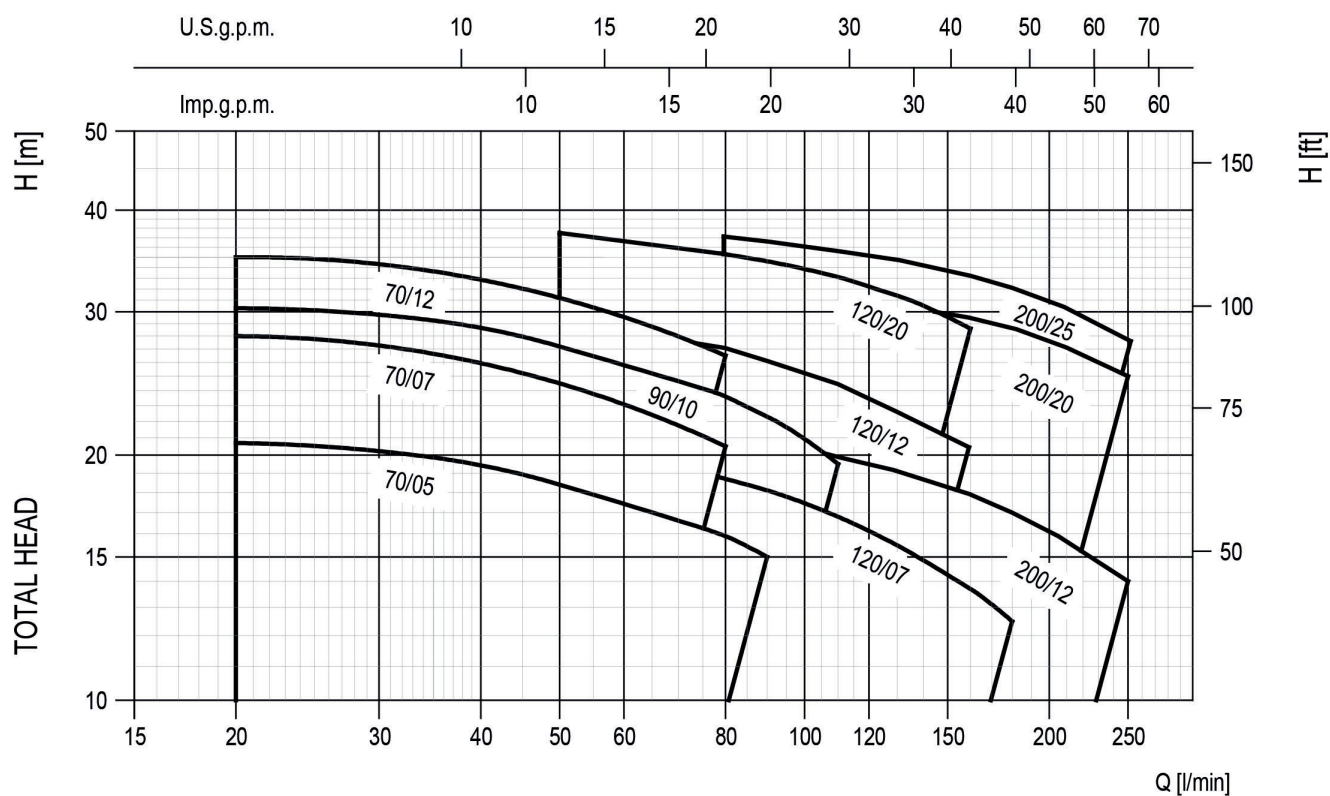
50Hz

Rev. V

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	G1"¼ (G1"½ CD 200) UNI ISO 228-1
	Discharge	G1" 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 special versions see page 303)
	Shaft	AISI 303 (Wet extension)
	Bracket	EN 1.4301 (AISI 304)
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	EN 1.4301 (AISI 304)	
Base material/motor support	EN 1.4301 (AISI 304)	
Dimensions of cable entry	PG11	

