

**EBARA**

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## SPECIFICATION

50Hz

Rev. I

PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. +5 max. +40
Maximum working pressure [MPa]		1.1
Construction	Impeller	Closed centrifugal
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	G 1"¼ UNI ISO 228
	Discharge	G 1"¼ UNI ISO 228
Material	Casing	Cast iron
	Impeller	PPE+PS Glass fibre reinforced
	Shaft seal	Ceramic/Carbon/NBR
	External pump casing	AISI 304
	Shaft	AISI 416
	Stages	PPE+PS Glass fibre reinforced /PTFE
	Diffuser	PPE+PS Glass fibre reinforced
Bracket	Cast iron	
Applicable standard of test		ISO 9906:2012 - Grade 3B

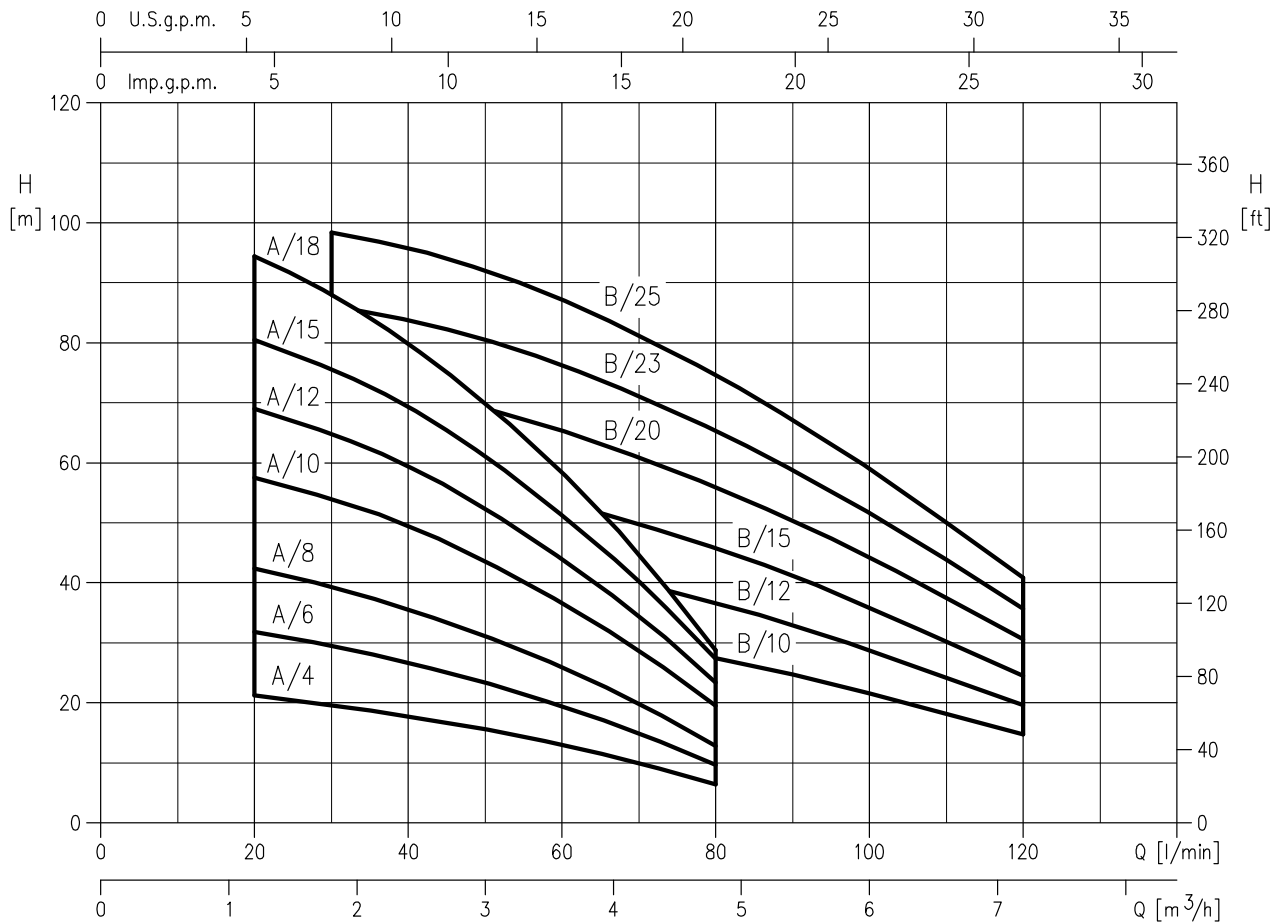
MOTOR		
Type	Electric asynchronous- TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 640/2009)	-	- from 0.3 kW up to 0.6 kW IE2 from 0.75 kW up to 1.85 kW IE3 from 0.75 kW up to 1.85 kW
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈ 2850	
Insulation Class	F	
Protection degree (CEI EN 60034-5)	IP 44	
Power rating	[kW]	0.3 ÷ 1.7
	[HP]	0.4 ÷ 2.3
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	
Dimensions of cable entry	PG 11 – PG 13.5 - M16x1.5 – M20x1.5 (see pag. 400)	

