



4" PSC Motors PRODUCT CATALOG



Franklin Electric



Franklin Electric



QUALITY



AVAILABILITY



SERVICE



INNOVATION

Quality in the Well



Franklin Electric

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.

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 _N [kW]	U _N [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 6715L
	230-240	254 813 6700L	254 813 6700	254 813 6715L
0,37	220-230	254 805 6700L	254 805 6700	254 805 6715L
	230-240	254 815 6700L	254 815 6700	254 815 6715L
0,55	220-230	254 807 6700L	254 807 6700	254 807 6715L
	230-240	254 817 6700L	254 817 6700	254 817 6715L
0,75	220-230	254 808 6700L	254 808 6700	254 808 6715L
	230-240	254 818 6700L	254 818 6700	254 818 6715L
1,10	220-230	254 809 6700L	254 809 6700	254 809 6715L
	230-240	254 819 6700L	254 819 6700	254 819 6715L
1,50	220-230	254 810 6700L	254 810 6700	254 810 6715L
	230-240	254 820 6700L	254 820 6700	254 820 6715L
2,20	220-230	254 811 6700L	254 811 6700	254 811 6715L
	230-240	254 821 6700L	254 821 6700	254 821 6715L

4" PSC Performance Data 50 Hz

220V - 230V version

P _N [kW]	Thrust F [N]	U _N [V]	n _N [min ⁻¹]	I _N [A]	I _A [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T _N [Nm]	T _A [Nm]	Capacitor μF (U _C =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

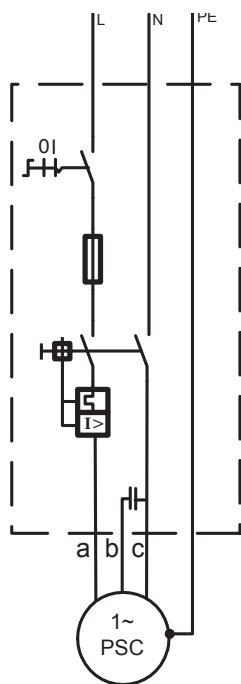
P _N [kW]	Thrust F [N]	U _N [V]	n _N [min ⁻¹]	I _N [A]	I _A [A]	η (Eff.) [%] at % load			cos φ (Pf.) at % load			T _N [Nm]	T _A [Nm]	Capacitor μF (U _C =450V)
						50	75	100	50	75	100			
0,25	4000	230	2865	2,2	8,6	33	45	51	0,91	0,93	0,96	0,82	0,73	12,5
		240	2875	2,3	9,0	28	42	50	0,80	0,88	0,92	0,83	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

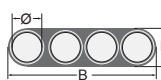
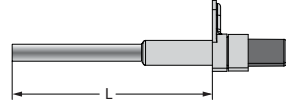


a	b	c	PE
black	brown	grey	yellow/green

Motor Leads*

PSC Motor- VDE / ACS/ KTW Approved Flat Leads

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

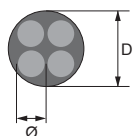
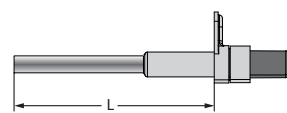



L [m]	304 SS	316 SS
1,5	310 178 401	310 178 501
2,5	310 178 402	310 178 502
5	310 178 405	310 178 505
10	310 178 410	310 178 510
15	310 178 415	310 178 515
20	310 178 420	310 178 520
30	310 178 430	310 178 530
40	310 178 440	310 178 540
50	310 178 450	310 178 550

