



# AY Series

4" Submersible Pump

4" Oil-Filled Sumersible Motor



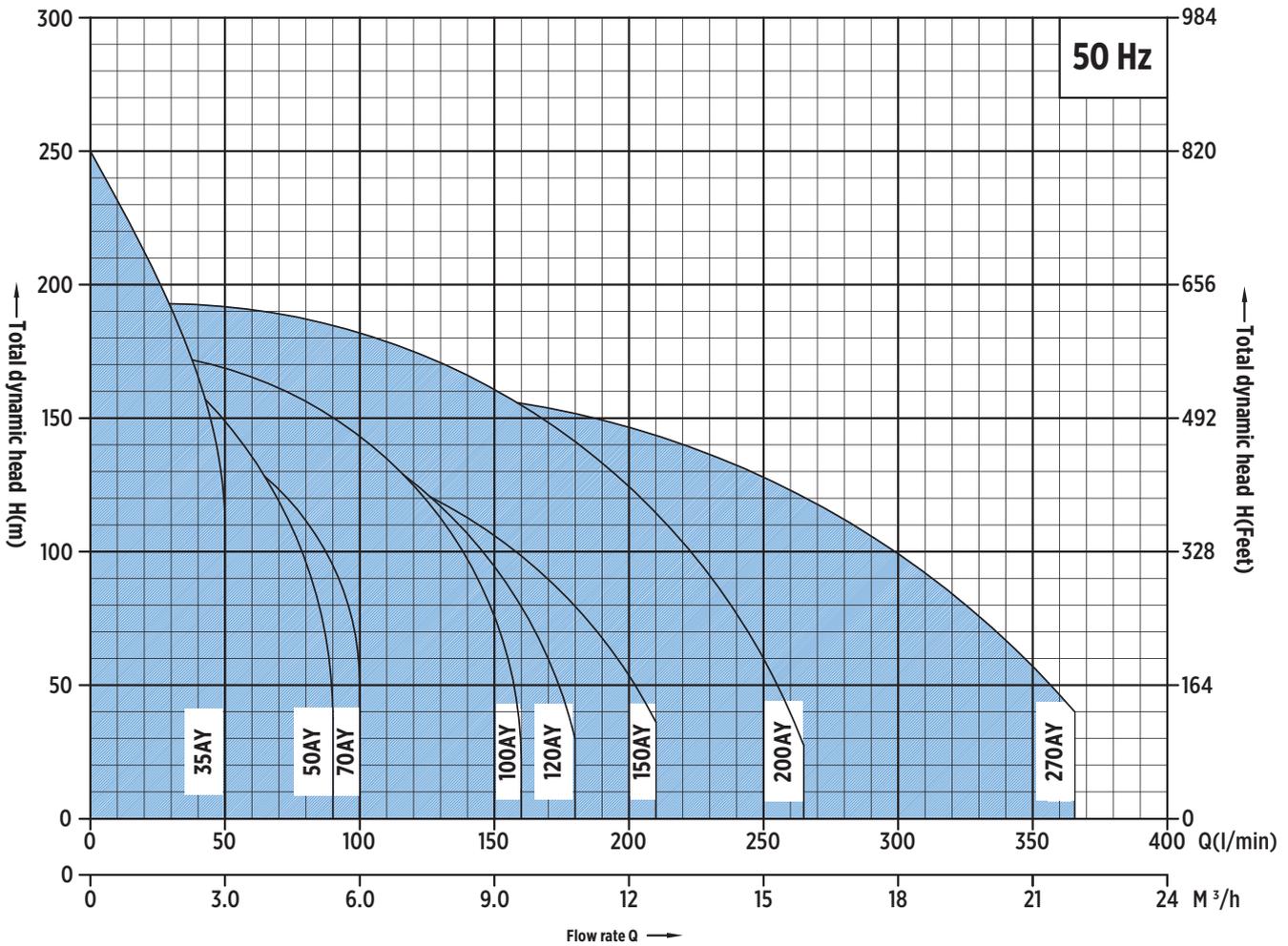
Franklin Electric

[www.franklinwatersea.com](http://www.franklinwatersea.com)



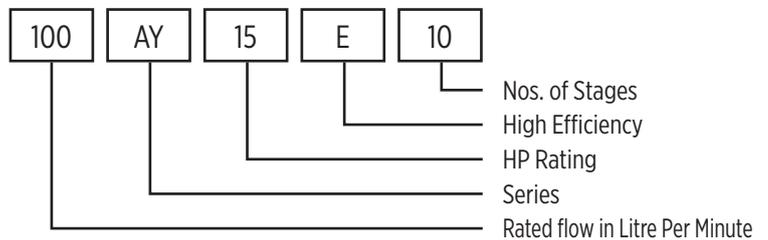
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# FAMILY CURVES 50HZ



## PRODUCT IDENTIFICATION

100AY15E10



# 4" SUBMERSIBLE PUMP

The **AquaDuty 4" AY Series** submersible pumps are constructed with high quality material and features floating impeller system. These enable our pumps endure against wear when operating in abrasive and sandy well condition.

## Feature

- ✓ Excellent resistance against corrosion with fully stainless steel casing; and cast stainless steel pump discharge outlet and bracket.
- ✓ Greater tolerance against sand through sophisticated hydraulic design and the use of engineered thermoplastic material for impeller that has superior wear resistance properties.
- ✓ Cost effective solution through optimized hydraulic design to enhance overall pumping efficiency to reduce energy consumption.
- ✓ Protection against water hammering with built-in check valve.

## Specification

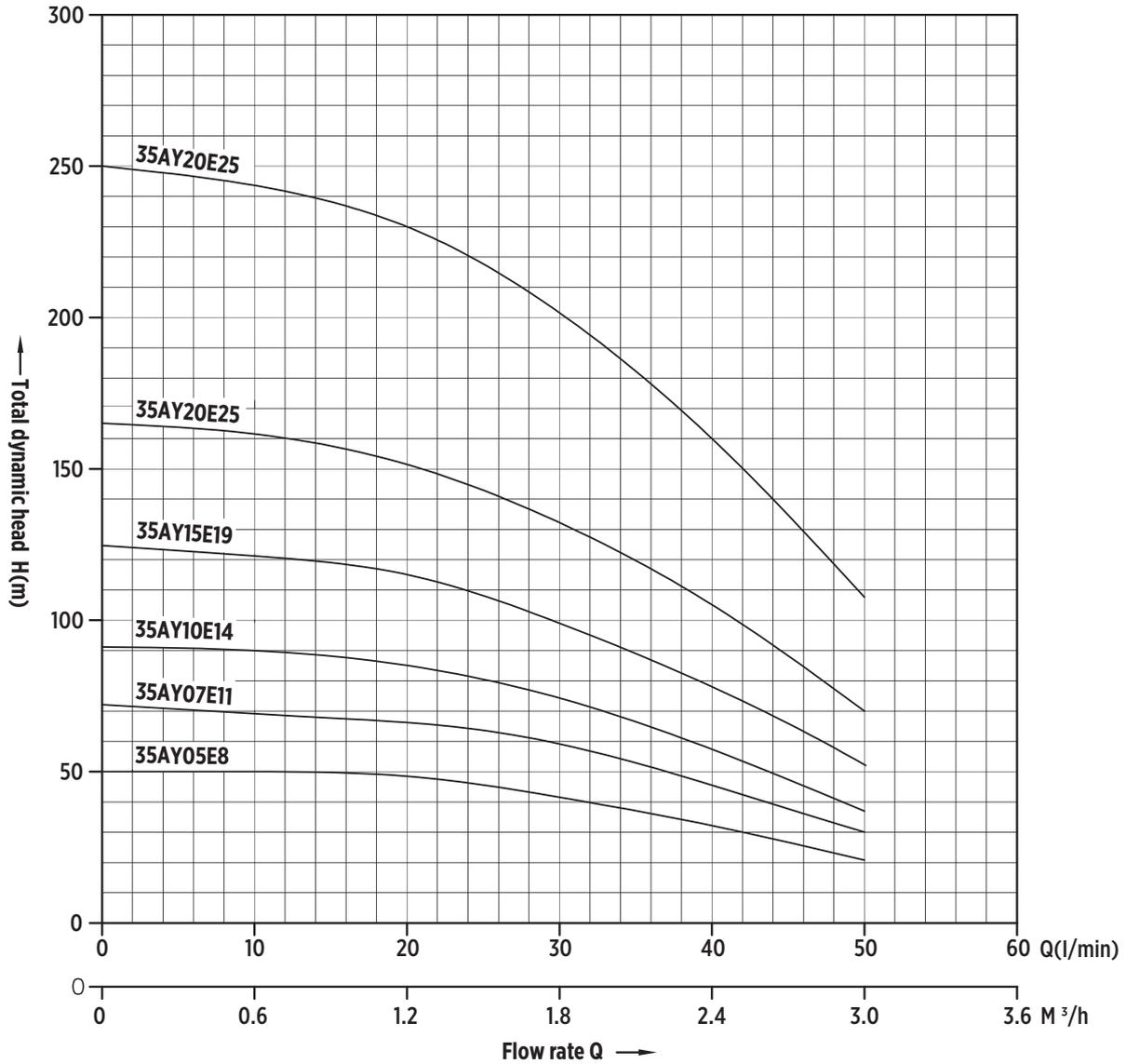
- ✓ Flow: up to 24m<sup>3</sup>/hr, Head up to 250m at 50Hz
- ✓ Outlet Size: 1.5" for 35AY, 50AY, 70AY and 2" for 35AY, 50AY, 70AY
- ✓ Maximum allowable amount of sand: 400 g/m<sup>3</sup>
- ✓ Maximum Pump diameter: 97mm
- ✓ NEMA standard dimensions
- ✓ Pump can work continuously in vertical or horizontal positions (requires our consultation to confirm horizontal applications type)

