

# 4" Encapsulated Motors

## PSC / 3- wire / 3- Phase



**Franklin Electric**



Franklin Electric



Quality in the Well



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# 4" Super Stainless 1~ PSC



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase PSC motor has been electrically optimized to offer reliable pump starting over a wide range of incoming voltages. It should ideally be combined to the Franklin Electric SubStart/ SubTronicSC control boxes for maximum system performance, protection and warranty.

### Standard Motor Design Specifications:

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- Cable material according to drinking water regulations (VDE / ACS / KTW approved)
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Pollution Recovery Motor Version Specifications:

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304 graded stainless steel as standard, 316SS as an option

### Brackish Water Motor Version Specifications:

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life

### Technical specification:

- PSC motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: max. 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Options

- Motor cable VDE, KTW approved ( 1,5m; special lengths available)
- Motors with factory- installed lead in Single Packing
- Built in lightning arrestors
- Built in overload protection
- Alternative material executions
- Motor sets including control box, lead and splice kit



4" PSC Motors Model Numbers 50 Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1- 6	Digit 7- 10			
			Standard Motors (single pack, with Lead)	Standard Motors (40 motors packing unit)	Pollution Recovery Motors (single pack, with Lead)	Brackish Water Motors (single pack, with Lead)
0,25	220-230	254 803	1621L	1621	1622L	1624L
	230-240	254 813	1621L	1621	1622L	1624L
0,37	220-230	254 805	1621L	1621	1622L	1624L
	230-240	254 815	1621L	1621	1622L	1624L
0,55	220-230	254 807	1621L	1621	1622L	1624L
	230-240	254 817	1621L	1621	1622L	1624L
0,75	220-230	254 808	1621L	1621	1622L	1624L
	230-240	254 818	1621L	1621	1622L	1624L
1,10	220-230	254 809	1621L	1621	1622L	1624L
	230-240	254 819	1621L	1621	1622L	1624L
1,50	220-230	254 810	1621L	1621	1622L	1624L
	230-240	254 820	1621L	1621	1622L	1624L
2,20	220-230	254 811	1621L	1621	1622L	1624L
	230-240	254 821	1621L	1621	1622L	1624L

4" PSC Performance Data 50 Hz

220V - 230V version

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]	Capacitor μF (U <sub>c</sub> =450V)
						50	75	100	50	75	100			
0,25	3000	220	2865	2,3	9,0	33	45	51	0,91	0,93	0,96	0,82	0,73	12,5
		230	2875	2,4	9,4	28	42	50	0,80	0,88	0,92	0,83	0,80	
0,37	3000	220	2850	3,2	12,1	36	47	54	0,86	0,92	0,97	1,21	1,07	16
		230	2860	3,3	12,6	35	46	54	0,78	0,85	0,91	1,24	1,17	
0,55	3000	220	2840	4,2	16,9	46	57	63	0,94	0,97	0,98	1,85	1,50	20
		230	2850	4,3	17,7	45	57	63	0,86	0,91	0,94	1,90	1,63	
0,75	3000	220	2825	5,7	21,7	44	54	61	0,97	0,99	0,99	2,5	2,3	35
		230	2845	5,7	22,7	41	52	59	0,92	0,96	0,98	2,5	2,5	
1,1	3000	220	2830	8,1	32,5	47	59	65	0,86	0,94	0,97	3,7	2,9	40
		230	2845	8,4	33,9	43	56	63	0,77	0,86	0,92	3,7	3,1	
1,5	3000	220	2820	10,4	39,9	52	63	68	0,90	0,95	0,98	5,1	3,6	50
		230	2830	10,7	41,7	48	59	66	0,82	0,90	0,95	5,1	3,9	
2,2	4000	220	2825	14,7	59,2	55	65	70	0,93	0,98	0,99	7,4	5,0	70
		230	2840	14,7	61,8	51	62	68	0,86	0,93	0,97	7,4	5,5	

230V - 240V version

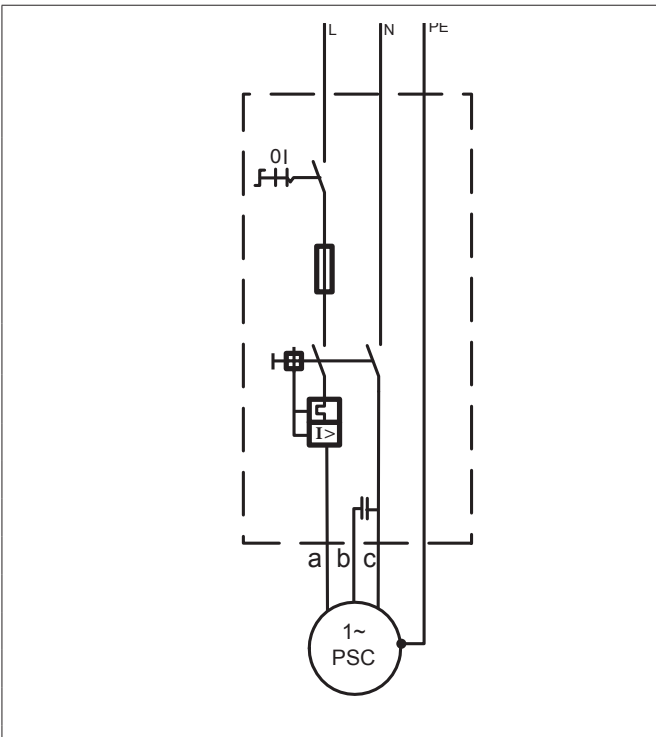
P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]	Capacitor μF (U <sub>c</sub> =450V)
						50	75	100	50	75	100			
0,25	3000	230	2865	2,2	8,6	33	45	51	0,91	0,93	0,96	0,82	0,73	12,5
		240	2875	2,3	9,0	28	42	50	0,80	0,88	0,92	0,83	0,80	
0,37	3000	230	2850	3,1	11,6	36	47	54	0,86	0,92	0,97	1,21	1,07	16
		240	2860	3,2	12,1	35	46	54	0,78	0,85	0,91	1,24	1,17	
0,55	3000	230	2840	4,0	16,2	46	57	63	0,94	0,97	0,98	1,85	1,50	20
		240	2850	4,1	16,9	45	57	63	0,86	0,91	0,94	1,90	1,63	
0,75	3000	230	2825	5,5	20,8	44	54	61	0,97	0,99	0,99	2,5	2,3	35
		240	2845	5,5	21,8	41	52	59	0,92	0,96	0,98	2,5	2,5	
1,1	3000	230	2830	7,8	31,1	47	59	65	0,86	0,94	0,97	3,7	2,9	40
		240	2845	8,1	32,5	43	56	63	0,77	0,86	0,92	3,7	3,1	
1,5	3000	230	2820	10,0	38,3	52	63	68	0,90	0,95	0,98	5,1	3,6	50
		240	2830	10,2	40,0	48	59	66	0,82	0,90	0,95	5,1	3,9	
2,2	4000	230	2825	14,0	56,7	55	65	70	0,93	0,98	0,99	7,4	5,0	70
		240	2840	14,1	59,3	51	62	68	0,86	0,93	0,97	7,4	5,5	



PSC Winding Resistances 50 Hz

$P_N$ [kW]	$U_N$ [V]	Stator-Ref. #	Main Phase [Ohm]	Start Phase [Ohm]
0,25	220 - 230	326 738 912	8,2 - 10,0	31,1 - 38,1
	230 - 240	326 800 912	8,9 - 10,9	26,7 - 32,6
0,37	220 - 230	326 739 912	6,7 - 8,1	21,7 - 26,5
	230 - 240	326 801 912	7,2 - 8,8	20,8 - 25,4
0,55	220 - 230	326 740 912	4,4 - 5,4	13,6 - 16,6
	230 - 240	326 802 912	4,8 - 5,8	13,1 - 16,0
0,75	220 - 230	326 741 912	3,3 - 4,1	8,1 - 9,9
	230 - 240	326 803 912	3,7 - 4,6	7,7 - 9,4
1,1	220 - 230	326 742 912	2,3 - 2,8	6,8 - 8,3
	230 - 240	326 804 912	2,5 - 3,0	6,5 - 7,9
1,5	220 - 230	326 743 912	1,8 - 2,2	4,7 - 5,7
	230 - 240	326 805 912	1,9 - 2,4	4,4 - 5,4
2,2	220 - 230	326 744 912	1,2 - 1,5	3,2 - 3,9
	230 - 240	326 806 912	1,3 - 1,6	3,0 - 3,6

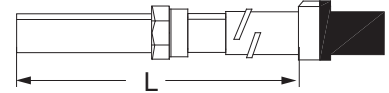
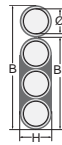
Electrical Connection



a	b	c	PE
black	brown	grey	yellow/green

VDE / ACS/ KTW Approved Leads\*

$\emptyset$ [mm <sup>2</sup> ]	B (mm)	B1 (mm)	H (mm)
3X1,5+1G1,5	16,8 ± 0,3	10,7 ± 0,3	5,0 ± 0,3



L [m]	PSC Motor Leads		
	Brass	304 SS	316 SS
1,5	310 113 001	310 113 401	310 113 501
2,5	310 113 002	310 113 402	310 113 502
5	310 113 005	310 113 405	310 113 505
10	310 113 010	310 113 410	310 113 510
15	310 113 015	310 113 415	310 113 515
20	310 113 020	310 113 420	310 113 520
30	310 113 030	310 113 430	310 113 530
40	310 113 040	310 113 440	310 113 540
50	310 113 050	310 113 450	310 113 550

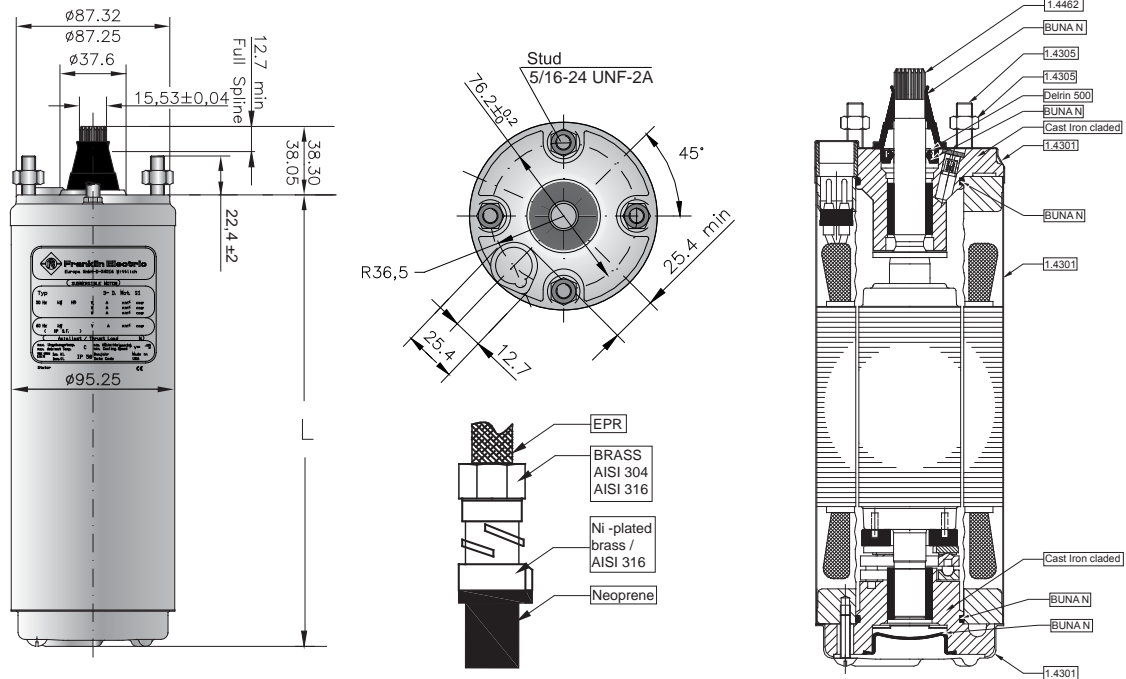
L [m]	Pollution Recovery Motor Leads	
	Model number (only 316SS)	
1,5	310 313 501	
2,5	310 313 502	
10	310 313 510	
20	310 313 520	
30	310 313 530	
40	310 313 540	
50	310 313 550	

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.



Outline Drawing PSC Motors

Material Description



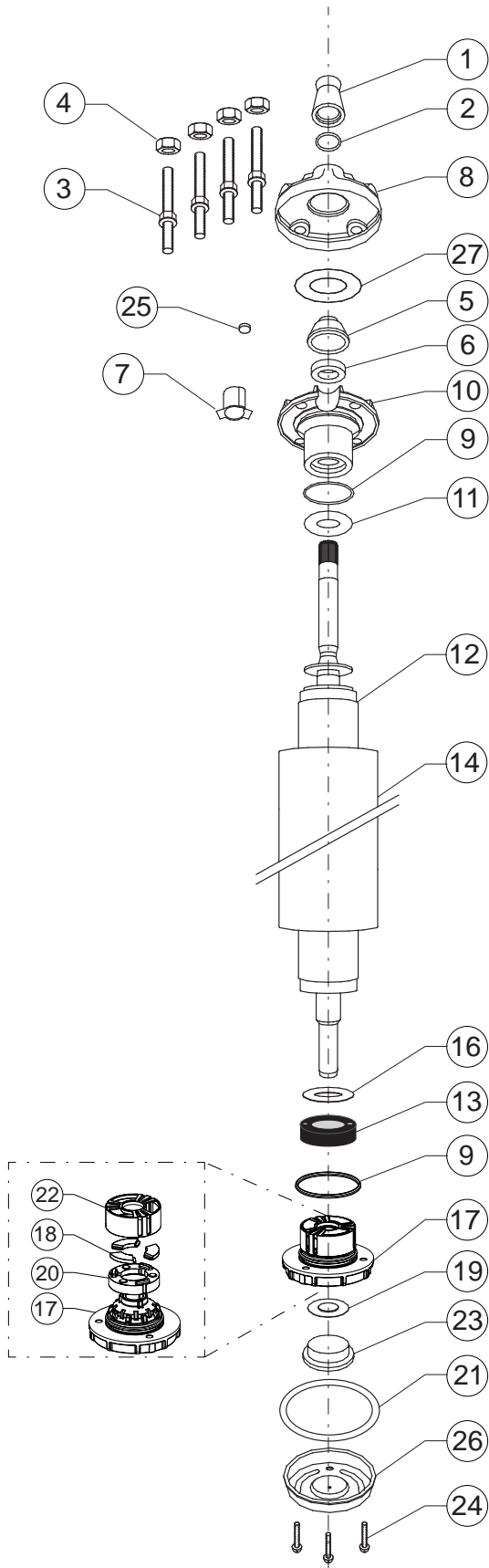
Tolerances according to NEMA MG 1-18.388

4" PSC Motors Lengths and Weights / Packing sizes

$P_N$		L [mm]	M [kg]	Motor Package size (40 motors per packing unit)		Motor with Lead in single pack	
[kW]	[HP]			[mm]	[kg]	[mm]	[kg]
0,25	0,33	214,2	7,4	800 x 500 x 870	310,0	400 x 100 x 110	8,6
0,37	0,50	228,2	8,0	800 x 500 x 870	334,0	400 x 100 x 110	9,2
0,55	0,75	253,2	9,2	800 x 500 x 870	382,0	530 x 100 x 110	10,5
0,75	1,00	282,6	10,4	800 x 500 x 870	430,0	530 x 100 x 110	11,7
1,10	1,50	306,6	11,8	800 x 500 x 870	486,0	530 x 100 x 110	13,1
1,50	2,0	338,6	12,9	800 x 500 x 870	530,0	796 x 100 x 110	14,7
2,20	3,0	436,6	17,3	800 x 500 x 870	706,0	796 x 100 x 110	15,5



4" PSC Standard Motor\* Part Description



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	4	Kit B
3	Stud	4	Kit C
4	Nut	1	Kit C
5	Seal cover	1	Kit
6	Shaft Seal	1	Kit B
7	Connector boss	1	151 820 102
8	Top Endbell, Cover	1	Kit
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 9
13	Thrust disk assy	1	Kit A
14	Stator	1	page 9
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Cover	3	Kit C
25	Filter	1	Kit B
26	Bottom Endbell Cover		156 414 101
27	Washer	1	Kit B

\* Spare Parts for Pollution Recovery and Brackish Water Motors on Request





**4" PSC Standard Motor\* Spare Part Kit's**

$P_N$ [kW]	Thrust Bearing	End bell, upper (Pos. 5 - 10, 27)	End bell, lower (Pos. 17)	Up thrust washer (Pos. 11)
0,25 - 0,55	Kit A1	177 231 904	Kit A1	150 954 102
0,75 - 1,5		177 233 904		151 093 105
2,2		(0,75 - 2,2kW)		
<b>Kit 1500N</b> 0,25 - 0,55kW up to 07.2008	Thrust bearing Kit 1500N		inkl. Pos.: 13, 15, 16, 18, 20	<b>308 652 101</b>
<b>Kit A1</b>	End bell (lower) incl. Thrust bearing Kit 3000N/4000N		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	<b>308 464 901</b>
<b>Kit B1</b>	Seals Kit		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	<b>308 650 101</b>
<b>Kit B2</b>	Seals Kit (Viton)		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	<b>308 650 104</b>
<b>Kit C</b>	Screws Kit		inkl. Pos.: 3, 4, 24	<b>308 656 101</b>

**PSC Replacement Stator and Rotor 50 Hz**

$P_N$ [kW]	Volt	Motor Model No.	Stator	Rotor
<b>0,25</b>	220-230	254 803 1621 / L	305 491 101	178 610 902K
	230-240	254 813 1621 / L	305 491 121	
<b>0,37</b>	220-230	254 805 1621 / L	305 491 102	178 611 902K
	230-240	254 815 1621 / L	305 491 122	
<b>0,55</b>	220-230	254 807 1621 / L	305 491 103	178 612 902K
	230-240	254 817 1621 / L	305 491 123	
<b>0,75</b>	220-230	254 808 1621 / L	305 491 104	178 613 902K
	230-240	254 818 1621 / L	305 491 124	
<b>1,10</b>	220-230	254 809 1621 / L	305 491 105	178 614 902K
	230-240	254 819 1621 / L	305 491 125	
<b>1,50</b>	220-230	254 810 1621 / L	305 491 106	178 615 902K
	230-240	254 820 1621 / L	305 491 126	
<b>2,20</b>	220-230	254 811 2521 / L	305 491 107	178 616 902K
	230-240	254 821 2521 / L	305 491 127	

\* Spare Parts for Pollution Recovery and Brackish Water Motors on Request



# 4" Super Stainless 1~ PSC NextGen



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase PSC motor has been electrically optimized to offer reliable pump starting over a wide range of incoming voltages. It should ideally be combined to the Franklin Electric SubStart/SubTronicSC control boxes for maximum system performance, protection and warranty.

### Features:

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Pollution Recovery Motor Version Specifications:

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS (316SS Stator) graded stainless steel as standard

### Technical specification:

- PSC motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Options:

- Various cable lengths
- Motor sets including control box, lead and splice kit
- Alternative material executions



**4" PSC NextGen Motor Model numbers 50 Hz**

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	304SS		
		Standard Motors (Single pack, with Lead)	Standard Motors (40 motors packing unit)	Pollution Recovery Motors (Single pack, with Lead)
0,25	220-230	254 803 6700L	254 803 6700	254 803 6722L
	230-240	254 813 6700L	254 813 6700	254 813 6722L
0,37	220-230	254 805 6700L	254 805 6700	254 805 6722L
	230-240	254 815 6700L	254 815 6700	254 815 6722L
0,55	220-230	254 807 6700L	254 807 6700	254 807 6722L
	230-240	254 817 6700L	254 817 6700	254 817 6722L
0,75	220-230	254 808 6700L	254 808 6700	254 808 6722L
	230-240	254 818 6700L	254 818 6700	254 818 6722L
1,10	220-230	254 809 6700L	254 809 6700	254 809 6722L
	230-240	254 819 6700L	254 819 6700	254 819 6722L
1,50	220-230	254 810 6700L	254 810 6700	254 810 6722L
	230-240	254 820 6700L	254 820 6700	254 820 6722L
2,20	220-230	254 811 6700L	254 811 6700	254 811 6722L
	230-240	254 821 6700L	254 821 6700	254 821 6722L

**4" PSC Performance Data 50 Hz**

**220V - 230V version**

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]	Capacitor μF (U <sub>C</sub> =450V)
						50	75	100	50	75	100			
0,25	4000	220	2865	2,3	9,0	33	45	51	0,91	0,93	0,96	0,82	0,73	12,5
		230	2875	2,4	9,4	28	42	50	0,80	0,88	0,92	0,83	0,80	
0,37	4000	220	2850	3,2	12,1	36	47	54	0,86	0,92	0,97	1,21	1,07	16
		230	2860	3,3	12,6	35	46	54	0,78	0,85	0,91	1,24	1,17	
0,55	4000	220	2840	4,2	16,9	46	57	63	0,94	0,97	0,98	1,85	1,50	20
		230	2850	4,3	17,7	45	57	63	0,86	0,91	0,94	1,90	1,63	
0,75	4000	220	2825	5,7	21,7	44	54	61	0,97	0,99	0,99	2,5	2,3	35
		230	2845	5,7	22,7	41	52	59	0,92	0,96	0,98	2,5	2,5	
1,1	4000	220	2830	8,1	32,5	47	59	65	0,86	0,94	0,97	3,7	2,9	40
		230	2845	8,4	33,9	43	56	63	0,77	0,86	0,92	3,7	3,1	
1,5	4000	220	2820	10,4	39,9	52	63	68	0,90	0,95	0,98	5,1	3,6	50
		230	2830	10,7	41,7	48	59	66	0,82	0,90	0,95	5,1	3,9	
2,2	4000	220	2825	14,7	59,2	55	65	70	0,93	0,98	0,99	7,4	5,0	70
		230	2840	14,7	61,8	51	62	68	0,86	0,93	0,97	7,4	5,5	

**230V - 240V version**

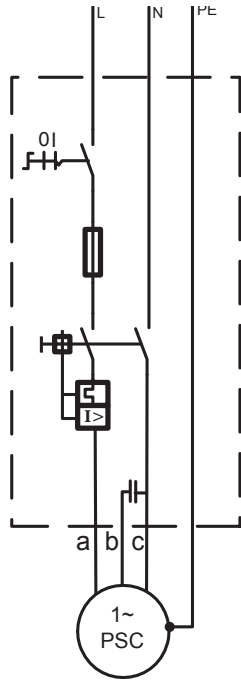
P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]	Capacitor μF (U <sub>C</sub> =450V)
						50	75	100	50	75	100			
0,25	4000	230	2865	2,2	8,6	33	45	51	0,91	0,93	0,96	0,82	0,73	12,5
		240	2875	2,3	9,0	28	42	50	0,80	0,88	0,92	0,83	0,80	
0,37	4000	230	2850	3,1	11,6	36	47	54	0,86	0,92	0,97	1,21	1,07	16
		240	2860	3,2	12,1	35	46	54	0,78	0,85	0,91	1,24	1,17	
0,55	4000	230	2840	4,0	16,2	46	57	63	0,94	0,97	0,98	1,85	1,50	20
		240	2850	4,1	16,9	45	57	63	0,86	0,91	0,94	1,90	1,63	
0,75	4000	230	2825	5,5	20,8	44	54	61	0,97	0,99	0,99	2,5	2,3	35
		240	2845	5,5	21,8	41	52	59	0,92	0,96	0,98	2,5	2,5	
1,1	4000	230	2830	7,8	31,1	47	59	65	0,86	0,94	0,97	3,7	2,9	40
		240	2845	8,1	32,5	43	56	63	0,77	0,86	0,92	3,7	3,1	
1,5	4000	230	2820	10,0	38,3	52	63	68	0,90	0,95	0,98	5,1	3,6	50
		240	2830	10,2	40,0	48	59	66	0,82	0,90	0,95	5,1	3,9	
2,2	4000	230	2825	14,0	56,7	55	65	70	0,93	0,98	0,99	7,4	5,0	70
		240	2840	14,1	59,3	51	62	68	0,86	0,93	0,97	7,4	5,5	



PSC Winding resistance 50 Hz

$P_N$ [kW]	$U_N$ [V]	Stator-Ref. # 304SS	Main phase [Ohm]	Start phase [Ohm]
0,25	220 - 230	326 738 942	8,2 - 10,0	31,1 - 38,1
	230 - 240	326 800 942	8,9 - 10,9	26,7 - 32,6
0,37	220 - 230	326 739 942	6,7 - 8,1	21,7 - 26,5
	230 - 240	326 801 942	7,2 - 8,8	20,8 - 25,4
0,55	220 - 230	326 740 942	4,4 - 5,4	13,6 - 16,6
	230 - 240	326 802 942	4,8 - 5,8	13,1 - 16,0
0,75	220 - 230	326 741 942	3,3 - 4,1	8,1 - 9,9
	230 - 240	326 803 942	3,7 - 4,6	7,7 - 9,4
1,1	220 - 230	326 742 942	2,3 - 2,8	6,8 - 8,3
	230 - 240	326 804 942	2,5 - 3,0	6,5 - 7,9
1,5	220 - 230	326 743 942	1,8 - 2,2	4,7 - 5,7
	230 - 240	326 805 942	1,9 - 2,4	4,4 - 5,4
2,2	220 - 230	326 744 942	1,2 - 1,5	3,2 - 3,9
	230 - 240	326 806 942	1,3 - 1,6	3,0 - 3,6

Electrical connection PSC Motors

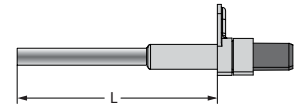
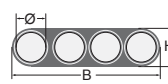


a	b	c	PE
black	brown	grey	yellow/green

Motor Leads\*

PSC Motor- VDE / ACS/ KTW Approved Flat Leads

$\varnothing$ [mm <sup>2</sup> ]	B [mm]	H [mm]
4X1,5	14,6 ± 0,3	5,1 ± 0,3

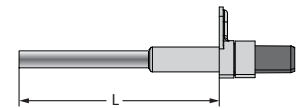
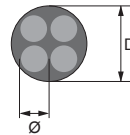


L [m]	304 SS	316 SS
1,5	310 178 401	310 178 501
2,5	310 178 402	310 178 502
5	310 178 405	310 178 505
10	310 178 410	310 178 510
15	310 178 415	310 178 515
20	310 178 420	310 178 520
30	310 178 430	310 178 530
40	310 178 440	310 178 540
50	310 178 450	310 178 550

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.

PSC Motor- Pollution Recovery Round Leads

$\varnothing$ [mm <sup>2</sup> ]	$\varnothing D$ [mm]
4X1,5	9,8 ± 0,3

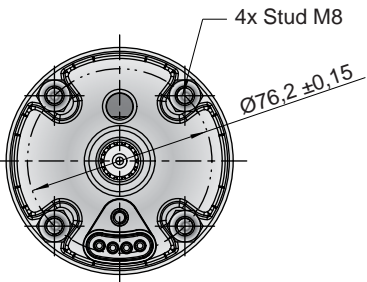
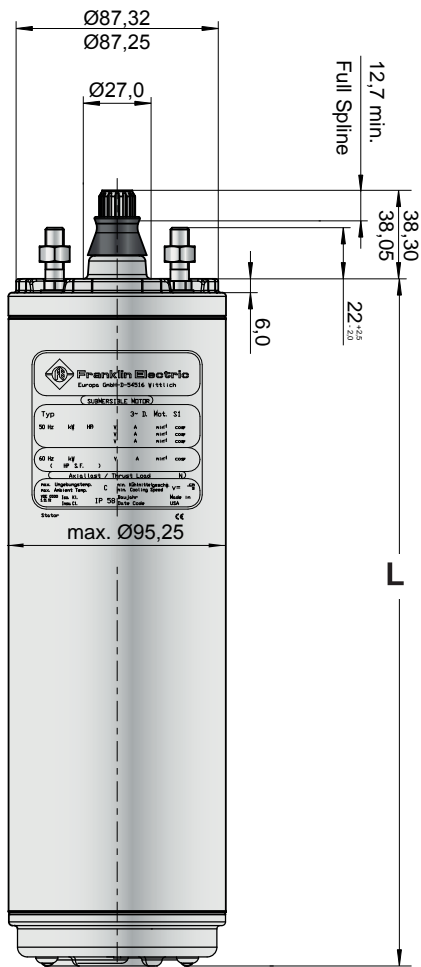


L [m]	304 SS	316 SS
1,5	310 318 401	310 318 501
2,5	310 318 402	310 318 502
5	310 318 405	310 318 505
10	310 318 410	310 318 510
15	310 318 415	310 318 515
20	310 318 420	310 318 520
30	310 318 430	310 318 530
40	310 318 440	310 318 540
50	310 318 450	310 318 550

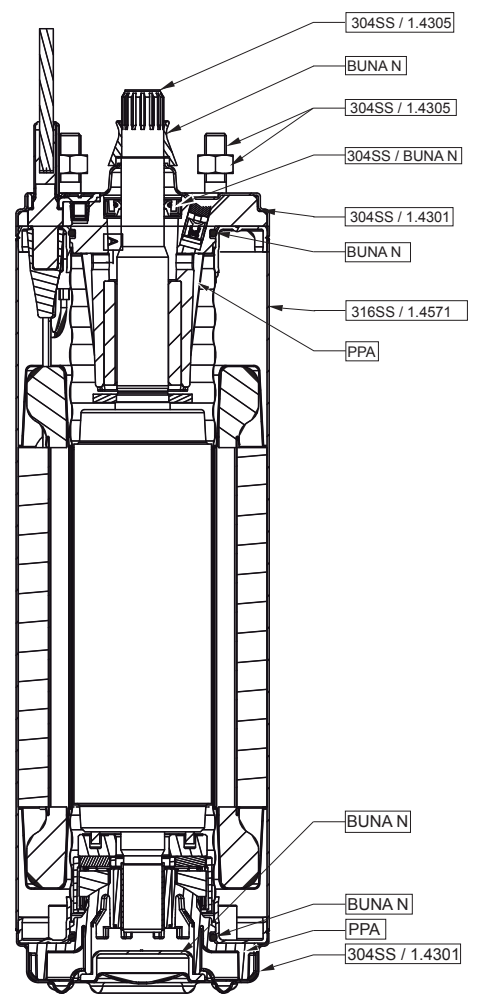


Outline Drawing PSC Motors

Material Description



- 304SS
  - EPR
  - AISI 316
  - AISI 304
  - Neoprene
- 316SS
  - EPR
  - AISI 316
  - AISI 316
  - Neoprene



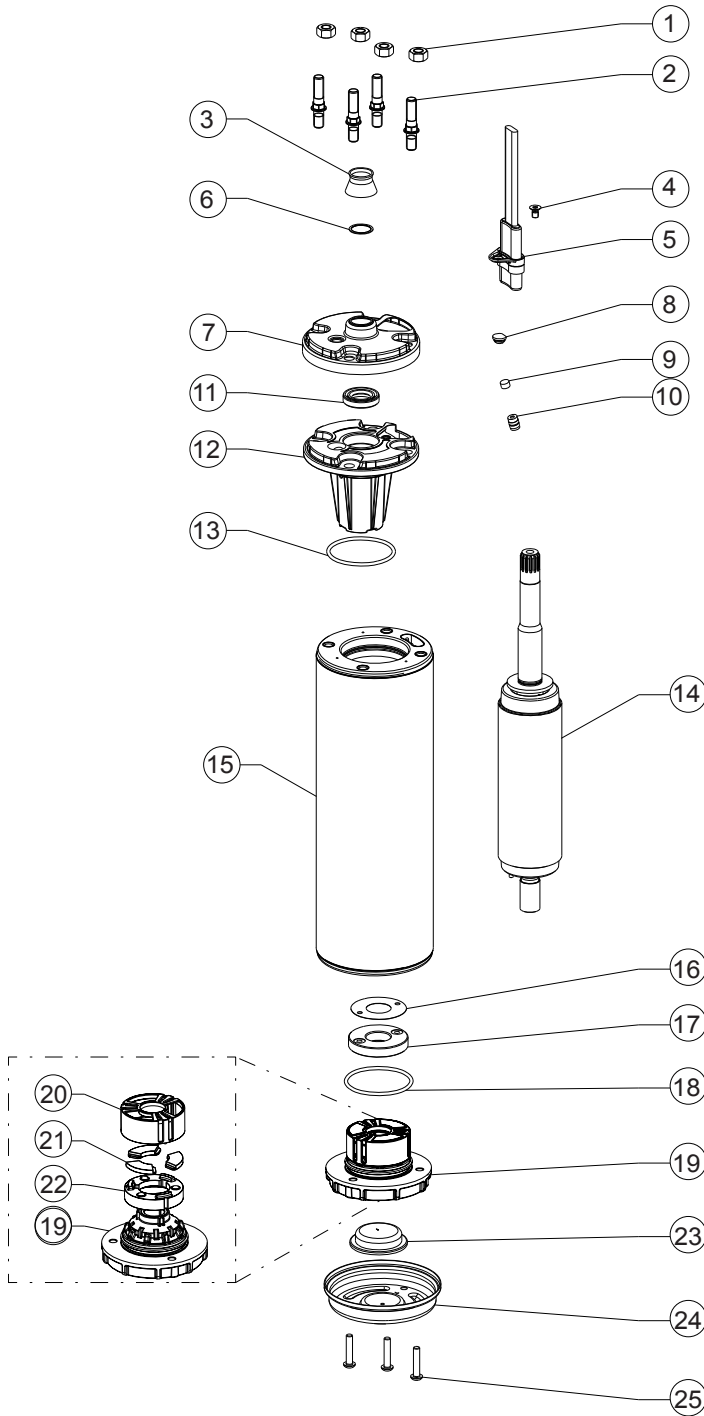
Tolerances according to NEMA MG 1-18.388

4" PSC Motors Lengths and Weights / Packing sizes

P <sub>N</sub>		L [mm]	M [kg]	Motor with Lead in single pack		Motor Package size (40 motors per packing unit)	
[kW]	[HP]			[mm]	[kg]	[mm]	[kg]
0,25	0,33	237,2	6,55	400 x 100 x 110	7,25	800 x 500 x 870	262,0
0,37	0,50	251,1	7,20	400 x 100 x 110	7,9	800 x 500 x 870	306,8
0,55	0,75	276,2	8,35	530 x 100 x 110	9,05	800 x 500 x 870	352,8
0,75	1,00	297,2	9,30	530 x 100 x 110	10,0	800 x 500 x 870	390,8
1,10	1,50	321,2	10,45	530 x 100 x 110	11,15	800 x 500 x 870	436,8
1,50	2,0	353,2	11,90	796 x 100 x 110	12,6	800 x 500 x 870	494,8
2,20	3,0	451,2	16,65	796 x 100 x 110	17,35	800 x 500 x 870	684,8



4" PSC NextGen Motor Part Description



Pos.	Part Description	Qty.	Part No.
1	Nut	4	Kit C
2	Stud	4	Kit C
3	Protector, Spline	1	Kit B
4	Screw (Motor lead)	1	Kit C
5	Motor lead	1	see page 12
6	Washer	1	Kit B
7	Top Endbell, Cover	1	Kit
8	Plug	1	Kit B
9	Filter	1	Kit B
10	Valve	1	Kit
11	Shaft Seal	1	Kit B
12	Top Endbell	1	Kit
13	O- Ring	1	Kit B
14	Rotor	1	see page 15
15	Stator	1	see page 15
16	Washer	1	Kit A
17	Thrust disk assy	1	Kit A
18	O- Ring	1	Kit B
19	Bottom Endbell	1	A1
20	Bearing cage	1	Kit A
21	Segments	3	Kit A
22	Rocking Disk	1	Kit A
23	Diaphragm	1	Kit B
24	Bottom Endbell Cover	1	156 414 201
25	Screw, Cover	3	Kit C



**4" PSC NextGen Motor Spare Part Kits**

$P_N$ [kW]	0,25 - 2,2kW		
<b>Kit A1</b>	<b>End bell, upper 304SS (Pos. 7 - 13)</b>	incl. Pos.: 7 - 13	<b>308 462 901</b>
<b>Kit A2</b>	<b>Endbell lower incl. Thrust Bearing Kit 4000N</b>	incl. Pos.: 16 - 22	<b>308 464 911</b>
<b>Kit B</b>	<b>Seal Kit 304SS</b>	incl. Pos.: 3, 6, 8, 9, 11, 13, 18, 23	<b>308 650 201</b>
<b>Kit C</b>	<b>Fastener Kit 304SS</b>	incl. Pos.: 1, 2, 4, 25	<b>308 656 201</b>

**PSC Replacement Stator (316SS) and Rotor 50 Hz**

$P_N$ [kW]	Volt	Motor Model No.	Stator	Rotor
<b>0,25</b>	220-230	254 803 6800 / L	305 491 701	178 165 951K
	230-240	254 813 6800 / L	305 491 721	
<b>0,37</b>	220-230	254 805 6800 / L	305 491 702	178 165 952K
	230-240	254 815 6800 / L	305 491 722	
<b>0,55</b>	220-230	254 807 6800 / L	305 491 703	178 165 953K
	230-240	254 817 6800 / L	305 491 723	
<b>0,75</b>	220-230	254 808 6800 / L	305 491 704	178 165 954K
	230-240	254 818 6800 / L	305 491 724	
<b>1,10</b>	220-230	254 809 6800 / L	305 491 705	178 165 955K
	230-240	254 819 6800 / L	305 491 725	
<b>1,50</b>	220-230	254 810 6800 / L	305 491 706	178 165 956K
	230-240	254 820 6800 / L	305 491 726	
<b>2,20</b>	220-230	254 811 6800 / L	305 491 707	178 165 957K
	230-240	254 821 6800 / L	305 491 727	



# 4" Super Stainless PSC Motor Set



## Submersible Motor Set

### Quality in the Well

In an effort to ease our customers ordering, stock holding and inventory management, Franklin Electric Europa GmbH is introducing the PSC Motor Kit.

