PRODUCT CATALOG

# SUBMERSIBLE MOTORS SYSTEMS, DRIVES AND ACCESSORIES




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Franklin Electric

# MOVING WATER IS OUR BUSINESS







Franklin Electric

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# 4" SUPER STAINLESS MOTOR – PSC DESIGN

STAINLESS STEEL 304

## FEATURES & BENEFITS

- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's non-toxic water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity

## SPECIFICATION

- Ratings: 0.25 - 2,2 kW
- Frequency: 50 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz)
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m)
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (1 phase motors CW upon request)

**Pollution Recovery version:**

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS (316SS Stator) graded Stainless Steel as Standard

## OPTIONS

- Built in lightning arrestors
- Special lead lenghts
- PSC motor sets with accessories



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ – Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS MOTOR – PSC DESIGN

## MOTOR MODEL NUMBERS 50 HZ - PSC DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | |
|---|---|---|---|---|---|
| | | | Single pack, with lead* | Motors in 40 motors packing unit | Pollution Recovery Motors (Single pack, with lead)* |
| 0,25 | 220-230 | 254 803 | 6721L | 6721 | 6723L |
| | 230-240 | 254 813 | 6721L | 6721 | 6723L |
| 0,37 | 220-230 | 254 805 | 6721L | 6721 | 6723L |
| | 230-240 | 254 815 | 6721L | 6721 | 6723L |
| 0,55 | 220-230 | 254 807 | 6721L | 6721 | 6723L |
| | 230-240 | 254 817 | 6721L | 6721 | 6723L |
| 0,75 | 220-230 | 254 808 | 6721L | 6721 | 6723L |
| | 230-240 | 254 818 | 6721L | 6721 | 6723L |
| 1,1 | 220-230 | 254 809 | 6721L | 6721 | 6723L |
| | 230-240 | 254 819 | 6721L | 6721 | 6723L |
| 1,5 | 220-230 | 254 810 | 6721L | 6721 | 6723L |
| | 230-240 | 254 820 | 6721L | 6721 | 6723L |
| 2,2 | 220-230 | 254 811 | 6721L | 6721 | 6723L |
| | 230-240 | 254 821 | 6721L | 6721 | 6723L |

## MOTOR PERFORMANCE DATA 220-230V / 50 HZ - PSC DESIGN

| $P_N$ [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 | |

# 4" SUPER STAINLESS MOTOR – PSC DESIGN

## MOTOR PERFORMANCE DATA 230-240V / 50 HZ - PSC DESIGN

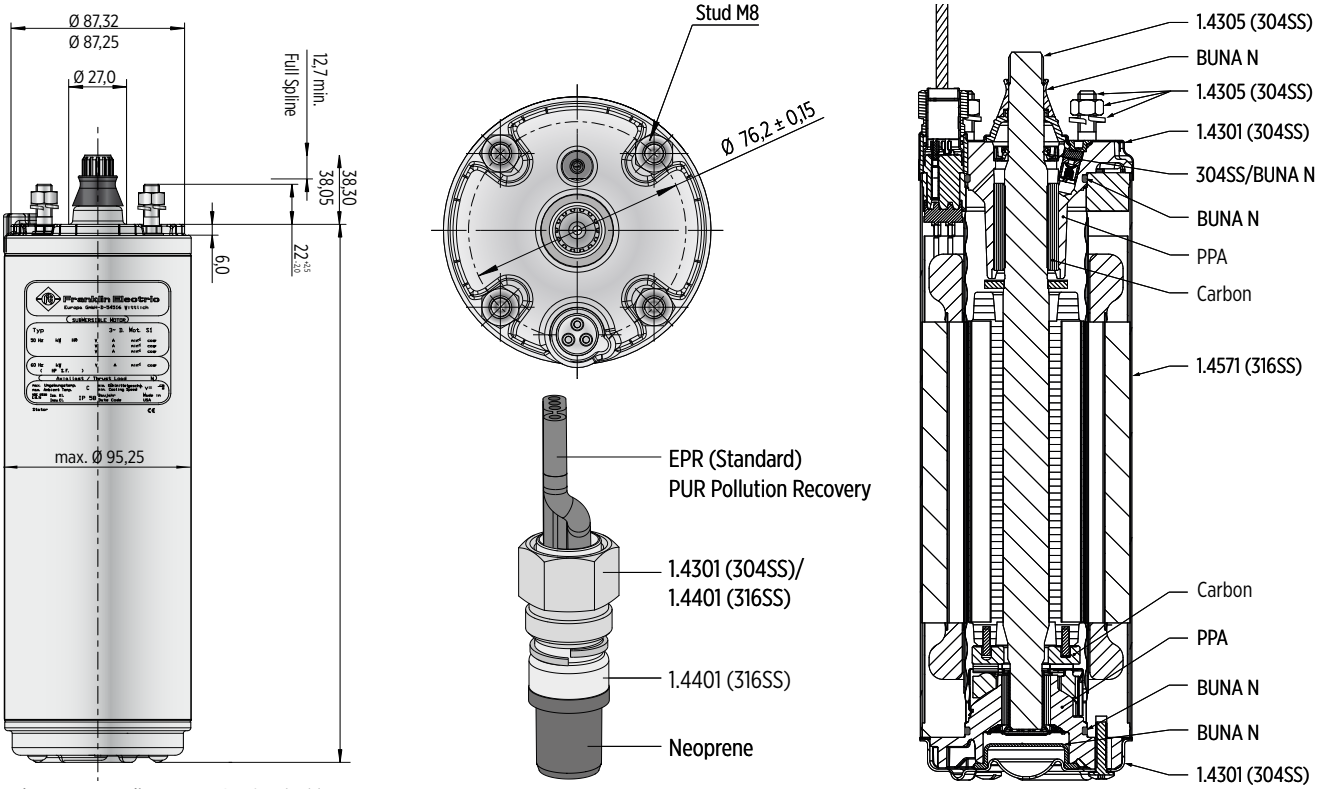
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (Pf.) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] | Capacitor μF ($U_C$=450V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | |
| 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 | |

## WINDING RESISTANCE DATA 50 HZ - PSC DESIGN

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

# MOTORDESIGN, DIMENSION AND LEADS

## PSC MOTORDESIGN 304SS 0,25 - 2,2 KW

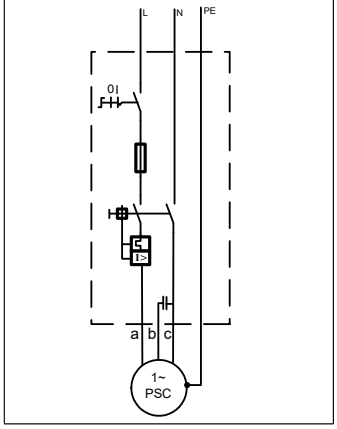



Tolerances according to NEMA MG 1-18.388

## LENGTHS AND WEIGHTS - PSC DESIGN

| $P_N$ | | L [mm] | M [kg] | motor with lead in single pack | |
|---|---|---|---|---|---|
| [kW] | [HP] | | | [mm] | [kg] |
| 0,25 | 0,33 | 237,2 | 6,55 | 400 x 100 x 110 | 7,25 |
| 0,37 | 0,50 | 251,1 | 7,20 | 400 x 100 x 110 | 7,9 |
| 0,55 | 0,75 | 276,2 | 8,35 | 530 x 100 x 110 | 9,05 |
| 0,75 | 1,00 | 297,2 | 9,30 | 530 x 100 x 110 | 10,0 |
| 1,10 | 1,50 | 321,2 | 10,45 | 530 x 100 x 110 | 11,15 |
| 1,50 | 2,0 | 353,2 | 11,90 | 796 x 100 x 110 | 12,6 |
| 2,20 | 3,0 | 451,2 | 16,65 | 796 x 100 x 110 | 17,35 |

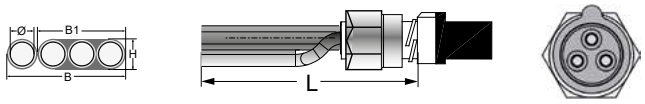
PSC 1~ Motor




a = black | b = brown | c = grey | PE = yellow/green

## MOTOR LEADS - PSC DESIGN

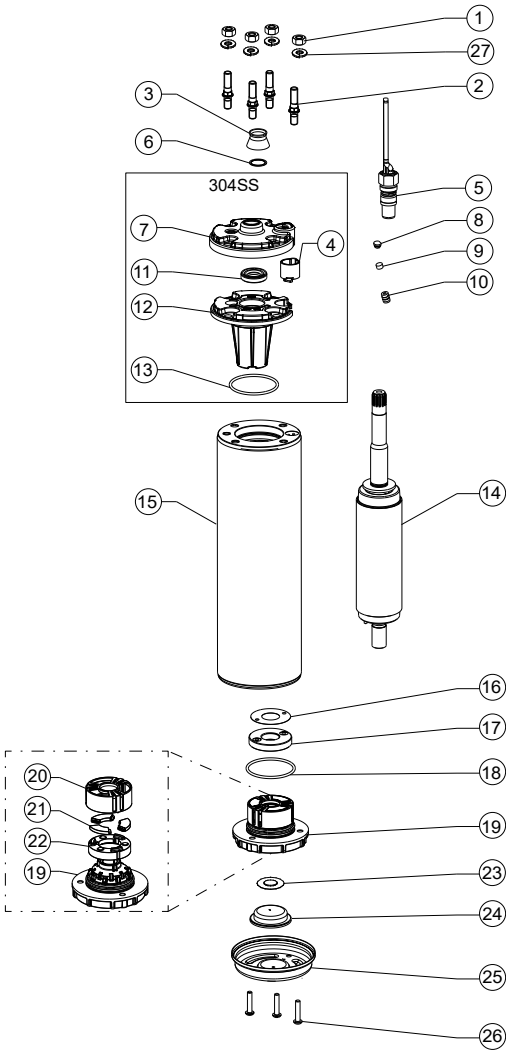
| PSC motor leads 0,25 - 2,2 kW | | | |
|---|---|---|---|
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |




| L [m] | Model numbers 304SS | Model numbers 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 |

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0.25 - 2,2 KW




| 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 | Page 7 |
| 6 | Washer | 1 | Kit B |
| 7 | Top Endbell, Cover 304SS | 1 | 150 262 151 |
| 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 | Page 9 |
| 15 | Stator | 1 | Page 9 |
| 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 / KitA2 |
| 25 | Bottom Endbell Cover 304SS | 1 | 156 414 201 / Kit A2 |
| 26 | Screw, Cover | 3 | Kit C |
| 27 | Lock washer | 4 | Kit C |

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 0.25 - 2,2 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 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 | incl. pos. 16 - 22 | 308 464 911 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 3, 6, 8, 9, 11, 13, 18, 23, 24 | 308 650 201 |
| | Seal Kit Pollution Recovery 304SS | | 308 650 202 |
| Kit C | Fastener Kit 304SS | incl. pos. 1, 2, 26, 27 | 308 656 202 |

## SPARE PARTS PSC DESIGN - STATOR AND ROTOR 50HZ 0.25 - 2,2 KW

| $P_N$ [kW] | $U_N$ [V] | Model no. stator 304SS | Model no. rotor 304SS |
|---|---|---|---|
| 0,25 | 220 / 230 | 305 491 801 | 178 165 901K |
| | 230 / 240 | 305 491 821 | |
| 0,37 | 220 / 230 | 305 491 802 | 178 165 902K |
| | 230 / 240 | 305 491 822 | |
| 0,55 | 220 / 230 | 305 491 803 | 178 165 903K |
| | 230 / 240 | 305 491 823 | |
| 0,75 | 220 / 230 | 305 491 804 | 178 165 904K |
| | 230 / 240 | 305 491 824 | |
| 1,1 | 220 / 230 | 305 491 805 | 178 165 905K |
| | 230 / 240 | 305 491 825 | |
| 1,5 | 220 / 230 | 305 491 806 | 178 165 906K |
| | 230 / 240 | 305 491 826 | |
| 2,2 | 220 / 230 | 305 491 807 | 178 165 907K |
| | 230 / 240 | 305 491 827 | |

# 4" SUPER STAINLESS MOTOR – PSC MOTOR SET

## FEATURES & BENEFITS

- One stop shop – no hassle selecting different components to work together
- PSC submersible motor, SubStart SC / SubTronic SC control box, motor short lead and splicing kit all packaged
- 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$^2$) can be spliced using included kit
- available with SubStartSC Motorstarter or SubTronicSC Motor Protection Box




## SPECIFICATION

- 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; and special lengths available)

## PSC MOTOR SET MODEL NUMBERS 1~ 50 HZ

| $P_N$ [kW] | $U_N$ [V] | Modellnummern | |
|---|---|---|---|
| | | Standard PSC Motor Set with SubStartSC Box | PSC Motor Set with SubTronicSC Box |
| 0,25 | 220-230 | 254 803 6721C | 254 803 6721D |
| | 230-240 | 254 813 6721C | 254 813 6721D |
| 0,37 | 220-230 | 254 805 6721C | 254 805 6721D |
| | 230-240 | 254 815 6721C | 254 815 6721D |
| 0,55 | 220-230 | 254 807 6721C | 254 807 6721D |
| | 230-240 | 254 817 6721C | 254 817 6721D |
| 0,75 | 220-230 | 254 808 6721C | 254 808 6721D |
| | 230-240 | 254 818 6721C | 254 818 6721D |
| 1,10 | 220-230 | 254 809 6721C | 254 809 6721D |
| | 230-240 | 254 819 6721C | 254 819 6721D |
| 1,50 | 220-230 | 254 810 6721C | 254 810 6721D |
| | 230-240 | 254 820 6721C | 254 820 6721D |
| 2,20 | 220-230 | 254 811 6721C | 254 811 6721D |
| | 230-240 | 254 821 6721C | 254 821 6721D |

# 4" SUPER STAINLESS MOTOR – PSC MOTOR SET PARTS DESCRIPTION

## PSC MOTORS

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:

- StatorShield™ - Franklin encapsulation system
- Stator with 316SS shell.
- 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
- Max. storage temperature -15°C - + 50°C
- Various agency approvals for use in drinking water
- Suitable for use in water with increased salinity

## Technical specification:

- Motor range: 0,25 – 2,2kW, 1~ 50Hz
- 4" NEMA flange
- 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
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1
- Rotation counter clock wise facing shaft end (1 phase motors CW upon request)

## SubStart SC/ Subtronic SC - Motor starter /Motor protection

The SubStartSC and 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 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 advantages:

- 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

* For detailed product information, please see page: 280/281 and 284/285

## Lead Splicing Kit up to 10 MM²

| Tech. Description | Mod. Nb. | Description | for cross-sections up to [mm²] | L [mm] | Ø [mm] | H [mm] | Max. cable Ø [mm] |
|---|---|---|---|---|---|---|---|
| • 4 wire<br>• up to 10 mm²<br>• up to 1,2kV | 308 090 930 | Splicing Kit 10 | 1.5 - 10 | 190 | 36 | 50 | 26 |



# 4" SUPER STAINLESS MOTOR – 2WIRE DESIGN

STAINLESS STEEL 304

## FEATURES & BENEFITS

- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's non-toxic water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity
- Internal Automatic reset overload
- Built-in surge arrestors

## SPECIFICATION

- Ratings: 0.37 - 1.1 kW
- Frequency: 50 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz)
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m)
- Special lead length up to 50 m,
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (1 phase motors CW upon request)

**Pollution Recovery version:**

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS (316SS Stator) graded Stainless Steel as Standard

## OPTIONS

- Built in lightning arrestors
- Special lead lengths



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ – Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 2-WIRE MOTOR DESIGN FUNCTION DESCRIPTION

## 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" SUPER STAINLESS MOTOR – 2-WIRE DESIGN

## MOTOR MODEL NUMBERS 50 HZ - 2-WIRE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | |
|---|---|---|---|---|
| | | | Single pack, with lead* | Motors in 40 motors packing unit |
| 0,37 | 220-230 | 244 755 | 6721L | 6721 |
| 0,55 | 220-230 | 244 757 | 6721L | 6721 |
| 0,75 | 220-230 | 244 758 | 6721L | 6721 |
| 1,1 | 220-230 | 244 759 | 6721L | 6721 |

* lead lengths motors: "L": 1.50 m preassembled cable

## MOTOR PERFORMANCE DATA 50 HZ - 2-WIRE DESIGN

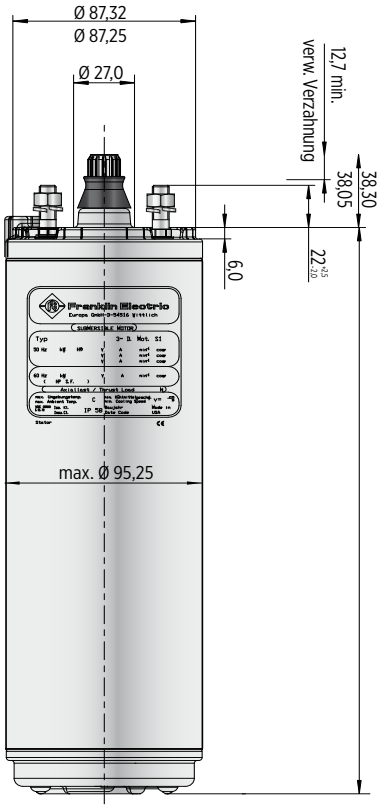
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (Pf.) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 0,37 | 4000 | 220 | 2875 | 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 | 4000 | 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 | 4000 | 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 | 4000 | 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 |

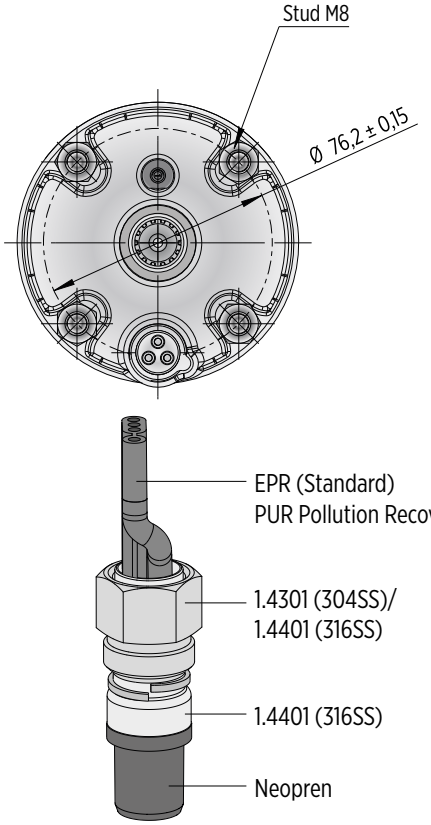
## WINDING RESISTANCE DATA 50 HZ 220-230V - 2-WIRE DESIGN

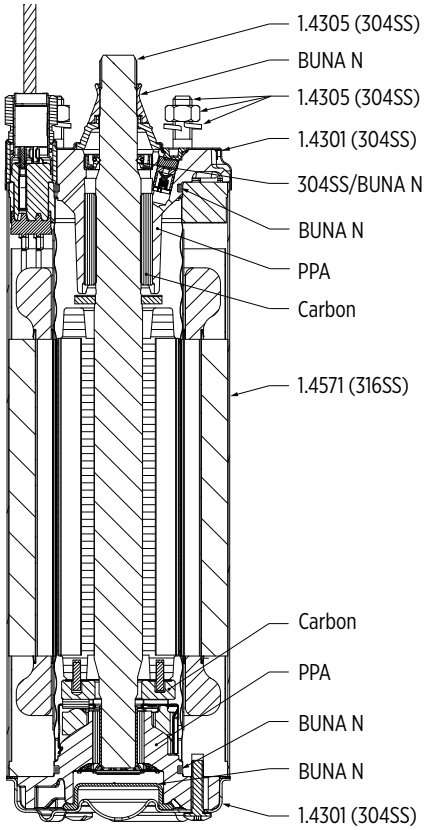
| $P_N$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] |
|---|---|---|---|
| 0,37 | 220 - 230 | 326 821 *** | 7,2 - 8,8 |
| 0,55 | 220 - 230 | 326 822 *** | 5,0 - 6,1 |
| 0,75 | 220 - 230 | 326 823 *** | 3,6 - 4,4 |
| 1,10 | 220 - 230 | 326 823 *** | 2,3 - 2,8 |

# MOTOR DESIGN AND DIMENSIONS

## MOTORDESIGN 304SS 0,37 - 1,1 KW



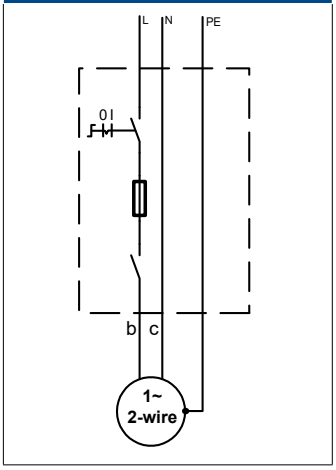




Toleranzen laut NEMA MG 1-18.388

## LENGTHS AND WEIGHTS - 2-WIRE DESIGN

| $P_N$ | | L [mm] | M [kg] | motor with lead in single pack | |
|---|---|---|---|---|---|
| [kW] | [HP] | | | [mm] | [kg] |
| 0,37 | 0,50 | 228,2 | 6,7 | 400 x 100 x 110 | 7,1 |
| 0,55 | 0,75 | 248,2 | 7,6 | 400 x 100 x 110 | 7,9 |
| 0,75 | 1,00 | 282,6 | 8,8 | 530 x 100 x 110 | 9,1 |
| 1,10 | 1,50 | 338,6 | 11,3 | 530 x 100 x 110 | 11,6 |

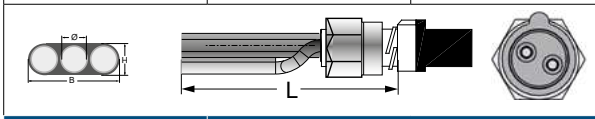
2-wire 1~ Motor




a = black | b = brown | c = grey | PE = yellow/green

## MOTOR LEADS 2-WIRE

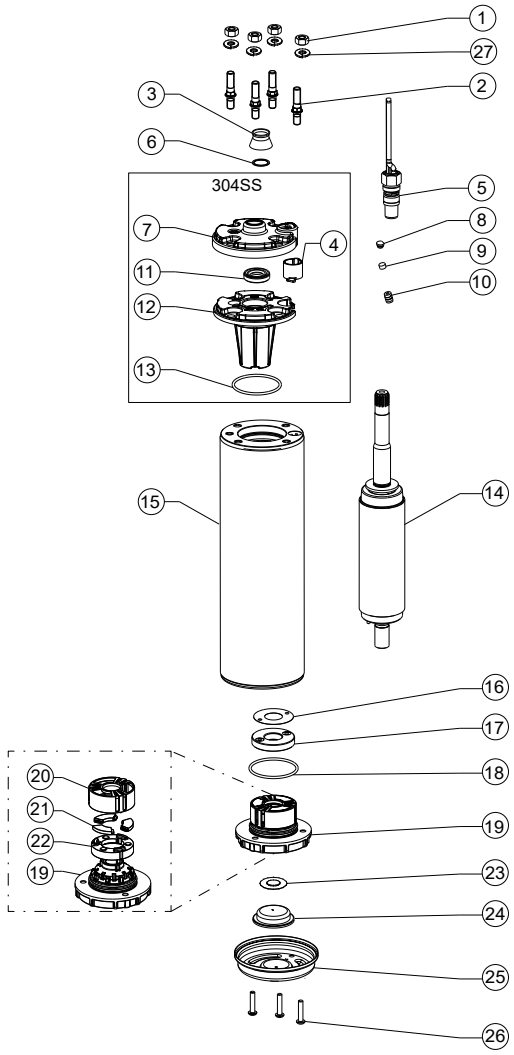
| 2-wire motor leads 0.37 - 1.1 kW | | |
|---|---|---|
| Ø [mm²] | B [mm] | H [mm] |
| 3X1,5 | 10,7 ± 0,3 | 5,0 ± 0,3 |




| L [m] | Model numbers 304SS |
|---|---|
| 1,5 | 310 134 401 |
| 2,5 | 310 134 402 |
| 5 | 310 134 405 |
| 10 | 310 134 410 |
| 15 | 310 134 415 |
| 20 | 310 134 420 |
| 30 | 310 134 430 |

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0.37 - 1.1 KW




| 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 | Page 15 |
| 6 | Washer | 1 | Kit B |
| 7 | Top Endbell, Cover 304SS | 1 | 150 262 151 |
| 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 | Page 16 |
| 15 | Stator | 1 | Page 16 |
| 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 / KitA2 |
| 25 | Bottom Endbell Cover 304SS | 1 | 156 414 201 / Kit A2 |
| 26 | Screw, Cover | 3 | Kit C |
| 27 | Lock washer | 4 | Kit C |

## SPARE PARTS KITS

| $P_N$ [kW] | 0.25 - 3.0 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 4, 7, 8, 9, 10, 11 , 12, 13 | 308 462 902 |
| Kit A2 | Bottom Endbell 304SS incl. Thrust Bearing Kit 4000N | incl. pos. 16 - 22 | 308 464 911 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 3, 6, 8, 9, 11, 13, 18, 23, 24 | 308 650 201 |
| | Seal Kit Pollution Recovery 304SS | | 308 650 202 |
| Kit C | Fastener Kit 304SS | incl. pos. 1, 2, 26, 27 | 308 656 202 |

## SPARE PARTS 2-WIRE DESIGN - STATOR AND ROTOR 0.37 - 1.1 KW

| $P_N$ [kW] | $U_N$ [V] | Model no. stator 304SS | Model no. rotor 304SS |
|---|---|---|---|
| 0,37 | 220 / 230 | 305 491 881 | 178 164 902K |
| 0,55 | 220 / 230 | 305 491 882 | 178 164 903K |
| 0,75 | 220 / 230 | 305 491 883 | 178 164 905K |
| 1,1 | 220 / 230 | 305 491 884 | 178 164 908K |

# 4" SUPER STAINLESS MOTOR – 3-WIRE DESIGN

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## FEATURES & BENEFITS

- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's FES93 water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- optional Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty
- High efficiency electrical design for low operation costs
- ideally be combined with FE 3-wire control boxes for maximum system performance, protection and warranty
- Drinking water approvals
- Suitable for use in water with increased salinity

## SPECIFICATION

- Ratings: 0.25 - 2.2 kW
- Voltage rating: 1~ - 220-230 V / 50 Hz, 230 V / 60 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz), +/- 10% (60 Hz)
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m)
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (1 phase motors CW upon request)

**Pollution Recovery version:**

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS (316SS Stator) graded Stainless Steel as Standard

## OPTIONS

- Built in lightning arrestors
- 316SS material design
- Special lead lenghts



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ - Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS MOTOR – 3-WIRE DESIGN

## MOTOR MODEL NUMBERS 50 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 304SS Standard | | 304SS Pollution Recovery | | 316SS Standard | | 316SS Pollution Recovery | |
| | | | Single pack, with lead* | Motors in 40 motors packing unit | Single pack , with lead* | Motors in 40 motors packing unit | Single pack, with lead* | Motors in 40 motors packing unit | Single pack, with lead* | Motors in 40 motors packing unit |
| 0,25 | 220-230 | 214 753 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,37 | 220-230 | 214 755 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,55 | 220-230 | 214 757 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,75 | 220-230 | 214 758 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,1 | 220-230 | 224 750 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,5 | 220-230 | 224 751 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 2,2 | 220-230 | 224 752 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |

* lead lengths motors: „L“: up to 1.5 kW with 1.50 m preassembled cable, starting at 2.2 kW with 2.50 m pre-mounted cable

## MOTOR MODEL NUMBERS 60 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $P_{Max}$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 304SS Standard | | 304SS Pollution Recovery | | 316SS Standard | | 316SS Pollution Recovery | |
| | | | | Single pack, with lead* | Motors in 40 motors packing unit | Single pack , with lead* | Motors in 40 motors packing unit | Single pack, with lead* | Motors in 40 motors packing unit | Single pack, with lead* | Motors in 40 motors packing unit |
| 0,25 | 0,33 | 230 | 214 70* | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,37 | 0,59 | 230 | 214 705 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,55 | 0,83 | 230 | 214 707 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,75 | 1 | 230 | 214 708 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,1 | 1,4 | 230 | 224 700 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,5 | 1,8 | 230 | 224 701 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 2,2 | 2,5 | 230 | 224 702 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |

* lead lengths motors: „L“: up to 1.5 kW with 1.50 m preassembled cable, starting at 2.2 kW with 2.50 m pre-mounted cable

## MOTOR PERFORMANCE DATA 50 HZ - 3-WIRE DESIGN

| $P_N$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 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 |

## MOTOR PERFORMANCE DATA 60 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $P_{MAX}$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 0,25 | 0,33 | 4000 | | | | | | | | | | | | |
| 0,37 | 0,59 | 4000 | 230 | 3470 | 5,6 | 21,6 | 53 | 59 | 62 | 0,64 | 0,69 | 0,78 | 1,0 | 2,7 |
| 0,55 | 0,83 | 4000 | 230 | 3470 | 7,6 | 30,4 | 54 | 60 | 62 | 0,59 | 0,71 | 0,79 | 1,5 | 3,7 |
| 0,75 | 1 | 4000 | 230 | 3470 | 9,2 | 37,0 | 56 | 62 | 64 | 0,60 | 0,72 | 0,80 | 2,0 | 4,9 |
| 1,1 | 1,4 | 4000 | 230 | 3460 | 10,2 | 46 | 60 | 67 | 70 | 0,75 | 0,83 | 0,88 | 3,9 | 5,5 |
| 1,5 | 1,8 | 4000 | 230 | 3425 | 12,2 | 51 | 66 | 71 | 72 | 0,82 | 0,89 | 0,92 | 5,0 | 5,6 |
| 2,2 | 2,5 | 4000 | 230 | 3440 | 15,1 | 68 | 66 | 73 | 75 | 0,98 | 0,98 | 0,98 | 7,0 | 11,7 |

## WINDING RESISTANCE DATA 50 HZ 220-230V - 3-WIRE DESIGN

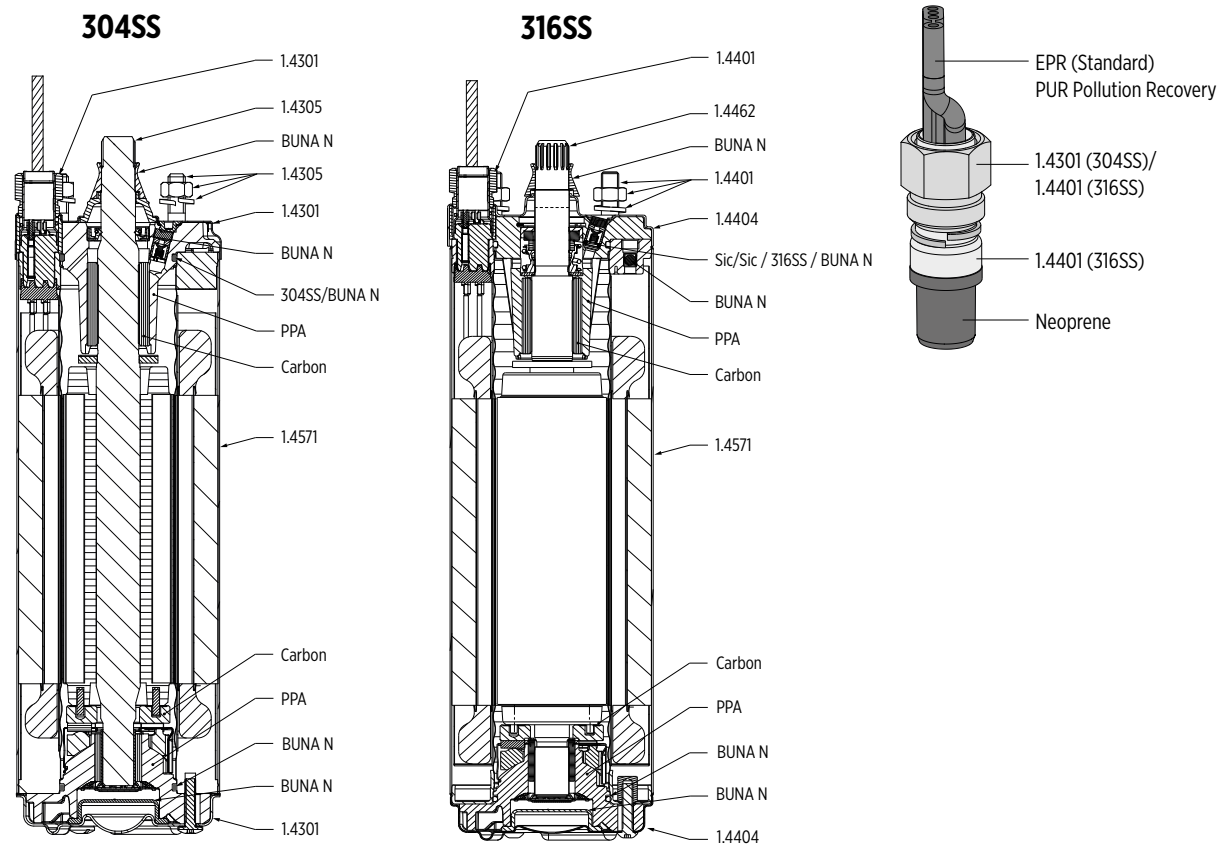
| $P_N$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] | Start phase [Ohm] |
|---|---|---|---|---|
| 0,25 | 220 / 230 | 326 807 *** | 10,6 - 13,0 | 38,3 - 46,8 |
| 0,37 | 220 / 230 | 326 808 948 | 7,3 - 8,9 | 23,9 - 29,3 |
| 0,55 | 220 / 230 | 326 809 948 | 4,8 - 5,8 | 18,5 - 22,7 |
| 0,75 | 220 / 230 | 326 810 948 | 3,5 - 4,3 | 14,8 - 18,0 |
| 1,10 | 220 / 230 | 326 811 948 | 2,6 - 3,2 | 6,9 - 8,4 |
| 1,50 | 220 / 230 | 326 812 948 | 2,0 - 2,4 | 5,3 - 6,4 |
| 2,20 | 220 / 230 | 326 813 948 | 1,3 - 1,6 | 3,8 - 4,6 |

## WINDING RESISTANCE DATA 60 HZ 230V - 3-WIRE DESIGN

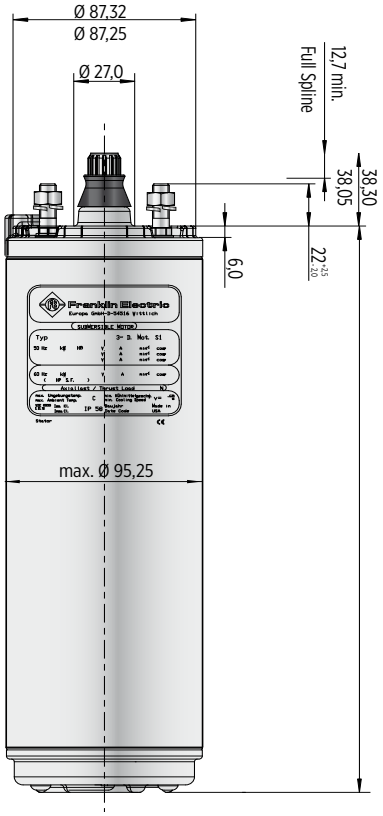
| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] | Start phase [Ohm] |
|---|---|---|---|---|---|
| 0,25 | 0,33 | 230 | | | |
| 0,37 | 0,59 | 230 | 326 892 *** | 4,5 - 5,5 | 14,4 - 17,6 |
| 0,55 | 0,83 | 230 | 326 893 | 3,3 - 4,0 | 10,7 - 13,1 |
| 0,75 | 1 | 230 | 326 894 | 2,6 - 3,1 | 8,7 - 10,7 |
| 1,10 | 1,4 | 230 | 326 895 | 2,0 - 2,5 | 6,8 - 8,3 |
| 1,50 | 1,8 | 230 | 326 896 | 1,7 - 2,1 | 5,9 - 7,2 |
| 2,20 | 2,5 | 230 | 326 897 | 1,3 - 1,6 | 3,5 - 4,3 |

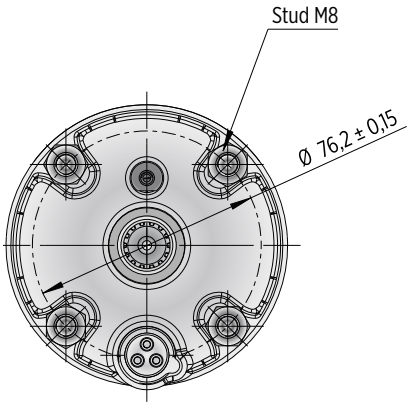
# MOTOR DESIGN AND DIMENSIONS

## MOTORDESIGN 304SS 4000N 0,25 - 2,2 KW




## LENGTHS AND WEIGHTS - 3-WIRE DESIGN



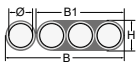
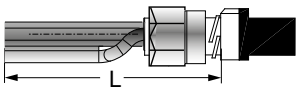



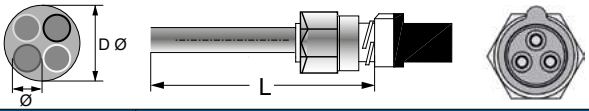

| $P_N$ | | L [mm] | M [kg] | motor with lead in single pack | |
|---|---|---|---|---|---|
| [kW] | [HP] | | | [mm] | [kg] |
| 0,25 | 0,33 | 237,2 | 6,55 | 400 x 100 x 110 | 7,25 |
| 0,37 | 0,50 | 251,1 | 7,20 | 400 x 100 x 110 | 7,9 |
| 0,55 | 0,75 | 271,2 | 8,35 | 530 x 100 x 110 | 9,05 |
| 0,75 | 1,00 | 297,2 | 9,30 | 530 x 100 x 110 | 10,0 |
| 1,10 | 1,50 | 353,2 | 10,45 | 530 x 100 x 110 | 11,15 |
| 1,50 | 2,0 | 364,2 | 11,90 | 796 x 100 x 110 | 12,6 |
| 2,20 | 3,0 | 451,2 | 16,65 | 796 x 100 x 110 | 17,35 |

Tolerances according to NEMA MG 1-18.388

# MOTOR LEADS

## MOTOR LEADS 3-WIRE DESIGN

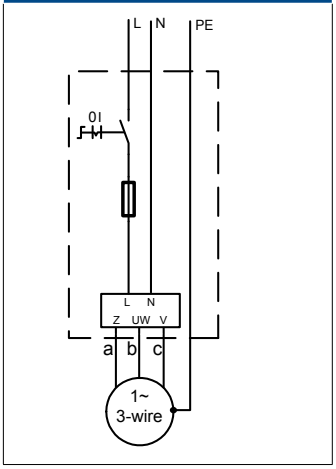
| 3-wire motor leads | | | |
|---|---|---|---|
| 0.25 - 3.0 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |
|   |   |  | |
| L [m] | Model numbers 304SS | Model numbers 316SS | |
| 1,5 | 310 113 401 | 310 113 501 | |
| 2,5 | 310 113 402 | 310 113 502 | |
| 5 | 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 | |

| 3-wire Pollution Recovery motor leads | |
|---|---|
| 0.25 - 3.0 kW | |
| Ø [mm²] | D Ø [mm] |
| 1,5 | 9,8 |
|   | |
| L [m] | Model numbers 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.

## CONNECTION - 3-WIRE DESIGN

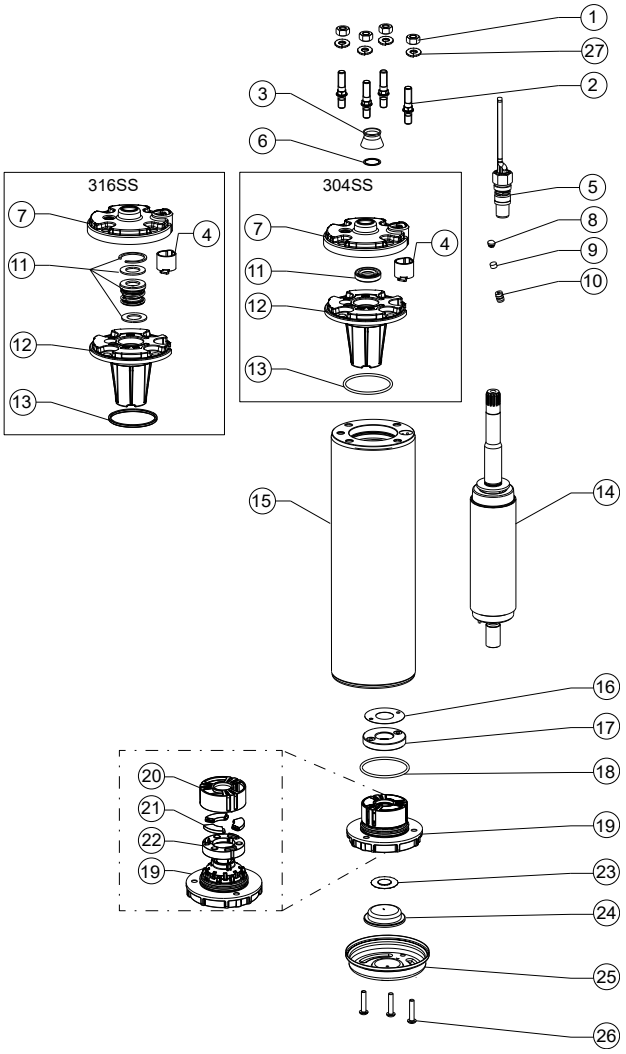
3-wire 1~ motors




a = black | b = brown | c = grey | PE = yellow/green

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0.25 -2.2 KW




| 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 | Page 21 |
| 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 | Page 23 |
| 15 | Stator | 1 | Page 23 |
| 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 / KitA2 |
| 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 |

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 0.25 - 3.0 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 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 | incl. pos. 16 - 22 | 308 464 911 |
| | Bottom Endbell 316SS incl. Thrust Bearing Kit 4000N | | 308 464 912 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 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 | incl. pos. 1, 2, 26, 27 | 308 656 202 |
| | Fastener Kit 316SS | | 308 656 252 |

## SPARE PARTS 50HZ 3-WIRE DESIGN - STATOR AND ROTOR 0.25 - 2.2 KW

| $P_N$ [kW] | $U_N$ [V] | Model no. stator 304SS / 316SS | Model no. rotor 304SS | Model no. rotor 316SS |
|---|---|---|---|---|
| 0,25 | 220 / 230 | 305 491 841 | 178 164 901K | 178 164 921K |
| 0,37 | 220 / 230 | 305 491 842 | 178 164 902K | 178 164 922K |
| 0,55 | 220 / 230 | 305 491 843 | 178 164 903K | 178 164 923K |
| 0,75 | 220 / 230 | 305 491 844 | 178 164 905K | 178 164 925K |
| 1,1 | 220 / 230 | 305 491 845 | 178 164 908K | 178 164 928K |
| 1,5 | 220 / 230 | 305 491 846 | 178 164 909K | 178 164 929K |
| 2,2 | 220 / 230 | 305 491 847 | 178 164 911K | 178 164 931K |

## SPARE PARTS 60HZ 3-WIRE DESIGN - STATOR AND ROTOR 0.25 - 2.2 KW

| $P_N$ [kW] | $P_{max}$ [kW] | $U_N$ [V] | Model no. stator 304SS / 316SS | Model no. rotor 304SS | Model no. rotor 316SS |
|---|---|---|---|---|---|
| 0,37 | 0,59 | 230 | 305 491 931 | 178 164 902 K | 178 164 923K |
| 0,55 | 0,83 | 230 | 305 491 932 | 178 164 903 K | 178 164 925K |
| 0,75 | 1 | 230 | 305 491 933 | 178 164 905 K | 178 164 927K |
| 1,10 | 1,4 | 230 | 305 491 934 | 178 164 908K | 178 164 928K |
| 1,50 | 1,8 | 230 | 305 491 935 | 178 164 909K | 178 164 929K |
| 2,20 | 2,5 | 230 | 305 491 936 | 178 164 911K | 178 164 931K |

# 4" 3-WIRE HIGH THRUST MOTOR

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## FEATURES & BENEFITS

- NEMA mounting design
- Stainless steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's FES93 motor fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- optional Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty
- Pressure-equalizing diaphragm
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity (Brackish water version optional)

**Pollution Recovery version:**

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

## SPECIFICATION

- Rating: 2,2 - 3,7 kW, 1~
- Voltage: 1~ - 220-230 V / 50 Hz, 230 V / 60 Hz
- Thrust load: 6,5 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz), ±10 % (60 Hz)
- Protection IP68 and insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- motors with factory installed leads 2,5 m (optional)
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation CW upon request)

## OPTIONS

- Built in lightning arrestors
- Various cable lengths
- Motors with factory-installed lead in single packing
- Motor complete in 316SS with SiC seal
- Special voltages



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ – Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS HIGH THRUST MOTOR – 3-WIRE DESIGN

## MOTOR MODEL NUMBERS 50 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 304SS Standard | | 304SS Pollution Recovery | | 316SS Standard | | 316SS Pollution Recovery | |
| | | | Motors in single pack, with Lead)* | 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 40 motors packing unit | Motors in single pack, with Lead)* | Motors in 40 motors packing unit |
| 2,2 | 220-230 | 224 752 | 3421L | 3421 | 3422L | 3422 | 3521L | 3521L | 3522L | 3522 |
| 3,7 | 220-230 | 224 753 | 3421L | 3421 | 3422L | 3422 | 3521L | 3521L | 3522L | 3522 |

* lead lengths motors: „L" with 2.50 m pre-mounted cable

## MOTOR MODEL NUMBERS 60 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Digit 1-6 | Digit 7-10 | | | |
|---|---|---|---|---|---|---|---|
| | | | | 304 | | 316 SS | |
| | | | | Motors in 40 motors packing unit | Motors in single pack, with Lead)* | Motors in 40 motors packing unit | Motors in single pack, with Lead)* |
| 2,2 | 2,5 | 230 | 224 --- | 3421 | 3421L | 3521 | 3521L |
| 3,7 | 4,2 | 230 | 224 703 | 3421 | 3421L | 3521 | 3521L |

* lead lengths motors: „L" with 2.50 m pre-mounted cable

## MOTOR PERFORMANCE DATA 50 HZ - 3-WIRE DESIGN

| $P_N$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 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 |

## MOTOR PERFORMANCE DATA 60 HZ - 3-WIRE DESIGN

| $P_N$ [kW] | $P_{max}$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 2,2 | 2,5 | 6500 | 230 | 3440 | 15,1 | 68 | 66 | 73 | 75 | 0,98 | 0,98 | 0,98 | 7,0 | 11,7 |
| 3,7 | 4,2 | 6500 | 230 | 3450 | 24,5 | 102 | 70 | 76 | 77 | 0,98 | 0,99 | 0,99 | 11,7 | 16,1 |

## WINDING RESISTANCE DATA 50 HZ 220-230V - 3-WIRE DESIGN

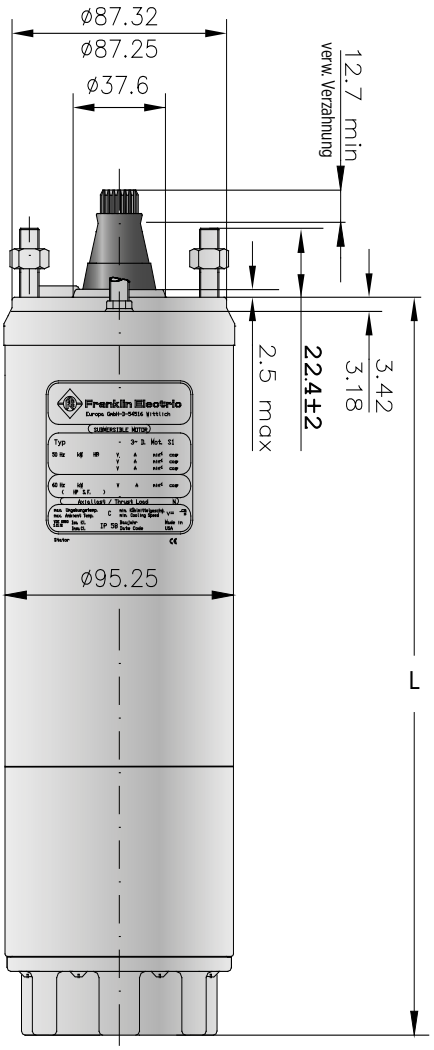
| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | Main phase [Ohm] | Start sphase[Ohm] |
|---|---|---|---|---|
| 2.2 | 220 / 230 | 326 813 912 | 1,3 - 1,6 | 3,8 - 4,6 |
| 3,7 | 220 / 230 | 326 813 912 | 1,0 - 1,3 | 2,5 - 3,1 |

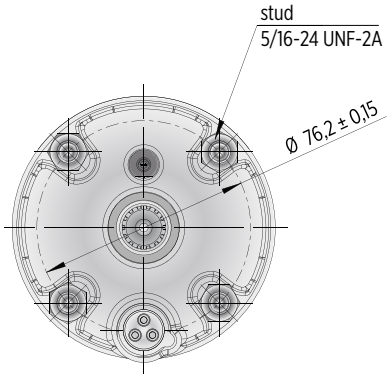
## WINDING RESISTANCE DATA 60 HZ 230V - 3-WIRE DESIGN

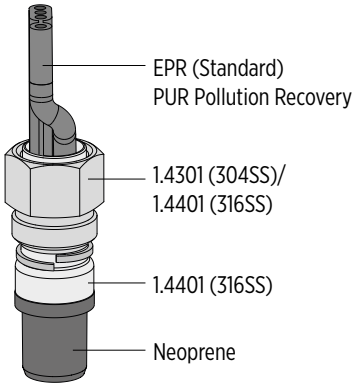
| $P_N$ [kW] | $P_{max}$ [kW] | $U_N$ [V] | Stator-Ref. # | Main phase [Ohm] | Start sphase[Ohm] |
|---|---|---|---|---|---|
| 2,20 | 2,5 | 230 | 326 897 | 1,3 - 1,6 | 3,5 - 4,3 |
| 3,7 | 4,2 | 230 | 326 898 | 0,9 - 1,1 | 1,7 - 2,1 |

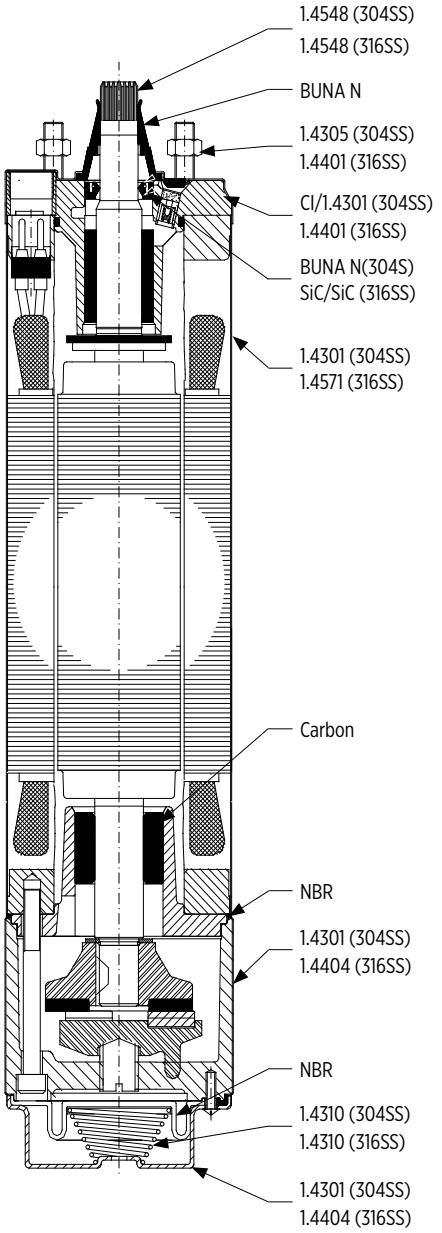
# MOTORDESIGN AND DIMENSION

## MOTORDESIGN 304SS 6500N 2,2 - 3,7 KW



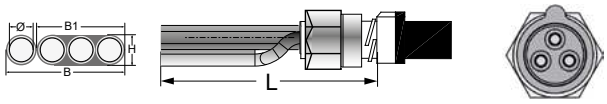

Tolerances according to NEMA MG 1-18.388

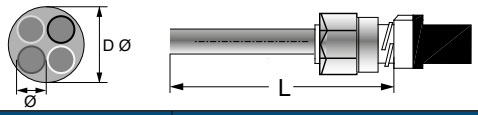
## LENGTHS AND WEIGHTS - 3-WIRE DESIGN

| $P_N$ [kW] | $P_{max}$ [kW] | 304SS L [mm] | 316SS L [mm] | 304SS M [kg] | 316SS M [kg] | motor with lead in single pack | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | [mm] | 304SS [kg] | 316SS [kg] |
| 2,2 | 2,5 | 520,2 | 529,4 | 21,3 | 21,8 | 796 x 100 x 110 | 23,1 | 23,6 |
| 3,7 | 4,2 | 652,5 | 661,7 | 26,4 | 27,3 | 904 x 100 x 110 | 28,5 | 29,4 |

# MOTOR LEADS

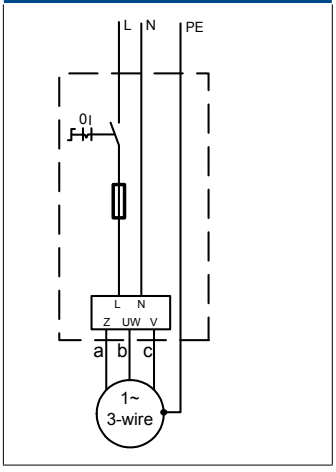
## MOTOR LEADS 3-WIRE DESIGN

| PSC / 3-wire / 3 Phase motor leads | | | |
|---|---|---|---|
| 0.25 - 3.0 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |
|  | | | |
| L [m] | Model numbers 304SS | Model numbers 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 | |

| 3-wire / 3-phase Pollution Recovery motor leads | |
|---|---|
| 0.25 - 3.0 kW | |
| Ø [mm²] | D Ø [mm] |
| 1,5 | 9,8 |
|  | |
| L [m] | Model numbers 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.