## Application

- ✓ Municipal Water Works
- ✓ Residential and agriculture Irrigation for various purposes, sprinkler systems
- ✓ Water supply from tank, reservoir & well.
- ✓ Domestic water supply
- ✓ Residential and agriculture
- ✓ General Industries

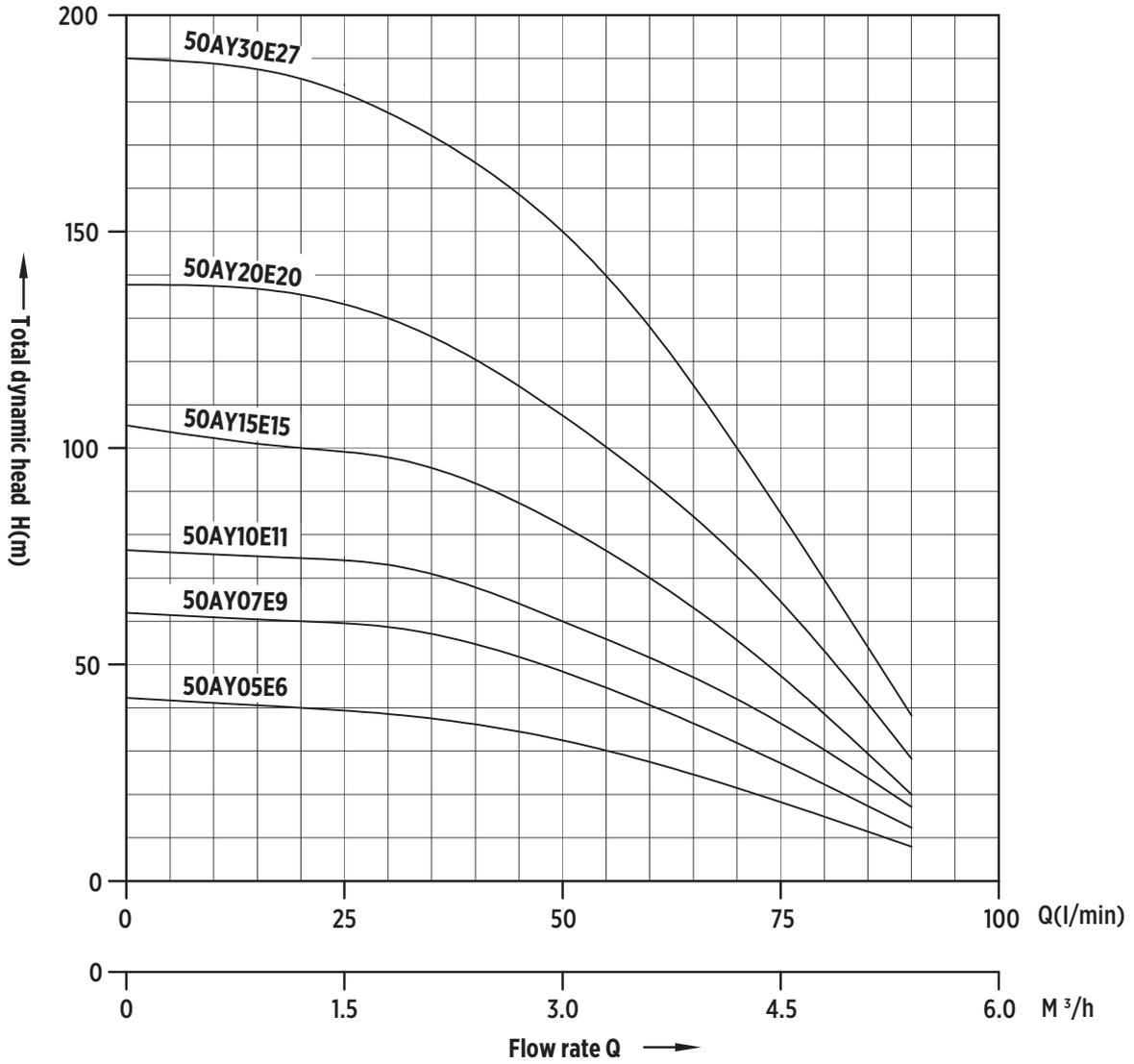


## 35AY - PERFORMANCE CURVE AT 50Hz



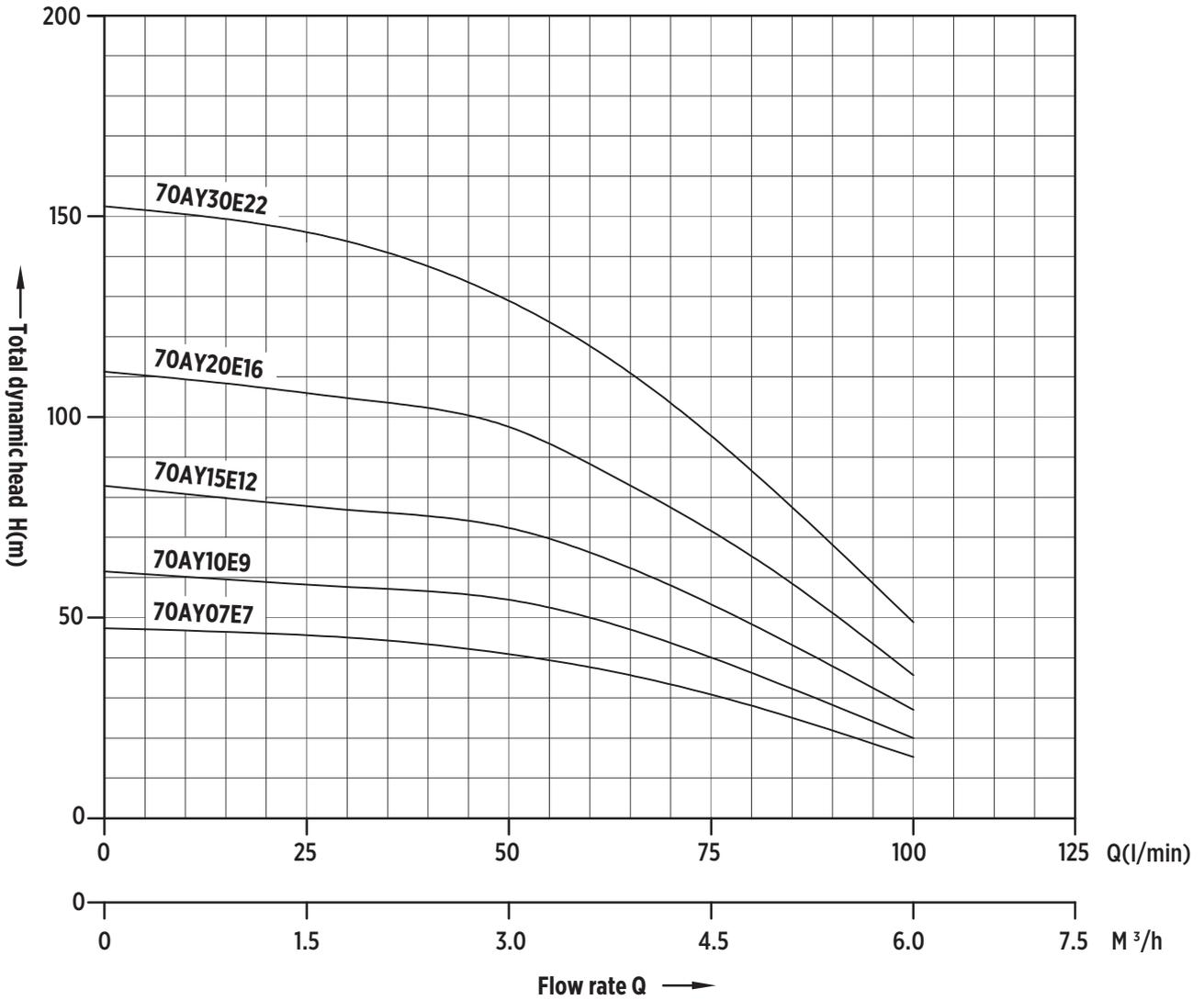
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery										
			kW	HP			0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3
98A0450208	35AY05E8	8	0.37	0.5	1.5"	Head H m	52	51	50	49	48	45	41	37	32	26	21
98A0450211	35AY07E11	11	0.55	0.75	1.5"		72	70	69	67	66	63	57	52	43	38	30
98A0450214	35AY10E14	14	0.75	1	1.5"		92	91	90	88	84	79	73	66	58	48	38
98A0450219	35AY15E19	19	1.1	1.5	1.5"		124	123	122	118	114	107	99	90	78	66	52