## SELECTION CHART

50Hz

Rev. I

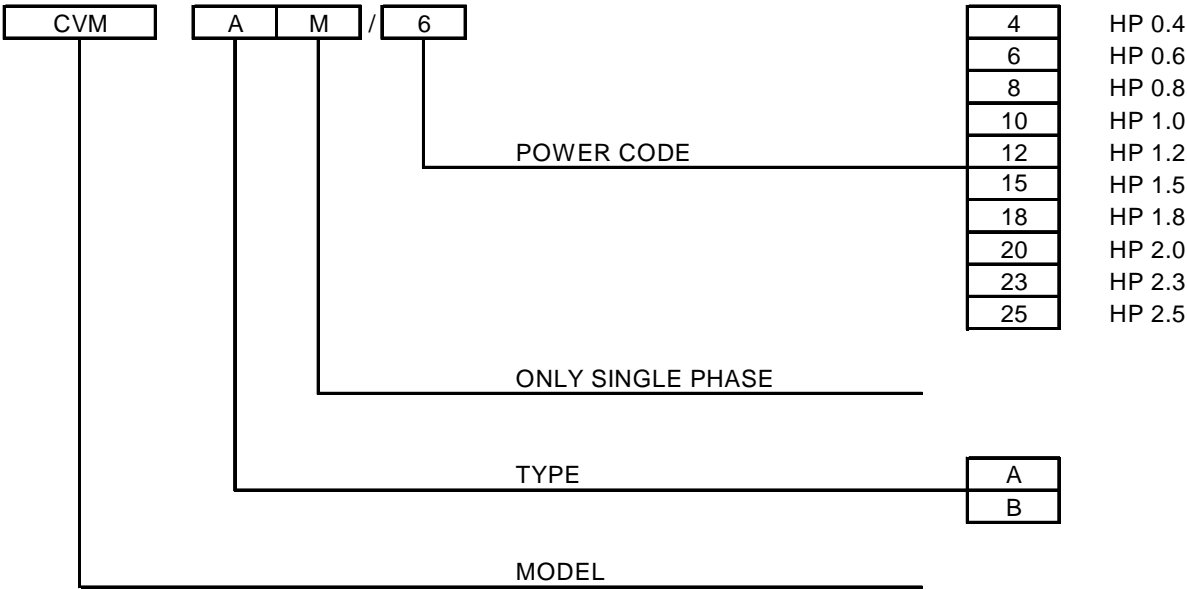
### PERFORMANCE RANGE



### SELECTION CHART

Pump type		Power		Q=Capacity									
Single Phase	Three Phase	[kW]	[HP]	l/min	20	30	40	50	60	80	100	120	
				0	1.2	1.8	2.4	3	3.6	4.8	6	7.2	
				H=Total manometric head in meters									
CVM AM/4	CVM A/4	0.3	0.4	23.8	21.2	19.7	17.8	15.6	13.0	6.4	-	-	
CVM AM/6	CVM A/6	0.44	0.6	35.7	31.8	29.5	26.7	23.3	19.4	9.6	-	-	
CVM AM/8	CVM A/8	0.6	0.8	47.5	42.5	39.4	35.6	31.1	25.9	12.8	-	-	
CVM AM/10	CVM A/10	0.75	1	62.5	57.5	54.0	49.5	43.5	36.6	19.5	-	-	
CVM AM/12	CVM A/12	0.9	1.2	75.0	69.0	65.0	59.5	52.5	44.0	23.4	-	-	
CVM AM/15	CVM A/15	1.1	1.5	87.5	80.5	75.5	69.5	61.0	51.0	27.3	-	-	
CVM AM/18	CVM A/18	1.3	1.8	103.0	94.5	88.0	80.0	70.0	58.5	28.8	-	-	
CVM BM/10	CVM B/10	0.75	1	38.1	-	36.2	35.1	33.7	32.0	27.5	21.6	14.7	
CVM BM/12	CVM B/12	0.9	1.2	51.0	-	48.0	46.8	45.0	42.6	36.6	28.8	19.6	
CVM BM/15	CVM B/15	1.1	1.5	63.5	-	60.5	58.5	56.2	53.3	45.8	36.0	24.5	
CVM BM/20	CVM B/20	1.5	2	78.5	-	74.0	72.0	69.0	65.5	56.0	44.5	30.6	
CVM BM/23	CVM B/23	1.7	2.3	91.5	-	86.0	84.0	80.5	76.5	65.5	51.5	35.7	
-	CVM B/25	1.85	2.5	105.0	-	98.5	96.0	92.0	87.0	74.5	59.0	41.0	

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:

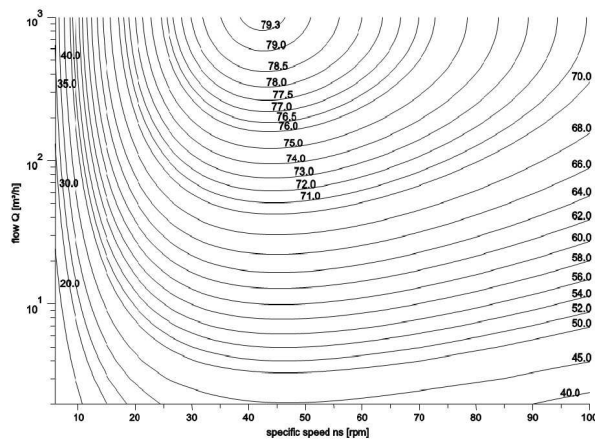
- Q = volume flow rate
- H = total head
- $P_2$  = pump power input (shaft power)
- $\eta$  = pump efficiency
- NPSH = net positive suction head required by the pump
- MEI = minimum efficiency index

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.

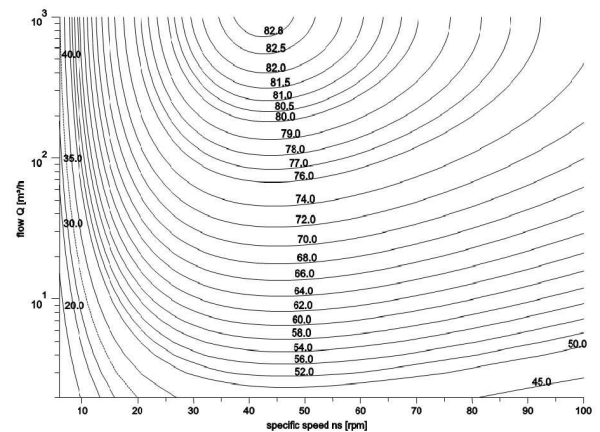
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

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.

