

4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

SPECIFICATION

- Motors for operation with Variable frequency drive (VFD)
 - 4" NEMA mounting design
 - Stainless steel splined shaft
 - StatorShield™ - Franklin encapsulation system
 - Factory filled with Franklin's non-toxic water soluble fill solution
 - Max. storage temperature 0°C - + 50°C
 - High-capacity Kingsbury type water lubricated thrust bearing
 - Field replaceable lead using Franklin's exclusive Water Bloc technology
 - Pressure-equalizing diaphragm
 - High efficiency electrical design for low operation costs
 - All motors manufactured in ISO 9001 & 14001 certified plants and 100% tested
 - Suitable for use in water with increased salinity (Brackish water version optional)
 - Drinking water approvals
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- Motor ratings: 0.55 - 3.0 kW; Thrust load; 4 kN
 - Motor ratings: 3.0 - 7.5 kW; Thrust load: 6.5 kN
 - Voltage: 220 V / 380 V (100 Hz - 3000 U/min; 120 Hz - 3600 U/min)
 - Voltage tolerance: $\pm 10\% U_N$
 - Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
 - Protection IP68 / insulation class B
 - Frequency of starts: max. 20 ; with 3 min. rest period
 - Motors installation orientation: Vertical / horizontal (shaft end heightened)
 - All motors with factory installed leads: ≤ 2.2 kW: 1.50 m; ≥ 3 kW: 2.50 m, special lead lengths on request



3~ 304SS / 316SS MODEL NUMBERS 220 V / 100 & 120 HZ**

P _N [kW]	U _N [V]	Thrust F [N]	f [Hz]	Digit 1 - 6	Digit 7 - 10	
					Standard 304SS	Standard 316SS
					Single pack with lead*	Single pack with lead*
0.55 - 1.1	220	4000	100	234 071	6721L	6821L
			120	234 051		
1.1 - 2.2	220	4000	100	234 072	6721L	6821L
			120	234 052		
2.2 - 3.0	220	4000	100	234 073	6721L	6821L
			120	234 053		
3.0 - 4.0	220	6500	100	234 074	3421L	3521L
			120	234 054		

3~ 304SS / 316SS MODEL NUMBERS 380 V / 100 HZ**

P _N [kW]	U _N [V]	Thrust F [N]	Digit 1 - 6	Digit 7 - 10	
				Standard 304SS	Standard 316SS
				Single pack with lead*	Single pack with lead*
1.1 - 2.2	380	4000	234 062	6721L	6821L
2.2 - 3.0	380	4000	234 063	6721L	6821L
3.0 - 4.0	380	6500	234 064	3421L	3521L
4.0 - 7.5	380	6500	234 066	3421L	3521L

* Lead lengths Motors "L" : with pre-mounted cable 1.5m/ 6500N- 2.5m

** PM motors are to be operated by Variable frequency drive (VFD)

4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

MOTOR PERFORMANCE DATA 220 V / 100 HZ

System model no.	Motor model no.	P _N [kW]	Thrust F [N]	U _N [V]	n [min ⁻¹]	I _N [A]	I _A /I _N [A]	η [%]	cos phi	T _N [Nm]	T _A /T _N [*] [Nm]
308 071 001	234 071 ***	0.55	4000	220	3000	1.8	1	85.1	0.95	1.8	1
		0.75				2.4		85.6		2.4	
		1.1				3.8		83.5		3.5	
308 072 001	234 072 ***	1.1	4000	220	3000	3.4	1	86.4	0.96	3.5	1
		1.5				4.8		88.0		4.8	
		2.2				7.0		87.0		7.0	
308 073 001	234 073 ***	2.2	4000	220	3000	6.9	1	90.3	0.96	7.0	1
		3.0				9.4		90.2		9.6	
308 074 001	234 074 ***	3.0	6500	220	3000	10.2	1	90.7	0.94	9.6	1
		3.7				12.0		91.0		11.8	
		4.0				13.0		91.0		12.7	