Consisting of the submersible motor, control box, motor short lead and splicing kit all packaged into one compact yet sturdy box, this kit is the ideal stock item to drive your pump.

### Product advantages:

- One stop shop – no hassle selecting different components to work together
- Everything available at the same time
- All components matched and warranted by Franklin Electric
- Maximum flexibility – one motor kit can drive as many as 5 different pump models
- Any practical drop cable length (up to 10mm<sup>2</sup>) can be spliced using included kit

### Technical Specifications

- Motor range 0,25 - 2,2kW
- 4" PSC Motor with NEMA flange
- Motor protection level: IP 68
- Box protection level: IP 54
- Voltage: 220 - 240V; - 6 / +10 %; 50Hz single phase

### Options

- Motor cable VDE / ACS / KTW approved ( 1,5m; special lengths available)

## PSC Motor Set Model numbers

$P_N$ [kW]	$U_N$ [V]	Model No. Standard PSC	Model No. NextGen PSC
0,25	220-230	254 803 1621C	254 803 6700C
	230-240	254 813 1621C	254 813 6700C
0,37	220-230	254 805 1621C	254 805 6700C
	230-240	254 815 1621C	254 815 6700C
0,55	220-230	254 807 1621C	254 807 6700C
	230-240	254 817 1621C	254 817 6700C
0,75	220-230	254 808 1621C	254 808 6700C
	230-240	254 818 1621C	254 818 6700C
1,10	220-230	254 809 1621C	254 809 6700C
	230-240	254 819 1621C	254 819 6700C
1,50	220-230	254 810 1621C	254 810 6700C
	230-240	254 820 1621C	254 820 6700C
2,20	220-230	254 811 2521C	254 811 6700C
	230-240	254 821 2521C	254 821 6700C





## PSC Motor Set Description

### The PSC Motor

#### Submersible Motors

##### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase PSC motor has been electrically optimized to offer reliable pump starting over a wide range of incoming voltages. It should ideally be combined to the Franklin Electric SubStart/SubTronicSC control boxes for maximum system performance, protection and warranty.



##### Product advantages:

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- Cable material according to drinking water regulations (VDE / ACS / KTW approved)
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

##### Technical specification:

- PSC motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: max. 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

## The SubStartSC® Single phase Submersible Motor Starter

The SubStartSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubStartSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.



##### Product features:

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors

## The Lead Termination Kit 1,5 - 10mm<sup>2</sup>

- 3M Quality
- 4 wire
- 1,5 - 10mm<sup>2</sup>
- up to 1,1kV





# 4" Super Stainless 2- wire

## Submersible Motors

### Quality in the well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The genuine Franklin Electric 2-wire motor is a split phase, control-box less submersible motor for direct connection to a fused power supply. It incorporates a long-life electronic switch that allows it to run without the aid of external controls or capacitors. Furthermore, it offers a reverse impact torque that can help loosening sand-locked pumps and comes factory-equipped with automatic reset overload and surge protectors. (functional description see page 19)



## Specifications

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- Cable material according to drinking water regulations (VDE / ACS / KTW approved)
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water
- Two wire plus ground connection
- Automatic reset overload internal to the motor
- Built-in surge arrestors

## Brackish Water Motor Version Specifications:

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life

## Technical specification:

- 2-W motor range: 0,37 – 1,1kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: CI.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Voltage tolerance 60Hz from nominal: ±10%
- Protection requirements: EN 60947-4-1

## Options

- Motor cable VDE, KTW approved ( 1,5m; special lengths available)
- Motors with factory- installed lead in Single Packing



## Function Description 2-wire Motors

### BIAC Switch Operation/2-Wire Motor Solid State Controls

**Power-On:** When power is applied to the motor the bi-metal switch contacts are closed so that the TRIAC is conducting. This allows current to pass to the start winding, thus starting the motor.

The BIAC switch responds to voltage from a sensor coil located inside the motor. This sensor coil voltage is proportional to motor speed (RPM ).

As speed increases, the increased voltage in the sensor coil generates heat in the bi-metal, causing it to open the start winding circuit. This cuts the starting winding current and the motor continues to run on the main winding only .

**Power-off:** Approximately 5 seconds after power is cut from the motor, the bi-metal strip cools sufficiently to return into its NC position, and the motor is ready for the next start cycle. If during operation, the motor speed drops for some reason, the lowered voltage in the sensor coil allows the bi-metal contacts to re-close, supplying start winding current to bring the motor back to operation speed.

### Reverse Impact Torque:

This unique torque reversing feature will minimize the problems of polluted environments. In a locked rotor condition, the BIAC switch will supply full start winding current for approximately one second. Then the switch begins to open and close rapidly. This action chops the start winding current, switching it between leading and lagging the run winding current. This produces impact torque in both forward and reverse directions.

This reverse impact torque will literally shake and loosen many obstructions. Once cleared, the motor will run in proper rotation.

### Extreme Fast Cycling:

(Due to Water - Logged Tank)

The BIAC starting switch will reset within approximately 5 seconds after the motor is stopped. If an attempt is made to restart the motor before the starting switch has reset, the motor may not start; however, there will be current flow through the main winding until the overload protector interrupts the circuit. The reset time for the protector is longer than the reset of the starting switch. So, the start winding switch will have closed and the motor will operate. The repeated on-off cycle will continue until the overload will trip again.

When a severely water – logged condition does occur, the user will be alerted to the problem during the off time (overload reset time), since the pressure will drop dramatically. When a water – logged tank condition is detected, the condition should be corrected to prevent nuisance tripping of the overload protector.

### Bound Pump (sand-locked):

When the motor is not free to turn, as with a sand-locked pump, the BIAC switch creates a “reverse impact torque “ as described above. This is a unique feature, particularly interesting in sandy environments or applications where long stand-still periods are to be expected (seasonal usage of water).



4" 2 wire Motors Model numbers

P <sub>N</sub> [kW]	Hp	U <sub>N</sub> [V]	Model No. 50Hz		
			Standard Motors (40 motors packing unit)	Standard Motors (single pack, with Lead)	Brackish Water Motors (single pack, with Lead)
0,37	0,50	230	244 755 1221	244 755 1221L	244 755 1224L
0,55	0,75	230	244 757 1221	244 757 1221L	244 757 1224L
0,75	1,1	230	244 758 1221	244 758 1221L	244 758 1224L
1,10	1,50	230	244 759 1221	244 759 1221L	244 759 1224L

Performance Data 220 / 230 Volt 50 Hz

P <sub>N</sub> [kW]	Thrust F[N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) at % load [%]			cos φ (Pf.) at % load [%]			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
0,37	3000	220	2875	4,1	24,4	48	55	57	0,57	0,68	0,76	1,24	1,18
		230	2890	4,1	25,5	47	54	57	0,53	0,64	0,73	1,23	1,29
0,55	3000	220	2870	5,7	35,0	50	57	59	0,55	0,67	0,77	1,85	1,7
		230	2890	5,8	36,6	47	55	59	0,51	0,63	0,73	1,85	1,9
0,75	3000	220	2875	7,2	46,6	54	61	62	0,57	0,69	0,78	2,5	2,1
		230	2890	7,3	48,7	51	59	61	0,53	0,65	0,75	2,5	2,3
1,10	3000	220	2880	10,6	57,9	56	62	63	0,56	0,68	0,77	3,7	2,7
		230	2895	10,8	59,7	52	60	63	0,51	0,63	0,73	3,7	2,9

2- wire Winding Resistances 50 Hz

P <sub>N</sub> [kW]	Volt	Motor Ref.	Ohm [Ω]
0,37	230	244 755 1221 / L	7,2 - 8,8
0,55		244 757 1221 / L	5,0 - 6,1
0,75		244 758 1221 / L	3,6 - 4,4
1,10		244 759 1221 / L	2,3 - 2,8

Electrical Connection	VDE / ACS / KTW Approved Leads*		
	∅ [mm <sup>2</sup> ]	B [mm]	H [mm]
	3X1,5	10,7 ± 0,3	5,0 ± 0,3
	L [m]	Part Numbers	
		Standard	304SS
	1,5	310 134 001	310 134 401
	2,5	310 134 002	310 134 402
	5	310 134 005	310 134 405
	10	310 134 010	310 134 410
	15	310 134 015	310 134 415
20	310 134 020	310 134 420	
30	310 134 030	310 134 430	
40	310 134 040	310 134 440	

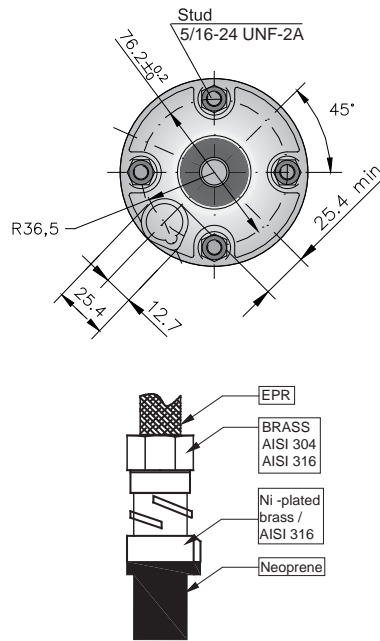
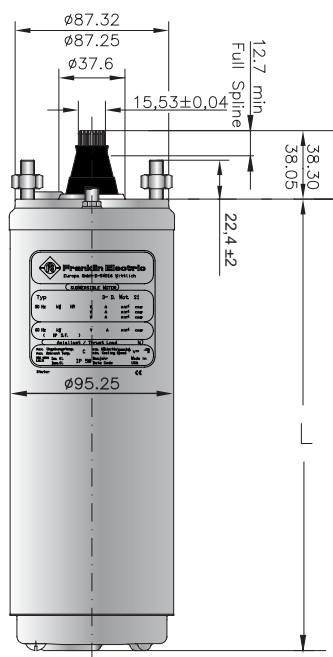
b	c	PE
brown	grey	yellow/green

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.

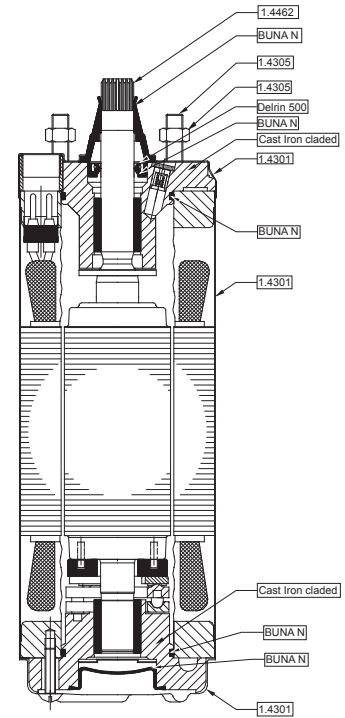


4" 1~ Motor Outlines 2-wire

Outline Drawing



Material Description



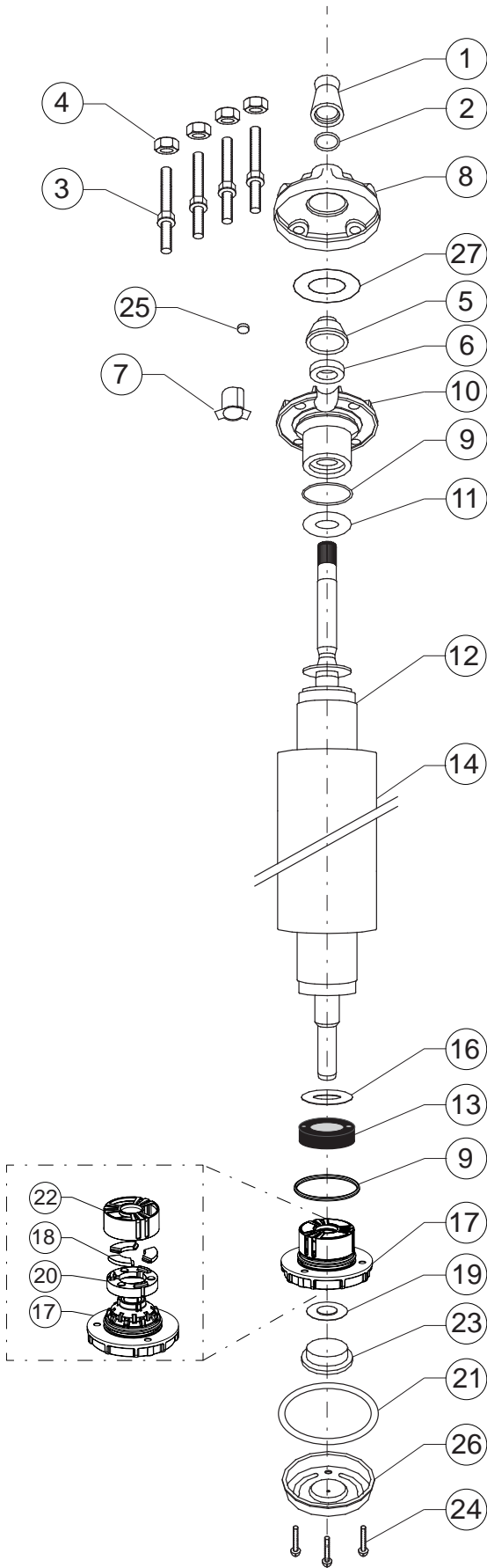
Tolerances according to NEMA MG 1-18.388

4" 2-wire Standard Lengths & Weights

$P_N$		L [mm]	M [kg]	Motor Package size (40 motors per packing unit)		Motor with Lead in single pack	
[kW]	[HP]			[mm]	[kg]	[mm]	[kg]
0,37	0,50	228,2	7,8	800 x 500 x 870	340	400 x 100 x 110	9,5
0,55	0,75	248,2	8,5	800 x 500 x 870	355	400 x 100 x 110	9,8
0,75	1,00	282,6	9,9	800 x 500 x 870	450	530 x 100 x 110	12,0
1,10	1,50	338,6	12,3	800 x 500 x 870	600	530 x 100 x 110	14,4



4" 2- wire Standard Motor\* 304SS Parts Description



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	1	Kit B
3	Stud	4	Kit C
4	Nut	4	Kit C
5	Seal cover	1	Kit
6	Shaft Seal	1	Kit B
7	Connector boss	1	151 820 102
8	Top Endbell, Cover	1	Kit
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 23
13	Thrust disk assy	1	Kit A
14	Stator	1	page 23
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Seal	3	Kit C
25	Filter	1	Kit B
26	Bottom Endbell Cover	1	156 414 101
27	Washer	1	Kit

\* Spare Parts for Brackish Water Motors on Request



**4" 2- wire Spare Parts**

$P_N$ [kW]	End bell, upper Pos. 5 - 10, 27	End bell, lower Pos. 17	Upthrust washer Pos. 11	Thrust bearing
<b>0,37</b>	177 231 924	Kit A1	150 954 102	Kit A1
<b>0,55</b>				
<b>0,75</b>	177 233 924		151 093 105	
<b>1,10</b>				
<b>Kit 1500N</b> <b>0,25 – 0,55kW</b> <b>up to 07.2008</b>	Thrust bearing Kit		incl. Pos.: 13, 15, 16, 18	308 652 101
<b>Kit A1</b>	End bell (lower) incl. Thrust bearing Kit 3000N/4000N		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
<b>Kit B1</b>	Seal Kit		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 101
<b>Kit B2</b>	Seal Kit (Viton)		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 104
<b>Kit C</b>	Screw Kit		inkl. Pos.: 3, 4, 24	308 656 101

**Replacement Standard Motor\* Stators and Rotors 50 Hz**

$P_N$ [kW]	Volt	Motor Model No.	Stator	Rotor
<b>0,37</b>	220-230	244 755 1221 / L	326 821 914	178 157 902K
<b>0,55</b>		244 757 1221 / L	326 822 914	178 158 902K
<b>0,75</b>		244 758 1221 / L	326 823 914	178 160 902K
<b>1,10</b>		244 759 1221 / L	326 824 914	178 163 902K

\* Spare Parts for Brackish Water Motors on Request



# 4" Super Stainless 3-wire



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase 3-wire motor has been designed for highest achievable starting torque and shaft power from single phase power supplies. It is therefore ideally suited for applications where starting torque is paramount and 3 phase motors cannot be used. It should ideally be combined to the Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty.

### Product advantages:

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- Cable material according to drinking water regulations (VDE / ACS / KTW approved)
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Brackish Water Motor Version Specifications:

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life

### Technical Specifications

- 3-W motor range: 0,25 – 3,7kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: max. 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Voltage tolerance 60Hz from nominal: ±10%
- Protection requirements: EN 60947-4-1

### Options

- Motor cable VDE, KTW approved ( 1,5m; special lengths available)
- Motors with factory- installed lead in Single Packing
- Built in lightning arrestors
- Alternative material executions





### 4" 3- wire Motor Model Numbers

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1-6	Digit 7-10				
			Standard 304		316 SS		Brackish Water Motor
			(Motors in 40 motors packing unit)	(Motors in single pack, with Lead)	(Motors in 40 motors packing unit)	(Motors in single pack, with Lead)	(Motors in single pack, with Lead)
<b>0,25</b>	220 / 230	214 753	1621	1621L	0521	0521L	1624L
<b>0,37</b>	220 / 230	214 755	1621	1621L	0521	0521L	1624L
<b>0,55</b>	220 / 230	214 757	1621	1621L	0521	0521L	1624L
<b>0,75</b>	220 / 230	214 758	1621	1621L	0521	0521L	1624L
<b>1,10</b>	220 / 230	224 750	1621	1621L	0521	0521L	1624L
<b>1,50</b>	220 / 230	224 751	1621	1621L	0521	0521L	1624L
<b>2,20</b>	220 / 230	224 752	2521	2521L	2221	2221L	2524L

### 4" 3- wire Motor Model Numbers High Thrust

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1-6	Digit 7-10				
			304		316 SS		Brackish Water Motor
			(Motors in 40 motors packing unit)	(Motors in single pack, with Lead)	(Motors in 40 motors packing unit)	(Motors in single pack, with Lead)	(Motors in single pack, with Lead)
<b>2,2</b>	220 / 230	224 752	3421	3421L	3521	3521L	3424L
<b>3,7</b>	220 / 230	224 753	3421	3421L	3521	3521L	3424L

### Standard Windings Resistance 50 Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Stator Ref.	Main phase Ohm	Start sphase Ohm
<b>0.25</b>	220 / 230	326 807 912	10,6 - 13,0	38,3 - 46,8
<b>0.37</b>	220 / 230	326 808 912	7,3 - 8,9	23,9 - 29,3
<b>0.55</b>	220 / 230	326 809 912	4,8 - 5,8	18,5 - 22,7
<b>0.75</b>	220 / 230	326 810 912	3,5 - 4,3	14,8 - 18,0
<b>1.1</b>	220 / 230	326 811 912	2,6 - 3,2	6,9 - 8,4
<b>1.5</b>	220 / 230	326 812 912	2,0 - 2,4	5,3 - 6,4
<b>2.2</b>	220 / 230	326 813 912	1,3 - 1,6	3,8 - 4,6
<b>3,7</b>	220 / 230	326 813 912	1,0 - 1,3	2,5 - 3,1



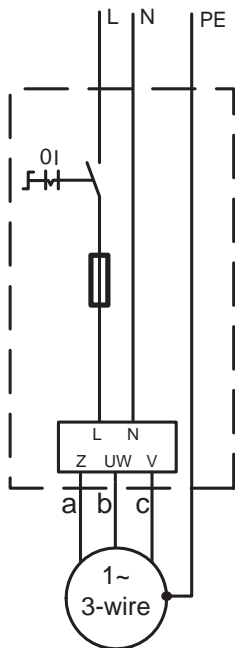
4" 3-Wire Standard Performance Data 50 Hz

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
0,25	3000	220	2850	2,8	9,3	43	50	53	0,61	0,70	0,78	0,83	1,45
		230	2870	2,8	9,7	42	50	53	0,58	0,67	0,75	0,83	1,65
0,37	3000	220	2855	3,9	13,1	48	55	56	0,58	0,69	0,77	1,23	1,90
		230	2870	4,0	13,7	46	53	56	0,55	0,65	0,74	1,23	2,05
0,55	3000	220	2860	5,9	20,6	46	53	56	0,58	0,69	0,77	1,84	3,0
		230	2880	5,9	21,6	45	53	56	0,53	0,64	0,73	1,82	3,2
0,75	3000	220	2850	7,3	26,6	53	59	60	0,59	0,71	0,79	2,5	3,8
		230	2870	7,3	27,8	51	58	61	0,55	0,67	0,76	2,5	4,2
1,1	3000	220	2875	8,6	41,3	63	68	69	0,69	0,80	0,87	3,7	6,9
		230	2885	8,6	41,2	60	67	68	0,65	0,76	0,84	3,7	6,8
1,5	3000	220	2860	10,6	55,4	66	71	71	0,75	0,85	0,91	5,0	9,6
		230	2875	10,4	53,3	64	70	71	0,69	0,81	0,88	4,9	9,5
2,2	4000	220	2875	15,2	71,2	67	73	74	0,76	0,86	0,91	7,3	13,8
		230	2885	15,3	74,5	63	70	73	0,69	0,80	0,88	7,3	15,0

4" 3-Wire High Thrust Performance Data 50 Hz

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
2,2	6500	220	2875	15,2	71,2	67	73	74	0,76	0,86	0,91	7,3	13,8
		230	2885	15,3	74,5	63	70	73	0,69	0,80	0,88	7,3	15,0
3,7	6500	220	2880	22,5	97	72	77	78	0,98	0,99	0,99	12,3	16,1
		230	2895	21,4	101	70	76	77	0,97	0,98	0,99	12,2	17,6

Electrical Connection



a	b	c	PE
black	brown	grey	yellow/green

VDE / ACS / KTW Approved Leads\*

∅ [mm <sup>2</sup> ]	B [mm]	B1 [mm]	H [mm]
3X1,5+1G1,5	16,8 ± 0,3	10,7 ± 0,3	5,0 ± 0,3

L [m]	Part Numbers		
	Standard	304 SS	316 SS
1,5	310 113 001	310 113 401	310 113 501
2,5	310 113 002	310 113 402	310 113 502
5	310 113 005	310 113 405	310 113 505
10	310 113 010	310 113 410	310 113 510
15	310 113 015	310 113 415	310 113 515
20	310 113 020	310 113 420	310 113 520
30	310 113 030	310 113 430	310 113 530
40	310 113 040	310 113 440	310 113 540
50	310 113 050	310 113 450	310 113 550

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.

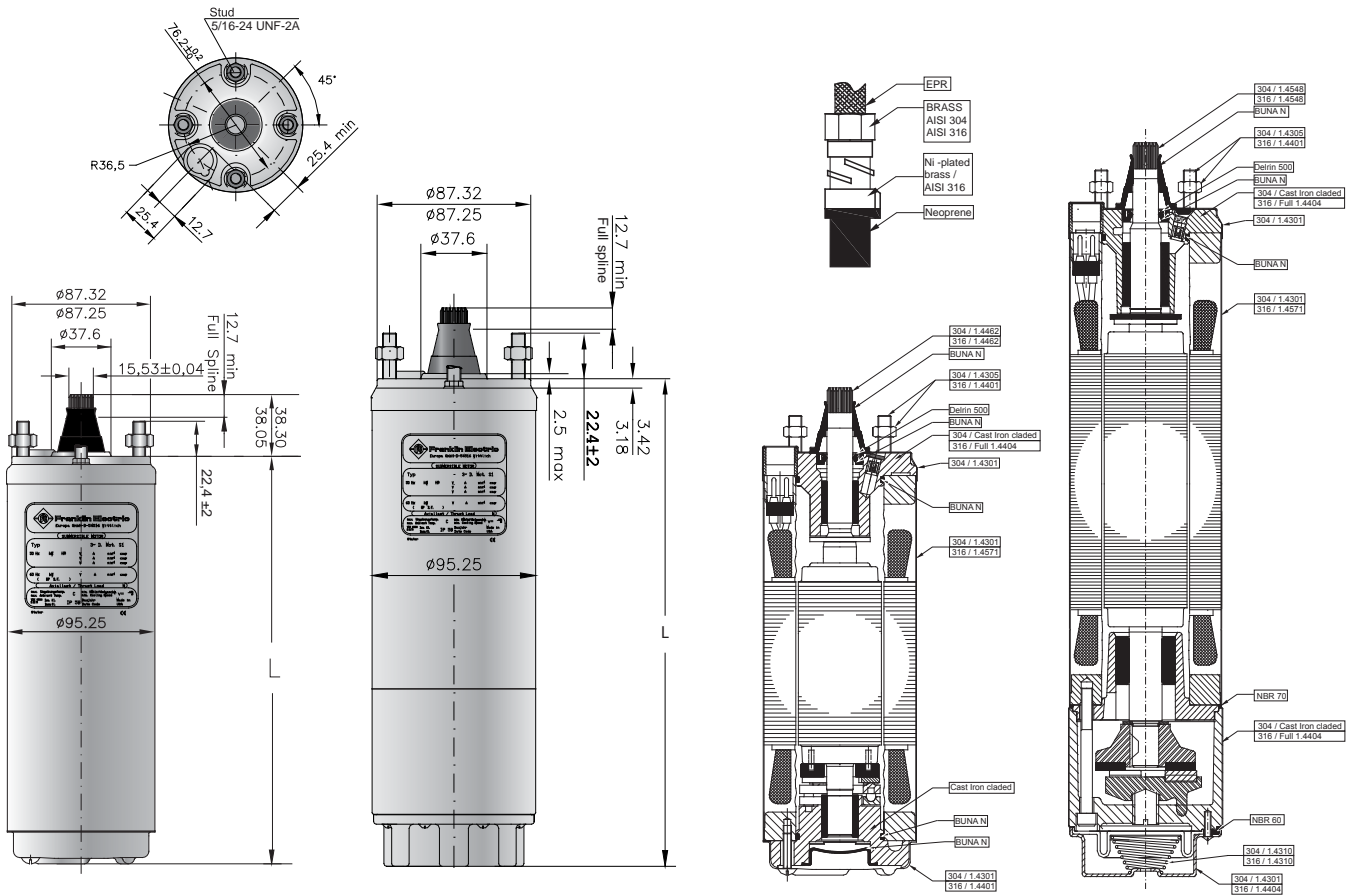


## 4" 3- wire Motors Lengths & Weights

**Standard 0,25 - 3,7kW**

**High Thrust 2,2 - 3,7kW**

**Material Description**



**Tolerances according to NEMA MG 1-18.388**

### Standard Motors

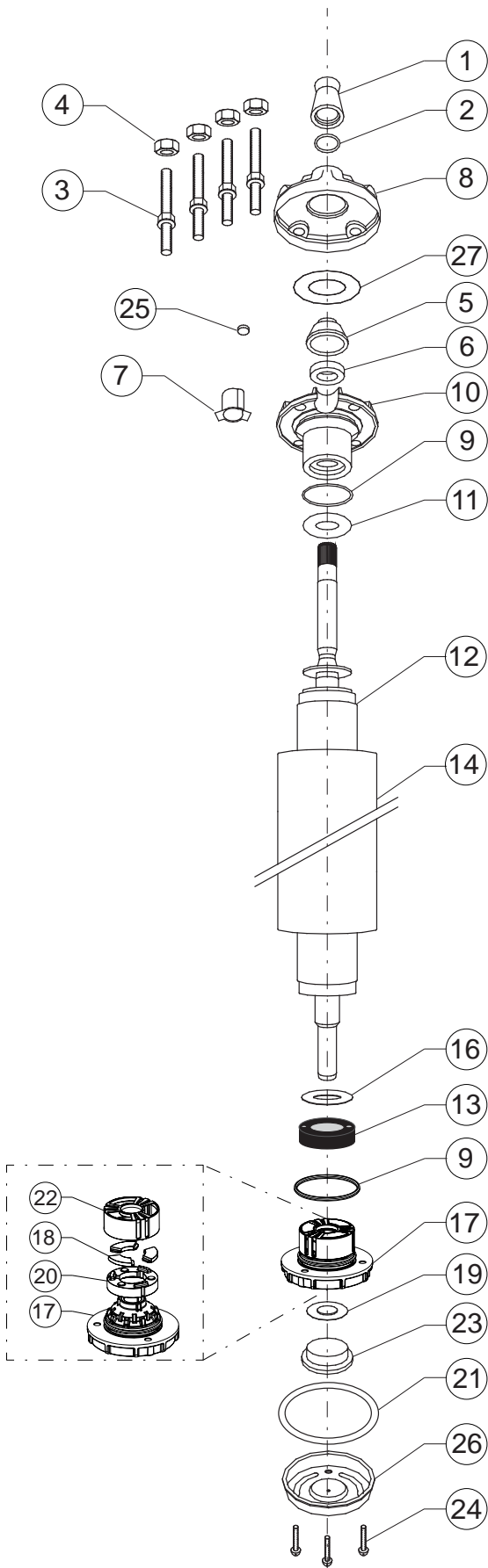
P <sub>N</sub> [kW]	304 L [mm]	316SS L [mm]	304 M [kg]	316SS M [kg]	Motor Package size (40 motors per packing unit)			Motor with Lead (in single pack)		
					[mm]	304 [kg]	316SS [kg]	[mm]	304 [kg]	316SS [kg]
0,25	214,2	228,9	7,2	7,7	800 x 500 x 870	302,0	322,0	400 x 100 x 110	8,4	8,9
0,37	228,2	242,9	7,8	8,3	800 x 500 x 870	326,0	346,0	400 x 100 x 110	9,0	9,5
0,55	248,2	262,9	8,7	9,2	800 x 500 x 870	362,0	382,0	530 x 100 x 110	10,0	10,7
0,75	282,6	290,2	10,0	10,5	800 x 500 x 870	414,0	434,0	530 x 100 x 110	11,3	11,8
1,10	338,6	346,2	12,6	13,1	800 x 500 x 870	518,0	538,0	530 x 100 x 110	13,9	14,5
1,50	349,6	357,2	13,0	13,5	800 x 500 x 870	534,0	554,0	796 x 100 x 110	14,8	15,3
2,20	436,6	444,2	16,9	17,4	800 x 500 x 870	690,0	710,0	796 x 100 x 110	18,7	19,2

### Standard High Thrust Version

P <sub>N</sub> [kW]	304 L [mm]	316SS L [mm]	304 M [kg]	316SS M [kg]	Motor with Lead (in single pack)		
					[mm]	304 [kg]	316SS [kg]
2,2	520,2	529,4	21,3	21,8	796 x 100 x 110	23,1	23,6
3,7	652,5	661,7	26,4	27,3	904 x 100 x 110	28,5	29,4



4" 3- wire Standard Motors\* 304SS Parts Description



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	1	Kit B
3	Stud	4	Kit C
4	Nut	4	Kit C
5	Seal cover	1	Kit
6	Shaft Seal	1	Kit B
7	Connector boss	1	151 820 102
8	Top Endbell, Cover	1	Kit
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 29
13	Thrust disk assy	1	Kit A
14	Stator	1	page 29
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Seal	3	Kit C
25	Filter	1	Kit B
26	Bottom Endbell Cover	1	156 414 101
27	Washer	1	Kit

\* Spare Parts for Brackish Water Motors on Request



## 4" 3- wire Spare Parts 304SS

$P_N$ [kW]	Thrust Bearing	End bell upper Pos. 5 - 10, 27	End bell, Lower Pos. 17	Upthrust washer Pos. 11
0,25 - 0,55	Kit A1	177 231 904	Kit A1	150 954 102
0,75		177 233 904		151 093 105
1,10 – 1,5				
2,2		177 233 904		
<b>Kit 1500N</b> 0,25 – 0,55kW up to 07.2008	Thrust bearing Kit		incl. Pos.: 13, 15, 16, 18	308 652 101
<b>Kit A1</b>	End bell (lower) incl. Thrust bearing Kit 3000N / 4000N		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
<b>Kit B1</b>	Seal Kit		incl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 101
<b>Kit B2</b>	Seal Kit (Viton)		incl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 104
<b>Kit C</b>	Screw Kit		incl. Pos.: 3, 4, 24	308 656 101

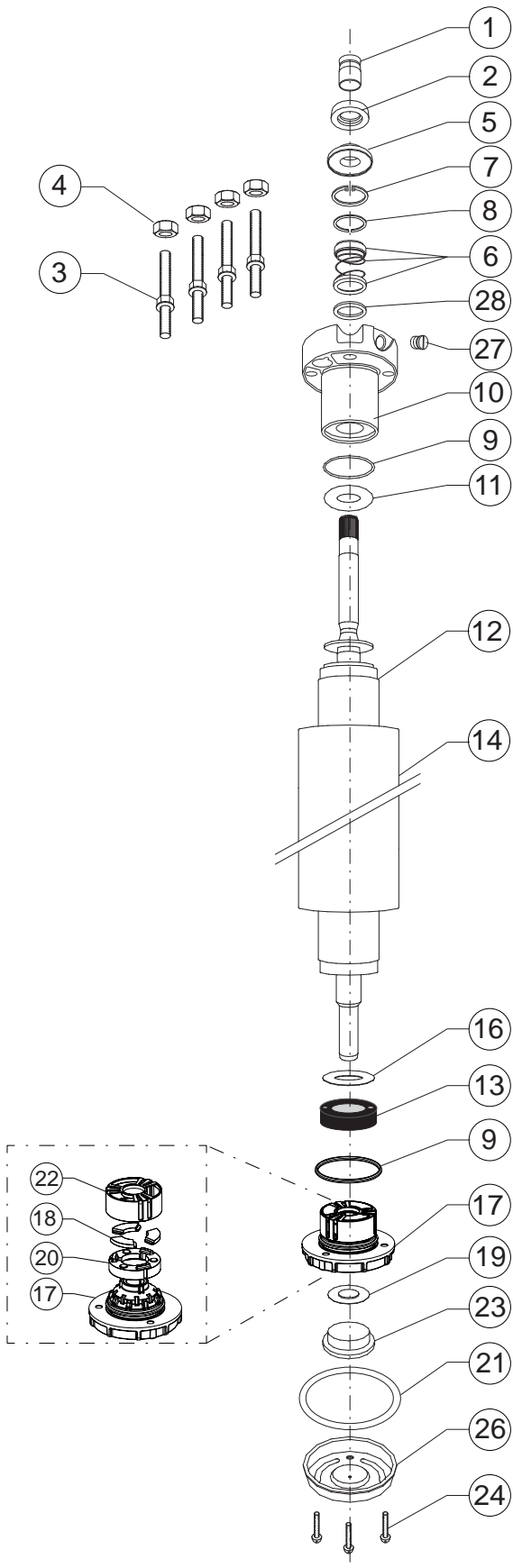
## Replacement Standard Motors\* Stators and Rotors 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor No.	Stator	Rotor
0,25	220 / 230	214 753 1621 / L	305 491 141	178 156 902K
0,37	220 / 230	214 755 1621 / L	305 491 142	178 157 902K
0,55	220 / 230	214 757 1621 / L	305 491 143	178 158 902K
0,75	220 / 230	214 758 1621 / L	305 491 144	178 160 902K
1,10	220 / 230	224 750 1621 / L	305 491 145	178 163 902K
1,50	220 / 230	224 751 1621 / L	305 491 146	178 124 902K
2,20	220 / 230	224 752 2521 / L	305 491 147	178 126 902K

\* Spare Parts for Brackish Water Motors on Request



4" 3- wire Standard Motors\* 316SS Parts Description



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit C
2	Slinger	1	Kit C
3	Stud	4	Kit D
4	Nut	4	Kit D
5	Seal cover	1	Kit B + C
6	Shaft Seal	1	Kit B
7	Retain Ring	1	Kit B
8	Ring	1	Kit B
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 31
13	Thrust disk assy	1	Kit A
14	Stator	1	page 31
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Seal	3	Kit D
25	Valve		Incl. Pos.: 10
26	Bottom Endbell Cover	1	156 414 102
27	Sealing Screw	1	308 279 903
28	Washer	1	308 747 201

\* Spare Parts for Brackish Water Motors on Request



## 4" 3- wire Spare Parts 316SS

$P_N$ [kW]	Thrust Bearing	End bell, upper (Pos. 10)	End bell, lower (Pos. 17)	Upthrust washer (Pos. 11)
<b>0,25 - 0,55</b>	Kit A1	177 390 955	Kit A1	308 268 104
<b>0,75</b>				
<b>1,1 - 1,5</b>				
<b>2,2 - 3,0</b>				
<b>Kit 1500N</b> up to 07.2008	Thrust bearing Kit		inkl. Pos.: 13, 15, 16, 18, 20	<b>308 652 101</b>
<b>Kit A1</b>	End bell (lower) incl. Thrust bearing Kit 3000N / 4000N		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
<b>Kit B</b>	Seals		inkl. Pos.: 5, 6, 7, 8, 9, 21, 23	<b>308 650 105</b>
<b>Kit B2</b>	Seal Kit (Viton)		inkl. Pos.: 5, 6, 7, 8, 9, 21, 23	308 650 106
<b>Kit C</b>	Sand Protection Seal Kit		inkl. Pos.: 1, 2, 5	<b>308 825 201</b>
<b>Kit D</b>	Screw Kit		inkl. Pos.: 3, 4, 24	<b>308 656 102</b>