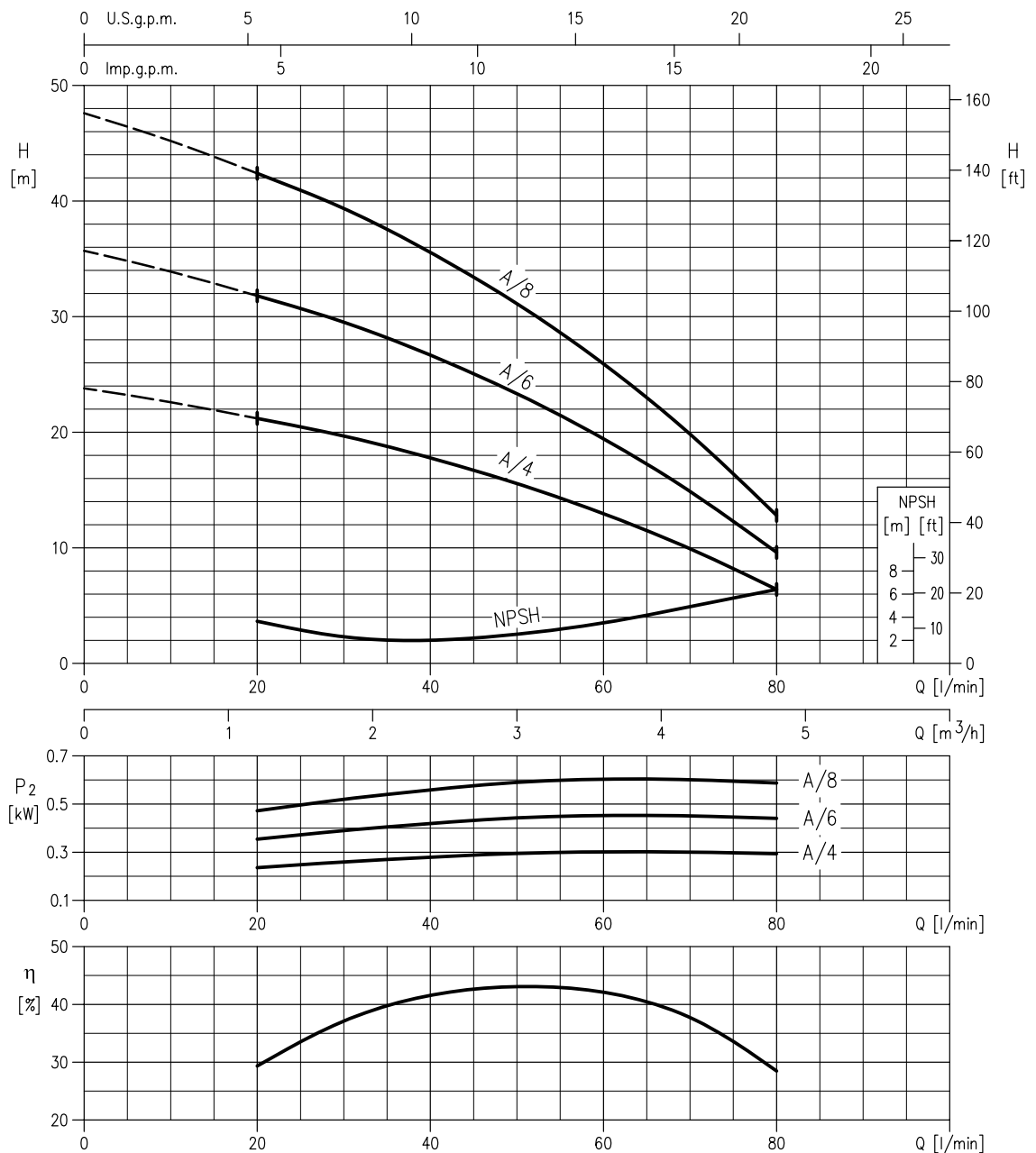
MEI = 0.4 for Multistage Vertical 2900rpm



MEI=0.7 for Mutistage Vertical 2900 rpm

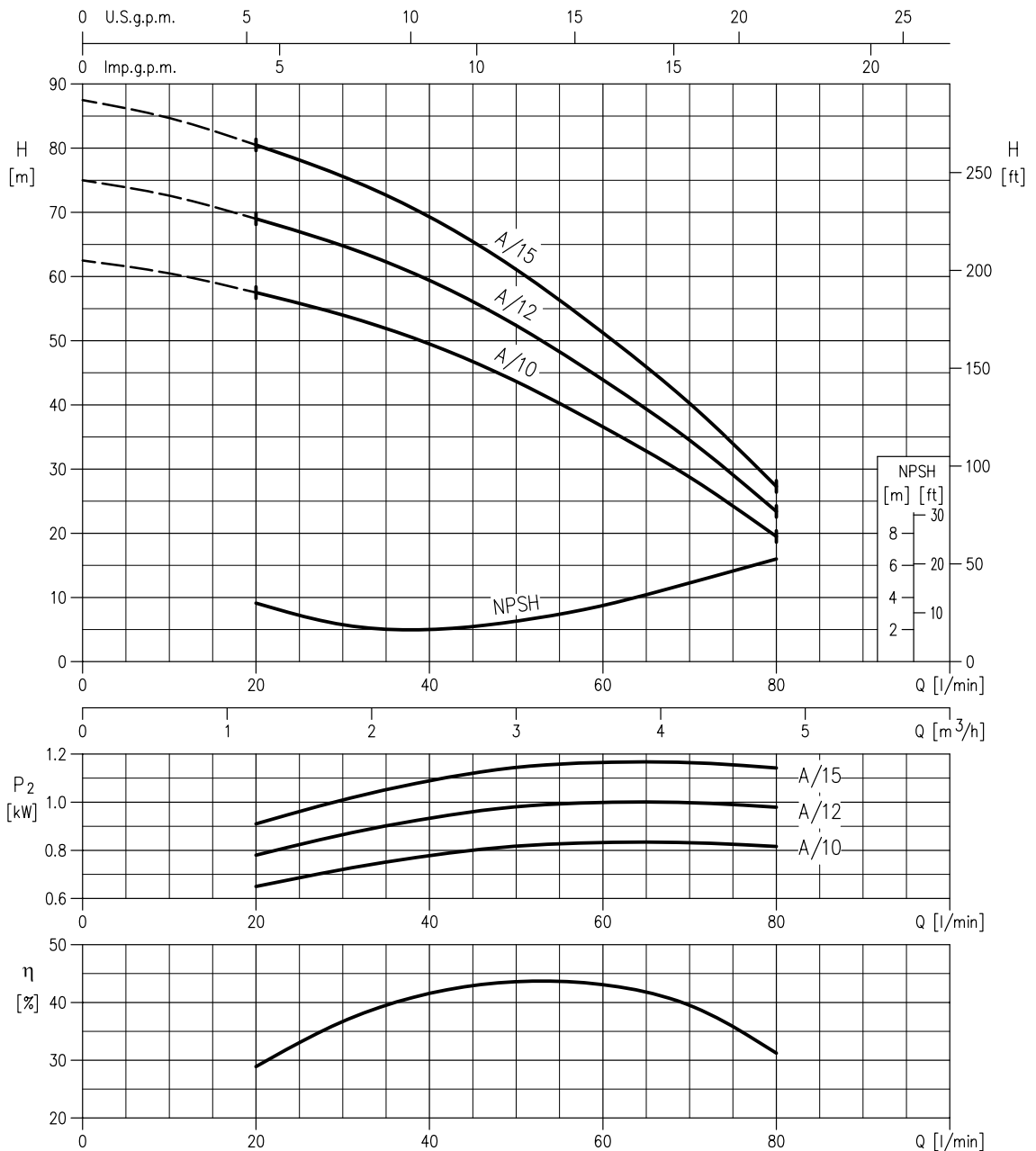


**CVM A/4 (0.3 kW) MEI > 0.60 - Impeller diameter = 102 mm**  
**CVM A/6 (0.44 kW) MEI > 0.60 - Impeller diameter = 102 mm**  
**CVM A/8 (0.6 kW) MEI > 0.60 - Impeller diameter = 102 mm**