PERFORMANCE RANGE



SELECTION CHART

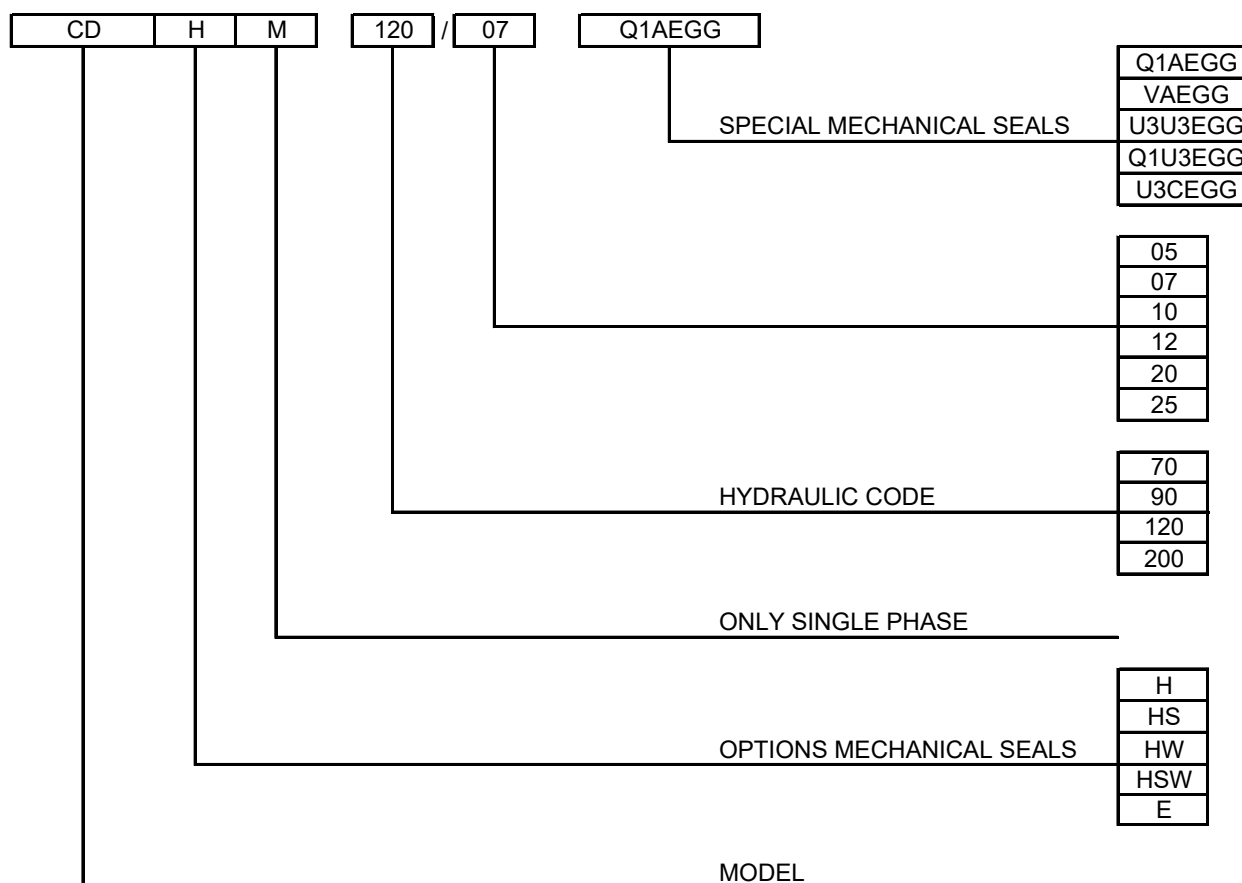
Pump Type		Q=Capacity											
		l/min	0	20	50	80	90	110	130	160	180	210	250
Single Phase	Three Phase	m³/h	0	1,2	3,0	4,8	5,4	6,6	7,8	9,6	10,8	12,6	15,0
H=Total manometric head in meters													
CDM 70/05	CD 70/05	21.1	20.3	18.3	16.0	15.2	-	-	-	-	-	-	-
CDM 70/07	CD 70/07	29.7	28.1	25.5	22.4	-	-	-	-	-	-	-	-
CDM 70/12	CD 70/12	35.5	33.7	30.7	26.5	-	-	-	-	-	-	-	-
CDM 90/10	CD 90/10	30.5	29.1	26.6	23.4	22.1	19.3	-	-	-	-	-	-
CDM 120/07	CD 120/07	23.1	-	21.1	19.7	19.2	18.2	17.1	15.2	13.8	-	-	-
CDM 120/12	CD 120/12	31.2	-	29.3	27.5	26.8	25.2	23.6	21.0	-	-	-	-
CDM 120/20	CD 120/20	40.5	-	38.5	37.2	36.8	35.8	34.7	32.7	-	-	-	-
CDM 200/12	CD 200/12	22.8	-	-	21.3	21.0	20.4	19.7	18.5	17.6	16.0	14.0	-
CDM 200/20	CD 200/20	34.5	-	-	32.6	32.3	31.7	31.0	30.0	29.2	28.0	26.2	-
-	CD 200/25	41.0	-	-	39.1	38.8	38.0	37.3	36.0	35.0	33.4	30.9	-

TYPE KEY and CURVE SPECIFICATIONS

50Hz

Rev. V

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:

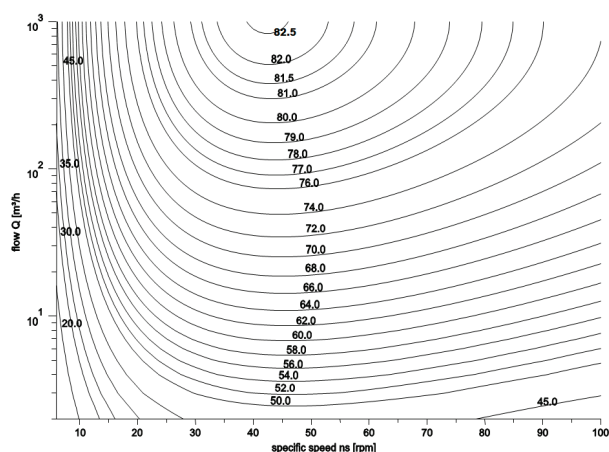
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump
- MEI = minimum efficiency index

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.

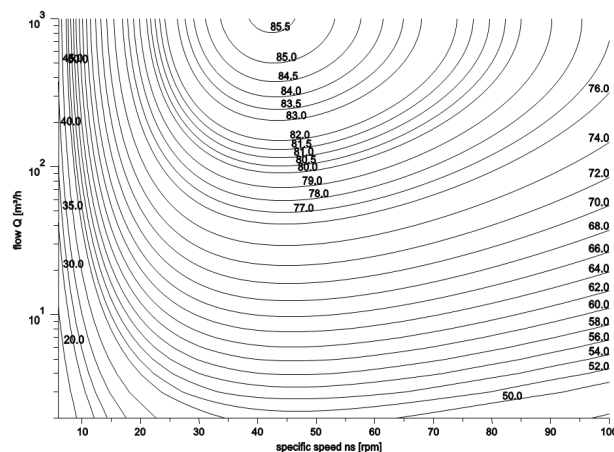
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