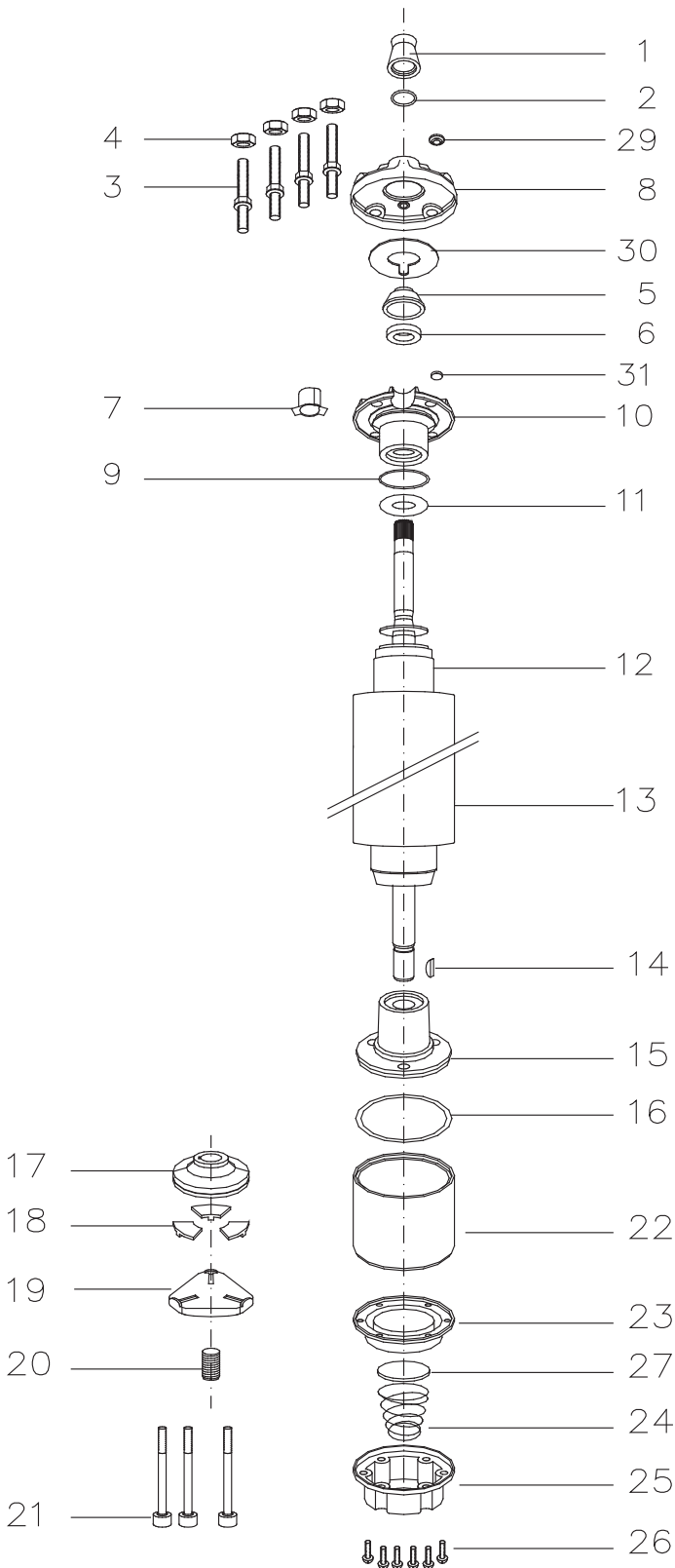
## Replacement Standard Motor\* Stators and Rotors 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor No.	Stator	Rotor
<b>0,25</b>	220 / 230	214 753 0521 / L	305 491 501	178 156 912K
<b>0,37</b>	220 / 230	214 755 0521 / L	305 491 502	178 157 912K
<b>0,55</b>	220 / 230	214 757 0521 / L	305 491 503	178 158 912K
<b>0,75</b>	220 / 230	214 758 0521 / L	305 491 504	178 160 912K
<b>1,10</b>	220 / 230	224 750 0521 / L	305 491 505	178 163 912K
<b>1,50</b>	220 / 230	224 751 0521 / L	305 491 506	178 124 912K
<b>2,20</b>	220 / 230	224 752 2221 / L	305 491 507	178 126 912K

\* Spare Parts for Brackish Water Motors on Request



4" 3- wire Standard Motors\* Parts List High Thrust 304



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	1	Kit B
3	Stud	4	Kit C
4	Nut	4	Kit C
5	Seal cover	1	Kit D
6	Shaft Seal	1	Kit B+D
7	Connector boss	1	Kit D
8	Top Endbell, Cover	1	Kit D
9	O-Ring	1	Kit B+D
10	Top Endbell	1	Kit D
11	Upthrust washer	1	Kit
12	Rotor	1	page 33
13	Stator	1	page 33
14	Woodruff key	1	275 250 104
15	Bottom Endbell	1	Kit
16	O-Ring	1	Kit B
17	Thrust disc	1	Kit A
18	Segment	1	Kit A
19	Leveling disc	1	155 660 101
20	Screw, adj.	1	151 048 102
21	Screw	3	Kit C
22	Thrust housing	1	177 378 901
23	Diaphragm	1	Kit B
24	Spring	1	151 449 101
25	Cover, Diaphragm	1	155 647 101
26	Screw	6	Kit C
27	Cup spring, Diaphragm	1	151 448 101
29	Sealing stopper	1	Kit B+D
30	Seal	1	Kit D
31	Filter	1	Kit B+D

\* Spare Parts for Brackish Water Motors on Request





**4" 3- wire Standard Motors\* Spare Parts High Thrust 304SS**

$P_N$ [kW]	End bell upper ( Kit D1 ) inkl. Pos.: 5, 6, 7, 8, 9, 10, 29,30, 31	End bell, Lower (Pos. 15)	Upthrust washer (Pos. 11)
2,2	308 233 509	177 379 921	308 268 104
3,7	308 434 501	177 379 921	308 317 901
<b>Kit A 6500N</b>	Thrust Bearing Kit	inkl. Pos.: 17, 18	308 700 301
<b>Kit B</b>	Seal Kit	inkl. Pos.: 1, 2, 6, 9, 16, 23,29, 31	308 900 351
<b>Kit B1</b>	Seal Kit Pollution Recovery	inkl. Pos.: 1, 2, 6, 9, 16, 23,29, 31	308 900 401
<b>Kit C</b>	Screw Kit	inkl. Pos.: 3, 4, 21, 26	308 658 351

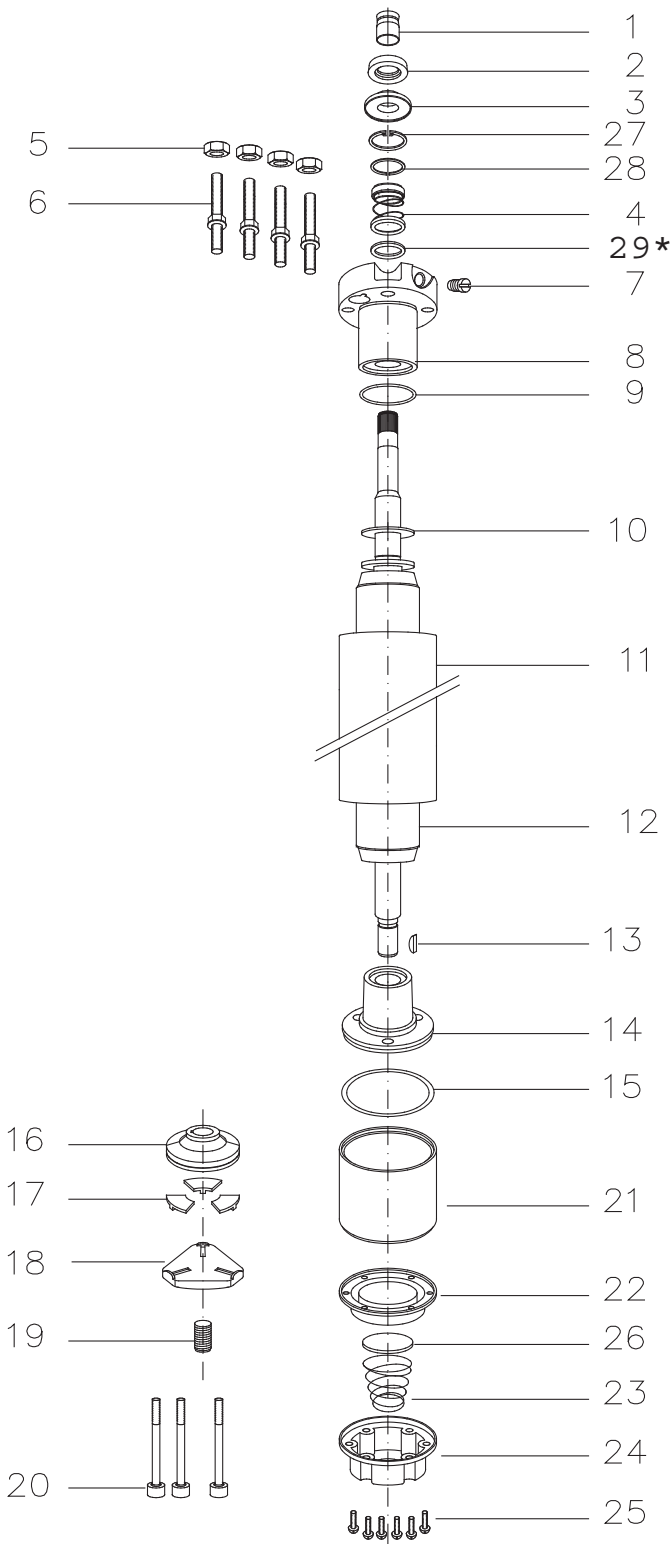
**Standard Motors\* High Thrust Replacement Stator and Rotor 304 50 Hz**

$P_N$ [kW]	$U_N$ [V]	Motor No.	Stator	Rotor
2,2	220 / 230	224 752 3421 / L	305 491 181	178 126 903K
3,7	220 / 230	224 753 3421 / L	305 491 182	178 135 903K

\* Spare Parts for Brackish Water Motors on Request



4" 3- wire Standard Motors\* 316SS High Thrust Parts List



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit C
2	Slinger	1	Kit C
3	Seal cover	1	Kit B + C
4	Shaft Seal	1	Kit B
5	Stud	4	Kit D
6	Nut	4	Kit D
7	Sealing Screw	1	308 279 903
8	Top Endbell	1	Kit
9	O-Ring	1	Kit B
10	Upthrust washer	1	Kit
11	Stator	1	page 35
12	Rotor	1	page 35
13	Woodruff key	1	275 250 104
14	Bottom Endbell	1	Kit
15	O-Ring	1	Kit B
16	Thrust disc	1	Kit A
17	Segments	1	Kit A
18	Leveling disc	1	155 660 101
19	Screw, adj.	1	151 048 102
20	Screw	3	Kit D
21	Thrust housing	1	177 378 951
22	Diaphragm	1	Kit B
23	Spring	1	151 449 101
24	Cover, Diaphragm	1	155 647 201
25	Screw	6	Kit D
26	Cup spring, Diaphragm	1	151 448 101
27	Ring	1	Kit B
28	Retain Ring	1	Kit B
29*	Washer	1	308 747 201

\* only for 2,2 - 3kW

\* Spare Parts for Brackish Water Motors on Request



**4" 3- wire Standard Motors\* Spare Parts High Thrust 316SS**

$P_N$ [kW]	End bell upper (Pos 8)	End bell, Lower (Pos. 14)	Upthrust washer (Pos. 10)
<b>2,2</b>	177 390 955	177 379 921	308 317 901
<b>3,7</b>			
<b>Kit A 6500N</b>	Thrust bearing Kit	inkl. Pos.: 16, 17	308 700 301
<b>Kit B</b>	Seal Kit	inkl. Pos.: 4, 9, 15, 22, 27, 28	308 900 302
<b>Kit C</b>	Sand Protection Kit	inkl. Pos.: 1, 2, 3	308 825 201
<b>Kit D</b>	Screw Kit	inkl. Pos.: 5, 6, 20, 25	308 658 301

**Standard Motors\* High Thrust Replacement Stator and Rotor 316SS / 50 Hz**

$P_N$ [kW]	$U_N$ [V]	Motor Model No.	Stator	Rotor
<b>2,2</b>	220 / 230	224 752 3521 / L	305 491 541	178 126 913K
<b>3,7</b>	220 / 230	224 753 3521 / L	305 491 542	178 135 913K

**\* Spare Parts for Brackish Water Motors on Request**



# 4" Super Stainless 3-wire NextGen



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells. The single phase 3-wire motor has been designed for highest achievable starting torque and shaft power from single phase power supplies. It is therefore ideally suited for applications where starting torque is paramount and 3 phase motors cannot be used. It should ideally be combined to the Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty.

### Features:

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Technical specification:

- 3-wire motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Optional:

- Motors in full 316SS
- Various cable lengths
- Alternative material executions



### 4" 3- wire NextGen Motor Numbers 50Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1-6	Digit 7-10			
			304SS Motors (Single pack, with Lead)	304SS Motors (40 motors packing unit)	316SS Motors (Single pack, with Lead)	316SS Motors (40 motors packing unit)
0,25	220 / 230	214 753	6700L	6700	6800L	6800
0,37	220 / 230	214 755	6700L	6700	6800L	6800
0,55	220 / 230	214 757	6700L	6700	6800L	6800
0,75	220 / 230	214 758	6700L	6700	6800L	6800
1,10	220 / 230	224 750	6700L	6700	6800L	6800
1,50	220 / 230	224 751	6700L	6700	6800L	6800
2,20	220 / 230	224 752	6700L	6700	6800L	6800

### 4" 3-Wire NextGen Performance Data 50 Hz

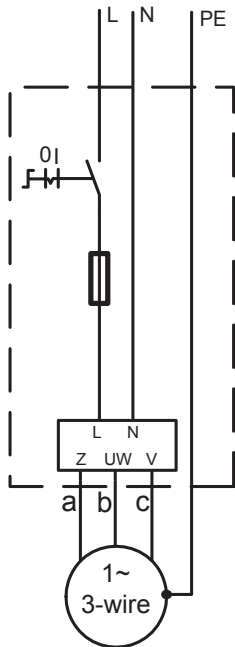
P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min-1]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
0,25	4000	220	2850	2,8	9,3	43	50	53	0,61	0,70	0,78	0,83	1,45
		230	2870	2,8	9,7	42	50	53	0,58	0,67	0,75	0,83	1,65
0,37	4000	220	2855	3,9	13,1	48	55	56	0,58	0,69	0,77	1,23	1,90
		230	2870	4,0	13,7	46	53	56	0,55	0,65	0,74	1,23	2,05
0,55	4000	220	2860	5,9	20,6	46	53	56	0,58	0,69	0,77	1,84	3,0
		230	2880	5,9	21,6	45	53	56	0,53	0,64	0,73	1,82	3,2
0,75	4000	220	2850	7,3	26,6	53	59	60	0,59	0,71	0,79	2,5	3,8
		230	2870	7,3	27,8	51	58	61	0,55	0,67	0,76	2,5	4,2
1,1	4000	220	2875	8,6	41,3	63	68	69	0,69	0,80	0,87	3,7	6,9
		230	2885	8,6	41,2	60	67	68	0,65	0,76	0,84	3,7	6,8
1,5	4000	220	2860	10,6	55,4	66	71	71	0,75	0,85	0,91	5,0	9,6
		230	2875	10,4	53,3	64	70	71	0,69	0,81	0,88	4,9	9,5
2,2	4000	220	2875	15,2	71,2	67	73	74	0,76	0,86	0,91	7,3	13,8
		230	2885	15,3	74,5	63	70	73	0,69	0,80	0,88	7,3	15,0



Standard Windings Resistance 50 Hz 304SS / 316SS Motors

$P_N$ [kW]	$U_N$ [V]	Stator Ref.	Main phase Ohm	Start phase Ohm
220 / 230	326 807 942 / 952	10,6 - 13,0	38,3 - 46,8	38,3 - 46,8
220 / 230	326 808 942 / 952	7,3 - 8,9	23,9 - 29,3	23,9 - 29,3
220 / 230	326 809 942 / 952	4,8 - 5,8	18,5 - 22,7	18,5 - 22,7
220 / 230	326 810 942 / 952	3,5 - 4,3	14,8 - 18,0	14,8 - 18,0
220 / 230	326 811 942 / 952	2,6 - 3,2	6,9 - 8,4	6,9 - 8,4
220 / 230	326 812 942 / 952	2,0 - 2,4	5,3 - 6,4	5,3 - 6,4
220 / 230	326 813 942 / 952	1,3 - 1,6	3,8 - 4,6	3,8 - 4,6

Electrical connection 3-wire Motors

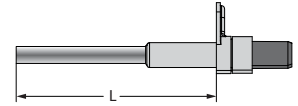
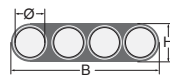


a	b	c	PE
black	brown	grey	yellow/green

Motor Leads\*

3-wire Motors- VDE / ACS/ KTW Approved Flat Leads

$\varnothing$ [mm <sup>2</sup> ]	B [mm]	H [mm]
4X1,5	14,6 ± 0,3	5,1 ± 0,3



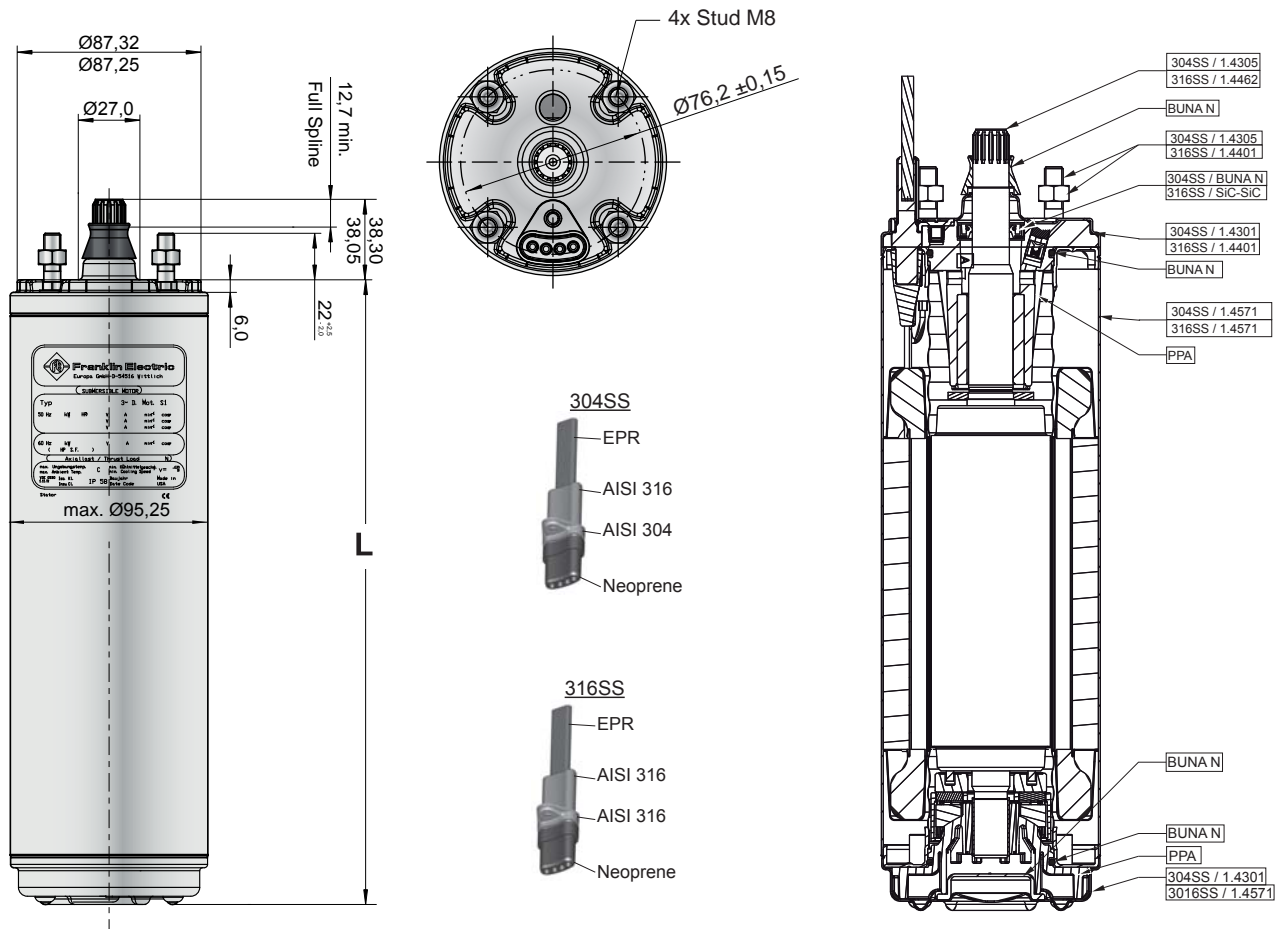
L [m]	304 SS	316 SS
1,5	310 178 401	310 178 501
2,5	310 178 402	310 178 502
5	310 178 405	310 178 505
10	310 178 410	310 178 510
15	310 178 415	310 178 515
20	310 178 420	310 178 520
30	310 178 430	310 178 530
40	310 178 440	310 178 540
50	310 178 450	310 178 550

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.



Standard 0,25 - 3,7kW

Material Description



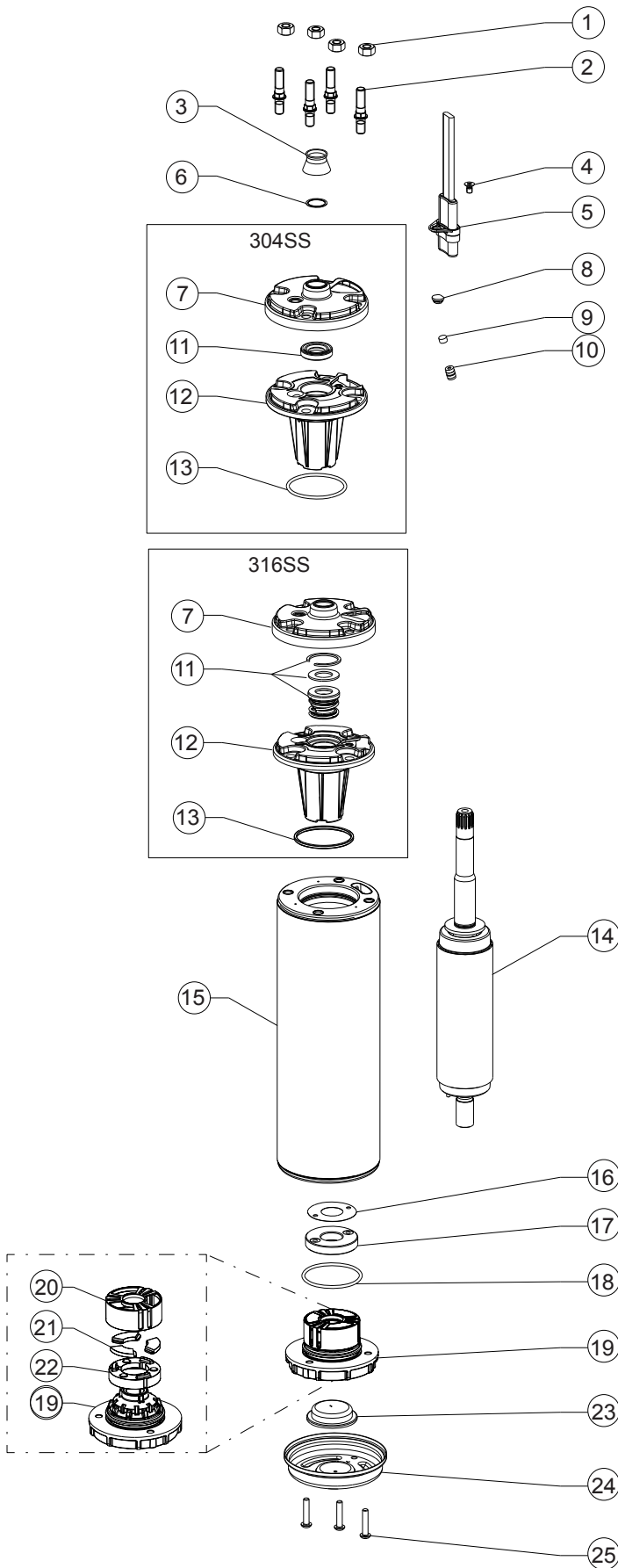
Tolerances according to NEMA MG 1-18.388

4" 3-wire NextGen Motors Lengths and Weights / Packing sizes

P <sub>N</sub>		L [mm]	M [kg]	Motor with Lead in single pack		Motor Package size (40 motors per packing unit)	
[kW]	[HP]			[mm]	[kg]	[mm]	[kg]
0,25	0,33	237,2	5,58	400 x 100 x 110	6,3	800 x 500 x 870	242
0,37	0,50	251,1	6,40	400 x 100 x 110	7,2	800 x 500 x 870	274,8
0,55	0,75	271,2	7,25	530 x 100 x 110	8,0	800 x 500 x 870	308,8
0,75	1,00	297,2	8,55	530 x 100 x 110	9,3	800 x 500 x 870	360,8
1,10	1,50	353,2	11,05	796 x 100 x 110	11,8	800 x 500 x 870	460,8
1,50	2,0	364,2	11,5	796 x 100 x 110	12,3	800 x 500 x 870	478,8
2,20	3,0	451,2	16,65	796 x 100 x 110	17,35	800 x 500 x 870	684,8



4" 3- wire NextGen Motors Parts Description



Pos.	Part Description	Qty.	Part No.
1	Nut	4	Kit C
2	Stud	4	Kit C
3	Protector, Spline	1	Kit B
4	Screw (Motor lead)	1	Kit C
5	Motor lead	1	see page 38
6	Washer	1	Kit B
7	Top Endbell, Cover	1	Kit
8	Plug	1	Kit B
9	Filter	1	Kit B
10	Valve	1	Kit
11	Shaft Seal	1	Kit B
12	Top Endbell	1	Kit
13	O- Ring	1	Kit B
14	Rotor	1	see page 41
15	Stator	1	see page 41
16	Washer	1	Kit A
17	Thrust disk assy	1	Kit A
18	O- Ring	1	Kit B
19	Bottom Endbell	1	A1
20	Bearing cage	1	Kit A
21	Segments	3	Kit A
22	Rocking Disk	1	Kit A
23	Diaphragm	1	Kit B
24	Bottom Endbell Cover 304SS	1	156 414 201
	Bottom Endbell Cover 316SS		156 414 301
25	Screw, Cover	3	Kit C





## 4" 3- wire NextGen Spare Parts 304SS and 316SS

$P_N$ [kW]	0,25 - 2,2kW		
Kit A1	End bell, upper 304SS (Pos. 7 - 13)	incl. Pos.: 7 - 13	308 462 901
	End bell, upper 316SS (Pos. 7 - 13)		308 462 951
Kit A2	Endbell lower incl. Thrust Bearing Kit 4000N	incl. Pos.: 16 - 22	308 464 911
Kit B	Seal Kit 304SS	incl. Pos.: 3, 6, 8, 9, 11, 13, 18, 23	308 650 201
	Seal Kit 316SS		308 650 251
Kit C	Fastener Kit 304SS	incl. Pos.: 1, 2, 4, 25	308 656 201
	Fastener Kit 316SS		308 656 251

## Replacement NextGen 304SS Motors 3- wire Stators and Rotors 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Nb.	Stator	Rotor
0,25	220 / 230	214 753 6700 / L	305 491 741	178 164 901K
0,37	220 / 230	214 755 6700 / L	305 491 742	178 164 902K
0,55	220 / 230	214 757 6700 / L	305 491 743	178 164 903K
0,75	220 / 230	214 758 6700 / L	305 491 744	178 164 905K
1,10	220 / 230	224 750 6700 / L	305 491 745	178 164 908K
1,50	220 / 230	224 751 6700 / L	305 491 746	178 164 909K
2,20	220 / 230	224 752 6700 / L	305 491 747	178 164 911K

## Replacement NextGen 316SS Motors 3- wire Stators and Rotors 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Nb.	Stator	Rotor
0,25	220 / 230	214 753 6800 / L	305 491 741	178 164 951K
0,37	220 / 230	214 755 6800 / L	305 491 742	178 164 952K
0,55	220 / 230	214 757 6800 / L	305 491 743	178 164 953K
0,75	220 / 230	214 758 6800 / L	305 491 744	178 164 955K
1,10	220 / 230	224 750 6800 / L	305 491 745	178 164 958K
1,50	220 / 230	224 751 6800 / L	305 491 746	178 164 959K
2,20	220 / 230	224 752 6800 / L	305 491 747	178 164 961K



# 4" Super Stainless 3 Phase



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells. The three phase motor offers maximum life and highest efficiency under various load conditions.

### Product advantages:

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- Cable material according to drinking water regulations (VDE / ACS / KTW approved)
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Pollution Recovery Motor Version Specifications:

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304 graded stainless steel as standard, 316SS as an option

### Brackish Water Motor Version Specifications:

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life

### Heat Pump Motor Version Specifications:

- Many modern heating systems extract heat that is stored in aquifer / river water. Such so-called two-pit or open systems require low-power, high efficiency 3-phase submersible motors. To meet the demands of this niche market, Franklin Electric has developed a special 4" encapsulated submersible motor optimized for shallow settings and low power consumption
- available in 0,25kW; 380-415V/50Hz

### Technical Specifications

- 3 phase motor range: 0,25 – 9,3kW
- 4" NEMA flange
- Rotation: reversible
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: max. 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Voltage tolerance 60Hz from nominal: ±10%
- Protection requirements: EN 60947-4-1

### Options

- Motor cable VDE / ACS / KTW approved (1,5m; 2,5m; special lengths available)
- Motors with factory- installed lead in Single Packing
- Special voltages on request
- Motor complete in AISI 316SS with SiC seal



### 3- Phase Standard Model Numbers 50 Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1 - 6	Digit 7-10						
			304 (Motors in 40 motors packing unit)	304 (with Lead and Single Pack)	316 SS (Motors in 40 motors packing unit)	316SS (with Lead and Single Pack)	Pollution Recovery Motor (with Lead and Single Pack)	Brackish Water Motor (with Lead and Single Pack)	Heat Pump Motor (with Lead and Single Pack)
0,25	380 - 415	234 870							1621L
	220, 230	234 751	1621	1621L	0521	0521L	1622L	1624L	
0,37	380 - 415	234 761	1621	1621L	0521	0521L	1622L	1624L	
	500	234 791	1621	1621L	0521	0521L	1622L	1624L	
0,55	220, 230	234 752	1621	1621L	0521	0521L	1622L	1624L	
	380 - 415	234 762	1621	1621L	0521	0521L	1622L	1624L	
	500	234 792	1621	1621L	0521	0521L	1622L	1624L	
0,75	220, 230	234 753	1621	1621L	0521	0521L	1622L	1624L	
	380 - 415	234 763	1621	1621L	0521	0521L	1622L	1624L	
	500	234 793	1621	1621L	0521	0521L	1622L	1624L	
1,10	220, 230	234 754	1621	1621L	0521	0521L	1622L	1624L	
	380 - 415	234 724	1621	1621L	0521	0521L	1622L	1624L	
	500	234 794	1621	1621L	0521	0521L	1622L	1624L	
1,50	220, 230	234 755	1621	1621L	0521	0521L	1622L	1624L	
	380 - 415	234 725	1621	1621L	0521	0521L	1622L	1624L	
	500	234 795	1621	1621L	0521	0521L	1622L	1624L	
2,20	220, 230	234 756	2521	2521L	2221	2221L	2522L	2524L	
	380 - 415	234 726	2521	2521L	2221	2221L	2522L	2524L	
	500	234 796	2521	2521L	2221	2221L	2522L	2524L	
3,00	220, 230	234 766	2521	2521L	2221	2221L	2522L	2524L	
	380 - 415	234 764	2521	2521L	2221	2221L	2522L	2524L	
	500	234 768	2521	2521L	2221	2221L	2522L	2524L	

### 3- Phase High Thrust Model Numbers 50 Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1-6		Digit 7-10					
		DOL	YΔ (only in 316SS)	304 (Motors in 40 motors packing unit)	304 (with Lead and Single Pack)	316SS (Motors in 40 motors packing unit)	316 SS (with Lead and Single Pack)	Pollution Recovery Motor (with Lead and Single Pack)	Brackish Water Motor (with Lead and Single Pack)
2,2	220, 230	234 756	234 780	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 726	234 770	3421	3421L	3521	3521L	3422L	3424L
	500	234 796	-	3421	3421L	3521	3521L	3422L	3424L
3,0	220, 230	234 766	234 781	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 764	234 771	3421	3421L	3521	3521L	3422L	3424L
	500	234 768	-	3421	3421L	3521	3521L	3422L	3424L
3,7	220, 230	234 757	234 782	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 727	234 772	3421	3421L	3521	3521L	3422L	3424L
	500	234 797	-	3421	3421L	3521	3521L	3422L	3424L
4,0	220, 230	234 767	234 783	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 765	234 773	3421	3421L	3521	3521L	3422L	3424L
	500	234 769	-	3421	3421L	3521	3521L	3422L	3424L
5,5	220, 230	234 758	234 784	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 728	234 778	3421	3421L	3521	3521L	3422L	3424L
	500	234 798	-	3421	3421L	3521	3521L	3422L	3424L
7,5	220, 230	-	-	3421	3421L	3521	3521L	3422L	3424L
	380 - 415	234 729	234 779	3421	3421L	3521	3521L	3422L	3424L
	500	234 799	-	3421	3421L	3521	3521L	3422L	3424L
9,3	380 - 415	234 788	-		3429L				



3-Phase Standard Performance Data 50 Hz

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
0,25	3000	380	2850	0,69	3,47	61	67	70	0,63	0,73	0,80	0,84	2,30
		400	2865	0,68	3,67	60	67	70	0,59	0,70	0,77	0,83	2,50
		415	2880	0,68	3,77	59	67	70	0,57	0,67	0,75	0,83	2,70
0,37	3000	220	2850	1,91	8,83	55	63	66	0,60	0,71	0,79	1,23	2,70
		230	2870	1,90	9,36	54	63	66	0,55	0,66	0,74	1,22	3,00
		380	2850	1,10	5,10	55	63	66	0,60	0,71	0,79	1,23	2,70
		400	2870	1,10	5,41	54	63	66	0,55	0,66	0,74	1,22	3,00
		415	2880	1,14	5,61	53	61	65	0,51	0,62	0,71	1,23	3,20
		500	2830	0,84	3,88	55	63	68	0,60	0,71	0,79	1,23	2,70
0,55	3000	220	2855	2,7	12,2	57	64	68	0,60	0,71	0,79	1,84	3,80
		230	2870	2,8	12,9	55	63	68	0,53	0,65	0,74	1,82	4,20
		380	2855	1,6	7,0	57	64	68	0,60	0,71	0,79	1,84	3,80
		400	2870	1,6	7,4	55	63	68	0,53	0,65	0,74	1,82	4,20
		415	2880	1,7	7,7	50	60	65	0,50	0,61	0,70	1,82	4,60
		500	2855	1,2	5,3	57	64	68	0,60	0,71	0,79	1,84	3,80
0,75	3000	220	2840	3,5	17,4	63	69	70	0,61	0,73	0,81	2,51	6,05
		230	2865	3,5	18,3	61	68	70	0,55	0,68	0,77	2,49	6,70
		380	2840	2,0	10,1	63	69	70	0,61	0,73	0,81	2,51	6,05
		400	2865	2,0	10,6	61	68	70	0,55	0,68	0,77	2,49	6,70
		415	2875	2,1	10,9	58	66	69	0,51	0,63	0,73	2,48	7,20
		500	2840	1,5	7,6	63	69	70	0,61	0,73	0,81	2,51	6,05
1,1	3000	220	2830	4,9	26,4	68	73	74	0,63	0,75	0,82	3,71	10,23
		230	2850	4,9	27,8	66	72	74	0,57	0,69	0,78	3,67	11,33
		380	2830	2,8	15,3	68	73	74	0,63	0,75	0,82	3,71	10,23
		400	2850	2,8	16,0	66	72	74	0,57	0,69	0,78	3,67	11,33
		415	2865	2,9	16,7	64	70	73	0,52	0,65	0,74	3,64	12,20
		500	2830	2,1	11,6	68	73	74	0,63	0,75	0,82	3,71	10,23
1,5	3000	220	2830	6,7	34,0	67	72	73	0,62	0,74	0,83	5,04	12,77
		230	2855	6,7	35,9	65	71	73	0,55	0,68	0,78	5,00	14,10
		380	2830	3,9	19,7	67	72	73	0,62	0,74	0,83	5,04	12,77
		400	2855	3,9	20,7	65	71	73	0,55	0,68	0,78	5,00	14,10
		415	2865	4,0	21,5	62	69	72	0,50	0,63	0,73	5,00	15,20
		500	2830	2,9	14,9	67	72	73	0,62	0,74	0,83	5,04	12,77
2,2	4000	220	2820	9,3	49,0	71	75	75	0,6	0,74	0,82	7,42	19,87
		230	2845	9,5	51,6	69	74	75	0,52	0,66	0,77	7,37	22
		380	2820	5,4	28,3	71	75	75	0,6	0,74	0,82	7,42	19,87
		400	2845	5,5	29,8	69	74	75	0,52	0,66	0,77	7,37	22
		415	2855	5,8	30,9	65	72	74	0,47	0,61	0,72	7,33	23,67
		500	2820	4,1	21,5	71	75	75	0,6	0,74	0,82	7,42	19,87
3	4000	220	2820	12,8	69,1	73	77	77	0,61	0,74	0,82	10,16	28,80
		230	2845	13,0	72,8	70	76	76	0,53	0,67	0,77	10,06	31,93
		380	2820	7,4	39,9	73	77	77	0,61	0,74	0,82	10,16	28,80
		400	2845	7,5	42,0	70	76	76	0,53	0,67	0,77	10,06	31,93
		415	2855	7,9	43,6	67	73	75	0,47	0,61	0,72	10,04	34,33
		500	2820	5,6	30,3	73	77	77	0,61	0,74	0,82	10,16	28,80