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

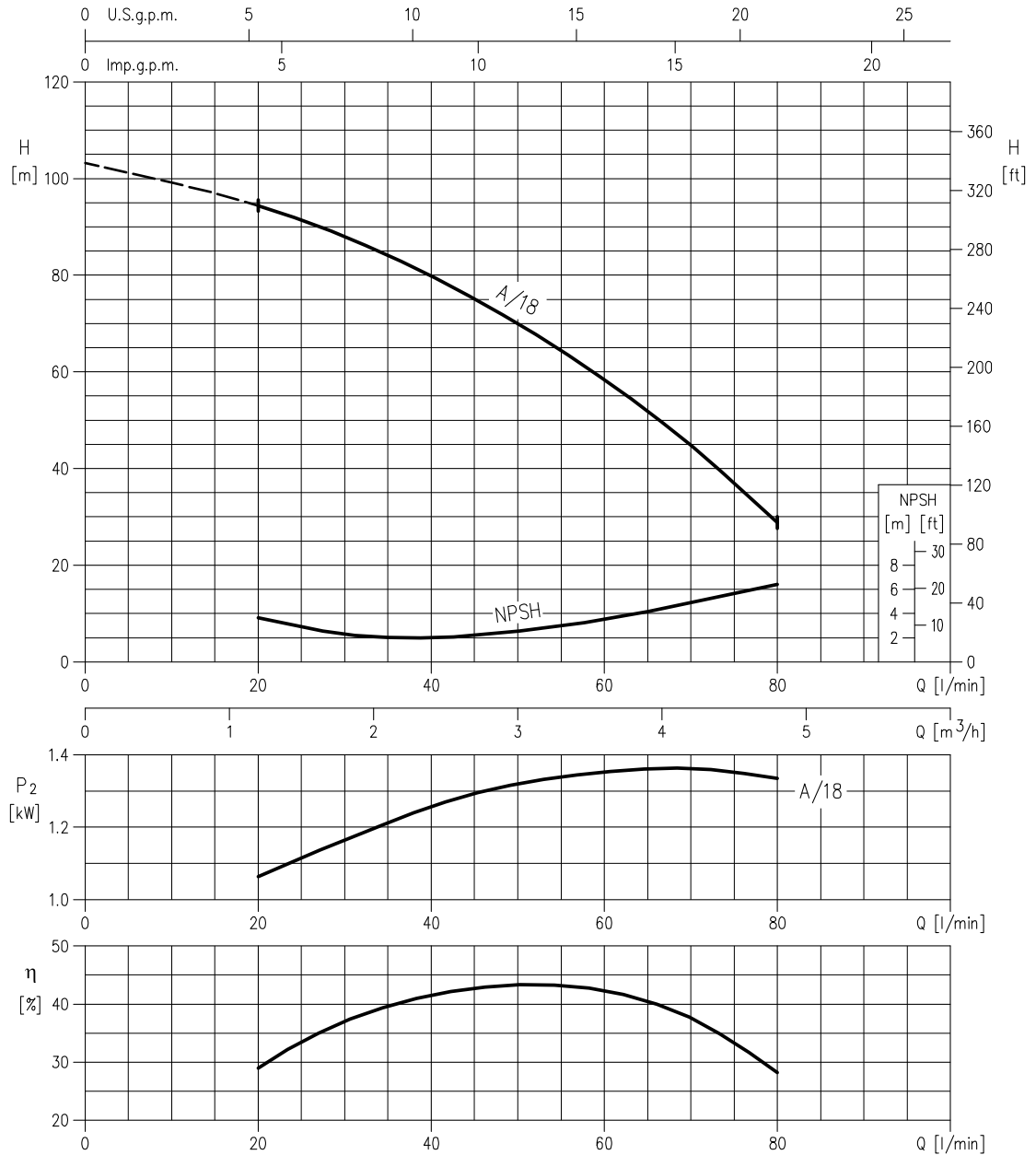
**CVM A/10 (0.75 kW) MEI > 0.60 - Impeller diameter = 102 mm**  
**CVM A/12 (0.9 kW) MEI > 0.60 - Impeller diameter = 102 mm**  
**CVM A/15 (1.1 kW) MEI > 0.60 - Impeller diameter = 102 mm**