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



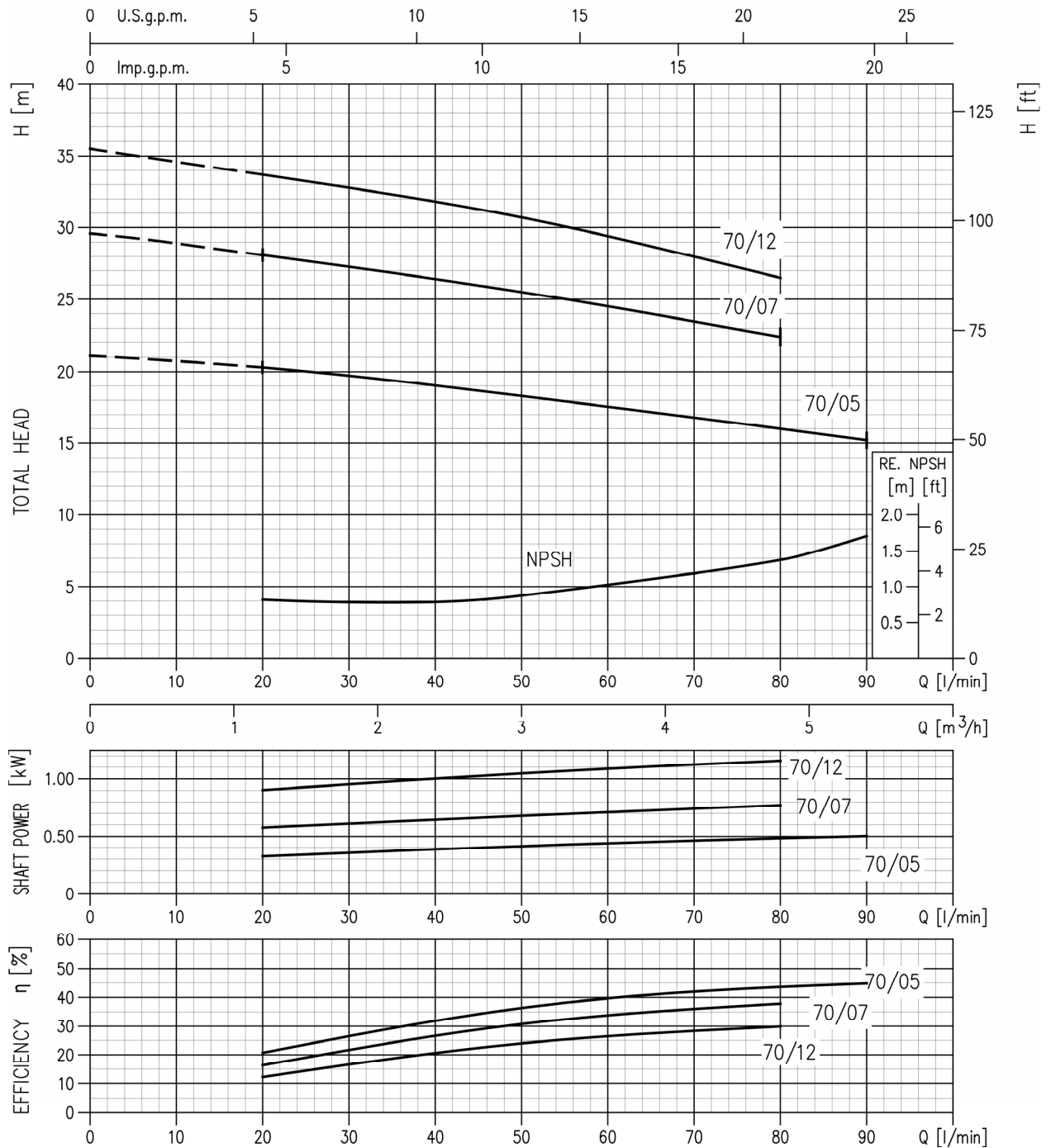
MEI = 0.7 for ESCC 2900rpm



CD 70/05 - Impeller diameter = 132 mm

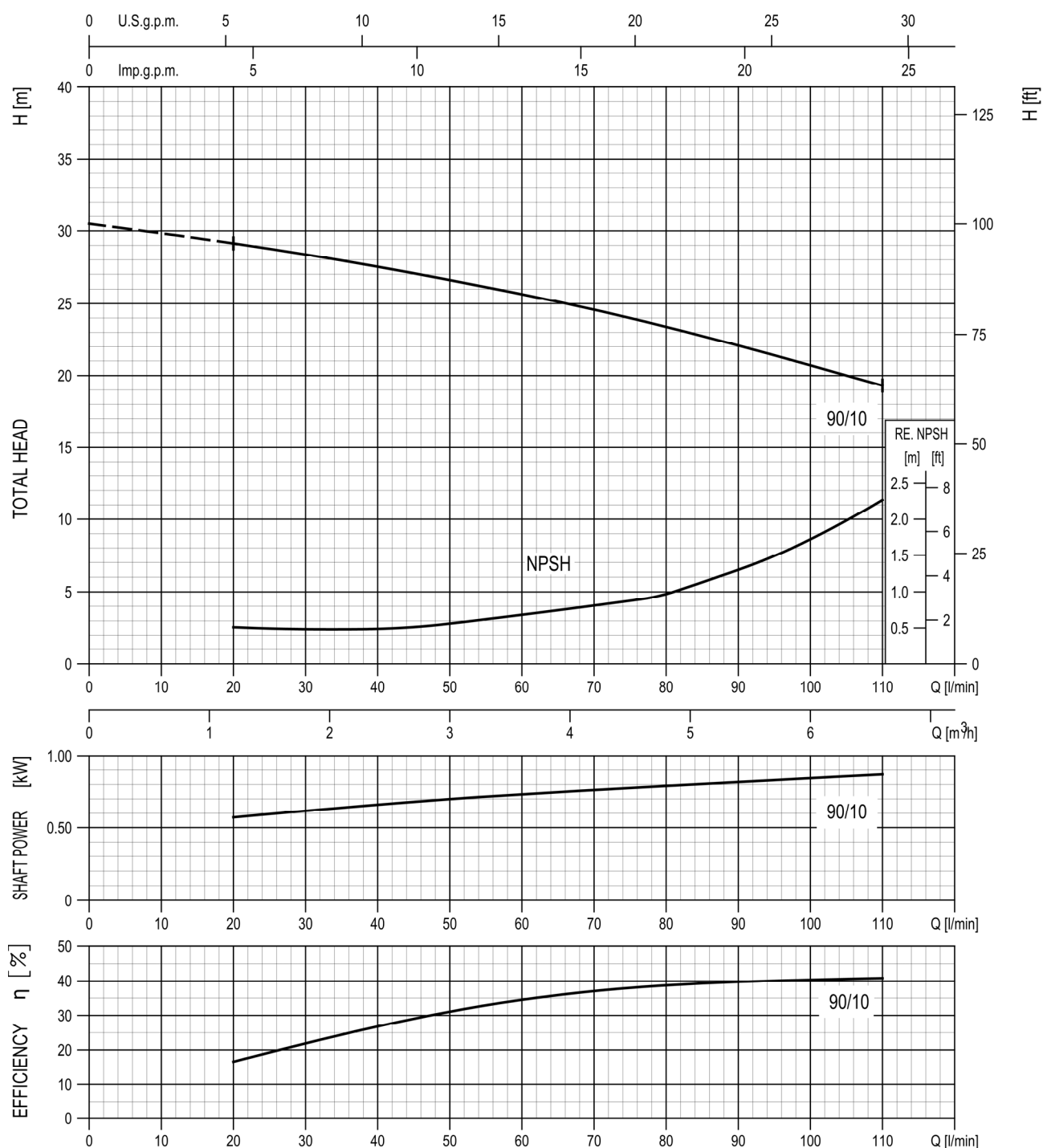
CD 70/07 - Impeller diameter = 157 mm

CD 70/12 - Impeller diameter = 176 mm