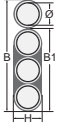
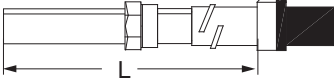


### 3-Phase High Thrust 50 Hz Performance Data

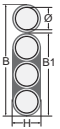
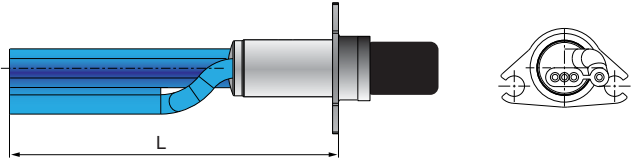
P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
<b>2,2</b>	<b>6500</b>	220	2820	9,3	49,0	71	75	75	0,6	0,74	0,82	7,42	19,87
		230	2845	9,5	51,6	69	74	75	0,52	0,66	0,77	7,37	22
		380	2820	5,4	28,3	71	75	75	0,6	0,74	0,82	7,42	19,87
		400	2845	5,5	29,8	69	74	75	0,52	0,66	0,77	7,37	22
		415	2855	5,8	30,9	65	72	74	0,47	0,61	0,72	7,33	23,67
		500	2820	4,1	21,5	71	75	75	0,6	0,74	0,82	7,42	19,87
<b>3</b>	<b>6500</b>	220	2820	12,8	69,1	73	77	77	0,61	0,74	0,82	10,16	28,80
		230	2845	13,0	72,8	70	76	76	0,53	0,67	0,77	10,06	31,93
		380	2820	7,4	39,9	73	77	77	0,61	0,74	0,82	10,16	28,80
		400	2845	7,5	42,0	70	76	76	0,53	0,67	0,77	10,06	31,93
		415	2855	7,9	43,6	67	73	75	0,47	0,61	0,72	10,04	34,33
		500	2820	5,6	30,3	73	77	77	0,61	0,74	0,82	10,16	28,80
<b>3,7</b>	<b>6500</b>	220	2815	15,3	86,1	75	79	78	0,62	0,75	0,83	12,6	37,5
		230	2840	15,5	90,6	73	77	78	0,54	0,69	0,78	12,5	41,5
		380	2815	8,8	49,7	75	79	78	0,62	0,75	0,83	12,6	37,5
		400	2840	9,0	52,3	73	77	78	0,54	0,69	0,78	12,5	41,5
		415	2850	9,3	54,3	70	76	77	0,49	0,63	0,73	12,4	44,7
		500	2815	6,7	37,8	75	79	78	0,62	0,75	0,83	12,6	37,5
<b>4</b>	<b>6500</b>	220	2820	16,7	93,7	75	78	78	0,60	0,74	0,82	13,5	39,7
		230	2840	17,2	98,7	72	77	78	0,52	0,67	0,77	13,4	44,0
		380	2820	9,7	54,1	75	78	78	0,60	0,74	0,82	13,5	39,7
		400	2840	9,9	57,0	72	77	78	0,52	0,67	0,77	13,4	44,0
		415	2855	10,4	59,1	69	75	77	0,47	0,61	0,72	13,4	47,4
		500	2820	7,3	41,1	75	78	78	0,60	0,74	0,82	13,5	39,7
<b>5,5</b>	<b>6500</b>	220	2845	21,9	127,0	77	80	79	0,66	0,79	0,85	18,5	51,0
		230	2865	21,8	133,7	75	79	79	0,59	0,73	0,81	18,3	56,5
		380	2845	12,6	73,3	77	80	79	0,66	0,79	0,85	18,5	51,0
		400	2865	12,6	77,2	75	79	79	0,59	0,73	0,81	18,3	56,5
		415	2875	12,8	80,1	73	77	79	0,54	0,68	0,77	18,2	60,9
		500	2845	9,6	55,7	77	80	79	0,66	0,79	0,85	18,5	51,0
<b>7,5</b>	<b>6500</b>	380	2830	17,2	94,3	78	80	79	0,66	0,79	0,86	25,3	65,9
		400	2855	17,1	99,3	75	79	79	0,58	0,72	0,81	25,1	73,1
		415	2865	17,6	103,0	73	78	79	0,52	0,67	0,77	25,0	78,6
		500	2830	13,1	71,7	78	80	79	0,66	0,79	0,86	25,3	65,9
<b>9,3</b>	<b>6500</b>	380	2825	21,2	108,0	77	80	79	0,65	0,78	0,86	31,4	73,8
		400	2850	21,4	113,0	75	79	79	0,56	0,71	0,81	31,1	81,8
		415	2860	22,1	118,0	72	77	78	0,47	0,58	0,76	31,0	88,0

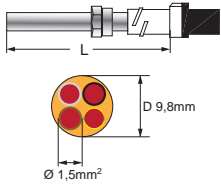


Motor cable\* 0,25 - 7,5kW

$\varnothing$ [mm <sup>2</sup> ]	B [mm]	B1 [mm]	H [mm]
3X1,5+1G1,5	16,8 ± 0,3	10,7 ± 0,3	5,0 ± 0,3
			
L [m]	Part numbers		
	Standard	304 SS	316 SS
1,5	310 113 001	310 113 401	310 113 501
2,5	310 113 002	310 113 402	310 113 502
5	310 113 005	310 113 405	310 113 505
10	310 113 010	310 113 410	310 113 510
15	310 113 015	310 113 415	310 113 515
20	310 113 020	310 113 420	310 113 520
30	310 113 030	310 113 430	310 113 530
40	310 113 040	310 113 440	310 113 540
50	310 113 050	310 113 450	310 113 550

Motor cable\* 9,3kW

$\varnothing$ [mm <sup>2</sup> ]	B [mm]	B1 [mm]	H [mm]
3X1,5+1G1,5	16,8 ± 0,3	10,7 ± 0,3	5,0 ± 0,3
			
L [m]	Part number		
2,5	310 116 502K		
5	310 116 505K		
10	310 116 510K		
20	310 116 520K		
30	310 116 530K		

L [m]	Pollution Recovery Motor cable*	
	Modelnb. (only in 316SS)	
1,5	310 313 501	
2,5	310 313 502	
10	310 313 510	
20	310 313 520	
30	310 313 530	
40	310 313 540	
50	310 313 550	

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.



### Winding Resistances 50Hz

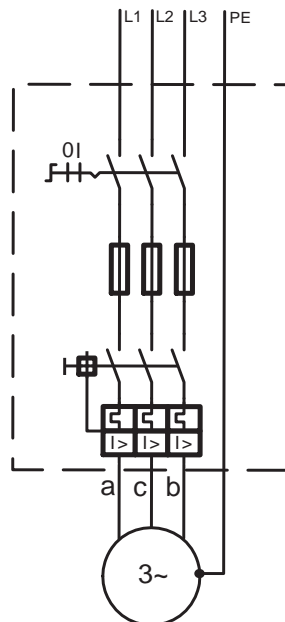
#### Standard

$P_N$ [kW]	$U_N$ [V]	Stator Ref.	U - V / Ohm
0,37	220 - 230	326 775 925	14,6 - 17,8
	380 - 400 - 415	326 710 925	44,8 - 54,8
	500	326 787 925	90,8 - 111,0
0,55	220 - 230	326 776 925	11,3 - 13,8
	380 - 400 - 415	326 711 925	34,2 - 41,8
	500	326 788 925	57,3 - 70,0
0,75	220 - 230	326 777 925	7,6 - 9,2
	380 - 400 - 415	326 712 925	23,2 - 28,3
	500	326 789 925	38,7 - 47,3
1,1	220 - 230	326 778 925	4,5 - 5,4
	380 - 400 - 415	326 713 925	13,8 - 16,8
	500	326 790 925	23,1 - 28,3
1,5	220 - 230	326 779 925	3,6 - 4,3
	380 - 400 - 415	326 714 925	10,9 - 13,4
	500	326 791 925	20,7 - 25,3
2,2	220 - 230	326 780 925	2,5 - 3,0
	380 - 400 - 415	326 715 925	7,1 - 8,6
	500	326 792 925	11,9 - 14,5
3	220 - 230	326 781 925	1,5 - 1,9
	380 - 400 - 415	326 716 925	4,7 - 5,8
	500	326 793 925	8,4 - 10,2

#### High Thrust

$P_N$ [kW]	$U_N$ [V]	Stator Ref.	U - V / Ohm
2,2	220 - 230	326 780 902	2,5 - 3,0
	380 - 400 - 415	326 715 902	7,1 - 8,6
	500	326 792 902	11,9 - 14,5
3,0	220 - 230	326 781 902	1,5 - 1,9
	380 - 400 - 415	326 716 902	4,7 - 5,8
	500	326 793 902	8,4 - 10,2
3,7	220 - 230	326 784 902	1,2 - 1,5
	380 - 400 - 415	326 717 902	3,7 - 4,5
	500	326 796 902	6,5 - 7,9
4,0	220 - 230	326 785 902	1,1 - 1,3
	380 - 400 - 415	326 718 902	3,3 - 4,0
	500	326 797 902	5,8 - 7,1
5,5	220 - 230	326 786 902	0,9 - 1,1
	380 - 400 - 415	326 719 902	2,6 - 3,2
	500	326 798 902	4,6 - 5,7
7,5	380 - 400 - 415	326 720 902	1,9 - 2,3
	500	326 799 902	3,3 - 4,1
9,3	380 - 400 - 415	326 995 920	1,5 - 1,7

### Electrical Connection DOL



a	b	c	PE
black	brown	grey	yellow/green

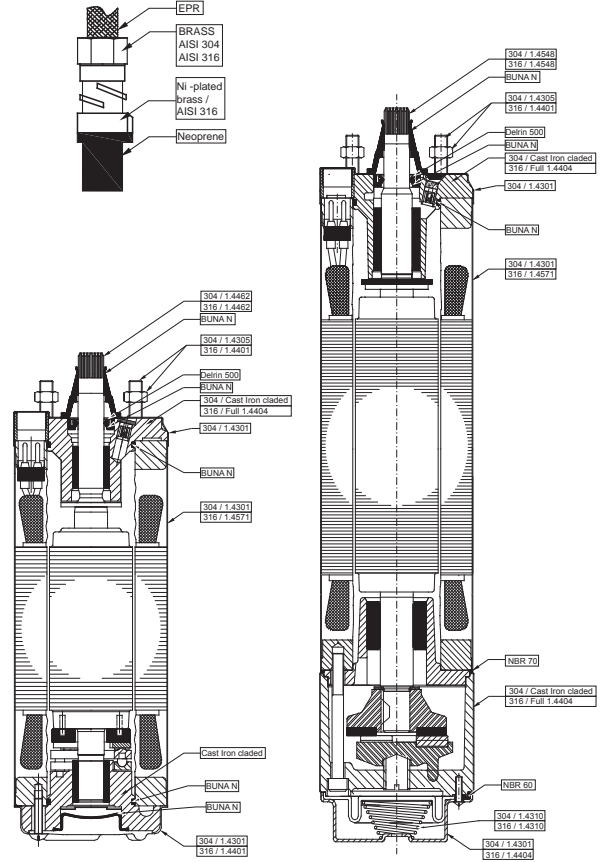
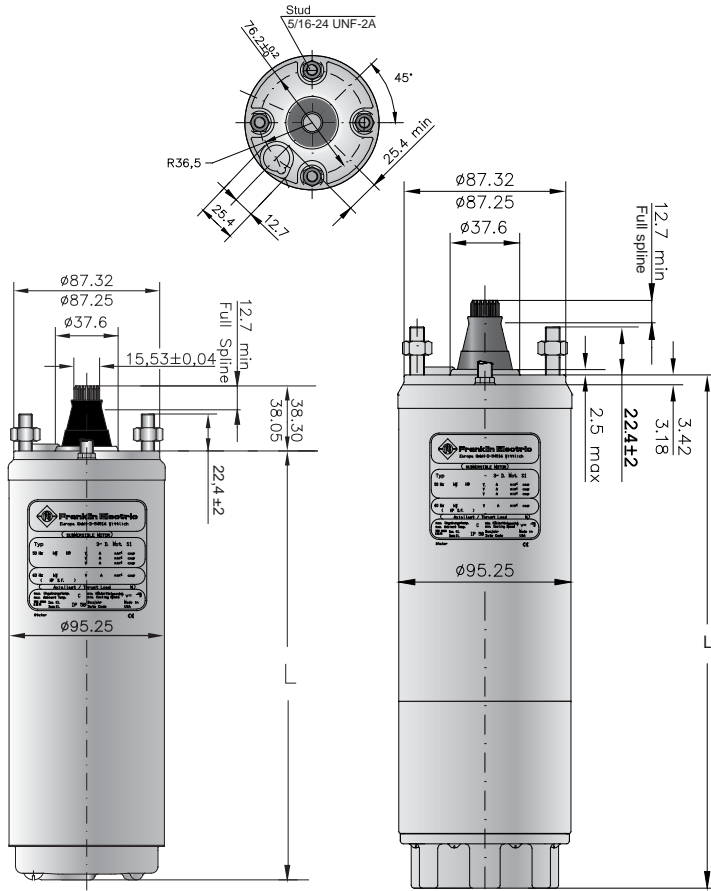


4" 3~ Motor Outlines 0,25 up to 7,5kW

Standard 0,25kW - 3,0kW

High Thrust 2,2kW - 7,5kW

Material Description



Tolerances according to NEMA MG 1-18.388

4" 3- Phase Standard Motors Lengths & Weights

P <sub>N</sub> [kW]	304 L [mm]	316SS L [mm]	304 [kg]	316SS [kg]	Motor Package size (40 motors per packing unit)			Motor with Lead in single pack		
					[mm]	304 [kg]	316SS [kg]	[mm]	304 [kg]	316SS [kg]
0,25	214,2		7,2		800 x 500 x 870	302,0		400 x 100 x 110	8,4	
0,37	214,2	228,9	7,2	7,7	800 x 500 x 870	302,0	322,0	400 x 100 x 110	8,4	8,9
0,55	228,2	242,9	7,7	8,2	800 x 500 x 870	322,0	342,0	400 x 100 x 110	8,9	9,4
0,75	248,2	262,9	8,7	9,2	800 x 500 x 870	362,0	382,0	530 x 100 x 110	10,0	10,5
1,10	282,6	290,2	10,2	10,7	800 x 500 x 870	422,0	442,0	530 x 100 x 110	12,5	12,0
1,50	306,6	314,2	11,2	11,7	800 x 500 x 870	462,0	482,0	530 x 100 x 110	13,5	13,0
2,20	338,6	346,2	12,6	13,1	800 x 500 x 870	518,0	538,0	796 x 100 x 110	14,4	14,9
3,0	393,6	401,2	15,0	15,5	800 x 500 x 870	614,0	634,0	796 x 100 x 110	16,8	17,3

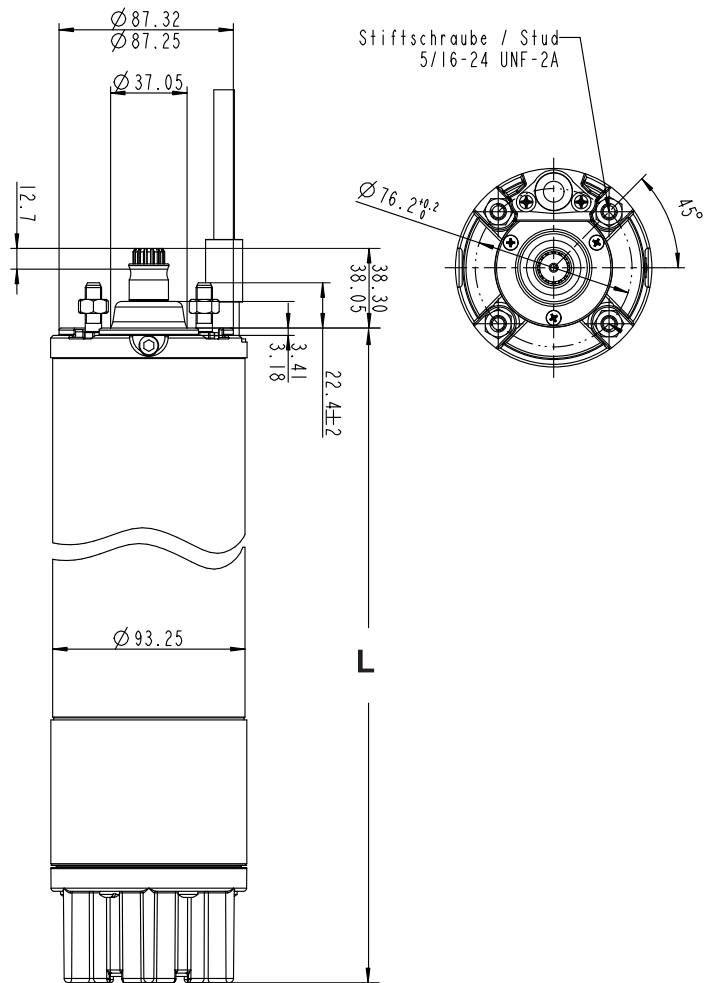
4" 3- Phase High Thrust Motors Lengths & Weights

P <sub>N</sub> [kW]	304 L [mm]	316SS L [mm]	304 [kg]	316SS [kg]	Motor with Lead , in single pack	
					[mm]	[kg]
2,2	422,2	431,4	15,0	15,5	796 x 100 x 110	16,8
3,0	477,2	486,4	17,0	17,5	796 x 100 x 110	18,9
3,7	520,2	529,4	19,1	19,6	796 x 100 x 110	20,9
4,0	543,2	552,4	20,0	20,5	796 x 100 x 110	21,8
5,5	652,5	661,7	26,6	27,1	904 x 100 x 110	28,7
7,5	730,5	739,7	30,6	31,1	904 x 100 x 110	32,7





4" 3~ Motor Outlines 9,3kW



Tolerances according to NEMA MG 1-18.388

Motors Lengths & Weights

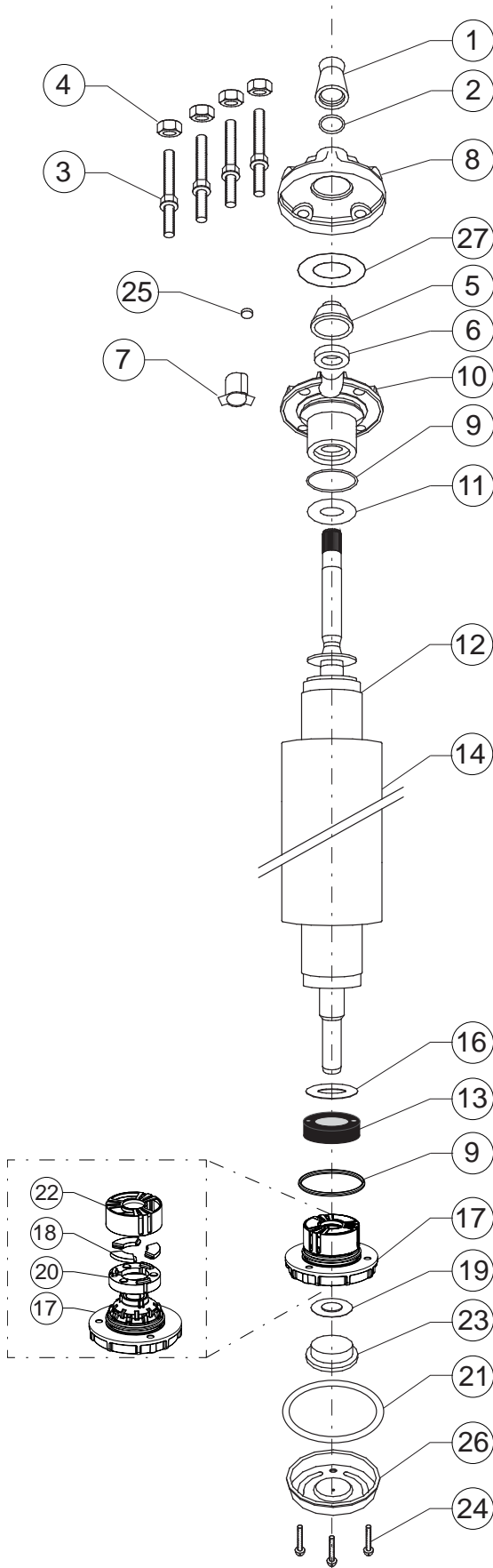
P <sub>N</sub> [kW]	L [mm]	M [kg]	Motor with Lead in single pack	
			[mm]	[kg]
9,3	855,1	37,9	904 x 100 x 110	41,3

Material DIN / AISI

Part	Material description
Shell	1.4301
End bell, upper	1.4401
End bell, lower	Cast iron
Thrust housing	1.4401
Shaft Seal	SiC / SiC
Seal Cover	1.4401
Slinger	NBR
Shaft Extensions	17-4 SS
Diaphragm	NBR
Diaphragm housing	Cast iron / 1.4301
Motor Lead	EPR
Seals	NBR 70



4" 3- phase Standard Motor\* Part Standard 304SS



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	1	Kit B
3	Stud	4	Kit C
4	Nut	4	Kit C
5	Seal cover	1	Kit
6	Shaft Seal	1	Kit B
7	Connector boss	1	151 820 102
8	Top Endbell, Cover	1	Kit
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 51
13	Thrust disk assy	1	Kit A
14	Stator	1	page 51
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Seal	3	Kit C
25	Filter	1	Kit B
26	Bottom Endbell Cover		156 414 101
27	Washer	1	Kit

\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request



**4" 3- phase Spare Parts 304SS**

$P_N$ [kW]	Thrust Bearing	End bell, Upper Pos. 5 - 10, 27	End bell, Lower Pos. 17	Upthrust washer Pos. 11
0,25 - 0,75	Kit A1	177 231 904	Kit A1	150 954 102
1,10 - 1,5		177 233 904		151 093 105
2,2 - 3,0				
<b>Kit 1500N</b> 0,25 - 0,75kW up to 07.2008	<b>Thrust bearing Kit</b>		inkl. Pos.: 13, 15, 16, 18, 20	308 652 101
<b>Kit A1</b>	<b>End bell (lower) incl. Thrust Bearing Kit 3000N / 4000N</b>		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
<b>Kit B1</b>	<b>Seal Kit</b>		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 101
<b>Kit B2</b>	<b>Seal Kit (Viton)</b>		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 104
<b>Kit C</b>	<b>Screw Kit</b>		inkl. Pos.: 3, 4, 24	308 656 101

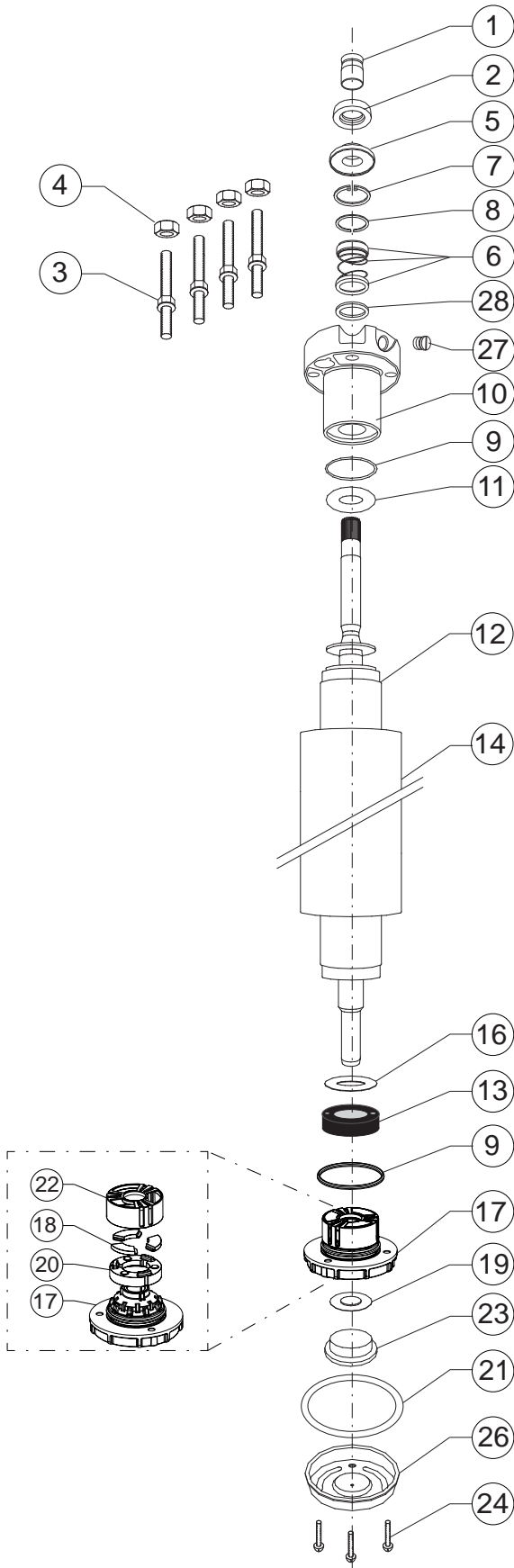
**Replacement Standard Motor\* Stator and Rotor 50 Hz**

$P_N$ [kW]	$U_N$ [V]	Motor Model No.	Stator Model No.	Rotor
<b>0,37</b>	220, 230	234 751 1621	305 491 301	178 156 902K
	380, 400, 415	234 761 1621	305 491 321	
	500	234 791 1621	305 491 341	
<b>0,55</b>	220, 230	234 752 1621	305 491 302	178 157 902K
	380, 400, 415	234 762 1621	305 491 322	
	500	234 792 1621	305 491 342	
<b>0,75</b>	220, 230	234 753 1621	305 491 303	178 158 902K
	380, 400, 415	234 763 1621	305 491 323	
	500	234 793 1621	305 491 343	
<b>1,10</b>	220, 230	234 754 1621	305 491 304	178 160 902K
	380, 400, 415	234 724 1621	305 491 324	
	500	234 794 1621	305 491 344	
<b>1,50</b>	220, 230	234 755 1621	305 491 305	178 162 902K
	380, 400, 415	234 725 1621	305 491 325	
	500	234 795 1621	305 491 345	
<b>2,20</b>	220, 230	234 756 2521	305 491 306	178 163 902K
	380, 400, 415	234 726 2521	305 491 326	
	500	234 796 2521	305 491 346	
<b>3,00</b>	220, 230	234 766 2521	305 491 307	178 125 902K
	380, 400, 415	234 764 2521	305 491 327	
	500	234 768 2521	305 491 347	

\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request



4" 3- phase Motor Standard Motor\* Part Standard 316SS



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit C
2	Slinger	1	Kit C
3	Stud	4	Kit D
4	Nut	4	Kit D
5	Seal cover	1	Kit B + C
6	Shaft Seal	1	Kit B
7	Retain Ring	1	Kit B
8	Ring	1	Kit B
9	O-Ring	2	Kit B
10	Top Endbell	1	Kit
11	Upthrust washer	1	Kit
12	Rotor	1	page 53
13	Thrust disk assy	1	Kit A
14	Stator	1	page 53
15	Leveling Disk (only 1500N)	1	Kit A
16	Washer	1	Kit A
17	Bottom Endbell	1	Kit
18	Segments	3	Kit A
19	Diaphragm Insert	1	151 314 101
20	Rocking Disk	1	Kit A
21	Gasket	1	Kit B
22	Bearing cage	1	Kit A
23	Diaphragm	1	Kit B
24	Screw, Seal	3	Kit D
25	Valve		Incl. Pos.: 10
26	Bottom Endbell Cover	1	156 414 102
27	Sealing Screw	1	308 279 903
28	Washer	1	308 747 201

\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request



**4" 3- phase Spare Part Kits 316SS Standard**

$P_N$ [kW]	Thrust Bearing	End bell, upper (Pos. 10)	End bell, lower (Pos. 17)	Upthrust washer (Pos. 11)
<b>0,37 - 0,75</b>	Kit A1	177 390 955	Kit A1	308 268 104
<b>1,1 - 1,5</b>				
<b>2,2 - 3,0</b>				
<b>Kit A1</b>	<b>End bell (lower) incl. Thrust Bearing Kit 3000N / 4000N</b>		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
<b>Kit B1</b>	<b>Seals Kit</b>		inkl. Pos.: 5,6,7,8,9,21,23	308 650 105
<b>Kit B2</b>	<b>Seals Kit (Viton)</b>		inkl. Pos.: 5,6,7,8,9,21,23	308 650 106
<b>Kit C</b>	<b>Sand Protection Kit</b>		inkl. Pos.: 1,2,5	308 825 201
<b>Kit D</b>	<b>Screw Kit</b>		inkl. Pos.: 3, 4, 24	308 656 102

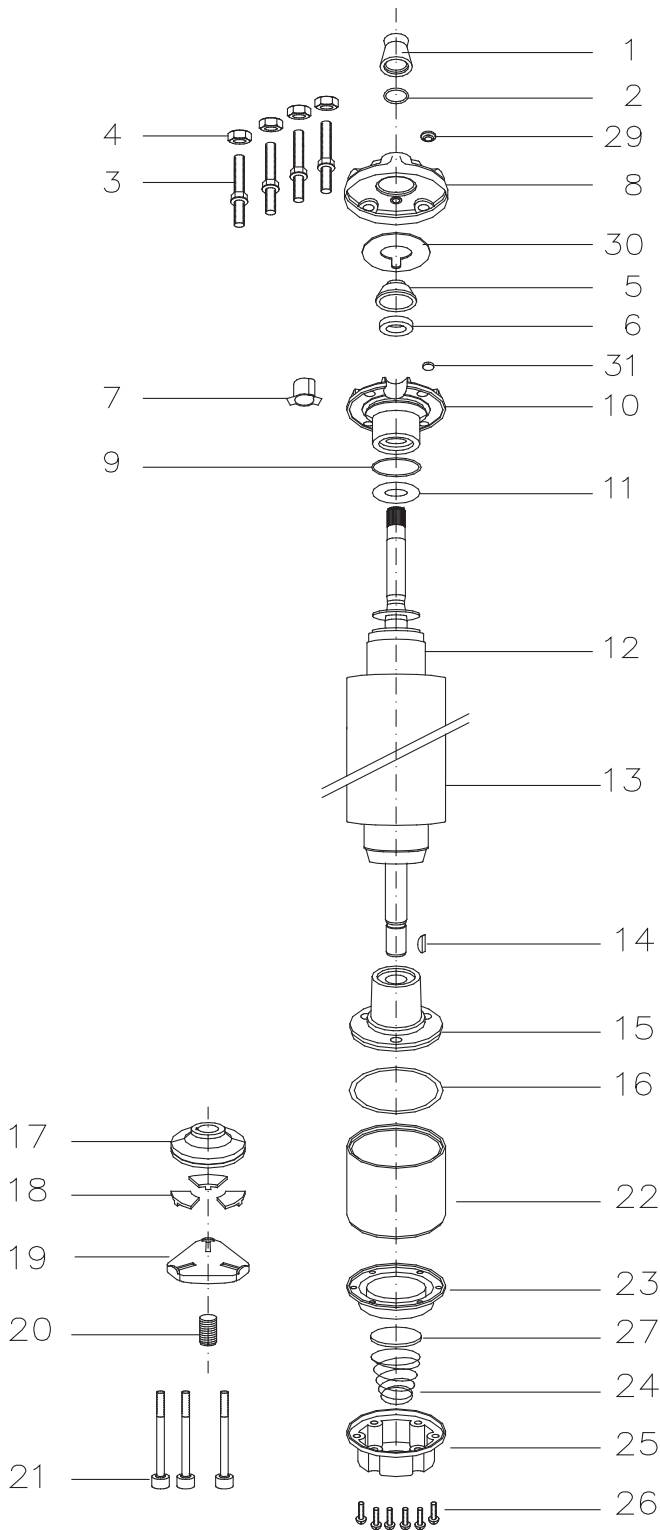
**Replacement Standard Motor\* Stator and Rotor 50 Hz DOL**

$P_N$ [kW]	$U_N$ [V]	Motor Model No.	Stator Model No.	Rotor
<b>0,37</b>	220, 230	234 751 0521	305 491 581	178 156 912K
	380, 400, 415	234 761 0521	305 491 601	
	500	234 791 0521	305 491 621	
<b>0,55</b>	220, 230	234 752 0521	305 491 582	178 157 912K
	380, 400, 415	234 762 0521	305 491 602	
	500	234 792 0521	305 491 622	
<b>0,75</b>	220, 230	234 753 0521	305 491 583	178 158 912K
	380, 400, 415	234 763 0521	305 491 603	
	500	234 793 0521	305 491 623	
<b>1,10</b>	220, 230	234 754 0521	305 491 584	178 160 912K
	380, 400, 415	234 724 0521	305 491 604	
	500	234 794 0521	305 491 624	
<b>1,50</b>	220, 230	234 755 0521	305 491 585	178 162 912K
	380, 400, 415	234 725 0521	305 491 605	
	500	234 795 0521	305 491 625	
<b>2,20</b>	220, 230	234 756 2221	305 491 586	178 163 912K
	380, 400, 415	234 726 2221	305 491 606	
	500	234 796 2221	305 491 626	
<b>3,00</b>	220, 230	234 766 2221	305 491 587	178 125 912K
	380, 400, 415	234 764 2221	305 491 607	
	500	234 768 2221	305 491 627	

\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request



4" 3- phase Standard Motor\* High Thrust 2,2 - 7,5kW Motor Parts 304SS



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit B
2	Washer	1	Kit B
3	Stud	4	Kit C
4	Nut	4	Kit C
5	Seal cover	1	Kit D
6	Shaft Seal	1	Kit B+D
7	Connector boss	1	Kit D
8	Top Endbell, Cover	1	Kit D
9	O-Ring	1	Kit B+D
10	Top Endbell	1	Kit D
11	Upthrust washer	1	Kit
12	Rotor	1	page 55
13	Stator	1	page 55
14	Woodruff key	1	275 250 104
15	Bottom Endbell	1	Kit
16	O-Ring	1	Kit B
17	Thrust disc	1	Kit A
18	Segment	1	Kit A
19	Leveling disc	1	155 660 101
20	Screw, adj.	1	151 048 102
21	Screw	3	Kit C
22	Thrust housing	1	177 378 901
23	Diaphragm	1	Kit B
24	Spring	1	151 449 101
25	Cover, Diaphragm	1	155 647 101
26	Screw	6	Kit C
27	Cup spring, Diaphragm	1	151 448 101
29	Sealing stopper	1	Kit B+D
30	Seal	1	Kit D
31	Filter	1	Kit B+D

\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request



### 4" 3- phase Spare Part Kits 304SS High Thrust

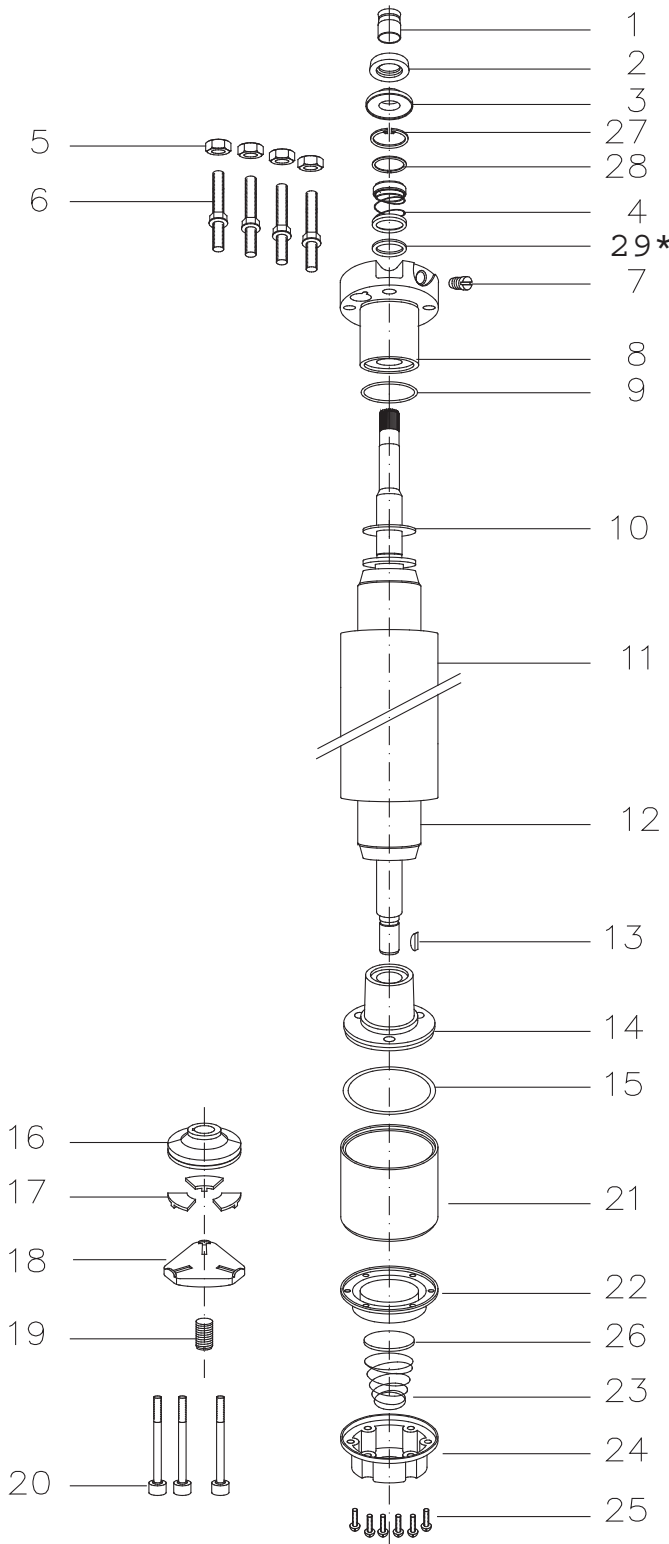
$P_N$ [kW]	Thrust Bearings	End bell upper (Pos. 10)	End bell, lower (Pos. 15)	Upthrust washer (Pos. 11)
2,2	<b>6500 N / KIT A</b>	Kit D1	177 379 921	308 268 104
3,0				
3,7				
4,0		Kit D2	177 379 901	308 317 901
5,5				
7,5				
<b>Kit A 6500N</b>	Thrust Bearing Kit		incl. Pos.: 17, 18	308 700 301
<b>Kit B</b>	Seal Kit		incl. Pos.: 1, 2, 6, 9, 16, 23, 29, 31	308 900 351
<b>Kit B1</b>	Seal Kit Pollution Recovery		incl. Pos.: 1, 2, 6, 9, 16, 23, 29, 31	308 900 401
<b>Kit C</b>	Screw Kit		incl. Pos.: 3, 4, 21, 26	308 658 351
<b>Kit D1</b>	End bell PE 2,2- 4,0kW		incl. Pos.: 5, 6, 7, 8, 9, 10, 29, 30, 31	308 233 509
<b>Kit D2</b>	End bell PE 5,5- 7,5kW		incl. Pos.: 5, 6, 7, 8, 9, 10, 29, 30, 31	308 434 501