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

PSC Motor- Pollution Recovery Round Leads

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

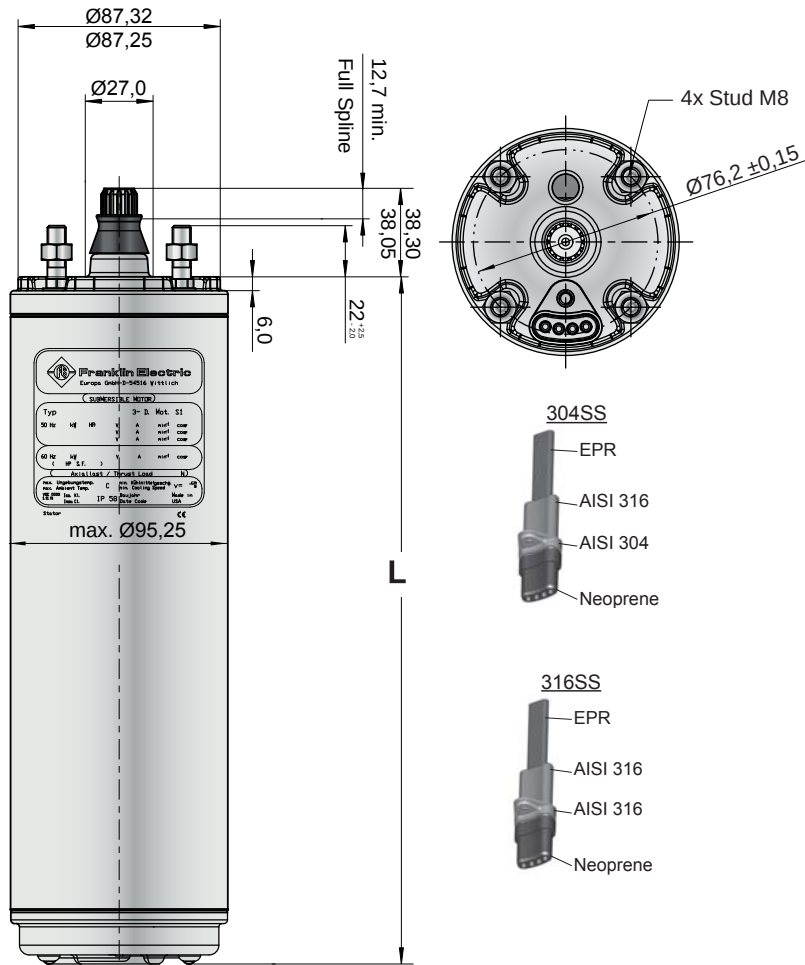
L [m]	304 SS	316 SS
1,5	310 318 401	310 318 501
2,5	310 318 402	310 318 502
5	310 318 405	310 318 505
10	310 318 410	310 318 510
15	310 318 415	310 318 515
20	310 318 420	310 318 520
30	310 318 430	310 318 530
40	310 318 440	310 318 540
50	310 318 450	310 318 550