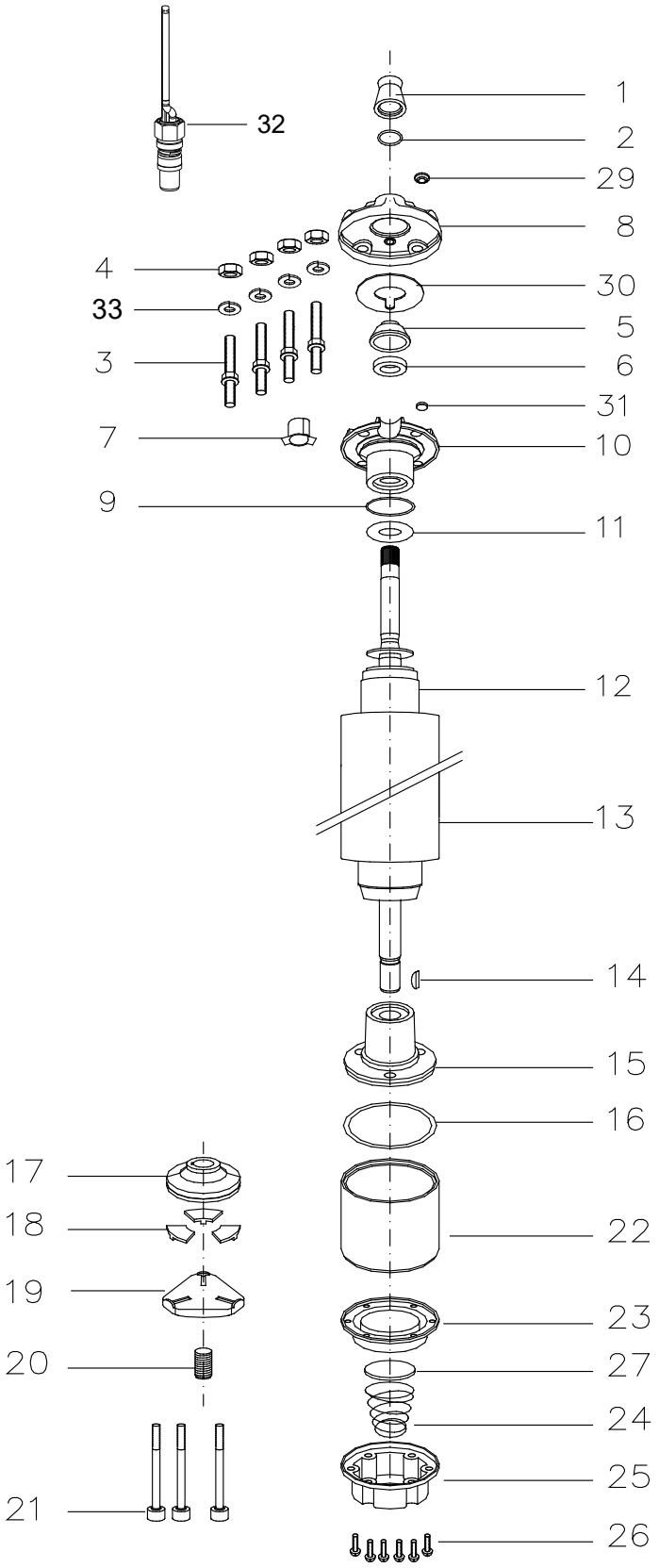
3-wire 1~ Motor




a = black | b = brown | c = grey | PE = yellow/green

# MOTOR PART DESCRIPTION

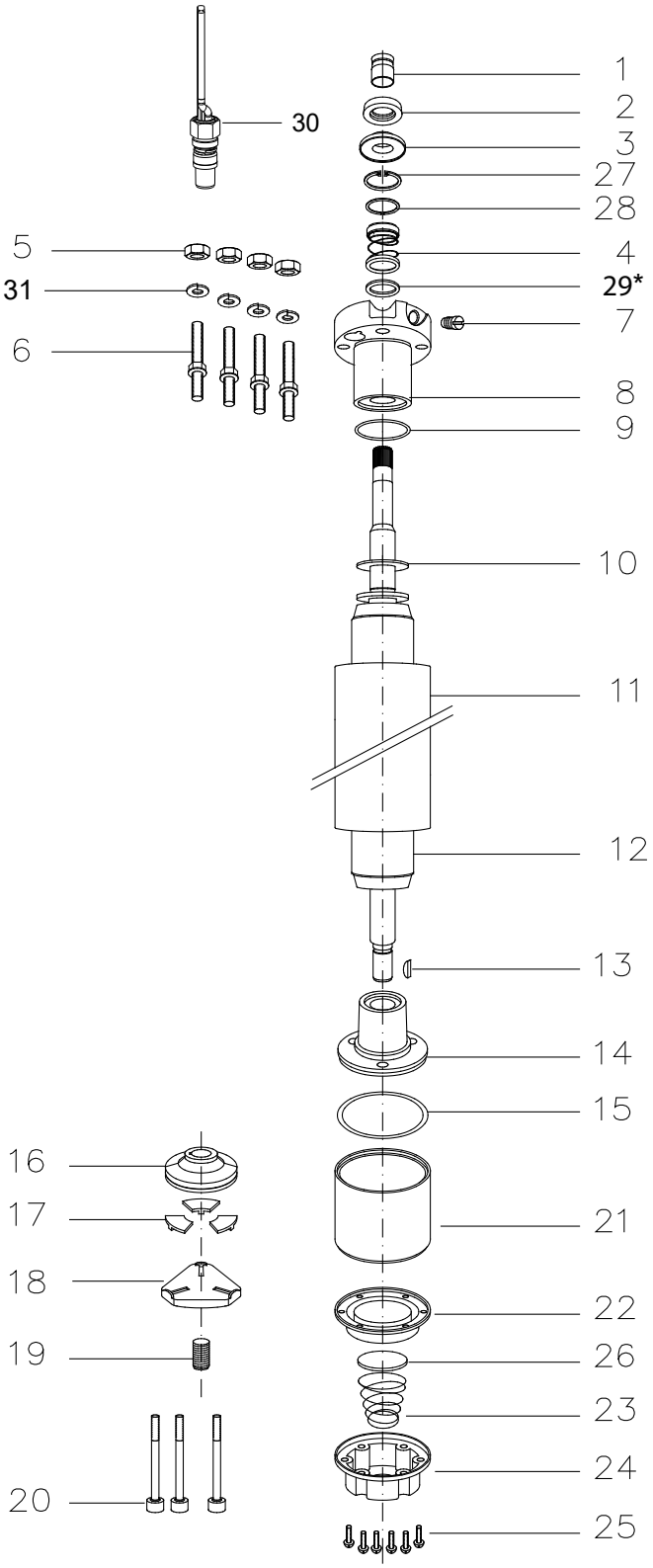
## MOTOR DESIGN 304SS 2,2 - 3,7 KW - 304SS




| 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 2,2 kW | 1 | 308 268 104 |
| | Upthrust washer 3,7 kW | | 308 317 901 |
| 12 | Rotor | 1 | see page 30 |
| 13 | Stator | 1 | see page 30 |
| 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 | 151 048 103 |
| 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 | 164 100 50 |
| 26 | Screw | 6 | Kit C |
| 27 | Cup spring, Diaphragm | 1 | 151 448 201 |
| 29 | Sealing stopper | 1 | Kit B+D |
| 30 | Seal | 1 | Kit D |
| 31 | Filter | 1 | Kit B+D |
| 32 | Motor lead | 1 | see page 27 |
| 33 | Lock washer | 4 | Kit C |

# PARTS DESCRIPTION

## MOTOR DESIGN 316SS 2,2 - 3,7 KW - 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 | 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 2,2 kW | 1 | 308 268 104 |
| | Upthrust washer 3,7 kW | | 308 317 901 |
| 11 | Stator | 1 | see page 30 |
| 12 | Rotor | 1 | see page 30 |
| 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 | 151 048 103 |
| 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 | 364 100 50 |
| 25 | Screw | 6 | Kit C |
| 26 | Cup spring, Diaphragm | 1 | 151 448 201 |
| 27 | Ring | 1 | Kit B |
| 28 | Retain Ring | 1 | Kit B |
| 29* | Washer | 1 | 308 747 201 |
| 30 | Motor lead | 1 | see page 27 |
| 31 | Lock washer | 4 | Kit C |

*** only for 2,2 - 3kW**

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 2,2 / 3,7 kW | | |
|---|---|---|---|
| 2,2kW | End bell, upper 304SS | inkl. Pos. 5, 6, 7, 8, 9, 10, 29,30, 31 | 308 462 902 |
| | End bell, upper 316SS | Pos. 8 | 177 390 955 |
| 3,7kW | End bell, upper 304SS | inkl. Pos. 5, 6, 7, 8, 9, 10, 29,30, 31 | 308 434 501 |
| | End bell, upper 316SS | Pos. 8 | 177 390 955 |
| Kit A | Thrust Bearing Kit 6500N | inkl. Pos.17. 18 | 308 700 301 |
| Kit B | Seal Kit 304SS | inkl. Pos.: 1, 2, 6, 9, 16, 23,29, 31 | 308 900 351 |
| | Seal Kit 316SS | inkl. Pos.: 4, 9, 15, 22, 27, 28 | 308 900 302 |
| Kit B1 | Seal Kit Pollution Recovery 304SS | inkl. Pos.: 1, 2, 6, 9, 16, 23,29, 31 | 308 900 401 |
| Kit B2 | Sand slinger Kit 316SS Motoren | inkl. Pos.: 1, 2, 3 | 308 825 201 |
| Kit C | Screw Kit 304SS | inkl. Pos.: 3, 4, 21, 26, 33 | 308 658 351 |
| | Screw Kit 316SS | inkl. Pos.: 5, 6, 20, 25, 31 | 308 658 301 |

## SPARE PARTS - STATOR AND ROTOR 304SS - 3-WIRE DESIGN 50HZ

| $P_N$ [kW] | $U_N$ [V] | Model nb. Stator 304SS | Model nb. Rotor 304SS |
|---|---|---|---|
| 2,2 | 220 / 230 | 305 491 181 | 178 126 903K |
| 3,7 | 220 / 230 | 305 491 182 | 178 133 903K |

## SPARE PARTS - STATOR AND ROTOR 316SS- 3-WIRE DESIGN 50HZ

| $P_N$ [kW] | $U_N$ [V] | Model nb. Stator 316SS | Model nb. Rotor 316SS |
|---|---|---|---|
| 2,2 | 220 / 230 | 305 491 541 | 178 126 913K |
| 3,7 | 220 / 230 | 305 491 542 | 178 133 913K |

## SPARE PARTS - STATOR AND ROTOR 316SS- 3-WIRE DESIGN 60HZ

| $P_N$ [kW] | $P_{max}$ [kW] | $U_N$ [V] | Stator 60Hz | Rotor 60Hz |
|---|---|---|---|---|
| 2,2 | 2,5 | 230 | 326 897 *** | 178 126 903K |
| 3,7 | 4,2 | 230 | 326 898 *** | 178 135 903K |

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## FEATURES & BENEFITS

- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's non-toxic water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity

## SPECIFICATION

- Ratings: 0.25 - 3.0 kW
- Frequency: 50 Hz ; 60 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz), +/- 10% (60 Hz)
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m)
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (3 phase motors rotation reversible)

**Pollution Recovery version:**

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304SS (316SS Stator) graded Stainless Steel as Standard

## OPTIONS

- Built in lightning arrestors
- 316SS material design
- Special lead lenghts



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ – Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR MODEL NUMBERS 50 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Standard 304SS | | Pollution Recovery 304SS | | Standard 316SS | | Pollution Recovery 316SS | |
| | | | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit |
| 0,37 | 220, 230 | 234 751 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 761 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 791 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,55 | 220, 230 | 234 752 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 762 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 792 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,75 | 220, 230 | 234 753 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 763 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 793 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,10 | 220, 230 | 234 754 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 724 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 794 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,50 | 220, 230 | 234 755 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 725 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 795 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 2,20 | 220, 230 | 234 756 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 726 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 796 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 3,00 | 220, 230 | 234 766 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 380 - 415 | 234 764 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | 500 | 234 768 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |

* lead lengths motors: „L“: up to 1.5 kW with 1.50 m preassembled cable, starting at 2.2 kW with 2.50 m pre-mounted cable

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR MODEL NUMBERS 60 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Standard 304SS | | Pollution Recovery 304SS | | Standard 316SS | | Pollution Recovery 316SS | |
| | | | | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit |
| 0,37 | 0,59 | 220 | 234 711 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 741 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 761 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,55 | 0,83 | 220 | 234 712 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 742 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 762 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 0,75 | 1 | 220 | 234 713 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 743 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 763 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,10 | 1,4 | 220 | 234 714 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 744 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 724 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 1,50 | 1,8 | 220 | 234 715 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 745 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 725 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 2,20 | 2,5 | 220 | 234 716 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 746 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 726 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| 3,00 | 3,4 | 220 | 234 776 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 380 | 234 774 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |
| | | 460 | 234 764 | 6721L | 6721 | 6723L | 6723 | 6821L | 6821 | 6823L | 6823 |

* lead lengths motors: „L“: up to 1.5 kW with 1.50 m preassembled cable, starting at 2.2 kW with 2.50 m pre-mounted cable

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR PERFORMANCE DATA 50 HZ - 3-PHASE DESIGN

| $P_N$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 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 |

## MOTOR PERFORMANCE DATA 60 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $P_{MAX}$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 0,37 | 0,59 | 4000 | 230 | 3455 | 2,7 | 14,1 | 65 | 71 | 73 | 0,56 | 0,68 | 0,77 | 1,6 | 4,0 |
| | | | 380 | 3455 | 1,6 | 8,5 | 65 | 71 | 73 | 0,56 | 0,68 | 0,77 | 1,6 | 4,0 |
| | | | 460 | 3455 | 1,4 | 7,0 | 65 | 71 | 73 | 0,56 | 0,68 | 0,77 | 1,6 | 4,0 |
| 0,55 | 0,83 | 4000 | 230 | 3445 | 3,7 | 19,6 | 60 | 65 | 66 | 0,59 | 0,71 | 0,79 | 2,3 | 5,6 |
| | | | 380 | 3445 | 2,3 | 11,9 | 60 | 65 | 66 | 0,59 | 0,71 | 0,79 | 2,3 | 5,6 |
| | | | 460 | 3445 | 1,9 | 9,8 | 60 | 65 | 66 | 0,59 | 0,71 | 0,79 | 2,3 | 5,6 |
| 0,75 | 1 | 4000 | 230 | 3410 | 4,5 | 22,0 | 61 | 67 | 70 | 0,64 | 0,75 | 0,82 | 2,8 | 6,4 |
| | | | 380 | 3410 | 2,7 | 13,3 | 61 | 67 | 70 | 0,64 | 0,75 | 0,82 | 2,8 | 6,4 |
| | | | 460 | 3410 | 2,3 | 11,0 | 61 | 67 | 70 | 0,64 | 0,75 | 0,82 | 2,8 | 6,4 |
| 1,1 | 1,4 | 4000 | 230 | 3415 | 6,0 | 32,2 | 66 | 72 | 74 | 0,64 | 0,75 | 0,82 | 3,9 | 10,2 |
| | | | 380 | 3415 | 3,6 | 19,5 | 66 | 72 | 74 | 0,64 | 0,75 | 0,82 | 3,9 | 10,2 |
| | | | 460 | 3415 | 3,0 | 16,1 | 66 | 72 | 74 | 0,64 | 0,75 | 0,82 | 3,9 | 10,2 |
| 1,5 | 1,8 | 4000 | 230 | 3430 | 7,8 | 40,8 | 67 | 73 | 75 | 0,60 | 0,72 | 0,80 | 5,0 | 11,5 |
| | | | 380 | 3430 | 4,7 | 24,7 | 67 | 73 | 75 | 0,60 | 0,72 | 0,80 | 5,0 | 11,5 |
| | | | 460 | 3430 | 3,9 | 20,4 | 67 | 73 | 75 | 0,60 | 0,72 | 0,80 | 5,0 | 11,5 |
| 2,2 | 2,5 | 4000 | 230 | 3425 | 10,8 | 57,4 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| | | | 380 | 3425 | 6,5 | 34,7 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| | | | 460 | 3425 | 5,4 | 28,7 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| 3 | 3,4 | 4000 | 230 | 3425 | 14,5 | 79,4 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |
| | | | 380 | 3425 | 8,8 | 48,1 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |
| | | | 460 | 3425 | 7,2 | 39,7 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## WINDING RESISTANCE DATA 50 HZ - 3-PHASE DESIGN

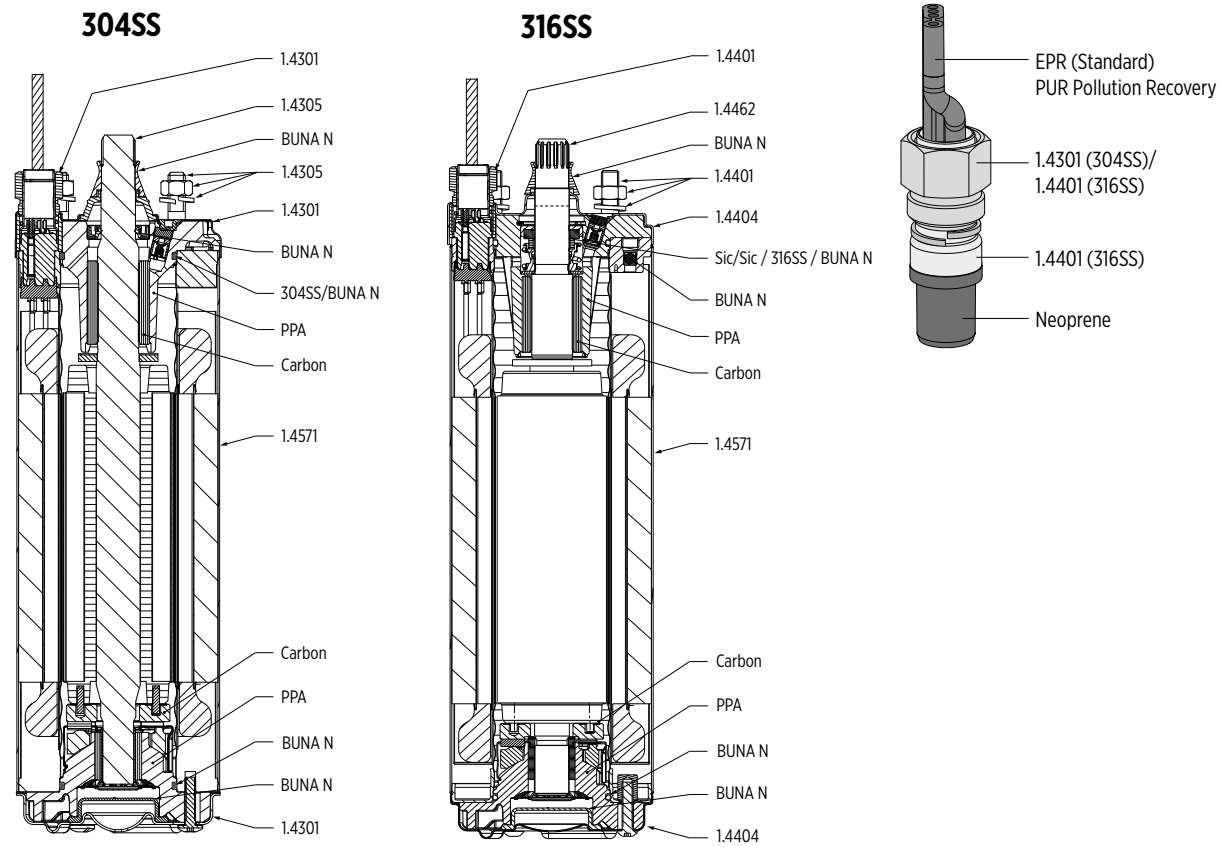
| $P_N$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] |
|---|---|---|---|
| 0,37 | 220 - 230 | 326 775 *** | 14,6 - 17,8 |
| | 380 - 400 - 415 | 326 710 *** | 44,8 - 54,8 |
| | 500 | 326 787 *** | 90,8 - 111,0 |
| 0,55 | 220 - 230 | 326 776 *** | 11,3 - 13,8 |
| | 380 - 400 - 415 | 326 711 *** |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

## WINDING RESISTANCE DATA 60 HZ - 3-PHASE DESIGN

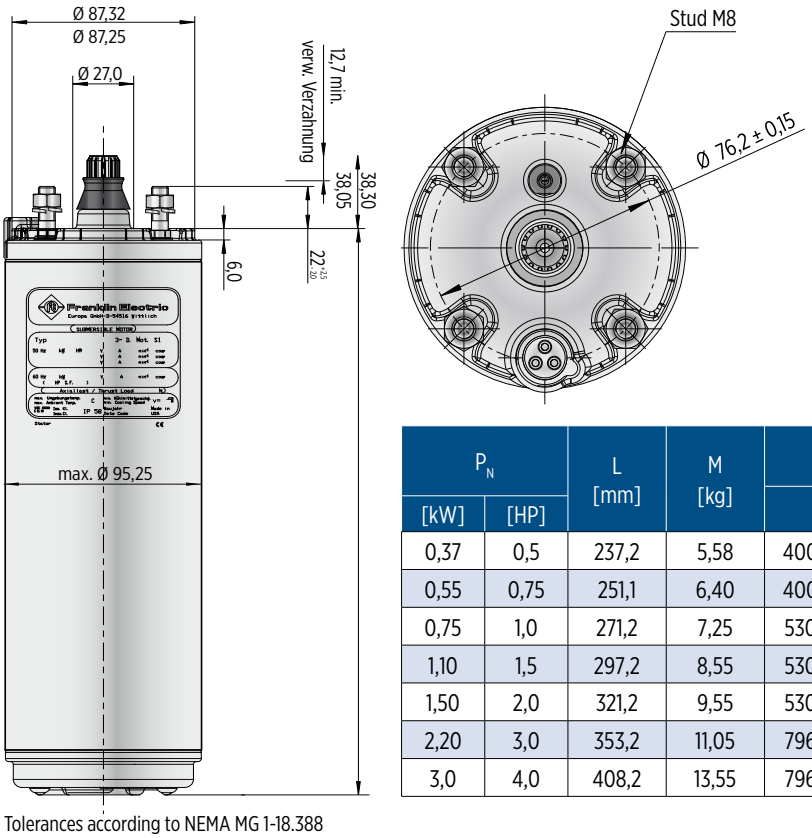
| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] |
|---|---|---|---|---|
| 0,37 | 0,59 | 230 | 326 828 | 9,4 - 11,5 |
| | | 380 | 326 838 | 24,1 - 29,5 |
| | | 460 | 326 710 | |
| 0,55 | 0,83 | 230 | 326 829 | 6,3 - 7,7 |
| | | 380 | 326 839 | 16,5 - 20,2 |
| | | 460 | 326 711 | |
| 0,75 | 1 | 230 | 326 830 | 5,7 - 6,9 |
| | | 380 | 326 840 | 15,5 - 19,0 |
| | | 460 | 326 712 | 23,2 - 28,3 |
| 1,1 | 1,4 | 230 | 326 831 | 3,4 - 4,1 |
| | | 380 | 326 841 | 9,3 - 11,4 |
| | | 460 | 326 713 | 13,8 - 16,8 |
| 1,5 | 1,8 | 230 | 326 832 | 2,7 - 3,3 |
| | | 380 | 326 842 | 7,6 - 9,2 |
| | | 460 | 326 714 | 10,9 - 13,4 |
| 2,2 | 2,5 | 230 | 326 833 | 1,8 - 2,2 |
| | | 380 | 326 843 | 4,9 - 6,0 |
| | | 460 | 326 715 | 7,1 - 8,6 |
| 3 | 3,4 | 230 | 326 834 | 1,2 - 1,4 |
| | | 380 | 326 844 | 3,2 - 4,0 |
| | | 460 | 326 716 | 4,7 - 5,8 |

# MOTOR DESIGN AND DIMENSIONS

## MOTOR DESIGN 304SS 4000N 0,37 - 3,0 KW




## LENGTHS AND WEIGHTS - 3-PHASE DESIGN

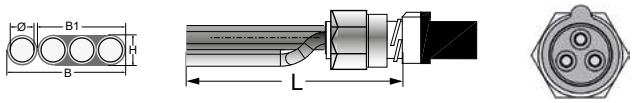



| $P_N$ | | L [mm] | M [kg] | motor with lead in single pack | |
|---|---|---|---|---|---|
| [kW] | [HP] | | | [mm] | [kg] |
| 0,37 | 0,5 | 237,2 | 5,58 | 400 x 100 x 110 | 6,3 |
| 0,55 | 0,75 | 251,1 | 6,40 | 400 x 100 x 110 | 7,2 |
| 0,75 | 1,0 | 271,2 | 7,25 | 530 x 100 x 110 | 8,0 |
| 1,10 | 1,5 | 297,2 | 8,55 | 530 x 100 x 110 | 9,3 |
| 1,50 | 2,0 | 321,2 | 9,55 | 530 x 100 x 110 | 10,3 |
| 2,20 | 3,0 | 353,2 | 11,05 | 796 x 100 x 110 | 11,8 |
| 3,0 | 4,0 | 408,2 | 13,55 | 796 x 100 x 110 | 14,3 |

Tolerances according to NEMA MG 1-18.388

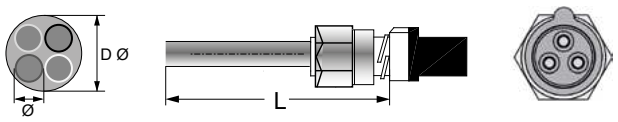
## MOTOR LEADS 3-PHASE DESIGN

| 3 Phase motor leads | | | |
|---|---|---|---|
| 0.25 - 3.0 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |




| L [m] | Model numbers 304SS | Model numbers 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 |

| 3-phase Pollution Recovery motor leads | |
|---|---|
| 0.25 - 3.0 kW | |
| Ø [mm²] | D Ø [mm] |
| 1,5 | 9,8 |

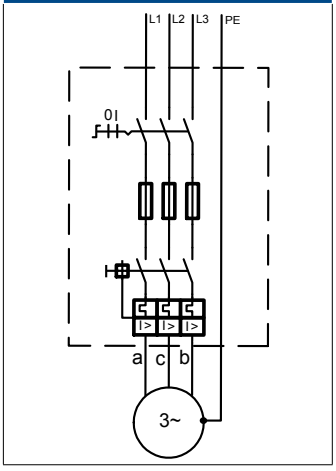



| L [m] | Model numbers 316SS |
|---|---|
| 1,5 | 310 313 501 |
| 2,5 | 310 313 502 |
| 10 | 310 313 510 |
| 20 | 310 313 520 |
| 30 | 310 313 530 |
| 40 | 310 313 540 |
| 50 | 310 313 550 |

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

## CONNECTION - 3-PHASE DESIGN

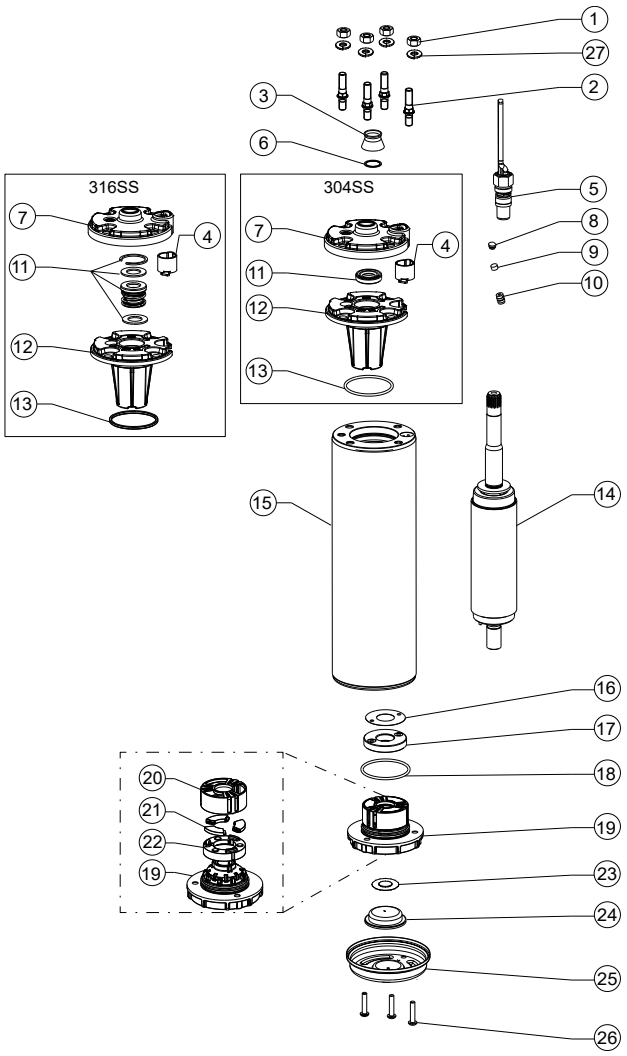
3~ Motor DOL




a = black | b = brown | c = grey | PE = yellow/green

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0.37 - 3.0 KW




| 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 | Page 38 |
| 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 | Page 40/41 |
| 15 | Stator | 1 | Page 40/41 |
| 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 / KitA2 |
| 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 |

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 0.25 - 3.0 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 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 | incl. pos. 16 - 22 | 308 464 911 |
| | Bottom Endbell 316SS incl. Thrust Bearing Kit 4000N | | 308 464 912 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 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 | incl. pos. 1, 2, 26, 27 | 308 656 202 |
| | Fastener Kit 316SS | | 308 656 252 |

## SPARE PARTS 3~ DESIGN 50 HZ - STATOR AND ROTOR 0.37 - 3.0 KW

| $P_N$ [kW] | $U_N$ [V] | Model no. stator 304SS / 316SS | Model no. rotor 304SS | Model no. rotor 316SS |
|---|---|---|---|---|
| 0,37 | 220, 230 | 305 491 851 | 178 164 901K | 178 164 921K |
| | 380 -415 | 305 491 861 | | |
| | 500 | 305 491 871 | | |
| 0,55 | 220, 230 | 305 491 852 | 178 164 902 K | 178 164 922K |
| | 380 -415 | 305 491 862 | | |
| | 500 | 305 491 872 | | |
| 0,75 | 220, 230 | 305 491 853 | 178 164 903 K | 178 164 923K |
| | 380 -415 | 305 491 863 | | |
| | 500 | 305 491 873 | | |
| 1,1 | 220, 230 | 305 491 854 | 178 164 905 K | 178 164 925K |
| | 380 -415 | 305 491 864 | | |
| | 500 | 305 491 874 | | |
| 1,5 | 220, 230 | 305 491 855 | 178 164 907K | 178 164 927K |
| | 380 -415 | 305 491 865 | | |
| | 500 | 305 491 875 | | |
| 2,2 | 220, 230 | 305 491 856 | 178 164 908K | 178 164 928K |
| | 380 -415 | 305 491 866 | | |
| | 500 | 305 491 876 | | |
| 3,0 | 220, 230 | 305 491 857 | 178 164 910K | 178 164 920K |
| | 380 -415 | 305 491 867 | | |
| | 500 | 305 491 877 | | |

## SPARE PARTS 3~ DESIGN 60 HZ - STATOR AND ROTOR 0.37 - 3.0 KW

| $P_N$ [kW] | $P_{N\,max.}$ [kW] | $U_N$ [V] | Model no. stator 304SS / 316SS | Model no. rotor 304SS | Model no. rotor 316SS |
|---|---|---|---|---|---|
| 0,37 | 0,59 | 230 | 305 491 901 | 178 164 901K | 178 164 921K |
| | | 380 | 305 491 911 | | |
| | | 460 | 305 491 921E | | |
| 0,55 | 0,83 | 230 | 305 491 902 | 178 164 902K | 178 164 922K |
| | | 380 | 305 491 912 | | |
| | | 460 | 305 491 922E | | |
| 0,75 | 1 | 230 | 305 491 903 | 178 164 903K | 178 164 923K |
| | | 380 | 305 491 913 | | |
| | | 460 | 305 491 923E | | |
| 1,10 | 1,4 | 230 | 305 491 904 | 178 164 905K | 178 164 925K |
| | | 380 | 305 491 914 | | |
| | | 460 | 305 491 924E | | |
| 1,50 | 1,8 | 230 | 305 491 905 | 178 164 907K | 178 164 927K |
| | | 380 | 305 491 915 | | |
| | | 460 | 305 491 925E | | |
| 2,20 | 2,5 | 230 | 305 491 906 | 178 164 908K | 178 164 928K |
| | | 380 | 305 491 916 | | |
| | | 460 | 305 491 926E | | |
| 3,00 | 3,4 | 230 | 305 491 907 | 178 164 910K | 178 164 930K |
| | | 380 | 305 491 917 | | |
| | | 460 | 305 491 927E | | |

# 4" 3-PHASE HIGH THRUST MOTORS

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## FEATURES & BENEFITS

- NEMA mounting design
- Stainless steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's FES93 motor fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity (Brackish water version optional)

**Pollution Recovery version:**

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

## SPECIFICATION

- Rating: 2,2 - 9,3kW
- Voltage: 3~ - 230/400/500 V / 50 Hz, 230/380/460 V / 60 Hz
- Thrust load: 6,5 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz), ±10 % (60 Hz)
- Protection IP68 and insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- Motors with factory installed leads (optional)
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation CW upon request)

## OPTIONS

- Built in lightning arrestors
- Various cable lengths
- Motors with factory-installed lead in single packing
- Motor complete in 316SS with SiC seal
- Special voltages



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ - Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR MODEL NUMBERS 50 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | | Digit 7 - 10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Standard 304SS | | Standard 316SS | | Pollution Recovery 304SS | Brackish water Motor |
| | | DOL | YΔ (only 316SS) | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* | Single pack, with lead* |
| 2,2 | 220, 230 | 234 756 | 234 780 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 726 | 234 770 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 796 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 3,0 | 220, 230 | 234 766 | 234 781 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 764 | 234 771 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 768 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 3,7 | 220, 230 | 234 757 | 234 782 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 727 | 234 772 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 797 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 4,0 | 220, 230 | 234 767 | 234 783 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 765 | 234 773 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 769 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 5,5 | 220, 230 | 234 758 | 234 784 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 728 | 234 778 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 798 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 7,5 | 220, 230 | - | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 380 - 415 | 234 729 | 234 779 | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| | 500 | 234 799 | - | 3421L | 3421 | 3521L | 3521 | 3422L | 3424L |
| 9,3 | 380 - 415 | 234 788 | - | 3429L | - | 3529L | - | - | - |

* lead lengths motors: „L“ with 2.50 m pre-mounted cable

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR MODEL NUMBERS 60 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $P_{N\,max.}$ [kW] | $U_N$ [V] | Digit 1-6 | | Digit 7-10 | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Standard 304SS | | Standard 316SS | |
| | | | DOL | YΔ (only 316SS) | 40 motors packing unit | Single pack, with lead* | 40 motors packing unit | Single pack, with lead* |
| 2,2 | 2,5 | 230 | 234 716 | 234 780 | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 746 | 234 770 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 726 | - | 3421E | 3421EL | 3521E | 3521EL |
| 3,0 | 3,4 | 230 | 234 776 | 234 781 | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 774 | 234 771 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 764 | - | 3421E | 3421EL | 3521E | 3521EL |
| 3,7 | 4,2 | 230 | 234 717 | 234 782 | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 747 | 234 772 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 727 | - | 3421E | 3421EL | 3521E | 3521EL |
| 4,0 | 4,7 | 230 | 234 777 | 234 783 | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 775 | 234 773 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 765 | - | 3421E | 3421EL | 3521E | 3521EL |
| 5,5 | 6,4 | 230 | 234 718 | 234 784 | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 748 | 234 778 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 728 | - | 3421E | 3421EL | 3521E | 3521EL |
| 7,5 | 8,6 | 230 | 234 719 | - | 3421 | 3421L | 3521 | 3521L |
| | | 380 | 234 749 | 234 780 | 3421 | 3421L | 3521 | 3521L |
| | | 460 | 234 729 | - | 3421E | 3421EL | 3521E | 3521EL |

* lead lengths motors: „L“ with 2.50 m pre-mounted cable

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR PERFORMANCE DATA 50 HZ - 3-PHASE DESIGN

| $P_N$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 2,2 | 6500 | 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 | 6500 | 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 |
| 3,7 | 6500 | 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 |
| 4 | 6500 | 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 |
| 5,5 | 6500 | 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 |
| 7,5 | 6500 | 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 |
| 9,3 | 6500 | 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 |

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## MOTOR PERFORMANCE DATA 60 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $P_{MAX}$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 2,2 | 2,5 | 6500 | 230 | 3425 | 10,8 | 57,4 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| | | | 380 | 3425 | 6,5 | 34,7 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| | | | 460 | 3425 | 5,4 | 28,7 | 69 | 74 | 76 | 0,57 | 0,70 | 0,78 | 7,0 | 18,0 |
| 3 | 3,4 | 6500 | 230 | 3425 | 14,5 | 79,4 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |
| | | | 380 | 3425 | 8,8 | 48,1 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |
| | | | 460 | 3425 | 7,2 | 39,7 | 71 | 76 | 77 | 0,57 | 0,70 | 0,79 | 9,5 | 23,8 |
| 3,7 | 4,2 | 6500 | 230 | 3425 | 17,2 | 104 | 74 | 78 | 79 | 0,59 | 0,72 | 0,80 | 11,8 | 32,9 |
| | | | 380 | 3425 | 10,4 | 62,7 | 74 | 78 | 79 | 0,59 | 0,72 | 0,80 | 11,8 | 32,9 |
| | | | 460 | 3425 | 8,6 | 51,8 | 74 | 78 | 79 | 0,59 | 0,72 | 0,80 | 11,8 | 32,9 |
| 4 | 4,7 | 6500 | 230 | 3420 | 19,4 | 114 | 73 | 78 | 79 | 0,58 | 0,71 | 0,79 | 13,2 | 38,2 |
| | | | 380 | 3420 | 11,7 | 68,8 | 73 | 78 | 79 | 0,58 | 0,71 | 0,79 | 13,2 | 38,2 |
| | | | 460 | 3420 | 9,7 | 56,8 | 73 | 78 | 79 | 0,58 | 0,71 | 0,79 | 13,2 | 38,2 |
| 5,5 | 6,4 | 6500 | 230 | 3440 | 24,7 | 142 | 76 | 80 | 81 | 0,64 | 0,75 | 0,83 | 17,9 | 42,7 |
| | | | 380 | 3440 | 15,0 | 85,9 | 76 | 80 | 81 | 0,64 | 0,75 | 0,83 | 17,9 | 42,7 |
| | | | 460 | 3440 | 12,4 | 71,0 | 76 | 80 | 81 | 0,64 | 0,75 | 0,83 | 17,9 | 42,7 |
| 7,5 | 8,6 | 6500 | 380 | 3435 | 20,3 | 121 | 75 | 79 | 80 | 0,63 | 0,75 | 0,83 | 24,1 | 62,1 |
| | | | 460 | 3435 | 16,8 | 99,7 | 75 | 79 | 80 | 0,63 | 0,75 | 0,83 | 24,1 | 62,1 |

# 4" SUPER STAINLESS MOTOR – 3-PHASE DESIGN

## WINDING RESISTANCE DATA 50 HZ - 3-PHASE DESIGN

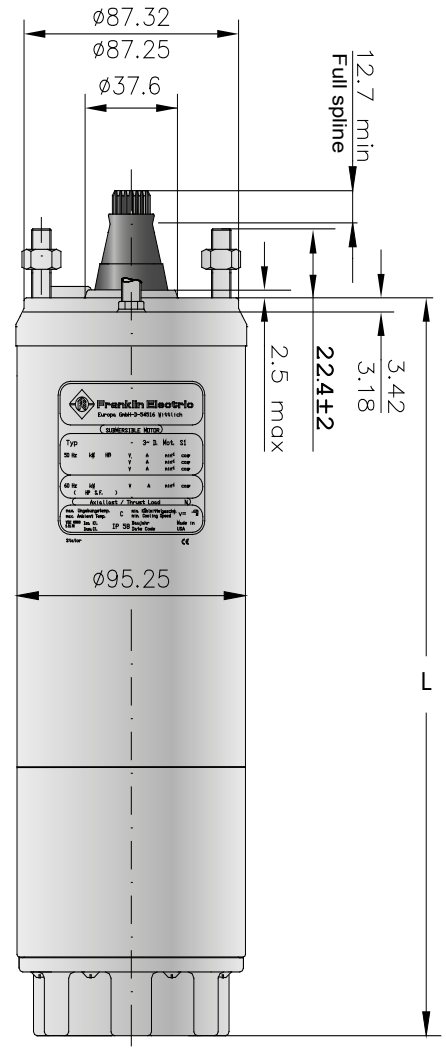
| $P_N$ [kW] | $U_N$ [V] | Stator-Ref. | U - V [Ohm] |
|---|---|---|---|
| 2,2 | 220 - 230 | 326 780 902 | 2,5 - 3,0 |
| | 380 - 400 - 415 | 326 715 902 | 7,1 - 8,6 |
| | 500 | 326 792 902 | 11,9 - 14,5 |
| 3,0 | 220 - 230 | 326 781 902 | 1,5 - 1,9 |
| | 380 - 400 - 415 | 326 716 902 | 4,7 - 5,8 |
| | 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 |

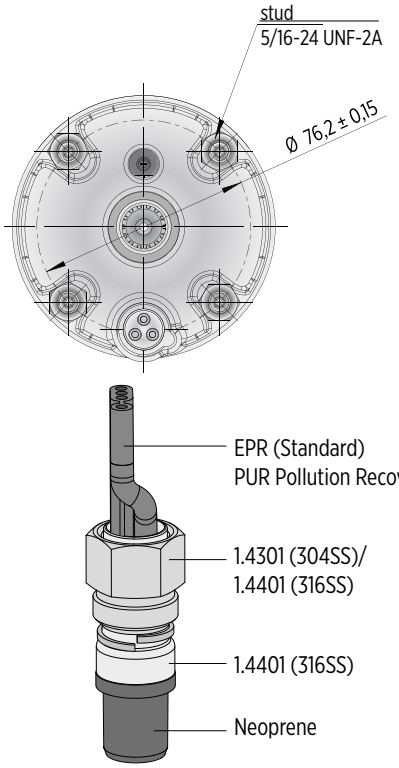
## WINDING RESISTANCE DATA 60 HZ - 3-PHASE DESIGN

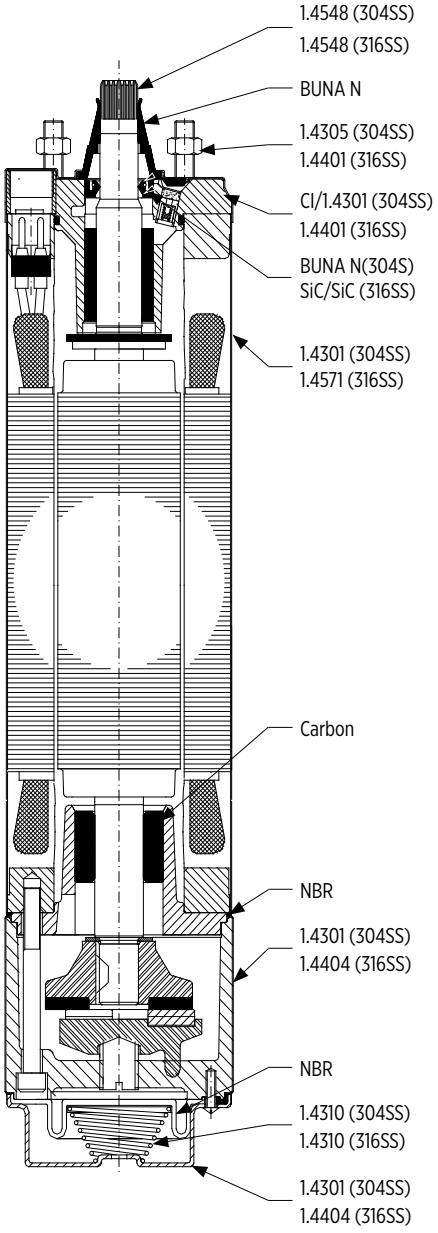
| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Stator-Ref. # | U - V [Ohm] |
|---|---|---|---|---|
| 2,2 | 2,5 | 230 | 326 833 | 1,8 - 2,2 |
| | | 380 | 326 843 | 4,9 - 6,0 |
| | | 460 | 326 715 | 7,1 - 8,6 |
| 3 | 3,4 | 230 | 326 834 | 1,2 - 1,4 |
| | | 380 | 326 844 | 3,2 - 4,0 |
| | | 460 | 326 716 | 6,5 - 8,0 |
| 3,7 | 4,2 | 230 | 326 835 | 0,9 - 1,1 |
| | | 380 | 326 845 | 2,6 - 3,1 |
| | | 460 | 326 717 | 3,7 - 4,5 |
| 4 | 4,7 | 230 | 326 836 | 0,8 - 1,0 |
| | | 380 | 326 846 | 2,4 - 2,9 |
| | | 460 | 326 718 | 3,3 - 4,0 |
| 5,5 | 6,4 | 230 | 326 837 | 0,7 - 0,8 |
| | | 380 | 326 847 | 1,8 - 2,2 |
| | | 460 | 326 719 | 2,6 - 3,2 |
| 7,5 | 8,6 | 380 | 326 848 | 1,3 - 1,6 |
| | | 460 | 326 720 | 1,9 - 2,3 |

