

4" ENCAPSULATED HEAT PUMP MOTOR - 3-PHASE

FEATURES & BENEFITS

- Suitable for operation in heating systems that extract heat from groundwater and river water (heat deep wells - or open systems).
- Three motor models cover the range from 160 to 1100 Watts, each motor being capable of driving several pumps within a certain power level range.
- NEMA mounting design with metric studs [M8]
- Stainless steel splined shaft
- Stator shell in 316SS (suitable for use in water with increased salinity)
- StatorShield™ - Franklin encapsulation system: Franklin Electric encapsulated motors are equipped with hermetically-sealed windings. The stator resin mechanically supports the winding and provides fast heat dissipation.
- Hydrodynamic liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable round plug lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- Factory filled with FES Franklin's non-toxic water soluble fill solution
- Drinking water approvals

STANDARD SPECIFICATION

- Ratings: 0.16 - 1.1 kW
- Thrust load: 4 kN
- Standard voltage: 3- 400 V (50 Hz)
- Max. storage temperature: -15 °C - +50 °C
- Nominal ambient temperature: 30 °C (with 0.08 m/s cooling flow)
- Voltage tolerance U_N : -10 % / +6 % (50 Hz)
- protection IP68
- insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time), equally distributed
- All motors with factory installed leads (1.50 m / 2.50 m)
- Vertical and horizontal operation, shaftend heightend
- Rotation counter clock wise facing shaft end (rotation reversible for 3 phase motors)



StatorShield™ - Franklin encapsulation system

Franklin Electric encapsulated motors are equipped with hermetically-sealed windings. The stator resin mechanically supports the winding and provides fast heat dissipation.

Hydrodynamic liquid lubricated radial bearings

100% maintenance free operation

Kingsbury type thrust bearing

High capacity 4 kN Kingsbury type thrust bearing for 100 % maintenance free operation.



Pressure-equalizing diaphragm

4" ENCAPSULATED HEAT PUMP MOTOR - 3-PHASE

Heat Pump motor version

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 range optimized for shallow settings and low power consumption available from 0.25 kW to 1.1 kW.



OPTIONS

- Built in lightning arrestors
- Higher-graded material: 316SS



4" encapsulated motors

4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR MODEL NO. | 50 HZ

P _N [kW]	U _N [V]	Digit 1 - 6	Digit 7 - 10			
			304SS		316SS	
			single pack, with lead	motors in 40 motors packing unit	single pack, with lead	motors in 40 motors packing unit
0,16 - 0,32	400	234 870	6721L	6721	6821L	6821
0,30 - 0,60	400	234 871	6721L	6721	6821L	6821
0,55 - 1,1	400	234 872	6721L	6721	6821L	6821

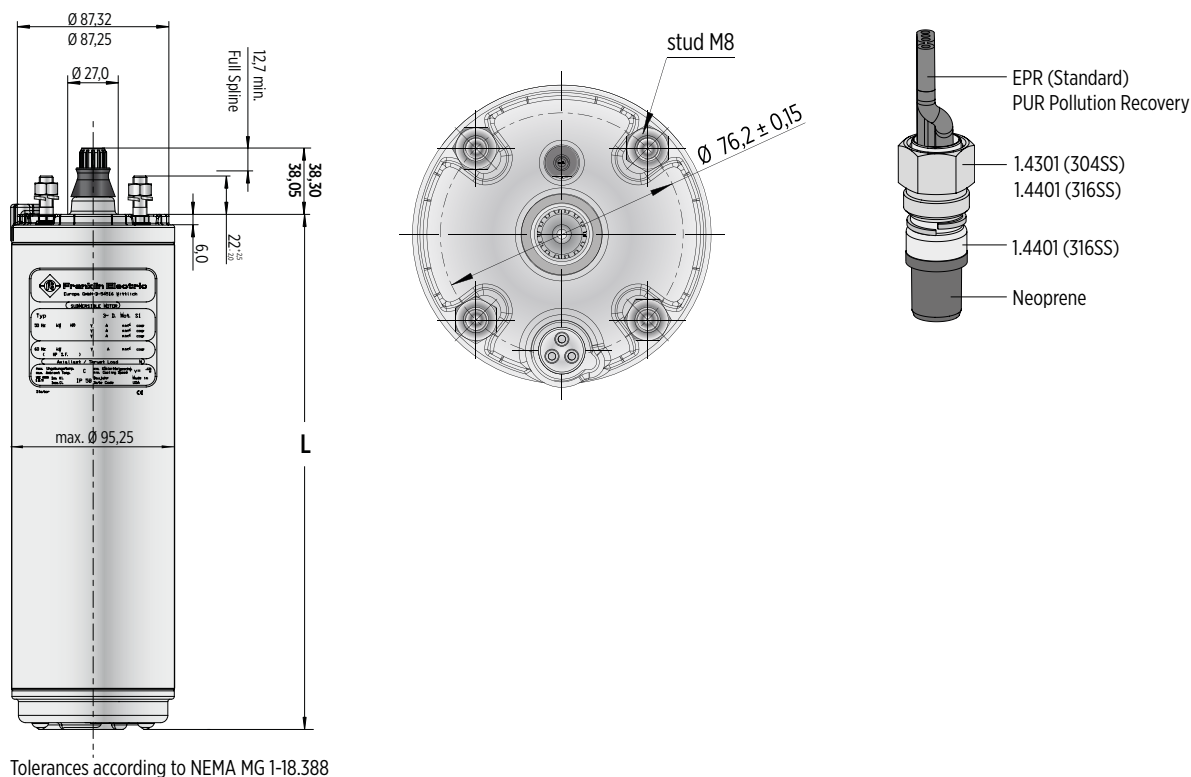
lead lengths motors „L“ : up to 1.5 kW with 1.50 m preassembled cable