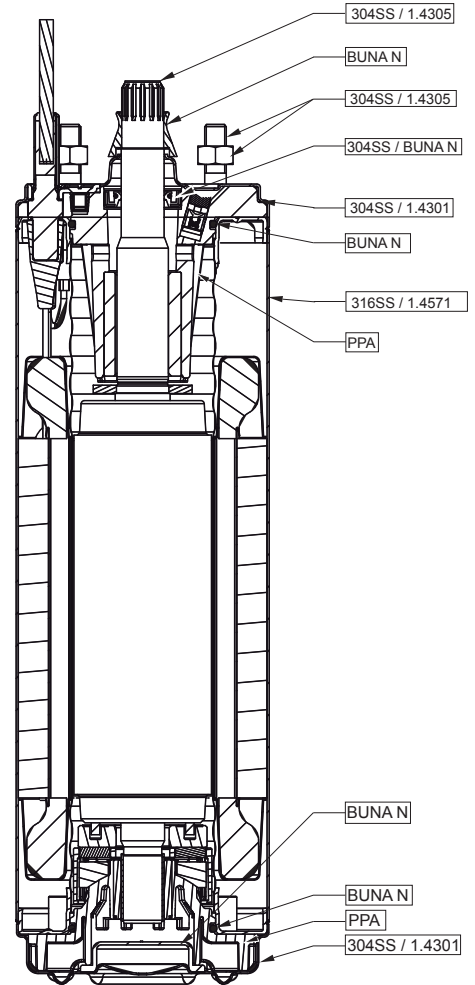
Franklin Electric

Outline Drawing PSC Motors

Material Description

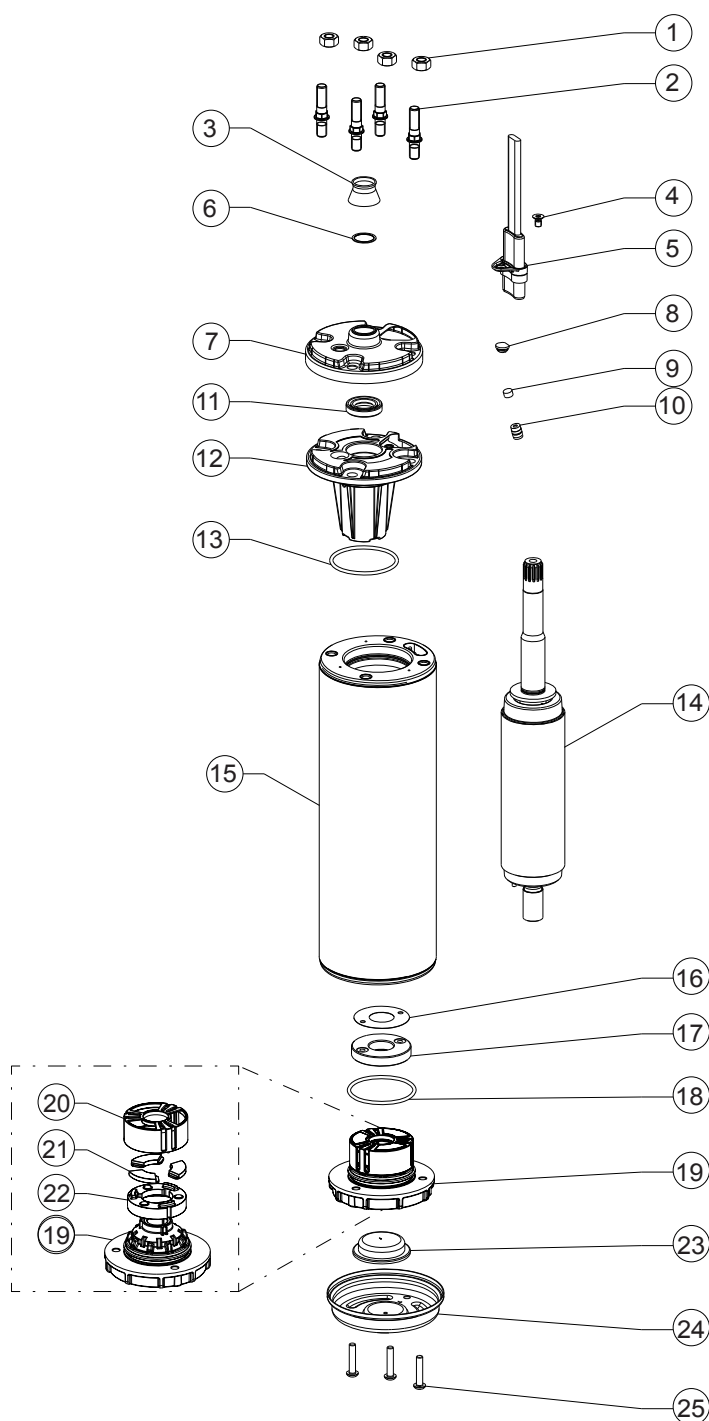


Tolerances according to NEMA MG 1-18.388



4" PSC Motors Lengths and Weights / Packing sizes

P_N		L [mm]	M [kg]	Motor 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



Pos.	Part Description	Qty.	Part No.
1	Nut M8	4	Kit C
2	Stud M8	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 9
15	Stator	1	see page 9
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 Motor Spare Part Kits Design start: 07.2016