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

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

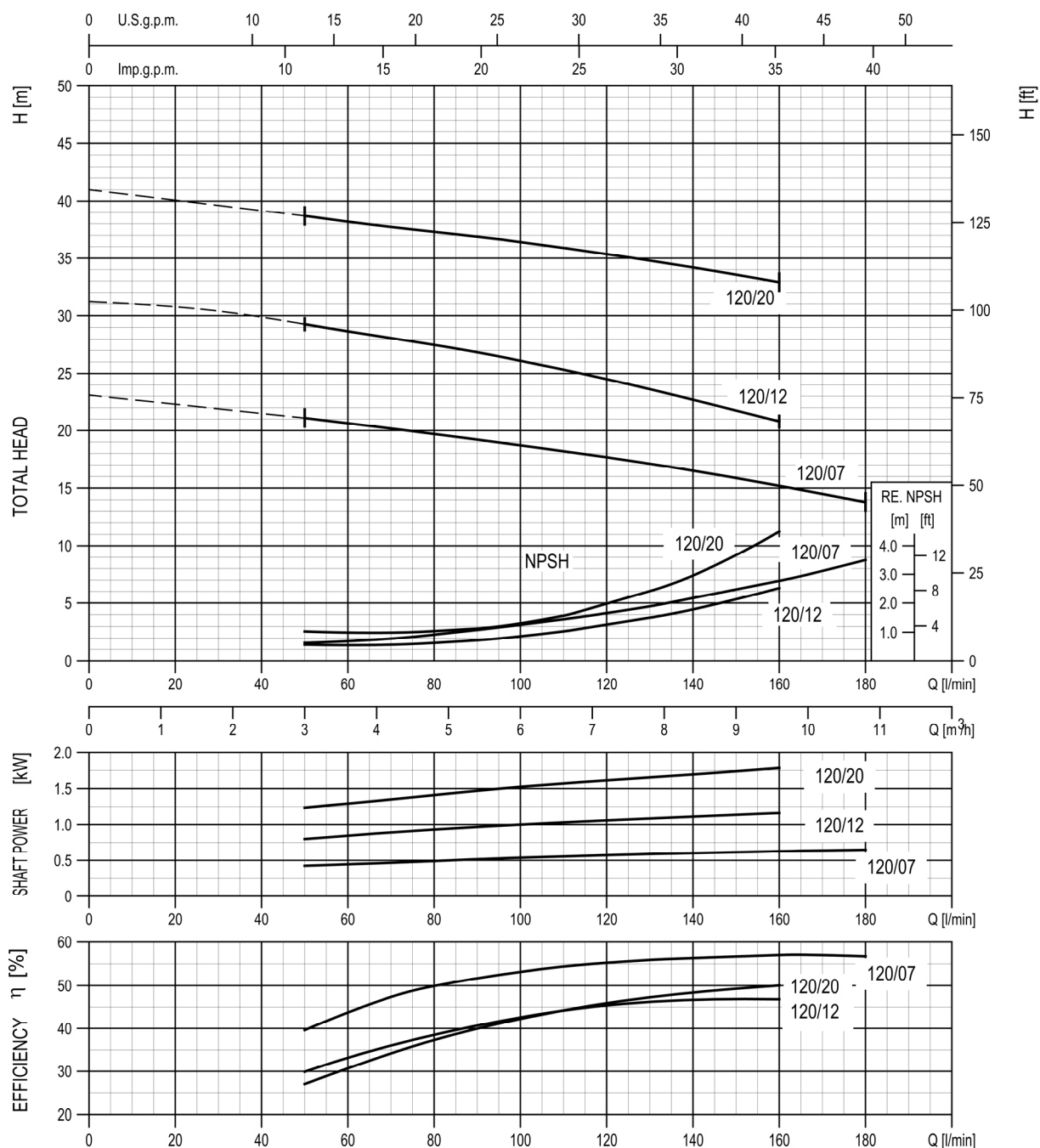


Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

CD 120/07 MEI > 0.70 - Impeller diameter = 132 mm

CD 120/12 MEI > 0.40 - Impeller diameter = 157 mm