MOTOR PERFORMANCE DATA 220 V / 120 HZ

System model no.	Motor model no.	P _N [kW]	Thrust F [N]	U _N [V]	n [min ⁻¹]	I _N [A]	I _A /I _N [A]	η [%]	cos phi	T _N [Nm]	T _A /T _N [*] [Nm]
	234 051 ****	0.55	4000	220	3600	2.0	1	85.1	0.95	1.8	1
		0.75				2.6		85.6		2.4	
		1.1				3.8		83.5		3.5	
	234 052 ****	1.1	4000	220	3600	4.1	1	86.4	0.94	3.5	1
		1.5				5.0		88.0		4.8	
		2.2				7.1		87.0		7.0	
	234 053 ****	2.2	4000	220	3600	6.9	1	90.3	0.96	7.0	1
		3.0				9.4		90.2		9.6	
	234 054 ****	3.0	6500	220	3600	9.7	1	90.7	0.94	9.6	1
		3.7				11.5		91.0		11.8	
		4.0				12.5		91.0		12.7	

MOTOR PERFORMANCE DATA 380 V / 100 HZ

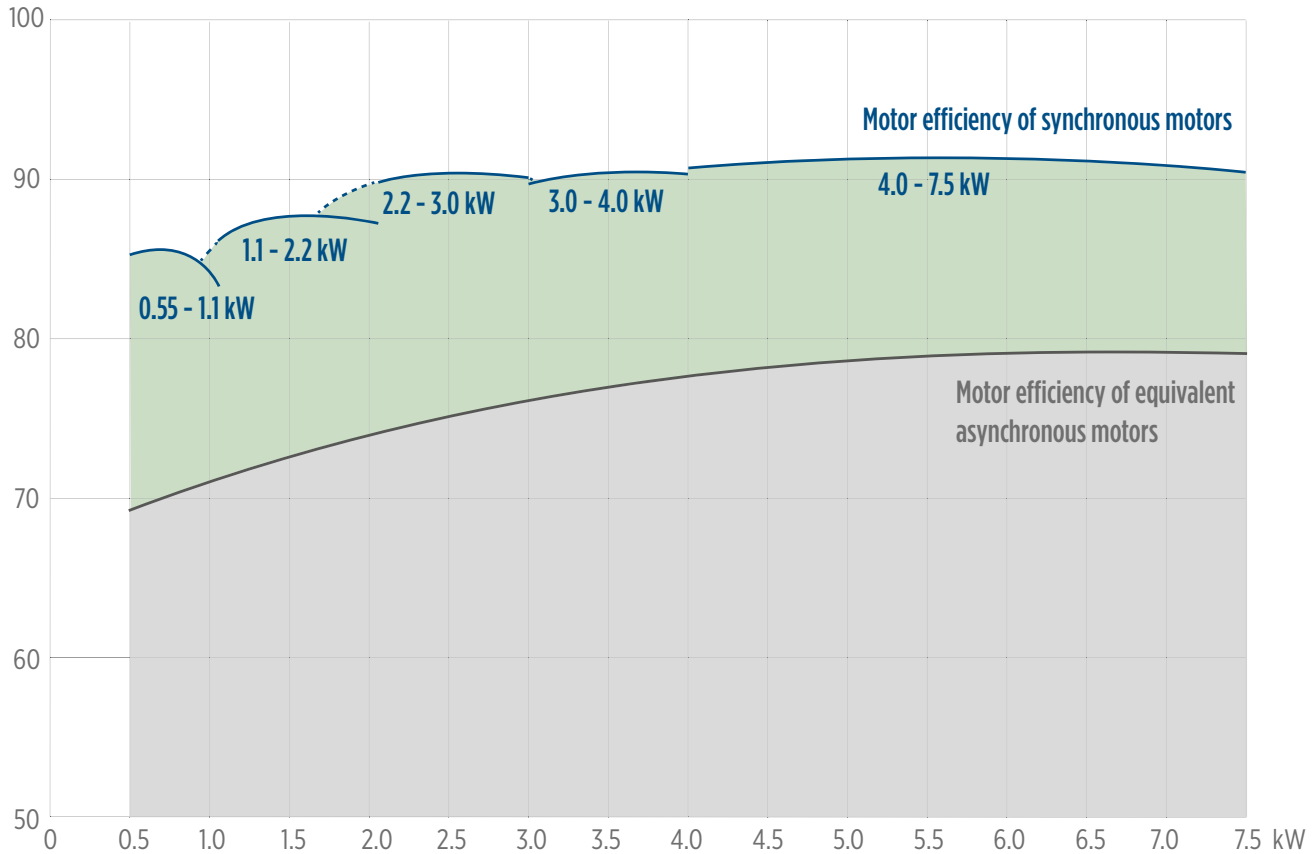
System model no.	Motor model no.	P _N [kW]	Thrust F [N]	U _N [V]	n [min ⁻¹]	I _N [A]	I _A /I _N [A]	η [%]	cos phi	T _N [Nm]	T _A /T _N [*] [Nm]
308 062 00X	234 062 ***	1.1	4000	380	3000	2.2	1	86.4	0.95	3.5	1
		1.5				2.8		88.0		4.8	
		2.2				4.0		87.0		7.0	
308 063 00X	234 063 ***	2.2	4000	380	3000	4.0	1	89.6	0.95	7.0	1
		3.0				5.4		90.0		9.6	
308 064 00X	234 064 ***	3.0	6500	380	3000	5.7	1	89.7	0.96	9.6	1
		3.7				6.7		90.2		11.8	
		4.0				7.3		90.2		12.7	
308 066 00x	234 066 ***	4.0	6500	380	3000	7.3	1	90.7	0.95	12.7	1
		5.5				9.7		91.0		17.5	
		7.5				13.1		90.5		23.9	