4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR PERFORMANCE DATA | 50 HZ

P _N [kW]	Thrust F [N]	U _N [V]	n _N [min ⁻¹]	I _N [A]	I _A [A]	η (Eff.) [%]	cos φ (Pf.)	T _A [Nm]	T _A [Nm]	length [mm]	weight [kg]
0,16 - 0,32	4000	2910	0.56	0.56	3.7	64	0.68	0.52	2.4	237.2	5.6
		2860	0.7	0.7		70	0.78	0.84			
		2820	0.8	0.8		70	0.83	1.08			
0,30 - 0,60	4000	2920	0.95	0.95	7.1	71	0.65	0.98	4.8	271.2	7.3
		2870	1.2	1.2		74	0.78	1.56			
		2830	1.4	1.4		75	0.84	2.02			
0,55 - 1,1	4000	2910	1.7	1.7	12.2	75	0.67	1.8	8.5	297.2	8.6
		2870	1.9	1.9		76	0.76	2.48			
		2800	2.5	2.5		76	0.85	2.74			

4" ENCAPSULATED HEAT PUMP MOTOR - 3-PHASE

4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR DESIGN



4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR SPARE PARTS - KITS

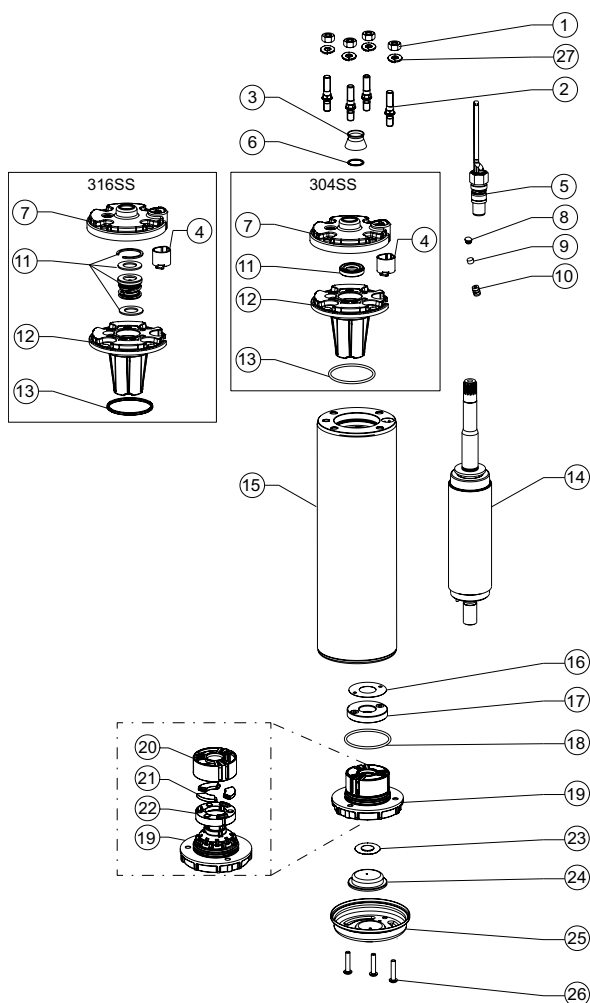
Kit	description	included positions	part no.
Kit A1	Top Endbell 304SS	4, 7, 8, 9, 10, 11, 12, 13	308 462 902
	Top Endbell 316SS*		308 462 952
Kit A2	Bottom Endbell 304SS incl. Thrust Bearing Kit 4000N	16 - 22	308 464 911
	Bottom Endbell 316SS incl. Thrust Bearing Kit 4000N*		308 464 912
Kit B	Seal Kit Standard 304SS	3, 6, 8, 9, 11, 13, 18, 23, 24	308 650 201
	Seal Kit Standard 316SS*		308 650 251
	Seal Kit Pollution Recovery 304SS		308 650 202
	Seal Kit Pollution Recovery 316SS*		308 650 252
Kit C	Fastener Kit 304SS	1, 2, 26, 27	308 656 202
	Fastener Kit 316SS*		308 656 252