### Replacement Standard Motor\* Stator and Rotor 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Model No.	Stator Model No.	Rotor
<b>2,2</b>	220, 230	234 756 3421 / L	305 491 361	178 163 903K
	380, 400, 415	234 726 3421 / L	305 491 381	
	500	234 796 3421 / L	305 491 401	
<b>3,0</b>	220, 230	234 766 3421 / L	305 491 362	178 125 903K
	380, 400, 415	234 764 3421 / L	305 491 382	
	500	234 768 3421 / L	305 491 402	
<b>3,7</b>	220, 230	234 757 3421 / L	305 491 363	178 126 903K
	380, 400, 415	234 727 3421 / L	305 491 383	
	500	234 797 3421 / L	305 491 403	
<b>4,0</b>	220, 230	234 767 3421 / L	305 491 364	178 127 903K
	380, 400, 415	234 765 3421 / L	305 491 384	
	500	234 769 3421 / L	305 491 404	
<b>5,5</b>	220, 230	234 758 3421 / L	305 491 365	178 133 903K
	380, 400, 415	234 728 3421 / L	305 491 385	
	500	234 798 3421 / L	305 491 405	
<b>7,5</b>	380, 400, 415	234 729 3421 / L	305 491 386	178 134 903K
	500	234 799 3421 / L	305 491 406	



**4" 3- phase Standard Motor\* High Thrust 2,2 - 7,5kW Parts 316SS**



Pos.	Part Description	Qty.	Part No.
1	Protector, Spline	1	Kit C
2	Slinger	1	Kit C
3	Seal cover	1	Kit B + C
4	Shaft Seal	1	Kit B
5	Nut	4	Kit D
6	Stud	4	Kit D
7	Sealing Screw	1	308 279 903
8	Top Endbell	1	Kit
9	O-Ring	1	Kit B
10	Upthrust washer	1	Kit
11	Stator	1	page 57
12	Rotor	1	page 57
13	Woodruff key	1	275 250 104
14	Bottom Endbell	1	Kit
15	O-Ring	1	Kit B
16	Thrust disc	1	Kit A
17	Segments	1	Kit A
18	Leveling disc	1	155 660 101
19	Screw, adj.	1	151 048 102
20	Screw	3	Kit D
21	Thrust housing	1	177 378 951
22	Diaphragm	1	Kit B
23	Spring	1	151 449 101
24	Cover, Diaphragm	1	155 647 201
25	Screw	6	Kit D
26	Cup spring, Diaphragm	1	151 448 101
27	Ring	1	Kit B
28	Retain Ring	1	Kit B
29*	Washer	1	308 747 201

\* only for 2,2 - 3kW

**\* Spare Parts for Heat Pump, Pollution Recovery and Brackish Water Motors on Request**





**4" 3- phase Spare Part Kits 316SS High Thrust**

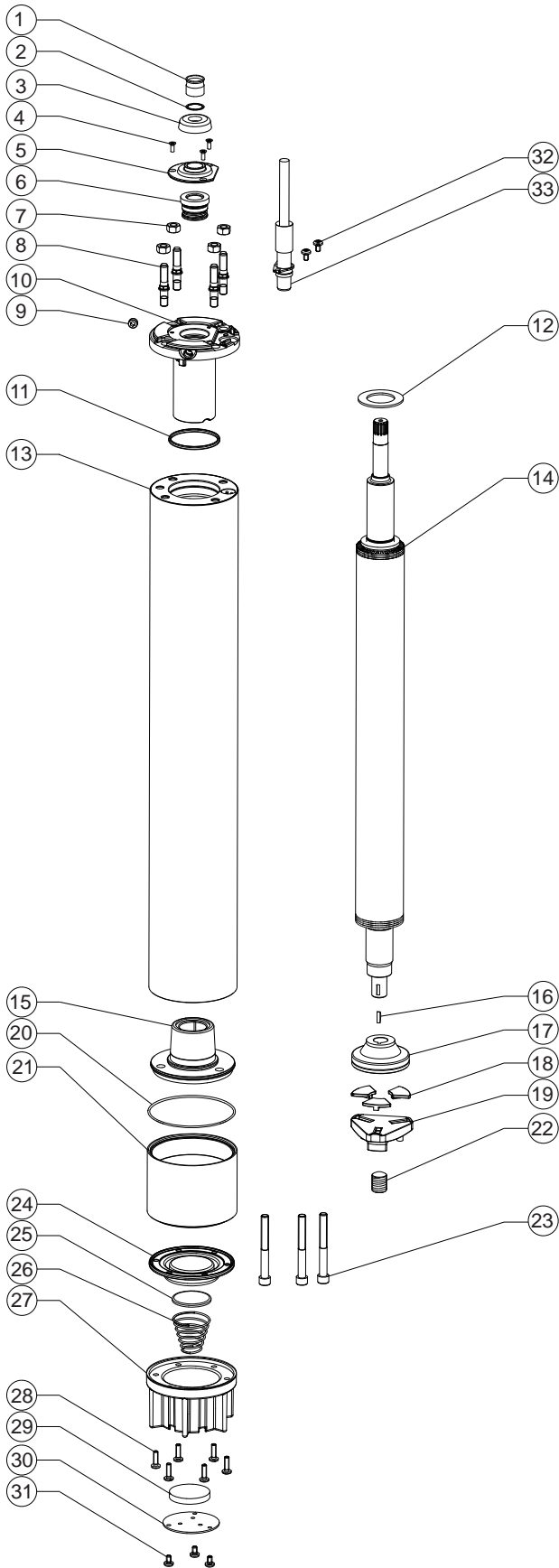
P <sub>N</sub> [kW]	End bell, upper (Pos 8)		End bell, lower (Pos. 14)	Upthrust washer (Pos. 10)
	3 ~ DOL	3 ~ YΔ		
<b>2,2 - 4,0</b>	177 390 955	177 390 956	<b>177 379 921</b>	<b>308 317 901</b>
<b>5,5 - 7,5</b>	177 390 951	177 390 953	<b>177 379 901</b>	
<b>Kit A 6500N</b>	Thrust bearing Kit		inkl. Pos.: 16, 17	<b>308 700 301</b>
<b>Kit B</b>	Seal Kit		inkl. Pos.: 3, 4, 9, 15, 22, 27, 28	<b>308 900 302</b>
<b>Kit B1</b>	Seal Kit Pollution Recovery		inkl. Pos.: 1, 2, 3, 4, 9, 15, 22, 27, 28	<b>308 900 402</b>
<b>Kit C</b>	Slinger Kit		inkl. Pos.: 1, 2, 3	<b>308 825 201</b>
<b>Kit D</b>	Screw Kit		inkl. Pos.: 5, 6, 20, 25	<b>308 658 301</b>

**Replacement Standard Motor\* Stator and Rotor High Thrust 50 Hz DOL**

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Motor Model No.	Stator Model No.	Rotor
<b>2,2</b>	220, 230	234 756 3521 / L	305 491 641	178 163 913K
	380, 400, 415	234 726 3521 / L	305 491 661	
	500	234 796 3521 / L	305 491 681	
<b>3,0</b>	220, 230	234 766 3521 / L	305 491 642	178 125 913K
	380, 400, 415	234 764 3521 / L	305 491 662	
	500	234 768 3521 / L	305 491 682	
<b>3,7</b>	220, 230	234 757 3521 / L	305 491 643	178 126 913K
	380, 400, 415	234 727 3521 / L	305 491 663	
	500	234 797 3521 / L	305 491 683	
<b>4,0</b>	220, 230	234 767 3521 / L	305 491 644	178 127 913K
	380, 400, 415	234 765 3521 / L	305 491 664	
	500	234 769 3521 / L	305 491 684	
<b>5,5</b>	220, 230	234 758 3521 / L	305 491 645	178 133 913K
	380, 400, 415	234 728 3521 / L	305 491 665	
	500	234 798 3521 / L	305 491 685	
<b>7,5</b>	380, 400, 415	234 729 3521 / L	305 491 666	178 134 913K
	500	234 799 3521 / L	305 491 686	



4" 3- phase Standard Motor\* High Thrust 9,3kW Parts



Pos.	Description	Qty.	Part Nb.
1	Protector, Spline	1	Kit B
2	Washer	1	275 542 102
3	Slinger	1	Kit B
4	Screw, Seal cover	3	Kit C
5	Seal cover	1	156 275 102
6	Shaft Seal	1	Kit B
7	Nut	4	Kit C
8	Stud	4	Kit C
9	Plug screw	1	282 230 101
10	Top Endbell	1	177 553 901
11	O-Ring	1	Kit B
12	Upthrust washer	1	308 317 901
13	Stator	1	see page 59
14	Rotor	1	see page 59
15	Bottom Endbell	1	177 379 901
16	Woodruff key	1	275 250 104
17	Thrust disc	1	Kit A
18	Segments	3	Kit A
19	Leveling disc	1	155 660 101
20	O- Ring	1	Kit B
21	Thrust housing	1	177 378 901
22	Screw, adj.	1	151 048 102
23	Screw	3	Kit C
24	Diaphragm	1	Kit B
25	Cup spring, Diaphragm	1	151 448 201
26	Spring	1	151 449 101
27	Diaphragm housing	1	177 965 101
28	Screw	6	Kit C
29	Filter	1	156 276 101
30	Cover, Diaphragm	1	156 278 101
31	Screw	3	Kit C
32	Screw	2	Kit C
33	Motor cable, 2,5m	1	see page 46



**4" 3- phase Spare Part Kits High Thrust 9,3kW**

$P_N$ [kW]	Thrust Bearing	End bell, upper (Pos. 10)	End bell, bottom (Pos. 15)	Upthrust-Disc (Pos. 12)
<b>9,3</b>	<b>6500 N / KIT A</b>	177 553 901	177 379 901	308 317 901
<b>Kit A 6500N</b>	<b>Thrust Bearing Kit</b>		incl. Pos.: 17, 18	308 700 301
<b>Kit B</b>	<b>Seal Kit</b>		incl. Pos.: 1; 3; 6; 11; 20; 24	308 900 501
<b>Kit C</b>	<b>Screw Kit</b>		incl. Pos.: 4; 7; 8; 23; 28; 31; 32	308 658 501

**Replacement 9,3kW High Thrust Stator and Rotor 50 Hz**

$P_N$ [kW]	$U_N$ [V]	Motor nb.	Stator nb.	Rotor
<b>9,3</b>	380 - 415	234 788	326 995 920	178 139 915



# 4" Super Stainless NextGen 3 Phase



## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001 certified facilities for outstanding performance in 4" or larger water wells.

The three phase motor offers maximum life and highest efficiency under various load conditions. It should ideally be combined to the Franklin Electric SubStart/ SubTronic3P control boxes for maximum system performance, protection and warranty.

### Features:

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Pollution Recovery Motor Version Specifications:

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS graded stainless steel as standard, 316SS as an option

### Technical Specification:

- 3 phase motor range: 0,37 – 3kW
- 4" NEMA flange
- Rotation: reversible
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Options:

- Motors in full 316SS
- Various cable lengths
- Special voltages
- Alternative material executions



3- Phasen NextGen 304SS / 316SS Model Numbers 50 Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Digit 1 - 6	Digit 7 - 10			
			304SS (Single pack, with Lead)	304 (40 motors packing unit)	316SS (Single pack, with Lead)	316SS (40 motors packing unit)
0,37	220, 230	234 751	6700L	6700	6800L	6800
	380 - 415	234 761	6700L	6700	6800L	6800
	500	234 791	6700L	6700	6800L	6800
0,55	220, 230	234 752	6700L	6700	6800L	6800
	380 - 415	234 762	6700L	6700	6800L	6800
	500	234 792	6700L	6700	6800L	6800
0,75	220, 230	234 753	6700L	6700	6800L	6800
	380 - 415	234 763	6700L	6700	6800L	6800
	500	234 793	6700L	6700	6800L	6800
1,10	220, 230	234 754	6700L	6700	6800L	6800
	380 - 415	234 724	6700L	6700	6800L	6800
	500	234 794	6700L	6700	6800L	6800
1,50	220, 230	234 755	6700L	6700	6800L	6800
	380 - 415	234 725	6700L	6700	6800L	6800
	500	234 795	6700L	6700	6800L	6800
2,20	220, 230	234 756	6700L	6700	6800L	6800
	380 - 415	234 726	6700L	6700	6800L	6800
	500	234 796	6700L	6700	6800L	6800
3,00	220, 230	234 766	6700L	6700	6800L	6800
	380 - 415	234 764	6700L	6700	6800L	6800
	500	234 768	6700L	6700	6800L	6800

3-Phase NextGen Performance Data 50 Hz

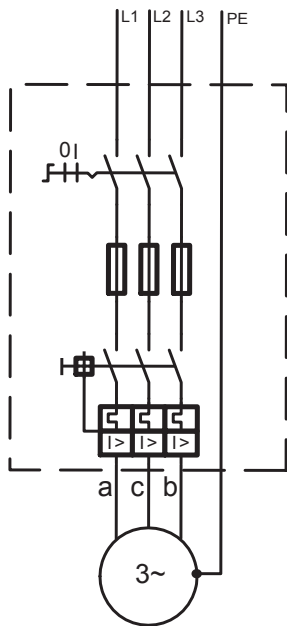
P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T <sub>N</sub> [Nm]	T <sub>A</sub> [Nm]
						50	75	100	50	75	100		
0,37	4000	220	2850	1,91	8,83	55	63	66	0,60	0,71	0,79	1,23	2,70
		230	2870	1,90	9,36	54	63	66	0,55	0,66	0,74	1,22	3,00
		380	2850	1,10	5,10	55	63	66	0,60	0,71	0,79	1,23	2,70
		400	2870	1,10	5,41	54	63	66	0,55	0,66	0,74	1,22	3,00
		415	2880	1,14	5,61	53	61	65	0,51	0,62	0,71	1,23	3,20
		500	2830	0,84	3,88	55	63	68	0,60	0,71	0,79	1,23	2,70
0,55	4000	220	2855	2,7	12,2	57	64	68	0,60	0,71	0,79	1,84	3,80
		230	2870	2,8	12,9	55	63	68	0,53	0,65	0,74	1,82	4,20
		380	2855	1,6	7,0	57	64	68	0,60	0,71	0,79	1,84	3,80
		400	2870	1,6	7,4	55	63	68	0,53	0,65	0,74	1,82	4,20
		415	2880	1,7	7,7	50	60	65	0,50	0,61	0,70	1,82	4,60
		500	2855	1,2	5,3	57	64	68	0,60	0,71	0,79	1,84	3,80
0,75	4000	220	2840	3,5	17,4	63	69	70	0,61	0,73	0,81	2,51	6,05
		230	2865	3,5	18,3	61	68	70	0,55	0,68	0,77	2,49	6,70
		380	2840	2,0	10,1	63	69	70	0,61	0,73	0,81	2,51	6,05
		400	2865	2,0	10,6	61	68	70	0,55	0,68	0,77	2,49	6,70
		415	2875	2,1	10,9	58	66	69	0,51	0,63	0,73	2,48	7,20
		500	2840	1,5	7,6	63	69	70	0,61	0,73	0,81	2,51	6,05
1,1	4000	220	2830	4,9	26,4	68	73	74	0,63	0,75	0,82	3,71	10,23
		230	2850	4,9	27,8	66	72	74	0,57	0,69	0,78	3,67	11,33
		380	2830	2,8	15,3	68	73	74	0,63	0,75	0,82	3,71	10,23
		400	2850	2,8	16,0	66	72	74	0,57	0,69	0,78	3,67	11,33
		415	2865	2,9	16,7	64	70	73	0,52	0,65	0,74	3,64	12,20
		500	2830	2,1	11,6	68	73	74	0,63	0,75	0,82	3,71	10,23
1,5	4000	220	2830	6,7	34,0	67	72	73	0,62	0,74	0,83	5,04	12,77
		230	2855	6,7	35,9	65	71	73	0,55	0,68	0,78	5,00	14,10
		380	2830	3,9	19,7	67	72	73	0,62	0,74	0,83	5,04	12,77
		400	2855	3,9	20,7	65	71	73	0,55	0,68	0,78	5,00	14,10
		415	2865	4,0	21,5	62	69	72	0,50	0,63	0,73	5,00	15,20
		500	2830	2,9	14,9	67	72	73	0,62	0,74	0,83	5,04	12,77
2,2	4000	220	2820	9,3	49,0	71	75	75	0,6	0,74	0,82	7,42	19,87
		230	2845	9,5	51,6	69	74	75	0,52	0,66	0,77	7,37	22
		380	2820	5,4	28,3	71	75	75	0,6	0,74	0,82	7,42	19,87
		400	2845	5,5	29,8	69	74	75	0,52	0,66	0,77	7,37	22
		415	2855	5,8	30,9	65	72	74	0,47	0,61	0,72	7,33	23,67
		500	2820	4,1	21,5	71	75	75	0,6	0,74	0,82	7,42	19,87
3	4000	220	2820	12,8	69,1	73	77	77	0,61	0,74	0,82	10,16	28,80
		230	2845	13,0	72,8	70	76	76	0,53	0,67	0,77	10,06	31,93
		380	2820	7,4	39,9	73	77	77	0,61	0,74	0,82	10,16	28,80
		400	2845	7,5	42,0	70	76	76	0,53	0,67	0,77	10,06	31,93
		415	2855	7,9	43,6	67	73	75	0,47	0,61	0,72	10,04	34,33
		500	2820	5,6	30,3	73	77	77	0,61	0,74	0,82	10,16	28,80



Winding Resistances 304SS / 316SS 50Hz

P <sub>N</sub> [kW]	U <sub>N</sub> [V]	Stator Ref.	U - V / Ohm
0,37	220 - 230	326 775 945 / 955	14,6 - 17,8
	380 - 400 - 415	326 710 945 / 955	44,8 - 54,8
	500	326 787 945 / 955	90,8 - 111,0
0,55	220 - 230	326 776 945 / 955	11,3 - 13,8
	380 - 400 - 415	326 711 945 / 955	34,2 - 41,8
	500	326 788 945 / 955	57,3 - 70,0
0,75	220 - 230	326 777 945 / 955	7,6 - 9,2
	380 - 400 - 415	326 712 945 / 955	23,2 - 28,3
	500	326 789 945 / 955	38,7 - 47,3
1,1	220 - 230	326 778 945 / 955	4,5 - 5,4
	380 - 400 - 415	326 713 945 / 955	13,8 - 16,8
	500	326 790 945 / 955	23,1 - 28,3
1,5	220 - 230	326 779 945 / 955	3,6 - 4,3
	380 - 400 - 415	326 714 945 / 955	10,9 - 13,4
	500	326 791 945 / 955	20,7 - 25,3
2,2	220 - 230	326 780 945 / 955	2,5 - 3,0
	380 - 400 - 415	326 715 945 / 955	7,1 - 8,6
	500	326 792 945 / 955	11,9 - 14,5
3	220 - 230	326 781 945 / 955	1,5 - 1,9
	380 - 400 - 415	326 716 945 / 955	4,7 - 5,8
	500	326 793 945 / 955	8,4 - 10,2

Electrical connection 3 Phase Motors DOL



a	b	c	PE
black	brown	grey	yellow/green

Motor Leads\*

Ø [mm <sup>2</sup> ]	B [mm]	H [mm]
4X1,5	14,6 ± 0,3	5,1 ± 0,3

L [m]	3 ~ Motor- Flat Leads	
	304 SS	316 SS
1,5	310 178 401	310 178 501
2,5	310 178 402	310 178 502
5	310 178 405	310 178 505
10	310 178 410	310 178 510
15	310 178 415	310 178 515
20	310 178 420	310 178 520
30	310 178 430	310 178 530
40	310 178 440	310 178 540
50	310 178 450	310 178 550

Ø [mm <sup>2</sup> ]	Ø D (mm)
4X1,5	9,8 ± 0,3

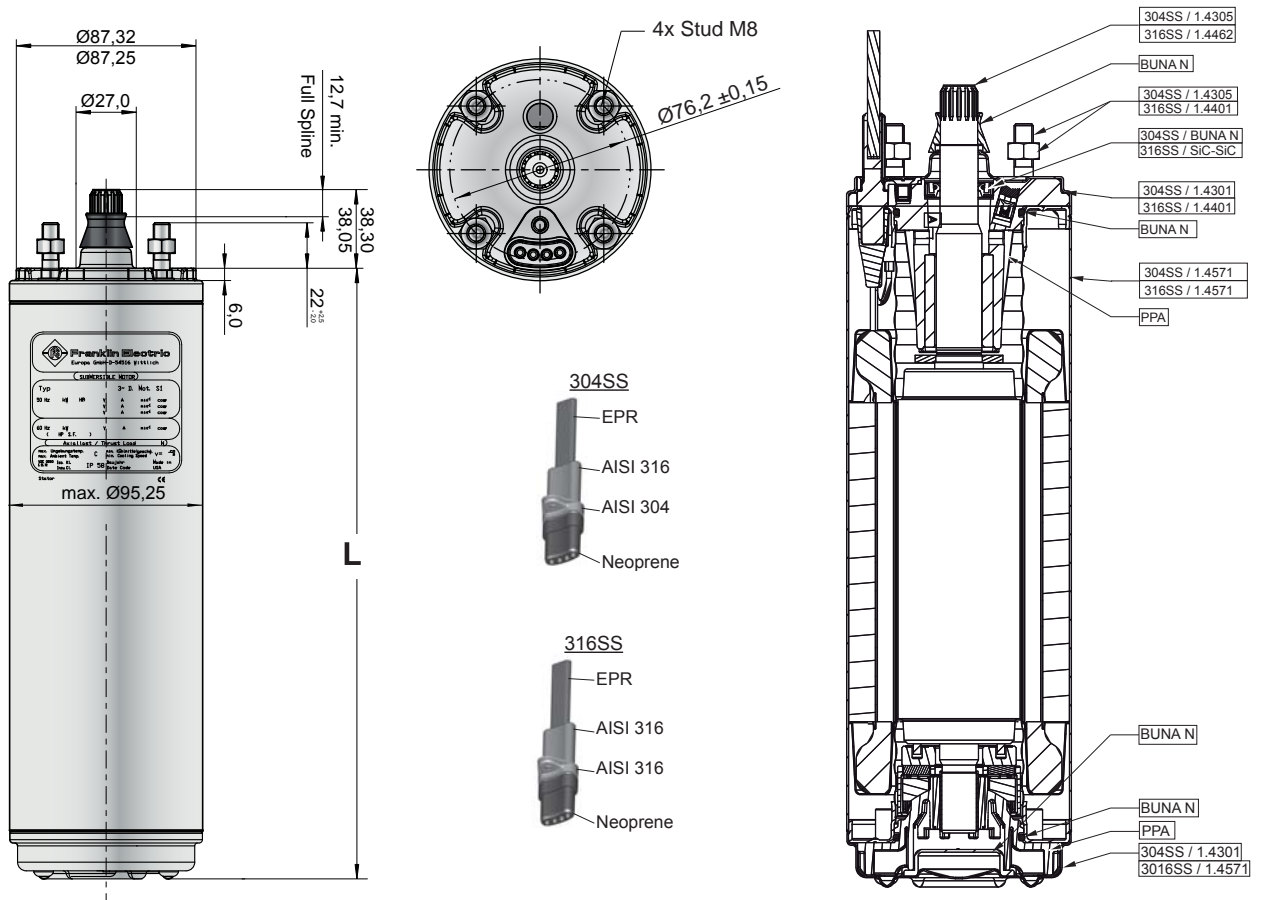
L [m]	3 ~ Motor- Pollution Recovery Round Leads	
	304 SS	316 SS
1,5	310 318 401	310 318 501
2,5	310 318 402	310 318 502
5	310 318 405	310 318 505
10	310 318 410	310 318 510
15	310 318 415	310 318 515
20	310 318 420	310 318 520
30	310 318 430	310 318 530
40	310 318 440	310 318 540
50	310 318 450	310 318 550

\*Cables are designed for submerged operation. For air operation please consult Franklin Electric.



0,37kW - 3,0kW

Material Description



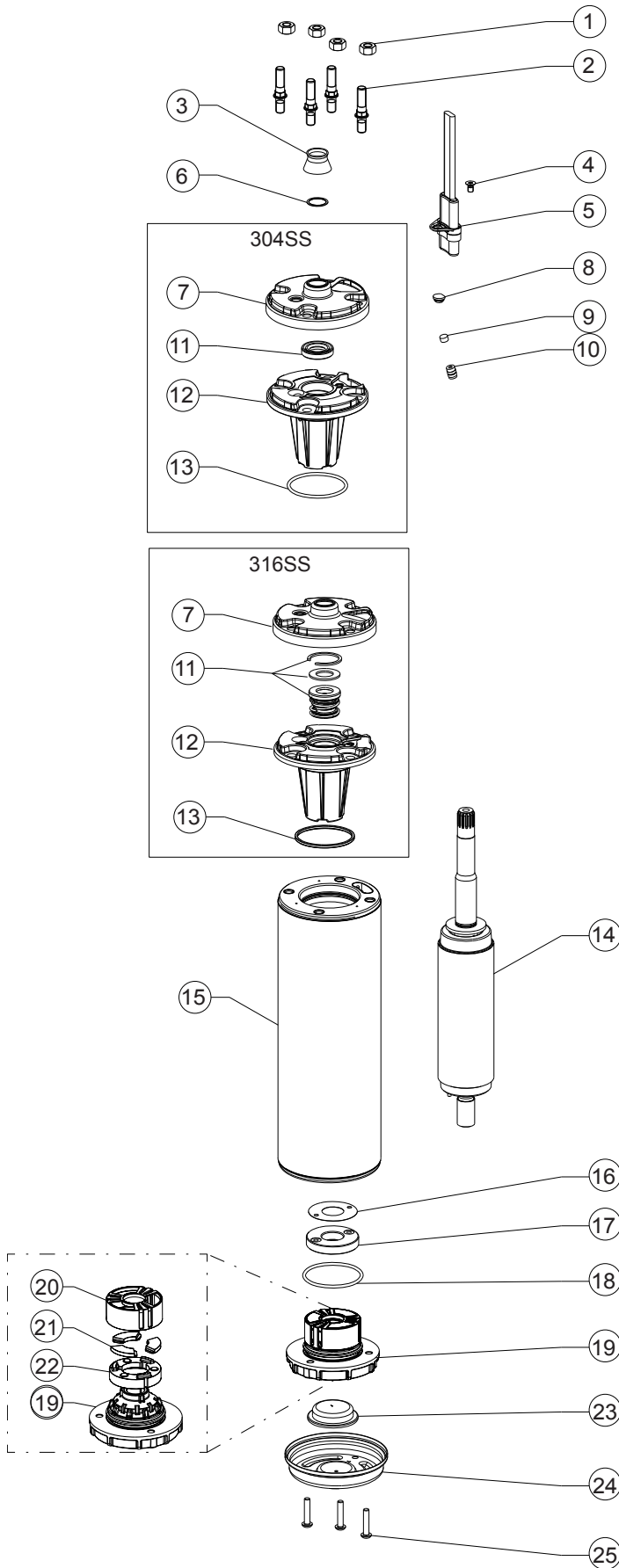
Tolerances according to NEMA MG 1-18.388

4" 3- Phase NextGen Motors Lengths & Weights

P <sub>N</sub>		L [mm]	M [kg]	Motor with Lead in single pack		Motor Package size (40 motors per packing unit)	
[kW]	[HP]			[mm]	[kg]	[mm]	[kg]
0,37	0,5	237,2	5,58	400 x 100 x 110	6,3	800 x 500 x 870	242
0,55	0,75	251,1	6,40	400 x 100 x 110	7,2	800 x 500 x 870	274,8
0,75	1,0	271,2	7,25	530 x 100 x 110	8,0	800 x 500 x 870	308,8
1,10	1,5	297,2	8,55	530 x 100 x 110	9,3	800 x 500 x 870	360,8
1,50	2,0	321,2	9,55	530 x 100 x 110	10,3	800 x 500 x 870	400,8
2,20	3,0	353,2	11,05	796 x 100 x 110	11,8	800 x 500 x 870	460,8
3,0	4,0	408,2	13,55	796 x 100 x 110	14,3	800 x 500 x 870	560,8



### 4" 3-Phase NextGen Motors Part Description



Pos.	Part Description	Qty.	Part No.
1	Nut	4	Kit C
2	Stud	4	Kit C
3	Protector, Spline	1	Kit B
4	Screw (Motor lead)	1	Kit C
5	Motor lead	1	see page 62
6	Washer	1	Kit B
7	Top Endbell, Cover	1	Kit
8	Plug	1	Kit B
9	Filter	1	Kit B
10	Valve	1	Kit
11	Shaft Seal	1	Kit B
12	Top Endbell	1	Kit
13	O- Ring	1	Kit B
14	Rotor	1	see page 65
15	Stator	1	see page 65
16	Washer	1	Kit A
17	Thrust disk assy	1	Kit A
18	O- Ring	1	Kit B
19	Bottom Endbell	1	A1
20	Bearing cage	1	Kit A
21	Segments	3	Kit A
22	Rocking Disk	1	Kit A
23	Diaphragm	1	Kit B
24	Bottom Endbell Cover 304SS	1	156 414 201
	Bottom Endbell Cover 316SS		156 414 301
25	Screw, Cover	3	Kit C





### 4" 3- Phase Spare Parts 304SS/316SS

$P_N$ [kW]	0,37- 3,0 kW		
Kit A1	End bell, upper 304SS (Pos. 7 - 13)	incl. Pos.: 7 - 13	308 462 901
	End bell, upper 316SS (Pos. 7 - 13)		308 462 951
Kit A2	Endbell lower incl. Thrust Bearing Kit 4000N	incl. Pos.: 16 - 22	308 464 911
Kit B	Seal Kit 304SS	incl. Pos.: 3, 6, 8, 9, 11, 13, 18, 23	308 650 201
	Seal Kit 316SS		308 650 251
Kit C	Fastener Kit 304SS	incl. Pos.: 1, 2, 4, 25	308 656 201
	Fastener Kit 316SS		308 656 251

### Replacement 304SS Motors Stator and Rotor 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Nb.	Stator Nb.	Rotor
0,37	220, 230	234 751 6700 / L	305 491 751	178 164 901K
	380, 400, 415	234 761 6700 / L	305 491 761	
	500	234 791 6700 / L	305 491 771	
0,55	220, 230	234 752 6700 / L	305 491 752	178 164 902K
	380, 400, 415	234 762 6700 / L	305 491 762	
	500	234 792 6700 / L	305 491 772	
0,75	220, 230	234 753 6700 / L	305 491 753	178 164 903K
	380, 400, 415	234 763 6700 / L	305 491 763	
	500	234 793 6700 / L	305 491 773	
1,10	220, 230	234 754 6700 / L	305 491 754	178 164 905K
	380, 400, 415	234 724 6700 / L	305 491 764	
	500	234 794 6700 / L	305 491 774	
1,50	220, 230	234 755 6700 / L	305 491 755	178 164 907K
	380, 400, 415	234 725 6700 / L	305 491 765	
	500	234 795 6700 / L	305 491 775	
2,20	220, 230	234 756 6700 / L	305 491 756	178 164 908K
	380, 400, 415	234 726 6700 / L	305 491 766	
	500	234 796 6700 / L	305 491 776	
3,00	220, 230	234 766 6700 / L	305 491 757	178 164 910K
	380, 400, 415	234 764 6700 / L	305 491 767	
	500	234 768 6700 / L	305 491 777	

### Replacement 316SS Motors Stator and Rotor 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Nb.	Stator Nb.	Rotor
0,37	220, 230	234 751 6800 / L	305 491 751	178 164 951K
	380, 400, 415	234 761 6800 / L	305 491 761	
	500	234 791 6800 / L	305 491 771	
0,55	220, 230	234 752 6800 / L	305 491 752	178 164 952K
	380, 400, 415	234 762 6800 / L	305 491 762	
	500	234 792 6800 / L	305 491 772	
0,75	220, 230	234 753 6800 / L	305 491 753	178 164 953K
	380, 400, 415	234 763 6800 / L	305 491 763	
	500	234 793 6800 / L	305 491 773	
1,10	220, 230	234 754 6800 / L	305 491 754	178 164 955K
	380, 400, 415	234 724 6800 / L	305 491 764	
	500	234 794 6800 / L	305 491 774	
1,50	220, 230	234 755 6800 / L	305 491 755	178 164 957K
	380, 400, 415	234 725 6800 / L	305 491 765	
	500	234 795 6800 / L	305 491 775	
2,20	220, 230	234 756 6800 / L	305 491 756	178 164 958K
	380, 400, 415	234 726 6800 / L	305 491 766	
	500	234 796 6800 / L	305 491 776	
3,00	220, 230	234 766 6800 / L	305 491 757	178 164 960K
	380, 400, 415	234 764 6800 / L	305 491 767	
	500	234 768 6800 / L	305 491 777	



# 4" Coal Bed Methane Submersible Motors

## Submersible Motors

### Quality in the Well

Franklin Electric 4" Submersible Coalbed Methan Encapsulated Motors, manufactured in ISO 9001 certified facilities.

This coalbed methane motors are built for superior dependability in 4" diameter or larger coalbed methane wells.

A special diaphragm ensures pressure compensation inside the motor.