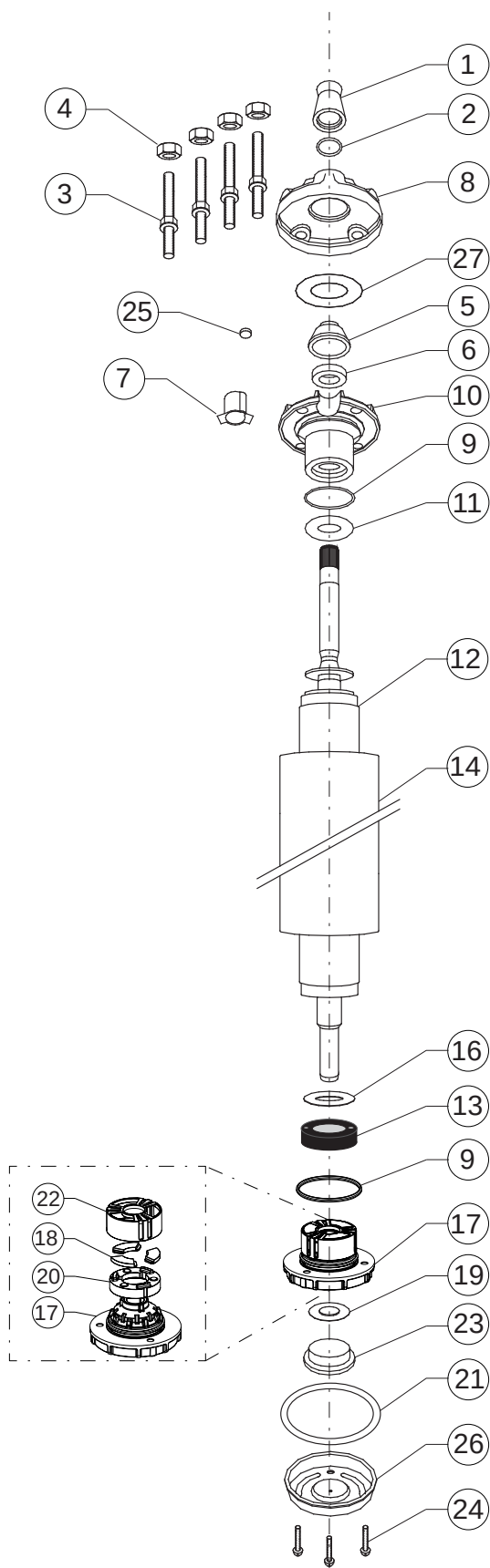
P_N [kW]	0,25 - 2,2kW		
Kit A1	End bell, upper 304SS (Pos. 7 - 13)	incl. Pos.: 7 - 13	308 462 901
Kit A2	Endbell lower incl. Thrust Bearing Kit 4000N	incl. Pos.: 16 - 22	308 464 911
Kit B	Seal Kit 304SS	incl. Pos.: 3, 6, 8, 9, 11, 13, 18, 23	308 650 201
Kit C	Fastener Kit 304SS	incl. Pos.: 1, 2, 4, 25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

PSC Replacement Stator (316SS) and Rotor 50 Hz

P_N [kW]	Volt	Motor Model No.	Stator	Rotor
0,25	220-230	254 803 6700 / L	305 491 701	178 165 951K
	230-240	254 813 6700 / L	305 491 721	
0,37	220-230	254 805 6700 / L	305 491 702	178 165 952K
	230-240	254 815 6700 / L	305 491 722	
0,55	220-230	254 807 6700 / L	305 491 703	178 165 953K
	230-240	254 817 6700 / L	305 491 723	
0,75	220-230	254 808 6700 / L	305 491 704	178 165 954K
	230-240	254 818 6700 / L	305 491 724	
1,10	220-230	254 809 6700 / L	305 491 705	178 165 955K
	230-240	254 819 6700 / L	305 491 725	
1,50	220-230	254 810 6700 / L	305 491 706	178 165 956K
	230-240	254 820 6700 / L	305 491 726	
2,20	220-230	254 811 6700 / L	305 491 707	178 165 957K
	230-240	254 821 6700 / L	305 491 727	



4" PSC Standard Motor* Part Description Design up to: 06.2016



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 11
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 Design up to: 06.2016

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)		
Kit A1	End bell (lower) incl. Thrust bearing Kit 3000N/4000N		inkl. Pos.: 9, 13, 16, 17, 18, 20, 22	308 464 901
Kit B1	Seals Kit		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 101
Kit B2	Seals Kit (Viton)		inkl. Pos.: 1, 2, 6, 9, 21, 23, 25, 27	308 650 104
Kit C	Screws Kit		inkl. Pos.: 3, 4, 24	308 656 101

PSC Replacement Stator and Rotor 50 Hz

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

VDE / ACS/ KTW Approved Standard Motor Leads*

Ø [mm²]	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.		



Franklin Electric

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 10mm²) 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
0,25	220-230	254 803 6700C
	230-240	254 813 6700C
0,37	220-230	254 805 6700C
	230-240	254 815 6700C
0,55	220-230	254 807 6700C
	230-240	254 817 6700C
0,75	220-230	254 808 6700C
	230-240	254 818 6700C
1,10	220-230	254 809 6700C
	230-240	254 819 6700C
1,50	220-230	254 810 6700C
	230-240	254 820 6700C
2,20	220-230	254 811 6700C
	230-240	254 821 6700C