# MOTOR DESIGN AND DIMENSIONS

## MOTOR DESIGN HIGH THRUST 6500N 2,2 - 7,5 KW



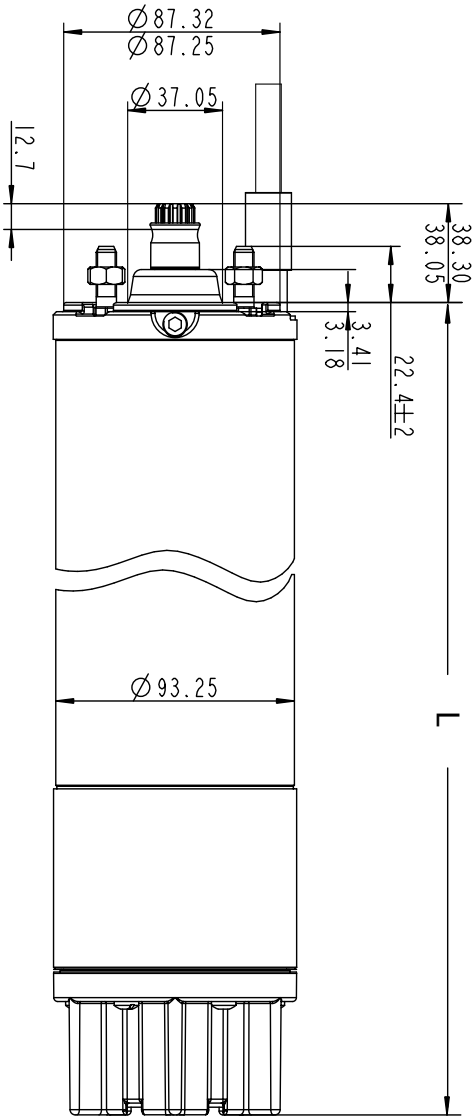

Tolerances according to NEMA MG 1-18.388

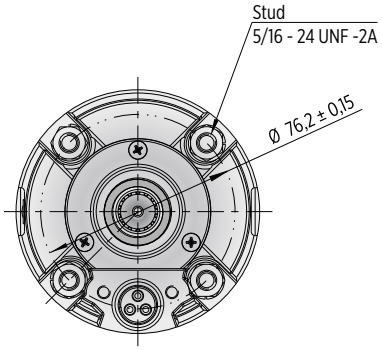
## LENGTHS AND WEIGHTS - 3-PHASE DESIGN

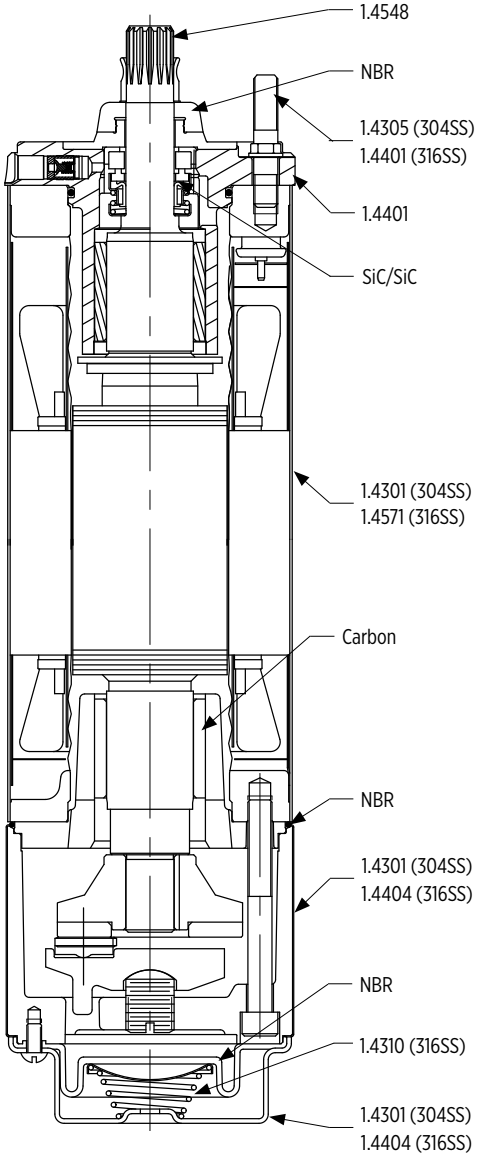
| $P_N$ | | 304SS L [mm] | 316SS L [mm] | 304SS M [kg] | 316SS M [kg] | motor with lead in single pack | |
|---|---|---|---|---|---|---|---|
| [kW] | [HP] | | | | | [mm] | 304SS [kg] |
| 2,2 | 3 | 422,2 | 431,4 | 15,0 | 15,5 | 796 x 100 x 110 | 16,8 |
| 3,0 | 4 | 477,2 | 486,4 | 17,0 | 17,5 | 796 x 100 x 110 | 18,9 |
| 3,7 | 5 | 520,2 | 529,4 | 19,1 | 19,6 | 796 x 100 x 110 | 20,9 |
| 4,0 | 5,5 | 543,2 | 552,4 | 20,0 | 20,5 | 796 x 100 x 110 | 21,8 |
| 5,5 | 7,5 | 652,5 | 661,7 | 26,6 | 27,1 | 904 x 100 x 110 | 28,7 |
| 7,5 | 10 | 730,5 | 739,7 | 30,6 | 31,1 | 904 x 100 x 110 | 32,7 |

# MOTORDESIGN AND DIMENSION

## MOTOR DESIGN HIGH THRUST 6500N 9,3 KW




Tolerances according to NEMA MG 1-18.388

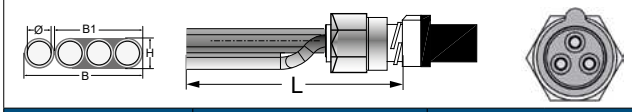
## LENGTHS AND WEIGHTS - 3-PHASE DESIGN

| $P_N$ [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 |

# MOTOR LEADS

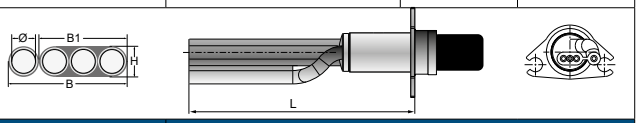
## MOTOR LEADS 3~ DESIGN DOL

| 3 Phase motor leads | | | |
|---|---|---|---|
| 2,2 - 7,5 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |



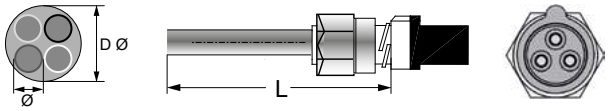

| L [m] | Model numbers 304SS | Model numbers 316SS |
|---|---|---|
| 1,5 | 310 113 401 | 310 113 501 |
| 2,5 | 310 113 402 | 310 113 502 |
| 5 | 310 113 405 | 310 113 505 |
| 10 | 310 113 410 | 310 113 510 |
| 15 | 310 113 415 | 310 113 515 |
| 20 | 310 113 420 | 310 113 520 |
| 30 | 310 113 430 | 310 113 530 |
| 40 | 310 113 440 | 310 113 540 |
| 50 | 310 113 450 | 310 113 550 |

| 3 Phase motor leads | | | |
|---|---|---|---|
| 9,3 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |



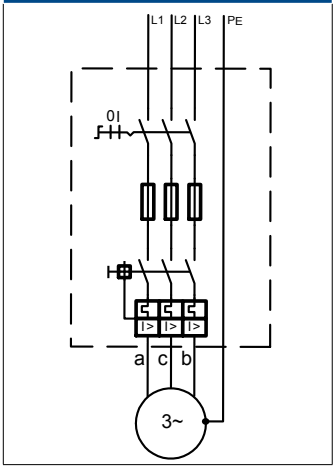

| L [m] | Model numbers |
|---|---|
| 2,5 | 310 116 502K |
| 5 | 310 116 505K |
| 10 | 310 116 510K |
| 20 | 310 116 520K |
| 30 | 310 116 530K |

| 3-phase Pollution Recovery motor leads | |
|---|---|
| 0.25 - 3.0 kW | |
| Ø [mm²] | D Ø [mm] |
| 1,5 | 9,8 |




| L [m] | Model numbers 316SS |
|---|---|
| 1,5 | 310 313 501 |
| 2,5 | 310 313 502 |
| 10 | 310 113 510 |
| 20 | 310 313 520 |
| 30 | 310 313 530 |
| 40 | 310 313 540 |
| 50 | 310 313 550 |

3~ motors DOL

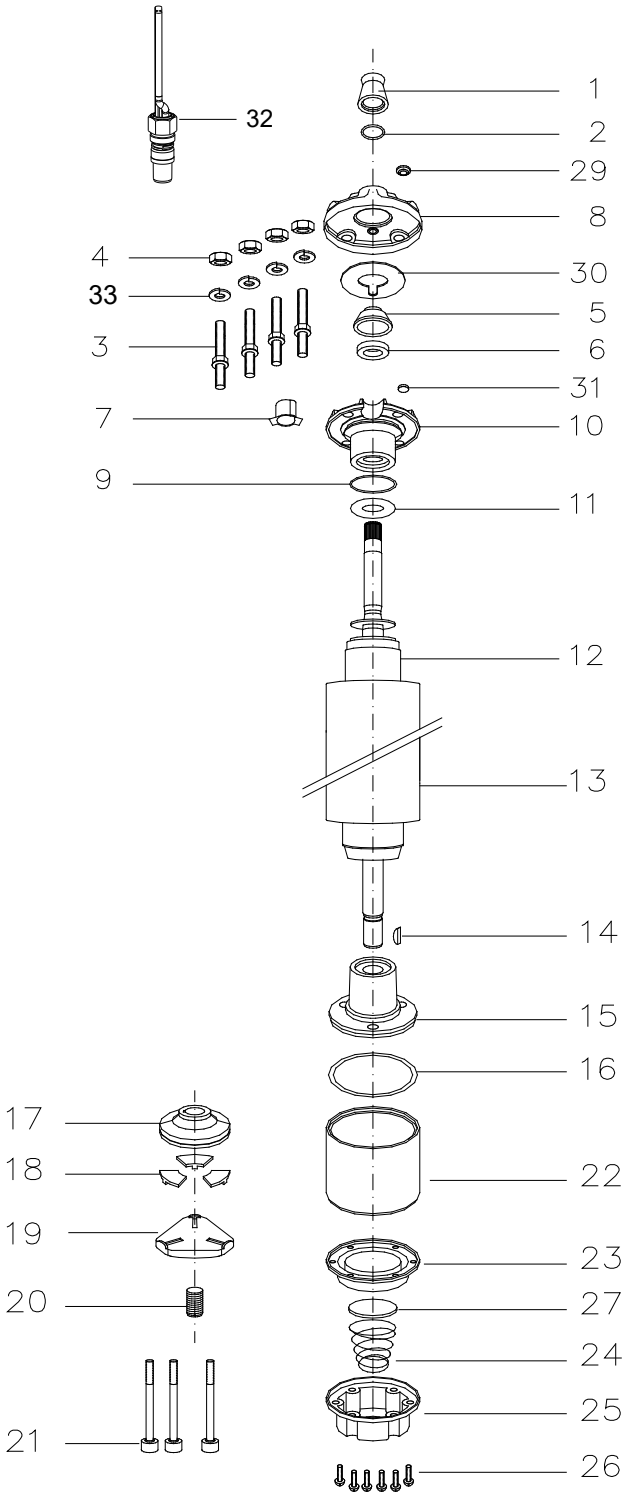



a = black | b = brown | c = grey | PE = yellow/green

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

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 304SS 2,2 - 7,5 KW




| 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 2,2 - 4,0 | 1 | 308 268 104 |
| | Upthrust washer 5,5 - 7,5 | 1 | 308 317 901 |
| 12 | Rotor | 1 | see page 52/53 |
| 13 | Stator | 1 | see page 52/53 |
| 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 | 151 048 103 |
| 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 | 164 100 50 |
| 26 | Screw | 6 | Kit C |
| 27 | Cup spring, Diaphragm | 1 | 151 448 201 |
| 29 | Sealing stopper | 1 | Kit B+D |
| 30 | Seal | 1 | Kit D |
| 31 | Filter | 1 | Kit B+D |
| 32 | Motor lead | 1 | see page 50 |
| 33 | Lock washer | 4 | Kit C |

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 2,2 - 7,5 kW | | |
|---|---|---|---|
| 2,2- 4,0kW | End bell, upper | incl. Pos.: 5, 6, 7, 8, 9, 10, 29, 30, 31 | 308 233 509 |
| | End bell, lower | incl. Pos.: 15 | 177 379 921 |
| 5,5 - 7,5kW | End bell, upper | incl. Pos.: 5, 6, 7, 8, 9, 10, 29, 30, 31 | 308 434 501 |
| | End bell, lower | incl. Pos.: 15 | 177 379 901 |
| 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 |
| Kit B1 | Seal Kit Pollution Recovery 304SS | incl. Pos.: 1, 2, 6, 9, 16, 23, 29, 31 | 308 900 401 |
| Kit C | Screw Kit 304SS | incl. Pos.: 3, 4, 21, 26, 33 | 308 658 351 |

## SPARE PARTS - STATOR AND ROTOR 304SS - 3-PHASE DESIGN 50HZ

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator Model No. | Rotor |
|---|---|---|---|---|
| **2,2** | 220, 230 | 234 756 3421/3422 | 305 491 361 | 178 163 903K |
| | 380, 400, 415 | 234 726 3421/3422 | 305 491 381 | |
| | 500 | 234 796 3421/3422 | 305 491 401 | |
| **3,0** | 220, 230 | 234 766 3421/3422 | 305 491 362 | 178 125 903K |
| | 380, 400, 415 | 234 764 3421/3422 | 305 491 382 | |
| | 500 | 234 768 3421/3422 | 305 491 402 | |
| **3,7** | 220, 230 | 234 757 3421/3422 | 305 491 363 | 178 126 903K |
| | 380, 400, 415 | 234 727 3421/3422 | 305 491 383 | |
| | 500 | 234 797 3421/3422 | 305 491 403 | |
| **4,0** | 220, 230 | 234 767 3421/3422 | 305 491 364 | 178 127 903K |
| | 380, 400, 415 | 234 765 3421/3422 | 305 491 384 | |
| | 500 | 234 769 3421/3422 | 305 491 404 | |
| **5,5** | 220, 230 | 234 758 3421/3422 | 305 491 365 | 178 133 903K |
| | 380, 400, 415 | 234 728 3421/3422 | 305 491 385 | |
| | 500 | 234 798 3421/3422 | 305 491 405 | |
| **7,5** | 380, 400, 415 | 234 729 3421/3422 | 305 491 386 | 178 134 903K |
| | 500 | 234 799 3421/3422 | 305 491 406 | |

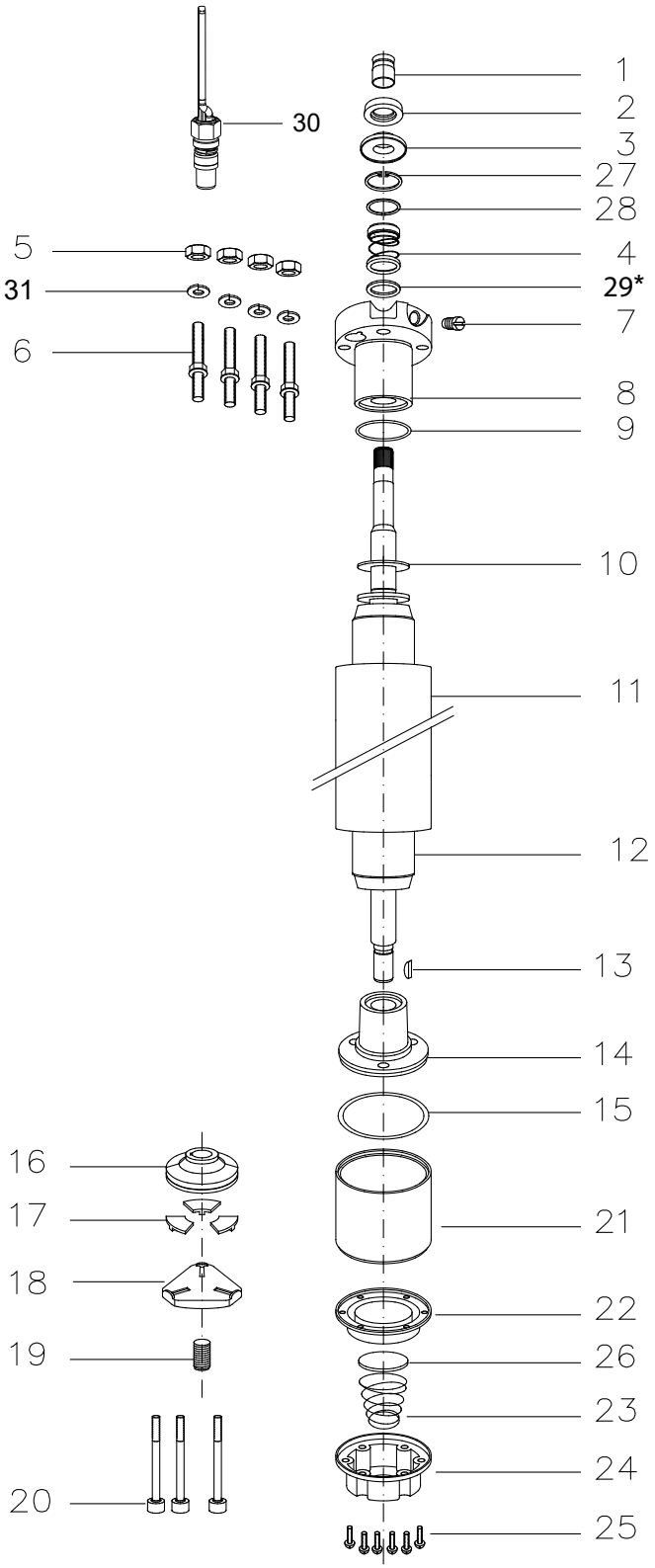
## SPARE PARTS - STATOR AND ROTOR 304SS - 3-PHASE DESIGN 60HZ

| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Stator* | Rotor |
|---|---|---|---|---|
| 2,2 | 2,5 | 230 | | 178 163 903K |
| | | 380 | | |
| | | 460 | | |
| 3,0 | 3,4 | 230 | | 178 125 903K |
| | | 380 | | |
| | | 460 | | |
| 3,7 | 4,2 | 230 | | 178 126 903K |
| | | 380 | | |
| | | 460 | | |
| 4,0 | 4,7 | 230 | | 178 127 903K |
| | | 380 | | |
| | | 460 | | |
| 5,5 | 6,4 | 230 | | 178 133 903K |
| | | 380 | | |
| | | 460 | | |
| 7,5 | 8,6 | 380 | | 178 134 903K |
| | | 460 | | |

* 60 Hz Stators on request

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 316SS 2,2 - 7,5 KW




| 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 | see page 55/56 |
| 12 | Rotor | 1 | see page 55/56 |
| 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 | 151 048 103 |
| 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 | 364 100 50 |
| 25 | Screw | 6 | Kit D |
| 26 | Cup spring, Diaphragm | 1 | 151 448 201 |
| 27 | Ring | 1 | Kit B |
| 28 | Retain Ring | 1 | Kit B |
| 29* | Washer | 1 | 308 747 201 |
| 30 | Motor lead | 1 | see page 50 |
| 31 | Lock washer | 4 | Kit D |

*** only for 2,2 - 3kW**

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 2,2 - 7,5 kW | | |
|---|---|---|---|
| 2,2- 4,0kW | End bell, upper 316SS - DOL | incl. Pos. 8 | 177 390 955 |
| | End bell, upper 316SS - YD | | 177 390 956 |
| 5,5 - 7,5kW | End bell, upper 316SS - DOL | incl. Pos. 8 | 177 390 951 |
| | End bell, upper 316SS - YD | | 177 390 953 |
| Kit A | Thrust bearing Kit 6500N | incl. Pos. 16, 17 | 308 700 301 |
| Kit B | Seal Kit 304SS | incl. Pos.: 4, 9, 15, 22 | 308 900 302 |
| Kit B1 | Seal Kit Pollution Recovery 304SS | incl. Pos.: 1, 2, 3, 4, 9 ,15, 22, 27, 28 | 308 900 402 |
| Kit C | Sand slinger Kit 316SS Motors | incl. Pos.: 1, 2, 3 | 308 825 201 |
| Kit D | Screw Kit 316SS | incl. Pos.: 5, 6, 20, 25, 31 | 308 658 301 |

## SPARE PARTS - STATOR AND ROTOR 316SS - 3-PHASE DESIGN 50HZ

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator Model No. | Rotor |
|---|---|---|---|---|
| **2,2** | 220, 230 | 234 756 3521/3522 | 305 491 641 | 178 163 913K |
| | 380, 400, 415 | 234 726 3521/3522 | 305 491 661 | |
| | 500 | 234 796 3521/3522 | 305 491 681 | |
| **3,0** | 220, 230 | 234 766 3521/3522 | 305 491 642 | 178 125 913K |
| | 380, 400, 415 | 234 764 3521/3522 | 305 491 662 | |
| | 500 | 234 768 3521/3522 | 305 491 682 | |
| **3,7** | 220, 230 | 234 757 3521/3522 | 305 491 643 | 178 126 913K |
| | 380, 400, 415 | 234 727 3521/3522 | 305 491 663 | |
| | 500 | 234 797 3521/3522 | 305 491 683 | |
| **4,0** | 220, 230 | 234 767 3521/3522 | 305 491 644 | 178 127 913K |
| | 380, 400, 415 | 234 765 3521/3522 | 305 491 664 | |
| | 500 | 234 769 3521/3522 | 305 491 684 | |
| **5,5** | 220, 230 | 234 758 3521/3522 | 305 491 645 | 178 133 913K |
| | 380, 400, 415 | 234 728 3521/3522 | 305 491 665 | |
| | 500 | 234 798 3521/3522 | 305 491 685 | |
| **7,5** | 380, 400, 415 | 234 729 3521/3522 | 305 491 666 | 178 134 913K |
| | 500 | 234 799 3521/3522 | 305 491 686 | |

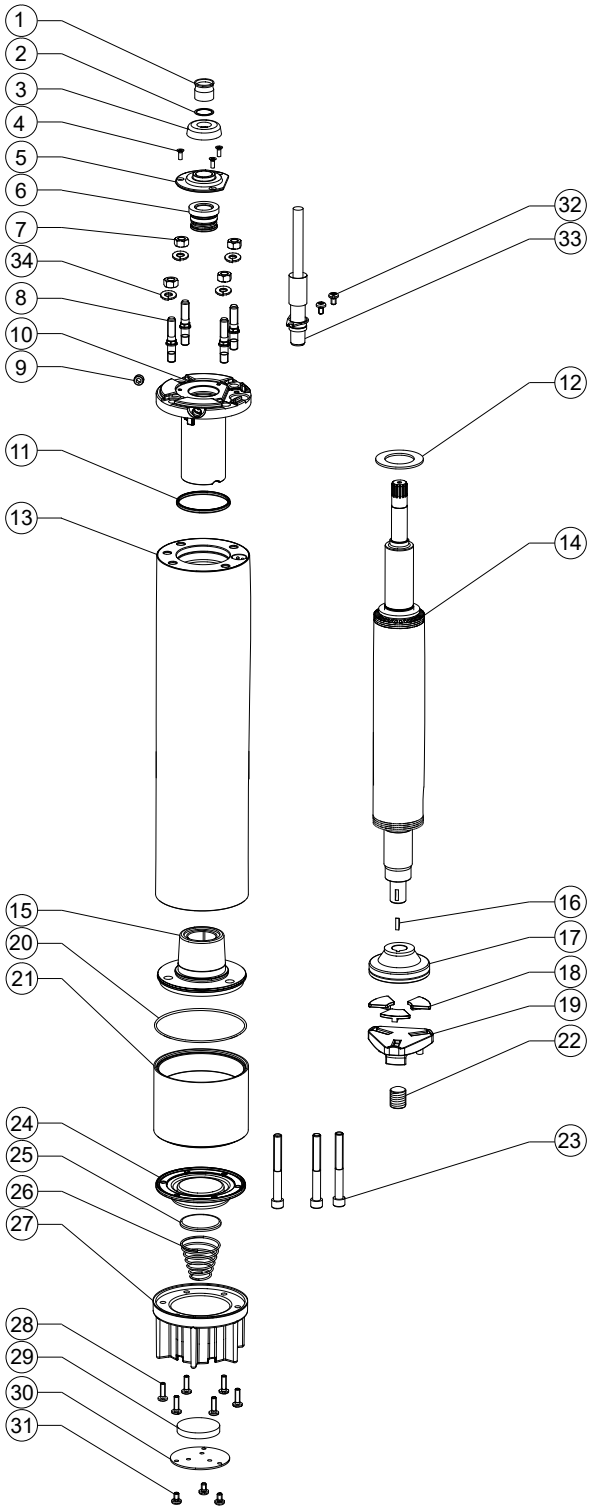
## SPARE PARTS - STATOR AND ROTOR 316SS - 3-PHASE DESIGN 60HZ

| $P_N$ [kW] | $P_{MAX}$ [kW] | $U_N$ [V] | Stator* | Rotor |
|---|---|---|---|---|
| 2,2 | 2,5 | 230 | | 178 163 913K |
| | | 380 | | |
| | | 460 | | |
| 3,0 | 3,4 | 230 | | 178 125 913K |
| | | 380 | | |
| | | 460 | | |
| 3,7 | 4,2 | 230 | | 178 126 913K |
| | | 380 | | |
| | | 460 | | |
| 4,0 | 4,7 | 230 | | 178 127 913K |
| | | 380 | | |
| | | 460 | | |
| 5,5 | 6,4 | 230 | | 178 133 913K |
| | | 380 | | |
| | | 460 | | |
| 7,5 | 8,6 | 380 | | 178 134 913K |
| | | 460 | | |

* 60 Hz Stators on request

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 9,3 KW




| 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 58 |
| 14 | Rotor | 1 | see page 58 |
| 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 | 151 048 103 |
| 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 50 |
| 34 | Lock washer | 4 | Kit C |

# MOTOR SPARE PARTS

## SPARE PARTS KITS

| $P_N$ [kW] | 9,3 kW | | |
|---|---|---|---|
| Kit A | Thrust bearing Kit 6500N | incl. Pos.17. 18 | 308 700 301 |
| Kit B | Seal Kit 304SS / 316SS | incl. Pos.: 1, 3, 6, 11, 20, 24 | 308 900 501 |
| Kit C | Screw Kit 304SS / 316SS | incl. Pos.: 4; 7; 8; 23; 28; 31; 32, 34 | 308 658 501 |

## SPARE PARTS - STATOR AND ROTOR - 3-PHASE DESIGN 50HZ

| $P_N$ [kW] | $U_N$ [V] | ModelInr. Stator 304SS / 316SS | ModelInr. Rotor 304SS/316SS |
|---|---|---|---|
| 9,3 | 380 - 415 | 326 995 920K | 178 139 915K |

* 60 Hz Stators on request

# 4" SUPER STAINLESS HEAT PUMP MOTORS – 3-PHASE DESIGN

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## 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 1100Watts, each motor being capable of driving several pumps within a certain power level range
- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's non-toxic water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity

## SPECIFICATION

- Ratings: 0,16 kW up to 1,1 kW
- Voltage: 3~, 400 V - 50 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 %
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m) Special lead length up to 50 m,
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (3 phase motors rotation reversible)

## OPTIONS

- Built in lightning arrestors
- 316SS material design
- Special voltages

### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ - Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm



# 4" SUPER STAINLESS HEAT PUMP MOTORS - 3- PHASE DESIGN

## MODEL NUMBERS - SOLAR MOTORS 60 HZ

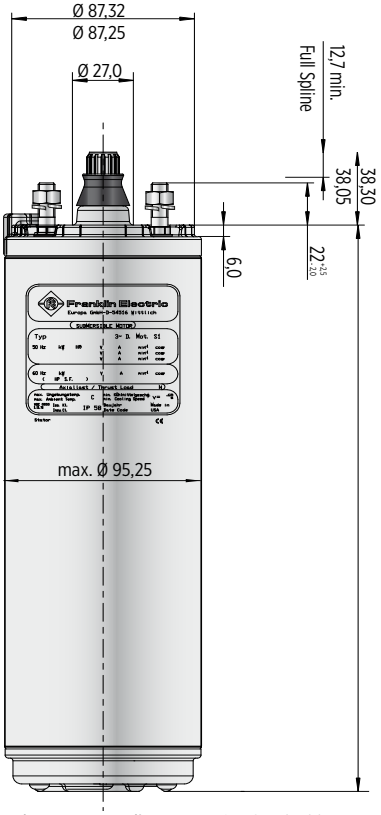
| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | | | |
|---|---|---|---|---|---|---|
| | | | Standard 304SS | | Standard 316SS | |
| | | | Single pack with lead* | 40 motors packing unit | Single pack with lead* | 40 motors packing unit |
| 0,16 - 0,32 | 400 | 234 870 | 6721L | 6721 | 6821L | 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 1.5 m preassembled cable

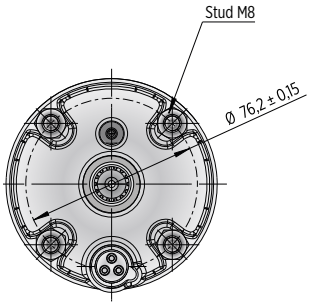
## MOTOR PERFORMANCE AND MECHANICAL DATA 50 HZ - 3-PHASE

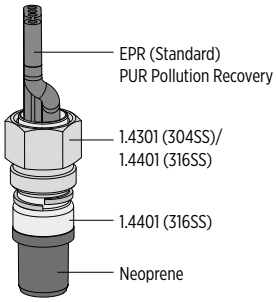
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] | cos φ (Pf.) | $T_N$ [Nm] | $T_A$ [Nm] | L [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0,16 - 0,32 | 4000 | 400 | 2910 | 0,56 | 3,7 | 64 | 0,68 | 0,52 | 2,4 | 237,2 | 5,6 |
| | | | 2860 | 0,7 | | 70 | 0,78 | 0,84 | | | |
| | | | 2820 | 0,8 | | 70 | 0,83 | 1,08 | | | |
| 0,30 - 0,60 | 4000 | 400 | 2920 | 0,95 | 7,1 | 71 | 0,65 | 0,98 | 4,8 | 271,2 | 7,3 |
| | | | 2870 | 1,2 | | 74 | 0,78 | 1,56 | | | |
| | | | 2830 | 1,4 | | 75 | 0,84 | 2,02 | | | |
| 0,55 - 1,1 | 4000 | 400 | 2910 | 1,7 | 12,2 | 75 | 0,67 | 1,80 | 8,5 | 297,2 | 8,6 |
| | | | 2870 | 1,9 | | 76 | 0,76 | 2,48 | | | |
| | | | 2800 | 2,5 | | 76 | 0,85 | 2,74 | | | |

## MOTOR DESIGN



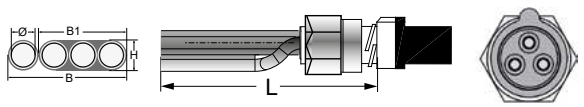

Tolerances according to NEMA MG 1-18.388



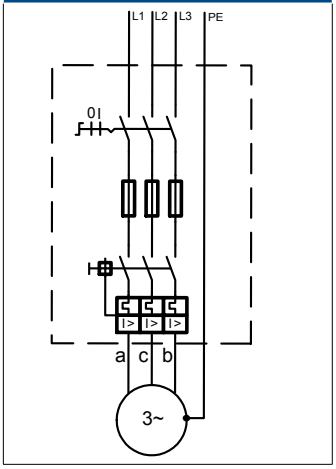

## MOTOR LEAD - 3-PHASEN DESIGN

| 3-Phasen Motor lead | | | |
|---|---|---|---|
| 0,16 - 1,1 kW | | | |
| Ø [mm$^2$] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |




| L [m] | Model numbers 304SS | Model numbers 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 |

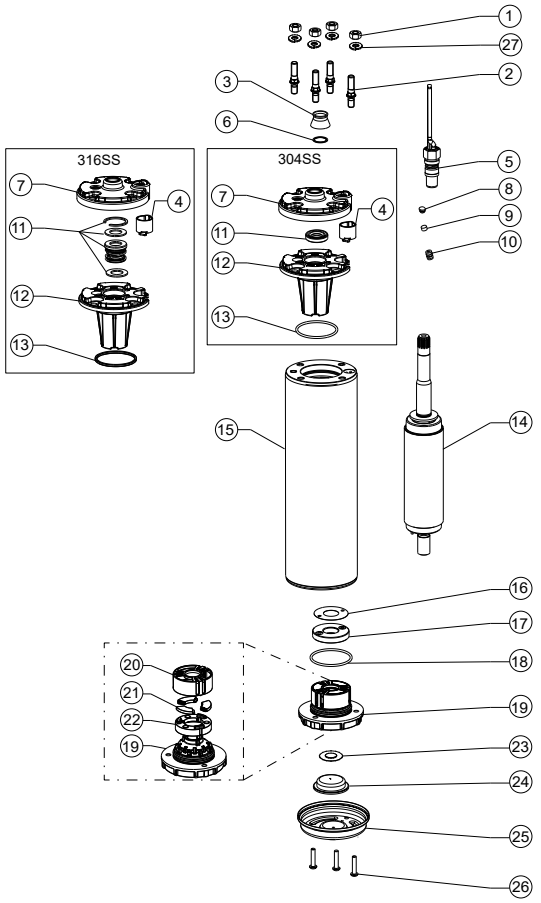
3- Motor DOL




a = black | b = brown | c = grey | PE = yellow/green

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0,16 UP TO 1,1 KW




| 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 | see page 60 |
| 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 | see page 61 |
| 15 | Stator | 1 | see page 61 |
| 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 / KitA2 |
| 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 |

## SPARE PARTS KITS

| $P_N$ [kW] | 0,16 - 1,1 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 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 | incl. pos. 16 - 22 | 308 464 911 |
| | Bottom Endbell 316SS incl. Thrust Bearing Kit 4000N* | | 308 464 912 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 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 | incl. pos. 1, 2, 26, 27 | 308 656 202 |
| | Fastener Kit 316SS* | | 308 656 252 |

## SPARE PARTS - STATOR AND ROTOR

| $P_N$ [kW] | $U_N$ [V] | **Motor Nb.** 304SS | **Motor Nb.** 316SS | Stator Nb.. 304SS / 316SS | Rotor Nb. 304SS | Rotor Nb. 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" SUPER STAINLESS SOLAR MOTOR – 3-PHASE DESIGN

*OPTIONAL*

STAINLESS STEEL 304 | STAINLESS STEEL 316

## FEATURES & BENEFITS

- Suitable for operation in solar applications, ideally with the Franklin Electric SolarPAK complete system.
- 4" NEMA mounting design with metric studs
- Stainless steel splined shaft
- Stator shell in 316SS
- Factory filled with Franklin's non-toxic water soluble fill solution
- Max. storage temperature -15°C - + 50°C
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology with extended jam nut in Stainless steel
- High efficiency electrical design for low operation costs
- Drinking water approvals
- Suitable for use in water with increased salinity

## SPECIFICATION

- Ratings: 0,75 kW / 1,1 kW
- Voltage: 3~, 100 V / 200 V - 60 Hz
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10 % / +6 % (50 Hz), +/- 10% (60 Hz)
- Protection IP68, insulation class B
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time)
- All motors with factory installed leads (1.50 m / 2.50 m) Special lead length up to 50 m,
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (1 phase motors CW upon request; 3 phase motors rotation reversible)

## OPTIONS

- Built in lightning arrestors
- 316SS material design
- Special voltages



### ISO 9001

All motors are manufactured in ISO 9001 certified plants and 100% tested

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation

### StatorSHIELD™ - Franklin encapsulation system

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

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm

# 4" SUPER STAINLESS SOLAR MOTORS - 3- PHASE DESIGN

## MODEL NUMBERS - SOLAR MOTORS 60 HZ

| $P_N$ [kW] | $U_N$ [V] | Digit 1 - 6 | Digit 7 - 10 | |
|---|---|---|---|---|
| | | | Single pack with lead* | 40 motors packing unit |
| 0,75 | 100 | 234 802 | 6721L | 6721 |
| 1,1 | 200 | 234 703 | 6721L | 6721 |

*lead lengths motors „L" : up to 1.5 kW with 1.5 m preassembled cable

## SYSTEM MODEL NUMBERS 60 HZ - SOLAR MOTORS & DRIVETECH MINI CONTROLLER

| $P_N$ [kW] | $U_N$ [V] | Set Motor mit DriveTech mini Solar Controller* | DriveTech mini Controller* | |
|---|---|---|---|---|
| | | | Controller Modell | Model number |
| 0,75 | 100 | 308 752 670 | FD Solar 0.55 kW N4 | 581 013 000 86C-62IS000 |
| 1,1 | 200 | 308 754 670 | FD Solar 1.10 kW N4 | 581 014 200 86C-62IS002 |

*More information about the DriveTech mini Controller and Accessories in the catalog section 4"HES Systems

## MOTOR PERFORMANCE DATA 60 HZ - 3-PHASE

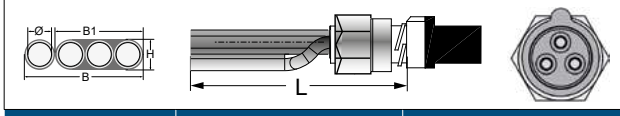
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % Last | | | cos φ (Pf.) at % Last | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 0,75 | 4000 | 100 | 3370 | 6,9 | 34,0 | 68 | 73 | 74 | 0,71 | 0,79 | 0,85 | 2,1 | 5,0 |
| 1,1 | 4000 | 200 | 3400 | 5,0 | 26,0 | 72 | 76 | 76 | 0,70 | 0,78 | 0,83 | 3,1 | 7,0 |

## WINDINGS RESISTANCE 60 HZ

| $P_N$ [kW] | $U_N$ [V] | Stator-Ref. | Main phase [Ohm] |
|---|---|---|---|
| 0,75 | 100 | 327 216 945 | 1,3 - 1,6 |
| 1,1 | 200 | 327 051 945 | 3,1 - 3,7 |

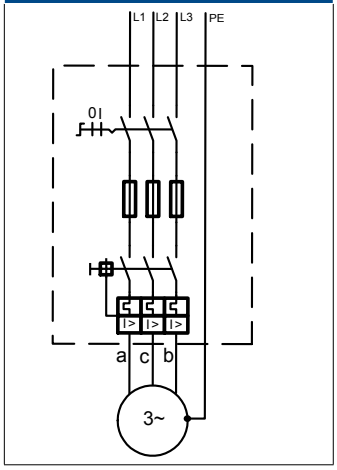
## MOTOR LEAD - 3-PHASEN DESIGN

| 3-Phasen Motor lead | | | |
|---|---|---|---|
| 0,75 - 1,1 kW | | | |
| Ø [mm²] | B [mm] | B1 [mm] | H [mm] |
| 3X1,5 + 1G1,5 | 16,8 | 10,7 | 5,0 |




| L [m] | Model numbers 304SS | Model numbers 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 |

3~ Motor DOL

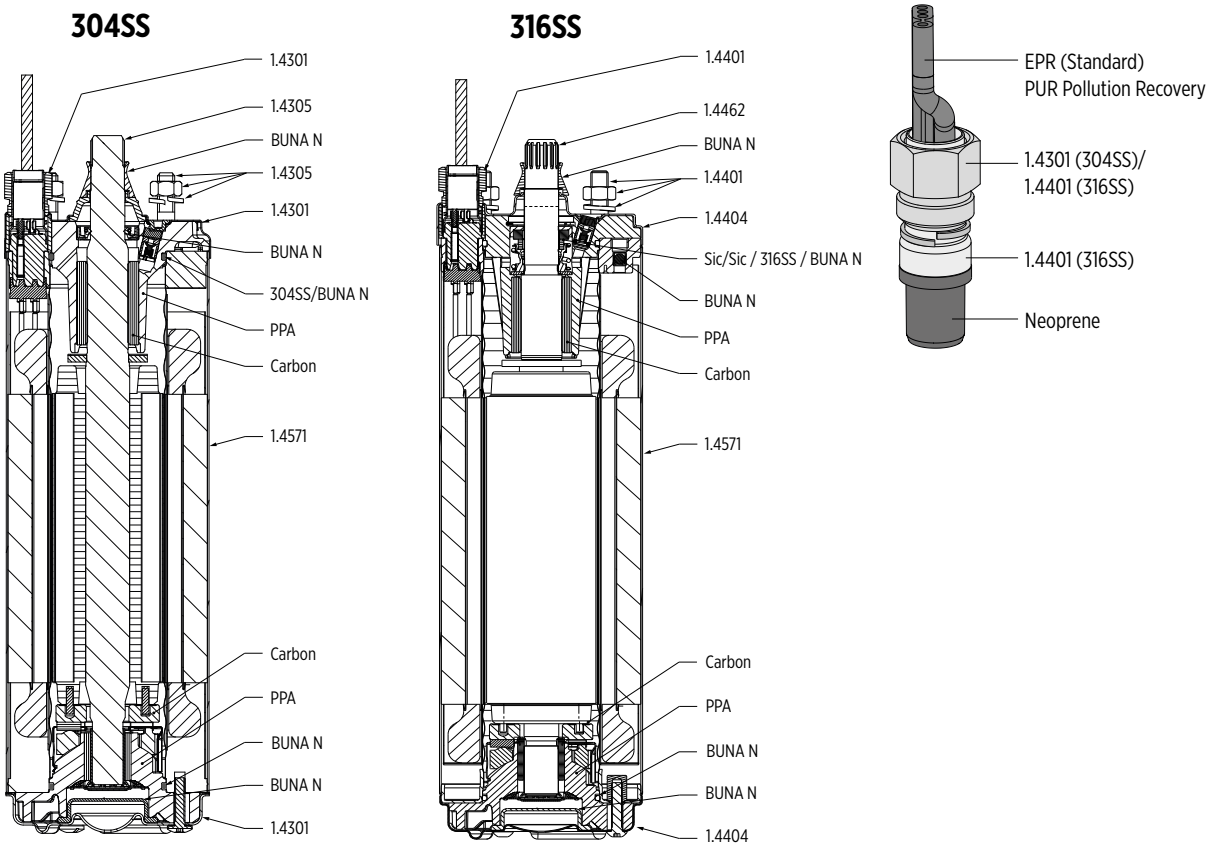



a = black | b = brown | c = grey | PE = yellow/green

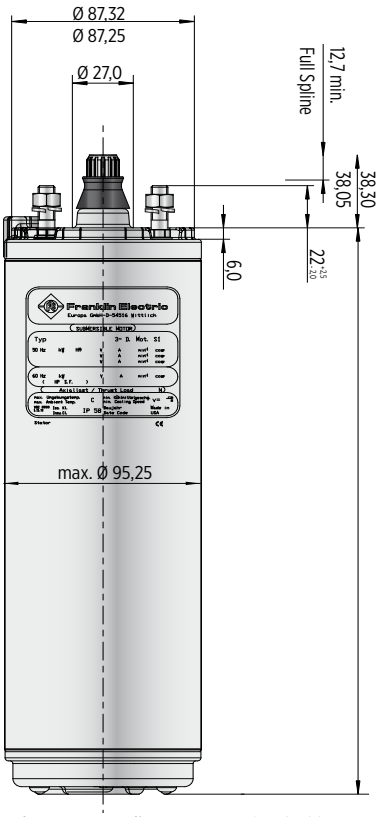
Cables are designed for submerged operation. For air operation, please consult Franklin Electric.

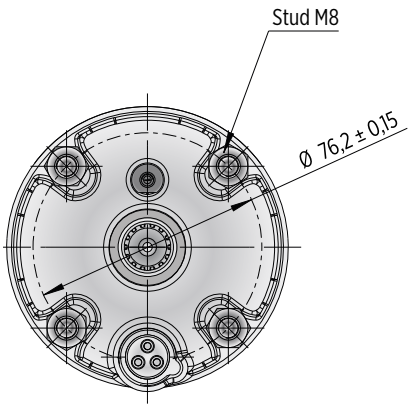
# MOTOR DESIGN AND DIMENSIONS

## MOTOR DESIGN 304SS 4000N 0,75 & 1,1 KW




## LENGTHS AND WEIGHTS - 3-PHASE DESIGN



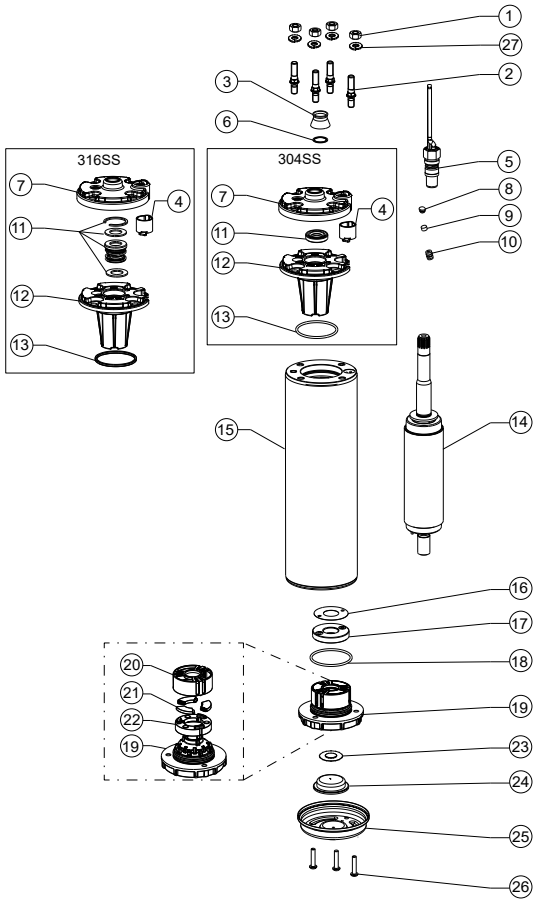




| $P_N$ [kW] | $P_N$ [HP] | L [mm] | M [kg] | Motor with Lead in single pack [mm] | Motor with Lead in single pack [kg] |
|---|---|---|---|---|---|
| 0,75 | 1,00 | 271,2 | 7,25 | 530 x 100 x 110 | 8,0 |
| 1,10 | 1,50 | 297,2 | 8,55 | 530 x 100 x 110 | 9,3 |

Tolerances according to NEMA MG 1-18.388

# MOTOR PART DESCRIPTION

## MOTOR DESIGN 0,75 & 1,1 KW




| 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 | see page 60 |
| 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 | see page 62 |
| 15 | Stator | 1 | see page 62 |
| 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 / KitA2 |
| 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 |

## SPARE PARTS KITS

| $P_N$ [kW] | 0.75 / 1,1 kW | | |
|---|---|---|---|
| Kit A1 | Top Endbell 304SS | incl. pos. 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 | incl. pos. 16 - 22 | 308 464 911 |
| | Bottom Endbell 316SS incl. Thrust Bearing Kit 4000N* | | 308 464 912 |
| Kit B | Seal Kit Standard 304SS | incl. pos. 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 | incl. pos. 1, 2, 26, 27 | 308 656 202 |
| | Fastener Kit 316SS* | | 308 656 252 |

## SPARE PARTS - STATOR AND ROTOR

| $P_N$ [kW] | $U_N$ [V] | **Motor Nb.** 304SS | **Motor Nb.** 316SS | Stator Nb.. 304SS / 316SS | Rotor Nb. 304SS | Rotor Nb. 316SS |
|---|---|---|---|---|---|---|
| 0,75 | 100 | 234 802 6721L | 234 802 6821L | 305 491 *** | 178 164 903K | 178 164 953K |
| 1,1 | 200 | 234 703 6721L | 234 703 6821L | 305 491 *** | 178 164 905K | 178 164 955K |

# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## SPECIFICATION

- 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



- 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: ± 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

# 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 | 0.97 | 2.4 | |
| | | 1.1 | | | | 3.8 | | 83.5 | 0.99 | 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 | 0.97 | 4.8 | |
| | | 2.2 | | | | 7.0 | | 87.0 | 0.99 | 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 | 0.97 | 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 | 0.96 | 11.8 | |
| | | 4.0 | | | | 13.0 | | 91.0 | 0.97 | 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 | 0,97 | 2,4 | |
| | | 1,1 | | | | 3,8 | | 83,5 | 0,99 | 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 | 0,95 | 4,8 | |
| | | 2,2 | | | | 7,1 | | 87,0 | 0,96 | 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 | 0,97 | 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 | 0,96 | 11,8 | |
| | | 4,0 | | | | 12,5 | | 91,0 | 0,97 | 12,7 | |

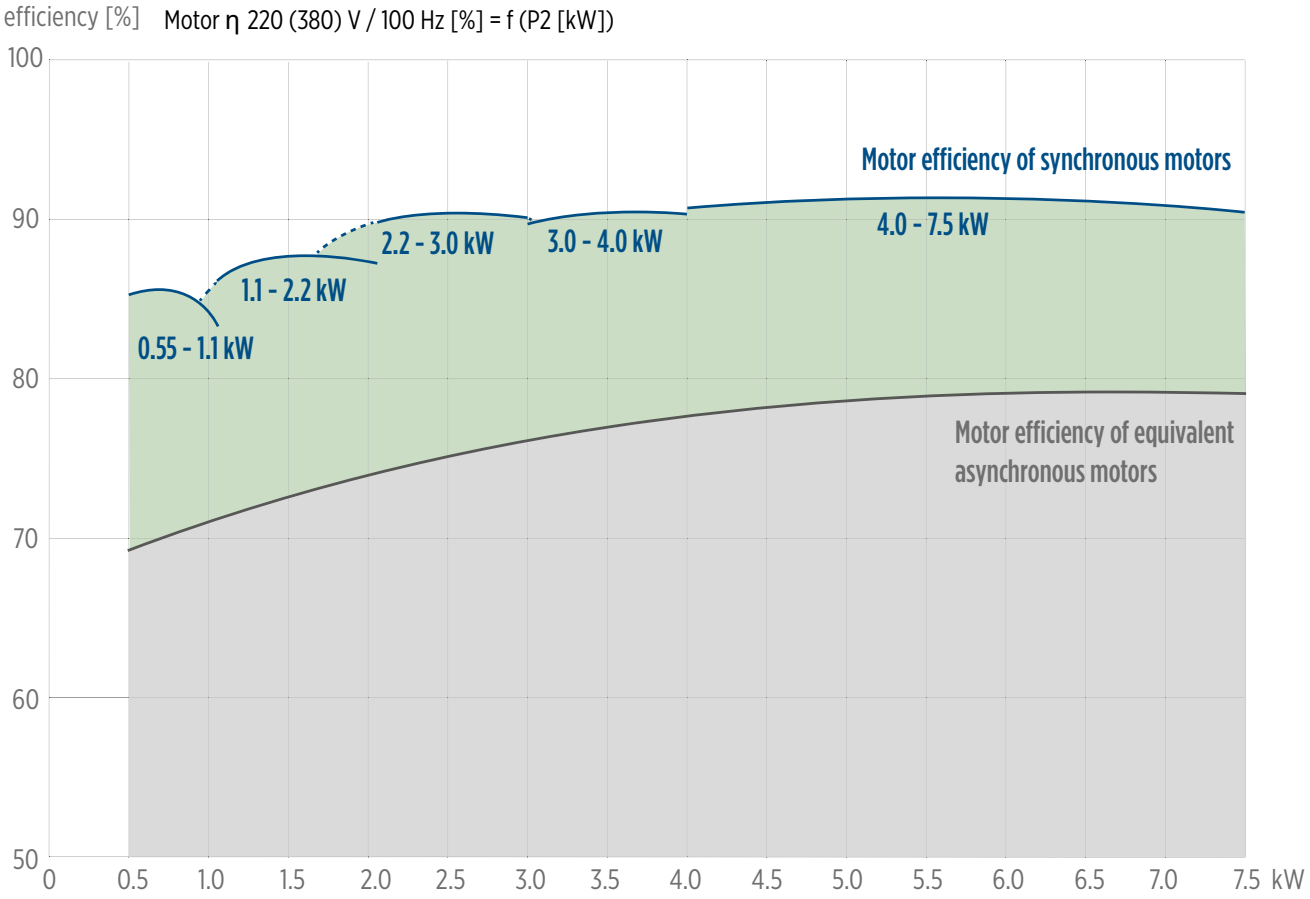
## MOTOR PERFORMANCE DATA 380 V / 100 HZ

| 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 | 0.96 | 4.8 | |
| | | 2.2 | | | | 4.0 | | 87.0 | 0.97 | 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 | 0.97 | 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 | 0.97 | 11.8 | |
| | | 4.0 | | | | 7.3 | | 90.2 | 0.98 | 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 | 0.95 | 17.5 | |
| | | 7.5 | | | | 13.1 | | 90.5 | 0.96 | 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.