Performance data are based on measurements with Franklin Electric original equipment.
 *Since this is an integrated system (motor plus electronics) these figures relate to VFD input.

4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

EFFICIENCY CURVE AT 3000 RPM

efficiency [%] Motor η 220 (380) V / 100 Hz [%] = f (P2 [kW])



MOTOR LEADS / ELECTRICAL CONNECTION 3~ MOTORS

3- PM motors	Motor lead*			
	0.55 - 7.5 kW			
	Ø [mm]	B [mm]	B1 [mm]	H [mm]
		3 x 1.5 + 1G 1.5	16.8	10.7
	L [m]		304SS / 316SS	
	1.50		310 178 501	
	2.50		310 113 502	
	5		310 113 505	
	10		310 113 510	
	15		310 113 515	
	20		310 113 520	

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

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WINDING RESISTANCE 220 V / 100 HZ

P_N [kW]	U_N [V]	Stator Ref.	U - V (Ohm)	Rotor Ref.
0.55 - 1.1	220	327 460 ***	7.7 - 8.14	178 172 901
1.1 - 2.2	220	327 461 ***	2.30 - 2.40	178 172 903
2.2 - 3.0	220	327 462 ***	1.45 - 1.54	178 172 904
3.0 - 4.0	220	327 463 ***	0.78 - 0.82	178 173 921