98A0450225	35AY20E25	25	1.5	2	1.5"		164	163	161	158	151	143	132	119	105	89	70
98A0450238	35AY30E38	38	2.2	3	1.5"		250	248	243	240	230	218	201	181	160	135	108

## 50AY - PERFORMANCE CURVE AT 50Hz



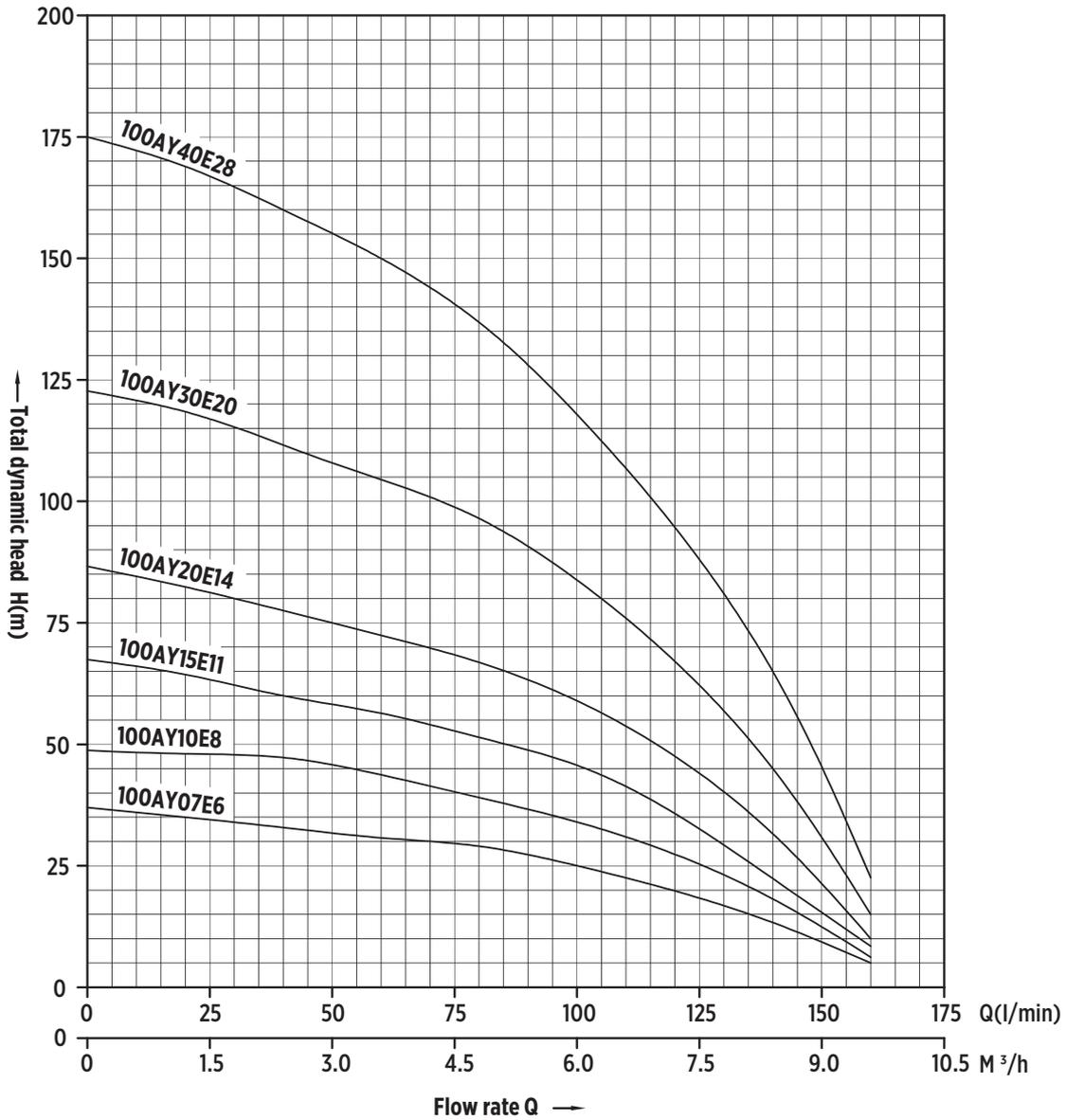
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery									
			kW	HP			0	0.6	1.2	1.8	2.4	3	3.6	4.2	4.8	5.4
98A0450306	50AY05E6	6	0.37	0.5	1.5"	Head H m	42	41	40	39	36	32	27	21	15	9
98A0450309	50AY07E9	9	0.55	0.75	1.5"		62	61	60	58	53	48	41	32	22	12
98A0450311	50AY10E11	11	0.75	1	1.5"		77	76	74	73	67	60	52	41	30	17
98A0450315	50AY15E15	15	1.1	1.5	1.5"		104	102	100	98	90	81	69	55	37	20
98A0450320	50AY20E20	20	1.5	2	1.5"		139	137	135	130	120	108	92	74	52	29
98A0450327	50AY30E27	27	2.2	3	1.5"		190	188	184	177	165	150	125	100	74	39