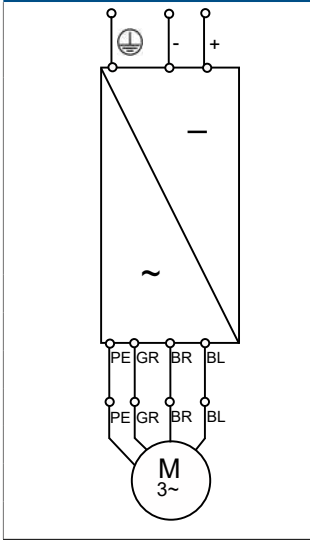
# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

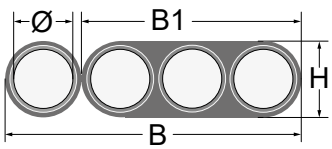
## EFFICIENCY CURVE AT 3000 RPM

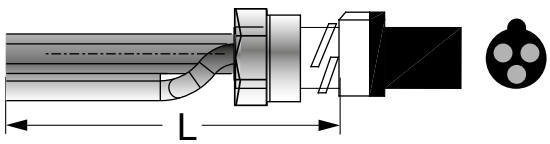



## MOTOR LEADS / ELECTRICAL CONNECTION 3~ MOTORS

| 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 | 5.0 |




| 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.

# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## WINDING RESISTANCE 220 V / 100 HZ

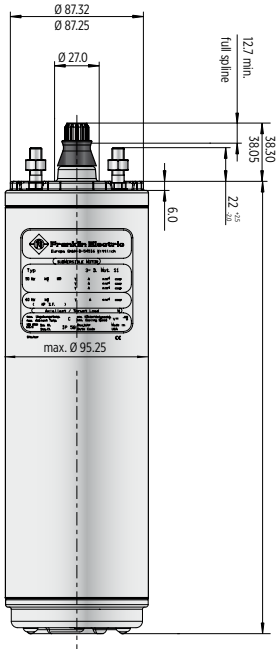
| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V (Ohm) | Rotor Ref. |
|---|---|---|---|---|
| 0.55 - 1.1 | 220 | 327 460 *** | 7.7 - 8.14 | 178 172 901 |
| 1.1 - 2.2 | 220 | 327 461 *** | 2.30 - 2.40 | 178 172 903 |
| 2.2 - 3.0 | 220 | 327 462 *** | 1.45 - 1.54 | 178 172 904 |
| 3.0 - 4.0 | 220 | 327 463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

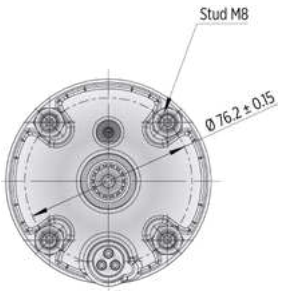
## WINDING RESISTANCE 380 V / 100 HZ

| $P_N$ [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 |

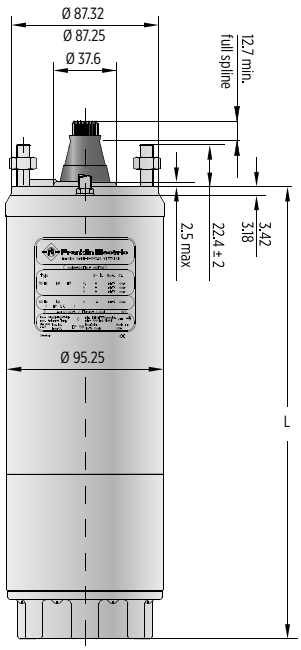
## MOTOR DIMENSIONS

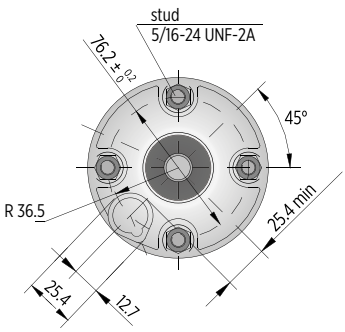
0.55 - 3.0 kW [4000 N]




3.0 - 7.5 kW [6500 N]



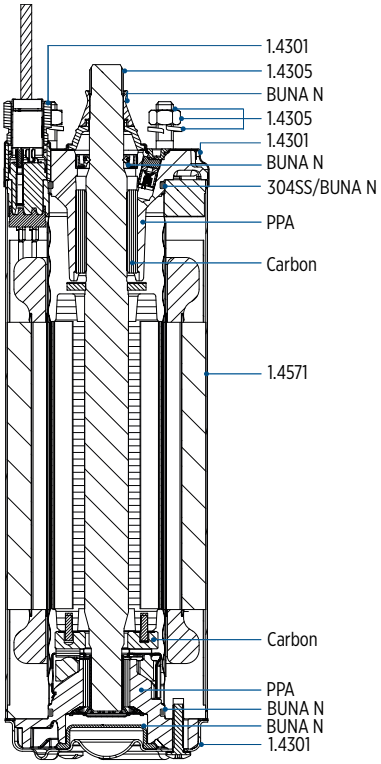

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | L [mm] | M [kg] | Motor with lead in single pack | |
|---|---|---|---|---|---|---|
| | | | | | [mm] | [kg] |
| 0.55 - 1.1 | 220 | 4000 | 218 | 5.2 | 530 x 100 x 110 | 6 |
| 1.1 - 2.2 | 220 | 4000 | 263 | 7.2 | 530 x 100 x 110 | 8 |
| 2.2 - 3.0 | 220 | 4000 | 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

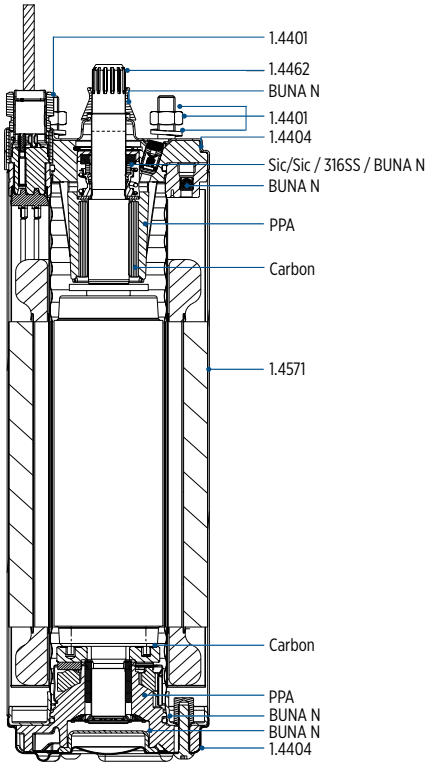
# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## MOTOR MATERIALS 4000 N

**304SS**

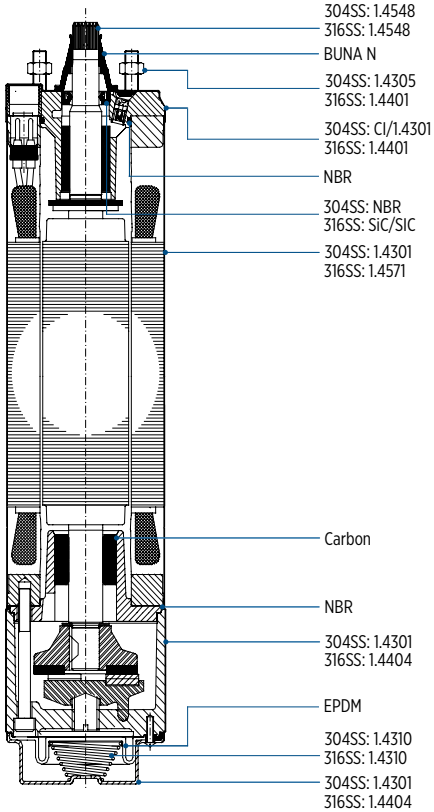



**316SS**



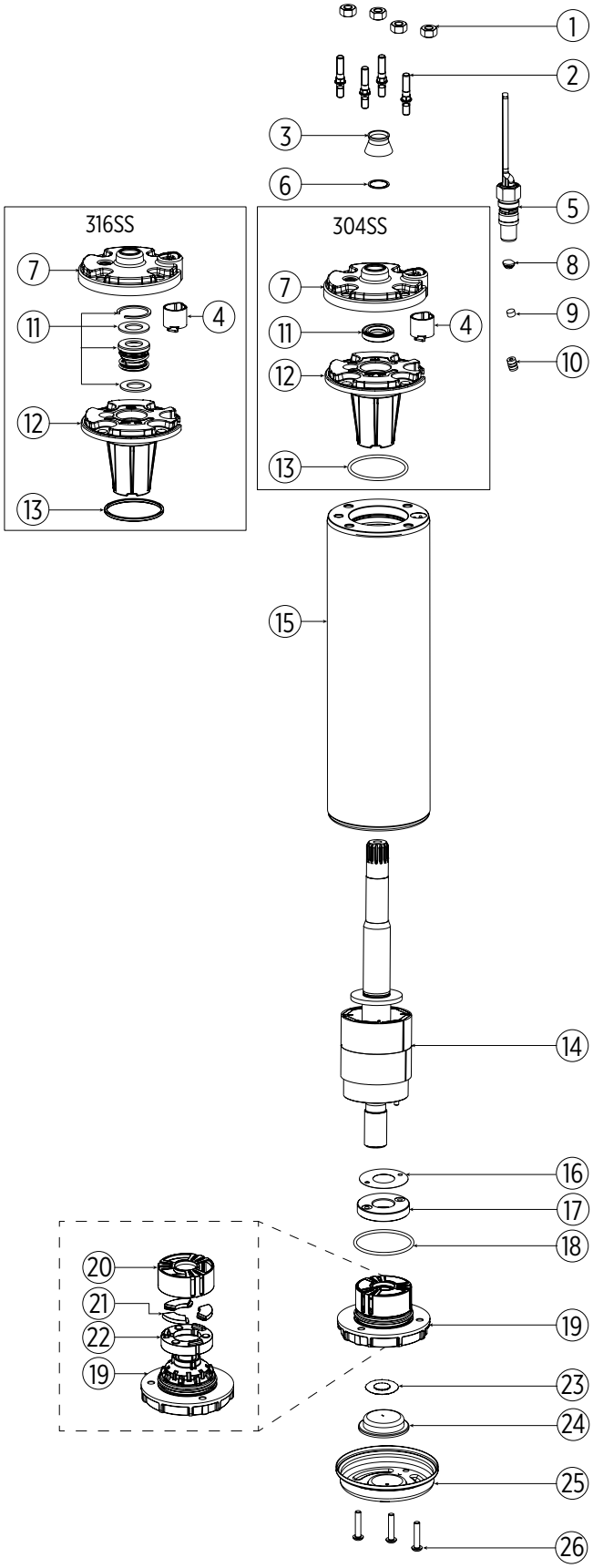

## MOTOR MATERIALS HIGH THRUST 6500 N

**304SS / 316SS**



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

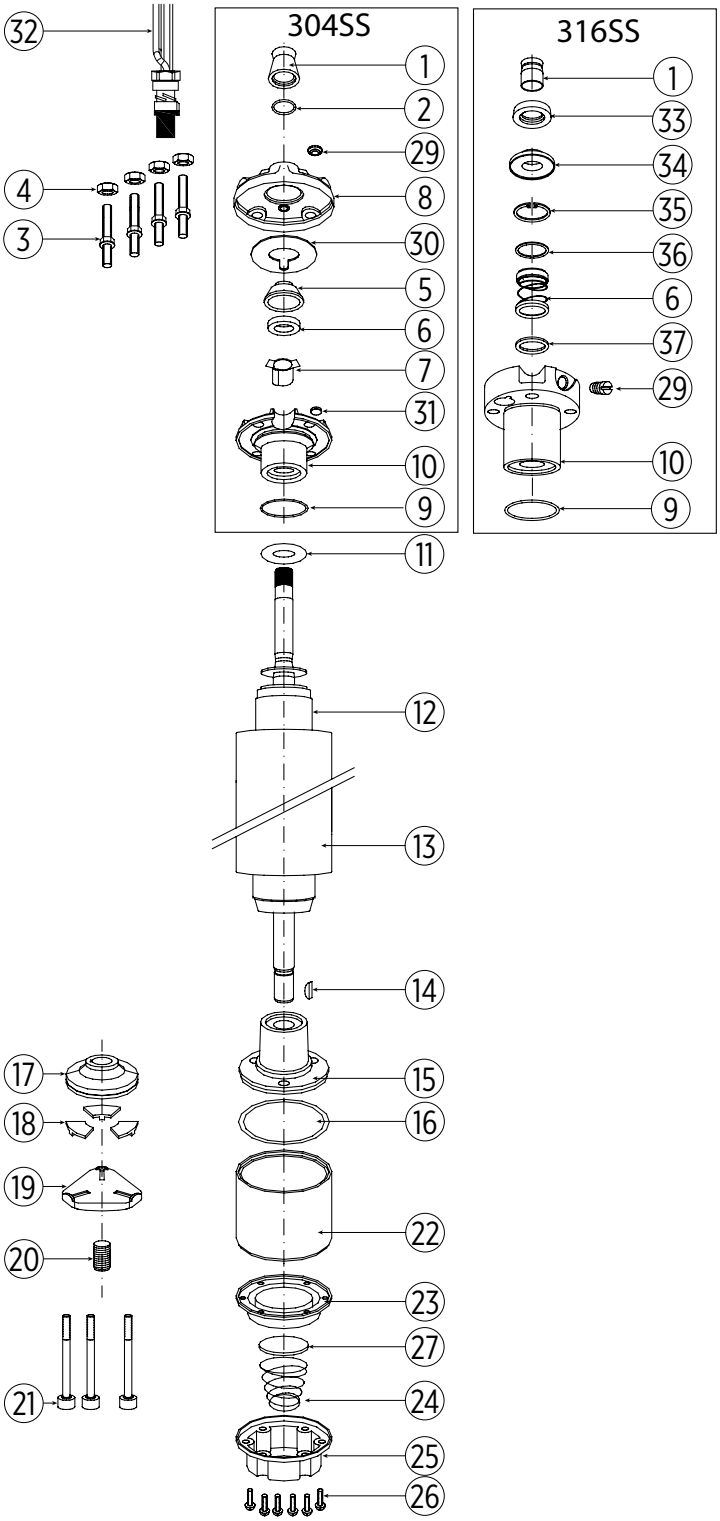
## MOTOR PARTS DESCRIPTION




| 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<br>151820103 |
| 5 | motor lead | 1 | see page 65 |
| 6 | washer | 1 | Kit B |
| 7 | top endbell, cover 304SS | 1 | Kit A1<br>150262151 |
| | top endbell, cover 316SS | 1 | Kit A1<br>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 70 |
| 15 | stator | 1 | see page 70 |
| 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<br>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 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 | ➡ see page 70 |
| 13 | stator | 1 | ➡ see page 70 |
| 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 | adjustimg screw | 1 | 151 048 103 |
| 21 | screws | 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 | screws | 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 |
| 32 | motor lead | 1 | ➡ see page 65 |
| 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 | Kit B |

# 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, 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

# 6" ENCAPSULATED MOTOR

**High-quality encapsulated motor with hermetically-sealed windings**

SAND FIGHTER | WATER WELL WW CI PC / 304SS | *OPTIONAL* STAINLESS STEEL 304 | *OPTIONAL* STAINLESS STEEL 316

## FEATURES & BENEFITS

- Double-flange NEMA mounting design
- Stainless steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's FES91 motor fill solution
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Drinking water approvals

## STANDARD SPECIFICATION

- Ratings: 4 - 45 kW
- Thrust load: 15.5 kN: 4 - 22 kW<br>27.5 kN: 30 kW<br>45 kN: 37 - 45 kW
- 6" NEMA flange
- Max. storage temperature - 15 °C to + 60 °C
- Nominal ambient temperature (with 0.16 m/s cooling flow): 4 - 30 kW: 30 °C, 37 - 45 kW: 50 °C
- Standard Voltage: 50 Hz: - 10 % / + 6 % $U_N$ [380 - 415 V = (380 - 10%) – (415 + 6 %)] 80-415 V; 60 Hz: ± 10 % $U_N$, 460 V
- Protection IP68 and insulation class F
- Motor protection: DIN 61947-4-1
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 4 m
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation reversible for 3 phase motors

## OPTIONS

- Higher-graded materials: 316SS and 304SS
- Other voltages
- 45 kN High Thrust version (Standard in 37 kW and 45 kW)
- Retrofitable PT 100 temperature sensor
- Integrated SubMonitor™ sensor (Standard for 37 and 45 kW)
- Special lead lengths up to 50 m



## MOTOR MODEL NUMBERS 50 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $U_N$ [V] | Model number Digit 1 – 6 | | Model number Digit 7 - 10 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Standard | | | with SubMonitor Transmitter | | | 45 KN Motor Version |
| | | DOL | YΔ | WW | 304SS | 316SS | WW | 304SS | 316SS | |
| 4 | 220, 230 | 236 680 | 236 670 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 610 | 236 710 | | | | | | | |
| | 500 | 236 700 | 236 790 | | | | | | | |
| 5,5 | 220, 230 | 236 681 | 236 671 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 611 | 236 711 | | | | | | | |
| | 500 | 236 701 | 236 791 | | | | | | | |
| 7,5 | 220, 230 | 236 682 | 236 672 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 612 | 236 712 | | | | | | | |
| | 500 | 236 702 | 236 792 | | | | | | | |
| 9,3 | 220, 230 | 236 015 | 236 005 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 001 | 236 011 | | | | | | | |
| | 500 | 236 008 | 236 018 | | | | | | | |
| 11 | 220, 230 | 236 683 | 236 673 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 613 | 236 713 | | | | | | | |
| | 500 | 236 703 | 236 793 | | | | | | | |
| 15 | 220, 230 | 236 684 | 236 674 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 614 | 236 714 | | | | | | | |
| | 500 | 236 704 | 236 794 | | | | | | | |
| 18,5 | 220, 230 | 236 685 | 236 675 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 615 | 236 715 | | | | | | | |
| | 500 | 236 705 | 236 795 | | | | | | | |
| 22 | 220, 230 | 236 686 | 236 676 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 616 | 236 716 | | | | | | | |
| | 500 | 236 706 | 236 796 | | | | | | | |
| 30 | 220, 230 | | 236 677 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | 380 - 415 | 236 617 | 236 717 | | | | | | | |
| | 500 | 236 707 | 236 797 | | | | | | | |
| 37 | 380 - 415 | 276 618 | 276 718 | | | | 6161 | | 6361 | Standard |
| 45 | 380 - 415 | 276 619 | 276 719 | | | | 6161 | | 6361 | Standard |

* VFD operation is only allowed up to 400V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH

** WW- Water well Design (Stator 304SS / Castings - CI Powder coated)

## MOTOR MODEL NUMBERS 60 HZ - 3-PHASE DESIGN

| $P_N$ [kW] | $P_N$ [HP] | $U_N$ [V] | Model number Digit 1 – 6 | | Model number Digit 7 - 10 | | | | | | High Thrust 45 KN Motor Version |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DOL | YΔ | Standard | | | with SubMonitor Transmitter | | | |
| | | | | | WW | 304SS | 316SS | WW | 304SS | 316SS | |
| 4 | 5,5 | 200 | 236 650 | 236 760 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 600 | 236 720 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 660 | 236 780 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 610 | 236 710 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 620 | 236 400 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 5,5 | 7,5 | 200 | 236 651 | 236 761 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 601 | 236 721 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 661 | 236 781 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 611 | 236 711 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 621 | 236 401 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 7,5 | 10,0 | 200 | 236 652 | 236 762 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 602 | 236 722 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 662 | 236 782 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 612 | 236 011 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 622 | 236 402 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 9,3 | 12,5 | 200 | 236 061 | 236 *** | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 041 | 236 *** | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 031 | 236 032 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 001 | 236 011 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 *** | 236 *** | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 11 | 15,0 | 200 | 236 653 | 236 763 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 603 | 236 723 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 663 | 236 783 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 613 | 236 713 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 623 | 236 403 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 15 | 20,0 | 200 | 236 654 | 236 764 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 604 | 236 724 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 664 | 236 784 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 614 | 236 714 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 624 | 236 404 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 18,5 | 25,0 | 200 | 236 655 | 236 765 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 605 | 236 725 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 665 | 236 785 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 615 | 236 715 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 625 | 236 405 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 22 | 30,0 | 200 | 236 656 | 236 766 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 230 | 236 606 | 236 726 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 380 | 236 666 | 236 786 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 616 | 236 716 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 626 | 236 406 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 30 | 40 | 380 | 236 667 | 236 787 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 460 | 236 617 | 236 717 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| | | 575 | 236 627 | 236 407 | 9061 | 1061 | 3961 | 6061 | 1161 | 4061 | **63 |
| 37 | 50 | 380 | 276 668 | 276 788 | | | | 6161 | | 6361 | Standard |
| | | 460 | 276 618 | 276 718 | | | | 6161 | | 6361 | Standard |
| | | 575 | 276 628 | 276 **8 | | | | 6161 | | 6361 | Standard |
| 45 | 60 | 380 | 276 669 | 276 789 | | | | 6161 | | 6361 | Standard |
| | | 460 | 276 619 | 276 719 | | | | 6161 | | 6361 | Standard |
| | | 575 | 276 629 | 276 **9 | | | | 6161 | | 6361 | Standard |

## MOTOR PERFORMANCE DATA 50 HZ - 3-PHASE DESIGN

| $P_N$ [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] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **4,0** | 15.500 | 220 | 2840 | 16,4 | 73 | 76,0 | 78,5 | 77,0 | 0,70 | 0,80 | 0,85 | 12,5 | 17,9 |
| | | 230 | 2860 | 16,1 | 75 | 74,0 | 77,5 | 78,0 | 0,62 | 0,74 | 0,82 | 12,3 | 20,2 |
| | | 380 | 2840 | 9,5 | 42 | 76,0 | 78,5 | 77,0 | 0,70 | 0,80 | 0,85 | 12,5 | 17,9 |
| | | 400 | 2860 | 9,3 | 43 | 74,0 | 77,5 | 78,0 | 0,62 | 0,74 | 0,82 | 12,3 | 20,2 |
| | | 415 | 2880 | 9,3 | 46 | 74,5 | 78,0 | 78,5 | 0,57 | 0,70 | 0,78 | 12,3 | 20,8 |
| | | 500 | 2840 | 7,2 | 32 | 76,0 | 78,5 | 77,0 | 0,70 | 0,80 | 0,85 | 12,5 | 17,9 |
| **5,5** | 15.500 | 220 | 2850 | 22,1 | 104 | 77,0 | 79,0 | 78,0 | 0,70 | 0,80 | 0,85 | 18,7 | 30,3 |
| | | 230 | 2870 | 21,7 | 106 | 74,0 | 78,0 | 79,0 | 0,63 | 0,75 | 0,82 | 18,6 | 35,0 |
| | | 380 | 2850 | 12,8 | 60 | 77,0 | 79,0 | 78,0 | 0,70 | 0,80 | 0,85 | 18,7 | 30,3 |
| | | 400 | 2870 | 12,5 | 64 | 74,0 | 78,0 | 79,0 | 0,63 | 0,75 | 0,82 | 18,6 | 35,0 |
| | | 415 | 2880 | 12,8 | 66 | 74,0 | 77,5 | 78,0 | 0,58 | 0,70 | 0,78 | 18,6 | 35,9 |
| | | 500 | 2850 | 9,7 | 46 | 77,0 | 79,0 | 78,0 | 0,70 | 0,80 | 0,85 | 18,7 | 30,3 |
| **7,5** | 15.500 | 220 | 2850 | 28,2 | 143 | 77,5 | 79,5 | 79,0 | 0,74 | 0,83 | 0,87 | 25,0 | 43,0 |
| | | 230 | 2860 | 27,7 | 144 | 75,0 | 78,5 | 79,0 | 0,70 | 0,81 | 0,86 | 25,0 | 47,7 |
| | | 380 | 2850 | 16,3 | 83 | 77,5 | 79,5 | 79,0 | 0,74 | 0,83 | 0,87 | 25,0 | 43,0 |
| | | 400 | 2860 | 16,0 | 83 | 75,0 | 78,5 | 79,0 | 0,70 | 0,81 | 0,86 | 25,0 | 47,7 |
| | | 415 | 2880 | 16,2 | 91 | 75,0 | 78,5 | 79,0 | 0,61 | 0,74 | 0,81 | 24,7 | 51,3 |
| | | 500 | 2850 | 12,4 | 63 | 77,5 | 79,5 | 79,0 | 0,74 | 0,83 | 0,87 | 25,0 | 43,0 |
| **9,3** | 15.500 | 220 | 2870 | 36,4 | 183 | 79,0 | 81,0 | 81,0 | 0,71 | 0,81 | 0,86 | 31,1 | 61,6 |
| | | 230 | 2870 | 36,0 | 189 | 78,0 | 81,0 | 81,0 | 0,58 | 0,72 | 0,80 | 31,1 | 68,6 |
| | | 380 | 2870 | 21,0 | 106 | 79,0 | 81,0 | 81,0 | 0,71 | 0,81 | 0,86 | 31,1 | 61,6 |
| | | 400 | 2870 | 20,7 | 112 | 78,0 | 81,0 | 81,0 | 0,58 | 0,72 | 0,80 | 31,1 | 68,2 |
| | | 415 | 2890 | 21,0 | 116 | 74,0 | 79,0 | 80,0 | 0,55 | 0,70 | 0,78 | 30,8 | 74,1 |
| | | 500 | 2870 | 16,0 | 80 | 79,0 | 81,0 | 81,0 | 0,71 | 0,81 | 0,86 | 31,1 | 61,6 |
| **11,0** | 15.500 | 220 | 2860 | 41,5 | 218 | 80,0 | 82,0 | 81,0 | 0,73 | 0,82 | 0,87 | 37,4 | 72,8 |
| | | 230 | 2860 | 40,4 | 224 | 78,5 | 81,0 | 81,0 | 0,68 | 0,79 | 0,85 | 37,3 | 78,3 |
| | | 380 | 2860 | 24,0 | 126 | 80,0 | 82,0 | 81,0 | 0,73 | 0,82 | 0,87 | 37,4 | 72,8 |
| | | 400 | 2860 | 23,3 | 129 | 78,5 | 81,0 | 81,0 | 0,68 | 0,79 | 0,85 | 37,3 | 78,3 |
| | | 415 | 2870 | 24,1 | 136 | 74,5 | 78,5 | 79,5 | 0,61 | 0,74 | 0,81 | 37,2 | 84,8 |
| | | 500 | 2860 | 18,2 | 96 | 80,0 | 82,0 | 81,0 | 0,73 | 0,82 | 0,87 | 37,4 | 72,8 |
| **15,0** | 15.500 | 220 | 2850 | 55,0 | 283 | 81,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,86 | 50,0 | 104,0 |
| | | 230 | 2860 | 54,2 | 289 | 79,0 | 81,5 | 81,0 | 0,70 | 0,80 | 0,85 | 49,9 | 107,3 |
| | | 380 | 2850 | 32,0 | 164 | 81,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,86 | 50,0 | 104,0 |
| | | 400 | 2860 | 31,3 | 169 | 79,0 | 81,5 | 81,0 | 0,70 | 0,80 | 0,85 | 49,9 | 107,3 |
| | | 415 | 2870 | 31,0 | 179 | 77,0 | 81,0 | 81,0 | 0,65 | 0,77 | 0,83 | 49,6 | 116,6 |
| | | 500 | 2850 | 24,3 | 124 | 81,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,86 | 50,0 | 104,0 |
| **18,5** | 15.500 | 220 | 2850 | 69,2 | 380 | 82,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,87 | 62,4 | 139,7 |
| | | 230 | 2860 | 66,7 | 392 | 80,0 | 82,5 | 82,0 | 0,68 | 0,79 | 0,85 | 62,4 | 159,6 |
| | | 380 | 2850 | 40,0 | 220 | 82,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,87 | 62,4 | 139,7 |
| | | 400 | 2850 | 38,5 | 231 | 80,0 | 82,5 | 82,0 | 0,68 | 0,79 | 0,85 | 62,4 | 154,6 |
| | | 415 | 2850 | 38,5 | 240 | 78,5 | 81,5 | 82,0 | 0,64 | 0,76 | 0,83 | 62,1 | 166,8 |
| | | 500 | 2850 | 30,5 | 168 | 82,0 | 83,0 | 82,0 | 0,76 | 0,84 | 0,87 | 62,4 | 139,7 |
| **22** | 15.500 | 220 | 2840 | 81,2 | 441 | 82,0 | 83,0 | 82,0 | 0,78 | 0,86 | 0,88 | 75,3 | 160,0 |
| | | 230 | 2860 | 78,5 | 455 | 81,0 | 83,0 | 83,0 | 0,71 | 0,81 | 0,86 | 74,7 | 177,6 |
| | | 380 | 2840 | 47,0 | 255 | 82,0 | 83,0 | 82,0 | 0,78 | 0,86 | 0,88 | 75,3 | 160,0 |
| | | 400 | 2860 | 45,3 | 268 | 81,0 | 83,0 | 83,0 | 0,71 | 0,81 | 0,86 | 74,7 | 177,6 |
| | | 415 | 2870 | 45,0 | 278 | 79,5 | 82,5 | 82,5 | 0,66 | 0,78 | 0,84 | 74,5 | 189,9 |
| | | 500 | 2840 | 35,8 | 194 | 82,0 | 83,0 | 82,0 | 0,78 | 0,86 | 0,88 | 75,3 | 160,0 |
| **30** | 27.500 | 220 | 2860 | 111 | 645 | 83,0 | 83,5 | 82,5 | 0,74 | 0,82 | 0,85 | 99,6 | 237,4 |
| | | 230 | 2860 | 107 | 670 | 80,5 | 83,0 | 83,0 | 0,67 | 0,79 | 0,84 | 99,4 | 263,1 |
| | | 380 | 2860 | 64,1 | 373 | 83,0 | 83,5 | 82,5 | 0,74 | 0,82 | 0,85 | 99,6 | 237,4 |
| | | 400 | 2860 | 63,5 | 393 | 80,5 | 83,0 | 83,0 | 0,67 | 0,79 | 0,84 | 99,4 | 263,1 |
| | | 415 | 2880 | 64,5 | 407 | 79,0 | 82,0 | 82,5 | 0,62 | 0,74 | 0,81 | 99,0 | 283,5 |
| | | 500 | 2860 | 49,0 | 283 | 83,0 | 83,5 | 82,5 | 0,74 | 0,82 | 0,85 | 99,6 | 237,4 |
| **37** | 45.000 | 380 | 2850 | 80,1 | 387 | 77 | 80,0 | 81,0 | 0,75 | 0,82 | 0,87 | 124,8 | 269,8 |
| | | 400 | 2870 | 77,9 | 411 | 76 | 80,0 | 81,0 | 0,68 | 0,78 | 0,85 | 124,5 | 269,8 |
| | | 415 | 2880 | 77,9 | 423 | 75 | 79,0 | 81,0 | 0,64 | 0,75 | 0,82 | 123,8 | 269,8 |
| **45** | 45.000 | 380 | 2850 | 95,5 | 480 | 79 | 81,0 | 82,0 | 0,76 | 0,83 | 0,87 | 150,5 | 287,4 |
| | | 400 | 2870 | 93,9 | 509 | 78 | 80,0 | 82,0 | 0,72 | 0,79 | 0,84 | 149,1 | 325,4 |
| | | 415 | 2880 | 93,2 | 531 | 77 | 80,0 | 82,0 | 0,68 | 0,77 | 0,82 | 149,1 | 355,2 |

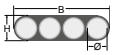
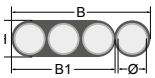
## MOTOR PERFORMANCE DATA 60 HZ - 3-PHASE DESIGN

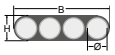
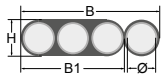
| $P_N$ [kW] | $P_{max}$ [kW] | ThrustF [N] | $U_N$ [V] | $n_N$ [$min^{-1}$] | $I_{max.}$ [A] | $I_A$ [A] | $\eta_{max}$ [%] at 100% load | LINE TO LINE RESISTANCE [Ω] |
|---|---|---|---|---|---|---|---|---|
| 4,0 | 4,6 | 15500 | 200 | 3450 | 20.0 | 99 | 79 | .77-.93 |
| | | | 230 | 3450 | 17.6 | 86 | 79 | 1.0-1.2 |
| | | | 380 | 3450 | 10.7 | 52 | 79 | 2.6-3.2 |
| | | | 460 | 3450 | 8.8 | 43 | 79 | 3.9-4.8 |
| | | | 575 | 3450 | 7.1 | 34 | 79 | 6.3-7.7 |
| 5.5 | 6,3 | 15500 | 200 | 3450 | 28.3 | 150 | 80 | .43-.53 |
| | | | 230 | 3450 | 24.6 | 130 | 80 | .64-.78 |
| | | | 380 | 3450 | 15 | 79 | 80 | 1.6-2.1 |
| | | | 460 | 3450 | 12.3 | 65 | 80 | 2.4-2.9 |
| | | | 575 | 3450 | 9.8 | 52 | 80 | 3.7-4.6 |
| 7.5 | 8,6 | 15500 | 200 | 3450 | 37 | 198 | 79 | .37-.45 |
| | | | 230 | 3450 | 32.2 | 172 | 79 | .47-.57 |
| | | | 380 | 3450 | 19.6 | 104 | 79 | 1.2-1.5 |
| | | | 460 | 3450 | 16.1 | 86 | 79 | 1.9-2.4 |
| | | | 575 | 3450 | 12.9 | 69 | 79 | 3.0-3.7 |
| 9,3 | 10,7 | 15500 | 200 | 3450 | | | | |
| | | | 230 | 3450 | 38,0 | 236,0 | 82 | |
| | | | 380 | 3450 | 23,9 | 142,8 | 82 | |
| | | | 460 | 3450 | 19,5 | 118,0 | 82 | |
| | | | 575 | 3450 | | | | |
| 11 | 12,7 | 15500 | 200 | 3450 | 54.4 | 306 | 81 | .24-.29 |
| | | | 230 | 3450 | 47.4 | 266 | 81 | .28-.35 |
| | | | 380 | 3450 | 28.9 | 161 | 81 | .77-.95 |
| | | | 460 | 3450 | 23.7 | 133 | 81 | 1.1-1.4 |
| | | | 575 | 3450 | 19 | 106 | 81 | 1.8-2.3 |
| 15 | 17,3 | 15500 | 200 | 3450 | 69.7 | 416 | 82 | .16-.20 |
| | | | 230 | 3450 | 60.6 | 362 | 82 | .22-.26 |
| | | | 380 | 3450 | 37.3 | 219 | 82 | .55-.68 |
| | | | 460 | 3450 | 30.3 | 181 | 82 | .8-1.0 |
| | | | 575 | 3450 | 24.2 | 145 | 82 | 1.3-1.6 |
| 18.5 | 21,3 | 15500 | 200 | 3450 | 86.3 | 552 | 83 | .12-.15 |
| | | | 230 | 3450 | 75 | 480 | 83 | .15-.19 |
| | | | 380 | 3450 | 46 | 291 | 83 | .46-.56 |
| | | | 460 | 3450 | 37.5 | 240 | 83 | .63-.77 |
| | | | 575 | 3450 | 30 | 192 | 83 | 1.0-1.3 |
| 22 | 25,3 | 15500 | 200 | 3450 | 104 | 653 | 83 | .09-.11 |
| | | | 230 | 3450 | 90.4 | 568 | 83 | .14-.17 |
| | | | 380 | 3450 | 55.4 | 317 | 83 | .35-.43 |
| | | | 460 | 3450 | 45.2 | 284 | 83 | .52-.64 |
| | | | 575 | 3450 | 36.2 | 227 | 83 | .78-.95 |
| 30 | 34,5 | 27500 | 380 | 3450 | 74.6 | 481 | 83 | .26-.33 |
| | | | 460 | 3450 | 61.6 | 397 | 83 | .34-.42 |
| | | | 575 | 3450 | 49.6 | 318 | 83 | .52-.64 |
| 37 | 42,6 | 45000 | 230 | 3450 | 157 | | 85 | .10 - .11 |
| | | | 380 | 3450 | 94.5 | 501 | 83 | .21 - .25 |
| | | | 460 | 3450 | 77,0 | 414 | 85 | .25 - .32 |
| | | | 575 | 3450 | 62.5 | 331 | 83 | .40 - .49 |
| 45 | 51,8 | 45000 | 380 | 3450 | 111.8 | 627 | 84 | .15 - .18 |
| | | | 460 | 3460 | 91,0 | 518 | 85 | .22 - .27 |
| | | | 575 | 3450 | 73.9 | 414 | 84 | .35 - .39 |

## WINDING RESISTANCE DATA 50 HZ - 3-PHASE DESIGN

| | | 3 ~ DOL | | 3 ~ YΔ | |
|---|---|---|---|---|---|
| $P_N$ kW | $U_N$ [V] | Stator Ref. | U - V / Ohm<br>V - W / Ohm<br>U - W / Ohm | Stator Ref. | $U_1$ - $U_2$ / Ohm<br>$V_1$ - $V_2$ / Ohm<br>$W_1$ - $W_2$ / Ohm |
| **4.0** | 220, 230 | 336 694 ... | 1.20 - 1.40 | 336 740 ... | 1.75 - 2.15 |
| | 380 - 415 | 336 327 ... | 3.40 - 4.20 | 336 747 ... | 5.40 - 6.60 |
| | 500 | 336 787 ... | 5.80 - 7.10 | 337 224 ... | 9.00 - 11.0 |
| **5.5** | 220, 230 | 336 695 ... | 0.72 - 0.90 | 336 741 ... | 1.10 - 1.30 |
| | 380 - 415 | 336 328 ... | 2.20 - 2.70 | 336 748 ... | 3.70 - 4.50 |
| | 500 | 336 788 ... | 4.00 - 4.90 | 337 225 ... | 6.28 - 7.70 |
| **7.5** | 220, 230 | 336 696 ... | 0.59 - 0.72 | 336 742 ... | 0.87 - 1.08 |
| | 380 - 415 | 336 329 ... | 1.70 - 2.20 | 336 749 ... | 2.40 - 2.90 |
| | 500 | 336 789 ... | 3.20 - 3.90 | 337 226 ... | 4.53 - 5.54 |
| **9.3** | 220, 230 | 338 100 ... | 0.42 - 0.50 | 338 103 ... | 0.63 - 0.77 |
| | 380 - 415 | 337 915 ... | 1.25 - 1.55 | 338 061 ... | 1.94 - 2.38 |
| | 500 | 338 220 ... | 2.60 - 3.10 | 338 223 ... | 3.27 - 4.00 |
| **11.0** | 220, 230 | 336 697 ... | 0.35 - 0.44 | 336 743 ... | 0.53 - 0.65 |
| | 380 - 415 | 336 330 ... | 1.05 - 1.30 | 336 750 ... | 1.64 - 2.00 |
| | 500 | 336 790 ... | 1.80 - 2.20 | 337 227 ... | 2.73 - 3.35 |
| **15.0** | 220, 230 | 336 698 ... | 0.25 - 0.30 | 336 744 ... | 0.38 - 0.47 |
| | 380 - 415 | 336 331 ... | 0.75 - 0.94 | 336 751 ... | 1.22 - 1.50 |
| | 500 | 336 791 ... | 1.30 - 1.60 | 337 228 ... | 2.04 - 2.50 |
| **18.5** | 220, 230 | 336 699 ... | 0.20 - 0.24 | 336 745 ... | 0.29 - 0.36 |
| | 380 - 415 | 336 332 ... | 0.59 - 0.73 | 336 752 ... | 0.93 - 1.15 |
| | 500 | 336 792 ... | 1.10 - 1.34 | 337 229 ... | 1.70 - 2.10 |
| **22.0** | 220, 230 | 336 700 ... | 0.16 - 0.20 | 336 746 ... | 0.24 - 0.30 |
| | 380 - 415 | 336 333 ... | 0.48 - 0.60 | 336 753 ... | 0.74 - 0.92 |
| | 500 | 336 793 ... | 0.83 - 1.00 | 337 230 ... | 1.26 - 1.55 |
| **30.0** | 220, 230 | | | 337 353 ... | 0.16 - 0.20 |
| | 380 - 415 | 336 334 ... | 0.32 - 0.40 | 336 754 ... | 0.50 - 0.61 |
| | 500 | 336 794 ... | 0.60 - 0.73 | 337 231 ... | 0.91 - 1.11 |
| **37.0** | 380 - 415 | 336 710 ... | 0.25 - 0.32 | 336 755 ... | 0.36 - 0.45 |
| **45.0** | 380 - 415 | 336 336 ... | 0.22 - 0.27 | 336 756 ... | 0.33 - 0.41 |

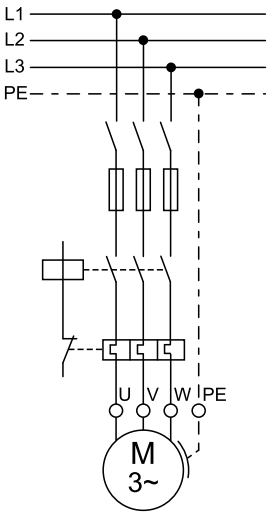
## MOTOR LEADS DESIGN 3-PHASE MOTORS

| DOL | Ø mm² | Lenght [m] | St.# | Motor | | | B [mm] (± 0,3) | B1 [mm] (±0,3) | H [mm] (± 0,3) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 220V | 380 - 415V | 500V | | | |
|  | 4G4 | 4 | 1 | 4-11kW | 4-22 kW | 4-30 kW | 19,0 | - | 7,0 |
|  | 3X8,4+1G8,4 | 4 | 1 | 15-22 kW | 30-45 kW | | 29,5 | 19,5 | 8,9 |

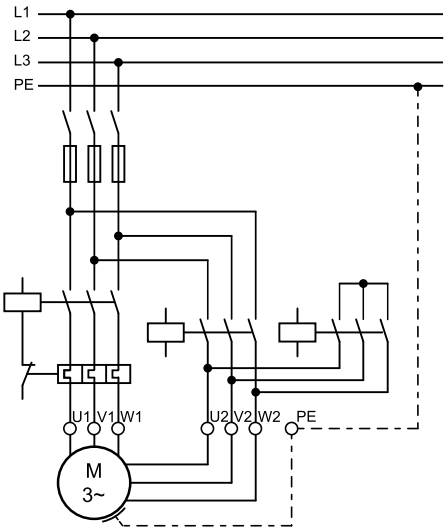
| YΔ | Ø mm² | Lenght [m] | St.# | Motor | | | B [mm] (± 0,3) | B1 [mm] (±0,3) | H [mm] (± 0,3) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 220V | 380 - 415V | 500V | | | |
|  | 4G4 | 4 | 2 | 4-22kW | 4-30 kW | | 19,0 | - | 7,0 |
|  | 3X8,4+1G8,4 | 4 | 1 | 30-37kW | 37-45 kW | | 29,5 | 19,5 | 8,9 |
|  | 3X8,4 | | 1 | | | | 19,6 | - | 8,9 |

## ELECTRICAL CONNECTION - 3-PHASE DESIGN

DOL

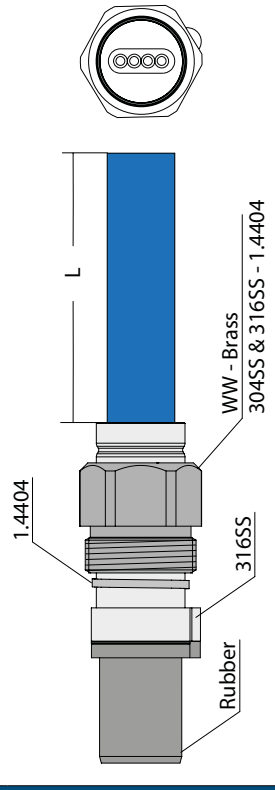
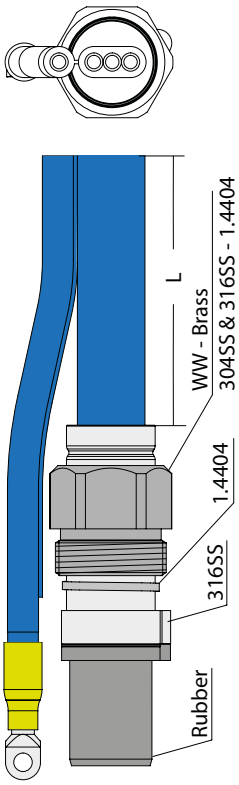
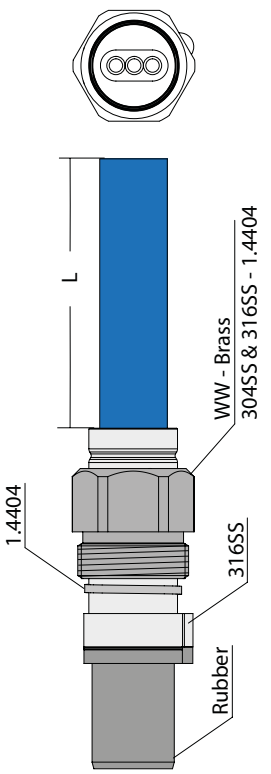



YΔ




| U | V | W | PE |
|---|---|---|---|
| black | grey | brown | yellow/green |

# MOTOR LEADS 3-PHASE 6" CT STANDARD MOTORS

| 4G4mm² | 3X8,4+1G8,4mm² | 3X8,4mm² |
|---|---|---|
|  |  |  |



| Lead Part Numbers WW Motors * | | | |
|---|---|---|---|
| L [m] | 4G4mm² | 3X8,4+1G8,4mm² | 3X8,4mm² |
| 4 | 310 125 004 | 310 145 004 | 310 155 004 |
| 8 | 310 125 008 | 310 145 008 | 310 155 008 |
| 10 | 310 125 010 | 310 145 010 | 310 155 010 |
| 15 | 310 125 015 | 310 145 015 | 310 155 015 |
| 20 | 310 125 020 | 310 145 020 | 310 155 020 |
| 25 | 310 125 025 | 310 145 025 | 310 155 025 |
| 30 | 310 125 030 | 310 145 030 | 310 155 030 |
| 35 | 310 125 035 | 310 145 035 | 310 155 035 |
| 40 | 310 125 040 | 310 145 040 | 310 155 040 |
| 45 | 310 125 045 | 310 145 045 | 310 155 045 |
| 50 | 310 125 050 | 310 145 050 | 310 155 050 |

| Lead Part Numbers 304SS/316SS Motors * | | | |
|---|---|---|---|
| L [m] | 4G4mm² | 3X8,4+1G8,4mm² | 3X8,4mm² |
| 4 | 310 125 504 | 310 145 504 | 310 155 504 |
| 8 | 310 125 508 | 310 145 508 | 310 155 508 |
| 10 | 310 125 510 | 310 145 510 | 310 155 510 |
| 15 | 310 125 515 | 310 145 515 | 310 155 515 |
| 20 | 310 125 520 | 310 145 520 | 310 155 520 |
| 25 | 310 125 525 | 310 145 525 | 310 155 525 |
| 30 | 310 125 530 | 310 145 530 | 310 155 530 |
| 35 | 310 125 535 | 310 145 535 | 310 155 535 |
| 40 | 310 125 540 | 310 145 540 | 310 155 540 |
| 45 | 310 125 545 | 310 145 545 | 310 155 545 |
| 50 | 310 125 550 | 310 145 550 | 310 155 550 |

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

| 6" Motor Design 4- 30 kW | | |
|---|---|---|
| WW | 304SS | 316SS |





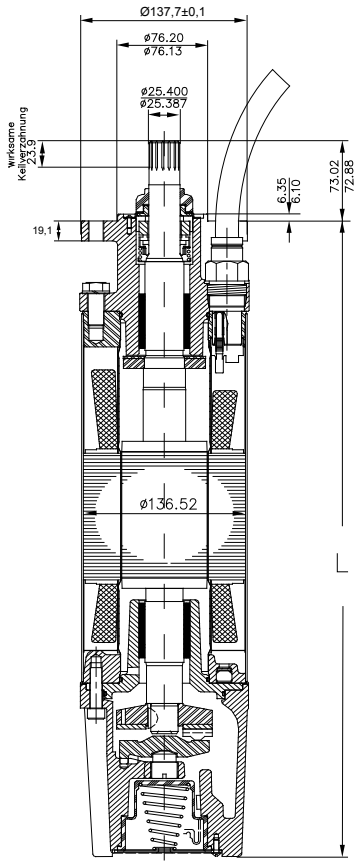


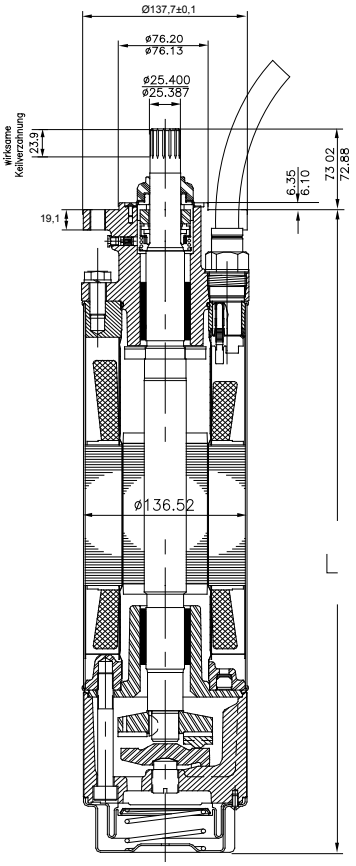
## MOTOR MATERIAL DESCRIPTION

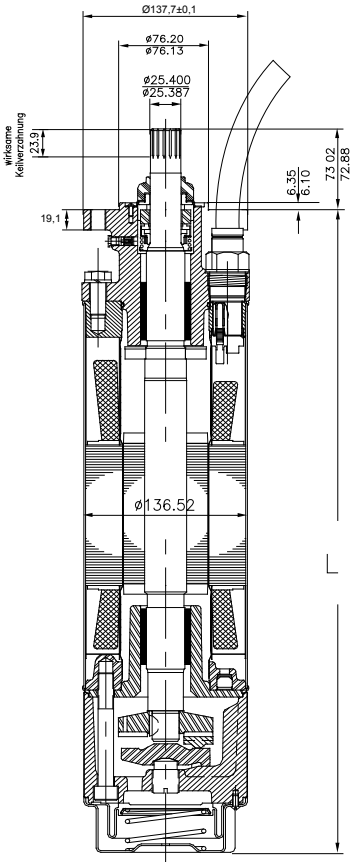
| Part | WW | 304 | 316 SS |
|---|---|---|---|
| **Shell** | 1.4301 | 1.4301 | 1.4571 |
| **Upper end bell** | Cast iron powder coated | 1.4301 | 1.4408 |
| **Thrust housing** | Cast iron powder coated | 1.4301 | 1.4408 |
| **Mechanical seal** | SiC / SiC | SiC / SiC | SiC / SiC |
| **Seal cover** | 1.4301 | 1.4301 | 1.4401 |
| **Slinger** | EPDM | EPDM | EPDM |
| **Shaft end** | 1.4305 | 1.4305 | 1.4462 |
| **Diaphragm** | NBR | NBR | NBR |
| **Lead** | EPR | EPR | EPR |