Franklin Electric

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 - 10mm²

- 3M Quality
- 4 wire
- 1,5 - 10mm²
- up to 1,1kV





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

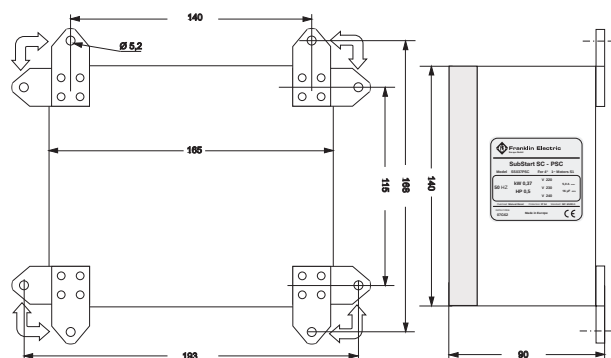
Technical Specifications:	
Mechanical	
Protection level	IP54
External dimensions	168 x 142 x 85mm
Weight	0,6 - 1,0 kg
Mounting	Wall mounting (mounting hardware provided)
Temperature	-5°C - +40°C
Humidity	50% at 55°C (without condensation)
Electrical	
Voltage	220 - 240V; - 6 / + 10 %; 50Hz single phase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

SubStartSC® Starter Specifications					
Part Number ¹	Type ²	Motor rating [kW]	Nominal Current ³ [A]	Maximal expected current ⁴ [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

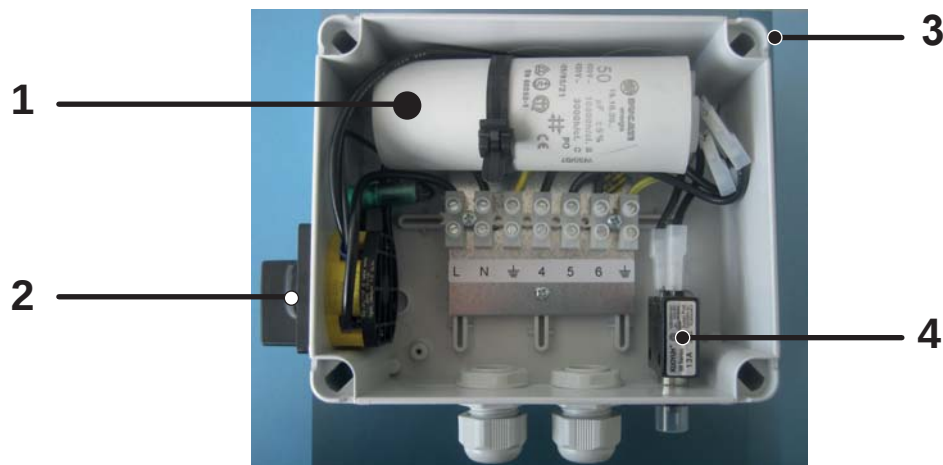
Dimensions





Franklin Electric

SubStartSC® Spare Parts

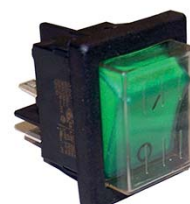


1 Part: Capacitor - Kit

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

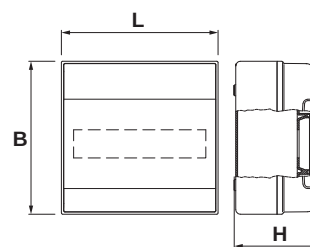


Ergonomically designed	
Mounting	Easy wall mounting without destroying the protection rating of the enclosure.
Wiring	Sufficient space is provided for ease of wiring.
Enclosure	
Protection	IP54
Material	PVC / Polycarbonate
Components	
ON/OFF Switch	Manual motor starter switch
Circuit breaker	Integrated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

SubStart3P® 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

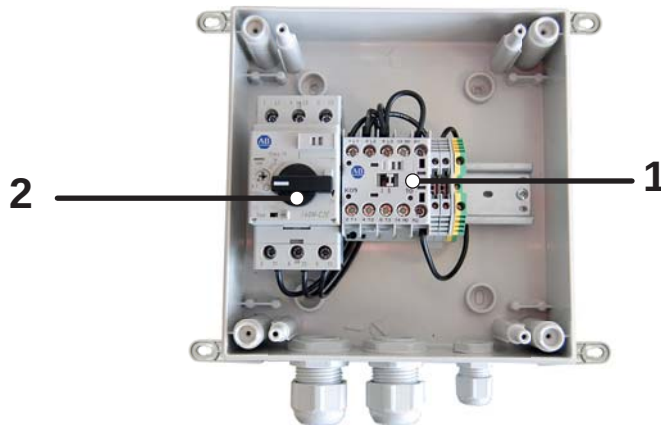
Specifications	
Mechanical Specification	
Protection level	IP 54
Environment	This equipment is suitable for environment B according to IEC/EN 61439 - 1 : 2010
Altitude	max 2000m above sea level
External dimensions	190x184x106mm <= 4kW 250x256x140mm >= 5,5kW
Weight	1,2 kg <= 4kW 2,3 kg >= 7,5kW
Mounting	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	