## 70AY - PERFORMANCE CURVE AT 50Hz



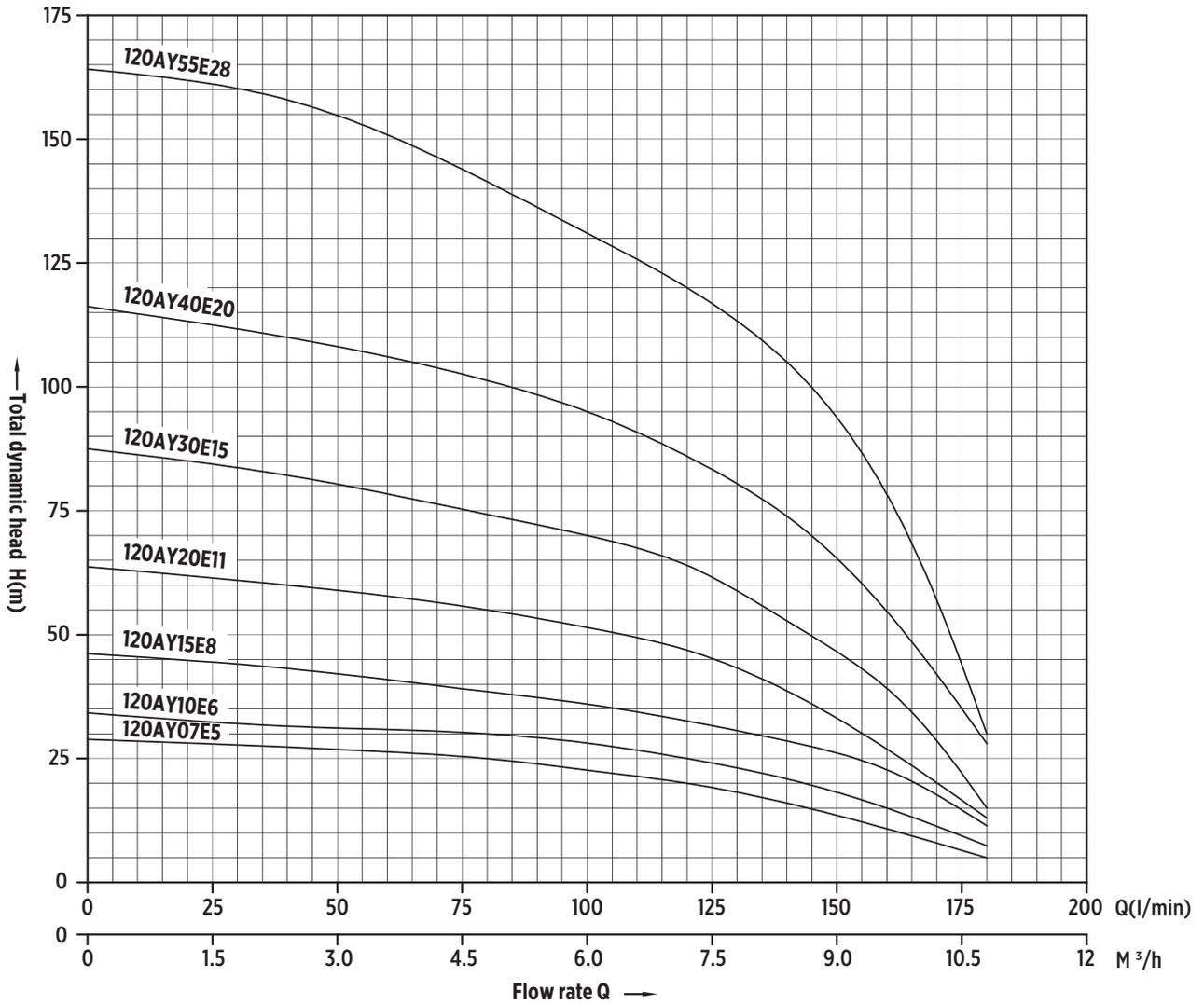
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery										
			kW	HP			0	0.6	1.2	1.8	2.4	3	3.6	4.2	4.8	5.4	6
98A0450407	70AY07E7	7	0.55	0.75	1.5"	Head H m	48	47	46	45	43	41	38	33	27	22	16
98A0450409	70AY10E9	9	0.75	1	1.5"		62	61	59	58	56	54	50	43	36	29	20
98A0450412	70AY15E12	12	1.1	1.5	1.5"		83	81	79	78	74	72	66	58	49	38	27
98A0450416	70AY20E16	16	1.5	2	1.5"		111	109	105	104	103	98	89	78	66	53	37
98A0450422	70AY30E22	22	2.2	3	1.5"		152	150	148	144	136	133	123	108	91	74	51

# 100AY - PERFORMANCE CURVE AT 50Hz



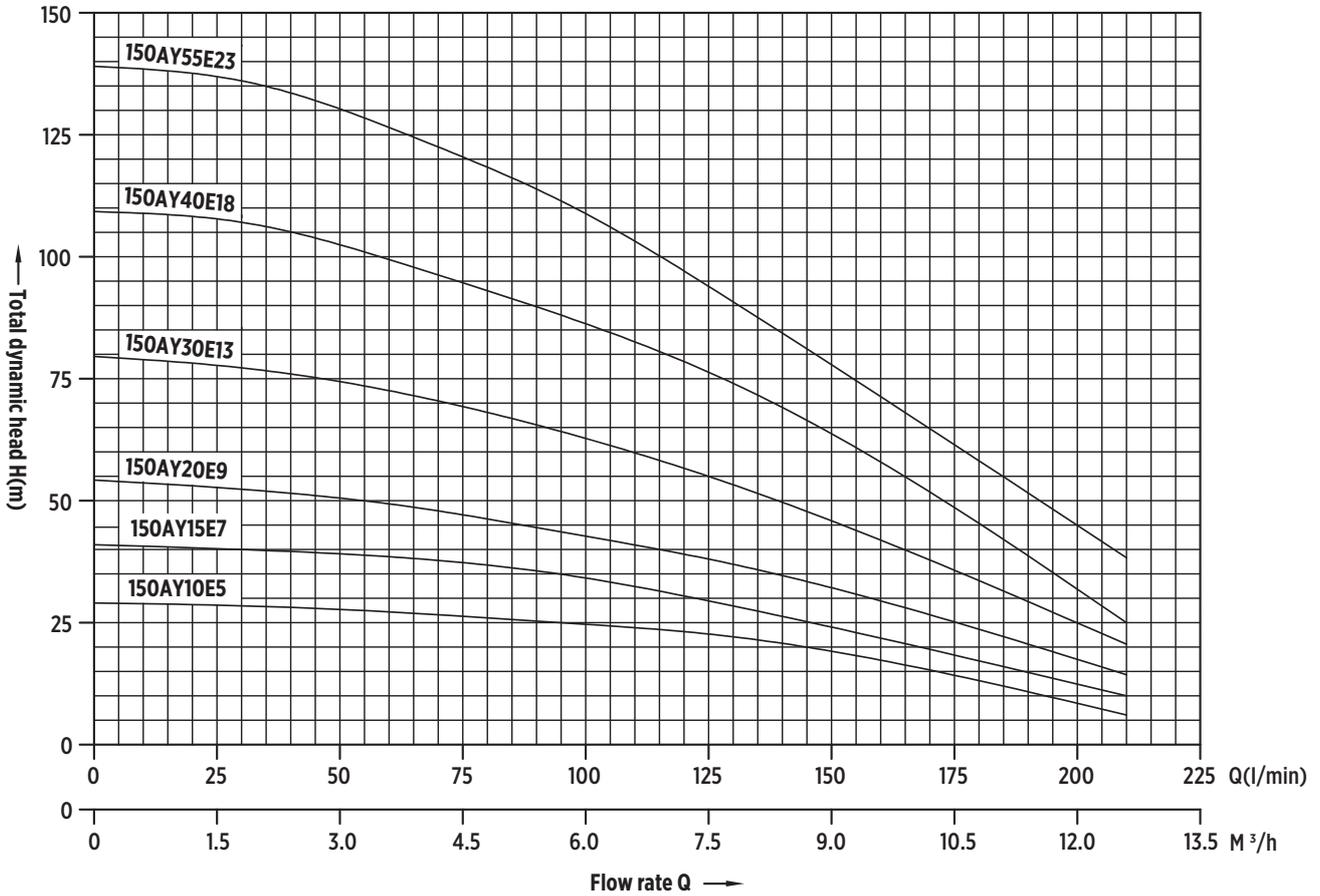
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery								
			kW	HP			0	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6
98A0450606	100AY07E6	6	0.55	0.75	2"	Head H m	37	35	33	31	29	25	20	13	5
98A0450608	100AY10E8	8	0.75	1	2"		49	47	44	42	39	34	26	17	6
98A0450611	100AY15E11	11	1.1	1.5	2"		67	64	60	57	53	46	36	22	8
98A0450614	100AY20E14	14	1.5	2	2"		87	83	78	73	67	59	46	31	10
98A0450620	100AY30E20	20	2.2	3	2"		123	118	111	104	97	84	66	45	15
98A0450628	100AY40E28	28	3	4	2"		175	169	157	147	137	118	95	65	22