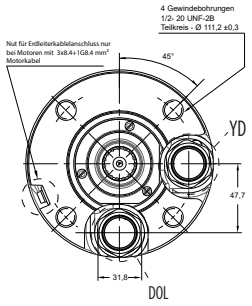
## 6" CT MOTOR DESIGN 4 - 30KW

| WW | 304SS | 316SS | End bell Design |
|---|---|---|---|



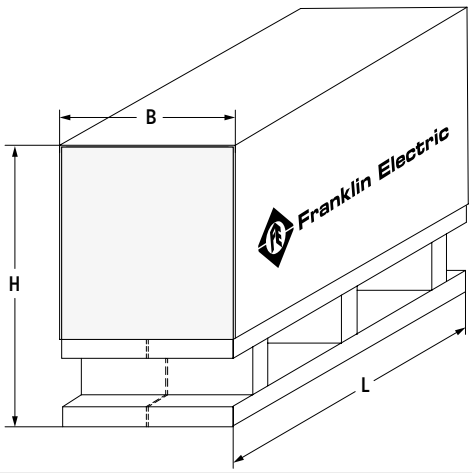




## 6" CT MOTORS 4- 30KW DIMENSION

| $P_N$ [kW] | WW L [mm] | 304SS L [mm] | 316SS L [mm] | Pack dimension B x H x L [mm] | Pack weight [kg] | | Motor packing |
|---|---|---|---|---|---|---|---|
| | | | | | DOL | YΔ | |
| 4 | 581,2 | 570,7 | 570,7 | 155 x 340 x 800 | 41,3 | 40,3 | |
| 5,5 | 614,4 | 604,0 | 604,0 | 155 x 340 x 800 | 44,9 | 43,9 | |
| 7,5 | 646,2 | 635,8 | 635,8 | 155 x 340 x 800 | 49,0 | 48,0 | |
| 9,3 | 678,7 | 668,3 | 668,3 | 155 x 340 x 1070 | 50,3 | 51,3 | |
| 11 | 711,2 | 700,8 | 700,8 | 155 x 340 x 1070 | 54,7 | 53,7 | |
| 15 | 776,2 | 765,8 | 765,8 | 155 x 340 x 1070 | 60,5 | 59,5 | |
| 18,5 | 841,5 | 831,1 | 831,1 | 155 x 340 x 1070 | 67,1 | 66,1 | |
| 22 | 906,5 | 896,1 | 896,1 | 155 x 340 x 1070 | 73,1 | 72,1 | |
| 30 | 1036,6 | 1026,2 | 1026,2 | 155 x 340 x 1200 | 87,7 | 87,7 | |



## 6" Motor Design 37- 45 kW

| WW | 316SS |
|---|---|



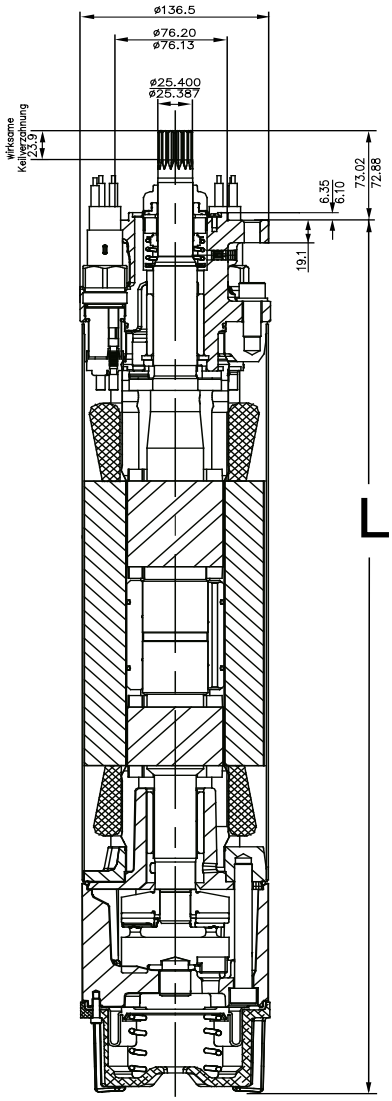


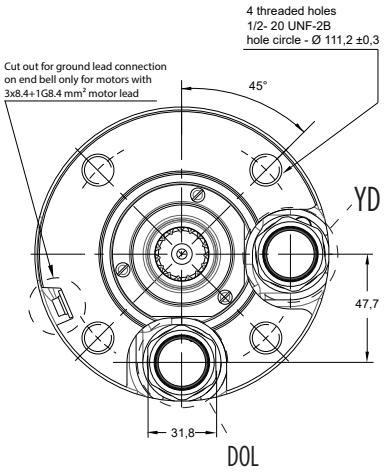
## MOTOR MATERIAL DESCRIPTION

| Part | WW | 316 SS |
|---|---|---|
| **Shell** | 1.4301 | 1.4571 |
| **Upper end bell** | Cast iron powder coated | 1.4408 |
| **Thrust housing** | Cast iron powder coated | 1.4408 |
| **Mechanical seal** | SiC / SiC | SiC / SiC |
| **Seal cover** | 1.4301 | 1.4401 |
| **Slinger** | Viton | Viton |
| **Shaft end** | 1.4305 | 1.4542 |
| **Diaphragm** | Viton | Viton |
| **Lead** | EPR | EPR |
| **Jam Nut (Lead)** | Brass | 1.4401 |
| **Lead bushing** | Rubber | Rubber |

# 6" Motor Design 37- 45 kW

## WW / 316SS



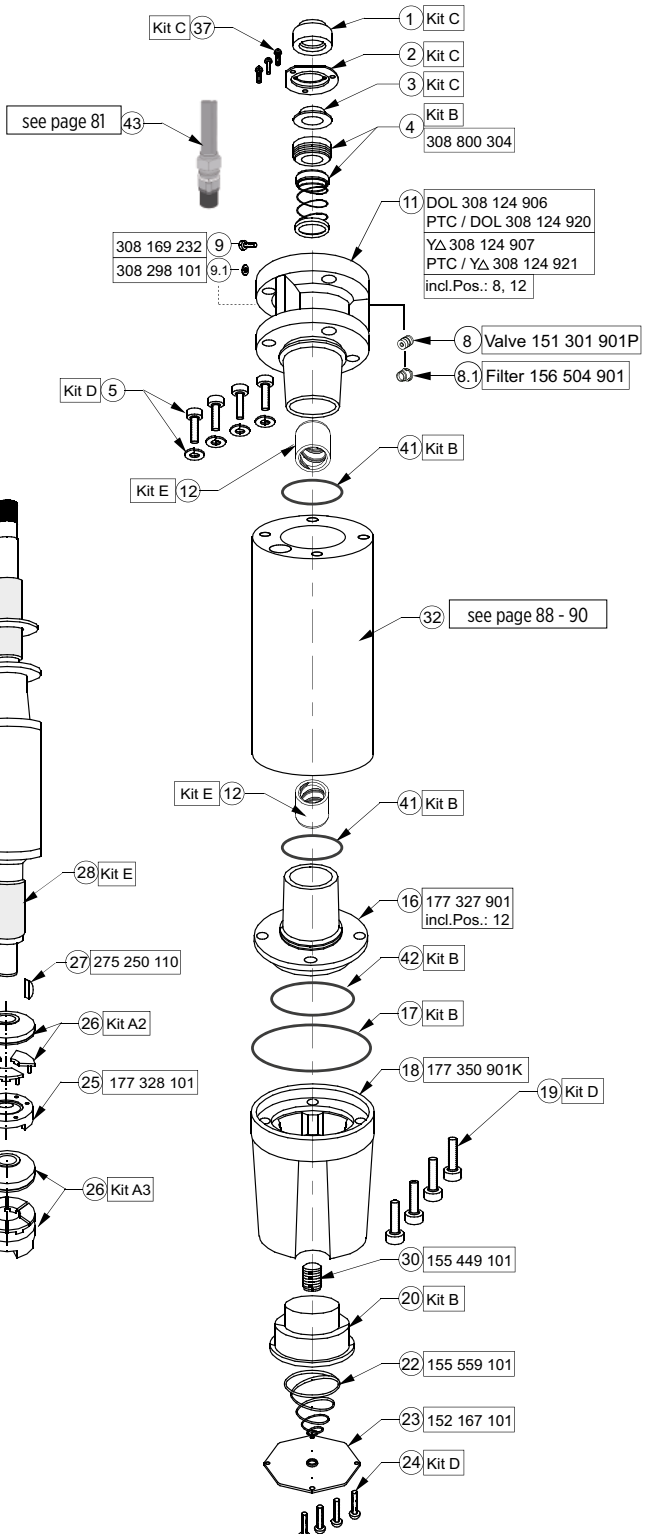

## MOTOR DIMENSION

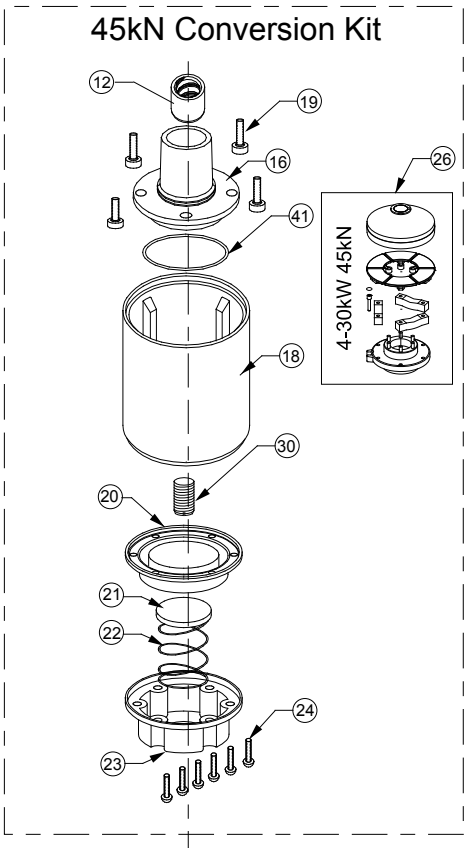
| $P_N$ [kW] | WW L [mm] | 316SS L [mm] | Motor Package Size [mm] | Shipping Weight [kg] |
|---|---|---|---|---|
| **37** | 1476,7 | 1476,7 | 223 x 267 x 1823 | 140 |
| **45** | 1629,2 | 1629,2 | 223 x 267 x 1823 | 156 |

# 6" Encapsulated Motors WW Version

4 - 30kW

| | | | |
|---|---|---|---|
| Rotor Kit 6500N to 15.500N | 4,0 kW | incl. Pos.: 25; 26, 29 | 305 330 901 |
| | 5,5 kW | incl. Pos.: 25; 26, 29 | 305 330 902 |
| Kit A2 15.500N / 4-22kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 120 |
| Kit A3 27.500N / 30kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 200 |
| Kit A4 | Thrust Bearing Kit 45.000N | incl. Pos.: 26 | 308 750 510 |
| 45kN Conversion Kit 4,0 - 30kW | | incl. Pos.: 12; 16; 18; 19 ; 20; 21; 22; 23; 24; 26; 30; 41 | 308 750 500 |
| Kit B1 4 - 30kW | Seal Kit | incl. Pos.: 4; 17; 20; 41; 42 | 308 800 125 |
| Kit C1 | Slinger Kit | incl. Pos.: 1; 2; 3; 37 | 308 725 101 |
| Kit D3 up to 07.2002 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 120 |
| Kit D4 starting 07.2002 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 121 |
| Kit E* 4 - 30 kW | Radial Bearing Kit | incl. Pos.: 12; 28 | 308 678 101 |
| * Radial Bearing Parts are unfinished | | | |

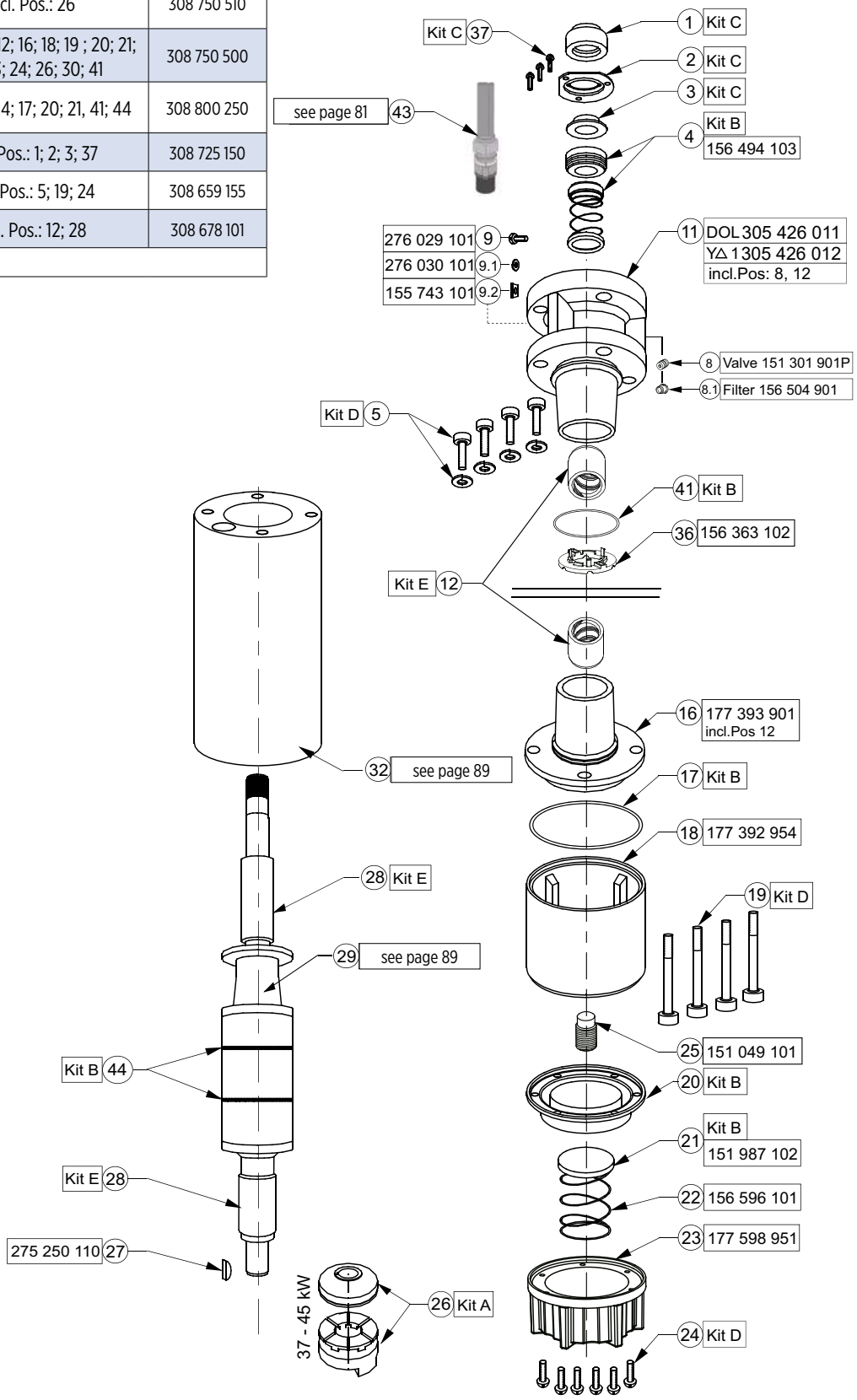


# 6" Encapsulated Motors WW Version

37- 45 Kw

| | | | |
|---|---|---|---|
| Kit A3 | Thrust Bearing Kit 27.500N | incl. Pos.: 26 | 308 750 200 |
| Kit A4 | Thrust Bearing Kit 45.000N | incl. Pos.: 26 | 308 750 510 |
| 45kN Conversion Kit 37 - 45 kW | | incl. Pos.: 12; 16; 18; 19 ; 20; 21; 22; 23; 24; 26; 30; 41 | 308 750 500 |
| Kit B3 | Seal Kit | incl. Pos.: 4; 17; 20; 21, 41; 44 | 308 800 250 |
| Kit C3 | Slinger Kit | incl. Pos.: 1; 2; 3; 37 | 308 725 150 |
| Kit D5 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 155 |
| Kit E* | Radial Bearing Kit | incl. Pos.: 12; 28 | 308 678 101 |
| * Radial Bearing Parts are unfinished | | | |



## Replacement Stators and Rotors WW Version / 50 Hz

| 3 ~ ohne SubMonitor Transmitter<br>3 ~ without SubMonitor Transmitter | 3 ~ sans transm. SubMonitor<br>3 ~ senza trasmettitore SubMonitor | 3 ~ sin transmissor SubMonitor<br>3 ~ sem transmissor SubMonitor |
|---|---|---|

| | | | DOL | | YΔ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| **4,0** | 220, 230 | 15.500 | 236 680 90** | 305 478 927 | 236 670 90** | 305 478 930 | 178 117 912K |
| | 380, 400, 415 | | 236 610 90** | 305 478 928 | 236 710 90** | 305 478 931 | |
| | 500 | | 236 700 90** | 305 478 929 | 236 790 90** | 305 478 932 | |
| **5,5** | 220, 230 | 15.500 | 236 681 90** | 305 479 930 | 236 671 90** | 305 479 933 | 178 118 911K |
| | 380, 400, 415 | | 236 611 90** | 305 479 931 | 236 711 90** | 305 479 934 | |
| | 500 | | 236 701 90** | 305 479 932 | 236 791 90** | 305 479 935 | |
| **7,5** | 220, 230 | 15.500 | 236 682 90** | 305 480 932 | 236 672 90** | 305 480 935 | 178 119 906K |
| | 380, 400, 415 | | 236 612 90** | 305 480 933 | 236 712 90** | 305 480 936 | |
| | 500 | | 236 702 90** | 305 480 934 | 236 792 90** | 305 480 937 | |
| **9,3** | 220, 230 | 15.500 | 236 015 90** | 305 481 921 | 236 005 90** | 305 481 924 | 178 182 906K |
| | 380, 400, 415 | | 236 001 90** | 305 481 922 | 236 011 90** | 305 481 925 | |
| | 500 | | 236 008 90** | 305 481 923 | 236 018 90** | 305 481 926 | |
| **11,0** | 220, 230 | 15.500 | 236 683 90** | 305 482 933 | 236 673 90** | 305 482 936 | 178 120 906K |
| | 380, 400, 415 | | 236 613 90** | 305 482 934 | 236 713 90** | 305 482 937 | |
| | 500 | | 236 703 90** | 305 482 935 | 236 793 90** | 305 482 938 | |
| **15,0** | 220, 230 | 15.500 | 236 684 90** | 305 484 933 | 236 674 90** | 305 484 936 | 178 121 906K |
| | 380, 400, 415 | | 236 614 90** | 305 484 934 | 236 714 90** | 305 484 937 | |
| | 500 | | 236 704 90** | 305 484 935 | 236 794 90** | 305 484 938 | |
| **18,5** | 220, 230 | 15.500 | 236 685 90** | 305 485 930 | 236 675 90** | 305 485 933 | 178 122 906K |
| | 380, 400, 415 | | 236 615 90** | 305 485 931 | 236 715 90** | 305 485 934 | |
| | 500 | | 236 705 90** | 305 485 932 | 236 795 90** | 305 485 935 | |
| **22,0** | 220, 230 | 15.500 | 236 686 90** | 305 486 934 | 236 676 90** | 305 486 937 | 178 123 906K |
| | 380, 400, 415 | | 236 616 90** | 305 486 935 | 236 716 90** | 305 486 938 | |
| | 500 | | 236 706 90** | 305 486 936 | 236 796 90** | 305 486 939 | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 90** | 305 488 923 | 178 115 906K |
| | 380, 400, 415 | | 236 617 90** | 305 488 921 | 236 717 90** | 305 488 924 | |
| | 500 | | 236 707 90** | 305 488 922 | 236 797 90** | 305 488 925 | |

**(*) :** **Kabel 90° versetzt** **Pos. de cavi 90°**
**Pos. of leads 90°** **Pos. de los cables 90°**
**Pos. des câbles 90°** **Pos. dos cabos 90°**

## Replacement Stators and Rotors WW Version / 50 Hz

| | | |
|---|---|---|
| 3 ~ mit SubMonitor Transmitter<br>3 ~ with SubMonitor Transmitter | 3 ~ avec transm. SubMonitor<br>3 ~ con trasmettitore SubMonitor | 3 ~ con transmissor SubMonitor<br>3 ~ com transmissor SubMonitor |

| | | | DOL | | YΔ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| **4,0** | 220, 230 | 15.500 | 236 680 60** | 305 478 907 | 236 670 60** | 305 478 910 | 178 117 912K |
| | 380, 400, 415 | | 236 610 60** | 305 478 908 | 236 710 60** | 305 478 911 | |
| | 500 | | 236 700 60** | 305 478 909 | 236 790 60** | 305 478 912 | |
| **5,5** | 220, 230 | 15.500 | 236 681 60** | 305 479 910 | 236 671 60** | 305 479 913 | 178 118 911K |
| | 380, 400, 415 | | 236 611 60** | 305 479 911 | 236 711 60** | 305 479 914 | |
| | 500 | | 236 701 60** | 305 479 912 | 236 791 60** | 305 479 915 | |
| **7,5** | 220, 230 | 15.500 | 236 682 60** | 305 480 912 | 236 672 60** | 305 480 915 | 178 119 906K |
| | 380, 400, 415 | | 236 612 60** | 305 480 913 | 236 712 60** | 305 480 916 | |
| | 500 | | 236 702 60** | 305 480 914 | 236 792 60** | 305 480 917 | |
| **9,3** | 220, 230 | 15.500 | 236 015 60** | 305 481 901 | 236 005 60** | 305 481 904 | 178 182 906K |
| | 380, 400, 415 | | 236 001 60** | 305 481 902 | 236 011 60** | 305 481 905 | |
| | 500 | | 236 008 60** | 305 481 903 | 236 018 60** | 305 481 906 | |
| **11,0** | 220, 230 | 15.500 | 236 683 60** | 305 482 913 | 236 673 60** | 305 482 916 | 178 120 906K |
| | 380, 400, 415 | | 236 613 60** | 305 482 914 | 236 713 60** | 305 482 917 | |
| | 500 | | 236 703 60** | 305 482 915 | 236 793 60** | 305 482 918 | |
| **15,0** | 220, 230 | 15.500 | 236 684 60** | 305 484 913 | 236 674 60** | 305 484 916 | 178 121 906K |
| | 380, 400, 415 | | 236 614 60** | 305 484 914 | 236 714 60** | 305 484 917 | |
| | 500 | | 236 704 60** | 305 484 915 | 236 794 60** | 305 484 918 | |
| **18,5** | 220, 230 | 15.500 | 236 685 60** | 305 482 910 | 236 675 60** | 305 485 913 | 178 122 906K |
| | 380, 400, 415 | | 236 615 60** | 305 485 911 | 236 715 60** | 305 485 914 | |
| | 500 | | 236 705 60** | 305 482 912 | 236 795 60** | 305 485 915 | |
| **22,0** | 220, 230 | 15.500 | 236 686 60** | 305 486 914 | 236 676 60** | 305 486 917 | 178 123 906K |
| | 380, 400, 415 | | 236 616 60** | 305 486 915 | 236 716 60** | 305 486 918 | |
| | 500 | | 236 706 60** | 305 486 916 | 236 796 60** | 305 486 919 | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 60** | 305 488 907 | 178 115 906K |
| | 380, 400, 415 | | 236 617 60** | 305 488 905 | 236 717 60** | 305 488 908 | |
| | 500 | | 236 707 60** | 305 488 906 | 236 797 60** | 305 488 909 | |
| **37,0** | 380, 400, 415 | 45.000 | 276 618 6161 | 305 489 920 | 276 718 6161 | 305 489 919 | 305 223 920 |
| **45,0** | 380, 400, 415 | 45.000 | 276 619 6161 | 305 490 920 | 276 719 6161 | 305 490 919 | 305 223 921 |

(*) : **Kabel 90° versetzt** **Pos. de cavi 90°**
**Pos. of leads 90°** **Pos. de los cables 90°**
**Pos. des câbles 90°** **Pos. dos cabos 90°**

## Replacement Stators and Rotors WW Version / 60 Hz

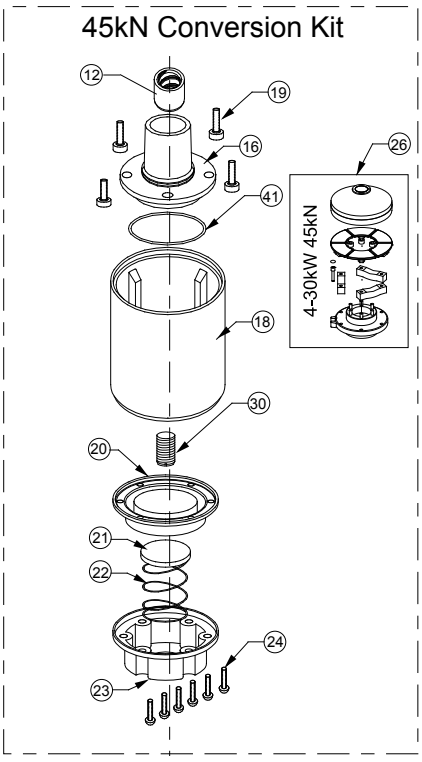
| 3 ~ mit SubMonitor Transmitter<br>3 ~ with SubMonitor Transmitter | 3 ~ avec transm. SubMonitor<br>3 ~ con trasmettitore SubMonitor | 3 ~ con transmissor SubMonitor<br>3 ~ com transmissor SubMonitor |
|---|---|---|

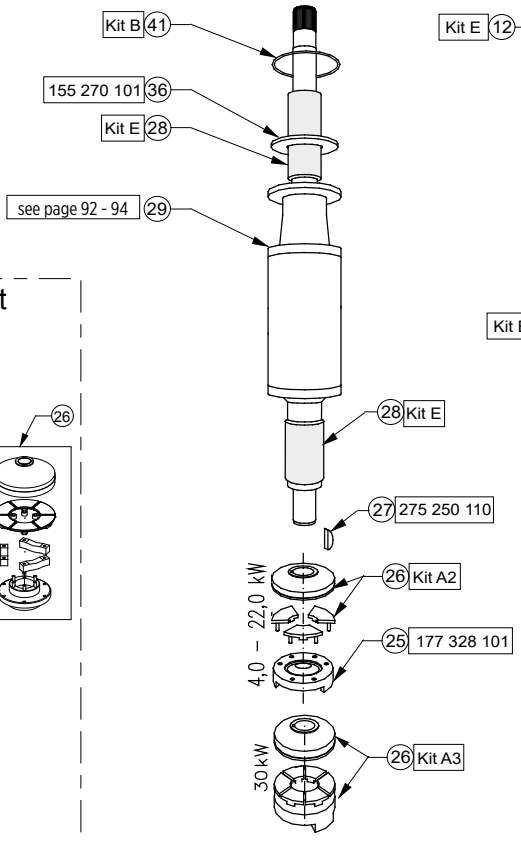
| $P_N$ [kW] | $P_N$ [HP] | Thrust F [N] | $U_N$ [V] | DOL | | YΔ* | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| 4 | 5,5 | 15500 | 200 | 236 650 60** | | 236 760 60** | | 178 117 912K |
| | | | 230 | 236 600 60** | | 236 720 60** | | |
| | | | 380 | 236 660 60** | | 236 780 60** | | |
| | | | 460 | 236 610 60** | 305 478 908 | 236 710 60** | 305 478 911 | |
| | | | 575 | 236 620 60** | | 236 400 60** | | |
| 5,5 | 7,5 | 15500 | 200 | 236 651 60** | | 236 761 60** | | 178 118 911K |
| | | | 230 | 236 601 60** | | 236 721 60** | | |
| | | | 380 | 236 661 60** | | 236 781 60** | | |
| | | | 460 | 236 611 60** | 305 479 911 | 236 711 60** | 305 479 914 | |
| | | | 575 | 236 621 60** | | 236 401 60** | | |
| 7,5 | 10,0 | 15500 | 200 | 236 652 60** | | 236 762 60** | | 178 119 906K |
| | | | 230 | 236 602 60** | | 236 722 60** | | |
| | | | 380 | 236 662 60** | | 236 782 60** | | |
| | | | 460 | 236 612 60** | 305 480 913 | 236 011 60** | 305 480 916 | |
| | | | 575 | 236 622 60** | | 236 402 60** | | |
| 9,3 | 12,5 | 15500 | 200 | 236 061 60** | | 236 *** 60** | | 178 182 906K |
| | | | 230 | 236 041 60** | | 236 *** 60** | | |
| | | | 380 | 236 031 60** | | 236 032 60** | | |
| | | | 460 | 236 001 60** | 305 481 902 | 236 011 60** | 305 481 905 | |
| | | | 575 | 236 *** 60** | | 236 *** 60** | | |
| 11 | 15,0 | 15500 | 200 | 236 653 60** | | 236 763 60** | | 178 120 906K |
| | | | 230 | 236 603 60** | | 236 723 60** | | |
| | | | 380 | 236 663 60** | | 236 783 60** | | |
| | | | 460 | 236 613 60** | 305 482 914 | 236 713 60** | 305 482 917 | |
| | | | 575 | 236 623 60** | | 236 403 60** | | |
| 15 | 20,0 | 15500 | 200 | 236 654 60** | | 236 764 60** | | 178 121 906K |
| | | | 230 | 236 604 60** | | 236 724 60** | | |
| | | | 380 | 236 664 60** | | 236 784 60** | | |
| | | | 460 | 236 614 60** | 305 484 914 | 236 714 60** | 305 484 917 | |
| | | | 575 | 236 624 60** | | 236 404 60** | | |
| 18,5 | 25,0 | 15500 | 200 | 236 655 60** | | 236 765 60** | | 178 122 906K |
| | | | 230 | 236 605 60** | | 236 725 60** | | |
| | | | 380 | 236 665 60** | | 236 785 60** | | |
| | | | 460 | 236 615 60** | 305 485 911 | 236 715 60** | 305 485 914 | |
| | | | 575 | 236 625 60** | | 236 405 60** | | |
| 22 | 30,0 | 15500 | 200 | 236 656 60** | | 236 766 60** | | 178 123 906K |
| | | | 230 | 236 606 60** | | 236 726 60** | | |
| | | | 380 | 236 666 60** | | 236 786 60** | | |
| | | | 460 | 236 616 60** | 305 486 915 | 236 716 60** | 305 486 918 | |
| | | | 575 | 236 626 60** | | 236 406 60** | | |
| 30 | 40 | 27500 | 380 | 236 667 60** | | 236 787 60** | | 178 115 906K |
| | | | 460 | 236 617 60** | 305 488 905 | 236 717 60** | 305 488 908 | |
| | | | 575 | 236 627 60** | | 236 407 60** | | |
| 37 | 50 | 45500 | 380 | 276 668 60** | | 276 788 60** | | 305 223 920 |
| | | | 460 | 276 618 60** | 305 489 920 | 276 718 60** | 305 489 919 | |
| | | | 575 | 276 628 60** | | 276 **8 60** | | |
| 45 | 60 | 45000 | 380 | 276 669 60** | | 276 789 60** | | 305 223 921 |
| | | | 460 | 276 619 60** | 305 490 920 | 276 719 60** | 305 490 919 | |
| | | | 575 | 276 629 60** | | 276 **9 60** | | |

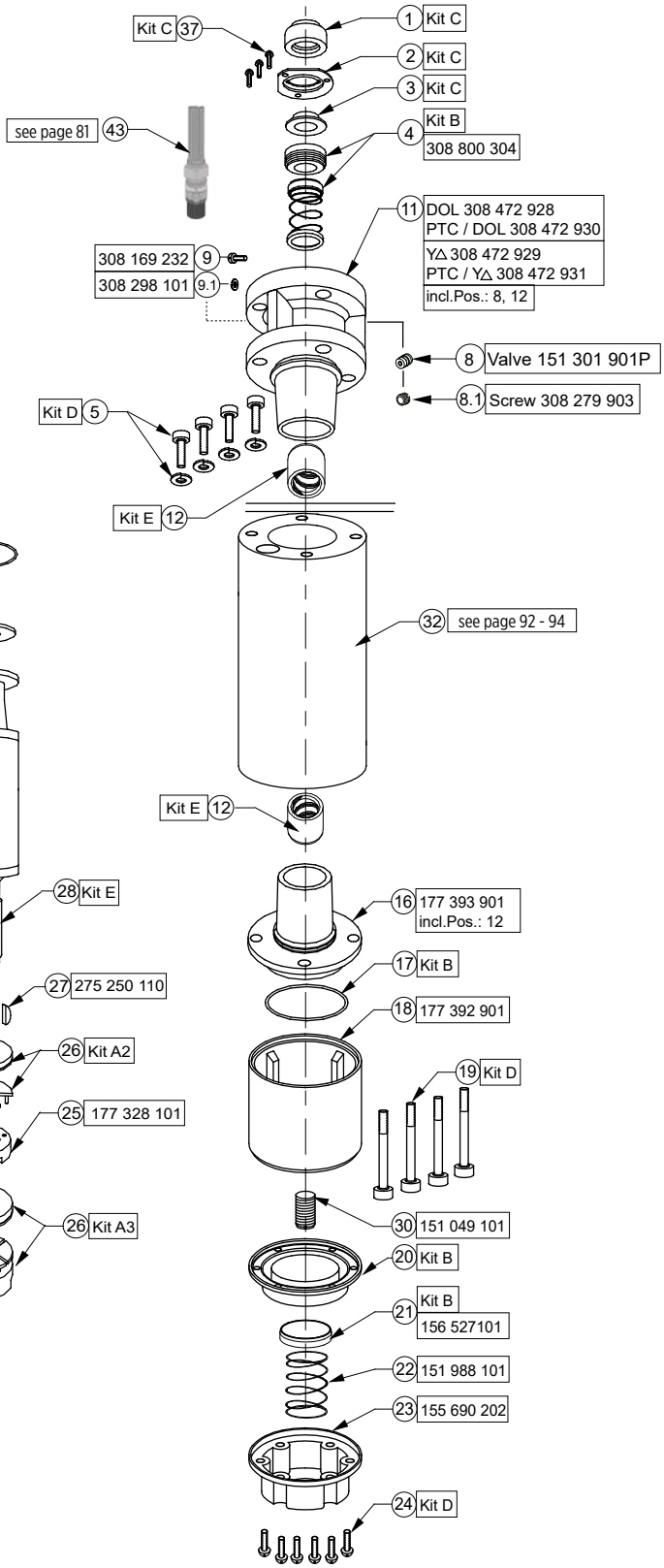
# 6" Encapsulated Motors 304SS

4 - 30 Kw

| | | | |
|---|---|---|---|
| Kit A2<br>15.500N / 4-22kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 120 |
| Kit A3<br>27.500N / 30kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 200 |
| Kit A4<br>45.000N / 30kW | Thrust Bearing Kit | incl. Pos.: 26 | 308750 510 |
| 45kN Conversion Kit<br>4,0 - 30kW | | incl. Pos.: 12; 16; 18; 19 ; 20; 21; 22; 23; 24; 26; 30; 41 | 308 750 500 |
| Kit B2<br>4 - 30kW | Seal Kit | incl. Pos.: 4; 17; 20; 21, 22, 41 | 308 800 302 |
| Kit C2 | Slinger Kit | incl. Pos.: 1; 2; 3; 37 | 308 725 302 |
| Kit D4 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 302 |
| Kit E*<br>4 - 30 kW | Radial Bearing Kit | incl. Pos.: 12; 28 | 308 678 101 |
| * Radial Bearing Parts are unfinished | | | |



## Replacement Stators and Rotors 304SS / 50 Hz

| 3 ~ ohne SubMonitor Transmitter<br>3 ~ without SubMonitor Transmitter | 3 ~ sans transm. SubMonitor<br>senza trasmettitore SubMonitor | 3 ~ | 3 ~ sin transmissor SubMonitor<br>3 ~ sem transmissor SubMonitor |
|---|---|---|---|

| | | | DOL | | YΔ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | Volts | Thrust F [N] | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| **4,0** | 220, 230 | 15.500 | 236 680 10** | 305 478 *** | 236 670 10** | 305 478 *** | 178 117 912K |
| | 380, 400, 415 | | 236 610 10** | 305 478 *** | 236 710 10** | 305 478 *** | |
| | 500 | | 236 700 10** | 305 478 *** | 236 790 10** | 305 478 *** | |
| **5,5** | 220, 230 | 15.500 | 236 681 10** | 305 479 *** | 236 671 10** | 305 479 *** | 178 118 911K |
| | 380, 400, 415 | | 236 611 10** | 305 479 *** | 236 711 10** | 305 479 *** | |
| | 500 | | 236 701 10** | 305 479 *** | 236 791 10** | 305 479 *** | |
| **7,5** | 220, 230 | 15.500 | 236 682 10** | 305 480 *** | 236 672 10** | 305 480 *** | 178 119 906K |
| | 380, 400, 415 | | 236 612 10** | 305 480 *** | 236 712 10** | 305 480 *** | |
| | 500 | | 236 702 10** | 305 480 *** | 236 792 10** | 305 480 *** | |
| **9,3** | 220, 230 | 15.500 | 236 015 10** | 305 481 *** | 236 005 10** | 305 481 *** | 178 182 906K |
| | 380, 400, 415 | | 236 001 10** | 305 481 *** | 236 011 10** | 305 481 *** | |
| | 500 | | 236 008 10** | 305 481 *** | 236 018 10** | 305 481 *** | |
| **11,0** | 220, 230 | 15.500 | 236 683 10** | 305 482 *** | 236 673 10** | 305 482 *** | 178 120 906K |
| | 380, 400, 415 | | 236 613 10** | 305 482 *** | 236 713 10** | 305 482 *** | |
| | 500 | | 236 703 10** | 305 482 *** | 236 793 10** | 305 482 *** | |
| **15,0** | 220, 230 | 15.500 | 236 684 10** | 305 484 *** | 236 674 10** | 305 484 *** | 178 121 906K |
| | 380, 400, 415 | | 236 614 10** | 305 484 *** | 236 714 10** | 305 484 *** | |
| | 500 | | 236 704 10** | 305 484 *** | 236 794 10** | 305 484 *** | |
| **18,5** | 220, 230 | 15.500 | 236 685 10** | 305 485 *** | 236 675 10** | 305 485 *** | 178 122 906K |
| | 380, 400, 415 | | 236 615 10** | 305 485 *** | 236 715 10** | 305 485 *** | |
| | 500 | | 236 705 10** | 305 485 *** | 236 795 10** | 305 485 *** | |
| **22,0** | 220, 230 | 15.500 | 236 686 10** | 305 486 *** | 236 676 10** | 305 486 *** | 178 123 906K |
| | 380, 400, 415 | | 236 616 10** | 305 486 *** | 236 716 10** | 305 486 *** | |
| | 500 | | 236 706 10** | 305 486 *** | 236 796 10** | 305 486 *** | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 10** | 305 488 *** | 178 115 906K |
| | 380, 400, 415 | | 236 617 10** | 305 488 *** | 236 717 10** | 305 488 *** | |
| | 500 | | 236 707 10** | 305 488 *** | 236 797 10** | 305 488 *** | |

(*) : Kabel 90° versetzt — Pos. de cavi 90°
Pos. of leads 90° — Pos. de los cables 90°
Pos. des câbles 90° — Pos. dos cabos 90°

## Replacement Stators and Rotors 304SS / 60 Hz

| 3 ~ ohne SubMonitor Transmitter<br>3 ~ without SubMonitor Transmitter | 3 ~ sans transm. SubMonitor<br>3 ~ senza trasmettitore SubMonitor | 3 ~ sin transmissor SubMonitor<br>3 ~ sem transmissor SubMonitor |
|---|---|---|

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Stator Model Nr.* | Rotor Model Nr. |
|---|---|---|---|---|
| 4,0 | 230 | 15.500 | | 178 117 912K |
| | 460 | | | |
| | 575 | | | |
| 5,5 | 230 | 15.500 | | 178 118 911K |
| | 460 | | | |
| | 575 | | | |
| 7,5 | 230 | 15.500 | | 178 119 906K |
| | 460 | | | |
| | 575 | | | |
| 9,3 | 230 | 15.500 | | 178 182 906K |
| | 460 | | | |
| | 575 | | | |
| 11,0 | 230 | 15.500 | | 178 120 906K |
| | 460 | | | |
| | 575 | | | |
| 15,0 | 230 | 15.500 | | 178 121 906K |
| | 460 | | | |
| | 575 | | | |
| 18,5 | 230 | 15.500 | | 178 122 906K |
| | 460 | | | |
| | 575 | | | |
| 22,0 | 230 | 15.500 | | 178 123 906K |
| | 460 | | | |
| | 575 | | | |
| 30,0 | 230 | 27.500 | | 178 115 906K |
| | 460 | | | |
| | 575 | | | |

(*) Spare part Stators on request

## Replacement Stators and Rotors 304SS / 50 Hz

| 3 ~ mit SubMonitor Transmitter<br>3 ~ with SubMonitor Transmitter | 3 ~ avec transm. SubMonitor<br>3 ~ con trasmettitore SubMonitor | 3 ~ con transmissor SubMonitor<br>3 ~ com transmissor SubMonitor |
|---|---|---|

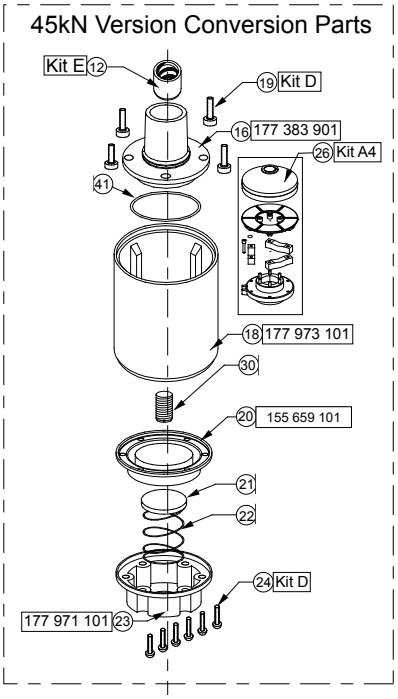
| | | | DOL | | Y∆ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| **4,0** | 220, 230 | 15.500 | 236 680 11** | 305 478 *** | 236 670 11** | 305 478 *** | 178 117 912K |
| | 380, 400, 415 | | 236 610 11** | 305 478 *** | 236 710 11** | 305 478 *** | |
| | 500 | | 236 700 11** | 305 478 *** | 236 790 11** | 305 478 *** | |
| **5,5** | 220, 230 | 15.500 | 236 681 11** | 305 479 *** | 236 671 11** | 305 479 *** | 178 118 911K |
| | 380, 400, 415 | | 236 611 11** | 305 479 *** | 236 711 11** | 305 479 *** | |
| | 500 | | 236 701 11** | 305 479 *** | 236 791 11** | 305 479 *** | |
| **7,5** | 220, 230 | 15.500 | 236 682 11** | 305 480 *** | 236 672 11** | 305 480 *** | 178 119 906K |
| | 380, 400, 415 | | 236 612 11** | 305 480 *** | 236 712 11** | 305 480 *** | |
| | 500 | | 236 702 11** | 305 480 *** | 236 792 11** | 305 480 *** | |
| **9,3** | 220, 230 | 15.500 | 236 015 11** | 305 481 *** | 236 005 11** | 305 481 *** | 178 182 906K |
| | 380, 400, 415 | | 236 001 11** | 305 481 *** | 236 011 11** | 305 481 *** | |
| | 500 | | 236 008 11** | 305 481 *** | 236 018 11** | 305 481 *** | |
| **11,0** | 220, 230 | 15.500 | 236 683 11** | 305 482 *** | 236 673 11** | 305 482 *** | 178 120 906K |
| | 380, 400, 415 | | 236 613 11** | 305 482 *** | 236 713 11** | 305 482 *** | |
| | 500 | | 236 703 11** | 305 482 *** | 236 793 11** | 305 482 *** | |
| **15,0** | 220, 230 | 15.500 | 236 684 11** | 305 484 *** | 236 674 11** | 305 484 *** | 178 121 906K |
| | 380, 400, 415 | | 236 614 11** | 305 484 *** | 236 714 11** | 305 484 *** | |
| | 500 | | 236 704 11** | 305 484 *** | 236 794 11** | 305 484 *** | |
| **18,5** | 220, 230 | 15.500 | 236 685 11** | 305 485 *** | 236 675 11** | 305 485 *** | 178 122 906K |
| | 380, 400, 415 | | 236 615 11** | 305 485 *** | 236 715 11** | 305 485 *** | |
| | 500 | | 236 705 11** | 305 485 *** | 236 795 11** | 305 485 *** | |
| **22,0** | 220, 230 | 15.500 | 236 686 11** | 305 486 *** | 236 676 11** | 305 486 *** | 178 123 906K |
| | 380, 400, 415 | | 236 616 11** | 305 486 *** | 236 716 11** | 305 486 *** | |
| | 500 | | 236 706 11** | 305 486 *** | 236 796 11** | 305 486 *** | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 11** | 305 488 *** | 178 115 906K |
| | 380, 400, 415 | | 236 617 11** | 305 488 *** | 236 717 11** | 305 488 *** | |
| | 500 | | 236 707 11** | 305 488 *** | 236 797 11** | 305 488 *** | |

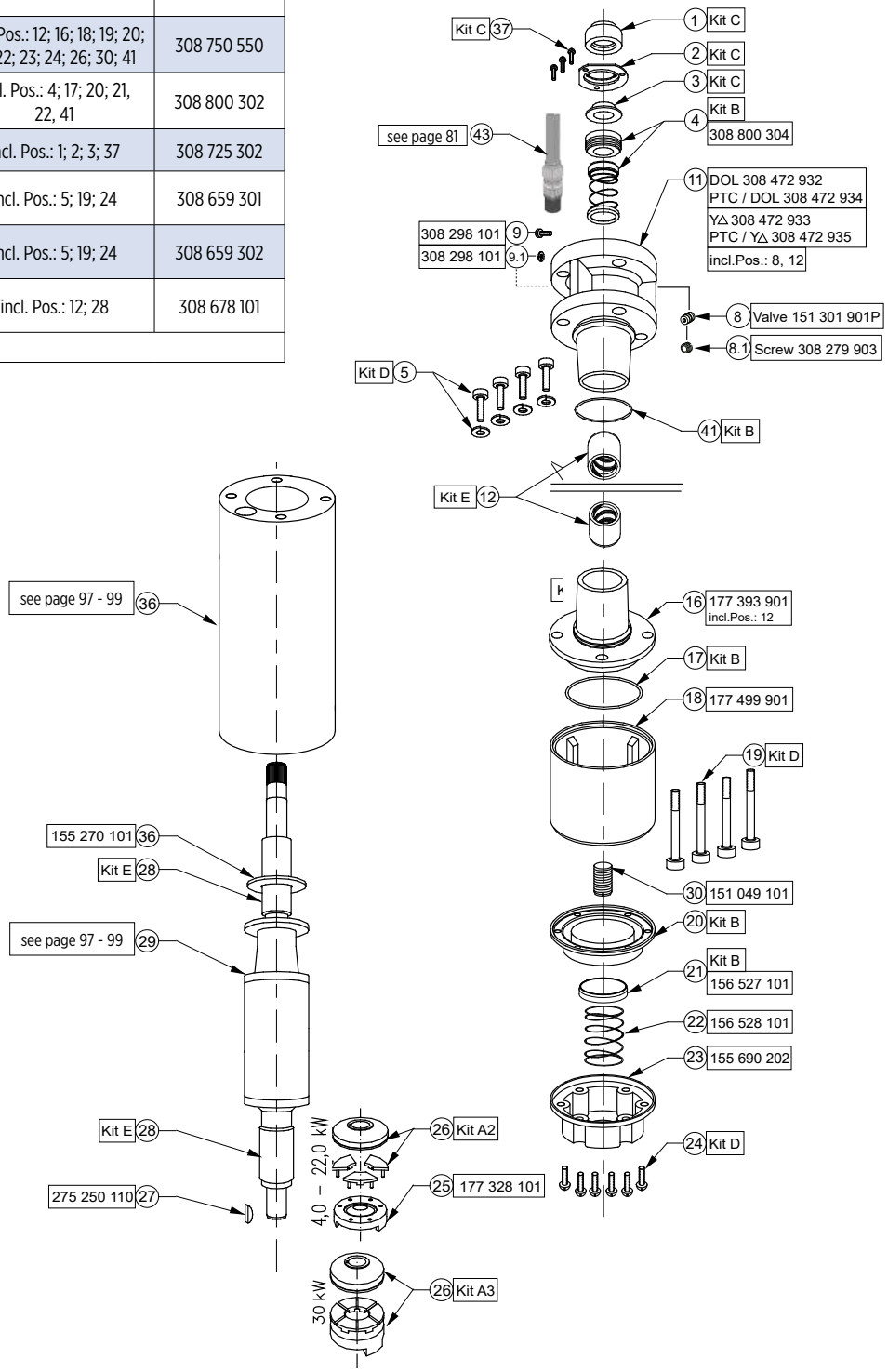
**(*) :** **Kabel 90° versetzt** **Pos. de cavi 90°**
**Pos. of leads 90°** **Pos. de los cables 90°**
**Pos. des câbles 90°** **Pos. dos cabos 90°**

## 6" Encapsulated 316SS

### 4- 30 kW

| | | | |
|---|---|---|---|
| Rotor Kit 6500N to 15.500N | 4,0 kW | incl. Pos.: 25; 26, 29 | 305 330 911 |
| | 5,5 kW | incl. Pos.: 25; 26, 29 | 305 330 912 |
| Kit A2 15.500N / 4-22kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 120 |
| Kit A3 27.500N / 30kW | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 200 |
| Kit A4 45.000N | Thrust Bearing Kit | incl. Pos.: 26 | 308 750 510 |
| 45kN Conversion Kit 4,0 - 30kW | | incl. Pos.: 12; 16; 18; 19; 20; 21; 22; 23; 24; 26; 30; 41 | 308 750 550 |
| Kit B2 4 - 30kW | Seal Kit | incl. Pos.: 4; 17; 20; 21, 22, 41 | 308 800 302 |
| Kit C2 | Slinger Kit | incl. Pos.: 1; 2; 3; 37 | 308 725 302 |
| Kit D3 up to 07.2002 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 301 |
| Kit D4 starting 07.2002 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 302 |
| Kit E* 4 - 30 kW | Radial Bearing Kit | incl. Pos.: 12; 28 | 308 678 101 |
| * Radial Bearing Parts are unfinished | | | |