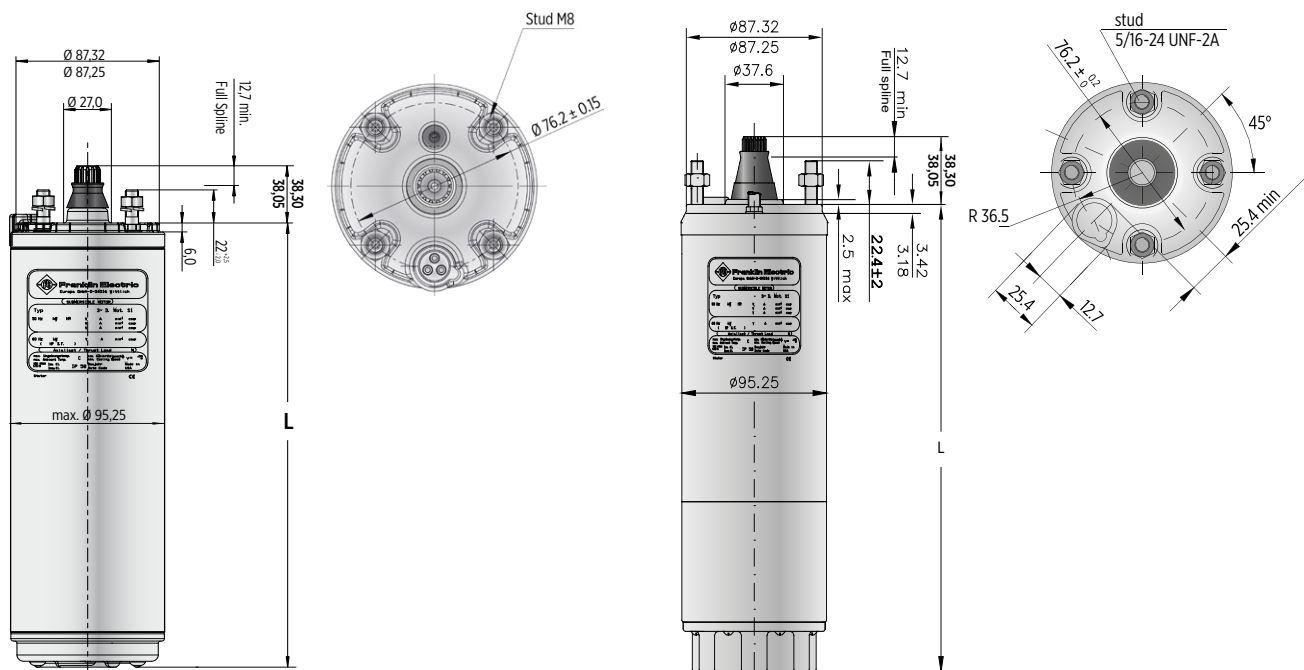
WINDING RESISTANCE 380 V / 100 HZ

P_N [kW]	U_N [V]	Stator Ref.	U - V (Ohm)	Rotor Ref.
1.1 - 2.2	380	327 451 ***	8.0 - 8.4	178 172 903
2.2 - 3.0	380	327 452 ***	4.4 - 4.62	178 172 904
3.0 - 4.0	380	327 453 ***	2.7 - 2.9	178 173 921
4.0 - 7.5	380	327 454 ***	1.88 - 2.07	178 141 901

MOTOR DIMENSIONS

0.55 - 3.0 kW [4000 N]

3.0 - 7.5 kW [6500 N]



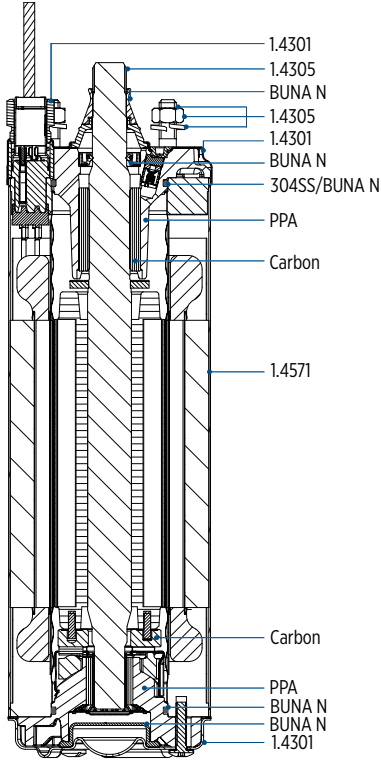
P_N [kW]	U_N [V]	Thrust F [N]	L [mm]	M [kg]	Motor with lead in single pack	
					[mm]	[kg]
0.55 - 1.1	220	4000	218	5.2	530 x 100 x 110	6
1.1 - 2.2	220	4000	263	7.2	530 x 100 x 110	8
2.2 - 3.0	220	4000	353	9.2	560 x 100 x 110	10
3.0 - 4.0	220	6500	429	15.2	560 x 100 x 110	16
1.1 - 2.2	380	4000	263	7.2	560 x 100 x 110	8
2.2 - 3.0	380	4000	353	9.2	560 x 100 x 110	10
3.0 - 4.0	380	6500	429	15.2	796 x 100 x 110	16
7.5	380	6500	531	19.8	796 x 100 x 110	20