# 120AY - PERFORMANCE CURVE AT 50Hz



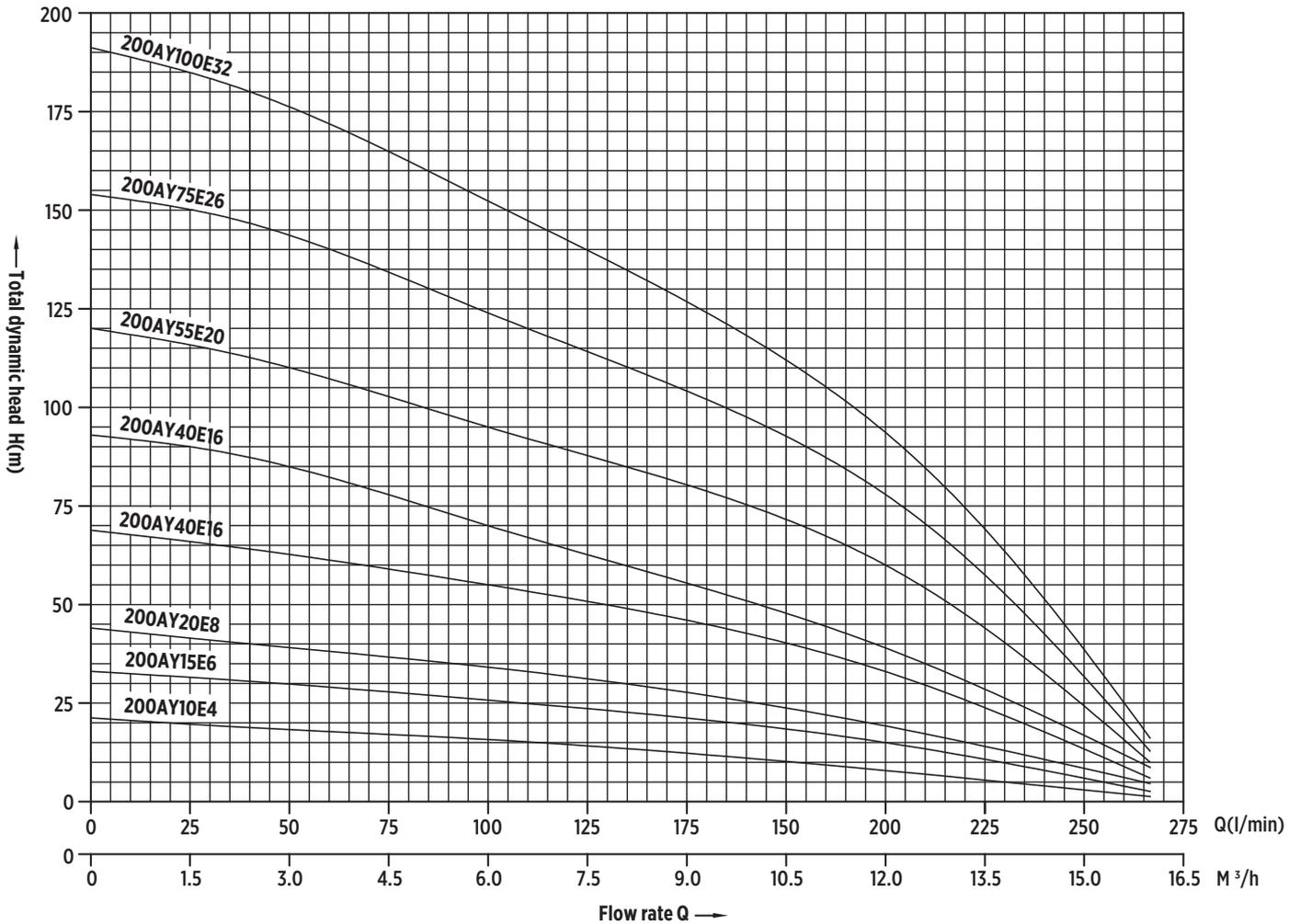
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery									
			kW	HP			0	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8
98A0450805	120AY07E5	5	0.55	0.75	2"	Head H m	28	27	26	25	24	23	20	17	13	5
98A0450806	120AY10E6	6	0.75	1	2"		34	33	32	31	30	27	25	21	15	7
98A0450808	120AY15E8	8	1.1	1.5	2"		46	45	44	41	39	37	33	28	22	11
98A0450811	120AY20E11	11	1.5	2	2"		64	62	60	57	55	51	46	39	28	13
98A0450815	120AY30E15	15	2.2	3	2"		87	84	82	78	74	70	64	53	39	15
98A0450820	120AY40E20	20	3	4	2"		116	113	110	105	101	95	86	74	59	28
98A0450828	120AY55E28	28	4	5.5	2"		164	161	158	148	140	132	120	105	75	30

# 150AY - PERFORMANCE CURVE AT 50Hz



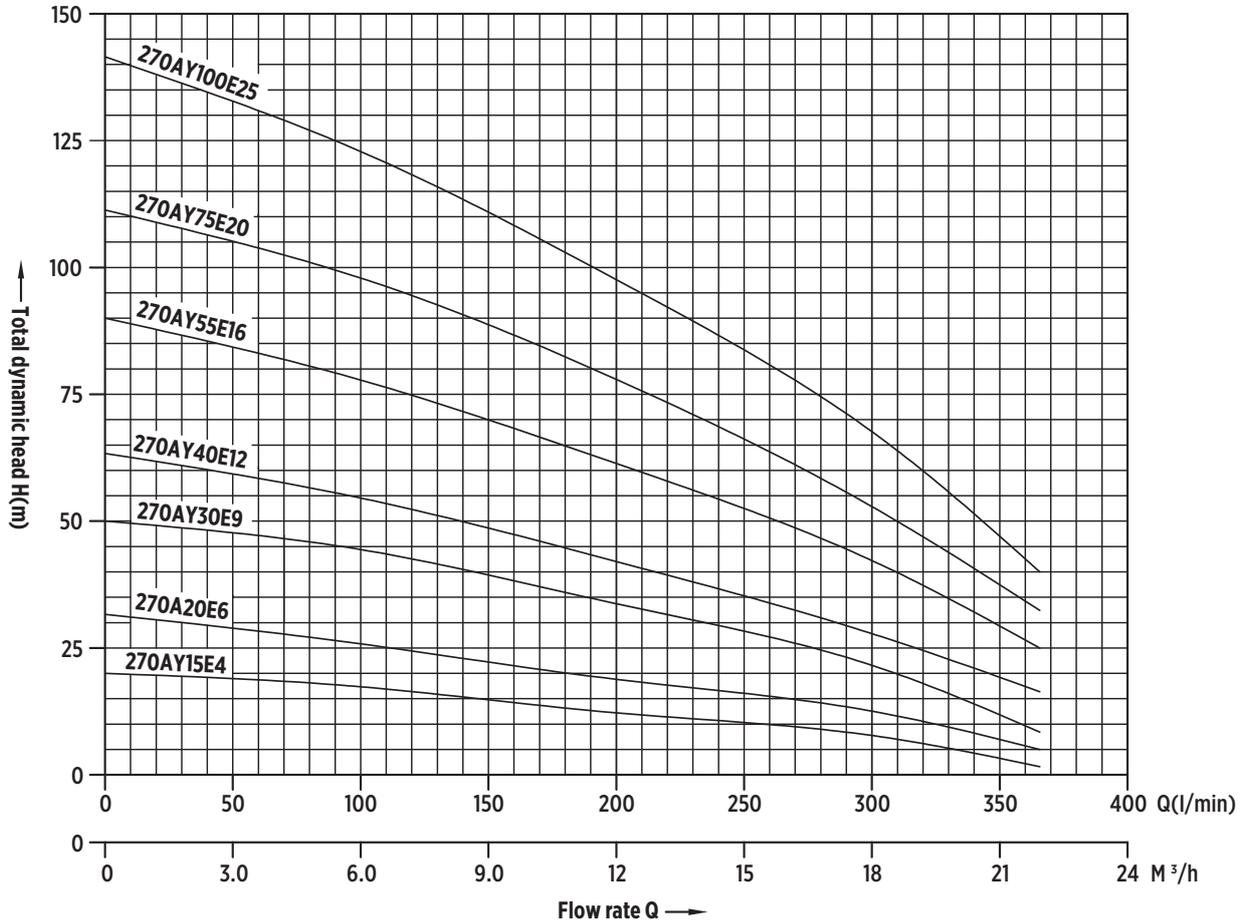
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery							
			kW	HP			0	1.8	3.6	5.4	7.2	9	10.8	12.6
98A0451005	150AY10E5	5	0.75	1	2"	Head H m	29	28	27	26	24	21	16	7
98A0451007	150AY15E7	7	1.1	1.5	2"		41	40	38	37	34	29	22	10
98A0451009	150AY20E9	9	1.5	2	2"		54	53	50	47	43	37	28	14
98A0451013	150AY30E13	13	2.2	3	2"		79	77	72	68	64	55	42	21
98A0451018	150AY40E18	18	3	4	2"		109	107	100	95	88	76	57	30
98A0451023	150AY55E23	23	4	5.5	2"		139	136	127	121	111	92	64	30