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:

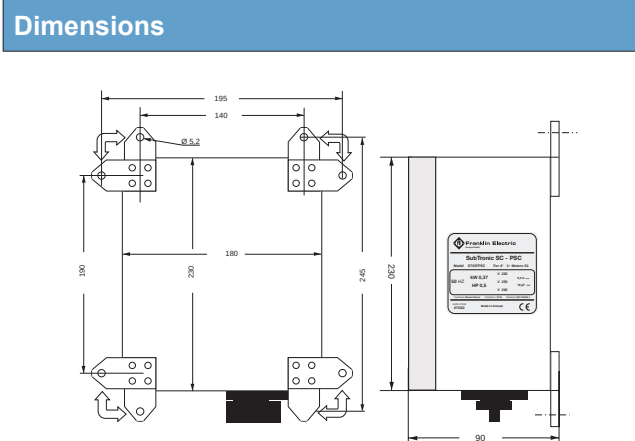
- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors



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.

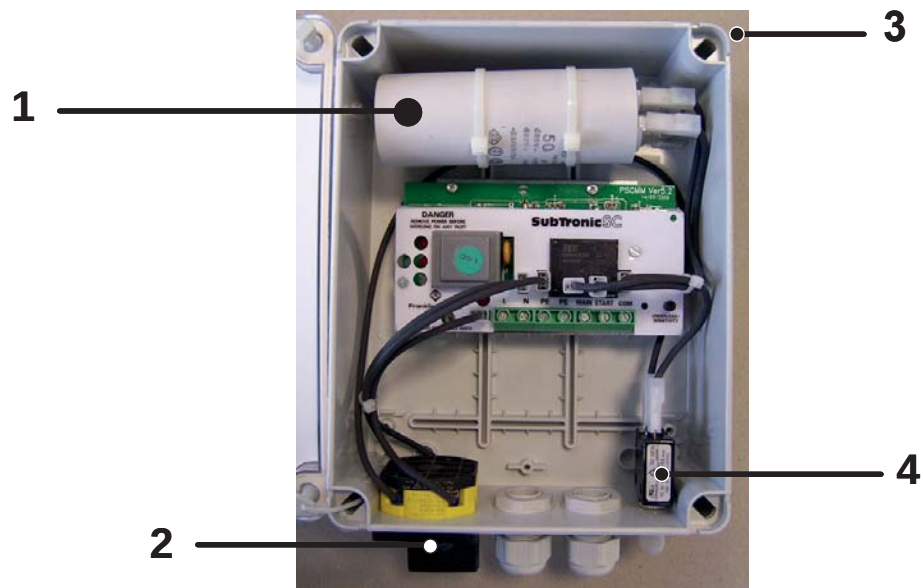
Technical Specifications	
Mechanical	
Protection level	IP54
External dimensions	290 x 230 x 95mm
Weight	0,6 - 1,0 kg
Mounting	Wall mounting (with options)
Temperature	-5°C - +40°C
Humidity	50% at 55°C (without condensation)
Electrical	
Voltage	220 - 240V; ± 10 %; 50Hz single phase
Current	16 A
Power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

SubTronicSC 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





SubTronicSC® Spare Parts

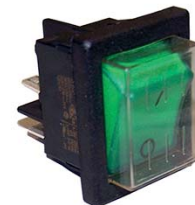


1 Part: Capacitor - Kit

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

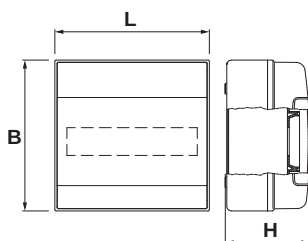
Dry-run detection (without probes)	Prevents motor and pump damage due to running the pump without water based on a proprietary reliable detection method.
Dry-run auto- reset	Automatic dry-run reset time is based on a proprietary search algorithm to find the best operating point for weak wells. Reset 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