tolerances according to NEMA MG 1-18.388

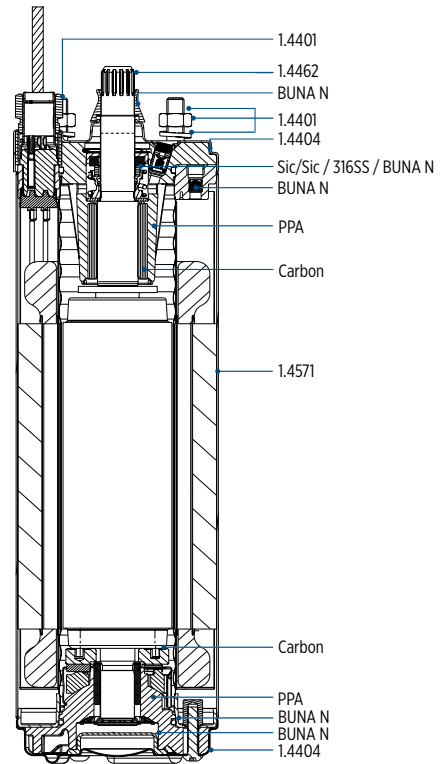
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MOTOR MATERIALS 4000 N

304SS

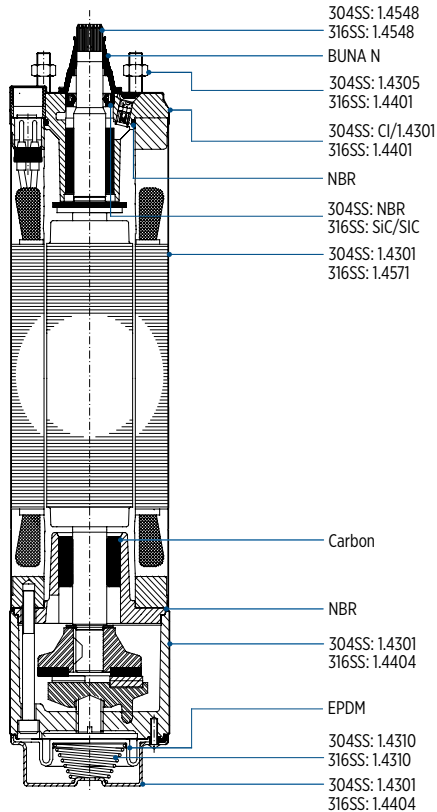


316SS



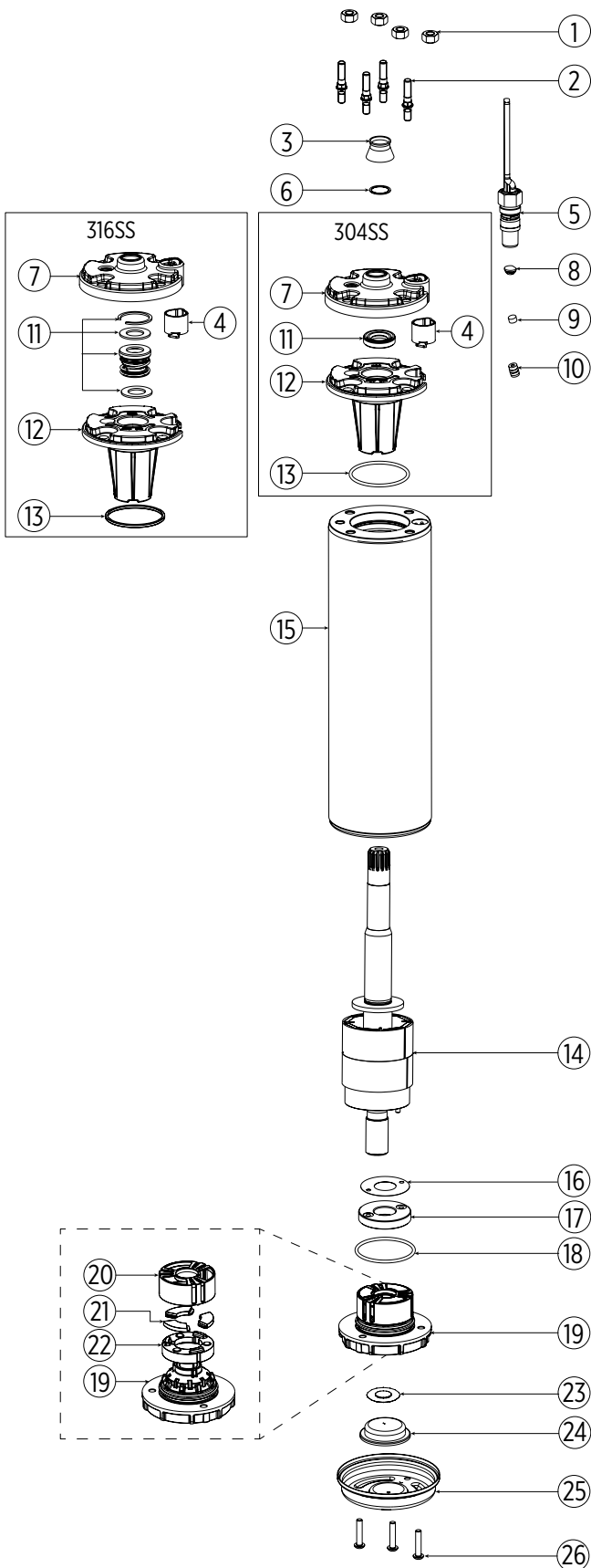
MOTOR MATERIALS HIGH THRUST 6500 N

304SS / 316SS



4" 3~ ENCAPSULATED PM MOTOR SPARE PARTS 0.55 - 3.0 KW / 4000 N

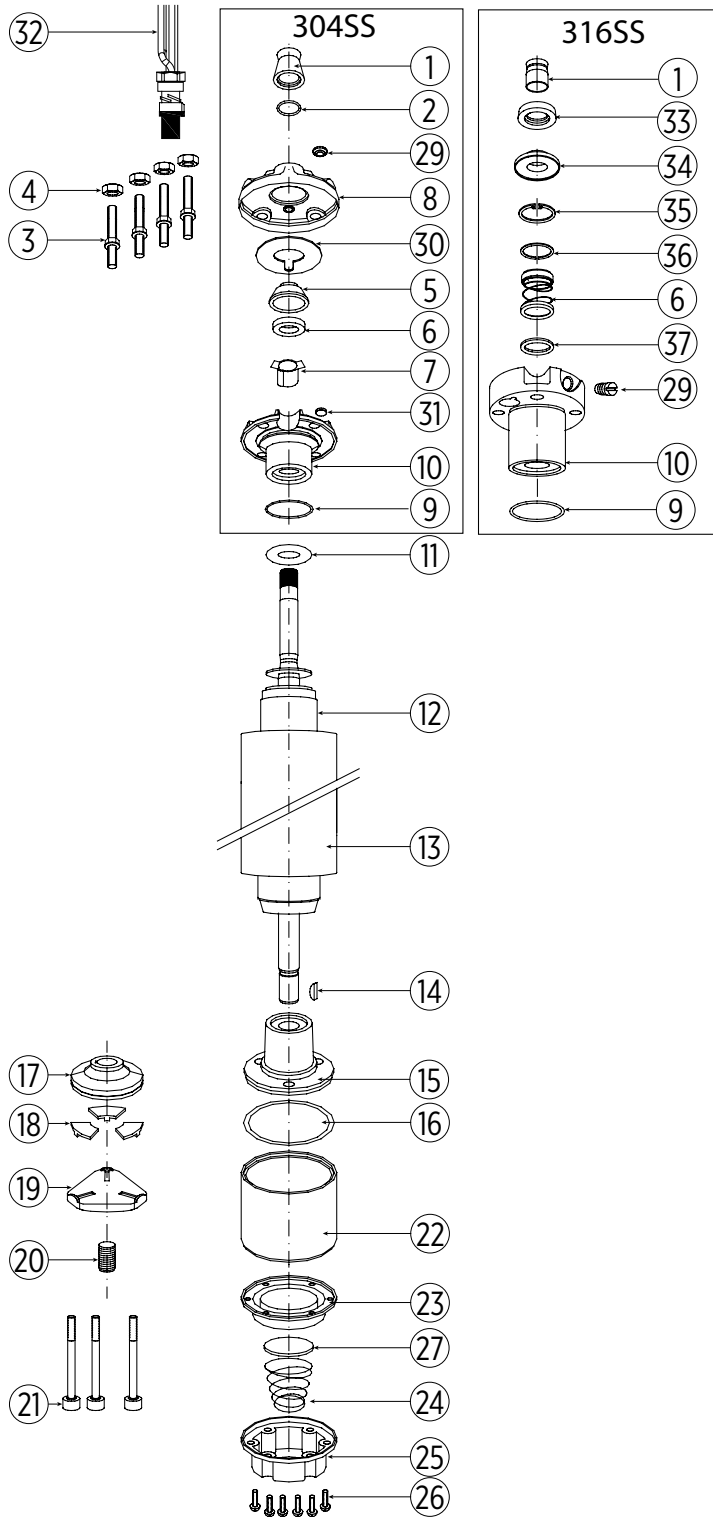
MOTOR PARTS DESCRIPTION



Pos.	Part Description	Qty.	Part number
1	nut M8	4	Kit C
2	stud M8	4	Kit C
3	protector (spline)	1	Kit B
4	connector boss	1	Kit A1 151820103
5	motor lead	1	see page 66
6	washer	1	Kit B
7	top endbell, cover 304SS	1	Kit A1 150262151
	top endbell, cover 316SS	1	Kit A1 150262251
8	plug	1	Kit B
9	filter	1	Kit B
10	valve	1	Kit A
11	shaft seal	1	Kit B
12	top endbell	1	Kit A
13	O-ring	1	Kit B
14	rotor	1	see page 71
15	stator	1	see page 71
16	level washer	1	Kit A
17	thrust disc assy	1	Kit A
18	O-ring	1	Kit B
19	bottom endbell	1	Kit A2
20	bearing cage	1	Kit A
21	segments	3	Kit A
22	rocking disc	1	Kit A
23	diaphragm washer	1	Kit B 151314101
24	diaphragm	1	Kit B
25	bottom endbell cover 304SS	1	156 414 201
	bottom endbell cover 316SS		156 414 301
26	screw, cover	3	Kit C