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

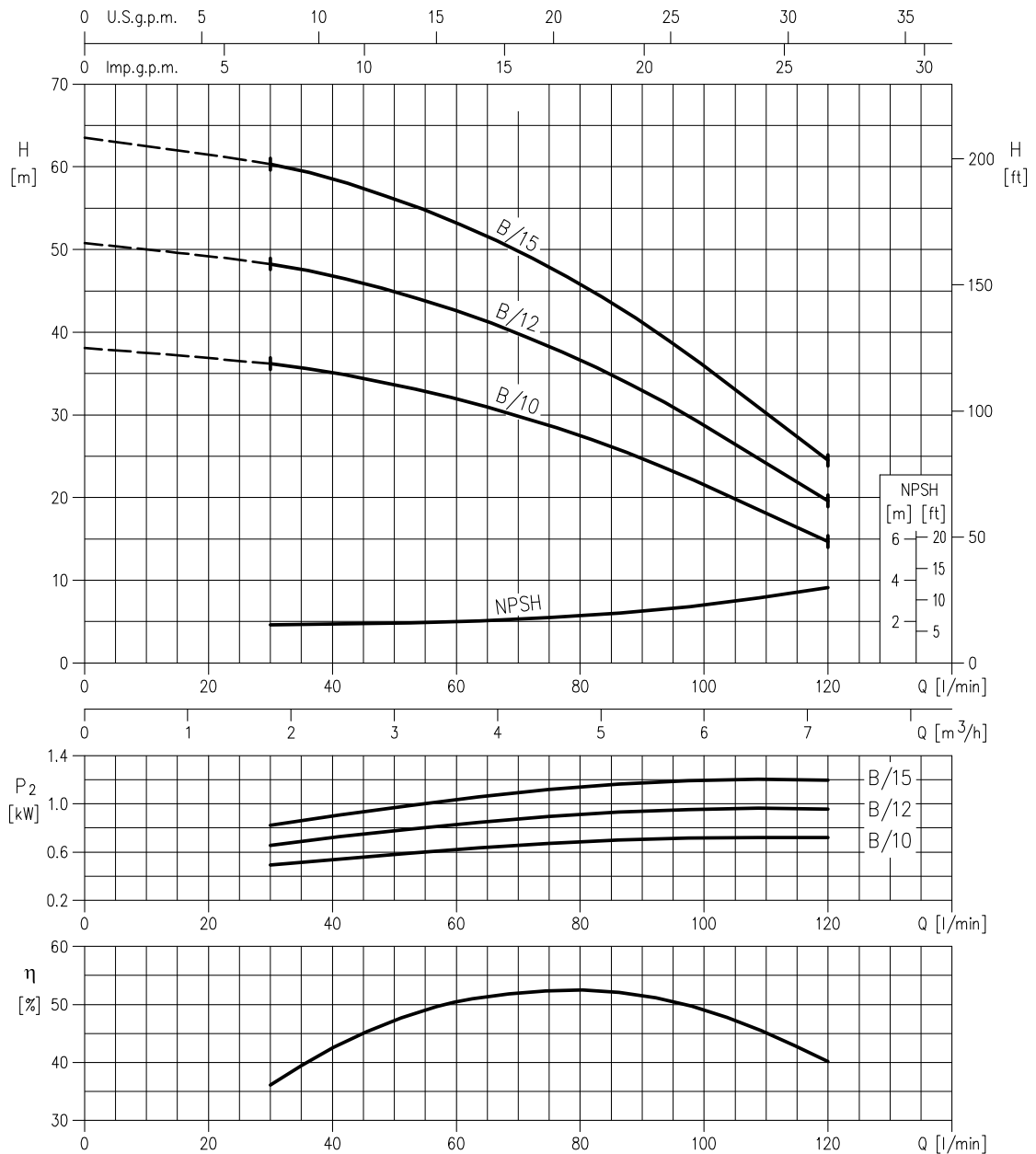


CVM A/18 (1.3 kW) MEI > 0.60 - Impeller diameter = 102 mm



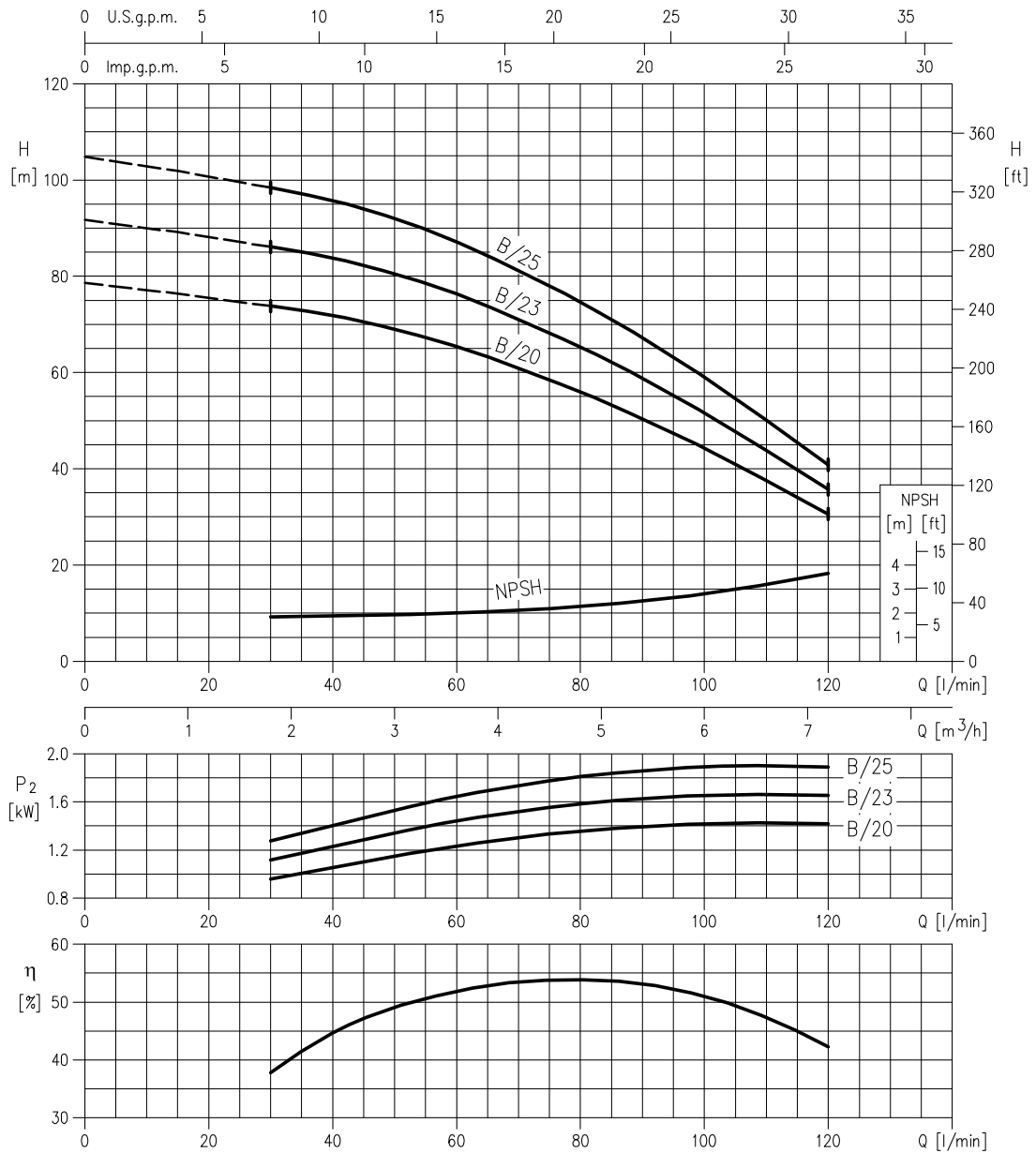
Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906:2012 - Grade 3B

**CVM B/10 (0.75 kW) MEI > 0.70 - Impeller diameter = 102 mm**  
**CVM B/12 (0.9 kW) MEI > 0.70 - Impeller diameter = 102 mm**  
**CVM B/15 (1.1 kW) MEI > 0.70 - Impeller diameter = 102 mm**