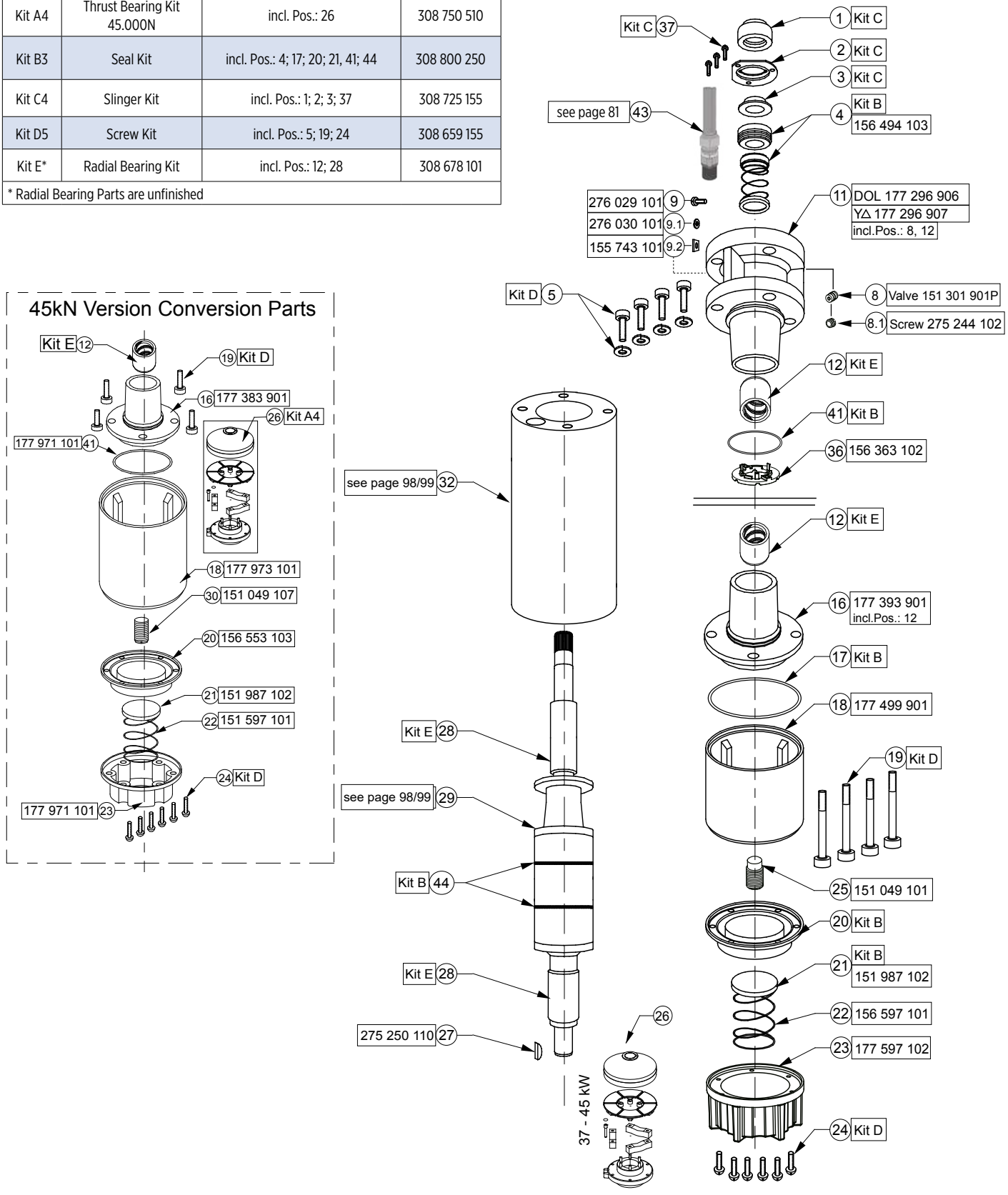


## 6" Encapsulated 316SS

### 37- 45 kW

| | | | |
|---|---|---|---|
| Kit A3 | Thrust Bearing Kit 27.500N | incl. Pos.: 26 | 308 750 200 |
| Kit A4 | Thrust Bearing Kit 45.000N | incl. Pos.: 26 | 308 750 510 |
| Kit B3 | Seal Kit | incl. Pos.: 4; 17; 20; 21, 41; 44 | 308 800 250 |
| Kit C4 | Slinger Kit | incl. Pos.: 1; 2; 3; 37 | 308 725 155 |
| Kit D5 | Screw Kit | incl. Pos.: 5; 19; 24 | 308 659 155 |
| Kit E* | Radial Bearing Kit | incl. Pos.: 12; 28 | 308 678 101 |
| * Radial Bearing Parts are unfinished | | | |



## Replacement Stators and Rotors 316SS / 50 Hz

| 3 ~ ohne SubMonitor Transmitter<br>3 ~ without SubMonitor Transmitter | 3 ~ sans transm. SubMonitor<br>senza trasmettitore SubMonitor | 3 ~ sin transmissor SubMonitor<br>3 ~ sem transmissor SubMonitor |
|---|---|---|

| | | | DOL | | YΔ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Thrust (N) | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| **4,0** | 220, 230 | 15.500 | 236 680 39** | 305478917 | 236 670 39** | 305478920 | 178 117 913K |
| | 380 - 415 | | 236 610 39** | 305478918 | 236 710 39** | 305478921 | |
| | 500 | | 236 700 39** | 305478919 | 236 790 39** | 305478922 | |
| **5,5** | 220, 230 | 15.500 | 236 681 39** | 305479920 | 236 671 39** | 305479923 | 178 118 912K |
| | 380 - 415 | | 236 611 39** | 305479921 | 236 711 39** | 305479924 | |
| | 500 | | 236 701 39** | 305479922 | 236 791 39** | 305479925 | |
| **7,5** | 220, 230 | 15.500 | 236 682 39** | 305480922 | 236 672 39** | 305480925 | 178 119 908K |
| | 380 - 415 | | 236 612 39** | 305480923 | 236 712 39** | 305480926 | |
| | 500 | | 236 702 39** | 305480924 | 236 792 39** | 305480927 | |
| **9,3** | 220, 230 | 15.500 | 236 015 39** | 305481911 | 236 005 39** | 305481914 | 178 182 907K |
| | 380 - 415 | | 236 001 39** | 305481912 | 236 011 39** | 305481915 | |
| | 500 | | 236 008 39** | 305481913 | 236 018 39** | 305481916 | |
| **11,0** | 220, 230 | 15.500 | 236 683 39** | 305482923 | 236 673 39** | 305482926 | 178 120 908K |
| | 380 - 415 | | 236 613 39** | 305482924 | 236 713 39** | 305482927 | |
| | 500 | | 236 703 39** | 305482925 | 236 793 39** | 305482928 | |
| **15,0** | 220, 230 | 15.500 | 236 684 39** | 305484923 | 236 674 39** | 305484926 | 178 121 907K |
| | 380 - 415 | | 236 614 39** | 305484924 | 236 714 39** | 305484927 | |
| | 500 | | 236 704 39** | 305484925 | 236 794 39** | 305484928 | |
| **18,5** | 220, 230 | 15.500 | 236 685 39** | 305485920 | 236 675 39** | 305485923 | 178 122 907K |
| | 380 - 415 | | 236 615 39** | 305485921 | 236 715 39** | 305485924 | |
| | 500 | | 236 705 39** | 305485922 | 236 795 39** | 305485926 | |
| **22,0** | 220, 230 | 15.500 | 236 686 39** | 305486924 | 236 676 39** | 305486927 | 178 123 907K |
| | 380 - 415 | | 236 616 39** | 305486925 | 236 716 39** | 305486928 | |
| | 500 | | 236 706 39** | 305486926 | 236 796 39** | 305486929 | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 39** | 305488915 | 178 115 906K |
| | 380 - 415 | | 236 617 39** | 305488913 | 236 717 39** | 305488916 | |
| | 500 | | 236 707 39** | 305488914 | 236 797 39** | 305488917 | |

**(*) :** **Kabel 90° versetzt** **Pos. de cavi 90°**
**Pos. of leads 90°** **Pos. de los cables 90°**
**Pos. des câbles 90°** **Pos. dos cabos 90°**

## Replacement Stators and Rotors 316SS / 50 Hz

| | | |
|---|---|---|
| 3 ~ mit SubMonitor Transmitter<br>3 ~ with SubMonitor Transmitter | 3 ~ avec transm. SubMonitor<br>3 ~ con trasmettitore SubMonitor | 3 ~ con transmissor SubMonitor<br>3 ~ com transmissor SubMonitor |

| | | | DOL | | Y∆ (*) | | |
|---|---|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Thrust F (N) | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | Rotor Model No. |
| 4,0 | 220, 230 | 15.500 | 236 680 40** | 305 478 947 | 236 670 40** | 305 478 950 | 178 117 913K |
| | 380 - 415 | | 236 610 40** | 305 478 948 | 236 710 40** | 305 478 951 | |
| | 500 | | 236 700 40** | 305 478 949 | 236 790 40** | 305 478 952 | |
| **5,5** | 220, 230 | 15.500 | 236 681 40** | 305 479 950 | 236 671 40** | 305 479 953 | 178 118 912K |
| | 380 - 415 | | 236 611 40** | 305 479 951 | 236 711 40** | 305 479 954 | |
| | 500 | | 236 701 40** | 305 479 952 | 236 791 40** | 305 479 955 | |
| **7,5** | 220, 230 | 15.500 | 236 682 40** | 305 480 952 | 236 672 40** | 305 480 955 | 178 119 908K |
| | 380 - 415 | | 236 612 40** | 305 480 953 | 236 712 40** | 305 480 956 | |
| | 500 | | 236 702 40** | 305 480 954 | 236 792 40** | 305 480 957 | |
| **9,3** | 220, 230 | 15.500 | 236 015 40** | 305 481 941 | 236 005 40** | 305 481 944 | 178 182 907K |
| | 380 - 415 | | 236 001 40** | 305 481 942 | 236 011 40** | 305 481 945 | |
| | 500 | | 236 008 40** | 305 481 943 | 236 018 40** | 305 481 946 | |
| **11,0** | 220, 230 | 15.500 | 236 683 40** | 305 482 953 | 236 673 40** | 305 482 956 | 178 120 908K |
| | 380 - 415 | | 236 613 40** | 305 482 954 | 236 713 40** | 305 482 957 | |
| | 500 | | 236 703 40** | 305 482 955 | 236 793 40** | 305 482 958 | |
| **15,0** | 220, 230 | 15.500 | 236 684 40** | 305 484 953 | 236 674 40** | 305 484 956 | 178 121 907K |
| | 380 - 415 | | 236 614 40** | 305 484 954 | 236 714 40** | 305 484 957 | |
| | 500 | | 236 704 40** | 305 484 955 | 236 794 40** | 305 484 958 | |
| **18,5** | 220, 230 | 15.500 | 236 685 40** | 305 485 950 | 236 675 40** | 305 485 953 | 178 122 907K |
| | 380 - 415 | | 236 615 40** | 305 485 951 | 236 715 40** | 305 485 954 | |
| | 500 | | 236 705 40** | 305 485 952 | 236 795 40** | 305 485 955 | |
| **22,0** | 220, 230 | 15.500 | 236 686 40** | 305 486 954 | 236 676 40** | 305 486 957 | 178 123 907K |
| | 380 - 415 | | 236 616 40** | 305 486 955 | 236 716 40** | 305 486 958 | |
| | 500 | | 236 706 40** | 305 486 956 | 236 796 40** | 305 486 959 | |
| **30,0** | 220, 230 | 27.500 | | | 236 677 40** | 305 488 939 | 178 115 906K |
| | 380 - 415 | | 236 617 40** | 305 488 937 | 236 717 40** | 305 488 940 | |
| | 500 | | 236 707 40** | 305 488 938 | 236 797 40** | 305 488 941 | |
| **37,0** | 380 - 415 | 45.000 | 276 618 6361X | 338 710 908 | 276 718 6361X | 336 755 906 | 305 223 920 |
| **45,0** | 380 - 415 | 45.000 | 276 619 6361X | 305 490 921 | 276 719 6361X | 336 756 103 | 305 223 921 |

(*) : Kabel 90° versetzt — Pos. de cavi 90°
Pos. of leads 90° — Pos. de los cables 90°
Pos. des câbles 90° — Pos. dos cabos 90°

## Replacement Stators and Rotors 316SS / 60 Hz

| 3 ~ mit SubMonitor Transmitter<br>3 ~ with SubMonitor Transmitter | 3 ~ avec transm. SubMonitor<br>con trasmettitore SubMonitor | 3 ~ | 3 ~ con transmissor SubMonitor<br>3 ~ com transmissor SubMonitor |
|---|---|---|---|

| $P_N$ [kW] | $P_N$ [HP] | Thrust F [N] | $U_N$ [V] | DOL | | YΔ* | | Rotor Model No. |
|---|---|---|---|---|---|---|---|---|
| | | | | Motor Model No. | Stator Model No. | Motor Model No. | Stator Model No. | |
| 4 | 5,5 | 15500 | 200 | 236 650 40** | | 236 760 40** | | 178 117 913K |
| | | | 230 | 236 600 40** | | 236 720 40** | | |
| | | | 380 | 236 660 40** | | 236 780 40** | | |
| | | | 460 | 236 610 40** | 305 478 948 | 236 710 40** | 305 478 951 | |
| | | | 575 | 236 620 40** | | 236 400 40** | | |
| 5,5 | 7,5 | 15500 | 200 | 236 651 40** | | 236 761 40** | | 178 118 912K |
| | | | 230 | 236 601 40** | | 236 721 40** | | |
| | | | 380 | 236 661 40** | | 236 781 40** | | |
| | | | 460 | 236 611 40** | 305 479 951 | 236 711 40** | 305 479 954 | |
| | | | 575 | 236 621 40** | | 236 401 40** | | |
| 7,5 | 10,0 | 15500 | 200 | 236 652 40** | | 236 762 40** | | 178 119 908K |
| | | | 230 | 236 602 40** | | 236 722 40** | | |
| | | | 380 | 236 662 40** | | 236 782 40** | | |
| | | | 460 | 236 612 40** | 305 480 953 | 236 011 40** | 305 480 956 | |
| | | | 575 | 236 622 40** | | 236 402 40** | | |
| 9,3 | 12,5 | 15500 | 200 | 236 061 40** | | 236 *** 40** | | 178 182 907K |
| | | | 230 | 236 041 40** | | 236 *** 40** | | |
| | | | 380 | 236 031 40** | | 236 032 40** | | |
| | | | 460 | 236 001 40** | 305 481 942 | 236 011 40** | 305 481 945 | |
| | | | 575 | 236 *** 40** | | 236 *** 40** | | |
| 11 | 15,0 | 15500 | 200 | 236 653 40** | | 236 763 40** | | 178 120 908K |
| | | | 230 | 236 603 40** | | 236 723 40** | | |
| | | | 380 | 236 663 40** | | 236 783 40** | | |
| | | | 460 | 236 613 40** | 305 482 954 | 236 713 40** | 305 482 957 | |
| | | | 575 | 236 623 40** | | 236 403 40** | | |
| 15 | 20,0 | 15500 | 200 | 236 654 40** | | 236 764 40** | | 178 121 907K |
| | | | 230 | 236 604 40** | | 236 724 40** | | |
| | | | 380 | 236 664 40** | | 236 784 40** | | |
| | | | 460 | 236 614 40** | 305 484 954 | 236 714 40** | 305 484 957 | |
| | | | 575 | 236 624 40** | | 236 404 40** | | |
| 18,5 | 25,0 | 15500 | 200 | 236 655 40** | | 236 765 40** | | 178 122 907K |
| | | | 230 | 236 605 40** | | 236 725 40** | | |
| | | | 380 | 236 665 40** | | 236 785 40** | | |
| | | | 460 | 236 615 40** | 305 485 951 | 236 715 40** | 305 485 954 | |
| | | | 575 | 236 625 40** | | 236 405 40** | | |
| 22 | 30,0 | 15500 | 200 | 236 656 40** | | 236 766 40** | | 178 123 907K |
| | | | 230 | 236 606 40** | | 236 726 40** | | |
| | | | 380 | 236 666 40** | | 236 786 40** | | |
| | | | 460 | 236 616 40** | 305 486 955 | 236 716 40** | 305 486 958 | |
| | | | 575 | 236 626 40** | | 236 406 40** | | |
| 30 | 40 | 27500 | 380 | 236 667 40** | | 236 787 40** | | 178 115 906K |
| | | | 460 | 236 617 40** | 305 488 937 | 236 717 40** | 305 488 940 | |
| | | | 575 | 236 627 40** | | 236 407 40** | | |
| 37 | 50 | 45000 | 380 | 276 668 40** | | 276 788 40** | | 305 223 920 |
| | | | 460 | 276 618 40** | 338 710 909 | 276 718 40** | 305 489 *** | |
| | | | 575 | 276 628 40** | | 276 **8 40** | | |
| 45 | 60 | 45000 | 380 | 276 669 40** | | 276 789 40** | | 305 223 921 |
| | | | 460 | 276 619 40** | 305 490 921 | 276 719 40** | 305 490 *** | |
| | | | 575 | 276 629 40** | | 276 **9 40** | | |

(*) : Kabel 90° versetzt — Pos. de cavi 90°
Pos. of leads 90° — Pos. de los cables 90°
Pos. des câbles 90° — Pos. dos cabos 90°

# 6" Encapsulated Motors „HighTemp 90°C“

**Encapsulated motor for reliable operation with ambient temperatures up to 90 °C**

## Submersible Motors

### Quality in the Well

These 6" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 6" diameter or larger water wells with ambient temperature up to 90°C.
Water lubricated thrust and radial bearings enable a maintenance free operation. A special diaphragm ensures pressure compensation inside the motor. The motor is filled with a special FES92 fluid, providing frost protection down to -15ºC storage temperture.
The Sand fighter® SiC seal system is standard.



### Product advantages:

- Up to 90°C ambient temperature
- Increast thrust capacity up to 30°C
- No cooling flow in larger wells (12" / open reservoirs) up to 30°C ambient
- Hermetically sealed encapsulated stator, anti track, self healing stator resin
- Removable “Water Bloc” lead connector
- „Sand fighter®“ Motor with SiC-Mechanical Seal
- High efficiency electrical design for low operation cost
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- All motors prefilled and 100% tested. Max. storage temperature -15°C - + 60°C
- High temperature leads
- Non contaminating FES92 -filled design

### Technical Specifications

- 3,7 ... 30 kW
- 6" NEMA double flange
- Protection: IP 68
- Starts per hour: 20
- Installation: vertical/horizontal
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6% $U_N$ [380-415V = (380-10%) – (415+6%)]
- Voltage tolerance 60Hz: ±10%$U_N$
- Motor protection: Select thermal overloads according to DIN 61947-4-1
- Insulation: Class F
- Rated ambient temperature: 90°C
- Cooling flow: min. 0,16 m/s
- DOL / YΔ - start (pos. of cables 90°)
- Motor cable in the standard with 5m length 3X8,4mm² and 5m single conductor ground wire round cable mounted on the motor

### Options

- Other voltages
- 45kN Thrust Bearing capacity (Standard in 22 and 30kW motors)
- Motors complete in 316 SS
- Motor lead 8m length

## 6" HighTemp90 Model numbers 50 Hz*

| $P_N$ [kW] | $P_N$ [Hp] | $U_N$ [V] | Model Number Digit 1 – 6 | | Model Number Digit 7 - 11 | |
|---|---|---|---|---|---|---|
| | | | DOL | YΔ | WW** | 316SS |
| **3,7** | 5 | 380 - 415 | 276 610 | 276 710 | 0000 | 3000 |
| **5,5** | 7,5 | 380 - 415 | 276 611 | 276 711 | 0000 | 3000 |
| **7,5** | 10 | 380 - 415 | 276 612 | 276 712 | 0000 | 3000 |
| **11** | 15 | 380 - 415 | 276 613 | 276 713 | 0000 | 3000 |
| **15** | 20 | 380 - 415 | 276 614 | 276 714 | 0000 | 3000 |
| **18,5** | 25 | 380 - 415 | 276 615 | 276 715 | 0100 | 3100 |
| **22** | 30 | 380 - 415 | 276 616 | 276 716 | 0100 | 3100 |
| **30** | 40 | 380 - 415 | 276 617 | 276 717 | 0100 | 3100 |

## 6" HighTemp90 Model numbers 60 Hz*

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Model Number Digit 1 – 6 | | Model Number Digit 7 - 11 | | |
|---|---|---|---|---|---|---|---|
| | | | DOL | YΔ | WW** | 316SS | High Thrust 45 kN Motor Version |
| 3,7 | **4,3** | 230 | 276 600 | 276 720 | 0000 | 3000 | **63 |
| | | 380 | 276 660 | 276 780 | 0000 | 3000 | **63 |
| | | 460 | 276 610 | 276 710 | 0000 | 3000 | **63 |
| 5,5 | **6,3** | 230 | 276 601 | 276 721 | 0000 | 3000 | **63 |
| | | 380 | 276 661 | 276 781 | 0000 | 3000 | **63 |
| | | 460 | 276 611 | 276 711 | 0000 | 3000 | **63 |
| 7,5 | **8,6** | 230 | 276 602 | 276 722 | 0000 | 3000 | **63 |
| | | 380 | 276 662 | 276 782 | 0000 | 3000 | **63 |
| | | 460 | 276 612 | 276 712 | 0000 | 3000 | **63 |
| 11 | **12,7** | 230 | 276 603 | 276 723 | 0000 | 3000 | **63 |
| | | 380 | 276 663 | 276 783 | 0000 | 3000 | **63 |
| | | 460 | 276 613 | 276 713 | 0000 | 3000 | **63 |
| 15 | **17,2** | 230 | 276 604 | 276 724 | 0000 | 3000 | **63 |
| | | 380 | 276 664 | 276 784 | 0000 | 3000 | **63 |
| | | 460 | 276 614 | 276 714 | 0000 | 3000 | **63 |
| 18,5 | **21,3** | 230 | 276 605 | 276 725 | 0100 | 3100 | **63 |
| | | 380 | 276 665 | 276 785 | 0100 | 3100 | **63 |
| | | 460 | 276 615 | 276 715 | 0100 | 3100 | **63 |
| 22 | **25,3** | 230 | 276 606 | 276 726 | 0100 | 3100 | Standard |
| | | 380 | 276 666 | 276 786 | 0100 | 3100 | Standard |
| | | 460 | 276 616 | 276 716 | 0100 | 3100 | Standard |
| 30 | **34,5** | 230 | 276 607 | 276 727 | 0100 | 3100 | Standard |
| | | 380 | 276 667 | 276 787 | 0100 | 3100 | Standard |
| | | 460 | 276 617 | 276 717 | 0100 | 3100 | Standard |

* VFD operation is only allowed up to 400V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH

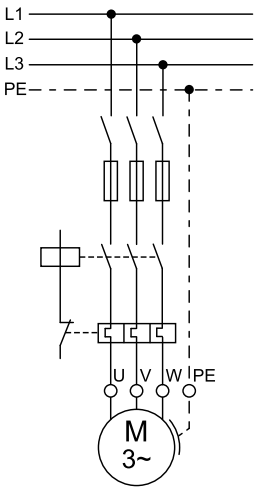
** WW- Water well Design (Stator 304SS / Castings - CI Powder coated)

## 6" HighTemp 90 Performance Data 50 Hz

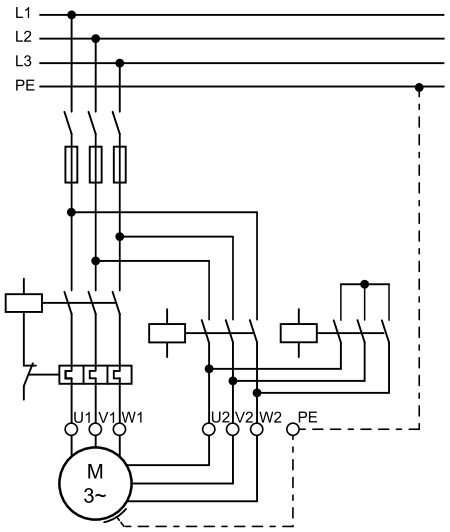
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (Pf.) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **3,7** | 15.500 | 380 | 2865 | 8,8 | 49,9 | 66 | 72 | 74 | 0,78 | 0,85 | 0,88 | 12,4 | 27,9 |
| | | 400 | 2880 | 8,5 | 52,5 | 66 | 72 | 75 | 0,74 | 0,82 | 0,86 | 12,3 | 31,4 |
| | | 415 | 2890 | 8,4 | 54,5 | 65 | 72 | 75 | 0,70 | 0,79 | 0,84 | 12,3 | 34,2 |
| **5,5** | 15.500 | 380 | 2880 | 12,7 | 78,6 | 70 | 75 | 77 | 0,77 | 0,85 | 0,88 | 18,6 | 42,8 |
| | | 400 | 2890 | 12,3 | 83,0 | 70 | 75 | 77 | 0,72 | 0,81 | 0,86 | 18,4 | 48,3 |
| | | 415 | 2900 | 12,3 | 86,0 | 69 | 75 | 77 | 0,67 | 0,77 | 0,84 | 18,4 | 52,4 |
| **7,5** | 15.500 | 380 | 2880 | 16,4 | 105 | 74 | 78 | 80 | 0,76 | 0,84 | 0,88 | 24,7 | 68,1 |
| | | 400 | 2890 | 16,0 | 110 | 74 | 79 | 81 | 0,69 | 0,79 | 0,85 | 24,5 | 76,6 |
| | | 415 | 2900 | 16,1 | 114 | 71 | 77 | 80 | 0,65 | 0,76 | 0,83 | 24,5 | 83,4 |
| **11,0** | 15.500 | 380 | 2880 | 24,4 | 152 | 75 | 79 | 80 | 0,74 | 0,83 | 0,85 | 37,0 | 99,1 |
| | | 400 | 2890 | 24,2 | 160 | 74 | 79 | 80 | 0,67 | 0,77 | 0,82 | 36,9 | 111,4 |
| | | 415 | 2895 | 24,4 | 166 | 73 | 78 | 79 | 0,61 | 0,73 | 0,79 | 36,7 | 123,5 |
| **15,0** | 15.500 | 380 | 2865 | 33,3 | 195 | 76 | 79 | 80 | 0,73 | 0,82 | 0,87 | 49,6 | 143,7 |
| | | 400 | 2885 | 33,0 | 205 | 75 | 79 | 80 | 0,65 | 0,77 | 0,83 | 49,4 | 161,3 |
| | | 415 | 2890 | 33,3 | 213 | 74 | 78 | 80 | 0,60 | 0,72 | 0,80 | 49,2 | 196,6 |
| **18,5** | 27.500 | 380 | 2870 | 40,7 | 253 | 79 | 82 | 82 | 0,70 | 0,80 | 0,86 | 61,9 | 199,3 |
| | | 400 | 2890 | 40,5 | 266 | 78 | 82 | 83 | 0,62 | 0,74 | 0,82 | 61,5 | 227,8 |
| | | 415 | 2895 | 41,4 | 276 | 76 | 80 | 82 | 0,57 | 0,69 | 0,78 | 61,4 | 248,1 |
| **22** | 45.000 | 380 | 2870 | 49,2 | 289 | 76 | 79 | 80 | 0,76 | 0,83 | 0,88 | 74,3 | 196,6 |
| | | 400 | 2885 | 48,0 | 304 | 75 | 79 | 81 | 0,70 | 0,80 | 0,85 | 74,0 | 221,0 |
| | | 415 | 2895 | 47,9 | 316 | 74 | 79 | 80 | 0,65 | 0,76 | 0,82 | 73,8 | 241,3 |
| **30** | 45.000 | 380 | 2870 | 65,0 | 419 | 80 | 82 | 83 | 0,70 | 0,80 | 0,86 | 99,2 | 267,1 |
| | | 400 | 2885 | 64,5 | 441 | 79 | 82 | 83 | 0,63 | 0,75 | 0,82 | 98,7 | 301,0 |
| | | 415 | 2895 | 65,6 | 458 | 77 | 81 | 83 | 0,58 | 0,70 | 0,78 | 98,4 | 326,7 |

## Electrical Connection

### DOL




### YΔ



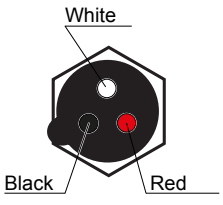

| U | V | W | PE |
|---|---|---|---|
| black | white | red | green |

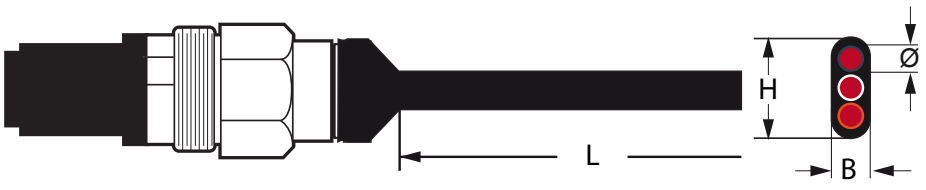
## 6" HighTemp 90 Performance Data 60 Hz

| $P_N$ [kW] | $P_{max}$ [kW] | Thrust [N] | $U_N$ [V] | Hz | $n_N$ [$min^{-1}$] | $I_{max}$ [A] | $I_A$ [A] | LINE TO LINE RESISTANCE OHMS |
|---|---|---|---|---|---|---|---|---|
| **4,0** | **4,6** | 15.500 | 230 | 60 | 3450 | 17.2 | 108 | .68 - .84 |
| | | | 380 | 60 | 3450 | 10.4 | 66.0 | 2.0 - 2.4 |
| | | | 460 | 60 | 3450 | 8.6 | 54.0 | 2.8 - 3.4 |
| | | | 575 | 60 | 3450 | 6.9 | 43.0 | 4.7 - 5.7 |
| **5,5** | **6,3** | 15.500 | 230 | 60 | 3450 | 24.6 | 168 | .41 - .50 |
| | | | 380 | 60 | 3450 | 14.9 | 102 | 1.1 - 1.4 |
| | | | 460 | 60 | 3450 | 12.3 | 84.0 | 1.7 - 2.0 |
| | | | 575 | 60 | 3450 | 9.9 | 67.0 | 2.6 - 3.2 |
| **7,5** | **8,6** | 15.500 | 230 | 60 | 3450 | 31.6 | 238 | .28 - .35 |
| | | | 380 | 60 | 3450 | 19.2 | 144 | .80 - .98 |
| | | | 460 | 60 | 3450 | 15.8 | 119 | 1.2 - 1.4 |
| | | | 575 | 60 | 3450 | 12.7 | 95.0 | 1.8 - 2.2 |
| **11** | **12,7** | 15.500 | 230 | 60 | 3450 | 47.4 | 354 | .19 - .24 |
| | | | 380 | 60 | 3450 | 28.7 | 214 | .52 - .65 |
| | | | 460 | 60 | 3450 | 23.7 | 177 | .78 - .96 |
| | | | 575 | 60 | 3450 | 19.0 | 142 | 1.2 - 1.4 |
| **15** | **17,3** | 15.500 | 230 | 60 | 3450 | 64.0 | 418 | .14 - .18 |
| | | | 380 | 60 | 3450 | 38.8 | 253 | .41 - .51 |
| | | | 460 | 60 | 3450 | 32.0 | 209 | .58 - .72 |
| | | | 575 | 60 | 3450 | 25.6 | 167 | .93 - 1.15 |
| **18,5** | **21,3** | 27.500 | 230 | 60 | 3450 | 78.8 | 578 | .11 - .14 |
| | | | 380 | 60 | 3450 | 47.7 | 350 | .27 - .34 |
| | | | 460 | 60 | 3450 | 39.4 | 289 | .41 - .51 |
| | | | 575 | 60 | 3450 | 31.6 | 231 | .70 - .86 |
| **22** | **25,3** | 45.000 | 230 | 60 | 3450 | 94.4 | 640 | .09 - .12 |
| | | | 380 | 60 | 3450 | 57.2 | 387 | .23 - .29 |
| | | | 460 | 60 | 3450 | 47.2 | 320 | .34 - .42 |
| | | | 575 | 60 | 3450 | 37.8 | 256 | .52 - .65 |
| **30** | **34,5** | 45.000 | 380 | 60 | 3450 | 76.0 | 545 | .18 - .23 |
| | | | 460 | 60 | 3450 | 62.8 | 450 | .23 - .29 |
| | | | 575 | 60 | 3450 | 50.2 | 360 | .34 - .43 |

## 6" High Temp 90 Motor Leads* WW / 316SS

| $P_N$ [kW] | Jam Nut Material | L [m] | Ø [$mm^2$] | H [mm] | B [mm] | Part numbers |
|---|---|---|---|---|---|---|
| All Ratings | 316 SS | 5 | 3 x 8,4 $mm^2$ | 23,1 mm (±0,3mm) | 11 mm (±0,3mm) | 305 602 905 |
| | | 8 | | | | 305 602 906 |




## Ground lead

| | P [kW] | Ø [$mm^2$] | D [mm] | Type | Qty. | L (m) | Mod. Nb. WW/316SS |
|---|---|---|---|---|---|---|---|
|  | **4,0 - 30** | 1G8,4 $mm^2$ | 7,6 mm (±0,3) | VDE | 1 | 5 | 152 764 901 |



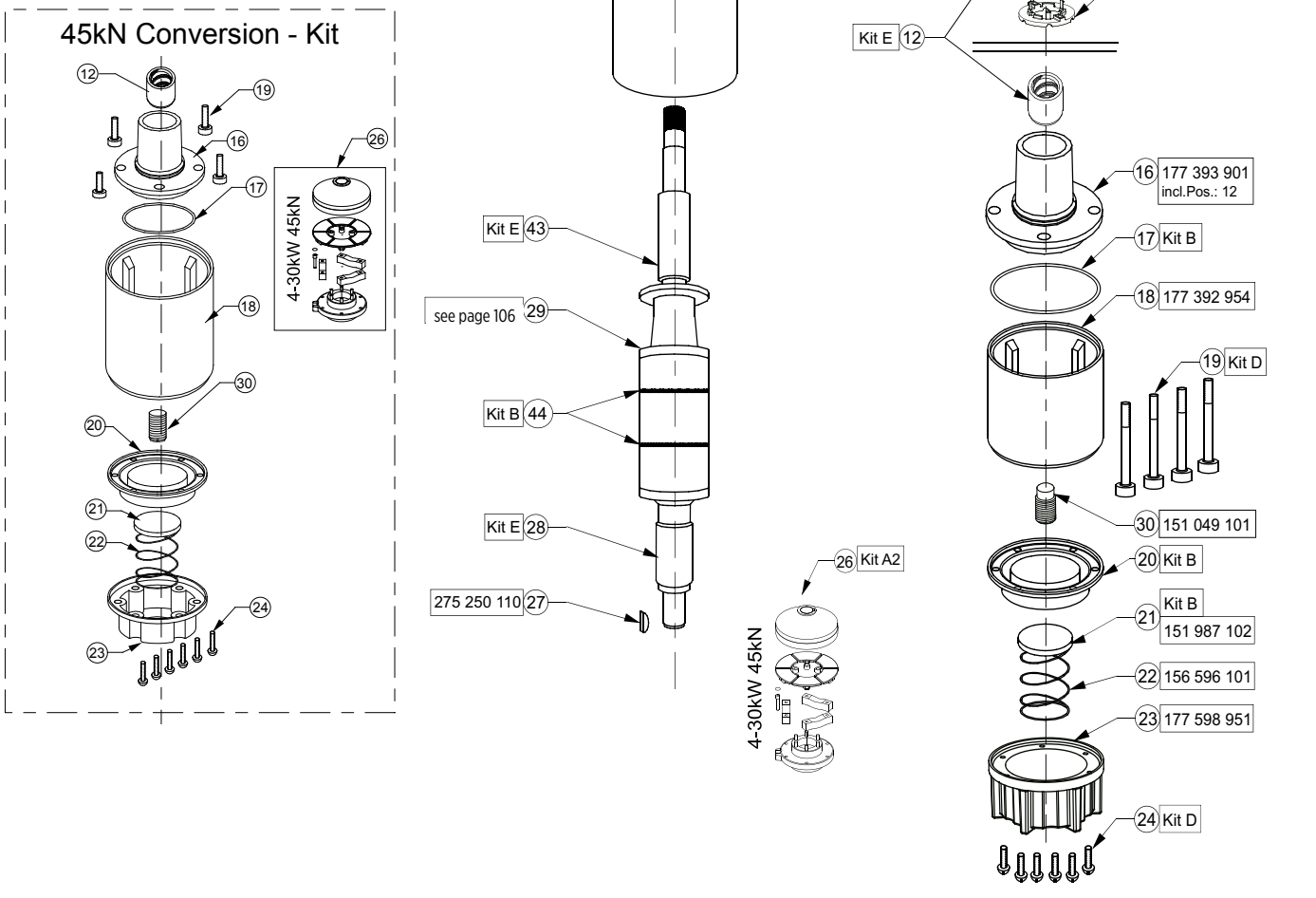
*Cables are designed for submerged operation. For air operation please consult Franklin Electric.

## 6" HighTemp 90 Encapsulated WW

**4 - 30 kW**

| | | | |
|---|---|---|---|
| Kit A2 | Thrust Bearing 15.500N | Incl.Pos.: 25; 26 | 308 750 120 |
| Kit A3 | Thrust Bearing 27.500N | Incl.Pos.: 26 | 308 750 200 |
| Kit A4 | Thrust Bearing 45.000N | Incl.Pos.: 26 | 308 750 510 |
| 45kN Conversion Kit A4 4,0 - 30kW | | incl. Pos.: 12; 16; 17; 18; 19 ; 20; 21; 22; 23; 24; 26; 30 | 308 750 500 |
| Kit B3 | Seal Kit | Incl.Pos.: 4; 17; 20; 21, 41; 44 | 308 800 250 |
| Kit C4 | Slinger Kit | Incl.Pos.: 1; 2; 3; 37 | 308 725 155 |
| Kit D5 | Screw Kit | Incl.Pos.: 5; 19; 24 | 308 659 155 |
| Kit E* | Radial Bearing Kit | Incl.Pos.: 12; 28 | 308 678 101 |

*** Parts are unfinished**

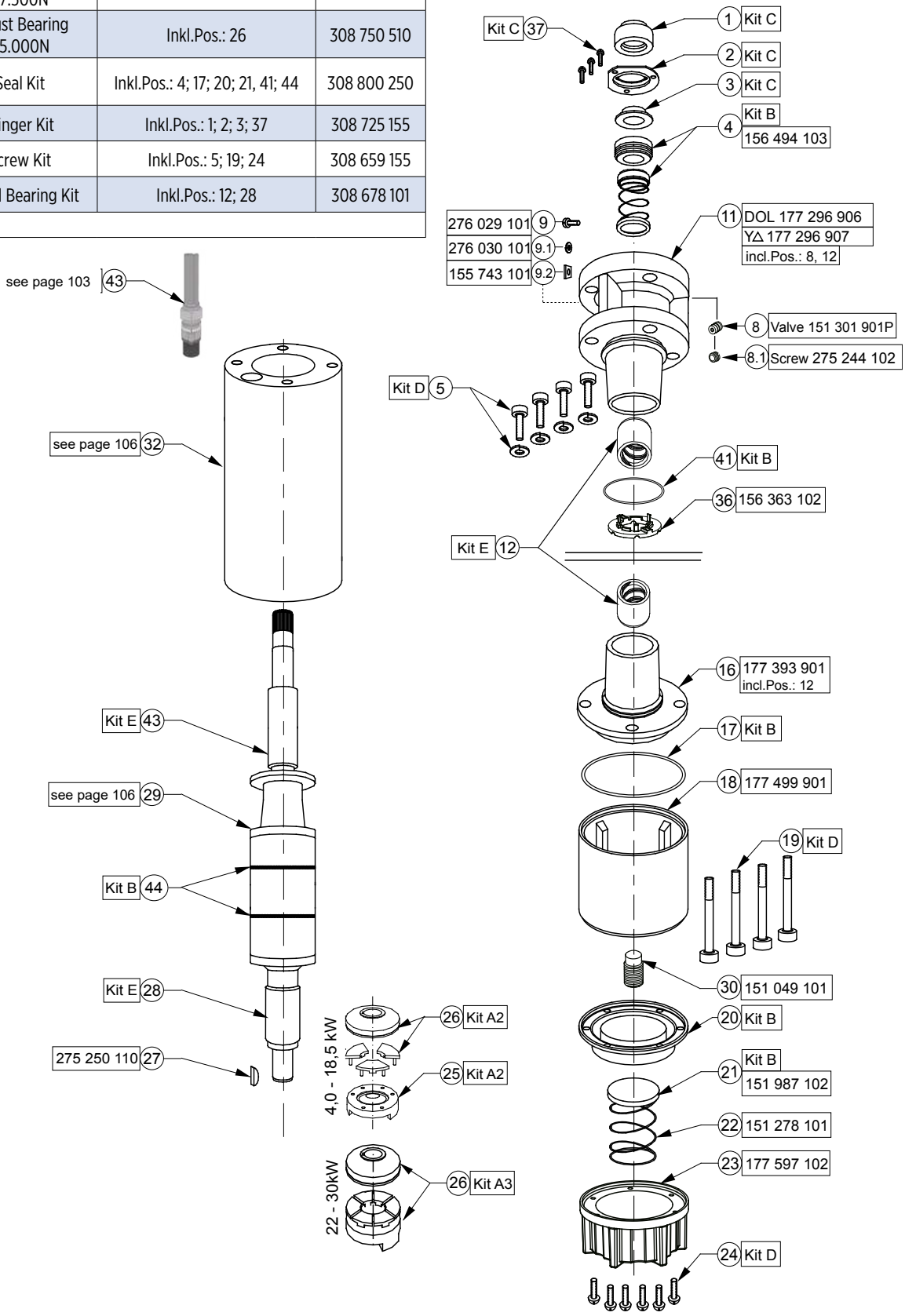


## 6" HighTemp 90 Encapsulated 316SS

### 4-30 kW

| | | | |
|---|---|---|---|
| Kit A2 | Thrust Bearing 15.500N | Inkl.Pos.: 25; 26 | 308 750 120 |
| Kit A3 | Thrust Bearing 27.500N | Inkl.Pos.: 26 | 308 750 200 |
| Kit A4 | Thrust Bearing 45.000N | Inkl.Pos.: 26 | 308 750 510 |
| Kit B3 | Seal Kit | Inkl.Pos.: 4; 17; 20; 21, 41; 44 | 308 800 250 |
| Kit C4 | Slinger Kit | Inkl.Pos.: 1; 2; 3; 37 | 308 725 155 |
| Kit D5 | Screw Kit | Inkl.Pos.: 5; 19; 24 | 308 659 155 |
| Kit E* | Radial Bearing Kit | Inkl.Pos.: 12; 28 | 308 678 101 |

* Parts are unfinished



## 6″ HighTemp 90 Replacement Stators and Rotors 50 Hz

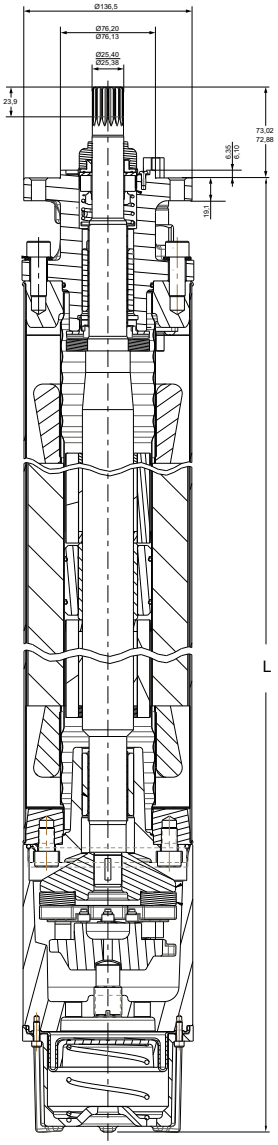
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | DOL | | YΔ | | Rotor 316 Model No. |
|---|---|---|---|---|---|---|---|
| | | | Motor Model No. | Stator 316 Model No. | Motor Model No. | Stator 316 Model No. | |
| **3,7** | 380 - 415 | 45.000 | 276 610 ***** | 331 634 903 | 276 710 ***** | 331 668 902 | 305 575 901 |
| **5,5** | 380 - 415 | 45.000 | 276 611 ***** | 331 635 903 | 276 711 ***** | 331 666 902 | 305 575 902 |
| **7,5** | 380 - 415 | 45.000 | 276 612 ***** | 331 636 903 | 276 712 ***** | 331 667 902 | 305 575 903 |
| **11,0** | 380 - 415 | 45.000 | 276 613 ***** | 305 482 974 | 276 713 ***** | 331 668 902 | 305 575 904 |
| **15,0** | 380 - 415 | 45.000 | 276 614 ***** | 331 616 903 | 276 714 ***** | 331 617 903 | 305 575 905 |
| **18,5** | 380 - 415 | 45.000 | 276 615 ***** | 305 485 972 | 276 715 ***** | 331 669 903 | 305 575 906 |
| **22,0** | 380 - 415 | 45.000 | 276 616 ***** | 305 486 976 | 276 716 ***** | 331 614 903 | 305 223 920 |
| **30,0** | 380 - 415 | 45.000 | 276 617 ***** | 305 490 913 | 276 717 ***** | 331 670 903 | 305 223 921 |

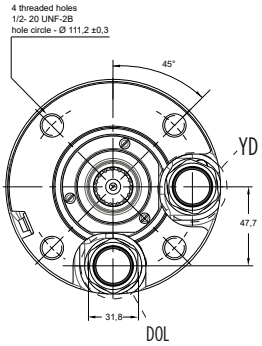
## 6″ HighTemp 90 Replacement Stators and Rotors 60 Hz

| $P_{max}$ [kW] | $U_N$ [V] | Thrust F [N] | DOL | | YΔ | | Rotor 316 Model No. |
|---|---|---|---|---|---|---|---|
| | | | Motor Model No. | Stator 316 Model No. | Motor Model No. | Stator 316 Model No. | |
| **4,3** | 230 | 45.000 | 276 600 | 331 *** *** | 276 720 | 331 *** *** | 305 575 901 |
| | 380 | 45.000 | 276 660 | 331 *** *** | 276 780 | 331 *** *** | |
| | 460 | 45.000 | 276 610 | 331 *** *** | 276 710 | 331 *** *** | |
| **6,3** | 230 | 45.000 | 276 601 | 331 *** *** | 276 721 | 331 *** *** | 305 575 902 |
| | 380 | 45.000 | 276 661 | 331 *** *** | 276 781 | 331 *** *** | |
| | 460 | 45.000 | 276 611 | 331 *** *** | 276 711 | 331 *** *** | |
| **8,6** | 230 | 45.000 | 276 602 | 331 *** *** | 276 722 | 331 *** *** | 305 575 903 |
| | 380 | 45.000 | 276 662 | 331 *** *** | 276 782 | 331 *** *** | |
| | 460 | 45.000 | 276 612 | 331 *** *** | 276 712 | 331 *** *** | |
| **12,7** | 230 | 45.000 | 276 603 | 331 *** *** | 276 723 | 331 *** *** | 305 575 904 |
| | 380 | 45.000 | 276 663 | 331 *** *** | 276 783 | 331 *** *** | |
| | 460 | 45.000 | 276 613 | 331 *** *** | 276 713 | 331 *** *** | |
| **17,2** | 230 | 45.000 | 276 604 | 331 *** *** | 276 724 | 331 *** *** | 305 575 905 |
| | 380 | 45.000 | 276 664 | 331 *** *** | 276 784 | 331 *** *** | |
| | 460 | 45.000 | 276 614 | 331 *** *** | 276 714 | 331 *** *** | |
| **21,3** | 230 | 45.000 | 276 605 | 331 *** *** | 276 725 | 331 *** *** | 305 575 906 |
| | 380 | 45.000 | 276 665 | 331 *** *** | 276 785 | 331 *** *** | |
| | 460 | 45.000 | 276 615 | 305 485 902 | 276 715 | 331 *** *** | |
| **25,3** | 230 | 45.000 | 276 606 | 331 *** *** | 276 726 | 331 *** *** | 305 223 920 |
| | 380 | 45.000 | 276 666 | 331 *** *** | 276 786 | 331 *** *** | |
| | 460 | 45.000 | 276 616 | 331 *** *** | 276 716 | 331 *** *** | |
| **34,5** | 230 | 45.000 | 276 607 | 331 *** *** | 276 727 | 331 *** *** | 305 223 921 |
| | 380 | 45.000 | 276 667 | 331 *** *** | 276 787 | 331 *** *** | |
| | 460 | 45.000 | 276 617 | 331 *** *** | 276 717 | 331 *** *** | |

# 6" HighTemp 90 Motor Design 4 - 30 kW

## WW / 316SS




### Material DIN / AISI

| Part | WW | 316 SS |
|---|---|---|
| **Shell** | 1.4301 | 1.4571 |
| **Upper end bell** | Cast iron powder coated | 1.4408 |
| **Thrust housing** | Cast iron powder coated | 1.4408 |
| **Mechanical seal** | SiC / SiC | SiC / SiC |
| **Seal cover** | 1.4301 | 1.4401 |
| **Slinger** | Viton | Viton |
| **Shaft end** | 1.4305 | 1.4542 |
| **Diaphragm** | Viton | Viton |
| **Lead** | Special compound based on PVC | |
| **Jam Nut (Lead)** | 1.4401 | 1.4401 |
| **Lead bushing** | 1.4401 | 1.4401 |

### Motor Sizes

| $P_N$ [kW] | WW / 316SS L [mm] | Motor Package Size [mm] | Shipping Weight [kg] |
|---|---|---|---|
| **4** | 670,5 | 222 x 267 x 876 | 53 |
| **5,5** | 735,5 | 222 x 267 x 940 | 59 |
| **7,5** | 800,6 | 222 x 267 x 1073 | 66 |
| **11** | 866 | 222 x 267 x 1073 | 71 |
| **15** | 931 | 222 x 267 x 1302 | 79 |
| **18,5** | 1061 | 222 x 267 x 1302 | 92 |
| **22** | 1429 | 223 x 267 x 1823 | 140 |
| **30** | 1581,6 | 223 x 267 x 1823 | 156 |

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## BENEFITS & FEATURES

- Double-flange NEMA mounting design
- Stainless steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's non-toxic water soluble fill solution
- High capacity Kingsbury type liquid lubricated thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- All motors manufactured in ISO 9001 certified plants and 100% tested
- Drinking water approvals