4" 3~ ENCAPSULATED PM MOTOR SPARE PARTS 3.0 - 7.5 kW / 6500 N

MOTOR PARTS DESCRIPTION



Pos.	Part Description	Qty.	Part No.
1	protector, spline	1	Kit B
2	washer	1	Kit B
3	stud	4	Kit D
4	nut	4	Kit D
5	seal cover	1	Kit
6	shaft seal	1	Kit B
7	connector boss	1	see page 71
8	top endbell, cover	1	Kit
9	O-ring	1	Kit B
10	top endbell	1	Kit
11	upthrust washer	1	Kit
12	rotor	1	see page 71
13	stator	1	see page 71
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	adjusting screw	1	151 048 103
21	screws	3	Kit D
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	screws	6	Kit D
27	cup spring, diaphragm	1	151 448 101
29	sealing stopper (304SS)	1	Kit B
	plug screw (316SS)		308 279 903
30	seal	1	Kit B
31	filter	1	Kit B
32	motor lead	1	see page 66
33	sand slinger (316SS)	1	Kit B
34	seal cover (316SS)	1	Kit B
35	ring	1	Kit B
36	spring ring	1	Kit B
37	support disc seal	1	308 747 201

4" 3~ ENCAPSULATED PM MOTOR SPARE PARTS

OVERVIEW SPARE PARTS KITS 4000 N

P _N [kW]	0.55 - 3.0 kW	including positions	order no.
Kit A1	upper end bell 304SS	4, 7 - 13	308 462 901
	upper end bell 316SS		308 462 951
Kit A2	lower end bell incl. thrust bearing kit 4000N	16 - 22	308 464 911
Kit B	seal kit Standard 304SS	3, 6, 8, 9, 11, 13, 18, 23	308 650 201
	seal kit Standard 316SS		308 650 251
Kit C	fastener kit 304SS	1, 2, 26	308 656 201
	fastener kit 316SS		308 656 251

OVERVIEW SPARE PARTS KITS MOTORS 6500 N

P _N [kW]	upper end bell (Pos. 10)	lower end bell (Pos. 15)	Upthrust washer (Pos. 11)
3.0 - 7.5	308 233 509 - 304SS	177 379 921	308 268 104
	3.0 - 4.0kW - 177 390 957 - 316SS		3.0 - 4.0kW - 308 747 101
	4.0 - 7.5kW - 177 390 959 - 316SS	177 379 901	4.0 - 7.5kW - 275 540 163
Kit A	thrust bearing kit 6500N	incl. pos. 17, 18	308 700 301
Kit B	seal kit 304SS	incl. pos. 1, 2, 6, 9, 16, 23, 29, 31	308 900 351
	seal kit 316SS	incl. pos. 6, 9, 16, 23, 34, 35, 36	308 900 302
Kit D	fastener kit 304SS	incl. pos. 3, 4, 21, 26	308 658 351
	fastener kit 316SS		308 658 301

SPARE PARTS STATOR AND ROTOR 220 V

P _N [kW]	U _N [V]	Thrust F [N]	Model no. Motor	Model no. Stator	Model no. Rotor
0.55 - 1.1	220	4000	234 071 ****	305 491 951	178 172 901 K
1.1 - 2.2	220	4000	234 072 ****	305 491 952	178 172 903 K
2.2 - 3.0	220	4000	234 073 ****	305 491 953	178 172 904 K
3.0 - 4.0	220	6500	234 074 ****	305 491 957	178 173 921 K

SPARE PARTS STATOR AND ROTOR 380 V

P _N [kW]	U _N [V]	Thrust F [N]	Model no. Motor	Model no. Stator	Model no. Rotor
1.1 - 2.2	380	4000	234 062 ****	305 491 954	178 172 903 K
2.2 - 3.0	380	4000	234 063 ****	305 491 955	178 172 904 K
3.0 - 4.0	380	6500	234 064 ****	305 491 958	178 173 921 K
7.5	380	6500	234 066 ****	305 491 959	178 141 921 K



Youtube tutorial 4 CT motor cable mounting: <https://youtu.be/tHFNfUByT3s>