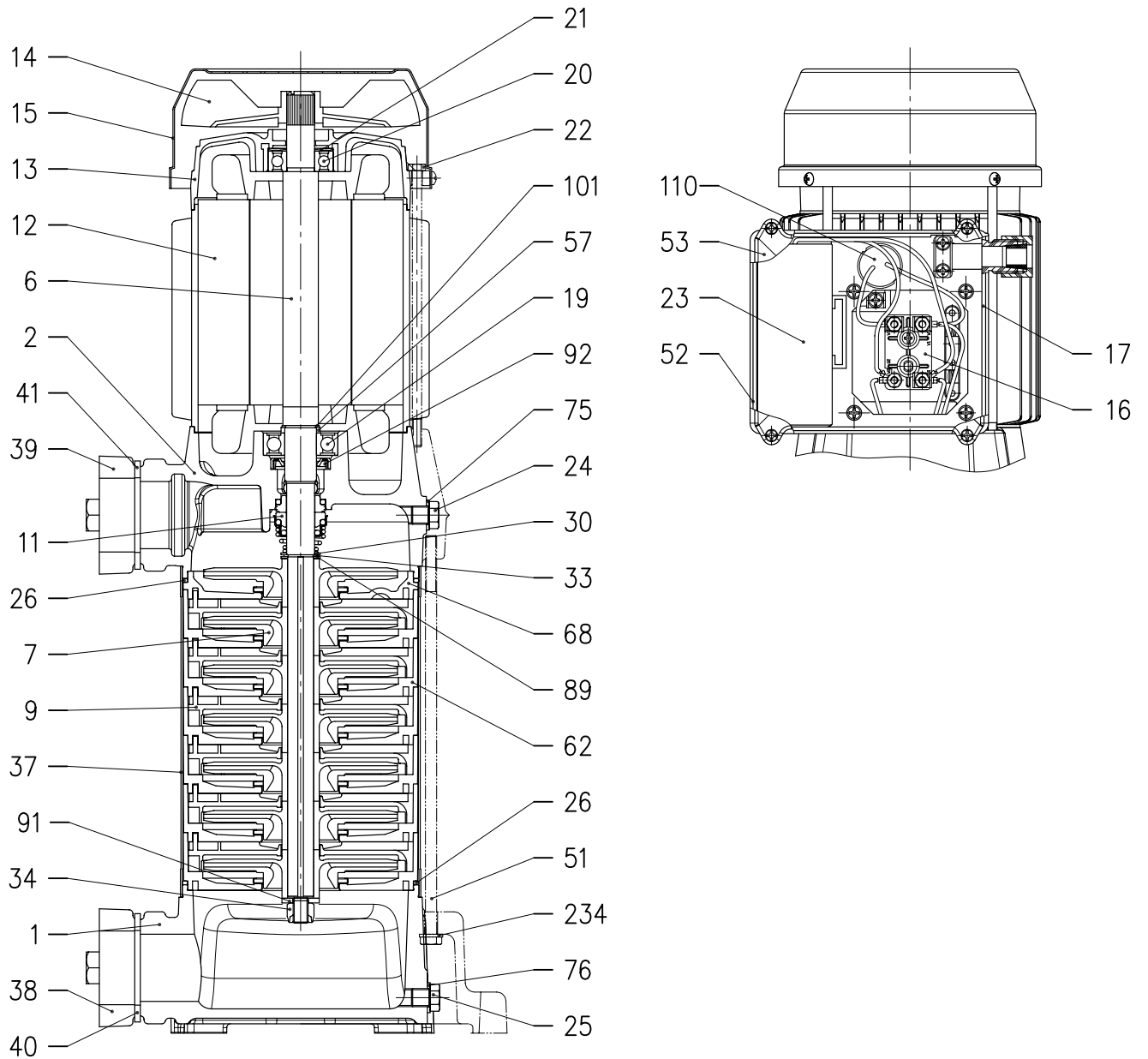
Rotation speed  $\approx 2800 \text{ min}^{-1}$   
 Test standard: ISO 9906:2012 - Grade 3B

**CVM B/20 (1.5 kW) MEI > 0.70 - Impeller diameter = 102 mm**  
**CVM B/23 (1.7 kW) MEI > 0.70 - Impeller diameter = 102 mm**  
**CVM B/25 (1.85 kW) MEI > 0.70 - Impeller diameter = 102 mm**



Rotation speed ≈ 2800 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

SECTIONAL VIEW DRAWING



### SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Suction casing	Cast iron EN-GJL-200-EN 1561	-	-	1
2	Delivery casing	Cast iron EN-GJL-200-EN 1561	-	-	1
6	Shaft with rotor	EN 1.4005 (AISI 416)	-	-	1
7	Impeller	PPE+PS Glass fibre reinforced	-	-	[1]
9	Diffuser	PPE+PS Glass fibre reinforced	-	-	[1]
11	Mechanical seal [2]	Carbon / Ceramic / NBR	-	-	1
12	Motor frame with stator	-	-	-	1
13	Motor cover	Aluminium	-	-	1
14	Fan	PA	-	-	1
15	Fan cover	Galvanized Fe P04	-	-	1
16	Terminal board	-	-	-	1
17	Terminal box cover [3]	Aluminium	-	-	1
19	Pump side ball bearing	-	[4]	-	1
20	Fan side ball bearing	-	[4]	-	1
21	Adjusting ring	Steel C70	-	-	1
22	Motor tie rod	Galvanized Fe 42	M5xL	EBARA DRAWING	4
23	Capacitor [5]	-	-	-	1
24	Priming plug	OT 58 UNI 5705	G 1/8"	UNI ISO 228	1
25	Drain plug	OT 58 UNI 5705	G 1/8"	UNI ISO 228	1
26	O-ring	NBR	120x3	-	2
30	Washer	EN 1.4301 (AISI 304)	12x22x1 - [UP to 0,6kW]	EBARA DRAWING	1
			15x22x1 - [0,75 kW and above]		
33	Seeger ring	EN 1.4021 (AISI 420)	12	UNI 7435	1
		EN 1.4301 (AISI 304)	14	JIS B2804-1978	
34	Impeller nut	EN 1.4301 (AISI 304)	M8x1 - [UP to 0,6kW]	UNI 7474	1
			M10x1,25 - [0,75 kW and above]		
37	External pump casing	EN 1.4301 (AISI 304)	-	-	1
38	Counter flange	Cast iron EN-GJL-200-EN 1561	1"½	EBARA DRAWING	1
39	Counter flange	Cast iron EN-GJL-200-EN 1561	1"½	EBARA DRAWING	1
40	Counter flange gasket	NBR	-	EBARA DRAWING	1
41	Counter flange gasket	NBR	-	EBARA DRAWING	1
51	Tie rod	Galvanized Fe P04	M6	EBARA DRAWING	4
52	Capacitor box [5]	ABS class V-0	-	-	1
53	Capacitor box cover [5]	ABS class V-0	-	-	1
57	Pump side ball bearing spacer [6]	Steel C40	22x27x3	EBARA DRAWING	1
62	Stage housing	PPE+PS Glass fibre reinforced/PTFE	-	-	[1]
68	Stage	PPE+PS Glass fibre reinforced/PTFE	-	-	1
75	Washer	Aluminium	10x16x1,5	EBARA DRAWING	1
76	Washer	Aluminium	10x16x1,5	EBARA DRAWING	1
89	Washer	EN 1.4301 (AISI 304)	12x21x1 - [UP to 0,6kW]	EBARA DRAWING	1
			14,1x22x1 - [0,75 kW and above]		
91	Washer	EN 1.4301 (AISI 304)	8,4x17x1,6 - [UP to 0,6kW]	UNI EN ISO 7089	1
			10,2x20x2,5 - [0,75 kW and above]	EBARA DRAWING	
92	Lip seal	NBR	12x24x4	EBARA DRAWING	1
			17x32x6		
101	Seeger ring [6]	EN 1.4301 (AISI 304)	20	UNI 7435	1
110	Motor protector [7]	-	-	-	1
234	Washer	Galvanized steel	6,4x12,5x1,6	UNI EN ISO 7089	4

[1] See table at page 302

[2] See pag. 303

[3] Only for three phase

[4] See pag. 302

[5] Only for single phase

[6] Only for motor size 80 (see page 400)

[7] Only for motor size 71 e 80 single phase version (see page 400)