CD 120/20 MEI > 0.70 - Impeller diameter = 176 mm

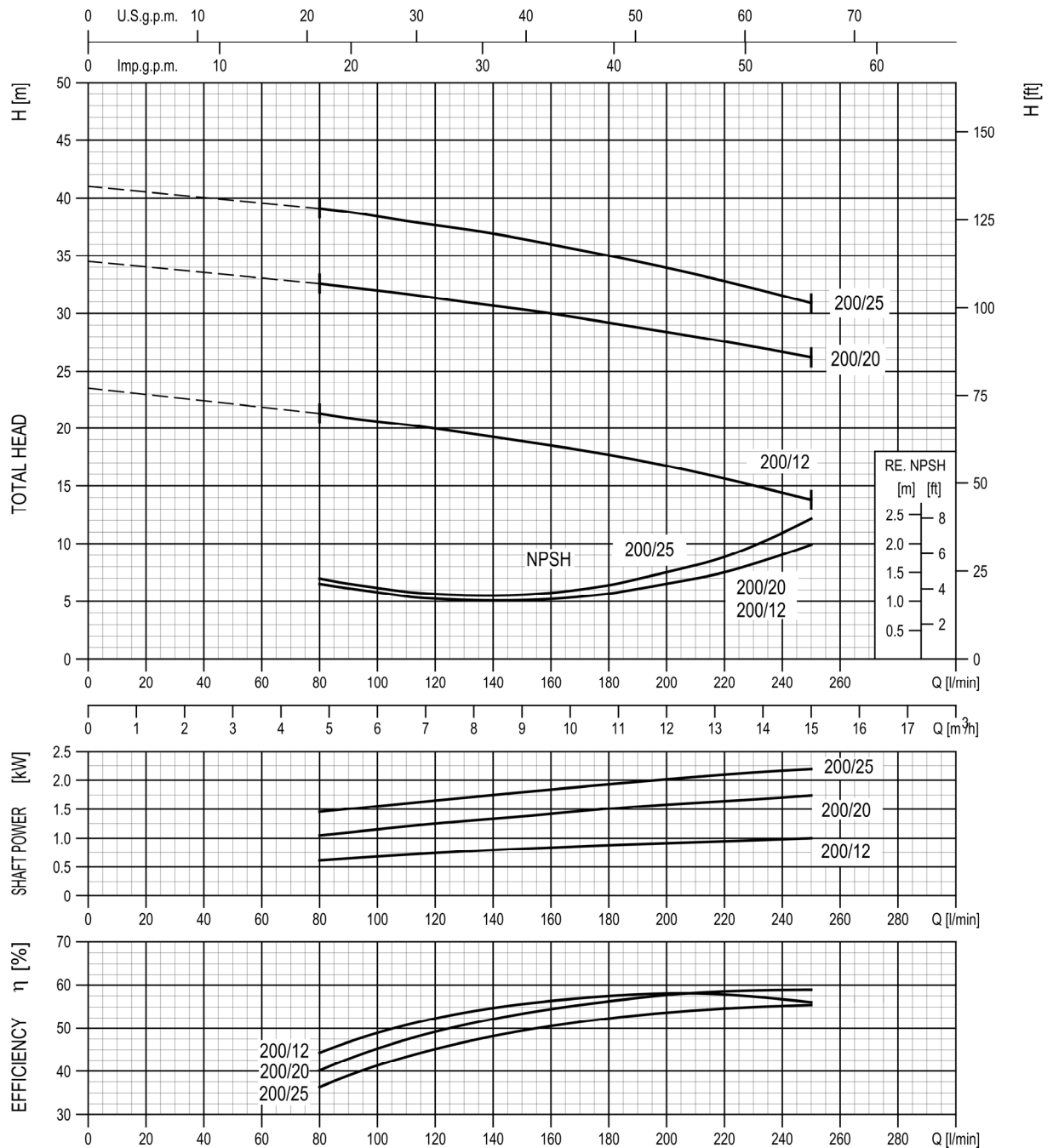


Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3

CD 200/12 MEI > 0.50 - Impeller diameter = 132 mm

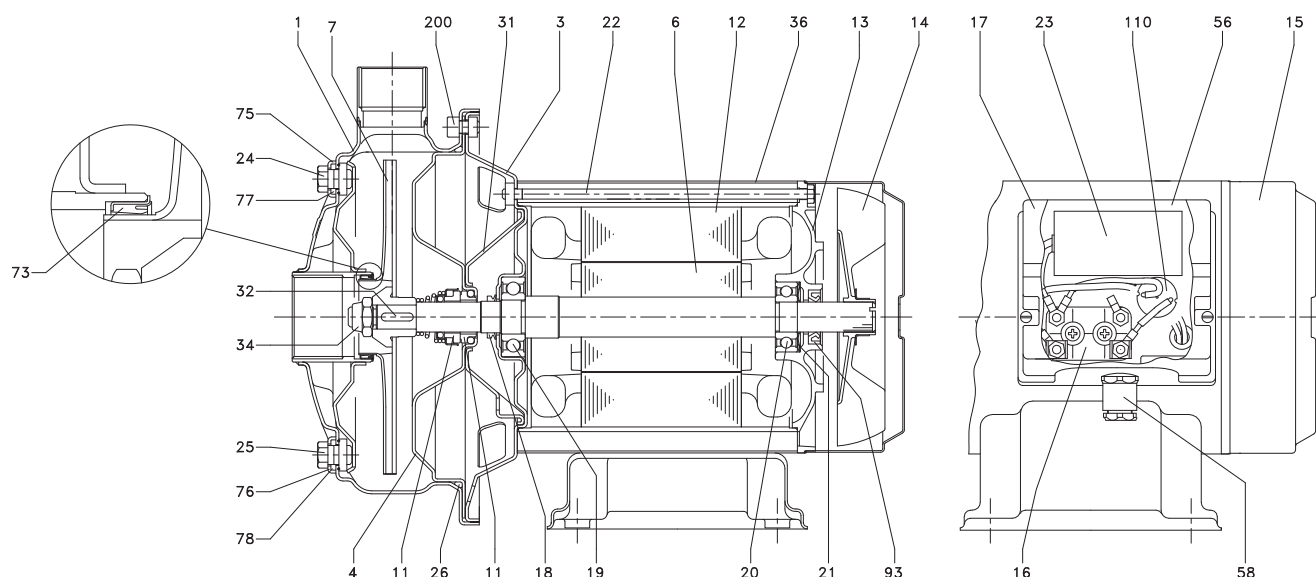
CD 200/20 MEI > 0.60 - Impeller diameter = 157 mm