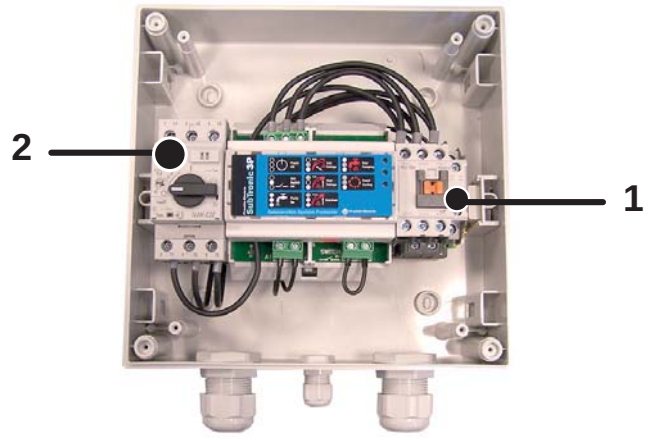
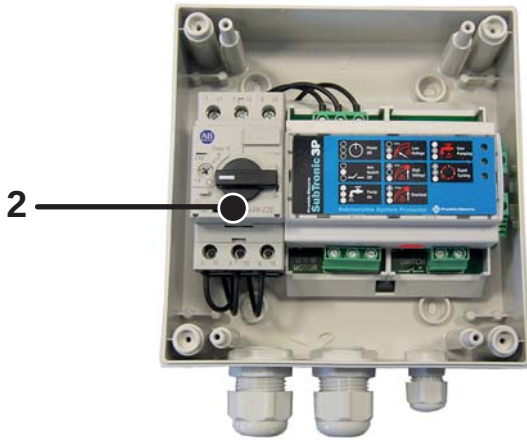


Franklin Electric

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

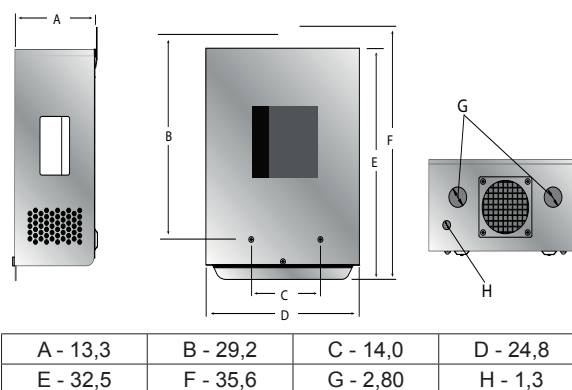
Built-in Diagnostics and Protection

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)



Constant Pressure Controls Specifications

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



Franklin Electric

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 Attention: Limited shelf life of Resin and Hardener
Strain Relief	308 090 902	incl. Strain relief Attention: 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

4" High Thrust and Motor Design up to 06.2016

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



4" Standard Motor start 07.2016

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



Lead Termination Kit 1,5 - 10mm²

- 3M Quality
 - 4 wire
 - 1,5 - 10mm²
 - up to 1,1kV
- Part number: 308 090 921**



PTC Lead (only as spare parts)

Ø = 2x0,75 mm ²	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 ²	L (m)	Mod.-No.
	2,5	310 113 402G



Franklin Electric

4" Corrosion protection in aggressive water for Standard Motors

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

4" Corrosion protection in aggressive water for NextGen Motors

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.

These sacrificial anodes, affixed to the motor body, will increase the service life of the motor when used in such environments.

Material Specification: GG25

LT

308 250 914

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	6" / 8" / 10" / 12" Rew Motors 6" / 8" Rew PM Motors		FES93



Part number:
308 353 941

FES91	FES92	FES93
		

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

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.



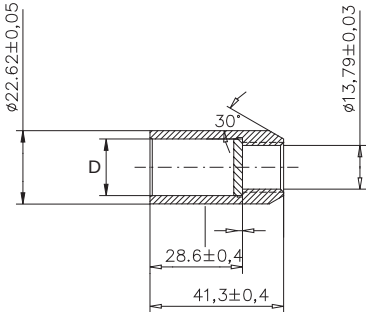
4" Motor - Pump couplings

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
	



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, light gray lines. The grid covers the entire area of the page, leaving no margins or other markings. There are 20 columns and 20 rows of squares, creating a total of 400 square units.

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Franklin Electric





Franklin Electric

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