### Basic Features

- Anti-track self-healing resin system
- Hermetically-sealed windings
- Water lubricated bearings
- Kingsbury-type thrust bearing rated for 6500N downthrust
- Pressure equalizing diaphragm
- Removable Water-Bloc™ lead
- NEMA pump mounting dimensions

### Coalbed Methane Motor Features:

- Exclusive Sand Fighter™ sealing system
- Reinforced diaphragm housing resists damage from bottom tagging
- Protective filter shields diaphragm from debris

### Option:

- Motor Cable in special lengths available on request

### Technical specification:

- 3,7kW up to 9,3kW
- 4" NEMA flange
- Voltage rating: 380-415V/50Hz; 380V/60Hz
- Thrust capacity: 6500N
- Rotation: electrically reversible
- Degree of protection: IP 68
- Insulation: Cl. B
- Voltage tolerance: -10% / + 6% of nominal U
- max. Rated Ambient temp.: 50°C
- Cooling flow: min. 8 cm/s
- Starts / h: 20 max.
- Mounting: vertical/horizontal
- Motor protection: 3- phase - Select thermal overloads according to EN 60947-4-1





## 3-Phase Standard Model Numbers 50 Hz

$P_N$ [kW]	$U_N$ [V]	Digit 1 - 6	Digit 7-10
			CBM+*
3,7	380 - 415	234 727	3525L
4,0	380 - 415	234 765	3525L
5,5	380 - 415	234 728	3525L
7,5	380 - 415	234 729	3525L
9,3	380 - 415	234 788	3525L

\* CBM+ means reinforced construction (full stainless upper end bell, stator end rings, thrust and diaphragm hsg, viton elastomers), with PUR round motor short leads attached

## 3-Phase Standard Performance Data 50 Hz

$P_N$ [kW]	Thrust F [N]	$U_N$ [V]	$n_N$ [min <sup>-1</sup> ]	$I_N$ [A]	$I_A$ [A]	$\eta$ (Eff.) [%] at % load			$\cos \phi$ (Pf.) at % load			$T_N$ [Nm]	$T_A$ [Nm]
						50	75	100	50	75	100		
						3,7	6500N	380	2810	9,1	43,0		
400	2830	9,2	45,3	68,3	73,1			74,3	0,57	0,71	0,80	12,5	35,8
415	2845	9,4	47,0	65,9	71,9			74,4	0,52	0,66	0,75	12,4	38,5
4,0	6500N	380	2820	9,7	54,1	75	78	78	0,60	0,74	0,82	13,5	39,7
		400	2840	9,9	57,0	72	77	78	0,52	0,67	0,77	13,4	44,0
		415	2855	10,4	59,1	69	75	77	0,47	0,61	0,72	13,4	47,4
5,5	6500N	380	2845	12,6	73,3	77	80	79	0,66	0,79	0,85	18,5	51,0
		400	2865	12,6	77,2	75	79	79	0,59	0,73	0,81	18,3	56,5
		415	2875	12,8	80,1	73	77	79	0,54	0,68	0,77	18,2	60,9
7,5	6500N	380	2830	17,2	94,3	78	80	79	0,66	0,79	0,86	25,3	65,9
		400	2855	17,1	99,3	75	79	79	0,58	0,72	0,81	25,1	73,1
		415	2865	17,6	103,0	73	78	79	0,52	0,67	0,77	25,0	78,6
9,3	6500N	380	2825	21,2	108,0	77	80	79	0,65	0,78	0,86	31,4	73,8
		400	2850	21,4	113,0	75	79	79	0,56	0,71	0,81	31,1	81,8
		415	2860	22,1	118,0	72	77	78	0,47	0,58	0,76	31,0	88,0

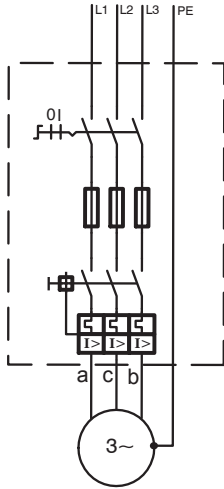
## Winding Resistance 50Hz

$P_N$ [kW]	$U_N$ [V]	Stator Ref.	U - V / Ohm
3,7	380 - 400 - 415	326 717 902	3,7 - 4,5
4,0	380 - 400 - 415	326 718 902	3,3 - 4,0
5,5	380 - 400 - 415	326 719 902	2,6 - 3,2
7,5	380 - 400 - 415	326 720 902	1,9 - 2,3
9,3	380 - 400 - 415	326 995 920	1,5 - 1,7



### 4" Motor Leads and Connection

#### Electrical Connection

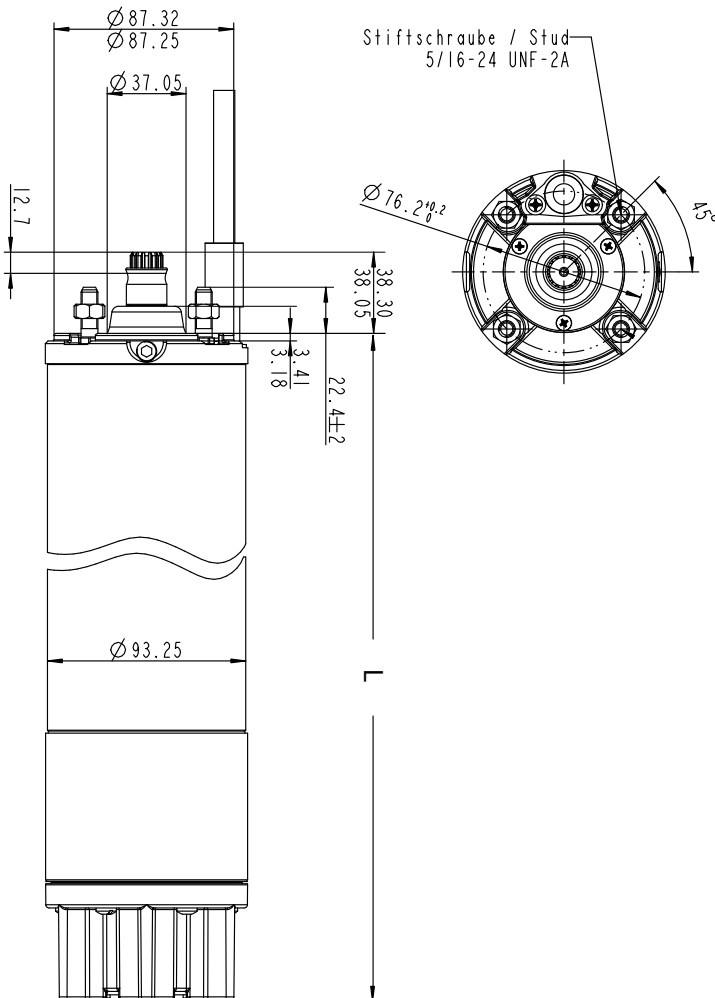


a	b	c	PE
black	brown	grey	yellow/green

#### Lead Drawing

$\emptyset$ [mm <sup>2</sup> ]	D $\emptyset$ [mm]
4X1,5	10
L [m]	Part Numbers
	Standard
2,5	310 386 502K

### 4" CBM Motor Outlines



#### 4" CBM Motors Lengths & Weights

P <sub>N</sub> [kW]	L [mm]	M [kg]	Motor with Lead in single pack	
			[mm]	[kg]
3,7	562,3	20,6	796 x 100 x 110	22
4,0	585,3	21,5	796 x 100 x 110	22,8
5,5	687,1	28,9	796 x 100 x 110	30,2
7,5	765,1	32,1	796 x 100 x 110	33,4
9,3	855,1	37,9	904 x 100 x 110	41,3

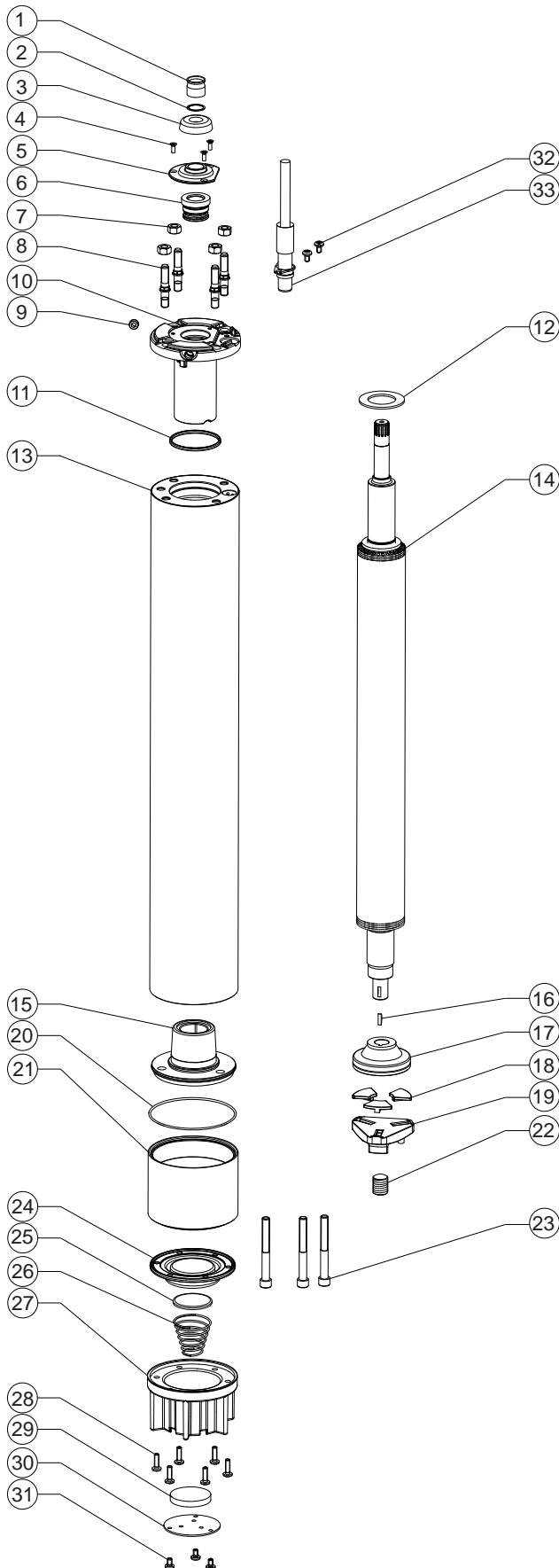
#### Material DIN / AISI

Part	
Shell	1.4301
Upper end bell	1.4401
Lower end bell	Cast iron
Thrust housing	1.4401
Mechanical seal	SiC / SiC
Seal cover	1.4401
Slinger	Viton
Shaft end	17-4 SS
Diaphragm	Viton
Diaphragm housing	1.4401
Lead	PUR
Other seals	BUNA N

Tolerances according to NEMA MG 1-18.388



### 4" CBM Motor Spare Parts



Pos.	Part Description	Qty.	Part No.
1	Spline Protector	1	Kit B
2	Washer	1	275 542 102
3	Slinger	1	Kit B
4	Screw, Seal cover	3	Kit C
5	Seal cover	1	156 275 102
6	Mechanical seal	1	Kit B
7	Nut	4	Kit C
8	Stud	4	Kit C
9	Pug screw	1	282 230 101
10	End bell, upper	1	177 553 901
11	O-Ring	1	Kit B
12	Upthrust washer	1	308 317 901
13	Stator	1	see page 70
14	Rotor	1	see page 70
15	End bell, lower	1	177 379 901
16	Woodruff key	1	275 250 104
17	Thrust disc	1	Kit A
18	Segment set	3	Kit A
19	Leveling disc	1	155 660 101
20	O- Ring	1	Kit B
21	Thrust housing	1	177 559 901
22	Screw, adj.	1	151 048 102
23	Screw	3	Kit C
24	Diaphragm	1	Kit B
25	Cup spring, Diaphragm	1	151 448 201
26	Spring	1	156 506 101
27	Housing, Diaphragm	1	177 965 101
28	Screw	6	Kit C
29	Filter	1	156 276 101
30	Cover, Diaphragm	1	156 278 101
31	Screw	3	Kit C
32	Screw	2	Kit C
33	Motor short lead 2,5m	1	see page 68



### 4" CBM Motor Spare Part Kits

$P_N$ [kW]	Thrust Bearings	End bell upper (Pos. 10)	End bell, lower (Pos. 15)	Upthrust washer (Pos. 12)
3,7	<b>6500 N / KIT A</b>	177 553 901	177 379 901	308 317 901
4,0				
5,5				
7,5				
9,3				
<b>Kit A 6500N</b>	Thrust bearing		inkl. Pos.: 17, 18	308 700 301
<b>Kit B</b>	Seals		inkl. Pos.: 1; 3; 6; 11; 20; 24	308 900 502
<b>Kit C</b>	Screws		inkl. Pos.: 4; 7; 8; 23; 28; 31; 32	308 658 501

### Replacement Stator and Rotor 50 Hz

$P_N$ [kW]	$U_N$ [V]	Motor Model No.	Stator Model No.	Rotor
3,7	380 - 415	234 727	326 717 919	178 137 915
4,0	380 - 415	234 765	326 718 919	178 138 915
5,5	380 - 415	234 728	326 719 919	178 133 915
7,5	380 - 415	234 729	326 720 919	178 134 915
9,3	380 - 415	234 788	326 995 920	178 139 915



Franklin Electric



# FHOTON SOLARPAK

## ALL-IN-ONE-PACKAGE

The Photon SolarPAK is the system solution to your solar pumping requirements. By utilizing quality components, innovative thinking based on global market inputs, and a technical expertise in groundwater pumping, Franklin Electric has developed a rugged, high-output system which tackles the challenges of harsh and remote environments. No other system delivers the features, benefits, and reliability of Photon SolarPAK in just one package!

## Features

- High-flow system for faster tank-fill and significant water output
- Proven motor and pump technology for long-term reliability
- Robust IP66, NEMA 4 enclosure minimizes impact from wildlife, insects, dust, and weather
- DC solar array
- Operating status indicated by multi-color LED
- Terminals provided for an optional data communications board
- Max Power Point Tracking (MPPT) for maximizing efficiency of input power
- Soft-start feature prevents water hammer and increases system life
- Allows use of new solar array or retrofit to existing array (subject to size and performance check)
- Simple installation with no required maintenance
- Built-in diagnostics and protection
- C-Tick, cULus, CE, and UL approved



## SOLARPAK CONTENTS

- Franklin Electric 4" submersible motor
- Franklin Electric 4" submersible pump
- Photon Solar controller
- Flow switch with 10 m cable
- Variety of flow rates available: 18, 25, 30, 45, 70, 100, 150, or 270 lpm
- Motor and drive ratings available: 0.55 or 1.1 kW



## FHoton SolarPAK- Ordering Information

SolarPAK		FHoton Solar Controller		Solar Pump (BSPP)				Motor		Flow Switch (BSPP)	
SolarPAK Model	Order No.	Drive Model	Part No.	LPM	Stages	Solar Pump	Part No.	kW	Part No.	Model	Part No.
18FDSP-0.55kW	90030514	FD Solar 0.55KW N4	581013000864-SP075HP	18	18	18SL07S4-PEXB	90020504	0,55	2349029204S	C25	226014101
18FDSP-1.1kW	90030524	FD Solar 1.1 kW N4	581014200864-SP150HP	18	30	18SL1S4-PEXB	90020508	1,1	2345049203S	C25	226014101
25FDSP-0.55kW	90030714	FD Solar 0.55KW N4	581013000864-SP075HP	25	13	25SL07S4-PEXB	90020704	0,55	2349029204S	C25	226014101
30FDSP-0.55kW	90031014	FD Solar 0.55KW N4	581013000864-SP075HP	30	8	30SL07S4-PEXB	90021004	0,55	2349029204S	C25	226014101
30FDSP-1.1kW	90031024	FD Solar 1.1 kW N4	581014200864-SP150HP	30	18	30SL15S4-PEXB	90021011	1,1	2345049203S	C25	226014101
45FDSP-0.55kW	90031514	FD Solar 0.55KW N4	581013000864-SP075HP	45	6	45SL07S4-PEXB	90021504	0,55	2349029204S	C25	226014101
45FDSP-1.1kW	90031524	FD Solar 1.1 kW N4	581014200864-SP150HP	45	15	45SL15S4-PEXB	90021511	1,1	2345049203S	C25	226014101
70FDSP-1.1kW	90032524	FD Solar 1.1 kW N4	581014200864-SP150HP	70	10	70SL15S4-PEXB	90022511	1,1	2345049203S	F21	226019101
100FDSP-1.1kW	90033524(a)	FD Solar 1.1 kW N4	581014200864-SP150HP	100	10	100SL15S4-PEXB	90023511	1,1	2345049203S	F21	226019101
150FDSP-1.1 kW	90034524(a)	FD Solar 1.1 kW N4	581014200864-SP150HP	150	7	150SL15S4-PEXB	90024511	1,1	2345049203S	F21	226019101
270FDSP-1.1 kW	90039024(a)	FD Solar 1.1 kW N4	581014200864-SP150HP	270	5	270SL15S4-PEXB	90029011	1,1	2345049203S	F21	226019101

\* a ~ 10 meter cable for use with the flow switch is included in the controller packaging

\*\* 316 stainless steel motors available on request

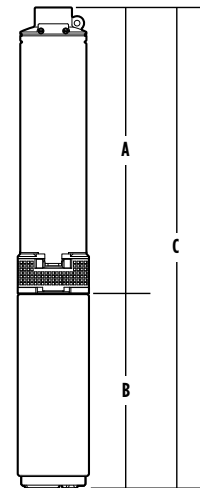
\*\*\* Motors shown above include an individual conductor lead installed in the motor. For replacement motors without a lead, use part number 2345041903S (1.1 kW)

(a) High capacity pumps, 100 lpm and higher, in a SolarPAK are not supplied with an internal check valve.

## FHoton SolarPAK- Dimension

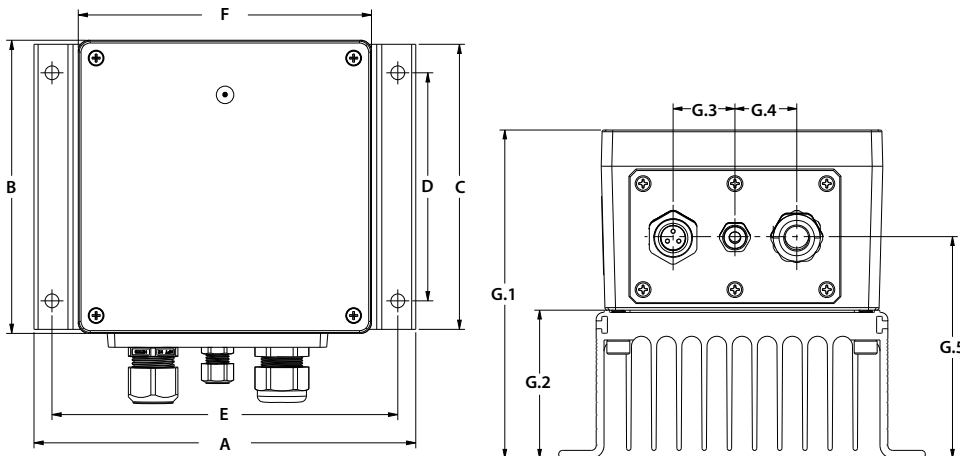
### Solar Motor/Pump (PMA) Dimensions

LPM	kW	Stages	A [mm]	B [mm]	C [mm]	Discharge [inch]	PE Weight [Kg]	PMA Weight [Kg]
18	0,55	18	574	270	844	1 1/4	5	15
25	0,55	13	467	270	737	1 1/4	5	15
30	0,55	8	373	270	643	1 1/4	4	13
45	0,55	6	329	270	599	1 1/4	3	13
18	1,1	30	866	298	1164	1 1/4	9	22
30	1,1	18	642	298	940	1 1/4	7	20
45	1,1	15	521	298	819	1 1/4	7	20
70	1,1	10	488	298	786	1 1/4	5	18
150	1,1	7	593	298	891	2	7	20
270	1,1	5	575	298	873	2	7	20



### Solar Controller Dimensions

Dimensions	A	B	C	D	E	F	G.1	G.2
[mm]	259	464	534	508	152	76	221	265







## Drive Application

The Photon drive supports submersible and surface pumping applications

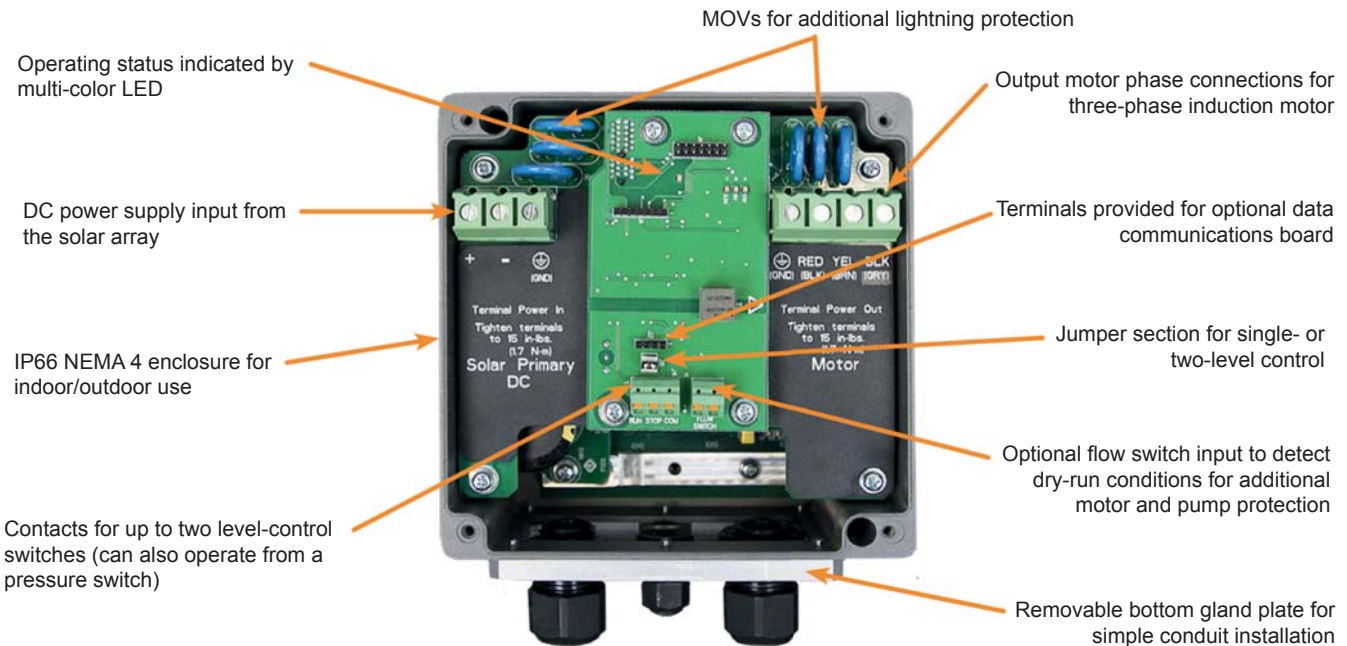
- Outside temperature: -25°C...+50°C, up to 100% humidity
- Housing protection IP 66 (NEMA 4)
- Livestock watering
- Tank/cistern filling
- Wildlife refuge and game farms
- Rural water supply for villages and homesteads
- Irrigation systems
- Fountains
- Vineyards
- Renewable energy projects
- Effluent pumping



## Built-in Diagnostics & Protection

The Photon SolarPAK includes diagnostic features and built-in protection from potential harmful conditions, including:

- Surge
- Underload
- Undervoltage
- Locked pump
- Open circuit
- Short circuit
- Overheated controller
- Dry run
- Reverse polarity



## FHoton Drive Model Numbers

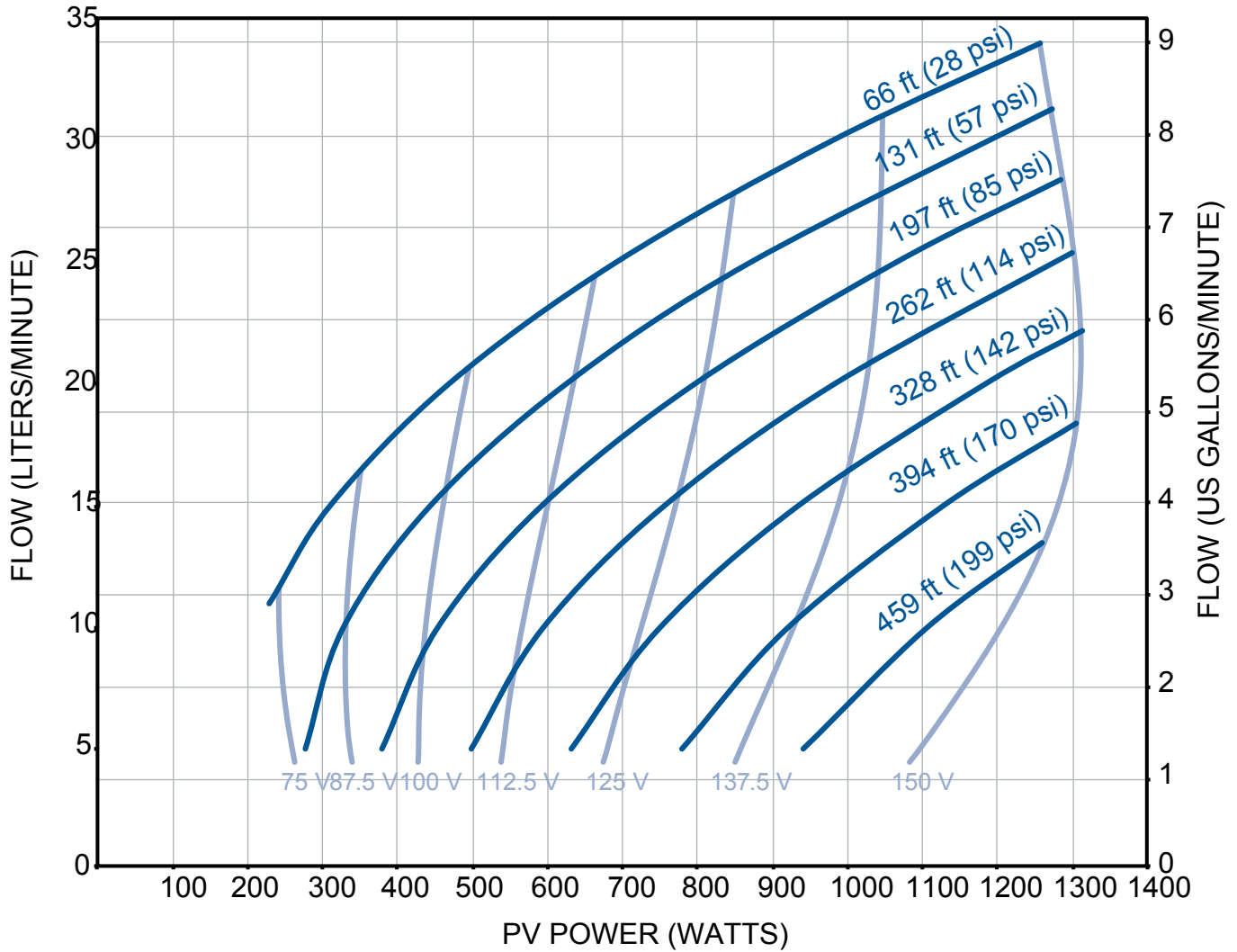
Drive Range [kW]	Tech. Data	Drive Model Number	Drive Design	Outline Size [inch / mm]
0,55	$V_{IN}$ (DC max.): 30...210 Voc $I_{IN}$ (DC max.): 8,7 A $P_{MPP}$ : 1,4 kWp $f_{OUT}$ : 30...60Hz	581 01 210 086 4		6" x 6" x 7.5" 152,5x152,5x190,5
1,1	$V_{IN}$ (DC max.): 50...420 Voc $I_{IN}$ (DC max.): 7 A $P_{MPP}$ : 2,0 kWp $f_{OUT}$ : 30...58Hz	581 01 420 068 4		9" x 9" x 7.5" 228,6x228,6x190,5



# FHOTON SOLARPAK - 0.55 kW PERFORMANCE

## 5FDSP-0.55 kW

Photon Solar 0.55 kW Controller, 5 US gpm 0.55 kW Pump End, 0.55 kW Motor



TDH (ft)	PV Power (Watts)											
	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Flow (USGPM)												
66		4	5	5	6	6	7	7	8	8	9	
131		2	3	4	5	6	6	7	7	8	8	
197			2	3	4	5	5	6	6	7	7	
262				1	3	3	4	5	5	6	6	7
328						2	3	4	4	5	5	6
394							2	2	3	4	4	5
459									2	3	3	

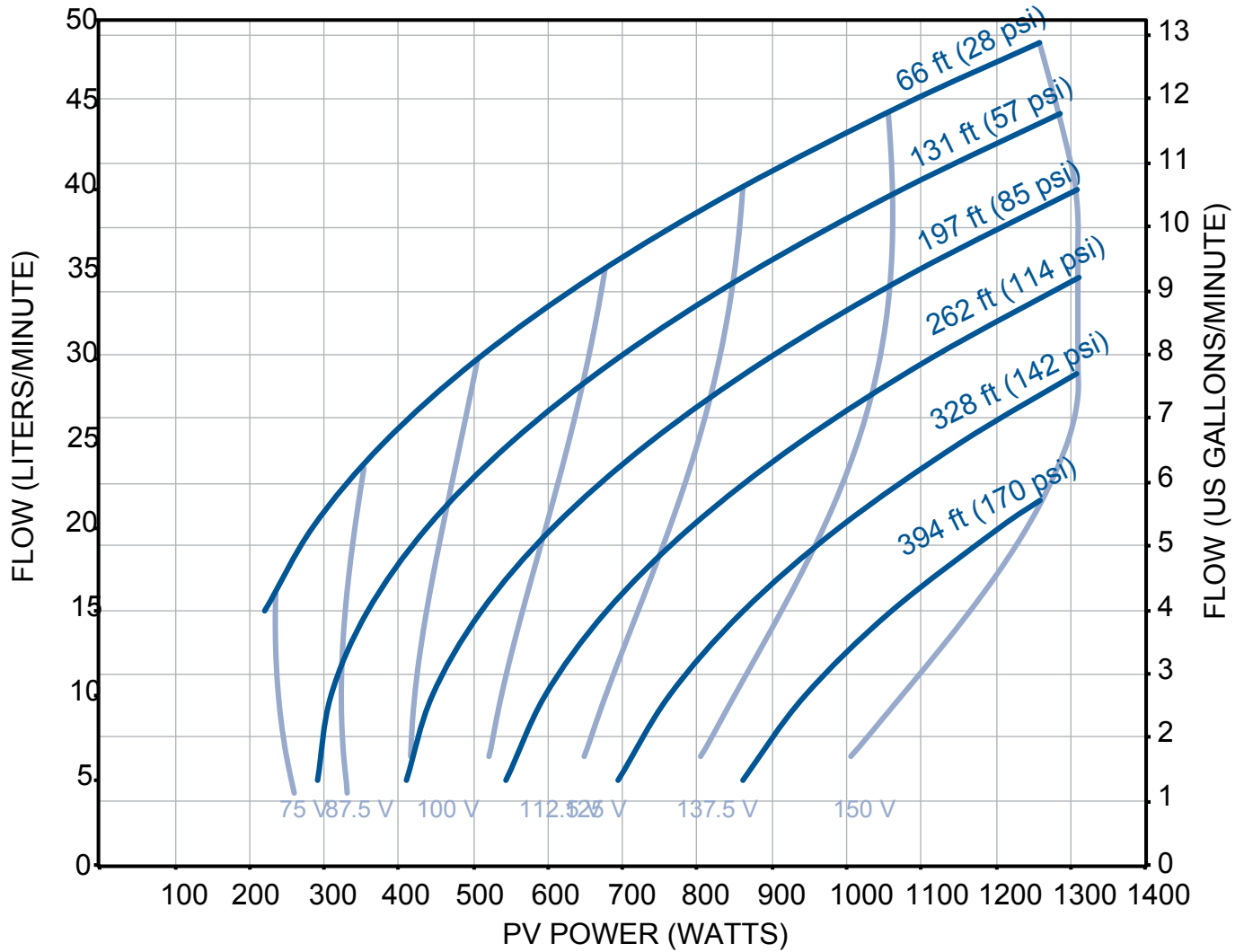
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 0.55 kW PERFORMANCE

## 7FDSP-0.55 kW

Photon Solar 0.55 kW Controller, 7 US gpm 0.55 kW Pump End, 0.55 kW Motor



TDH (ft)	PV Power (Watts)											
	200	300	400	500	600	700	800	900	1000	1100	1200	1300
	Flow (USGPM)											
66		5	7	8	9	9	10	11	11	12	12	
131		2	5	6	7	8	9	9	10	11	11	
197				4	5	6	7	8	9	9	10	10
262					3	4	5	6	7	8	8	9
328						1	3	4	5	6	7	8
394								2	3	4	5	

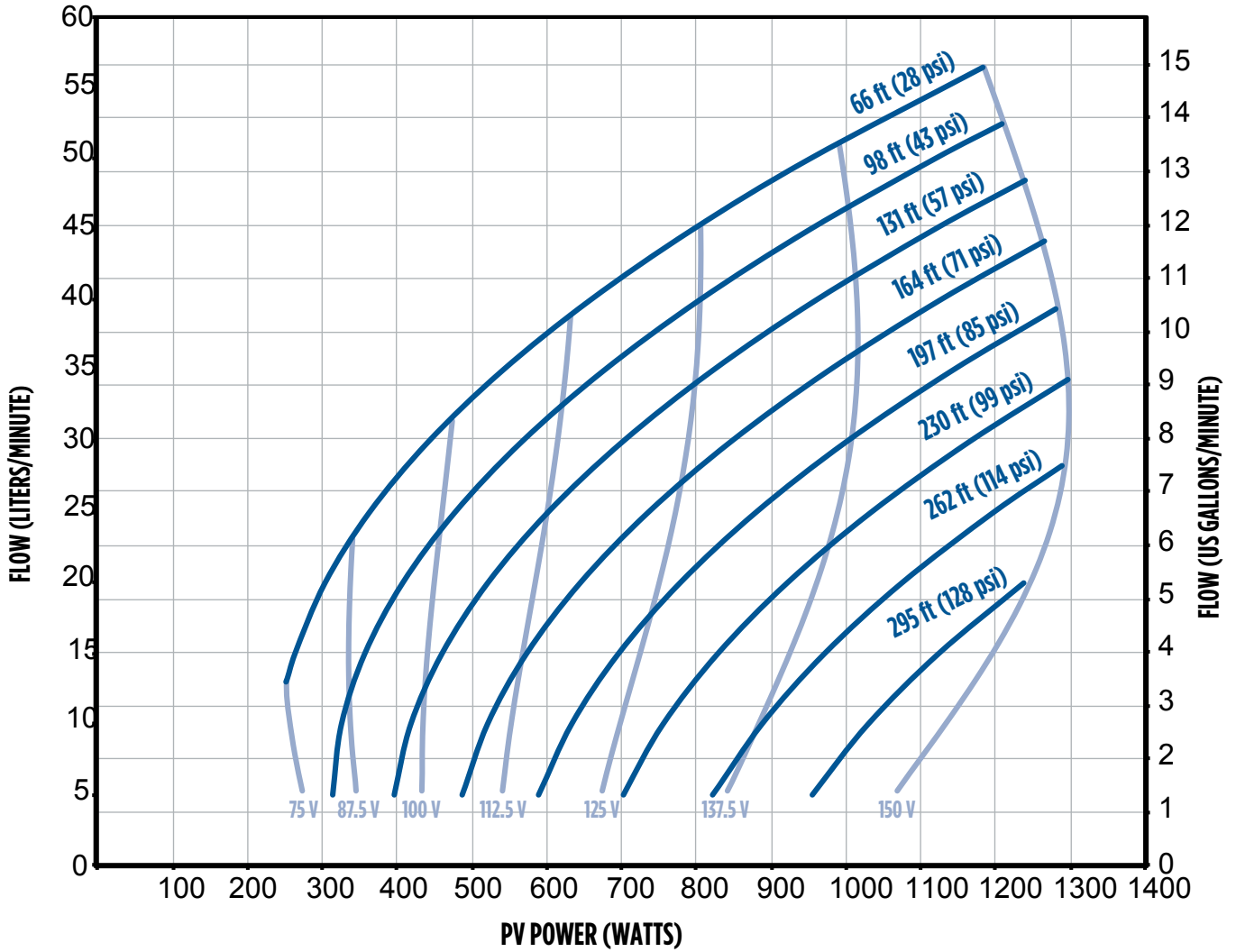
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 0.55 kW PERFORMANCE

## 10FDSP-0.55 kW

Photon Solar 0.55 kW Controller, 10 US gpm 0.55 kW Pump End, 0.55 kW Motor



TDH (ft)	PV Power (Watts)											
	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Flow (USGPM)												
66		5	7	9	10	11	12	13	13	14		
98			5	7	8	9	10	11	12	13	14	
131			2	5	6	8	9	10	11	12	12	
164				2	4	6	7	8	9	10	11	
197					2	4	5	7	8	9	10	
230							3	5	6	7	8	9
262								3	4	5	6	
295									2	3	5	

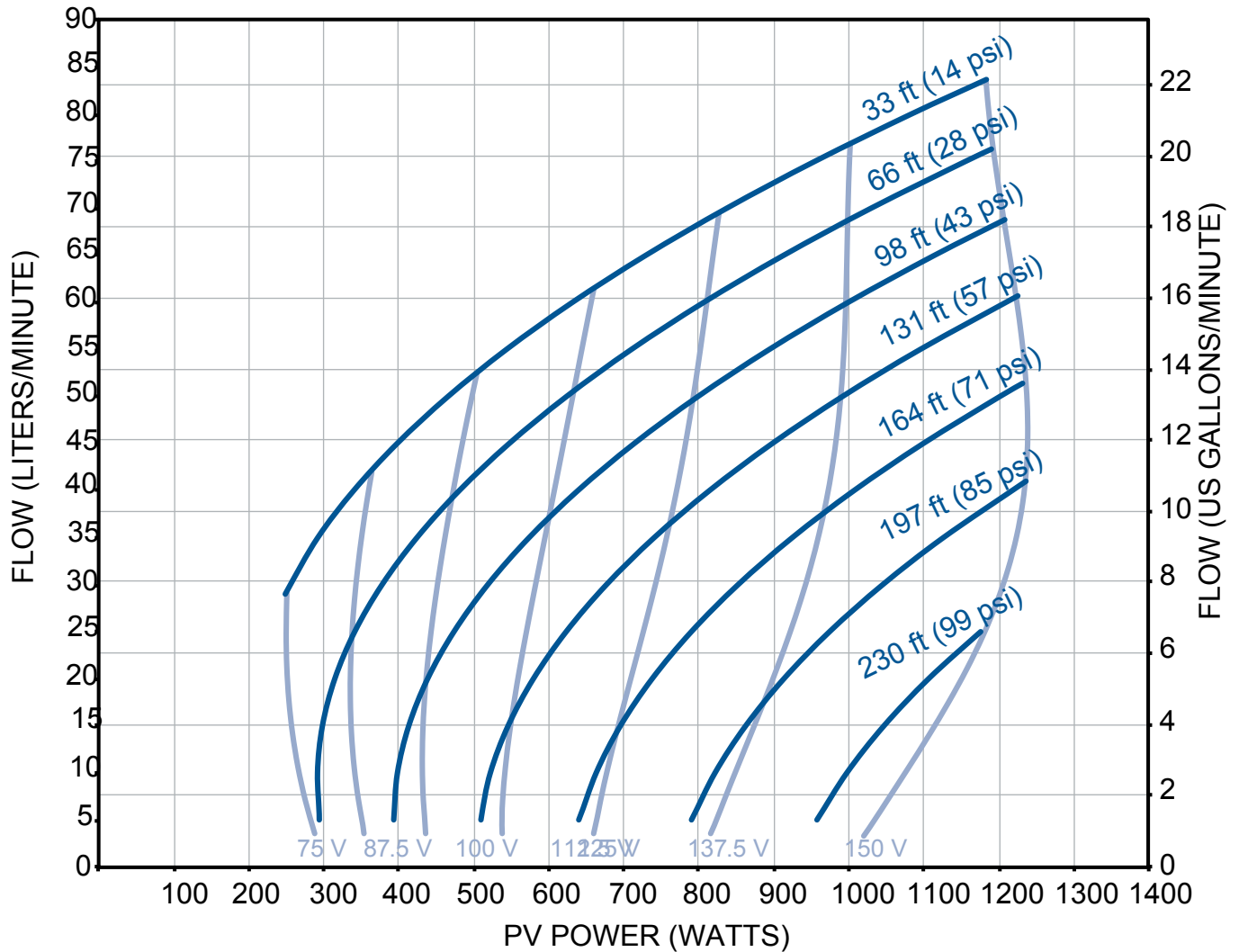
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 0.55 kW PERFORMANCE