WATER WELL WW CI PC / 304SS

STAINLESS STEEL 304

STAINLESS STEEL 316

SAND FIGHTER

## STANDARD SPECIFICATION

- Ratings: 4 - 45 kW (100 Hz - 3000 rpm)
- Thrust load: 15.5 kN: 4 - 22 kW, 27.5 kN: 26 - 45 kW
- System Supply Voltage: 380 V (100 Hz)
- DOL- start
- Voltage Tolerance: ±10 % $U_N$
- Nominal ambient temperature: 30 °C
  4 - 22 kW: with 0.16 m/s cooling flow; > 22 kW: with 0.5 m/s cooling flow
- Protection IP68 and insulation class F
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Frequency of starts: 20 starts/hour (with min. 3 minutes resting time), equally distributed
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation reversible)
- All motors with factory installed leads



### OPTIONS

- Higher-graded materials: 304SS, 316SS
- Retrofitable PT 100 temperature sensor
  (VFD PT100 Plug-in card necessary, order no. 308 170 202)
- Special lead lengths
- High Thrust design 45 kN
- 120 Hz electrical design

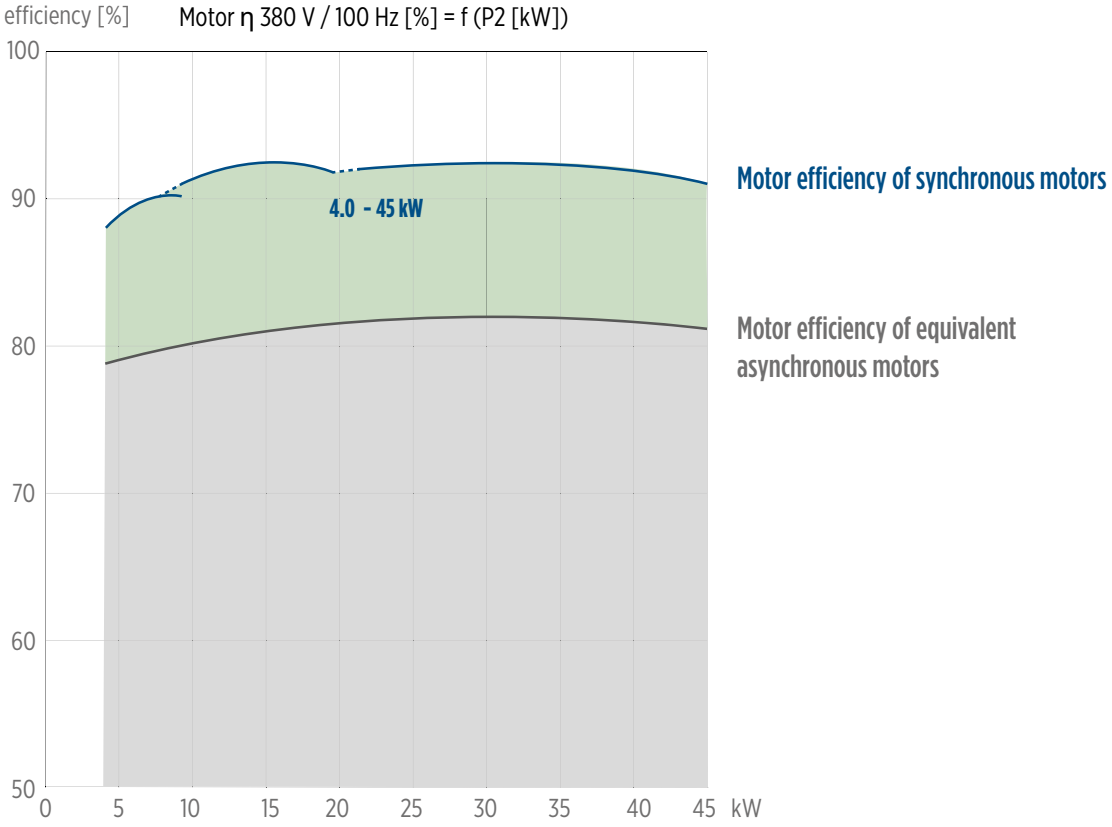
## 3~ DOL MODEL NUMBERS 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Digit 1 - 6 | Digit 7 - 10 | | |
|---|---|---|---|---|---|---|
| | | | | WW** | 304SS | Standard 316SS |
| | | | | Single pack with pre-installed lead* | Single pack with pre-installed lead* | Single pack with pre-installed lead* |
| 4 - 11 | 380 | 15.500 | 236 080 | 9561 | 1461 | 1561 |
| 13 - 22 | 380 | 15.500 | 236 084 | 9561 | 1461 | 1561 |
| 26 - 45 | 380 | 27.500 | 236 086 | 9561 | 1461 | 1561 |

* with 4 m motor short lead
** WW (Water well)- Stator 304SS / Castings - CI Powder coated

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM



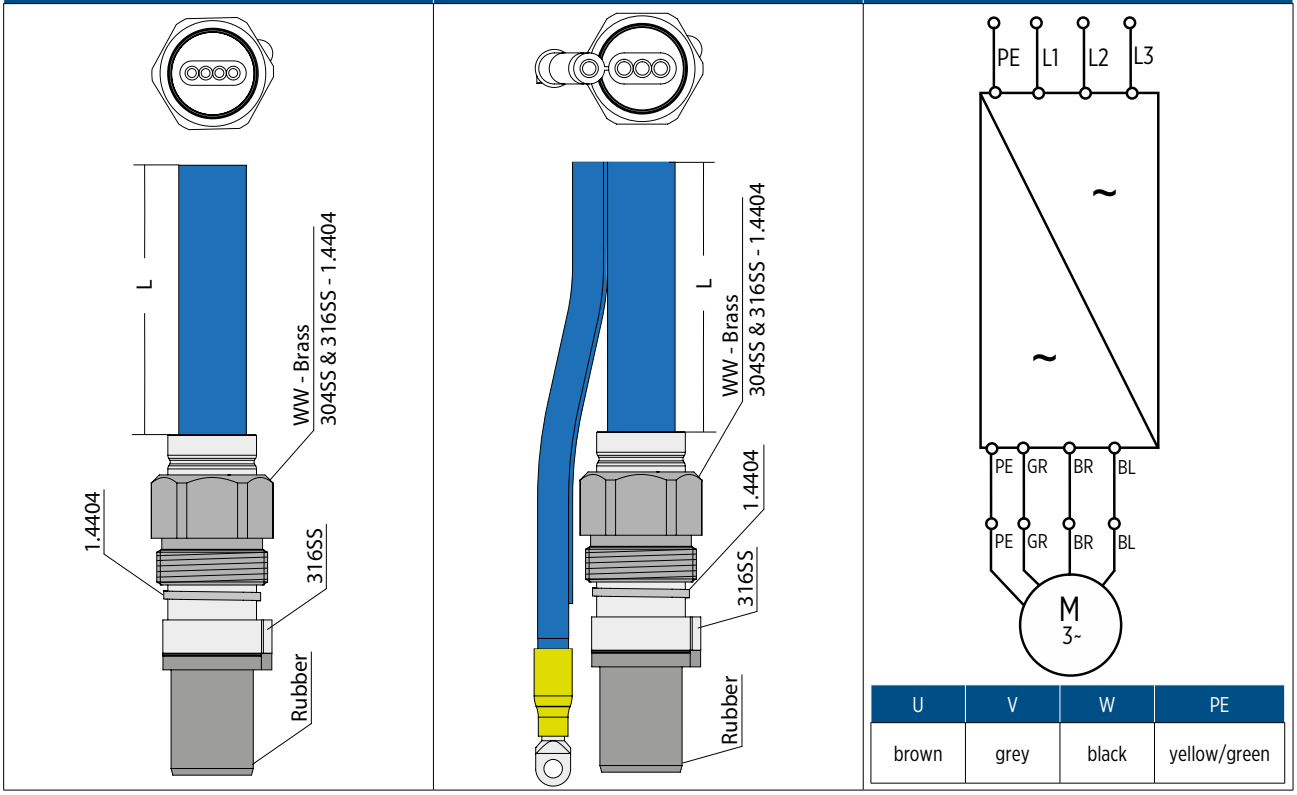

## 3~ MOTOR PERFORMANCE DATA 380 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | n [min$^{-1}$] | $I_N$ [A] | $I_A / I_N$ | η [%] | cos phi | $T_N$ [Nm] | $T_A / T_N$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 236 080 xxxx | 4 | 15500 | 380 | 3000 | 9.2 | 1 | 87.1 | 0.95 | 12.7 | 1 |
| | 5.5 | | | | 11.0 | 1 | 89.8 | 0.95 | 17.5 | 1 |
| | 7.5 | | | | 14.1 | 1 | 90.9 | 0.95 | 23.9 | 1 |
| 236 080 xxxx | 9.3 | 15500 | 380 | 3000 | 17.2 | 1 | 91.2 | 0.95 | 29.6 | 1 |
| | 11 | | | | 20.5 | 1 | 90.9 | 0.95 | 35.0 | 1 |
| 236 084 xxxx | 13 | 15500 | 380 | 3000 | 25.3 | 1 | 91.4 | 0.95 | 41.4 | 1 |
| | 15 | | | | 28.3 | 1 | 91.8 | 0.95 | 47.7 | 1 |
| 236 084 xxxx | 18.5 | 15500 | 380 | 3000 | 34.1 | 1 | 92.1 | 0.95 | 58.9 | 1 |
| 236 084 xxxx | 22 | 15500 | 380 | 3000 | 40.7 | 1 | 92.0 | 0.95 | 70.0 | 1 |
| 236 086 xxxx | 26 | 27500 | 380 | 3000 | 51.2 | 1 | 92.3 | 0.95 | 82.8 | 1 |
| | 30 | | | | 57.8 | 1 | 92.5 | 0.95 | 95.5 | 1 |
| 236 086 xxxx | 37 | 27500 | 380 | 3000 | 71.3 | 1 | 92.1 | 0.95 | 117.8 | 1 |
| 236 086 xxxx | 45 | 27500 | 380 | 3000 | 90.0 | 1 | 90.8 | 0.95 | 143.2 | 1 |

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

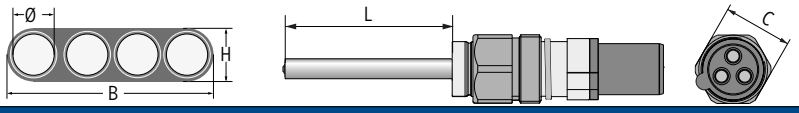
## ELECTRICAL CONNECTION AND MOTOR LEADS 3~ DOL

| 4G4 mm² | 3 x 8.4 + 1G 8.4 mm² | Electrical connection |
|---|---|---|

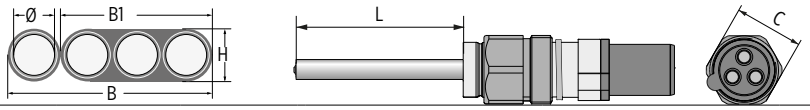



| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

| Motor lead* | | | | | | |
|---|---|---|---|---|---|---|
| 4 - 22 kW | | | | | | |
| Ø [mm²] | C [mm] | B [mm] | H [mm] | L [m] | WW | 316SS |
| 4G4 | 32 | 19 | 7 | 4 | 310 125 004 | 310 125 504 |




| 26 - 45 kW | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ø [mm²] | C [mm] | B [mm] | B1 [mm] | B1 [mm] | H [mm] | WW | 316SS |
| 3x8.4+1G8.4 | 32 | 29.5 | 19.5 | 19.5 | 8.9 | 310 145 004 | 310 145 504 |




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

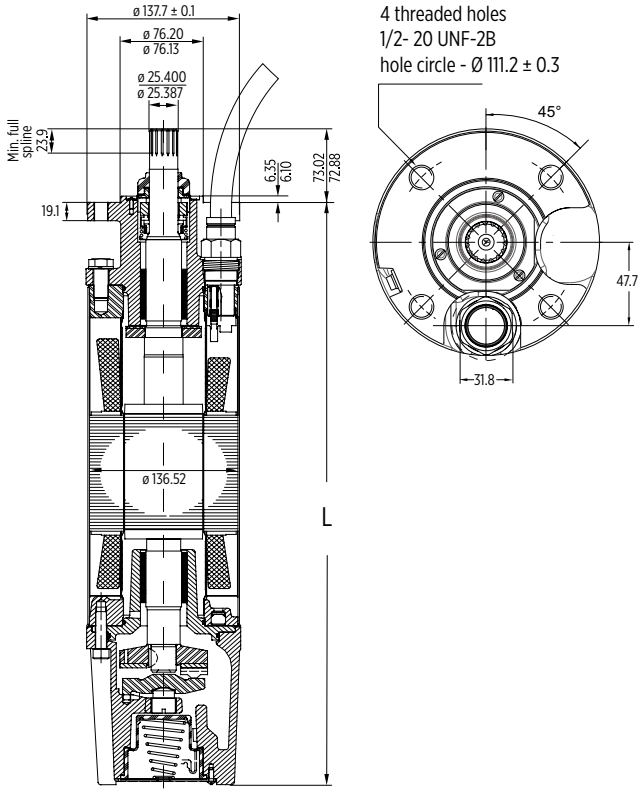
## WINDING RESISTANCE 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V [Ohm]* | Rotor Ref. |
|---|---|---|---|---|
| 4 - 11 | 380 | 327 245 ... | 0.86 | 178 130 921 |
| 13 - 22 | 380 | 327 250 ... | 0.33 | 178 130 923 |
| 26 - 45 | 380 | 327 257 ... | 0.19 | 178 130 925 |

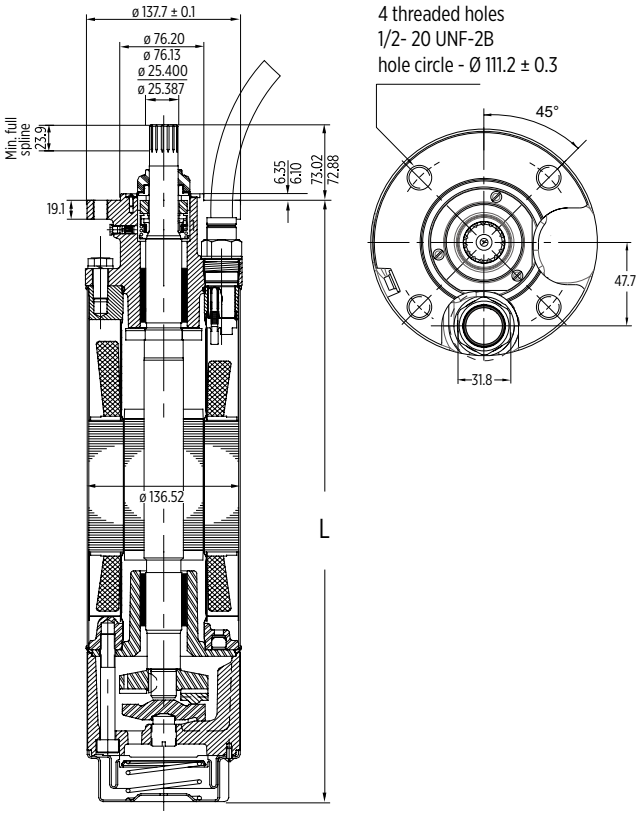
# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## MOTOR DIMENSIONS AND MATERIALS

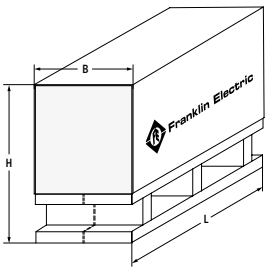
### WW




### 304SS & 316SS




## MOTOR DIMENSIONS

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | WW | 304SS/316SSS | M [kg] | Motor with lead in single pack | | Motor packing |
|---|---|---|---|---|---|---|---|---|
| | | | L [mm] | L [mm] | | B x H x L [mm] | [kg] | |
| 4 - 11 | 380 | 15.500 | 634,5 | 625,2 | 43,0 | 155 x 340 x 800 | 45 |  |
| 13 - 22 | 380 | 15.500 | 793,5 | 784,2 | 57,4 | 155 x 340 x 1070 | 61 | |
| 26 - 45 | 380 | 27.500 | 1020,5 | 1011,2 | 78,0 | 155 x 340 x 1070 | 84 | |



Tolerances according to NEMA MG 1-18.388

## MOTOR MATERIAL DESCRIPTION

| Part | WW | 304SS | 316SS |
|---|---|---|---|
| Shell | 1.4301 | 1.4301 | 1.4571 |
| Upper end bell | Cast iron powder coated | 1.4301 | 1.4408 |
| Thrust housing | Cast iron powder coated | 1.4301 | 1.4408 |
| Mechanical seal | SiC / SiC | SiC / SiC | SiC / SiC |
| Seal cover | 1.4301 | 1.4301 | 1.4401 |
| Slinger | EPDM | EPDM | EPDM |
| Shaft end* | 1.4021 | 1.4021 | 1.4462 |
| Diaphragm | EPDM | EPDM | EPDM |
| Lead | EPR | EPR | EPR |

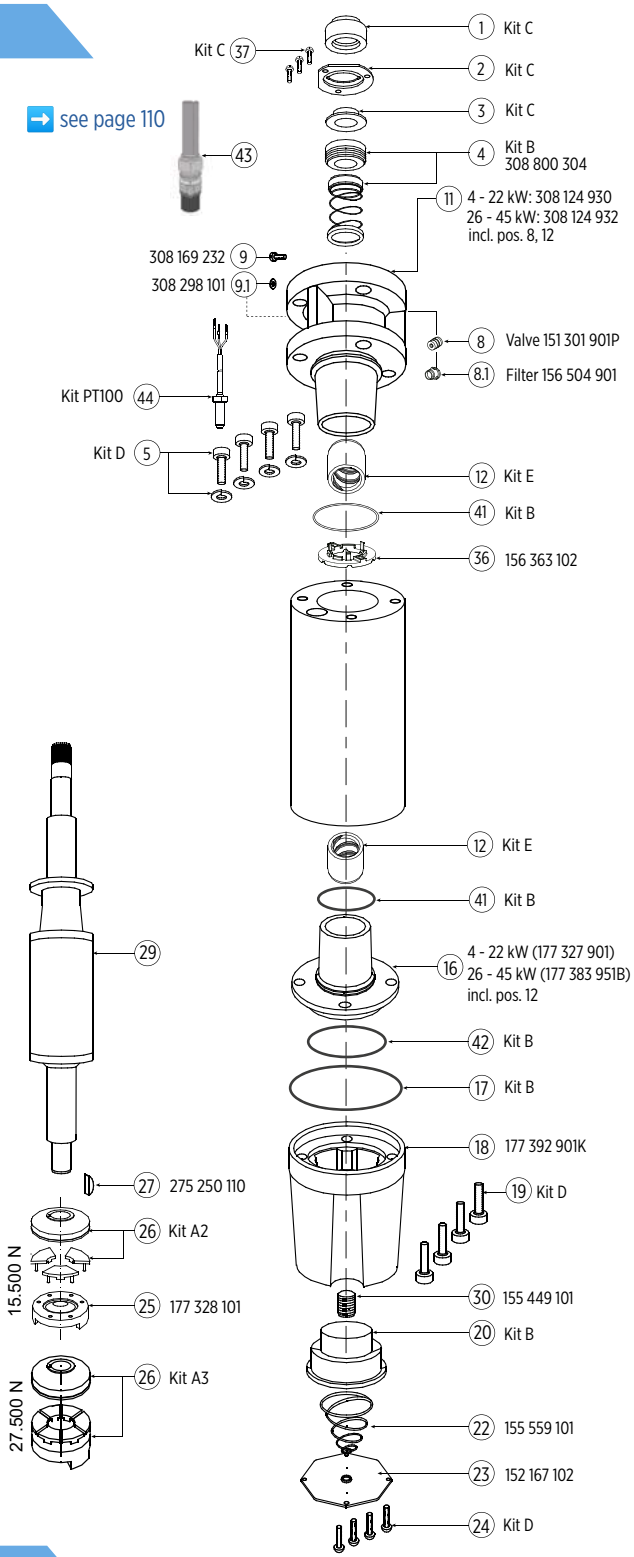
* running change to 1.4462 (WIP)

# 6" 3~ ENCAPSULATED PM MOTOR SPARE PARTS WW

## MOTOR PARTS DESCRIPTION

| Kit | part description | incl. positions | order no. |
|---|---|---|---|
| Kit A2 15.500N | Thrust bearing kit up to 22 kW | 26 | 308 750 120 |
| Kit A3 27.500N | Thrust bearing kit 26 - 45 kW | 26 | 308 750 120 |
| Kit B1 | Seal kit | 4, 17, 20, 41, 42 | 308 800 125 |
| Kit C1 | Slinger kit | 1, 2, 3, 37 | 308 725 101 |
| Kit D1 | Screw kit | 5, 19, 24 | 308 659 121 |
| Kit E1* | Radial bearing kit up to 22 kW | 12 | 308 678 103 |
| Kit E2 | Radial bearing kit 26 - 45 kW | 12 | 308 678 110 |
| PT100 Kit | | 44 | see page 305 |

* Kit without rotor shaft sleeves, flange replacement bushings are unfinished




## SPARE PARTS STATOR AND ROTOR WW 380 V / 100 HZ

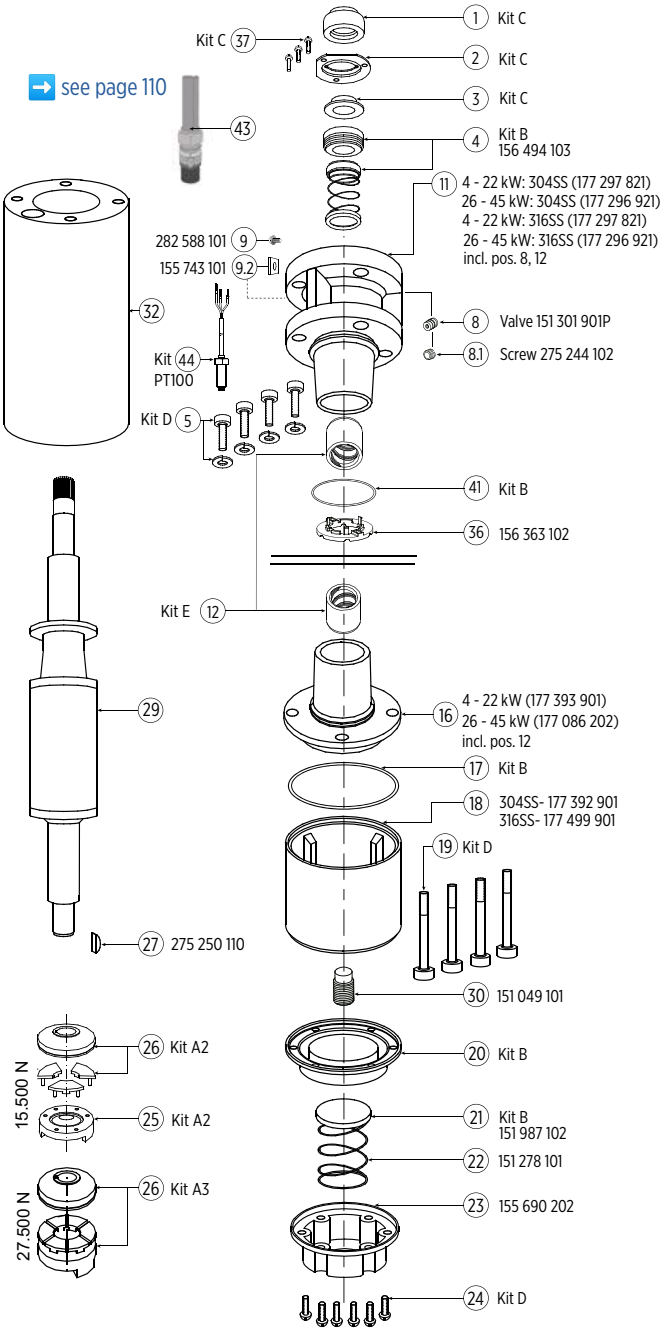
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | Stator Model No. | Rotor |
|---|---|---|---|---|---|
| 4 - 11 | 380 | 15.500 | 236 080 9561 | 327 245 963K | 178 130 901K |
| 13 - 22 | 380 | 15.500 | 236 084 9561 | 327 250 963K | 178 130 903K |
| 26 - 45 | 380 | 27.500 | 236 086 9561 | 327 257 963K | 178 130 905K |

# 6" 3~ ENCAPSULATED PM MOTOR SPARE PARTS 304SS / 316SS

## MOTOR PARTS DESCRIPTION

| Kit | part description | incl. positions | order no. |
|---|---|---|---|
| Kit A2 | Thrust bearing kit 15.500 N | 26 | 308 750 120 |
| Kit A3 | Thrust bearing kit 27.500 N | 26 | 308 750 200 |
| Kit B3 | Seal kit | 4, 17, 20, 21, 41, 44 | 308 800 250 |
| Kit C3 | Slinger kit | 1, 2, 3, 37 | 308 725 150 |
| Kit D5 | Screw kit | 5, 19, 24 | 308 659 155 |
| Kit E1* | Radial bearing kit up to 22 kW | 12 | 308 678 103 |
| Kit E2 | Radial bearing kit 26 - 45 kW | 12 | 308 678 110 |
| PT100 Kit | | 44 | see page 305 |

* Kit without rotor shaft sleeves, flange replacement bushings are unfinished




## SPARE PARTS STATOR AND ROTOR 304 / 316SS 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | | Stator Model No. | Rotor |
|---|---|---|---|---|---|---|
| | | | 304SS | 316SS | | |
| 4 - 11 | 380 | 15.500 | 236 080 1461 | 236 080 1561 | 327 245 983K | 178 130 921K |
| 13 - 22 | 380 | 15.500 | 236 084 1461 | 236 084 1561 | 327 250 983K | 178 130 923K |
| 26 - 45 | 380 | 27.500 | 236 086 1461 | 236 086 1561 | 327 257 983K | 178 130 925K |

# 8" ENCAPSULATED MOTOR

**High-quality encapsulated motor with hermetically-sealed windings**

## FEATURES & BENEFITS

- Double flange NEMA mounting design
- Stainless steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's FES91 motor fill solution for frost protection down to -15 °C storage temperature.
- Liquid lubricated radial bearings and High capacity Kingsbury type 45 kN thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Drinking water approvals

## STANDARD SPECIFICATION

- Ratings: 30 - 150 kW
- Max. storage temperature - 15 °C to + 60 °C
- Nominal ambient temperature: 30 °C (with 0.16 m/s cooling flow)
- Standard Voltage:
  50 Hz: - 10 % / + 6 % $U_N$ [(380 - 10 %) – (415 + 6 %)]
  60 Hz: ± 10 % $U_N$, [460 V]
- Protection IP68 and insulation class F
- Motor protection: DIN 61947-4-1
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 4 m
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation reversible)
- Integrated sensor for SubMonitor™

► SubMonitor™ Protection

## OPTIONS

- Higher-graded materials: 316SS
- Special voltages
- Retrofitable PT 100 temperature sensor



## MOTOR MODEL NUMBERS 50 HZ - 3-PHASEN DESIGN

| $P_N$ [kW] | $U_N$ [V] | Model number Digit 1 - 6 | | Model number Digit 7 – 10 with SubMonitor Transmitter | | | |
|---|---|---|---|---|---|---|---|
| | | DOL | YΔ | WW** | | 316 SS | |
| | | | | DOL | YΔ | DOL | YΔ |
| **30** | 380, 400, 415 | 239 600 | 239 620 | 7023 | 8023 | 7223 | 8223 |
| | 500,525 | 239 670 | 239 720 | 7023 | 8023 | - | - |
| **37** | 380, 400, 415 | 239 601 | 239 621 | 7023 | 8023 | 7223 | 8223 |
| | 500,525 | 239 671 | 239 721 | 7023 | 8023 | - | - |
| **45** | 380, 400, 415 | 239 602 | 239 622 | 7023 | 8023 | 7223 | 8223 |
| | 500,525 | 239 672 | 239 722 | 7023 | 8023 | - | - |
| **55** | 380, 400, 415 | 239 603 | 239 623 | 7043 | 8043 | 7243 | 8243 |
| | 500,525 | 239 673 | 239 723 | 7043 | 8043 | - | - |
| **75** | 380, 400, 415 | 239 604 | 239 624 | 7043 | 8043 | 7243 | 8243 |
| | 500,525 | 239 674 | 239 724 | 7043 | 8043 | - | - |
| **93** | 380, 400, 415 | 239 105 | 239 125 | 7019 | 8019 | 7219 | 8219 |
| | 500,525 | 239 175 | 239 225 | 7019 | 8019 | - | - |
| **110** | 380, 400, 415 | 239 106 | 239 126 | 7519 | 7619 | 7219 | 8219 |
| | 500,525 | 239 176 | 239 226 | 7519 | 7619 | - | - |
| **130** | 380, 400, 415 | 239 107 | 239 127 | 7519 | 7619 | 7219 | 8219 |
| | 500,525 | 239 177 | 239 227 | 7519 | 7619 | - | - |
| **150** | 380, 400, 415 | 239 108 | 239 128 | 7519 | 7619 | 7219 | 8219 |
| | 500,525 | 239 178 | 239 228 | 7519 | 7619 | - | - |

* VFD operation is only allowed up to 400V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH
** WW (Water well)- Stator 304SS / Castings - CI Powder coated

## MOTOR MODEL NUMBERS 60 HZ - 3-PHASEN DESIGN

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Model number Digit 1 - 6 | | Model number Digit 7 – 10 with SubMonitor Transmitter | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DOL | YΔ | WW* | | 316 SS | |
| | | | | | DOL | YΔ | DOL | YΔ |
| 30 | 40 | 230 | - | 239 650 | - | 8023 | 7223 | 8223 |
| | | 380 | 239 660 | 239 680 | 7023 | 8023 | 7223 | 8223 |
| | | 460 | 239 600 | 239 620 | 7023 | 8023 | 7223 | 8223 |
| | | 575 | 239 610 | - | 7023 | 8023 | 7223 | 8223 |
| 37 | 50 | 230 | - | 239 651 | - | 8023 | 7223 | 8223 |
| | | 380 | 239 661 | 239 681 | 7023 | 8023 | 7223 | 8223 |
| | | 460 | 239 601 | 239 621 | 7023 | 8023 | 7223 | 8223 |
| | | 575 | 239 611 | - | 7023 | 8023 | 7223 | 8223 |
| 45 | 57,8 | 230 | - | 239 652 | - | 8023 | 7223 | 8223 |
| | | 380 | 239 662 | 239 682 | 7023 | 8023 | 7223 | 8223 |
| | | 460 | 239 602 | 239 622 | 7023 | 8023 | 7223 | 8223 |
| | | 575 | 239 612 | - | 7023 | 8023 | 7223 | 8223 |
| 55 | 64 | 230 | - | 239 653 | - | 8043 | 7243 | 8243 |
| | | 380 | 239 663 | 239 683 | 7043 | 8043 | 7243 | 8243 |
| | | 460 | 239 603 | 239 623 | 7043 | 8043 | 7243 | 8243 |
| | | 575 | 239 613 | - | 7043 | 8043 | 7243 | 8243 |
| 75 | 86 | 230 | - | 239 654 | - | 8043 | 7243 | 8243 |
| | | 380 | 239 664 | 239 684 | 7023 | 8043 | 7243 | 8243 |
| | | 460 | 239 604 | 239 624 | 7023 | 8043 | 7243 | 8243 |
| | | 575 | 239 614 | - | 7023 | 8043 | 7243 | 8243 |
| 93 | 107 | 380 | 239 165 | 239 185 | 7019 | 8019 | 7219 | 8219 |
| | | 460 | 239 105 | 239 125 | 7019 | 8019 | 7219 | 8219 |
| | | 575 | 239 115 | - | 7019 | 8019 | 7219 | 8219 |
| 110 | 128 | 380 | 239 166 | 239 186 | 7519 | 7619 | 7219 | 8219 |
| | | 460 | 239 106 | 239 126 | 7519 | 7619 | 7219 | 8219 |
| | | 575 | 239 116 | - | 7519 | 7619 | 7219 | 8219 |
| 130 | 150 | 380 | 239 167 | 239 187 | 7519 | 7619 | 7219 | 8219 |
| | | 460 | 239 107 | 239 127 | 7519 | 7619 | 7219 | 8219 |
| | | 575 | 239 117 | - | 7519 | 7619 | 7219 | 8219 |
| 150 | 170 | 380 | 239 168 | 239 188 | 7519 | 7619 | 7219 | 8219 |
| | | 460 | 239 108 | 239 128 | 7519 | 7619 | 7219 | 8219 |
| | | 575 | 239 118 | - | 7519 | 7619 | 7219 | 8219 |

* WW (Water well)- Stator 304SS / Castings - CI Powder coated

## MOTOR PERFORMANCE DATA 50 HZ - 3-PHASEN DESIGN

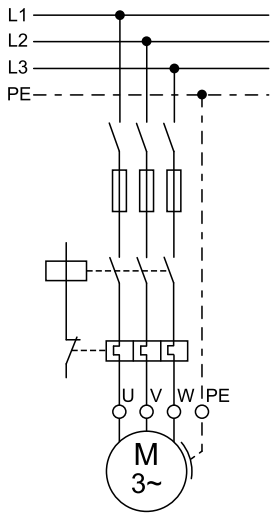
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cosφ (Pf.) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **30** | 45 000 | 380 | 2890 | 61 | 397 | 85 | 86 | 86 | 0,75 | 0,84 | 0,88 | 98 | 231 |
| | | 400 | 2900 | 61 | 418 | 83 | 86 | 86 | 0,68 | 0,78 | 0,84 | 97 | 255 |
| | | 415 | 2910 | 62 | 433 | 82 | 85 | 86 | 0,62 | 0,73 | 0,80 | 97 | 275 |
| | | 500 | 2890 | 47 | 302 | 85 | 86 | 86 | 0,75 | 0,84 | 0,88 | | |
| | | 525 | 2900 | 47 | 318 | 83 | 86 | 86 | 0,68 | 0,78 | 0,84 | | |
| **37** | 45 000 | 380 | 2905 | 75 | 507 | 85 | 87 | 87 | 0,78 | 0,85 | 0,89 | 122 | 266 |
| | | 400 | 2920 | 74 | 534 | 84 | 87 | 87 | 0,71 | 0,81 | 0,86 | 121 | 295 |
| | | 415 | 2925 | 74 | 554 | 83 | 86 | 87 | 0,66 | 0,76 | 0,83 | 121 | 317 |
| | | 500 | 2905 | 57 | 385 | 85 | 87 | 87 | 0,78 | 0,85 | 0,89 | | |
| | | 525 | 2920 | 57 | 404 | 84 | 87 | 87 | 0,71 | 0,81 | 0,86 | | |
| **45** | 45 000 | 380 | 2910 | 89 | 612 | 86 | 87 | 87 | 0,77 | 0,85 | 0,89 | 146 | 363 |
| | | 400 | 2920 | 89 | 645 | 85 | 87 | 87 | 0,71 | 0,81 | 0,85 | 145 | 395 |
| | | 415 | 2925 | 89 | 669 | 84 | 86 | 87 | 0,65 | 0,76 | 0,82 | 146 | 428 |
| | | 500 | 2910 | 68 | 466 | 86 | 87 | 87 | 0,77 | 0,85 | 0,89 | | |
| | | 525 | 2920 | 68 | 494 | 85 | 87 | 87 | 0,71 | 0,81 | 0,85 | | |
| **55** | 45 000 | 380 | 2910 | 111 | 819 | 86 | 88 | 88 | 0,79 | 0,86 | 0,89 | 182 | 507 |
| | | 400 | 2920 | 108 | 862 | 85 | 87 | 88 | 0,72 | 0,82 | 0,87 | 182 | 563 |
| | | 415 | 2925 | 108 | 895 | 84 | 87 | 88 | 0,67 | 0,78 | 0,84 | 182 | 605 |
| | | 500 | 2910 | 85 | 623 | 86 | 88 | 88 | 0,79 | 0,86 | 0,89 | | |
| | | 525 | 2920 | 83 | 661 | 85 | 87 | 88 | 0,72 | 0,82 | 0,87 | | |
| **75** | 45 000 | 380 | 2920 | 153 | 1208 | 86 | 87 | 87 | 0,71 | 0,81 | 0,86 | 243 | 637 |
| | | 400 | 2930 | 153 | 1272 | 85 | 87 | 87 | 0,63 | 0,75 | 0,81 | 242 | 706 |
| | | 415 | 2935 | 156 | 1319 | 84 | 87 | 87 | 0,57 | 0,70 | 0,77 | 242 | 760 |
| | | 500 | 2920 | 113 | 835 | 86 | 88 | 88 | 0,79 | 0,86 | 0,89 | | |
| | | 525 | 2925 | 111 | 861 | 85 | 87 | 87 | 0,72 | 0,82 | 0,87 | | |
| **93** | 45 000 | 380 | 2920 | 194 | 1265 | 85 | 87 | 87 | 0,75 | 0,83 | 0,86 | 303 | 511 |
| | | 400 | 2930 | 190 | 1332 | 84 | 86 | 87 | 0,68 | 0,78 | 0,83 | 302 | 567 |
| | | 415 | 2935 | 191 | 1382 | 83 | 86 | 87 | 0,63 | 0,74 | 0,80 | 302 | 610 |
| | | 500 | 2920 | 148 | 961 | 85 | 87 | 87 | 0,75 | 0,83 | 0,86 | | |
| | | 525 | 2930 | 145 | 1015 | 84 | 86 | 87 | 0,68 | 0,78 | 0,83 | | |
| **110** | 45 000 | 380 | 2920 | 226 | 1517 | 86 | 88 | 88 | 0,77 | 0,84 | 0,87 | 364 | 694 |
| | | 400 | 2930 | 222 | 1597 | 85 | 87 | 88 | 0,70 | 0,80 | 0,84 | 363 | 769 |
| | | 415 | 2935 | 223 | 1657 | 84 | 87 | 88 | 0,64 | 0,75 | 0,81 | 363 | 828 |
| | | 500 | 2920 | 172 | 1153 | 86 | 88 | 88 | 0,77 | 0,84 | 0,87 | | |
| | | 525 | 2930 | 170 | 1217 | 85 | 87 | 88 | 0,70 | 0,80 | 0,84 | | |
| **130** | 45 000 | 380 | 2910 | 260 | 1651 | 86 | 87 | 87 | 0,83 | 0,87 | 0,89 | 425 | 837 |
| | | 400 | 2920 | 252 | 1738 | 86 | 87 | 88 | 0,79 | 0,84 | 0,87 | 424 | 927 |
| | | 415 | 2930 | 247 | 1803 | 85 | 87 | 88 | 0,74 | 0,81 | 0,86 | 423 | 1153 |
| | | 500 | 2910 | 198 | 1255 | 86 | 87 | 87 | 0,83 | 0,87 | 0,89 | | |
| | | 525 | 2920 | 192 | 1324 | 86 | 87 | 88 | 0,79 | 0,84 | 0,87 | | |
| **150** | 45 000 | 380 | 2910 | 294 | 1765 | 86 | 88 | 88 | 0,83 | 0,88 | 0,90 | 487 | 933 |
| | | 400 | 2920 | 284 | 1858 | 86 | 88 | 88 | 0,79 | 0,86 | 0,88 | 485 | 1034 |
| | | 415 | 2930 | 277 | 1928 | 86 | 88 | 88 | 0,75 | 0,83 | 0,87 | 485 | 1113 |
| | | 500 | 2910 | 224 | 1341 | 86 | 88 | 88 | 0,83 | 0,88 | 0,90 | | |
| | | 525 | 2920 | 217 | 1416 | 86 | 88 | 88 | 0,79 | 0,86 | 0,88 | | |

## MOTOR PERFORMANCE DATA 60 HZ - 3-PHASEN DESIGN

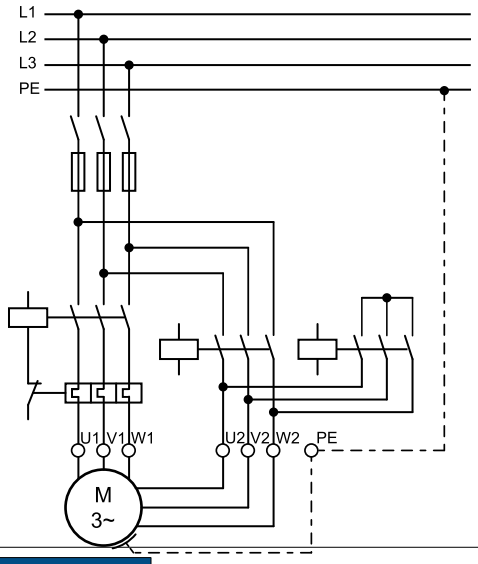
| $P_N$ [kW] | $P_{max.}$ [kW] | Thrust F [N] | $U_N$ [V] | HZ | $n_N$ [$min^{-1}$] | $I_{max.}$ [A] | $I_A$ [A] | $\eta_{max}$ [%] **at % load** | LINE TO LINE RESISTANCE [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| 30 | **40** | 45000 | 380 | 60 | 3525 | 72 | 479 | 86 | .16-.20 |
| | | | 460 | 60 | 3525 | 60 | 396 | 86 | .24-.30 |
| | | | 575 | 60 | 3525 | 48 | 317 | 86 | .39-.49 |
| 37 | **50** | 45000 | 380 | 60 | 3525 | 88 | 656 | 87 | .12-.16 |
| | | | 460 | 60 | 3525 | 73 | 542 | 87 | .18-.22 |
| | | | 575 | 60 | 3525 | 59 | 434 | 87 | .28-.34 |
| 45 | **57,8** | 45000 | 380 | 60 | 3525 | 104 | 797 | 87 | .09-.11 |
| | | | 460 | 60 | 3515 | 86 | 658 | 88 | .14-.17 |
| | | | 575 | 60 | 3525 | 69 | 526 | 87 | .22-.28 |
| 55 | **64** | 45000 | 380 | 60 | 3525 | 130 | 1046 | 88 | .06-.09 |
| | | | 460 | 60 | 3515 | 107 | 864 | 88 | .10-.13 |
| | | | 575 | 60 | 3525 | 86 | 691 | 88 | .16-.21 |
| 75 | **86** | 45000 | 380 | 60 | 3525 | 172 | 1466 | 89 | .05-.06 |
| | | | 460 | 60 | 3520 | 142 | 1211 | 87 | .07-.09 |
| | | | 575 | 60 | 3525 | 114 | 969 | 89 | .11-.13 |
| 93 | **107** | 45000 | 380 | 60 | 3525 | 228 | 1596 | 86 | .03-.04 |
| | | | 460 | 60 | 3520 | 188 | 1318 | 84 | .05-.07 |
| | | | 575 | 60 | 3525 | 151 | 1054 | 86 | .08-.11 |
| 110 | **128** | 45000 | 380 | 60 | 3525 | 266 | 1961 | 87 | .02-.03 |
| | | | 460 | 60 | 3520 | 219 | 1620 | 86 | .04-.05 |
| | | | 575 | 60 | 3525 | 176 | 1296 | 87 | .06-.08 |
| 130 | **150** | 45000 | 380 | 60 | 3525 | 302 | 1991 | 88 | .02-.04 |
| | | | 460 | 60 | 3515 | 249 | 1645 | 88 | .04-.05 |
| | | | 575 | 60 | 3525 | 200 | 1316 | 88 | .06-.08 |
| 150 | **170** | 45000 | 380 | 60 | 3525 | 342 | 2270 | 88 | .02-.03 |
| | | | 460 | 60 | 3510 | 282 | 1875 | 89 | .03-.05 |
| | | | 575 | 60 | 3525 | 226 | 1500 | 88 | .05-.07 |

## ELECTRICAL CONNECTION - 3-PHASE DESIGN

**DOL**




**YΔ**



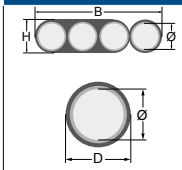

| U | V | W | PE |
|---|---|---|---|
| black | grey | brown | yellow/green |

# WINDING RESISTANCE DATA 50 HZ - 3-PHASE DESIGN

| | | 3 ~ DOL | | 3 ~ YΔ | |
|---|---|---|---|---|---|
| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V / Ohm<br>V - W / Ohm<br>U - W / Ohm | Stator Ref. | $U_1$ - $U_2$ / Ohm<br>$V_1$ - $V_2$ / Ohm<br>$W_1$ - $W_2$ / Ohm |
| **30** | 220 | - | **-** | 338 382 ... | **0.123 - 0.150** |
| | 380, 400, 415 | 338 382 ... | **0.247 - 0.302** | 338 443 ... | **0.345 - 0.423** |
| | 500, 525 | 338 610 ... | **0.399 - 0.487** | 338 610 ... | **0.621 - 0.759** |
| **37** | 220 | - | **-** | 338 383 ... | **0.090 - 0.111** |
| | 380, 400, 415 | 338 383 ... | **0.181 - 0.221** | 338 588 ... | **0.272 - 0.332** |
| | 500, 525 | 338 611 ... | **0.280 - 0.342** | 338 611 ... | **0.464 - 0.566** |
| **45** | 220 | - | **-** | 338 384 ... | **0.071 - 0.087** |
| | 380, 400, 415 | 338 384 ... | **0.142 - 0.174** | 338 645 ... | **0.210 - 0.257** |
| | 500, 525 | 338 612 ... | **0.227 - 0.277** | 338 612 ... | **0.369 - 0.450** |
| **55** | 220 | - | **-** | 338 385 ... | **0.053 - 0.065** |
| | 380, 400, 415 | 338 385 ... | **0.105 - 0.128** | 338 646 ... | **0.164 - 0.200** |
| | 500, 525 | 338 613 ... | **0.169 - 0.207** | 338 613 ... | **0.267 - 0.327** |
| **75** | 220 | - | **-** | 338 386 ... | **0.036 - 0.045** |
| | 380, 400, 415 | 338 386 ... | **0.073 - 0.089** | 338 591 ... | **0.102 - 0.125** |
| | 500, 525 | 338 614 ... | **0.129 - 0.158** | 338 614 ... | **0.198 - 0.243** |
| **93** | 380,400,415 | 336 053 ... | **0.055 - 0.067** | 336 053 ... | **0.083 - 0.101** |
| | 500, 525 | 338 514 ... | **0.091 - 0.112** | 338 514 ... | **0.137 - 0.168** |
| **110** | 380,400,415 | 336 054 ... | **0.046 - 0.056** | 336 054 ... | **0.069 - 0.084** |
| | 500, 525 | 338 515 ... | **0.086 - 0.106** | 338 515 ... | **0.129 - 0.159** |
| **130** | 380,400,415 | 336 524 ... | **0.042 - 0.052** | 336 524 ... | **0.063 - 0.078** |
| | 500, 525 | 338 516 ... | **0.073 - 0.090** | 338 516 ... | **0.110 - 0.135** |
| **150** | 380,400,415 | 336 055 ... | **0.036 - 0.044** | 336 055 ... | **0.054 - 0.066** |
| | 500, 525 | 337 071 ... | **0.057 - 0.070** | 337 071 ... | **0.086 - 0.105** |

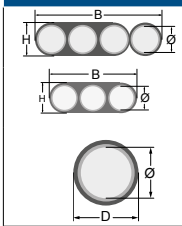
## VDE / KTW Approved Leads* WW / 316SS

### 3 ~ DOL start

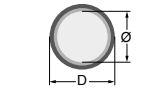
| | $P_N$ [kW] | Ø [mm²] | Size [mm] | Type | Qty. | L (m) | Part numbers | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | WW | 316SS |
|  | **30 - 45** | 3X8,4 + 1G8,4 mm² | B 29,5 / H 8,9 | VDE/KTW | 1 | 8 | 305 312 901 | 305 312 911 |
| | **55 - 93** | 3 x (1X16 mm²) | D 11,6 (±0,2) | VDE/KTW | 1 | 8 | 305 310 901 | 305 310 951 |
| | **110 –150*** | 3 x (1X35 mm²) | Ø 14,5 (±0,3) | VDE/KTW | 1 | 8 | 305 309 901 | |

* 3 Leads with single conductors

### 3 ~ YΔ Start (Pos. of cables 90°

| | $P_N$ [kW] | Ø [mm²] | Size [mm] | Type | Qty. | L (m) | Part numbers | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | WW | 316SS |
|  | **30 - 45** | 3X8,4 + 1G8,4 mm² | B 29,5 / H 8,9 | VDE/KTW | 1 | 8 | 305 312 902 | 305 312 912 |
| | | 1x 3X8,4 mm² | B 19,6 / H 8,9 | | 1 | | | |
| | **55 - 150** | 3 x (1X16 mm²) | D 11,6 (±0,2) | VDE/KTW | 2 | 8 | 305 310 901 | 305 310 951 |

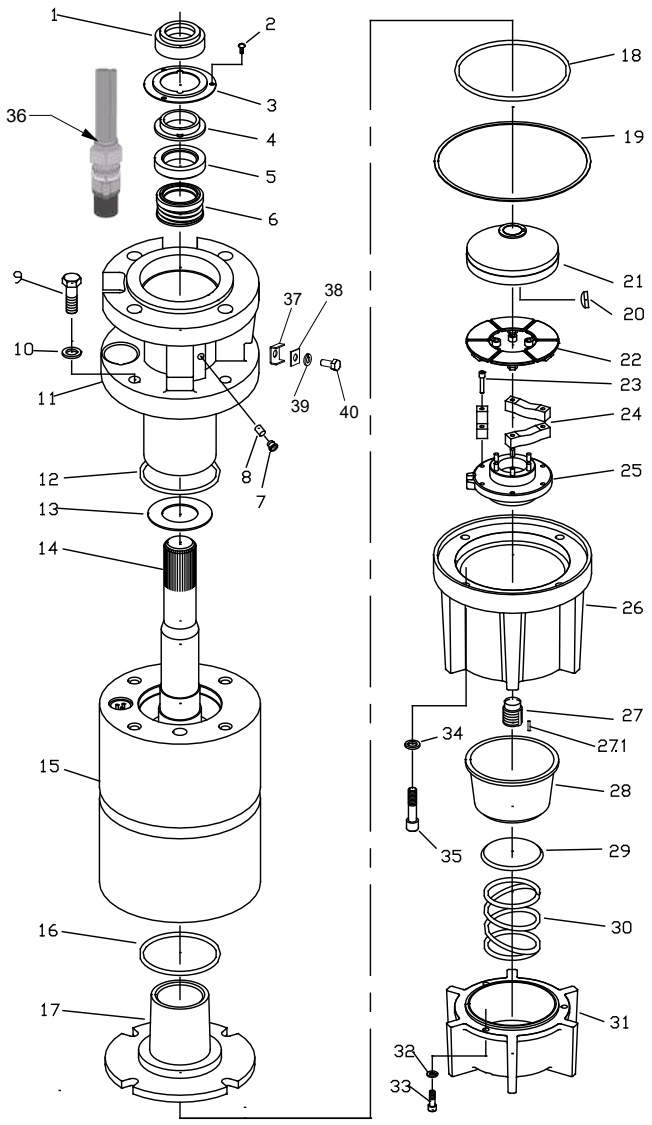
## Ground Leads

| | $P_N$ [kW] | Ø | Size [mm] | Type | Qty. | L (m) | Part numbers |
|---|---|---|---|---|---|---|---|
| | | | | | | | WW/316SS |
|  | **55 - 150** | 1G25 mm² | D 13 mm (±0,3) | VDE/KTW | 1 | 8 | 308 053 080 |