### QUANTITY FOR MODEL

Pump		POS. 7	POS. 9	POS. 62
A type	B type			
CVM A/4	-	2	1	1
CVM A/6	CVM B/10	3	2	2
CVM A/8	CVM B/12	4	3	3
CVM A/10	CVM B/15	5	4	4
CVM A/12	CVM B/20	6	5	5
CVM A/15	CVM B/23	7	6	6
CVM A/18	CVM B/25	8	7	7

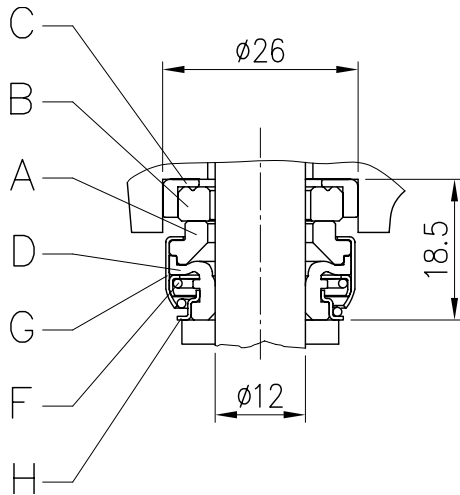
### BEARINGS

Type pumps		Ball Bearing			
Single Phase	Three Phase	Pump side	(*) Pump side	Fan side	(*) Fan side
CVM AM/4	CVM A/4	6201 2RSH	-	6201 2RSH	-
CVM AM/6	CVM A/6				
CVM AM/8	CVM A/8				
CVM AM/10	CVM A/10	6203 2RSH C3	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CVM AM/12	CVM A/12				
CVM AM/15	CVM A/15				
CVM AM/18	CVM A/18	6304 2RSH C3	6304-ZZ C3	6203 2RSH	6203-ZZ C3
CVM BM/10	CVM B/10	6203 2RSH C3	6203-ZZ C3	6202 2RSH	6202-ZZ C3
CVM BM/12	CVM B/12				
CVM BM/15	CVM B/15				
CVM BM/20	CVM B/20	6304 2RSH C3	6304-ZZ C3	6203 2RSH	6203-ZZ C3
CVM BM/23	CVM B/23				
-	CVM B/25				

(\*) Only for IE3 Motors

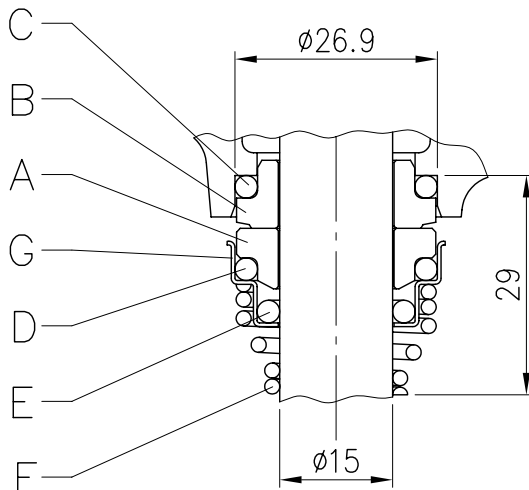
MECHANICAL SEAL

UP TO 0.6 KW



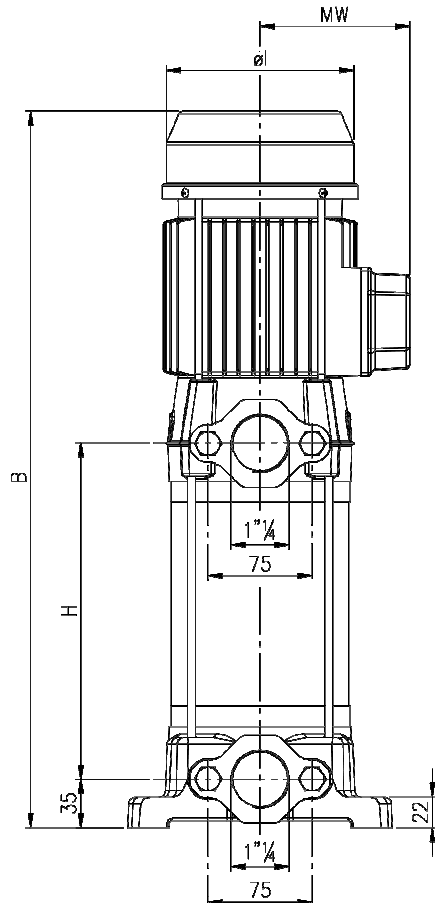
REF	PART NAME	MATERIAL
A	Rotary seal ring	Carbon graphite
B	Stationary seal ring	Ceramic
C	Gasket	NBR
D	Bellows	NBR
F	Self driving spring	AISI 304
G	Frame	AISI 304
H	Retainer ring	AISI 304

0,75 KW AND ABOVE



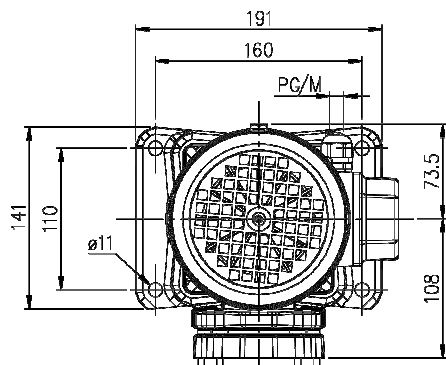
REF	PART NAME	MATERIAL
A	Rotary seal ring	Ceramic
B	Stationary seal ring	Carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

### PUMP



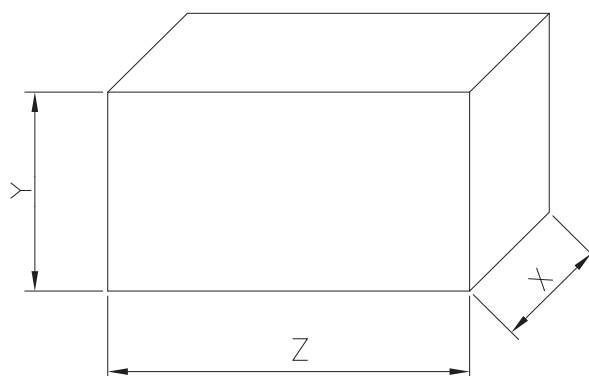
Pump type	Motor Size	Dimensions [mm]										Weight [kgf]		
		B			H	Ø1	MW		M	PG/M		[1~]	[3~]	(*)
		[1~]	[3~]	(*) [3~]			[1~]	[3~]	(*)	[1~]	[3~]	[1~]	[3~]	[3~]
CVM A/4	63	336	336	-	112	124	101	91.5	-	11	11	11	11	-
CVM A/6		362	362	-	138				-			11.7	11.6	-
CVM A/8		388	388	-	164				-			12.7	12.6	-
CVM A/10	71	452	452	452	190	141	110.5	101	M16x1.5	11	11	16.5	16.6	16.6
CVM A/12		478	490	490	216				M16x1.5			17.5	18.4	18.4
CVM A/15		516	516	516	242				M16x1.5			18.5	18.6	18.6
CVM A/18	80	565	565	565	268	159	136	120.5	M20x1.5	13.5	11	21.2	21.8	22.7
CVM B/10	71	400	400	400	138	141	110.5	101	M16x1.5	11	11	15.9	15.9	15.9
CVM B/12		426	438	438	164				M16x1.5			16.8	17.5	17.5
CVM B/15		464	464	464	190				M16x1.5			18	17.9	17.9
CVM B/20	80	513	526	526	216	159	134.5	120.5	M20x1.5	13.5	11	21.3	22.8	23.7
CVM B/23		552	552	552	242				M20x1.5			22.6	23.4	24.3
CVM B/25		-	578	578	268				-			M20x1.5	-	23.7