## 15FDSP-0.55 kW

Photon Solar 0.55 kW Controller, 15 US gpm 0.55 kW Pump End, 0.55 kW Motor



TDH (ft)	PV Power (Watts)											
	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Flow (USGPM)												
33		9	12	14	15	17	18	19	20	21		
66		4	8	11	13	14	16	17	18	19		
98			3	7	10	12	13	15	16	17	18	
131				6	8	10	12	13	14	16		
164					4	7	9	10	12	13		
197						2	5	7	9	10		
230								3	5			

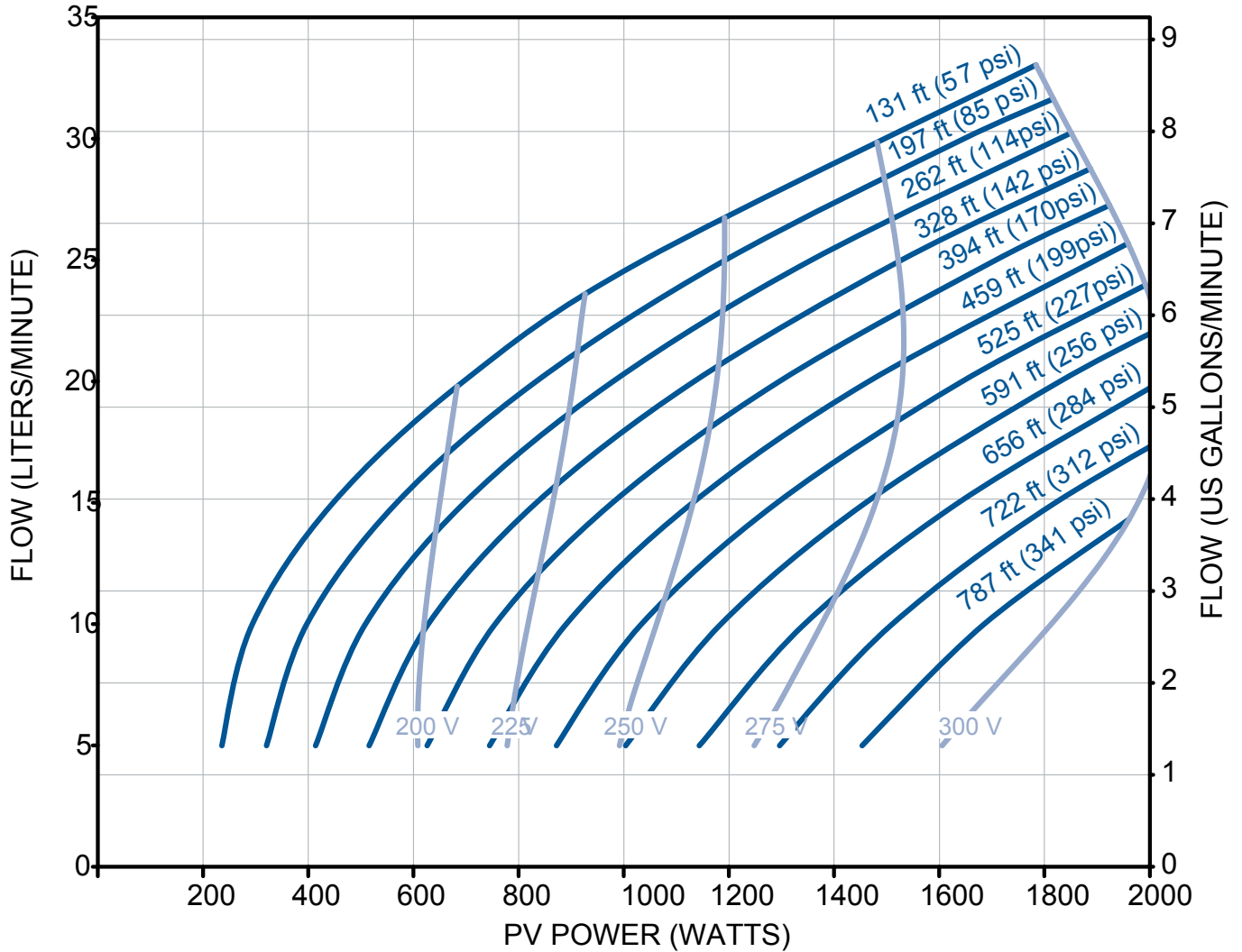
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 5FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 5 US gpm 1.1 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
	Flow (USGPM)									
131		4	5	6	6	7	8	8	9	
197		3	4	5	6	7	7	8	8	
262			3	5	5	6	7	7	8	
328			2	4	5	6	6	7	7	
394				3	4	5	6	6	7	
459				2	3	4	5	6	6	
525					2	4	4	5	6	6
591					1	3	4	4	5	6
656						2	3	4	5	5
722							2	3	4	5
787								2	3	

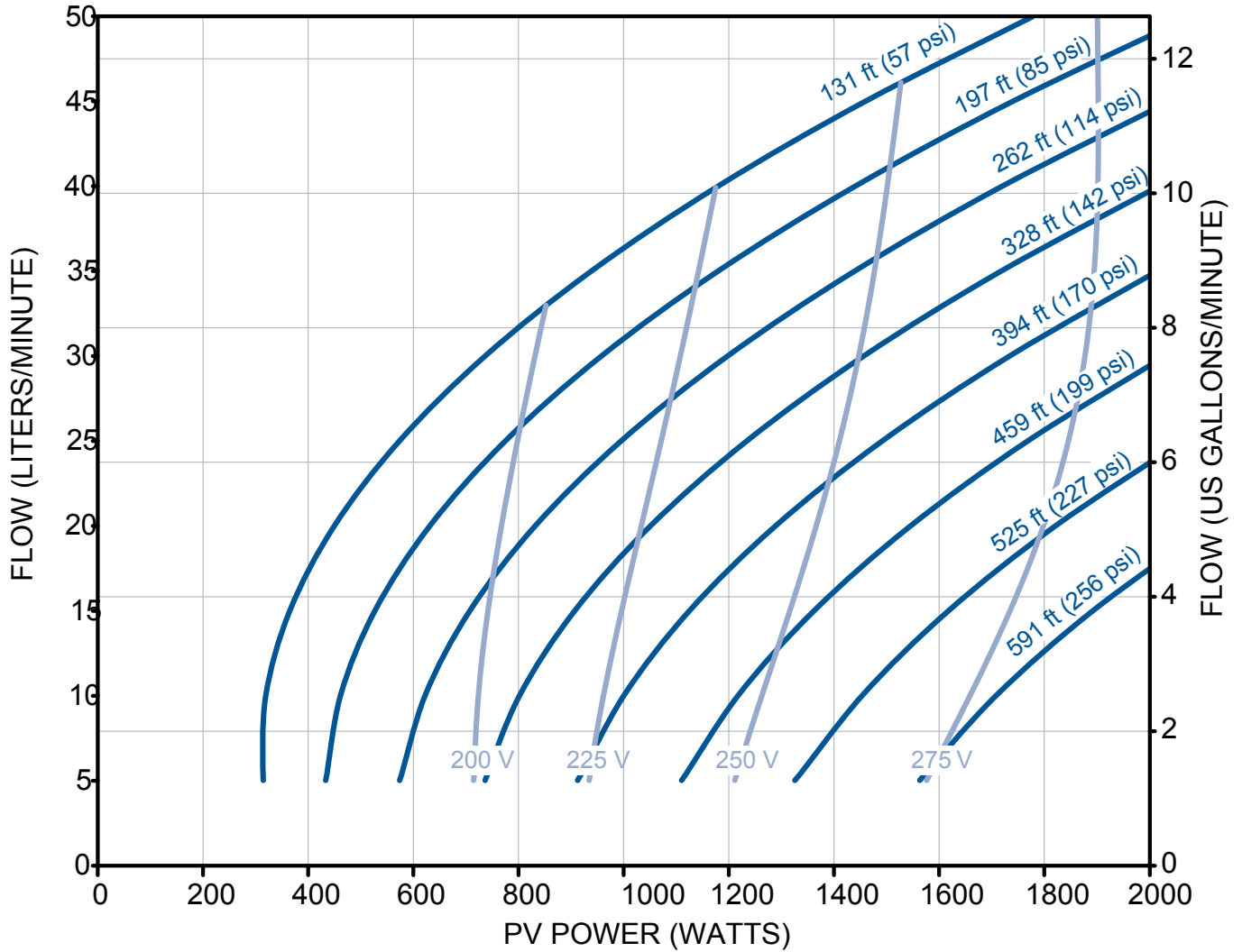
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# PHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 10FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 10 US gpm 1,5 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
	Flow (USGPM)									
131		5	7	8	10	11	12	12	13	
197			5	7	8	9	10	11	12	13
262			2	5	7	8	9	10	11	12
328				3	5	6	8	9	10	11
394					3	5	6	7	8	9
459						2	4	6	7	8
525							2	4	5	6
591								2	3	5

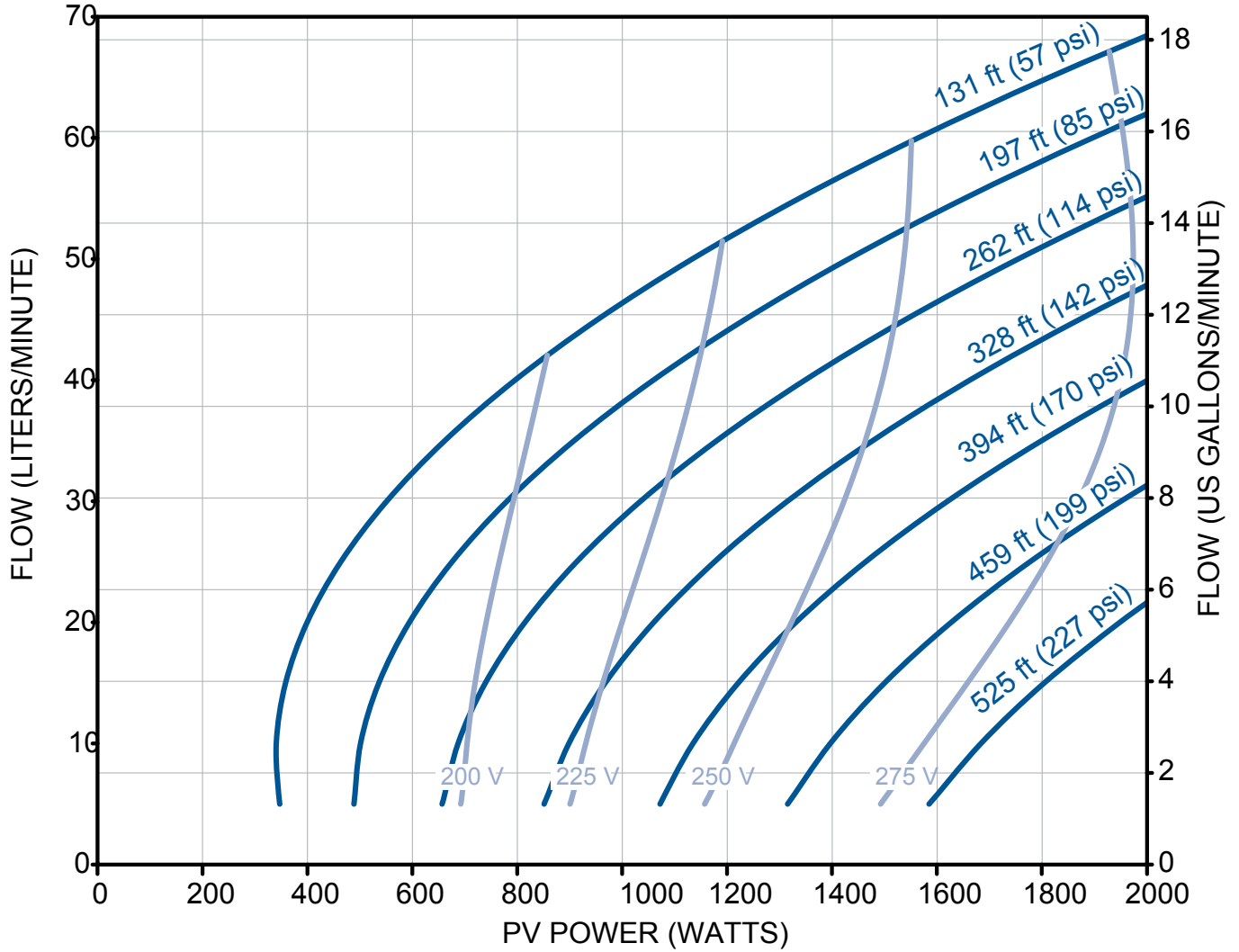
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 15FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 15 US gpm 1,5 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
	Flow (USGPM)									
131		5	8	11	12	14	15	16	17	18
197			6	8	13	12	13	14	15	16
262				5	8	10	11	12	13	15
328					4	7	9	10	11	13
394						4	6	8	9	11
459							3	5	9	8
525								2	4	6

NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges

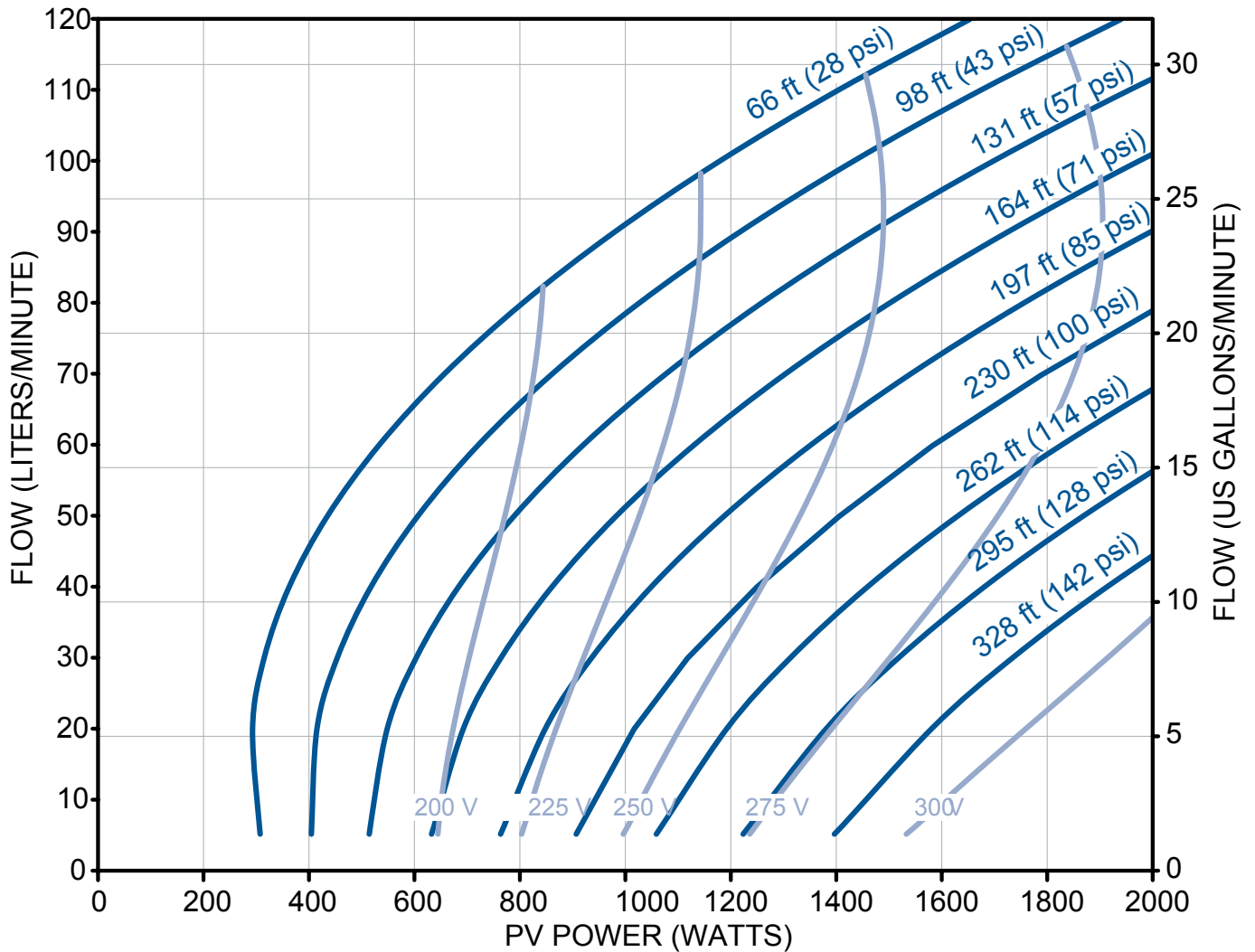




# FHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 25FDSP-1.1kW

Photon Solar 1.1 kW Controller, 25 US gpm 1,5 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
Flow (USGPM)										
66		12	17	21	24	27	29	31		
98			13	17	21	24	26	28	30	
131			8	13	17	20	23	25	27	30
164				9	14	17	20	22	25	27
197				3	10	13	17	19	22	24
230					5	10	13	16	19	21
262						6	10	13	15	18
295							6	9	12	15
328							1	6	9	12

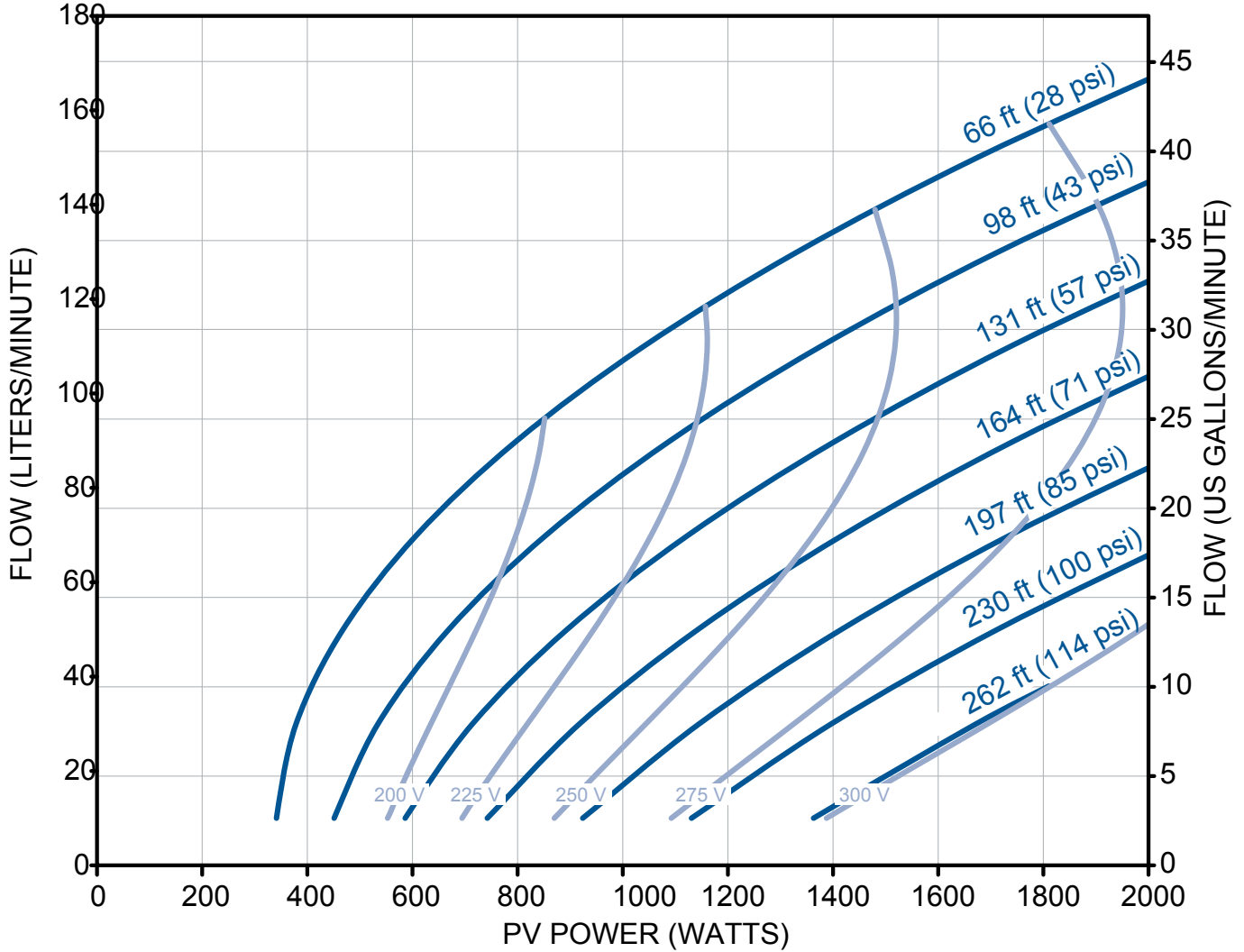
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# PHOTON SOLARPAK - 1.5 PERFORMANCE

## 35FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 35 US gpm 1,5 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
66		10	18	24	28	32	36	39	41	44
98			11	17	22	26	30	33	36	38
131			3	11	16	20	24	27	30	33
164				4	10	15	18	21	25	27
197					4	9	13	16	20	22
230						4	8	11	15	17
262							3	7	10	

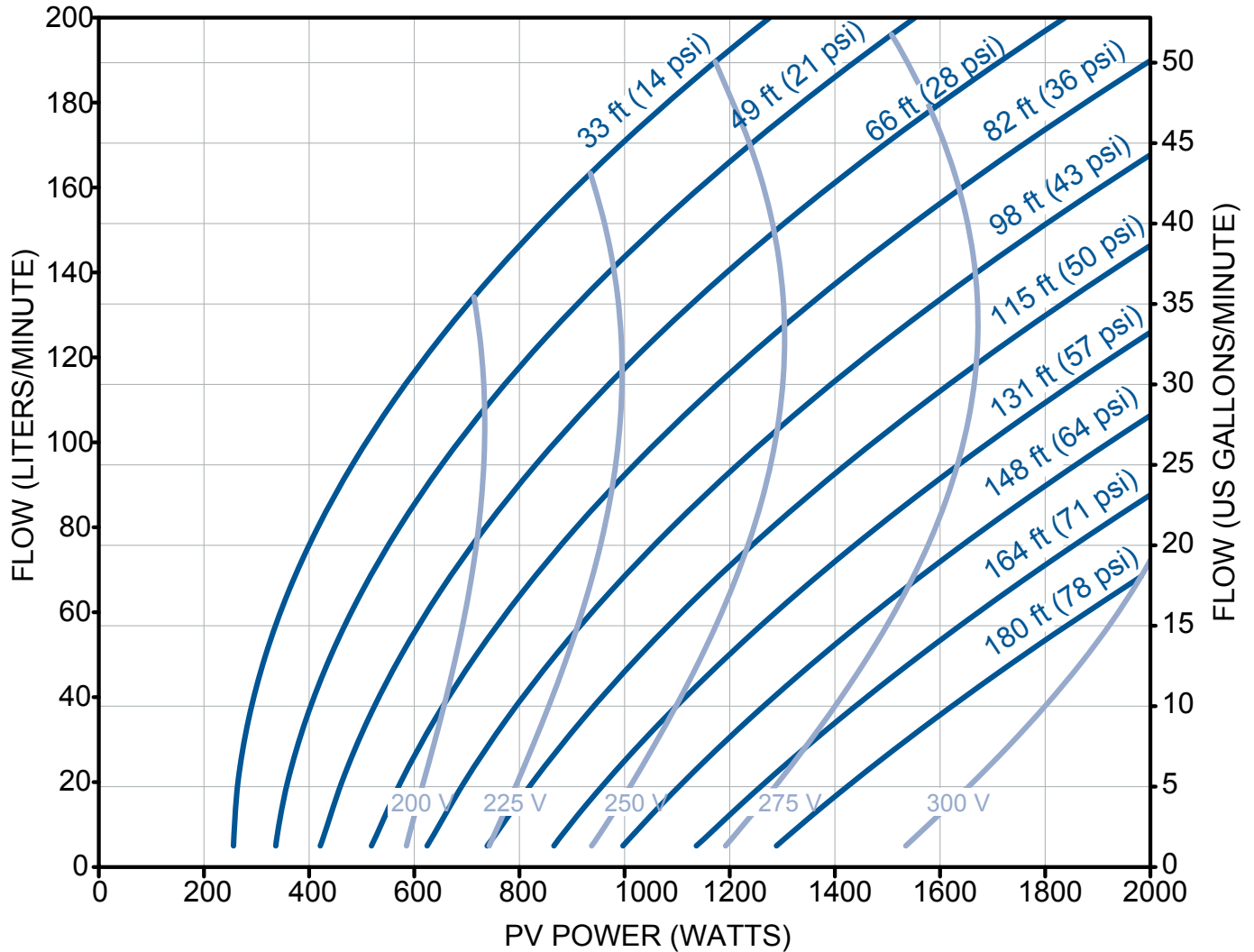
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# PHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 45FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 45 US gpm 1,5 kW Pump End, 1.1 kW Motor



TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
Flow (USGPM)										
33		20	31	39	45	51				
49		10	23	31	38	44	49			
66			15	24	31	37	43	48	52	
82			7	17	25	31	36	41	46	50
98				11	18	25	30	35	40	44
115				4	12	19	25	30	34	39
131					7	13	19	24	29	33
148						8	14	19	24	28
164						3	9	14	19	23
180							5	10	14	

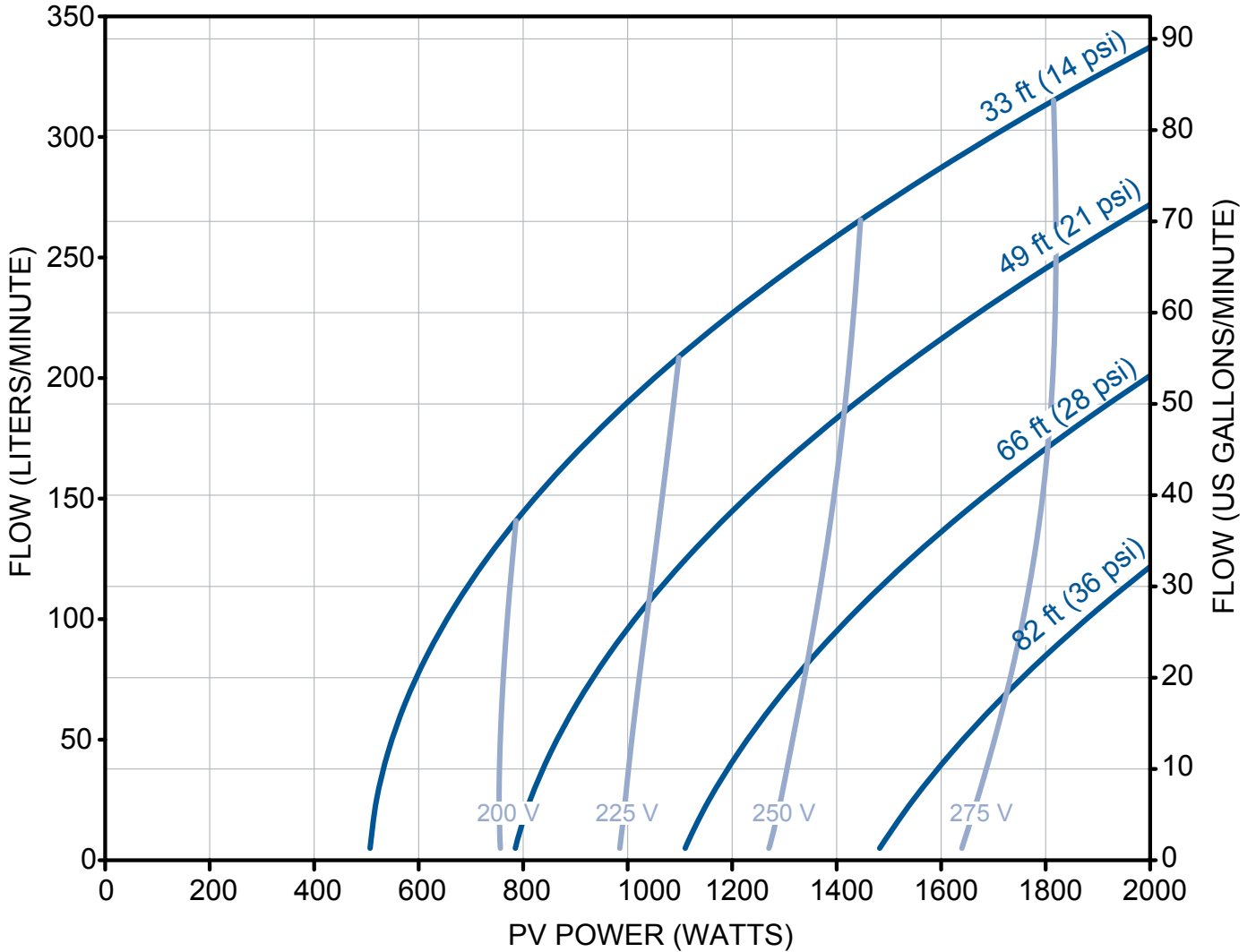
NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



# FHOTON SOLARPAK - 1.1 kW PERFORMANCE

## 90FDSP-1.1 kW

Photon Solar 1.1 kW Controller, 90 US gpm 1,5 kW Pump End, 1.1 kW Motor



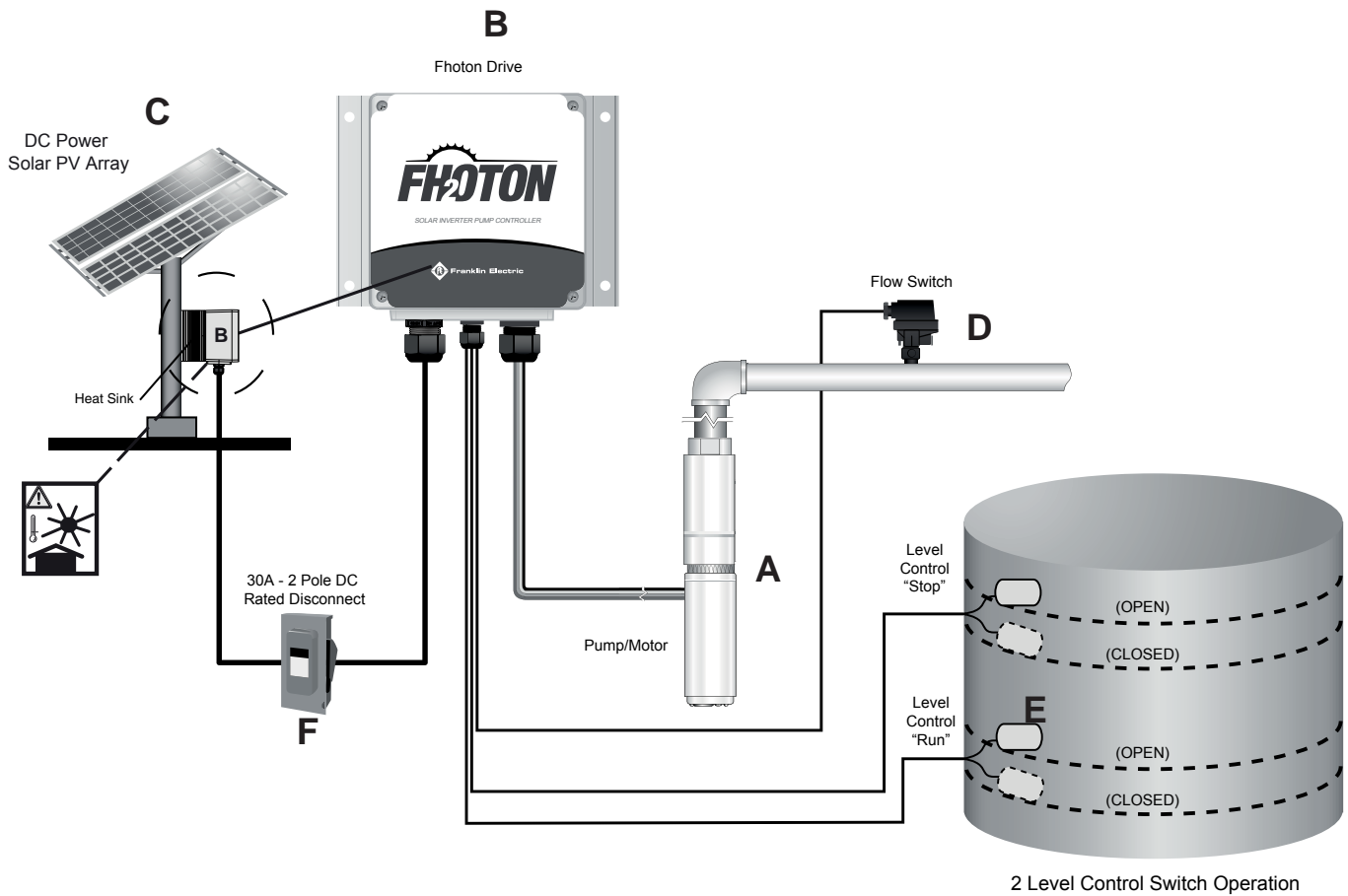
TDH (ft)	PV Power (Watts)									
	200	400	600	800	1000	1200	1400	1600	1800	2000
33			21	38	50	60	69	76	83	91
49				5	26	38	49	57	65	72
66						12	25	36	45	53
82								11	22	32

NOTE: Refer to drive specifications table in this catalog for PV source power and voltage-recommended operating ranges



## FHoton Installation

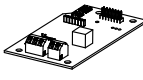
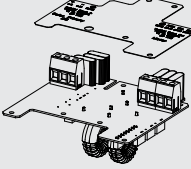
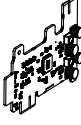
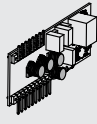
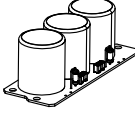
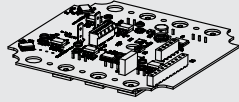

The Franklin Electric Fhoton Drive is designed to be part of a system that consists of:



- A. Standard Pump and Motor
- B. Photon Solar Drive
- C. Solar Array (not included)
- D. Flow Switch (with sensor cable)
- E. Control Switches (optional, not included)
- F. Rated DC Disconnect - Per applicable codes
  - 0 - 11A/800V DC - 308 170 313
  - 14 - 22A/800V DC - 308 170 325

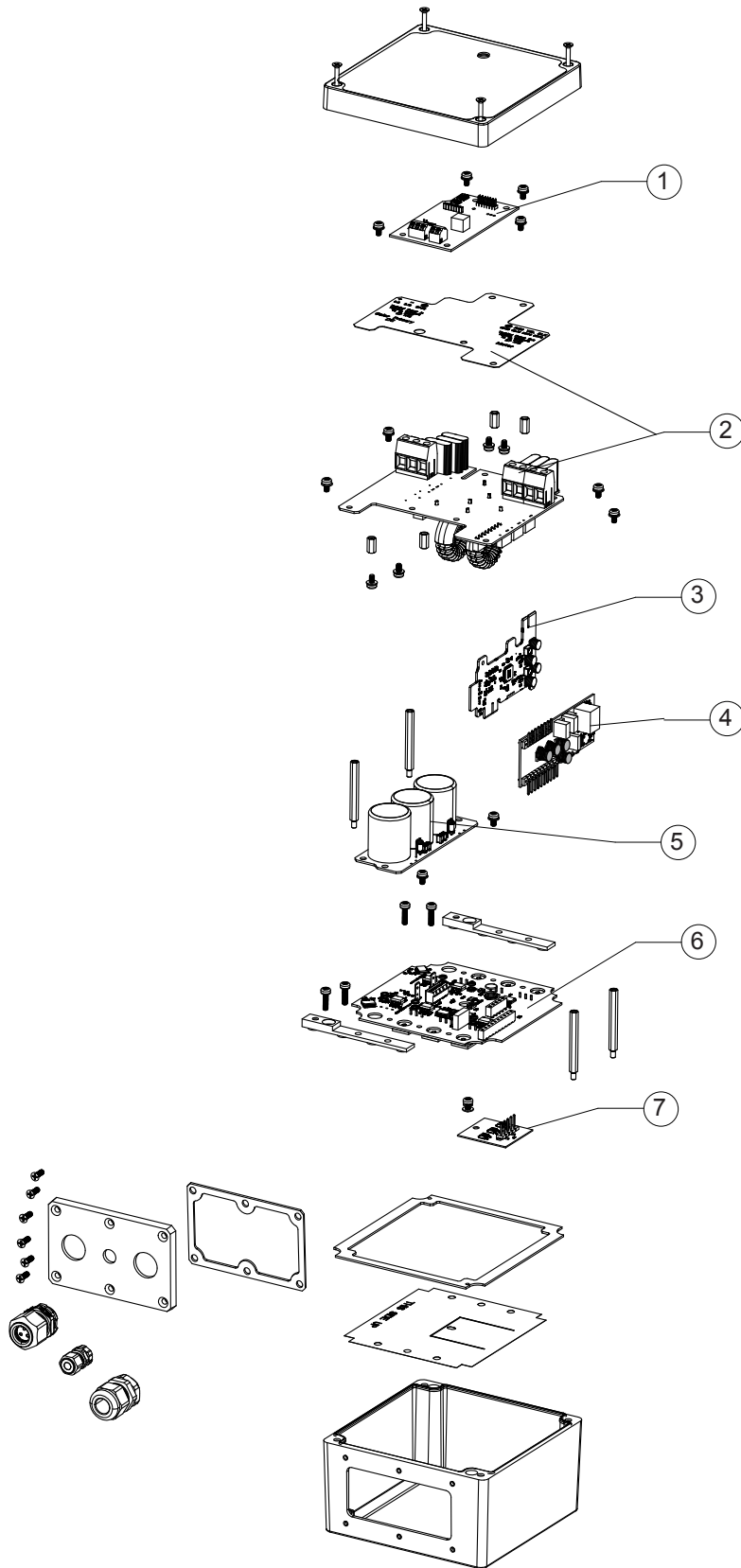


### FHoton Drive Spare Parts

No. see drawing page 207	Part Description	Layout	Qyt.	Rating [kW]	Spare Part number
1	User Interface Card		1	0,55 - 1,1	
2	Terminal Block and Filter Card		1	0,55	
				1,1	
3	Motor Control Card		1	0,55 - 1,1	
4	Power Supply Card		1	0,55	
				1,1	
5	Capacitor Board		1	0,55	
				1,1	
6	Inverter Card		1	0,55 - 1,1	
7	IMS Resistor Card		1	0,55	
				1,1	



# FHoton Spare Parts Drawing





## FHOTON SOLARPAK - DRIVE SPECIFICATIONS

### SOLAR CONTROLLER

		0.55 kW Model		1.1 kW Model	
Controller Model No.		581013000864-SP075HP		581014200864-SP150HP	
<b>Output</b>					
Max. Output Voltage		100V AC, 3-phase		200V AC, 3-phase	
Max. Amps (RMS)		8.6 A, each phase		6.8 A, each phase	
Output Frequency		30-60 Hz		30-60 Hz	
Efficiency at Max Power		98%		98%	
<b>PV Source</b>					
Input Voltage at MPP		45 - 165 VDC		**190 – 330 V DC	
Max. Amps Input		8.7 A DC, continuous		7 A DC, continuous	
Power at MPP		Up to 1400 watts		Up to 2000 watts	
<b>For Use With</b>					
Franklin Electric Motor		234902----		234504----	
Solar Pumps (NPT)	USGPM	Stages	Model No.	Stages	Model No.
	5	18	90020503	30	90020507
	7	13	90020703	30	-
	10	8	90021003	18	90021010
	15	6	90021503	15	90021510
	25	-	-	10	90022510
	35	-	-	10	90023510
	45	-	-	7	90024510
Solar Pumps (BSPP)	LPM	Stages	Model No.	Stages	Model No.
	18	18	90020504	30	90020508
	25	13	90020704	30	-
	30	8	90021004	18	90021011
	45	6	90021504	15	90021511
	70	-	-	10	90022511
	100	-	-	10	90023511
	150	-	-	7	90024511
270	-	-	5	90029011	
<b>Controller Size - L x W x D</b>					
cm		15.24 x 15.24 x 19.05		15.24 x 15.24 x 19.05	
<b>Controller Weight</b>					
kg		4.5		4.5	
<b>Operating Conditions</b>					
Temperature Range		-25 °C to 50 °C (40 °C max when using AC generator)			
Relative Humidity Range		0 to 100% Condensing			

\* Drive will attempt to start the pump/motor at 95 V DC, and attempt to continue operation down to 75 V DC.