## 200AY - PERFORMANCE CURVE AT 50Hz



Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery								
			kW	HP			0	2	4	6	8	10	12	14	16
98A0451204	200AY10E4	4	0.75	1	2"	Head H m	21	19	18	16	13	11	8	4	2
98A0451206	200AY15E6	6	1.1	1.5	2"		33	31	29	26	23	19	15	10	2
98A0451208	200AY20E8	8	1.5	2	2"		44	41	38	34	30	25	19	12	3
98A0451212	200AY30E12	12	2.2	3	2"		69	65	60	55	49	41	33	22	4
98A0451216	200AY40E16	16	3	4	2"		93	87	81	73	67	57	44	30	5
98A0451220	200AY55E20	20	4	5.5	2"		120	114	104	95	85	74	60	42	7
98A0451226	200AY75E26	26	5.5	7.5	2"		154	147	134	124	110	95	77	54	20
98A0451232	200AY100E32	32	7.5	10	2"		191	182	167	153	137	118	94	65	28

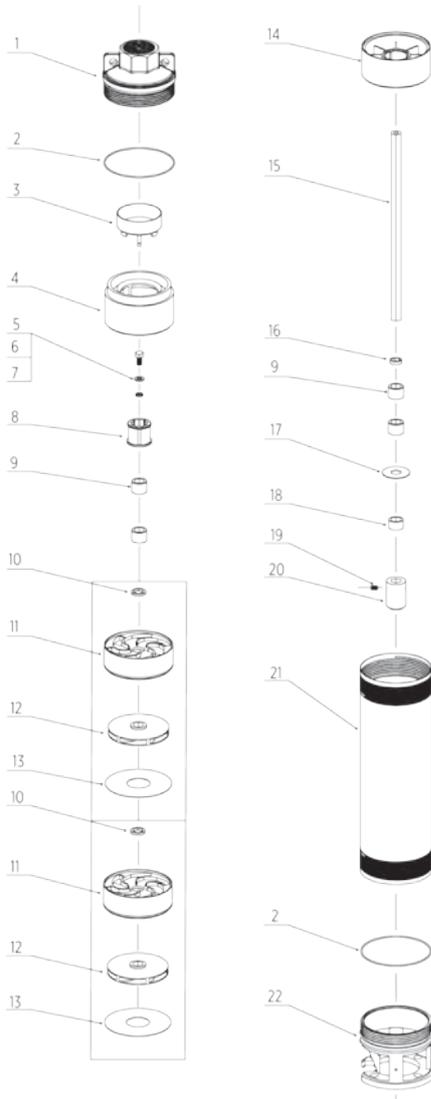
## 270AY - PERFORMANCE CURVE AT 50Hz



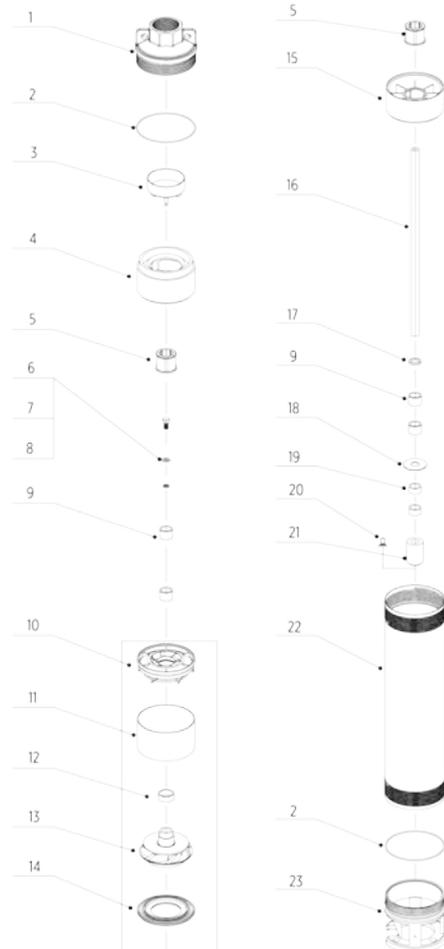
Part Number	Pump Model	Stages	Power		Pump Outlet (in)	Q (m³/h)	Delivery									
			kW	HP			0	4	6	10	12	14	16	18	20	22
98A0451604	270AY15E4	4	1.1	1.5	2"	Head H m	20	18	17	14	13	11	9	7	5	2
98A0451606	270AY20E6	6	1.5	2	2"		31	27	26	22	19	17	14	12	9	5
98A0451609	270AY30E9	9	2.2	3	2"		50	46	44	37	34	30	27	22	18	13
98A0451612	270AY40E12	12	3	4	2"		64	58	54	46	42	38	33	28	22	16
98A0451616	270AY55E16	16	4	5.5	2"		90	82	78	66	61	55	50	42	35	25
98A0451620	270AY75E20	20	5.5	7.5	2"		111	103	97	84	77	69	61	53	43	33
98A0451625	270AY100E25	25	7.5	10	2"		142	130	123	106	97	88	80	68	58	40

# MATERIAL OF CONSTRUCTION

35AY-50AY-70AY-100AY-120AY-150AY



200AY-270AY



No.	Description	Materials
1.	Discharge Head	SS
2.	O-Ring	NBR
3.	Check Valve	PC
4.	Valve Seat	PC
5.	Intermediate Support Sleeve	NBR
6.	Bolt	SS
7.	Spring Washer	SS
8.	Flat Washer	SS
9.	Ceramic Sleeve	Ceramic
10.	Diffuser	PC
11.	Diffuser Sleeve	SS
12.	Rubebr Ring	NBR

No.	Description	Materials
13.	Impeller	POM
14.	Difusser Cover	PC
15.	Intermediate Support	PC
16.	Pump Shaft	SS
17.	Sleeve	Plastic
18.	Flat Washer	SS
19.	Sleeve	Plastic
20.	Screw	SS
21.	Coupling	SS
22.	Pump Casing	SS
23.	Motor Bracket	SS
24.	Gasket	NBR+SS

# SUBMERSIBLE OIL-FILLED MOTOR

## Features

- ✓ AquaDuty 4" electric motors ensure reliable operation in wells with diameters equal to or greater than 4"
- ✓ The axial and radial oil lubricated bearings allow for maintenance-free operation
- ✓ The pressure compensation inside the motor is ensured by a special membrane

## Advantages

- ✓ Stator submerged in oil
- ✓ Sand protection and mechanical seal to allow for optimal operation even in the presence of sand in the well
- ✓ Excellent efficiency and low operating costs
- ✓ All motors are pre-filled with liquid and 100% tested

## Technical Data

- ✓ Ratings: 0.37 - 7.5 kW
- ✓ 4" NEMA flange
- ✓ Protection rating: IP68
- ✓ Number of starts per hour: max. 30
- ✓ Vertical and horizontal operation (prior authorization from our technical department)
- ✓ Standard rated voltage:
  - Single Phase: 220V 50Hz
  - Three Phase: 380V 50Hz
- ✓ Voltage tolerance:  $\pm 10\%$
- ✓ Insulation class: F
- ✓ Ambience temperature: 300C
- ✓ Cable dimensions: 4x1.5mm<sup>2</sup>
- ✓ Cooling flow rate: min. 0.08 m/sec
- ✓ Water pH: 6.5-8
- ✓ Thrust Load: 1500 N, 2500 N, 4500 N