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





### PACKING



Type pumps	Packing [mm]				Weight [kgf]		
	X	Y	Z	(*)	[1~]	[3~]	(*) [3~]
CVM A/4	212	208	427	-	11.9	11.9	-
CVM A/6					12.6	12.5	-
CVM A/8					13.6	13.5	-
CVM A/10					17.6	17.7	17.7
CVM A/12	252	208	537	537	18.6	19.5	19.5
CVM A/15					19.6	19.7	19.7
CVM A/18					22.3	23.6	24.5
CVM B/10					16.8	16.8	16.8
CVM B/12	212	208	537	537	17.9	18.6	18.6
CVM B/15					19.1	19.0	19.0
CVM B/20					22.4	23.6	24.5
CVM B/23	252	208	590	617	23.7	24.5	25.4
CVM B/25					-	24.8	25.7

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

### MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load)			Input [kW]		Full load current [A]			Locked rotor current [A]		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase		Three phase			Single Phase	Three Phase	[A]			[A]		
						[μF]	[V]	50%	75%	100%			230 V	230 V	400 V	230 V	230 V	400 V
CVM AM/4	CVM A/4	0.3	0.4	-	-	10	450	-	-	-	0.54	0.49	2.6	1.9	1.1	8.5	7.0	3.9
CVM AM/6	CVM A/6	0.44	0.6	-	-	12.5	450	-	-	-	0.69	0.69	3.2	2.3	1.3	9.7	10.0	5.6
CVM AM/8	CVM A/8	0.6	0.8	-	-	14	450	-	-	-	0.89	0.83	4.0	2.8	1.6	11.9	10.0	6.0
CVM AM/10	CVM A/10	0.75	1	-	IE2	20	450	77.2	80.9	81.3	1.27	0.92	6.0	2.9	1.7	25.1	22.0	12.9
-	CVM A/10	0.75	1	-	IE3	-	-	80.9	82.3	82.1	-	0.91	-	3.0	1.7	-	19.7	11.4
CVM AM/12	CVM A/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.45	1.35	6.5	4.3	2.5	24.8	31.0	17.8
-	CVM A/12	0.9	1.2	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CVM AM/15	CVM A/15	1.1	1.5	-	IE2	31.5	450	79.0	81.7	81.6	1.60	1.35	7.2	4.3	2.5	29.3	31.0	17.8
-	CVM A/15	1.1	1.5	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CVM AM/18	CVM A/18	1.3	1.8	-	IE2	35	450	79.7	82.5	83.0	1.76	1.80	7.8	5.6	3.2	41.0	45.0	25.7
-	CVM A/18	1.3	1.8	-	IE3	-	-	83.5	84.3	84.6	-	1.77	-	5.8	3.3	-	47.4	27.4
CVM BM/10	CVM B/10	0.75	1	-	IE2	20	450	77.2	80.9	81.3	1.14	0.92	5.6	2.9	1.7	23.5	22.0	12.9
-	CVM B/10	0.75	1	-	IE3	-	-	80.9	82.3	82.1	-	0.91	-	3.0	1.7	-	19.7	11.4
CVM BM/12	CVM B/12	0.9	1.2	-	IE2	31.5	450	79.0	81.7	81.6	1.38	1.35	6.2	4.3	2.5	23.6	31.0	17.8
-	CVM B/12	0.9	1.2	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CVM BM/15	CVM B/15	1.1	1.5	-	IE2	31.5	450	79.0	81.7	81.6	1.63	1.35	7.4	4.3	2.5	30.1	31.0	17.8
-	CVM B/15	1.1	1.5	-	IE3	-	-	81.7	83.1	82.4	-	1.34	-	4.3	2.5	-	28.8	16.6
CVM BM/20	CVM B/20	1.5	2	-	IE2	40	450	78.6	83.0	84.2	1.91	1.78	8.3	6.3	3.7	43.0	34.3	20.0
-	CVM B/20	1.5	2	-	IE3	-	-	82.7	86.1	87.0	-	1.72	-	6.6	3.8	-	66.6	38.4
CVM BM/23	CVM B/23	1.7	2.3	-	IE2	40	450	80.3	83.4	83.8	2.14	2.09	9.6	6.9	4.0	43.0	34.3	20.0
-	CVM B/23	1.7	2.3	-	IE3	-	-	84.2	86.8	86.9	-	2.01	-	7.1	4.1	-	66.6	38.4
-	CVM B/25	1.85	2.5	-	IE2	-	-	83.0	84.4	83.8	-	2.63	-	8.1	4.7	-	59.0	34.3
-	CVM B/25	1.85	2.5	-	IE3	-	-	86.2	87.0	86.0	-	2.55	-	8.2	4.7	-	66.6	38.4

### NOISE DATA

Pump type		Power		L <sub>pA</sub> - dB(A) *
Single Phase	Three Phase	[kW]	[HP]	
CVM AM/4	CVM A/4	0.3	0.4	53
CVM AM/6	CVM A/6	0.44	0.6	
CVM AM/8	CVM A/8	0.6	0.8	
CVM AM/10	CVM A/10	0.75	1	62
CVM AM/12	CVM A/12	0.9	1.2	
CVM AM/15	CVM A/15	1.1	1.5	
CVM AM/18	CVM A/18	1.3	1.8	67
CVM BM/10	CVM B/10	0.75	1	62
CVM BM/12	CVM B/12	0.9	1.2	
CVM BM/15	CVM B/15	1.1	1.5	
CVM BM/20	CVM B/20	1.5	2	67
CVM BM/23	CVM B/23	1.7	2.3	
-	CVM B/25	1.85	2.5	

\* Mean value of several measures at 1m distance around the pump.

Tolerance ± 2.5 dB.