\*\* Drive will attempt to start the pump/motor at 190 V DC, and attempt to continue operation down to 150 V DC.

Absolute maximum open circuit voltage input to the controller = 420 VOC for all controller models.





## SubStartSC® Single phase Submersible Motor Starter

The SubStartSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubStartSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

**Product features:**

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors



Ergonomically designed	
<b>Mounting</b>	Easy wall mounting without destroying the protection rating of the enclosure.
<b>Wiring</b>	Sufficient space is provided for ease of wiring.
Enclosure	
<b>Protection</b>	IP54
<b>Material</b>	PVC / Polycarbonat
Components	
<b>ON/OFF switch</b>	Illuminated integral ON/OFF switch for ease of power
<b>Circuit breaker</b>	Thermal circuit breaker for protection of the motor.
<b>Capacitor</b>	High quality motor run capacitor for long life
<b>Terminal board</b>	Terminal board suitable for ease of reliable connections
<b>Cable glands</b>	Cable glands to ensure IP54 rating

Technical Specifications:	
Mechanical	
<b>Protection level</b>	IP54
<b>External dimensions</b>	168 x 142 x 85mm
<b>Weight</b>	0,6 - 1,0 kg
<b>Mounting</b>	Wall mounting (mounting hardware provided)
<b>Temperature</b>	-5°C - +40°C
<b>Humidity</b>	50% at 55°C (without condensation)
Electrical	
<b>Voltage</b>	220 - 240V; - 6 / +10 %; 50Hz single phase
<b>Current</b>	2,2 - 16 A
<b>Power</b>	0,25 - 2,2 kW
Standards	
IEC 60439-1	

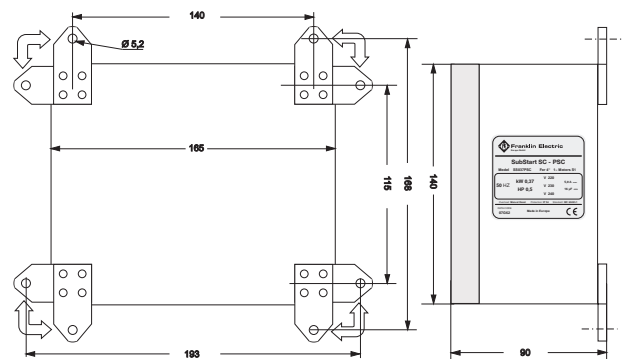
### Submersible Motor Starter Specifications

Part Number <sup>1</sup>	Type <sup>2</sup>	Motor rating [kw]	Nominal Current <sup>3</sup> [A]	Maximal expected current <sup>4</sup> [A]	Capacitor [µF] 450V ac
284 623 3510	SS025SC	0,25	2,4	9,4	12,5
284 624 3510	SS037SC	0,37	3,3	12,6	16
284 625 3510	SS055SC	0,55	4,3	17,7	20
284 626 3510	SS075SC	0,75	5,7	22,7	35
284 627 3510	SS110SC	1,10	8,4	33,9	40
284 628 3510	SS150SC	1,50	10,7	41,7	50
284 629 3510	SS220SC	2,20	14,7	61,8	70

Notes:

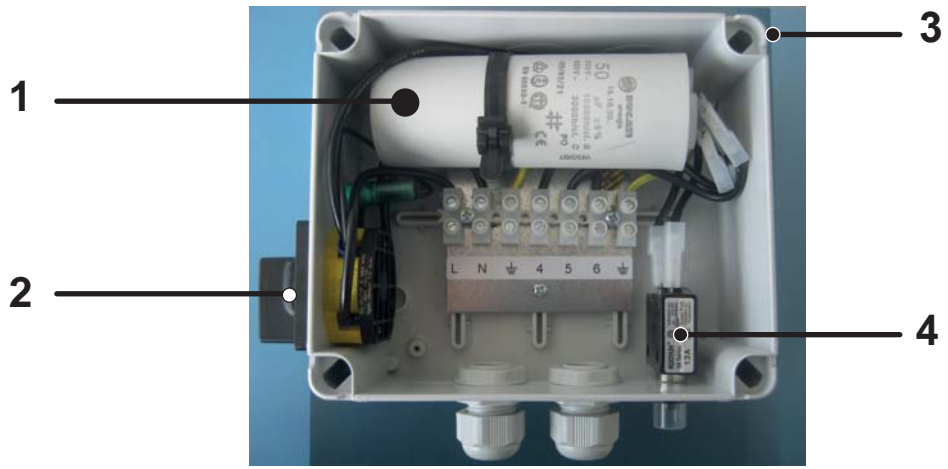
1. Can be used with both 220-230V and 230-240V PSC motor ranges.
2. Type indicates motor power rating and motor type.
3. Nominal supply current at nominal voltage
4. Motor starting current under nominal conditions

### Dimensions





SubStartSC® Spare Parts



1 Part: Capacitor - Kit

Rating [kw]	Mod. Nb.		µF
0,25	308 005 801	-	12,5
0,37	308 005 802	-	16
0,55	308 005 803	-	20
0,75	308 005 804	-	35
1,1	308 005 805	-	40
1,5	308 005 806	-	50
2,2	308 005 807	-	70

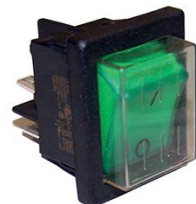
4 Part: Overload - Kit

Rating [kw]	Mod. Nb.		Amp
0,25	308 005 811	-	3
0,37	308 005 812	-	5
0,55	308 005 813	-	6
0,75	308 005 814	-	8
1,1	308 005 815	-	10
1,5	308 005 816	-	13
2,2	308 005 817	-	18



2 Part: Rotary - Switch - Kit

Mod. Nb.
308 005 822



3 Part: Rocker - Switch - Kit

Mod. Nb.
308 005 821



## SubStart3P® Three phase Submersible Motor Starter

The SubStart3P® range covers all 3 phase motors from 0.37kW to 7,5kW. Ergonomic design, attention to detail and unique features make the SubStart3P® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection

**Product features:**

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors

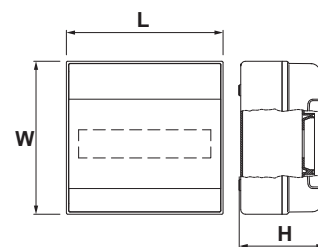


Ergonomically designed	
<b>Mounting</b>	Easy wall mounting without destroying the protection rating of the enclosure.
<b>Wiring</b>	Sufficient space is provided for ease of wiring.
Enclosure	
<b>Protection</b>	IP54
<b>Material</b>	PVC / Polycarbonate
Components	
<b>ON/OFF Switch</b>	Manual motor starter switch
<b>Circuit breaker</b>	Integrated thermal and magnetic overload protection
<b>Auxiliary relay</b>	Powered auxiliary contactor for use with external switches
<b>Cable glands</b>	Ensure IP54 rating

Specifications	
Mechanical Specification	
Protection level	IP 54
Environment	This equipment is suitable for environment B according to IEC/EN 61439 - 1 : 2010
Altitude	max 2000m above sea level
External dimensions	190x184x106mm <= 4kW 250x256x140mm >= 5,5kW
Weight	1,2 kg <= 4kW 2,3 kg >= 7,5kW
Mounting	Wall mounting (mounting hardware provided)
Storage temperature	-25°C to +55°C
Operation temperature	-5°C to +40°C
Humidity	50% at 40°C (without condensation)
Electrical Specifications	
Working Voltage	3~ / 50Hz 380 - 415V / -10% +6%
Voltage tolerance	380V -10% / 415V+6%
Rated insulation voltage	400 Vac
Rated short-time withstand current	50 kA
Rated conditional short-circuit current	50 kA
Current	5A, 9A, 16 A
Power	0,37kW - 7,5kW
Standards	
IEC/EN 61439 - 1 : 2010	

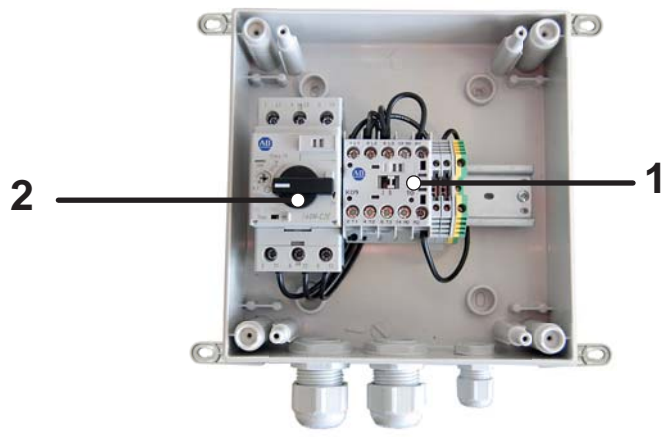
Model Parameters				
Motor Rating (kW)	Type 3~ 400V 50Hz	Model Number	Nom. Current (A)	Starting Current (A)
0,37	SS037P3	288 500 3510	1,1	5,4
0,55	SS055P3	288 501 3510	1,6	7,4
0,75	SS075P3	288 502 3510	2	10,6
1,10	SS110P3	288 503 3510	2,8	16
1,50	SS150P3	288 504 3510	3,9	20,7
2,20	SS220P3	288 505 3510	5,5	29,8
3,0	SS300P3	288 506 3510	7,5	42
3,7	SS370P3	288 507 3510	9	52,3
4,0	SS400P3	288 508 3510	9,9	57
5,5	SS550P3	288 509 3510	12,6	77,2
7,5	SS750P3	288 510 3510	17,1	99,3

Dimensions			
Motor Rating (kW)	W [mm]	L [mm]	H [mm]
0,37kW - 4,0kW	190	184	106
5,5kW - 7,5kW	250	256	140





SubStart3P® Spare parts



1 Part: Contactor

Rating [kw]	Mod. Nb.
0,37	308 027 201
0,55	308 027 201
0,75	308 027 201
1,1	308 027 201
1,5	308 027 201
2,2	308 027 202
3,0	308 027 202
3,7	308 027 203
4,0	308 027 203
5,5	308 027 204
7,5	308 027 205

2 Part: Motor Starter

Rating [kw]	Mod. Nb.
0,37	308 027 101
0,55	308 027 102
0,75	308 027 102
1,1	308 027 103
1,5	308 027 104
2,2	308 027 104
3,0	308 027 105
3,7	308 027 105
4,0	308 027 106
5,5	308 027 106
7,5	308 027 107



## SubTronicSC® Single Phase Motor Protection

The SubTronicSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubTronicSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

**Product features:**

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors

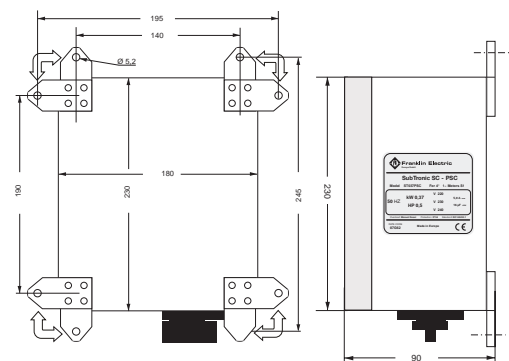


Ergonomically designed	
Mounting	Easy wall mounting offering various options without destroying the protection rating of the enclosure.
Wiring	Reliable connectors are provided for ease of wiring.
Motor compatible design	
Matching range	The SubTronicSC® Protector range was designed to match the Franklin Electric range of PSC motors.
Wide range of operation	Compatibility with motor design allows for a wide range of operation resulting in minimized nuisance tripping.
Intelligent Protection and Management features	
Dry-run detection (without probes)	Prevents motor and pump damage due to running the pump without water based on a proprietary reliable detection method.
Dry-run auto- reset	Automatic dry-run reset time is based on a proprietary search algorithm to find the best operating point for weak wells. Reset time 6 to 60 minutes.
Over & Under voltage	Prevents motor damage that may be caused by abnormal voltage conditions without limiting the range of operation, made possible by matching the design of the SubTronicSC® Protector with the motor. Reset time approximately 3 minutes.
Over current protection	Prevents operation under conditions where motor current may exceed safe levels due to bound pump or other fault condition. Detection is based on current heating capacity measurement to prevent unnecessary nuisance tripping. Reset time approximately 10 minutes.
Faulty Start Protection	Prevents system damage due to factors such as faulty contacts or switch. Contact failure detection reacts fast and will prevent damage to system components.
Rapid Cycle Protection	Prevents system damage due to factors such as continuous rapid cycling and excessive motor thermal cycling caused by waterlogged tank, faulty contacts or faulty pressure switch.
Indicators	
Status	Indication shows normal operation or other condition.
Voltage	Faulty voltage condition is indicated.
Fault conditions	Dry-run, Over current, Rapid Cycling, and Faulty start are indicated.

Technical Specifications	
Mechanical	
Protection level	IP54
External dimensions	290 x 230 x 95mm
Weight	0,6 - 1,0 kg
Mounting	Wall mounting (with options)
Temperature	-5°C - +40°C
Humidity	50% at 55°C (without condensation)
Electrical	
Voltage	220 - 240V; ± 10 %; 50Hz single phase
Current	16 A
Power	0,25 - 2,2 kW
Standards	
IEC 60439-1 when supplied with suitably fused supply.	

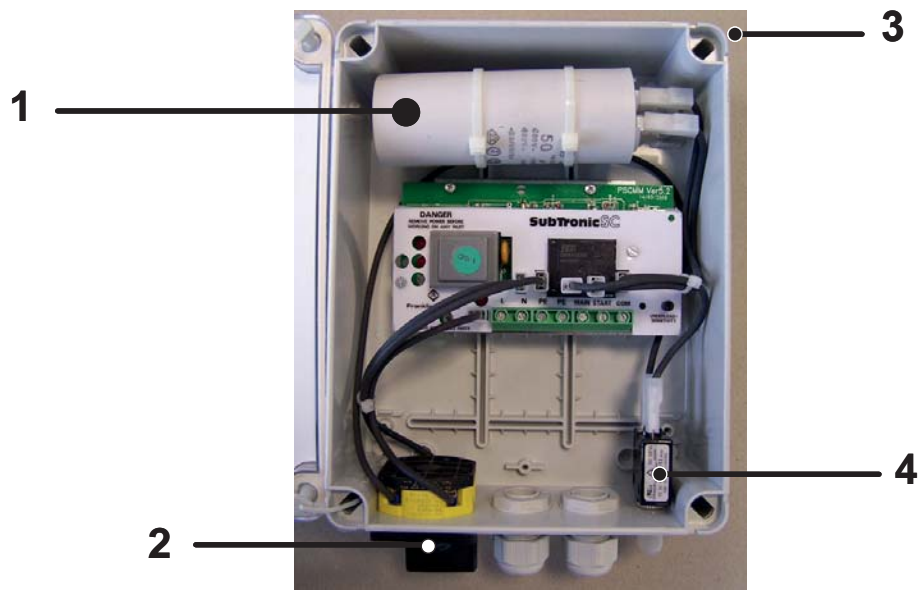
SubTronic SC Motor Protection Specifications					
Part Number	Type	Motor rating [kW]	Nominal Current [A]	Maximal expected current [A]	Capacitor [µF] 450V ac
284 623 3511	ST025PSC	0,25	2,4	9,4	12,5
284 624 3511	ST037PSC	0,37	3,3	12,6	16
284 625 3511	ST055PSC	0,55	4,3	17,7	20
284 626 3511	ST075PSC	0,75	5,7	22,7	35
284 627 3511	ST110PSC	1,10	8,4	33,9	40
284 628 3511	ST150PSC	1,50	10,7	41,7	50
284 629 3511	ST220PSC	2,20	14,7	61,8	70

### Dimensions





SubTronicSC® Spare Parts



1 Part: Capacitor - Kit

Rating [kw]	Mod. Nb.		µF
0,25	308 005 801	-	12,5
0,37	308 005 802	-	16
0,55	308 005 803	-	20
0,75	308 005 804	-	35
1,1	308 005 805	-	40
1,5	308 005 806	-	50
2,2	308 005 807	-	70

4 Part: Overload - Kit

Rating [kw]	Mod. Nb.		Amp
0,25	308 005 811	-	3
0,37	308 005 812	-	5
0,55	308 005 813	-	6
0,75	308 005 814	-	8
1,1	308 005 815	-	10
1,5	308 005 816	-	13
2,2	308 005 817	-	18



2 Part: Rotary - Switch - Kit

Mod. Nb.
308 005 822

3 Part: Rocker - Switch - Kit

Mod. Nb.
308 005 821



## SubTronic3P® Three Phase Motor Protection

The SubTronic3P® range covers all 4 inch 3 phase motors from 0.37kW to 7,5kW. Ergonomic design, attention to detail and unique features make the SubTronic3P® range your first choice when considering submersible motor protection and management. Together with Franklin Electric submersible motors you have an undisputable advantage, resulting in ease of installation, sophisticated system management and peace of mind.



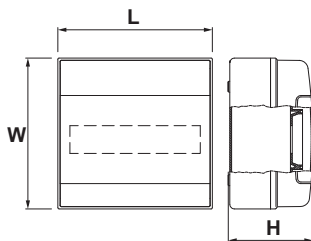
### Product features:

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors

Ergonomically designed	
Mounting	Easy wall mounting offering various options without destroying the protection rating of the enclosure.
Wiring	Reliable connectors are provided for ease of wiring.
Motor compatible design	
Matching range	The SubTronic3P® Protector range was designed to match the Franklin Electric range of 3 phase motors.
Wide range of operation	Compatibility with motor design allows for a wide range of operation resulting in minimized nuisance tripping.
Intelligent Protection and Management features	
Dry-run detection (without probes)	Prevents motor and pump damage due to running the pump without water based on a proprietary reliable detection method.
Dry-run auto- reset	Automatic dry-run reset time is based on a proprietary search algorithm to find the best operating point for weak wells. Reset time in max. 60 minutes.
Over & Under voltage	Prevents motor damage that may be caused by abnormal voltage conditions without limiting the range of operation, made possible by matching the design of the SubTronic3P® Protector with the motor. Reset time approximately 3 minutes.
Over current protection	Prevents operation under conditions where motor current may exceed safe levels due to bound pump or other fault condition. Detection is based on current heating capacity measurement to prevent unnecessary nuisance tripping. Auto-reset in 15 minutes. Manual reset possible in approximately 5 minutes by reapplying power.
Rapid Cycle Protection	Prevents system damage due to factors such as continuous rapid cycling and excessive motor thermal cycling caused by waterlogged tank, faulty contacts or faulty pressure switch. Auto-reset in 5 minutes if condition clears. Manual reset possible in approximately 5 minutes by reapplying power.
Indicators	
Status	Indication shows normal operation or other condition.
Voltage	Faulty voltage condition is indicated.
Fault conditions	Dry-run, Over Current, Rapid Cycling, Over Voltage and Under Voltage are indicated.

### Dimensions

Motor Rating [kW]	W [mm]	L [mm]	H [mm]
0,37kW - 3kW	190	184	106
3,7kW - 7,5kW	250	256	140



Specifications	
Mechanical Specification	
Protection level	IP 54
Environment	This equipment is suitable for environment B according to IEC/ EN 61439 - 1 : 2010
Altitude	max 2000m above sea level
External dimensions	190 x 184 x 106 mm <= 3kW 250 x 256 x 140 mm >= 3,7kW
Weight	1,2 kg <= 3kW 2,5 kg >= 3,7kW
Mounting	Wall mounting (mounting hardware provided)
Storage temperature	-25°C to +55°C
Operation temperature	-5°C to +40°C
Humidity	50% at 40°C (without condensation)
Electrical Specifications	
Rated Voltage	3~ / 50Hz 380 - 415V
Voltage tolerance	380V -10% / 415V+6%
Rated insulation voltage	400 Vac
Rated short-time withstand current	50 kA
Rated conditional short-circuit current	50 kA
Current	5 A ; 9 A ; 25 A
Power	0,37 - 7,5kW
Standards	
IEC/EN 61439 - 1 : 2010	

### SubTronic3P Motor Protection Specifications

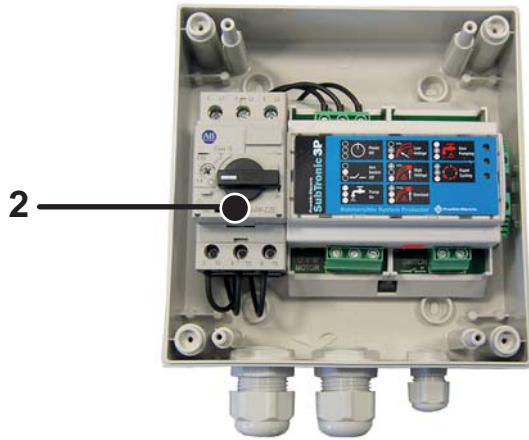
Motor Rating [kW]	Type 3phase / 400V 50Hz	Model Number	Nom. Current [A]	Max. Current [A]
0,37	ST037P3	288 500 3511	1,1	5,4
0,55	ST055P3	288 501 3511	1,6	7,4
0,75	ST075P3	288 502 3511	2	10,6
1,10	ST110P3	288 503 3511	2,8	16
1,50	ST150P3	288 504 3511	3,9	20,7
2,20	ST220P3	288 505 3511	5,5	29,8
3	ST300P3	288 506 3511	7,5	42
3,7	ST370P3	288 507 3511	9	52,3
4	ST400P3	288 508 3511	9,9	57
5,5	ST550P3	288 509 3511	12,6	77,2
7,5	ST750P3	288 510 3511	17,1	99,3



SubTronic3P® Spare Parts

0,37kW - 3,0kW

3,7kW - 7,5kW



1 Part: Contactor - > 3,7kW

Rating [kW]	Mod. Nb.
0,37	-
0,55	-
0,75	-
1,1	-
1,5	-
2,2	-
3,0	-
3,7	308 027 206
4,0	308 027 206
5,5	308 027 204
7,5	308 027 205

2 Part: Motor Starter

Rating [kW]	Mod. Nb.
0,37	308 027 101
0,55	308 027 102
0,75	308 027 102
1,1	308 027 103
1,5	308 027 104
2,2	308 027 104
3,0	308 027 105
3,7	308 027 105
4,0	308 027 106
5,5	308 027 106
7,5	308 027 107





## SubDrive® Constant-pressure Controller

Franklin Electric's SubDrive constant pressure controller provides constant pressure by continually adjusting the speed of the pump to match water demand. Instead of draining and filling a large tank, a SubDrive system pumps more or less water as you need it. Finally, you'll be able to run the dishwasher, do laundry and water the lawn – all at the same time!

### Product Features:

- Works with a standard three-phase, 60Hz, 230V Franklin Electric submersible motor
- IP 20 (Indoor) enclosure
- Three phase performance with single-phase input
  - High starting torque
  - More efficient
  - Smooth running
- Constant water pressure with a wide range of settings (2 to 6 bar)
- Soft start feature prevents water hammer and increases motor life
- Works with small pressure tanks or existing larger tanks
- Smart Reset™ technology allows well recovery before restarting the pump
- Complete well management included
- Absolutely easy to install
- Excellent radio frequency interference shielding

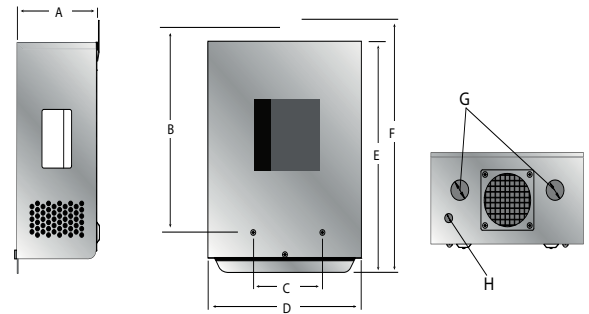
### Built-in Diagnostics and Protection

SubDrive products all include diagnostic features and built-in protection for conditions that would be harmful to the system.

- Surge protection
- Underload
- Undervoltage
- Locked pump
- Open circuit
- Short circuit
- Overheated controller



### Outlines (cm)



A - 13,3	B - 29,2	C - 14,0	D - 24,8
E - 32,5	F - 35,6	G - 2,80	H - 1,3

## Constant Pressure Controls Specifications

	SubDrive75	SubDrive100	SubDrive150
<b>Rated Power</b>	<b>1,1kW</b>	<b>1,5kW</b>	<b>2,2kW</b>
<b>Model No.</b>	587 020 3380	587 020 4100	587 020 4150
<b>Input (From Power Source)</b>			
<b>Voltage [V]</b>	190-260 V / 1 Phase	190-260 V / 1 Phase	190-260 V / 1 Phase
<b>Frequency [Hz]</b>	60 / 50 Hz	60 / 50 Hz	60 / 50 Hz
<b>Max. Amps (RMS) [A]</b>	11 A	19 A	23 A
<b>Power Factor</b>	1.0 (Constant)	1.0 (Constant)	1.0 (Constant)
<b>Output (To Motor)</b>			
<b>Voltage [V]</b>	Variable / 3 Phase	Variable / 3 Phase	Variable / 3 Phase
<b>Frequency [Hz]</b>	Variable (30-80 Hz)	Variable (30-80 Hz)	Variable (30-80 Hz)
<b>Max. Amps (RMS) [A]</b>	5,9 A	8,1 A	10,9 A
<b>For Use With:</b>			
<b>Pump Rating [kW]</b>	0,55, 0,75 or 1,1 kW (Selectable)	0,75, 1,1 or 1,5 kW (Selectable)	1,1, 1,5 or 2,2 kW (Selectable)
<b>Motor Rating [kW]</b>	1,1 kW, 230 VAC, 60Hz (3-Phase)	1,5 kW, 230 VAC, 60Hz (3-Phase)	2,2 kW, 230 VAC, 60Hz (3-Phase)
<b>Pressure Sensor (223 995 904 Included)</b>	External	External	External
<b>Controller Weight [kg]</b>	7,0	8,0	8,0
<b>Carton Size (H x W x D) [cm]</b>	42 x 31 x 23	42 x 31 x 23	42 x 31 x 23
<b>Shipping Weight [kg]</b>	10	10	10



## Termination Kit 4"

This proven, sturdy solution is your choice of cable joining in temporary pump applications or when re-usage if the drop cable is desired. Furthermore, the flexibility and safety it provides for under field service conditions makes it the preferred choice over conventional, not breakable splicing kits.



Kit- Type	Mod. Number	Description
Standard	308 090 901	without . Strain relief <b>Attention:</b> Limited shelf life of Resin and Hardener
Strain Relief	308 090 902	incl. Strain relief <b>Attention:</b> Limited shelf life of Resin and Hardener

## Double Plug Lead for Termination Kit

Required for use of lead termination kit. Connected between termination kit and 4" motor.

- PSC / 2-wire / 3-wire Motors and 3 ~ Motors up to 2,2kW
- Material: Connector- Ni plated brass; Lead: rubber
- 2 / 3 wire lead with ground
- Optional strain relief
- Max. current 16 amps.
- Approvals: KTW

Standard Motor			
Mod. No.	2 - wire	Mod. No.	PSC / 3 - wire / 3-Phase (up to 2,2kW)
310 131 001	3X1,5mm <sup>2</sup> 1,5 m - without . Strain relief	310 111 001	3X1,5+1G1,5mm <sup>2</sup> 1,5 m - without . Strain relief
310 131 002	3X1,5mm <sup>2</sup> 2,5 m - without . Strain relief	310 111 002	3X1,5+1G1,5mm <sup>2</sup> 2,5 m - without . Strain relief
310 132 001	3X1,5mm <sup>2</sup> 1,5 m - incl. Strain relief	310 112 001	3X1,5+1G1,5mm <sup>2</sup> 1,5 m - incl. Strain relief
310 132 002	3X1,5mm <sup>2</sup> 2,5 m - incl. Strain relief	310 112 002	3X1,5+1G1,5mm <sup>2</sup> 2,5 m - incl. Strain relief



NXTGen Motor	
Mod. No.	PSC / 3 - wire / 3-Phase (up to 2,2kW)
309 111 401	3X1,5+1G1,5mm <sup>2</sup> 1,5 m - without . Strain relief



## Lead Termination Kit 1,5 - 10mm<sup>2</sup>

- 3M Quality
- 4 wire
- 1,5 - 10mm<sup>2</sup>
- up to 1,1kV

Part number: 308 090 921




PTC Lead (only as spare parts)			
Ø = 2x0,75 mm <sup>2</sup>	D = 7,0 mm	L (m)	Mod.-No.
		4	310 364 004
		10	310 364 010
		20	310 364 020
		30	310 364 030

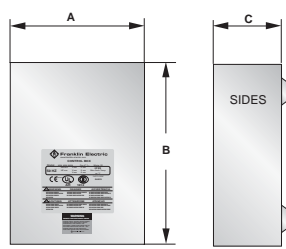
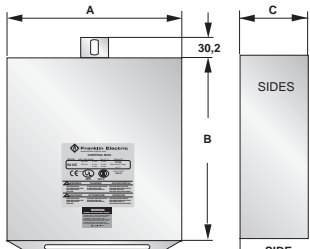
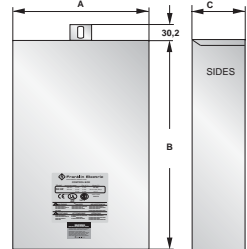
Brackish Water Motor Lead (only as spare parts)			
Ø = 4x1,5 mm <sup>2</sup>		L (m)	Mod.-No.
		2,5	310 113 402G



### 3- wire Motor Control Boxes

<b>Application:</b>	Control and Protection of Franklin Electric 3-wire single phase motors.		
<b>Specification:</b>	<ul style="list-style-type: none"> <li>Voltage: 220 – 230 V</li> <li>Degree of protection: IP 23</li> <li>Metal version</li> <li>Includes starting capacitor</li> <li>Manual reset overload</li> <li>Temperature range: -20°C - +50°C</li> <li>50 Hz</li> </ul>		
<b>Ordering information:</b>	<b>Motor Rating</b>	<b>Control Box Mod. Number</b>	<b>Weights (kg)</b>
<b>220 / 230 / 240 V</b>	0,25	280 355 2115	1,36
	0,37		
	0,55		
	0,75	280 358 2115	2,8
	1,1	282 350 8114	
	1,5	282 351 8114	
	2,2	282 352 8114	
3,7	282 253 4014	4,7	

### Outline Drawing [mm]

0,25 – 0,75 kW			1,1 kW / 1,5 kW / 2,2kW			3,7 kW		
								
<b>A</b>	<b>B</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>C</b>
<b>125</b>	<b>215</b>	<b>68</b>	<b>205</b>	<b>216</b>	<b>154</b>	<b>205</b>	<b>384</b>	<b>154</b>

### Spare Parts Control Box 50 Hz

P <sub>N</sub> [kW]	Box Nb.	Relay-Kit	Qty.	Start Capacitor	Qty.	Run Capacitor	Qty.	Overload relay of main phases	Qty.	Overload relay of start phases	Qty.
		Pos. 1		Pos. 2		Pos. 3		Pos. 4		Pos. 5	
0,37	2803552115	305213912	1	305218957 <b>48µF 220V</b>	1	-----	0	*	1	-----	0
0,55	2803572115	305213912	1	305218906 <b>65µF 220V</b>	1	-----	0	*	1	-----	0
0,75	2803582115	305213912	1	305218918 <b>95µF 220V</b>	1	-----	0	*	1	-----	0
1,1	2823508114	305213912	1	305207913 <b>115µF 220V</b>	1	305 204 902 <b>10µF 370V</b>	1	305 215 914	1	-----	0
1,5	2823518114	305213912	1	305208915 <b>208µF 220V</b>	1	305 204 903 <b>20µF 370V</b>	1	305 215 902	1	305 215 906	1
2,2	2823528114	305213912	1	305208919 <b>300µF 220V</b>	1	305 203 902 <b>35µF 370V</b>	1	305 215 907	1	305 214 907	1
3,7	2822534014	305213912	1	305208915 <b>208µF 220V</b>	2	305 203 909 <b>45µF 370V</b>	1	305 214 902	1	305 215 902	1
						305 203 901 <b>30µF 370V</b>	1				



## 4" Corrosion protection in aggressive water

### Application:

Wells with extremely high levels of chlorides and other elements in combination with high temperatures will aggressively attack and corrode nearly any type of metal, including stainless steel. Typical severe applications are geothermal wells and mine wells, and applications with low service times.

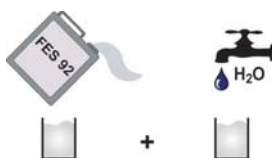

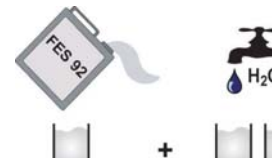
**Material Specification:** GG25

LT	HT
	
308 250 912	308 250 913

## Motor Filling Liquid

Filling liquid 5 L FES92					
4" Encapsulated	→	FES93	8" Encapsulated Standard	→	FES91
6" Encapsulated Standard	→	FES91	8" Encapsulated HighTemp75	→	FES92
6" Encapsulated HighTemp90	→	FES92	Rewindable	Std. Async.	→ FES93
				PM. Syncr.	→ FES91

FES91	FES92	FES93
		



**Part number:**  
**308 353 941**

## Motor Filling Kit

This kit contains all necessary tools to check and replenish Franklin Electric submersible motors with FES 91, 92 or 93 filling liquid (fill solution/concentrate must be ordered separately).

**Part number: 308 726 103**





## Couplings

### Application

Franklin Electric offers this line of motor-pump couplings for maximum customer convenience in matching the Franklin motor to a variety of pump shafts. Couplings are designed to transmit the pump thrust to the motor in order to provide maximum benefits from the Franklin internal thrust bearing construction.

Hardened stainless steel spacer discs in the 4" and 6" couplings assure positive bearing between motor and pump shafts, and assure full support for downward thrust created by the pump.

8" couplings DO NOT contain hardened spacer discs, since the motor shaft itself is hardened.



### 4" Motor - Pump couplings

**Application:** Allow connection of pump to motors shaft.

- Specification:**
- Material: 304 / 316 SS
  - NEMA standard measuring on motor shaft
  - separation washer between motor & pump shafts

Coupling 1	304			Coupling Insert only (316SS)
	151 551 911			151 970 102
	Dimension D Max. / Min.	Dimension N Max. / Min.	Dimension H Max. / Min.	
19,075 / 19,063	4,838 / 4,788	20,70 / 20,53		

Coupling 2	316SS	
	308 712 904	
	Dimension D Max. / Min.	17,50 / 17,48



## Flow Paddle Switch

The flow switch utilizes the force of liquid flow to propel its paddle and to detect the incoming flow or movement of the existing liquid in the pipe. A required Part of the 6" High Efficiency Solar System.

Mod.Nb.: 226 019 101



## Level Switch

A float switch is a device used to detect the level of liquid within a tank. A required Part of the 6" High Efficiency Solar System.

Mod.Nb.: 308 170 209



## DC Disconnect

To disconnect the drive even under load safely from the solar generator, Franklin Electric offers suitable DC disconnect switches for all different power ratings.

0 - 11A/800V DC - 308 170 313

12 - 22A/800V DC - 308 170 325



## Pressure Switch SubDrive Constant- pressure Controller

The pressure switch signals continuously prevailing in the water supply system pressure to the SubDrive controller. The factory setting of the desired pressure is 3,4bar; However, they can be changed.

Mod.Nr.: 223 995 904







**Franklin Electric**

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