## PERFORMANCE DATA SINGLE-PHASE | 210V-230V 50HZ

Phase	Power		Voltage (V)	In (A)	RPM	Efficiency (n%)			Power Factor (cos)			Capacitor (uF)
	KW	HP				50	75	100	50	75	100	
1	0.37	0.50	220	3.3	2835	37	48	55	0.88	0.94	0.97	20
			230	3.4	2850	34	45	53	0.82	0.89	0.94	
	0.55	0.75	220	4.6	2810	41	52	59	0.87	0.94	0.97	25
			230	4.8	2820	37	48	56	0.81	0.89	0.95	
	0.75	1.0	220	5.8	2810	46	57	62	0.81	0.90	0.96	30
			230	6.1	2825	41	53	60	0.74	0.84	0.91	
	1.1	1.5	220	8.5	2805	48	59	65	0.77	0.88	0.95	35
			230	9.0	2815	42	54	61	0.70	0.81	0.91	
	1.5	2.0	220	10.9	2800	54	63	66	0.81	0.91	0.96	40
			230	11.0	2820	49	60	66	0.71	0.83	0.92	
	2.2	3.0	220	15.5	2810	54	65	69	0.82	0.92	0.97	70
			230	16.2	2815	48	60	66	0.75	0.86	0.94	
	3.7	5.0	220	21.0	2901	67	79	83	0.91	0.96	0.98	130+178
			230	21.1	2910	62	74	80	0.85	0.93	0.97	

## PERFORMANCE DATA THREE-PHASE | 380V-415V 50HZ

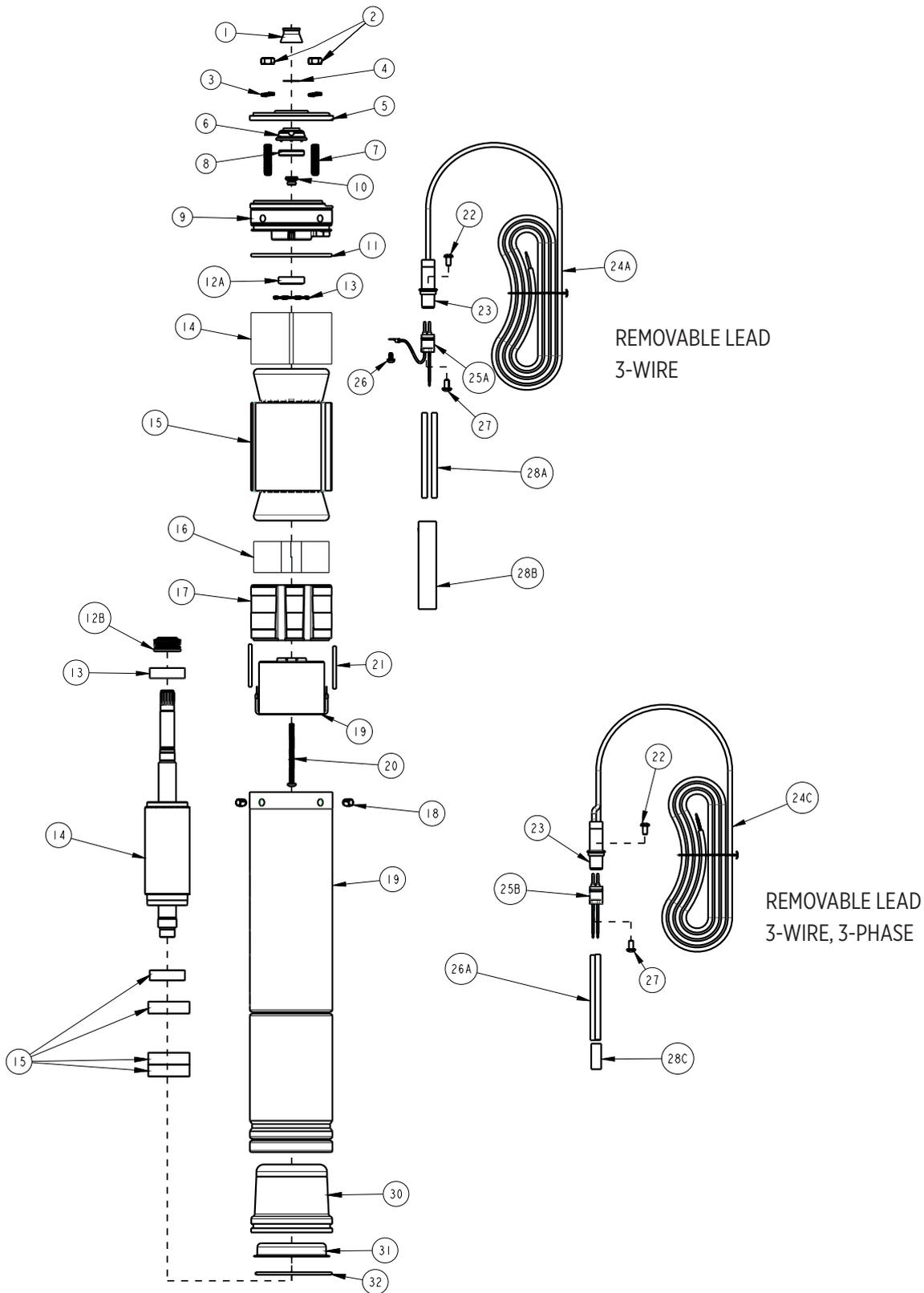
Phase	Power		Voltage (V)	In (A)	RPM	Efficiency (n%)			Power Factor (cos)		
	KW	HP				50	75	100	50	75	100
3	1.1	1.5	380	3.1	2835	66	71	73	0.57	0.70	0.79
			415	3.4	2865	61	68	71	0.44	0.57	0.67
	1.5	2.0	380	3.8	2825	70	74	74	0.63	0.76	0.83
			415	4.1	2860	64	71	73	0.48	0.62	0.72
	2.2	3.0	380	5.7	2810	73	76	76	0.55	0.70	0.80
			415	6.4	2845	66	72	75	0.43	0.56	0.67
	3.0	4.0	380	7.5	2815	74	77	77	0.58	0.72	0.81
			415	8.2	2850	67	73	75	0.44	0.58	0.69
	4.0	5.5	380	10.2	2820	75	78	78	0.57	0.72	0.81
			415	11.3	2855	68	74	76	0.44	0.57	0.68
	5.5	7.5	380	13.2	2830	78	80	79	0.62	0.76	0.84
			415	13.8	2865	74	78	79	0.48	0.62	0.74
	7.5	10	380	18.3	2850	76	80	79	0.56	0.71	0.81
			415	20.3	2875	69	75	77	0.43	0.57	0.68

## ORDERING INFORMATION | 3-WIRE SINGLE PHASE MODELS

KW	HP	Model No.	Volts	Hz	S.F.	Lead Type	Thrust Rating (N)
0.37	0.5	2752030252GS	220-230	50	1.0	Removable	1500
0.55	0.75	2752130252GS	220-230	50	1.0	Removable	1500
0.75	1	2752230252GS	220-230	50	1.0	Removable	1500
1.1	1.5	2752330252GS	220-230	50	1.0	Removable	1500
1.5	2	2752430352GS	220-230	50	1.0	Removable	2500
2.2	3	2752530363GS	220-230	50	1.0	Removable	2500
3.7	5	2756270463GS	220-230	50	1.0	Removable	4500

## THREE-PHASE MODELS

KW	HP	Model No.	Volts	Hz	S.F.	Lead Type	Thrust Rating (N)
1.1	1.5	2742360262GS	380-415	50	1.0	Removable	1500
1.5	2	2742460362GS	380-415	50	1.0	Removable	2500
2.2	3	2742560363GS	380-415	50	1.0	Removable	2500
3	4	2742660463GS	380-415	50	1.0	Removable	4500
4	5.5	2742860463GS	380-415	50	1.0	Removable	4500
5.5	7.5	2742960463GS	380-415	50	1.0	Removable	4500
7.5	10	2743060463GS	380-415	50	1.0	Removable	4500