CD 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

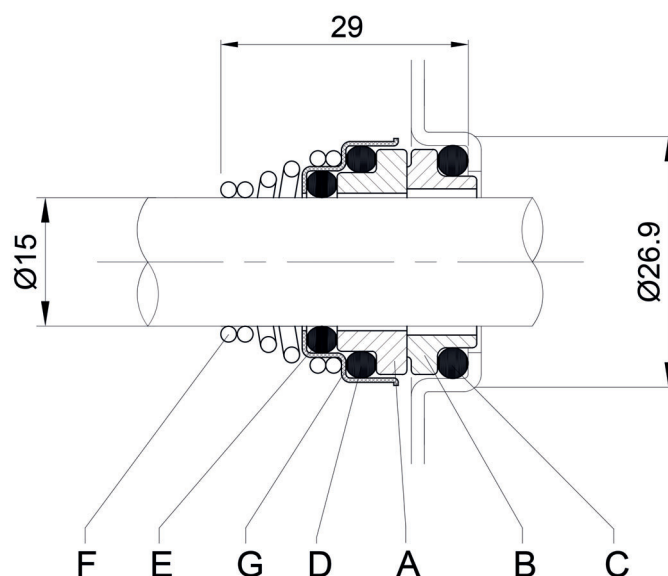


N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1
3	Motor bracket	AISI 304	1
4	Casing cover	AISI 304	1
6	Shaft w ith rotor	AISI 303 (Wet extension)	1
7	Impeller	AISI 304	1
11	Mechanical seal [4]	Ceramic/Carbon/NBR	1
12	Motor frame w ith stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PA	1
15	Fan cover	AISI 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	Q.TY
25	Drain plug	AISI 304	1
26	O-ring [2]	NBR	1
31	Thrust flange	AISI 304	1
32	Key	AISI 316	1
34	Impeller nut	Stainless steel A2-70	1
36	Motor casing	AISI 304	1
56	Box gasket	NBR	1
58	Cable entry	-	1
73	Casing ring [3]	EPDM	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	Stainless steel A2-70	8

- [1] Only for single phase
 [2] FPM for H-HS-HW-HSW
 EPDM for E and Special Mechanical Seal
 [3] FPM for H-HS-HW-HSW
 [4] See **MECHANICAL SEAL** pages 303-304

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

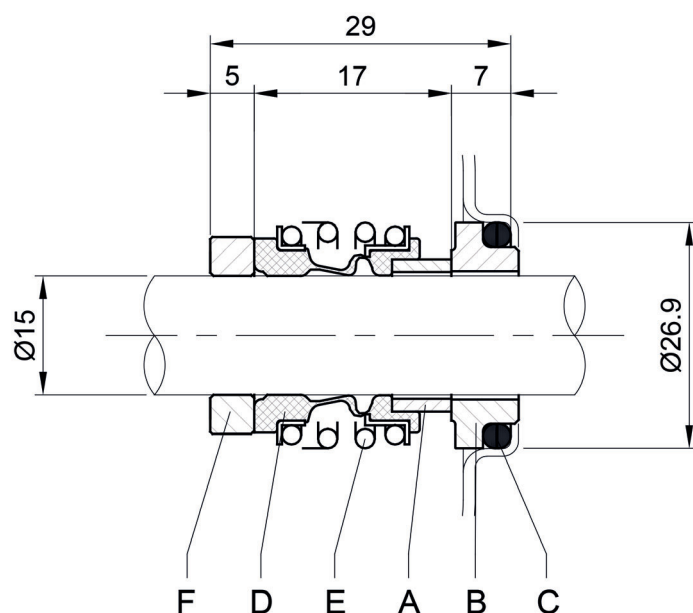
OPTIONAL

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

SPECIAL

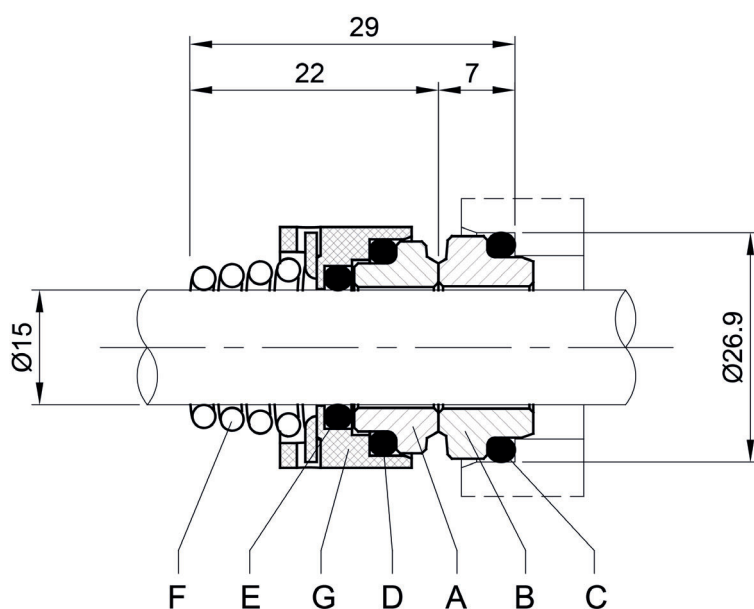
REF	PART NAME	MATERIAL			
		VAEGG	U3U3EGG	Q1U3EGG	U3CEGG
A	Rotary seal ring	Ceramic	Tungsten carbide	Silicon carbide	Tungsten carbide
B	Stationary seal ring	Metallised carbon	Tungsten carbide	Tungsten carbide	special Carbon
C	O-Ring	EPDM	EPDM	EPDM	EPDM
D	O-Ring	EPDM	EPDM	EPDM	EPDM
E	O-Ring	EPDM	EPDM	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			
ELASTOMER		CERAMIC-CARBON		ALL (except ceramic-carbon)	
	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