4CT HEAT PUMP MOTOR - 3-PHASE - STATOR AND ROTOR

P _N [kW]	U _N [V]	model no. 304SS	model no. 316SS	model no. stator 304SS / 316SS	model no. rotor 304SS	model no. rotor 316SS
0,16 - 0,32	400	234 870 6721L	234 870 6821L	305 *** **	178 164 901K	178 164 951K
0,30 - 0,60	400	234 871 6721L	234 871 6821L	305 *** **	178 164 903K	178 164 953K
0,55 - 1,1	400	234 872 6721L	234 872 6821L	305 *** **	178 164 905K	178 164 955K

4" ENCAPSULATED HEAT PUMP MOTOR - 3-PHASE

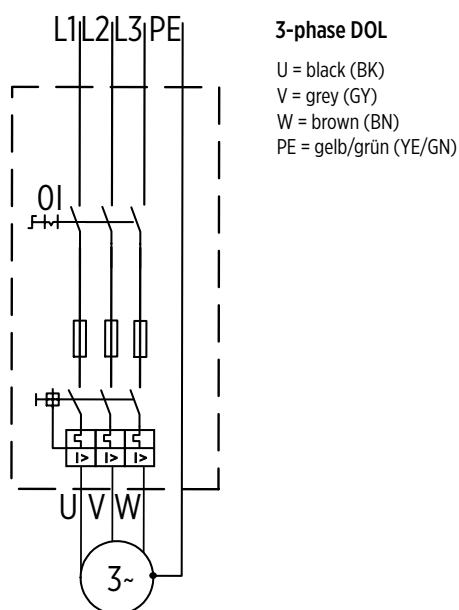
4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR PART DESCRIPTION



Pos.	part description	qty.	part no.
1	Nut	4	Kit C
2	Stud	4	Kit C
3	Protector, Spline	1	Kit B
4	Connector boss	1	151 820 103
5	Motor Lead	1	<i>cf. section</i>
6	Washer	1	Kit B
7	Top Endbell, Cover 304SS	1	150 262 151
	Top Endbell, Cover 316SS*	1	150 262 251
8	Filter plug	1	Kit
9	Filter	1	Kit
10	Valve	1	Kit
11	Shaft Seal	1	Kit B
12	Top Endbell	1	Kit
13	O-Ring	1	Kit B
14	Rotor	1	<i>cf. section</i>
15	Stator	1	<i>cf. section</i>
16	Level washer	1	Kit A2
17	Thrust disk assy	1	Kit A2
18	O-Ring	1	Kit B / Kit A2
19	Bottom Endbell	1	Kit A2
20	Bearing cage	1	Kit A2
21	Segments	3	Kit A2
22	Gasket	1	Kit A2
23	Diaphragm washer	1	151 314 101 / Kit A2
24	Diaphragm	1	Kit B / Kit A2
25	Bottom Endbell Cover 304SS	1	156 414 201 / Kit A2
	Bottom Endbell Cover 316SS*	1	156 414 301 / Kit A2
26	Screw, Cover	3	Kit C
27	Lock washer	4	Kit C

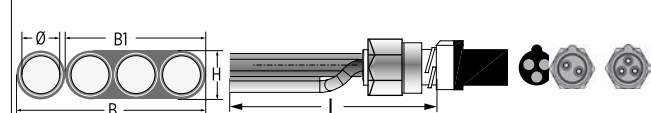
4" ENCAPSULATED HEAT PUMP MOTOR - 3-PHASE

4CT HEAT PUMP MOTOR - 3-PHASE - CONNECTIONS



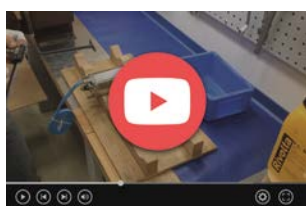
4CT HEAT PUMP MOTOR - 3-PHASE - MOTOR LEADS

3-phase motor leads 0.16 - 1.1 kW			
Ø [mm²]	B [mm]	B1 [mm]	H [mm]
3X1,5 + 1G1,5	16,8	10,7	5,0

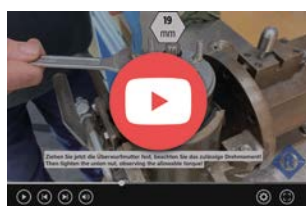


L [m]	model no.	
	304SS	316SS
1,5	310 113 401	310 113 501
2,5	310 113 402	310 113 502
5	310 113 405	310 113 505
10	310 113 410	310 113 510
15	310 113 415	310 113 515
20	310 113 420	310 113 520
30	310 113 430	310 113 530
40	310 113 440	310 113 540
50	310 113 450	310 113 550

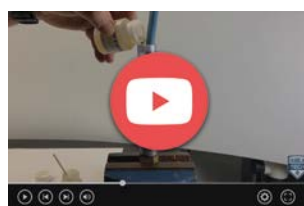
YOUTUBE TUTORIALS



Tutorial 4CT cable mounting



Tutorial 4CT cable installation



Tutorial 4" termination kit assembly