## MATERIAL OF CONSTRUCTION

No.	KW	Qty	Materials
1.	Sand Slinger	1	NBR
2.	Nut	4	304SS
3.	Washer	4	304SS
4.	Washer	1	304SS
5.	Top End Bell Cover	1	304SS
6.	Sand Slinger Base	1	Polyacetal (POM)
7.	Stud	4	304SS
8.	Lip Seal	1	NBR
9.	Top End Bell	1	E-Coated Cast-Iron
10.	Oil Fill Plug	1	Brass
11.	O-Ring for Top End Bell	1	NBR
12.	Mechanical Shaft Seal	1	NBR-Carbon and ceramic face seal
13.	Wave Spring	1	Hi Carbon Steel
14.	Top Insulation Roll-Up	1	Mylar A
15.	Wound Stator	1	Copper wire/Steel
16.	Bottom Insulation Roll-Up	1	Mylar A
17.	Bottom End Bell	1	Aluminum
18.	Lock Pins	4	304SS
19.	Capacitor	1	PBT or PBO case, epoxy or urethane fill
20.	Capacitor Screw	1	Zinc plated steel
21.	Shrink tube	2	Polyolefin
22.	Screw for Lead Clamp	1	304SS
23.	Lead Material	1	VPE/EPR/Cu
24.	Internal Connector	1	PA/Cu/NBR
25.	SEMS Grounding Screw	1	Zinc plated steel
26.	Lead Sleeveing		Glass/Silicone
27.	Lead Seal Rubber	1	NBR
28.	Pressure Equalization Diaphragm	1	NBR
29.	Diaphragm Retainer/Cover	1	304SS
30.	Retaining Ring	1	304SS
31.	Parallel Connectors	3	CuZn/Sn
32.	Lead Clamp Bushing	1	Nylon
33.	Lead Clamp Plate	1	304SS
34.	Upper Ball Bearing	1	SS
35.	Lower Ball Bearing	1-2	SS
36.	Shrink Tube	3	Polyolefin
37.	Rotor with Shaft	1	Steel/304SS/WCU
38.	Motor Outer Shell	1	304SS
39.	Lead Pressure Disk	2	Polyamide
40.	Filling Solution - Non-Toxic Oil		Food Contact Grade Mineral Oil

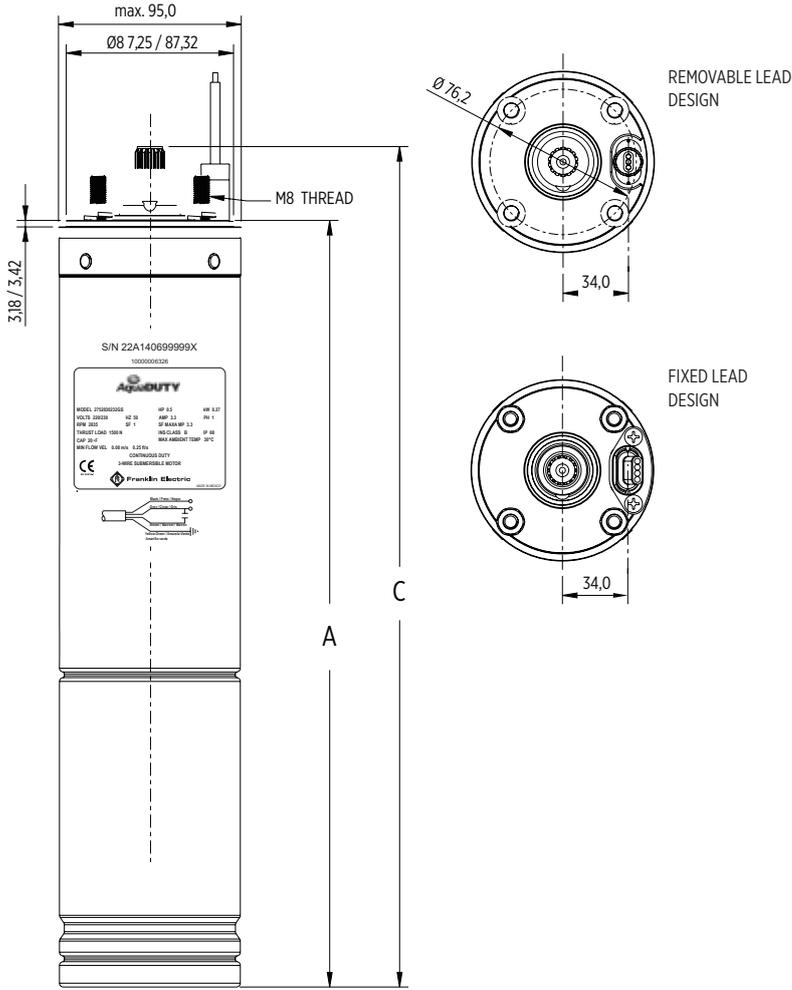
# DIMENSIONAL DATA AND DRAWING

## SINGLE-PHASE MOTORS 50 HZ

4" 1-3-wire Motors 50Hz					
P <sub>N</sub> [kW]	P <sub>N</sub> [HP]	A [mm]	C [mm]	Weight [kg]	Oil [kg]
0.37	0.5	327	365	7.1	0.47
0.55	0.75	336	374	7.4	0.47
0.75	1	357	395	8.3	0.49
1.1	1.5	380	419	9.5	0.5
1.5	2	426	464	11.6	0.53
2.2	3	475	513	14	0.57
3.7	5	649	687	22.1	0.69

## THREE-PHASE MOTORS 50 HZ

4" 3 Motors 50Hz					
P <sub>N</sub> [kW]	P <sub>N</sub> [HP]	A [mm]	C [mm]	Weight [kg]	Oil [kg]
1.1	1.5	368	406	8.9	0.50
1.5	2	388	426	9.8	0.51
2.2	3	426	464	11.6	0.53
3	4	475	513	14	0.57
4	5.5	540	579	17.1	0.61
5.5	7.5	635	673	22.6	0.68
7.5	10	744	782	28.1	0.75



# 4CB Control Box

Control Box that provides protection to Coverco single phase oil filled submersible motor.

## Technical Data

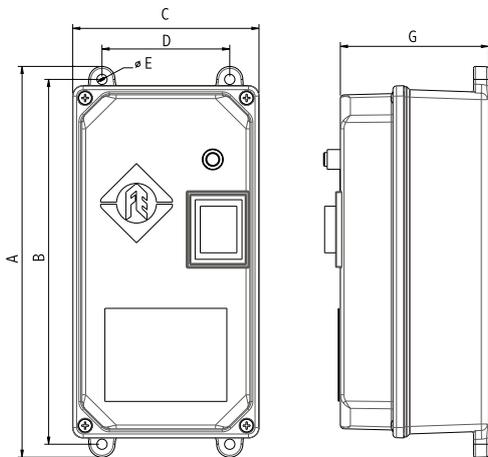
- ✓ **Main internal components:** Switch, Thermal Relay and Permanent Capacitor
- ✓ IP-53 thermoplastic external box
- ✓ **Power:** 0.5HP - 3.0HP
- ✓ **Voltage:** 220V Single Phase



## Ordering Information

Model	Part Number	Description	Power (HP)	Weight (Kg)
<b>4CB</b>	98A04C5001	4CB 0.5HP 220V 50HZ 20uF	0.5	0.52
	98A04C5002	4CB 0.75HP 220V 50HZ 25uF	0.75	0.55
	98A04C5003	4CB 1.0HP 220V 50HZ 30uF	1	0.59
	98A04C5004	4CB 1.5HP 220V 50HZ 35uF	1.5	0.60
	98A04C5005	4CB 2.0HP 220V 50HZ 40uF	2	0.67
	98A04C5006	4CB 3.0HP 220V 50HZ 70uF	3	0.67

## Dimension



Dimension (mm)						
Model	A	B	C	D	E	F
4CB	219	207	110	76	5.5	72



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