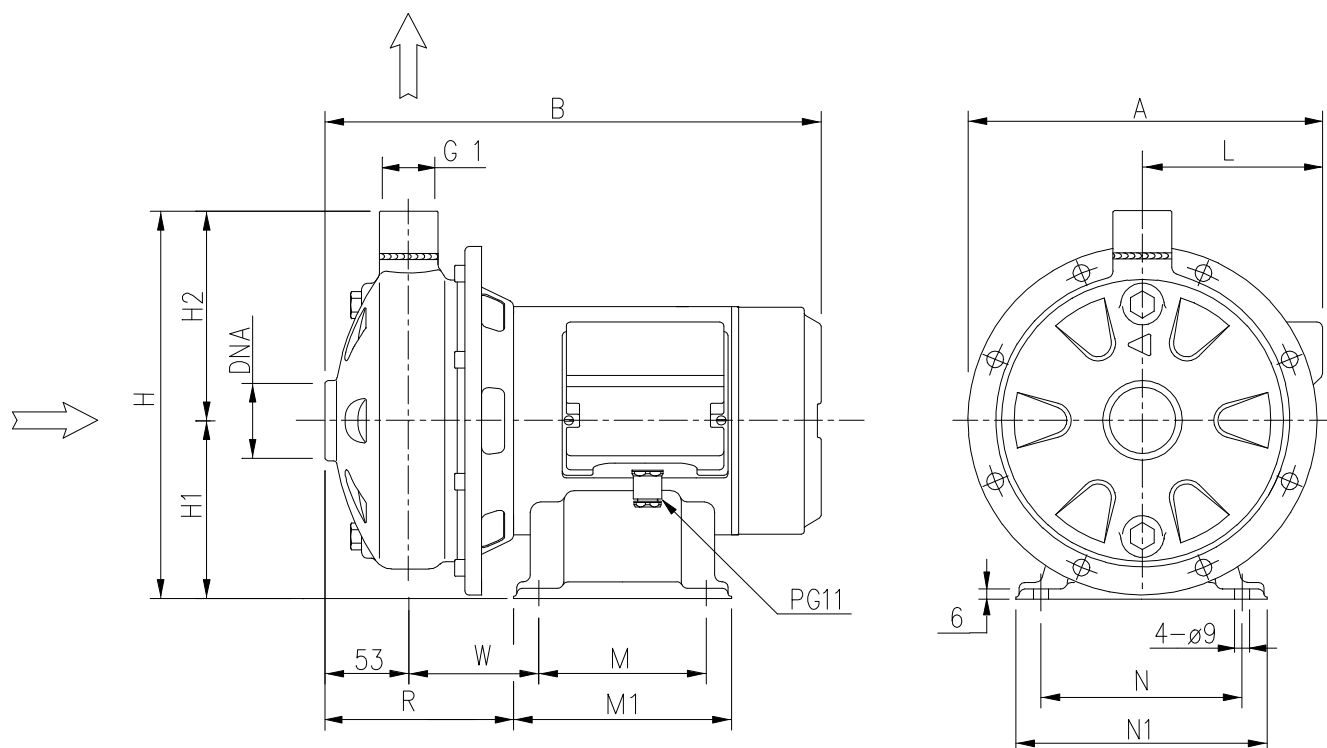
OPTIONAL mechanical seal	TEMPERATURE	
	MIN	MAX
H	-5 °C	75 °C
HS	-5 °C	75 °C
HW	-5 °C	75 °C
HSW	-5 °C	75 °C
E	-5 °C	90 °C

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			
Single Phase	Three Phase	Pump side		Fan side	
		[1~]	[3~]	[1~]	[3~]
CDM 70/05	CD 70/05	6203	6203	6202	6202
CDM 70/07	CD 70/07	6203	6203	6202	6202
CDM 70/12	CD 70/12	6203	6203	6202	6202
CDM 90/10	CD 90/10	6203	6203	6202	6202
CDM 120/07	CD 120/07	6203	6203	6202	6202
CDM 120/12	CD 120/12	6203	6203	6202	6202
CDM 120/20	CD 120/20	6204	6204	6203	6203
CDM 200/12	CD 200/12	6203	6203	6202	6202
CDM 200/20	CD 200/20	6204	6204	6203	6203
-	CD 200/25	-	6204	-	6203

PUMP

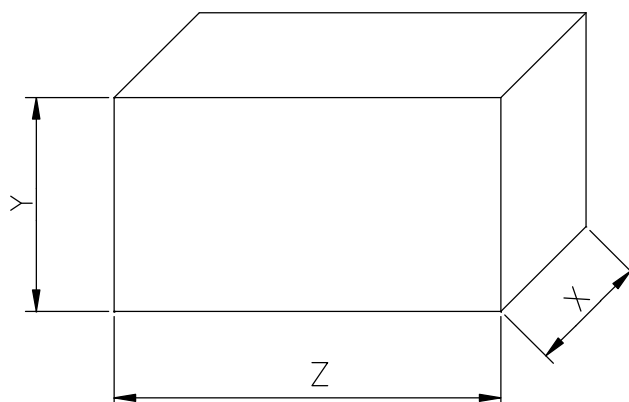


Pump type		Dimensions [mm]																		Weight	
		A		B		H	H1	H2	L		M		M1		N	N1	R	W	DNA		
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]				[1~]	[3~]	[1~]	[3~]	[1~]	[3~]						[1~]	[3~]
CDM 70/05	CD 70/05	209	208	298	298	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	77.5	G1"1/4	9.5	9.5
CDM 70/07	CD 70/07	209	208	328	328	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	92.5	G1"1/4	11.5	11.5
CDM 70/12	CD 70/12	208	208	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	135.5	97.5	G1"1/4	12	13.7
CDM 90/10	CD 90/10	209	208	338	328	229.5	106	123.5	105	104	100	100	130	130	120	150	130.5	92.5	G1"1/4	13	11.6
CDM 120/07	CD 120/07	209	208	328	328	229.5	106	123.5	105	104	100	100	130	130	120	150	115.5	92.5	G1"1/4	11.5	12
CDM 120/12	CD 120/12	208	208	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	135.5	97.5	G1"1/4	13	12.9
CDM 120/20	CD 120/20	232	232	376	376	250	118	132	116	116	120	120	150	150	140	170	133	105	G1"1/4	18.5	18.3
CDM 200/12	CD 200/12	208	208	338	338	229.5	106	123.5	104	104	100	100	130	130	120	150	135.5	97.5	G1"1/2	13	12.6
CDM 200/20	CD 200/20	213	213	376	376	229.5	106	123.5	109	109	120	120	150	150	140	170	133	105	G1"1/2	17.5	17.5
-	CD 200/25	-	232	-	376	250	118	132	-	116	-	120	-	150	140	170	138	100	G1"1/2	-	18.3

[1~] Single phase

[3~] Three phase

PACKING



Pump type		Packing [mm]				Weight [kgf]	
Single Phase	Three Phase	X	Y	Z			
				[1~]	[3~]	[1~]	[3~]
CDM 70/05	CD 70/05	245	310	450	450	10.5	10.4
CDM 70/07	CD 70/07	245	315	510	510	13	12.3
CDM 70/12	CD 70/12	245	315	510	510	15	14.6
CDM 90/10	CD 90/10	245	315	510	510	14	12.4
CDM 120/07	CD 120/07	245	315	510	510	12.5	12.8
CDM 120/12	CD 120/12	245	315	510	510	15.5	13.7
CDM 120/20	CD 120/20	245	315	510	510	20	19.2
CDM 200/12	CD 200/12	245	315	510	510	14.5	13.4
CDM 200/20	CD 200/20	245	315	510	510	19	18.5
-	CD 200/25	245	315	-	510	-	19.3

[1~] Single phase

[3~] Three phase

MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load)				Input	Full load current	Locked rotor current
Single Phase	[kW]	[HP]		[μF]	[V]	η %			cos-φ		[A]	[A]
						50%	75%	100%			230 V	230 V
CDM 70/05	0.45	0.6	IE2	14	450	55.7	65.6	72.5	0.94	0.65	3.0	13.4
CDM 70/07	0.75	1.0	IE2	25	450	61.0	70.8	79.2	0.93	0.95	4.4	24.0
CDM 70/12	1.1	1.5	IE2	25	450	72.6	77.7	79.6	0.93	1.41	6.6	32.1
CDM 90/10	0.9	1.2	IE2	25	450	67.2	75.4	79.4	0.89	1.14	5.6	32.1
CDM 120/07	0.75	1.0	IE2	25	450	61.0	70.8	79.2	0.93	0.95	4.4	24.0
CDM 120/12	1.1	1.5	IE2	25	450	72.6	77.7	79.6	0.93	1.41	6.6	32.1
CDM 120/20	1.5	2.0	IE2	40	450	70.2	77.5	81.8	0.93	1.93	8.9	64.8
CDM 200/12	1.1	1.5	IE2	25	450	72.6	77.7	79.6	0.93	1.41	6.6	32.1
CDM 200/20	1.5	2.0	IE2	40	450	70.2	77.5	81.8	0.93	1.93	8.9	64.8

Pump type	Power		Efficiency	Efficiency (% load)			Input	Full load current		Locked rotor current		
Three Phase	[kW]	[HP]		η %				[kW]	[A]		[A]	
				50%	75%	100%			230 V	400 V	230 V	400 V
CD 70/05	0.37	0.5	IE3	75.1	78.5	78.0	0.71	2.4	1.4	12.7	7.3	
CD 70/07	0.55	0.75	IE3	80.2	82.8	82.9	0.91	3.0	1.7	20.5	11.8	
CD 70/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6	
CD 90/10	0.75	1.0	IE3	80.9	82.3	82.1	1.05	3.3	1.9	19.7	11.4	
CD 120/07	0.55	0.75	IE3	80.2	82.8	82.9	0.91	3.0	1.7	20.5	11.8	
CD 120/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6	
CD 120/20	1.5	2.0	IE3	84.2	86.8	86.9	2.01	7.1	4.1	66.6	38.4	
CD 200/12	0.9	1.2	IE3	81.7	83.1	82.4	1.34	4.3	2.5	28.8	16.6	
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	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	
CDM 70/05	CD 70/05	<70
CDM 70/07	CD 70/07	
CDM 70/12	CD 70/12	
CDM 90/10	CD 90/10	
CDM 120/07	CD 120/07	
CDM 120/12	CD 120/12	
CDM 120/20	CD 120/20	
CDM 200/12	CD 200/12	
CDM 200/20	CD 200/20	
-	CD 200/25	

* Mean value of several measures at 1m distance around