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

## 8" Encapsulated Standard Motor WW Design

**30 - 45 kW Type 2.1*****



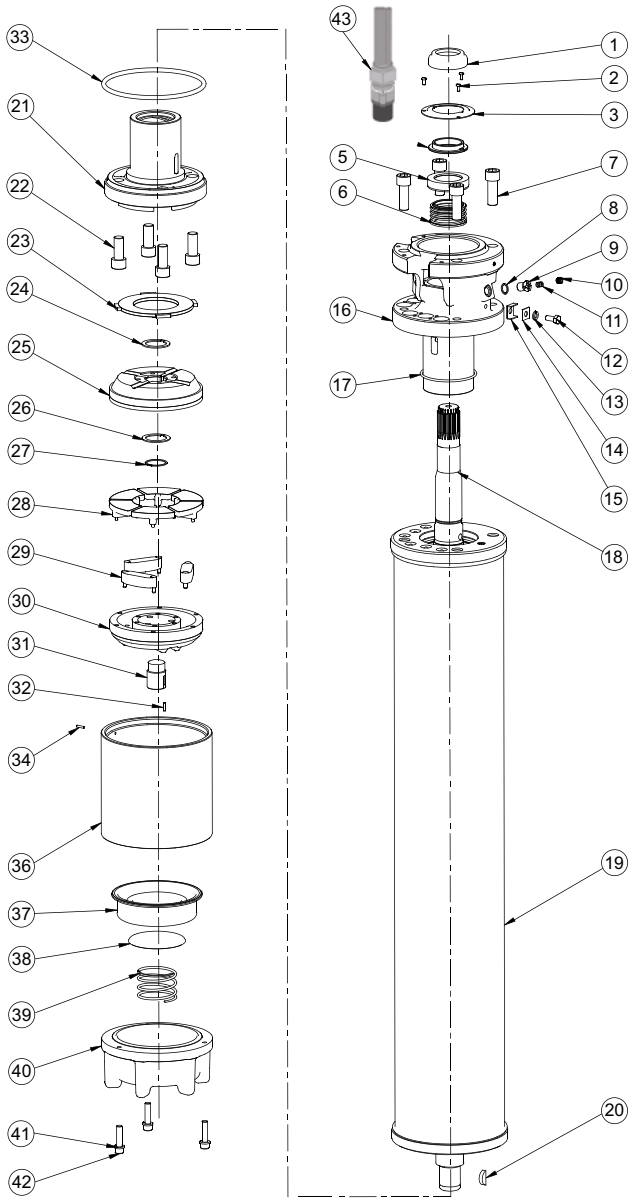

| Position | Part Description | Qty | Kit |
|---|---|---|---|
| 1 | Rubber Slinger | 1 | B |
| 2 | Bushing Cover Screw | 3 | B, F |
| 3 | Bushing Cover | 1 | B |
| 4 | Slinger Bushing | 1 | B |
| 5, 6 | Shaft Seal | 1 | B |
| 7 | Filter Assembly | 1 | B |
| 8 | Valve Assembly | 1 | B |
| 9, 10 | Screw/Lockwasher | 4 | C, D, F |
| 11 | End Bell, Upper w/Radial Brg | 1 | C, D |
| 12 | O-Ring | 1 | B, C, D |
| 13 | Upthrust Washer | 1 | A |
| 14 | Rotor | 1 | see page 122/123 |
| 15 | Stator | 1 | see page 122/123 |
| 16 | O-Ring | 1 | B, E |
| 17 | End Bell, Lower w/Radial Brg | 1 | E |
| 18 | O-Ring | 1 | B, E |
| 19 | Gasket | 1 | B |
| 20 | Woodruff Key | 1 | A |
| 21 | Thrust Disc Asm | 1 | A |
| 22, 23, 24, 25 | Thrust Segment Asm | 1 | A |
| 26 | Thrust Housing | 1 | G |
| 27 | Adjusting Screw | 1 | A |
| 27.1 | Pin (Brass) | 1 | A |
| 28 | Diaphragm | 1 | B |
| 29 | Spring Plate | 1 | B |
| 30 | Diaphragm Spring | 1 | B |
| 31 | Diaphragm Cover | 1 | H |
| 32, 33 | Screw/Lockwasher | 3 | F, H |
| 34, 35 | Screw/Lockwasher | 4 | F, G |
| 36 | Lead | 1/2 | see page 119 |
| 37 | U - Clip | 1 | 152 283 101 |
| 38 | Washer | 1 | 275 609 101 |
| 39 | Lockwasher | 1 | 275 606 110 |
| 40 | Ground screw | 1 | 276 015 102 |

| | Description | Includes Pos. | Part Number |
|---|---|---|---|
| **Kit A** 40 - 60 HP | Thrust Bearing | 13, 19 - 25, 27, 27.1 | 305 428 001 |
| **Kit B1** 40 - 60 HP | Seal SiC | 1 - 8, 12, 16, 18, 19, 28 - 30 | 305 428 011 |
| **Kit C1** 40 - 60 HP 3 Lead | End Bell, Upper | 9 - 12 | 305 428 003 |
| **Kit D1** 40 - 60 HP 6 Lead | End Bell, Upper | 9 - 12 | 305 428 005 |
| **Kit E** 40 - 60 HP | End Bell, Lower* | 16 - 18 | 305 428 007 |
| **Kit F** 40 - 60 HP | Fasteners* | 2, 9, 10, 32 - 35 | 305 428 017 |
| **Kit G** 40 - 60 HP | Thrust Housing | 26, 34, 35 | 305 428 009 |
| **Kit H** 40 - 60 HP | Diaphragm Cover | 31 - 33 | 305 428 010 |
| **Kit I** Type 2.1 Motors | Radial Bearing** | SS Sleeve & Carbon Bushing | 305 428 054 |

* Suitable for WW and 316SS Motors
** Parts are Semi finished
*** Spare parts for motors build up to june 2015 please contact FE

## 8" Encapsulated Standard Motor WW Design

**55 - 150 kW Type 1**




| Position | Part Description | Qty | Kit |
|---|---|---|---|
| **1** | Rubber Slinger | 1 | B |
| **2** | Bushing Cover Screw | 3 | B, F |
| **3** | Bushing Cover | 1 | B |
| **4** | Slinger Bushing | 1 | B |
| **5, 6** | Shaft Seal | 1 | B |
| **7** | Screw/Lockwasher | 4 | C, D, F |
| **8, 9, 11** | Valve Assembly | 1 | B, C, D |
| **10** | Filter Assembly | 1 | B |
| **12, 13, 14, 15** | Ground Lug Asm | 1 | C, D |
| **16** | End Bell, Upper w/Radial Brg | 1 | C, D |
| **17** | O-Ring | 1 | B, C, D |
| **18** | Rotor | 1 | see page 122/123 |
| **19** | Stator | 1 | see page 122/123 |
| **20** | Woodruff Key | 1 | A |
| **21** | End Bell, Lower w/Radial Brg | 1 | E |
| **22** | Screw | 4 | E, F |
| **23** | Upthrust Washer | 1 | A<br>155 318 201K |
| **24, 26, 27** | Shim/Retainer Ring | 1 | A |
| **25** | Thrust Disc Asm | 1 | A |
| **28, 29, 30** | Thrust Segment Asm | 1 | A |
| **31** | Adjusting Screw | 1 | A |
| **32** | Pin | 1 | A |
| **33** | O-Ring | 1 | A, E |
| **34** | Pin (Brass) Ø5 x 14mm | 1 | G |
| **36** | Thrust Housing | 1 | G |
| **35** | Plug | 1 | -- |
| **37** | Diaphragm | 1 | B |
| **38** | Spring Plate | 1 | B |
| **39** | Diaphragm Spring | 1 | B |
| **40** | Diaphragm Cover | 1 | H |
| **41, 42** | Screw/Lockwasher | 3 | F, H |
| **43** | Lead | 3 / 6 | see page 119 |

| | Description | Includes Pos. | Part Number |
|---|---|---|---|
| **Kit A** 75 - 200 HP | Thrust Bearing | 20, 23 - 33 | 305 428 020 |
| **Kit B1** 75 - 200 HP | Seal Kit | 1 – 6, 10, 11, 17, 32, 33, 37 - 39 | 305 428 021 |
| **Kit B2** 75 - 200 HP | Seal SiC *** | 1 – 6, 10, 11, 17, 32, 33, 37 - 39 | 305 428 022 |
| **Kit C1** 75 HP 3 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 023 |
| **Kit C2** 150 - 200 HP 3 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 024 |
| **Kit D** 75 - 200 HP 6 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 025 |
| **Kit E** 75 - 200 HP | End Bell, Lower* | 21, 22, 32, 33 | 305 428 037 |
| **Kit F** 75 – 200 HP | Fasteners* | 2, 7, 22, 41, 42 | 305 428 039 |
| **Kit G** 75 - 200 HP | Thrust Housing | 34, 36 | 305 428 029 |
| **Kit H** 75 - 200 HP | Diaphragm Cover | 40 - 42 | 305 428 030 |
| **Kit I Type 1 Motors** | Radial Bearing** | SS Sleeve & Carbon Bushing | 305 428 055 |

* Suitable for WW and 316SS Motors
** Parts are Semi finished
*** Spring DM 62,7mm for 125 - 200 HP only

## Replacement Stators and Rotors WW / 50 Hz

**3 ~ Direct start with SubMonitor Transmitter**

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator | Rotor |
|---|---|---|---|---|
| **30** | 380, 400, 415 | 239 600 7023 | 305 500 901 | 575 122 925 |
| | 500, 525 | 239 670 7023 | 338 610 902 | |
| **37** | 380, 400, 415 | 239 601 7023 | 305 501 901 | 575 122 930 |
| | 500, 525 | 239 671 7023 | 338 611 903 | |
| **45** | 380, 400, 415 | 239 602 7023 | 305 502 901 | 575 122 931 |
| | 500, 525 | 239 672 7023 | 338 612 904 | |
| **55** | 380, 400, 415 | 239 603 7043 | 338 386 915 | 575 122 920 |
| | 500, 525 | 239 673 7043 | 338 613 902 | |
| **75** | 380, 400, 415 | 239 604 7043 | 338 386 915 | 575 122 921 |
| | 500, 525 | 239 674 7043 | 338 614 907 | |
| **93** | 380, 400, 415 | 239 105 7019 | 305 505 901 | 575 122 922 |
| | 500, 525 | 239 175 7019 | 338 514 951 | |
| **110** | 380, 400, 415 | 239 106 7519 | 305 506 902 | 575 122 923 |
| | 500, 525 | 239 176 7519 | 338 515 951 | |
| **130** | 380, 400, 415 | 239 107 7519 | 336 524 101 | 575 122 924 |
| | 500, 525 | 239 177 7519 | * | |
| **150** | 380, 400, 415 | 239 108 7519 | 336 055 905 | 575 122 918 |
| | 500, 525 | 239 178 7519 | 337 071 912 | |

## Replacement Stators and Rotors WW / 50 Hz

**3 ~ YΔ Start with SubMonitor Transmitter (Pos. of cabels 90°)**

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator | Rotor |
|---|---|---|---|---|
| **30** | 220 | 239 400 8023 | 338 382 911 | 575 122 925 |
| | 380, 400, 415 | 239 620 8023 | 305 500 503 | |
| | 500, 525 | 239 720 8023 | 338 610 904 | |
| **37** | 220 | 239 401 8023 | 305 501 903 | 575 122 930 |
| | 380, 400, 415 | 239 621 8023 | 305 501 904 | |
| | 500, 525 | 239 721 8023 | 338 611 906 | |
| **45** | 220 | 239 402 8023 | 305 502 902 | 575 122 931 |
| | 380, 400, 415 | 239 622 8023 | 305 502 905 | |
| | 500, 525 | 239 722 8023 | 338 612 906 | |
| **55** | 220 | 239 403 8043 | 305 503 904 | 575 122 920 |
| | 380, 400, 415 | 239 623 8043 | 305 503 909 | |
| | 500, 525 | 239 723 8043 | 338 613 906 | |
| **75** | 220 | 239 404 8043 | 338 386 904 | 575 122 921 |
| | 380, 400, 415 | 239 624 8043 | 305 504 904 | |
| | 500, 525 | 239 724 8043 | 305 504 908 | |
| **93** | 380, 400, 415 | 239 125 8019 | 305 505 903 | 575 122 922 |
| | 500, 525 | 239 225 8019 | 305 505 910 | |
| **110** | 380, 400, 415 | 239 126 7619 | 305 506 903 | 575 122 923 |
| | 500, 525 | 239 226 7619 | 338 515 952 | |
| **130** | 380, 400, 415 | 239 127 7619 | 336 524 917 | 575 122 924 |
| | 500, 525 | 239 227 7619 | 338 516 902 | |
| **150** | 380, 400, 415 | 239 128 7619 | 336 055 919 | 575 122 918 |
| | 500, 525 | 239 228 7619 | 337 071 914 | |

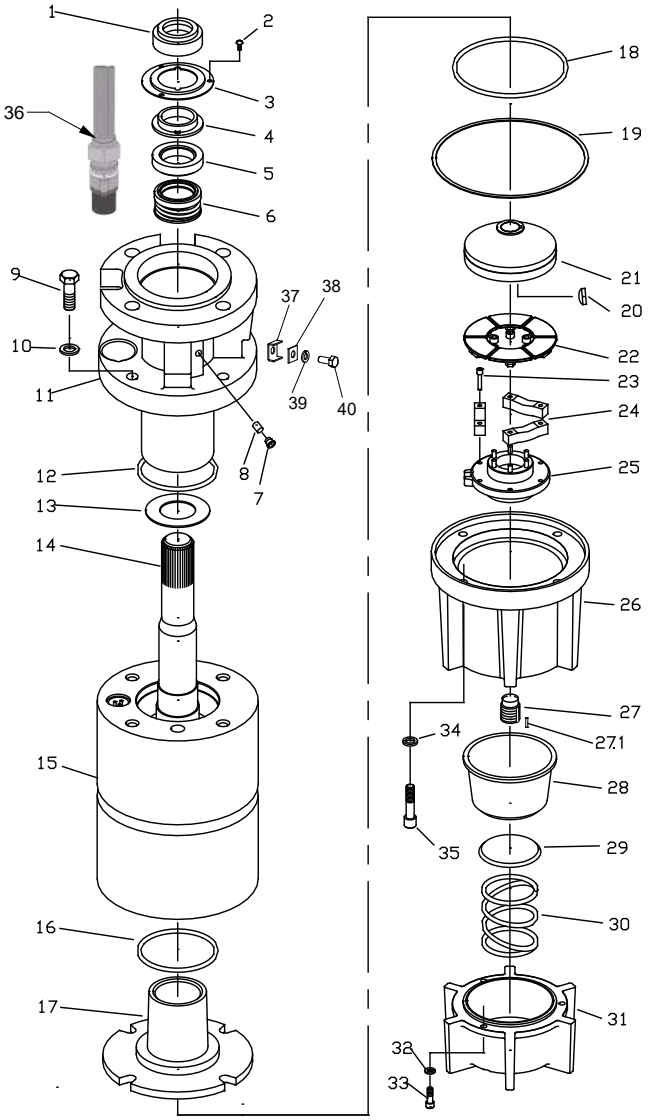
## Replacement Stators and Rotors - 3~ DOL 60 HZ - WW MOTORS

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Stator* | Rotor |
|---|---|---|---|---|
| 30 | 40 | 230 | | 575 122 925 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 37 | 50 | 230 | | 575 122 930 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 45 | 57,8 | 230 | | 575 122 931 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 55 | 64 | 230 | | 575 122 932 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 75 | 86 | 230 | | 575 122 917 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 93 | 107 | 380 | | 575 122 922 |
| | | 460 | | |
| | | 575 | | |
| 110 | 128 | 380 | | 575 122 923 |
| | | 460 | | |
| | | 575 | | |
| 130 | 150 | 380 | | 575 122 924 |
| | | 460 | | |
| | | 575 | | |
| 150 | 170 | 380 | | 575 122 918 |
| | | 460 | | |
| | | | | |

* Spare parts stators 60 Hz on request

# 8" Encapsulated 316SS

**30 - 45 kW Type 2.1*****



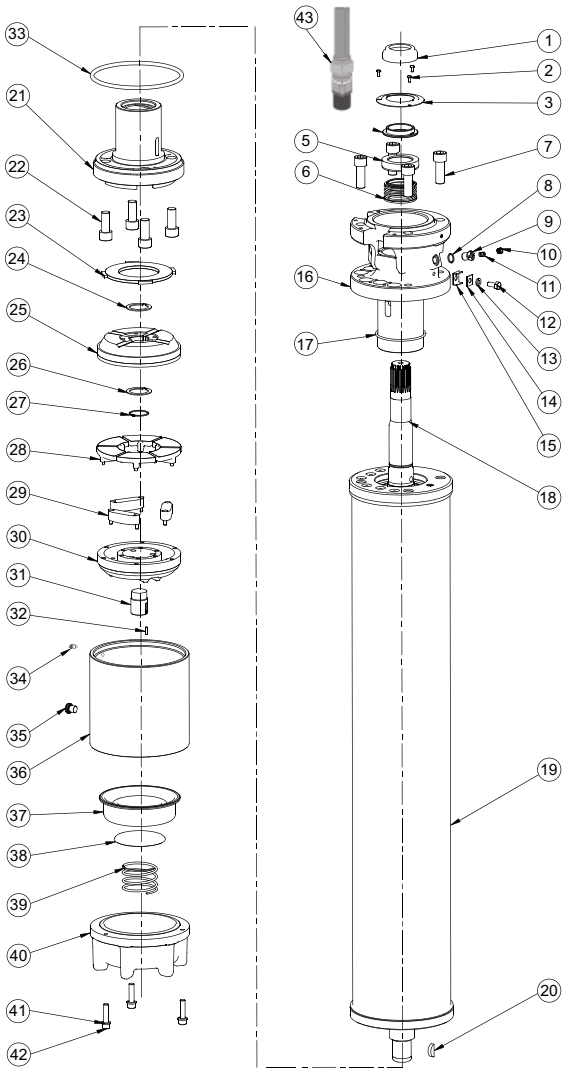

| Position | Part Description | Qty | Kit |
|---|---|---|---|
| **1** | Rubber Slinger | 1 | B |
| **2** | Bushing Cover Screw | 3 | B, F |
| **3** | Bushing Cover | 1 | B |
| **4** | Slinger Bushing | 1 | B |
| **5, 6** | Shaft Seal | 1 | B |
| **7** | Filter Assembly | 1 | B |
| **8** | Valve Assembly | 1 | B |
| **9, 10** | Screw/Lockwasher | 4 | C, D, F |
| **11** | End Bell, Upper w/Radial Brg | 1 | C, D |
| **12** | O-Ring | 1 | B, C, D |
| **13** | Upthrust Washer | 1 | A, B1<br>155 941 101 |
| **14** | Rotor | 1 | see page 126/127 |
| **15** | Stator | 1 | see page 126/127 |
| **16** | O-Ring | 1 | B, E |
| **17** | End Bell, Lower w/Radial Brg | 1 | E |
| **18** | O-Ring | 1 | B, E |
| **19** | Gasket | 1 | B |
| **20** | Woodruff Key | 1 | A |
| **21** | Thrust Disc Asm | 1 | A |
| **22, 23, 24, 25** | Thrust Segment Asm | 1 | A |
| **26** | Thrust Housing | 1 | G |
| **27** | Adjusting Screw | 1 | A |
| **27.1** | Pin (Brass) | 1 | A |
| **28** | Diaphragm | 1 | B |
| **29** | Spring Plate | 1 | B |
| **30** | Diaphragm Spring | 1 | B |
| **31** | Diaphragm Cover | 1 | H |
| **32, 33** | Screw/Lockwasher | 3 | F, H |
| **34, 35** | Screw/Lockwasher | 4 | F, G |
| **36** | Lead | 1/2 | see page 119 |
| **37** | U - Clip | 1 | 152 283 101 |
| **38** | Washer | 1 | 275 609 101 |
| **39** | Lockwasher | 1 | 275 606 110 |
| **40** | Ground screw | 1 | 276 015 102 |

| | Description | Includes Pos. | Part Number |
|---|---|---|---|
| **Kit A** 40 - 60 HP | Thrust Bearing* | 13, 19 - 25, 27, 27.1 | 305 428 001 |
| **Kit B** 40 - 60 HP | Seal Kit | 1 - 8, 12, 16, 18, 19, 28 - 30 | 305 428 012 |
| **Kit C1** 40 - 60 HP 3 Lead | End Bell, Upper | 9 - 12 | 305 428 013 |
| **Kit D1** 40 - 60 HP 6 Lead | End Bell, Upper | 9 - 12 | 305 428 015 |
| **Kit E** 40 - 60 HP | End Bell, Lower* | 16 - 18 | 305 428 007 |
| **Kit F** 40 - 60 HP | Fasteners* | 2, 9, 10, 32 - 35 | 305 428 017 |
| **Kit G** 40 - 60 HP | Thrust Housing | 26, 34, 35 | 305 428 018 |
| **Kit H** 40 - 60 HP | Diaphragm Cover | 31 - 33 | 305 428 019 |
| **Kit I** Type 2.1 Motors | Radial Bearing** | SS Sleeve & Carbon Bushing | 305 428 054 |

* Suitable for WW and 316SS Motors
** Parts are Semi finished
*** Spare parts for motors build up to june 2015 please contact FE

## 8" Encapsulated 316SS

**55 - 150 kW Type 1**



| Position | Part Description | Qty | Kit |
|---|---|---|---|
| 1 | Rubber Slinger | 1 | B |
| 2 | Bushing Cover Screw | 3 | B, F |
| 3 | Bushing Cover | 1 | B |
| 4 | Slinger Bushing | 1 | B |
| 5, 6 | Shaft Seal | 1 | B |
| 7 | Screw/Lockwasher | 4 | C, D, F |
| 8, 9, 11 | Valve Assembly | 1 | B, C, D |
| 10 | Filter Assembly | 1 | B |
| 12, 13, 14, 15 | Ground Lug Asm | 1 | C, D |
| 16 | End Bell, Upper w/Radial Brg | 1 | C, D |
| 17 | O-Ring | 1 | B, C, D |
| 18 | Rotor | 1 | see page 126/127 |
| 19 | Stator | 1 | see page 126/127 |
| 20 | Woodruff Key | 1 | A |
| 21 | End Bell, Lower w/Radial Brg | 1 | E |
| 22 | Screw | 4 | E, F |
| 23 | Upthrust Washer | 1 | A |
| 24, 26, 27 | Shim/Retainer Ring | 1 | A |
| 25 | Thrust Disc Asm | 1 | A |
| 28, 29, 30 | Thrust Segment Asm | 1 | A |
| 31 | Adjusting Screw | 1 | A |
| 32 | Pin | 1 | A |
| 33 | O-Ring | 1 | A, E |
| 34 | Pos.- Screw | 1 | 282 560 101 / G |
| 35 | Screw Plug (only 316ss Motor) | 1 | 156 409 101 |
| 36 | Thrust Housing | 1 | G |
| 37 | Diaphragm | 1 | B |
| 38 | Spring Plate | 1 | B |
| 39 | Diaphragm Spring | 1 | B |
| 40 | Diaphragm Cover | 1 | H |
| 41, 42 | Screw/Lockwasher | 3 | F, H |
| 43 | Lead | 3 / 6 | see page 119 |

| | Description | Includes Pos. | Part Number |
|---|---|---|---|
| **Kit A** 75 - 200 HP | Thrust Bearing | 20, 23 - 33 | 305 428 020 |
| **Kit B** 75 – 200 HP | Seal SiC*** | 1 – 6, 10, 11, 17, 32, 33, 37 - 39 | 305 428 033 |
| **Kit C1** 75 HP 3 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 034 |
| **Kit C2** 150 - 200 HP 3 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 035 |
| **Kit D** 75 - 200 HP 6 Lead | End Bell, Upper | 7, 11 - 17 | 305 428 036 |
| **Kit E** 75 - 200 HP | End Bell, Lower* | 21, 22, 32, 33 | 305 428 037 |
| **Kit F** 75 - 200 HP | Fasteners* | 2, 7, 22, 41, 42 | 305 428 039 |
| **Kit G** 75 - 200 HP | Thrust Housing | 34, 35, 36 | 305 428 040 |
| **Kit H** 75 - 200 HP | Diaphragm Cover | 40 - 42 | 305 428 041 |
| **Kit I** Type 1 Motors | Radial Bearing** | SS Sleeve & Carbon Bushing | 305 428 055 |

* Suitable for WW and 316SS Motors
** Parts are Semi finished
*** Spring DM 62,7mm for 125 - 200 HP only

## Replacement Stators and Rotors 316SS/ 50 Hz

### 3 ~ Direct start with SubMonitor Transmitter

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator | Rotor |
|---|---|---|---|---|
| **30** | 380, 400, 415 | 239 600 7223 | 305 500 902 | 575 122 925 |
| **37** | 380, 400, 415 | 239 601 7223 | 305 501 902 | 575 122 930 |
| **45** | 380, 400, 415 | 239 602 7223 | 305 502 903 | 575 122 931 |
| **55** | 380, 400, 415 | 239 603 7243 | 338 385 915 | 575 122 920 |
| **75** | 380, 400, 415 | 239 604 7243 | 338 386 915 | 575 122 921 |
| **93** | 380, 400, 415 | 239 105 7219 | 305 505 902 | 575 122 922 |
| **110** | 380, 400, 415 | 239 106 7219 | 305 506 906 | 575 122 923 |
| **130** | 380, 400, 415 | 239 107 7219 | 336 524 915 | 575 122 924 |
| **150** | 380, 400, 415 | 239 108 7219 | 336 055 916 | 575 122 918 |

### 3 ~ YΔ Start with SubMonitor Transmitter (Pos. of cabels 90°)

| $P_N$ [kW] | $U_N$ [V] | Motor Model No. | Stator | Rotor |
|---|---|---|---|---|
| **30** | 380, 400, 415 | 239 620 8223 | 338 443 904 | 575 122 925 |
| **37** | 380, 400, 415 | 239 621 8223 | 338 588 904 | 575 122 930 |
| **45** | 380, 400, 415 | 239 622 8223 | 305 502 906 | 575 122 931 |
| **55** | 380, 400, 415 | 239 623 8223 | 305 503 910 | 575 122 920 |
| **75** | 380, 400, 415 | 239 624 8223 | 305 504 905 | 575 122 921 |
| **93** | 380, 400, 415 | 239 125 8219 | 305 505 904 | 575 122 922 |
| **110** | 380, 400, 415 | 239 126 8219 | 305 506 905 | 575 122 923 |
| **130** | 380, 400, 415 | 239 127 8219 | 336 524 918 | 575 122 924 |
| **150** | 380, 400, 415 | 239 128 8219 | 305 508 904 | 575 122 918 |

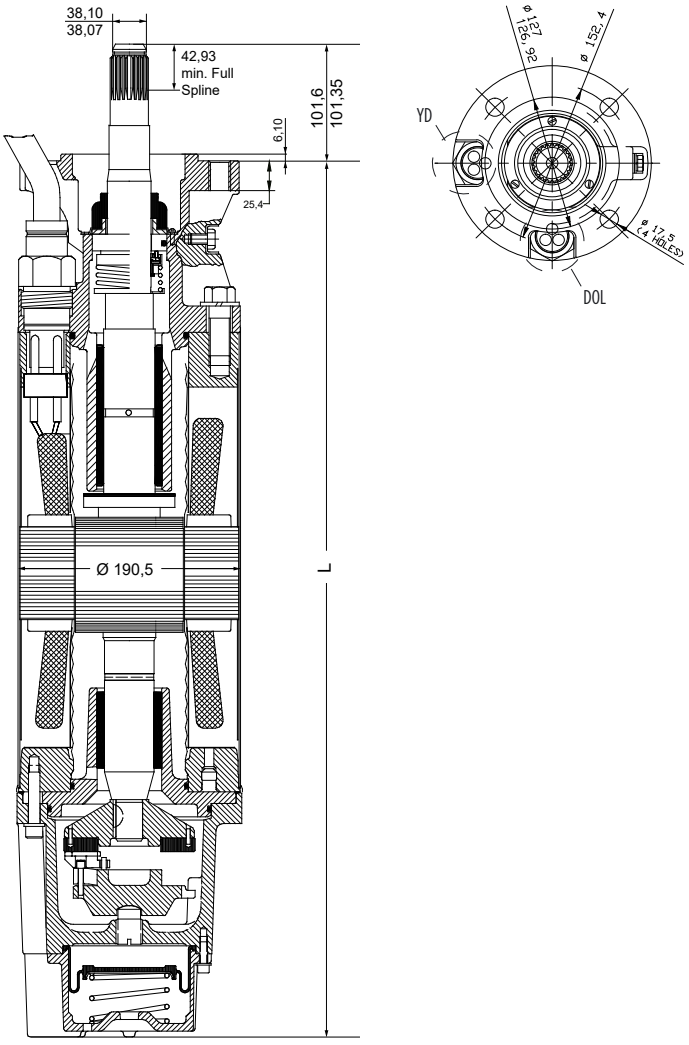
## Replacement Stators and Rotors - 3~ DOL 60 HZ - WW MOTORS

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Stator* | Rotor |
|---|---|---|---|---|
| 30 | 40 | 230 | | 575 122 925 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 37 | 50 | 230 | | 575 122 930 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 45 | 57,8 | 230 | | 575 122 931 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 55 | 64 | 230 | | 575 122 932 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 75 | 86 | 230 | | 575 122 917 |
| | | 380 | | |
| | | 460 | | |
| | | 575 | | |
| 93 | 107 | 380 | | 575 122 922 |
| | | 460 | | |
| | | 575 | | |
| 110 | 128 | 380 | | 575 122 923 |
| | | 460 | | |
| | | 575 | | |
| 130 | 150 | 380 | | 575 122 924 |
| | | 460 | | |
| | | 575 | | |
| 150 | 170 | 380 | | 575 122 918 |
| | | 460 | | |
| | | 575 | | |

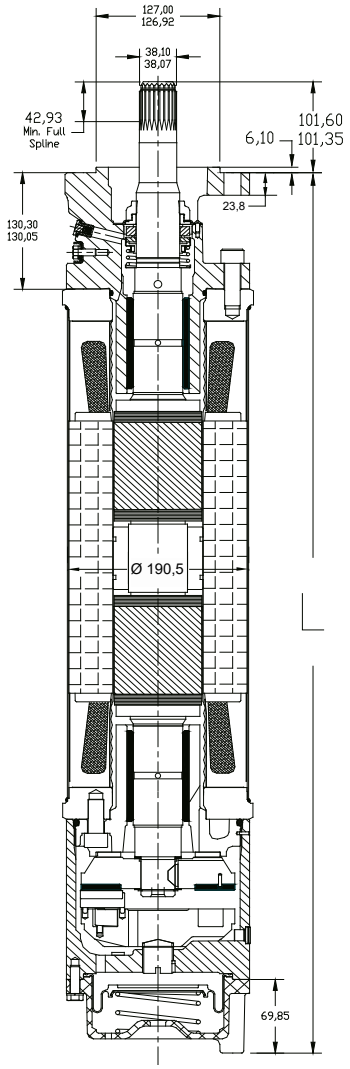
* Spare parts stators 60 Hz on request

## 8" Outline Drawings WW / 316 SS

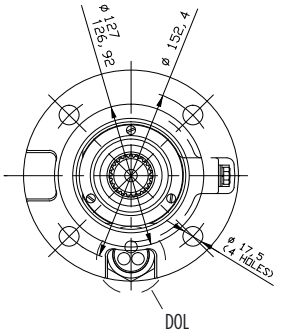
### 30 - 45 kW



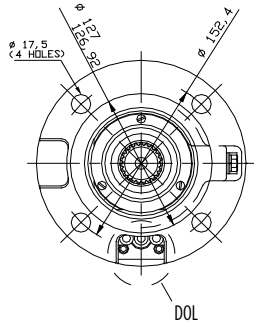

### 55 - 150 kW



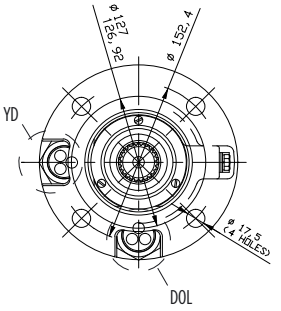

#### DOL 55 - 93kW




#### DOL 110 - 150kW




#### YΔ 55 - 150kW




### Material DIN / AISI

| Parts | WW | 316 SS |
|---|---|---|
| Shell | 1.4301 | 1.4571 |
| Upper end bell | Cast iron powder coated | 1.4408 |
| Lower end bell | Cast iron 20 | 1.4401 |
| Thrust housing | Cast iron powder coated | 1.4408 |
| Mechanical seal | SiC | SiC |
| Seal cover | 1.4301 | 1.4401 |
| Slinger | BUNA N | Hydrin 100 |
| Shaft end | 1.4305 | 1.4542 |
| Diaphragm | BUNA N | Hydrin |
| Cable | EPR | EPR |
| Cap screw (cable) | Brass | 1.4401 |
| Lead sleeve | Brass , Ni - plated | 1.4401 |
| Lead bushing | Rubber | Rubber |
| Other seals | BUNA N | BUNA N |

### Lengths & Weights

| $P_N$ [kW] | " L " Dim. [mm] | Shipping Weight [kg] | Shipping Size [mm] |
|---|---|---|---|
| 30 | 925 | 145 | 228 x 430 x 1308 |
| 37 | 1000 | 157 | 228 x 430 x 1308 |
| 45 | 1077 | 172 | 228 x 430 x 1308 |
| 55 | 1264 | 227 | 228 x 430 x 1632 |
| 75 | 1455 | 265 | 228 x 447 x 1981 |
| 93 | 1748 | 318 | 228 x 447 x 1981 |
| 110 | 1976 | 381 | 228 x 447 x 2438 |
| 130 | 2179 | 420 | 228 x 447 x 2438 |
| 150 | 2408 | 494 | 228 x 447 x 2438 |

# 8" Encapsulated Motors „HighTemp 75°C“

## Submersible Motors

These 8" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 8" diameter or larger water wells with ambient temperature up to 75°C.
It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. The motor is filled with a special FES92 fluid, providing frost protection down to -15°C storage temperture.
A special diaphragm ensures pressure compensation inside the motor.The Sand fighter® SiC seal system is standard.




## Product advantages:

- Up to 75°C ambient temperature
- Increast thrust capacity up to 30°C
- No cooling flow in larger wells (open reservoirs) up to 30°C ambient
- Hermetically sealed encapsulated stator
- Removable “Water Bloc” lead connector
- „Sand fighter®“ Motor with SiC-Mechanical Seal
- High efficiency electrical design for low operation cos
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- All motors prefilled and 100% tested. Max. storage temperature -15°C - + 60°C
- High temperature leads
- Non contaminating FES 92 filled design

## Technical Specifications

- 30 ... 110 kW
- 8" NEMA double flange
- Protection: IP 68
- Starts per hour: 10
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6% $U_N$ [380-415V = (380-10%) – (415+6%)]
- Voltage tolerance 60Hz: ±10%$U_N$
- Motor protection: Select thermal overloads according to DIN 61947-4-1
- Insulation: Class F
- Rated ambient temperature: 75°C
- Cooling flow: min. 0,16 m/s
- Motor lead in 4m length

## Options

- Other voltages
- YΔ - start (pos. of cables 90°)
- Motors complete in 316 SS
- Motor lead in 8m length

## HighTemp 75°C Model numbers 50 Hz*

| $P_N$ [kW] | $P_N$ [Hp] | $U_N$ [V] | Model Number Digit 1 – 6 | | Model Number Digit 7 - 11 | |
|---|---|---|---|---|---|---|
| | | | DOL | YΔ | WW** | 316SS |
| **30** | 40 | 380 - 415 | 279 100 | 279 120 | 9004X | 9204X |
| **37** | 50 | 380 - 415 | 279 101 | 279 121 | 9004X | 9204X |
| **45** | 60 | 380 - 415 | 279 102 | 279 122 | 9004X | 9204X |
| **55** | 75 | 380 - 415 | 279 103 | 279 123 | 9004X | 9204X |
| **75** | 100 | 380 - 415 | 279 104 | 279 124 | 9004X | 9204X |
| **93** | 125 | 380 - 415 | 279 105 | 279 125 | 9004X | 9204X |
| **110** | 150 | 380 - 415 | 279 106 | 279 126 | 9004X | 9204X |

## HighTemp 75°C Model numbers 60 Hz*

| $P_N$ [kW] | $P_{max.}$ [kW] | $U_N$ [V] | Model Number Digit 1 – 6 | | Model Number Digit 7 - 11 | |
|---|---|---|---|---|---|---|
| | | | DOL | YΔ | WW** | 316SS |
| 30 | **34,5** | 380 | 279 160 | 279 180 | 9004X | 9204X |
| | | 460 | 279 100 | 279 120 | 9004X | 9204X |
| | | 575 | 279 110 | 279 190 | 9004X | 9204X |
| 37 | **42,5** | 380 | 279 161 | 279 181 | 9004X | 9204X |
| | | 460 | 279 101 | 279 121 | 9004X | 9204X |
| | | 575 | 279 111 | 279 191 | 9004X | 9204X |
| 45 | **51,7** | 380 | 279 162 | 279 182 | 9004X | 9204X |
| | | 460 | 279 102 | 279 122 | 9004X | 9204X |
| | | 575 | 279 112 | 279 192 | 9004X | 9204X |
| 55 | **64** | 380 | 279 163 | 279 183 | 9004X | 9204X |
| | | 460 | 279 103 | 279 123 | 9004X | 9204X |
| | | 575 | 279 113 | 279 193 | 9004X | 9204X |
| 75 | **86,2** | 380 | 279 164 | 279 184 | 9004X | 9204X |
| | | 460 | 279 104 | 279 124 | 9004X | 9204X |
| | | 575 | 279 114 | 279 194 | 9004X | 9204X |
| 93 | **106,9** | 380 | 279 165 | 279 185 | 9004X | 9204X |
| | | 460 | 279 105 | 279 125 | 9004X | 9204X |
| | | 575 | 279 115 | 279 195 | 9004X | 9204X |
| 110 | **126,5** | 380 | 279 166 | 279 186 | 9004X | 9204X |
| | | 460 | 279 106 | 279 126 | 9004X | 9204X |
| | | 575 | 279 116 | 279 196 | 9004X | 9204X |

* VFD operation is only allowed up to 400V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH
** WW (Water well)- Stator 304SS / Castings - CI Powder coated

## 8" HighTemp 75°C Performance Datas 50 Hz

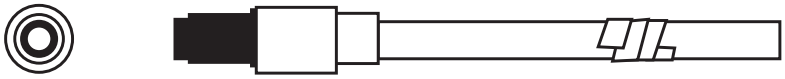
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (Pf.) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **30** | 45000 | 380 | 2920 | 66,8 | 474 | 72 | 78 | 80 | 0,76 | 0,82 | 0,86 | 98,1 | 265 |
| | | 400 | 2930 | 65,5 | 499 | 72 | 78 | 80 | 0,70 | 0,78 | 0,83 | 97,8 | 298 |
| | | 415 | 2935 | 65,8 | 518 | 71 | 77 | 80 | 0,65 | 0,74 | 0,80 | 97,6 | 324 |
| **37** | 45000 | 380 | 2930 | 80,7 | 654 | 75 | 80 | 83 | 0,76 | 0,83 | 0,87 | 121 | 354 |
| | | 400 | 2940 | 79,6 | 692 | 74 | 80 | 82 | 0,70 | 0,79 | 0,84 | 120 | 398 |
| | | 415 | 2945 | 80,1 | 720 | 73 | 79 | 82 | 0,65 | 0,75 | 0,81 | 120 | 429 |
| **45** | 45000 | 380 | 2935 | 94,3 | 835 | 78 | 83 | 85 | 0,75 | 0,82 | 0,87 | 146 | 413 |
| | | 400 | 2945 | 93,1 | 884 | 77 | 82 | 84 | 0,69 | 0,78 | 0,84 | 146 | 465 |
| | | 415 | 2950 | 93,0 | 920 | 76 | 82 | 84 | 0,64 | 0,74 | 0,81 | 146 | 501 |
| **55** | 45000 | 380 | 2920 | 118 | 876 | 78 | 82 | 84 | 0,77 | 0,84 | 0,87 | 183 | 467 |
| | | 400 | 2930 | 115 | 927 | 78 | 82 | 84 | 0,72 | 0,81 | 0,85 | 182 | 526 |
| | | 415 | 2935 | 113 | 965 | 77 | 82 | 84 | 0,69 | 0,78 | 0,83 | 182 | 566 |
| **75** | 45000 | 380 | 2925 | 155 | 1185 | 81 | 84 | 85 | 0,76 | 0,83 | 0,87 | 244 | 617 |
| | | 400 | 2935 | 151 | 1254 | 80 | 84 | 86 | 0,71 | 0,80 | 0,85 | 244 | 695 |
| | | 415 | 2940 | 150 | 1306 | 80 | 84 | 85 | 0,66 | 0,76 | 0,82 | 243 | 748 |
| **93** | 45000 | 380 | 2915 | 191 | 1404 | 81 | 85 | 86 | 0,78 | 0,85 | 0,88 | 304 | 843 |
| | | 400 | 2925 | 186 | 1482 | 81 | 84 | 86 | 0,73 | 0,80 | 0,86 | 304 | 949 |
| | | 415 | 2930 | 184 | 1544 | 80 | 84 | 86 | 0,69 | 0,76 | 0,84 | 303 | 1021 |
| **110** | 45000 | 380 | 2925 | 231 | 1596 | 81 | 84 | 85 | 0,77 | 0,84 | 0,88 | 359 | 890 |
| | | 400 | 2935 | 224 | 1690 | 81 | 84 | 86 | 0,72 | 0,81 | 0,85 | 358 | 1002 |
| | | 415 | 2940 | 222 | 1760 | 80 | 84 | 86 | 0,68 | 0,77 | 0,83 | 357 | 1078 |

## 8" HighTemp 75°C Performance Datas 60 Hz

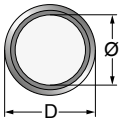
| $P_N$ [kW] | $P_{max}$ [kW] | Thrust [N] | $U_N$ [V] | $n_N$ [min$^{-1}$] | $I_{max}$ [A] | $I_A$ [A] | η (Eff.) [%] at 100% load | Line to Line Resistance ohms |
|---|---|---|---|---|---|---|---|---|
| 30 | **34,5** | 45000 | 380 | 3450 | 78.7 | 616 | 78 | .11 - .14 |
| | | | 460 | 3450 | 65.0 | 509 | 78 | .16 - .19 |
| | | | 575 | 3450 | 52.0 | 407 | 78 | .25 - .31 |
| 37 | **42,5** | 45000 | 380 | 3450 | 95.4 | 832 | 80 | .07 - .09 |
| | | | 460 | 3450 | 78.8 | 687 | 80 | .11 - .14 |
| | | | 575 | 3450 | 63.0 | 550 | 80 | .18 - .22 |
| 45 | **51,7** | 45000 | 380 | 3450 | 112 | 1081 | 82 | .06 - .07 |
| | | | 460 | 3450 | 92.1 | 893 | 82 | .09 - .11 |
| | | | 575 | 3450 | 73.7 | 715 | 82 | .13 - .16 |
| 55 | **64** | 45000 | 380 | 3450 | 141 | 1175 | 82 | .05 - .06 |
| | | | 460 | 3450 | 114 | 922 | 82 | .07 - .09 |
| | | | 575 | 3450 | 92 | 738 | 82 | .11 - .14 |
| 75 | **86,2** | 45000 | 380 | 3450 | 181 | 1508 | 85 | .04 - .05 |
| | | | 460 | 3450 | 149 | 1246 | 85 | .05 - .07 |
| | | | 575 | 3450 | 119 | 997 | 85 | .08 - .10 |
| 93 | **106,9** | 45000 | 380 | 3450 | 223 | 1793 | 85 | .03 - .04 |
| | | | 460 | 3450 | 184 | 1481 | 85 | .04 - .06 |
| | | | 575 | 3450 | 148 | 1185 | 85 | .07 - .09 |
| 110 | **126,5** | 45000 | 380 | 3450 | 269 | 2012 | 84 | .02 - .03 |
| | | | 460 | 3450 | 222 | 1662 | 84 | .03 - .05 |
| | | | 575 | 3450 | 178 | 1330 | 84 | .05 - .07 |

## 8" HighTemp 75°C DOL Motor leads* WW/316SS - 380 - 415V 50Hz/ 460V 60 Hz (For YD motors please order 2 of them)

| $P_N$ [kW] | Jam Nut Material | L [m] | Ø | Ø [mm] | Part numbers |
|---|---|---|---|---|---|
| All Ratings | 316SS | 4 | 3 x (33,6mm²) | max. 11,8 | 305 315 901 |
| | | 8 | | | 305 315 902 |



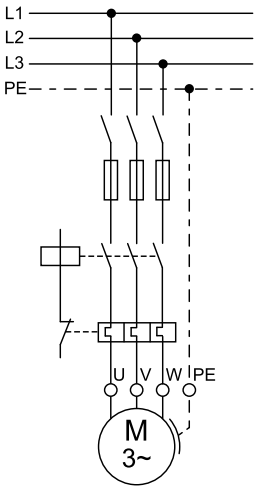
## 8" HighTemp 75°C Ground leads* WW/316SS



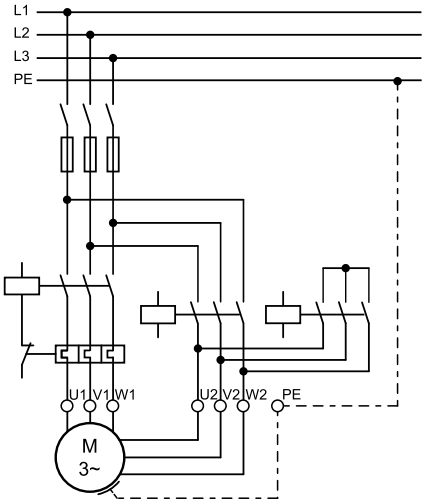

| $P_N$ [kW] | L [m] | Ø | D [mm] | Part numbers |
|---|---|---|---|---|
| All Ratings | 8 | 1G25 mm² | 13 | 308 053 080 |

## 8" HighTemp 75°C Electrical Connection

### DOL




### YΔ

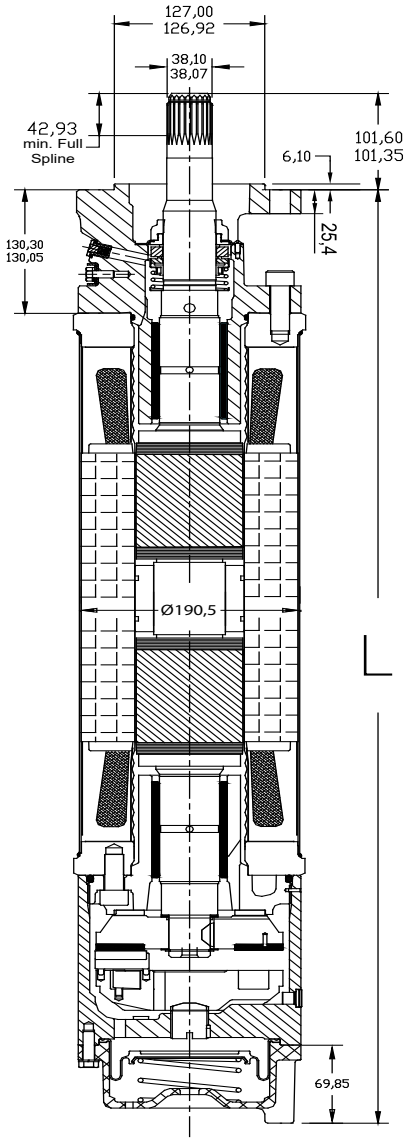



| U | V | W | PE |
|---|---|---|---|
| black | grey | brown | yellow/green |

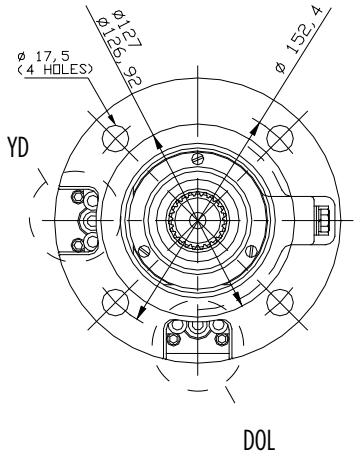
## 8" HighTemp 75°C Winding Resistance 3~ 50 Hz (20°C)

| $P_N$ kW | $U_N$ [V] | Stator Ref. | Line to Line Resistance [ Ohm ] |
|---|---|---|---|
| 30 | 380 - 415 | 331 659 ... | 0,25 - 0,27 |
| | 500 | | |
| 37 | 380 - 415 | 331 677 ... | 0,17 - 0,19 |
| | 500 | 326 558 ... | 0,09 - 0,01 |
| 45 | 380 - 415 | 331 678 ... | 0,13 - 0,15 |
| | 500 | 326 687 ... | 0,20 - 0,22 |
| 55 | 380 - 415 | 331 679 ... | 0,11 - 0,12 |
| | 500 | | |
| 75 | 380 - 415 | 331 680 ... | 0,08 - 0,09 |
| | 500 | 326 512 ... | 0,12 - 0,14 |
| 93 | 380 - 415 | 331 681 ... | 0,14 - 0,15 |
| | 500 | 326 683 ... | 0,10 - 0,12 |
| 110 | 380 - 415 | 331 660 ... | 0,05 - 0,06 |
| | 500 | 326 598 ... | 0,09 - 0,10 |

# 8" HighTemp 75°C WW / 316 Design




## End Bell




## Material DIN / AISI

| | WW | 316 SS |
|---|---|---|
| Castings | Cast Iron /powder coated | 316 SS |
| Stator Shell | 304 SS | 316 SS |
| Stator Ends | Low Carbon Steel | 316 SS |
| Shaft Extensions | 17-4 SS | 17-4 SS |
| Fasteners | 300 & 400 Series SS | 316 SS |
| Seal Cover | 304SS & Sintered Bronce | 316 SS |
| Seal | SiC/SiC | SiC/SiC |
| Diaphragm Spring | 302 SS | 316 SS & 25-6 MO SS |
| Slinger | FKM | FKM |
| Lead Wire (or Cable) | XLPO | XLPO |
| Lead Potting | Epoxy | Epoxy |
| Pipe Plug | 316 SS | 316 SS |
| Thrust Bearing | Carbon | Carbon |

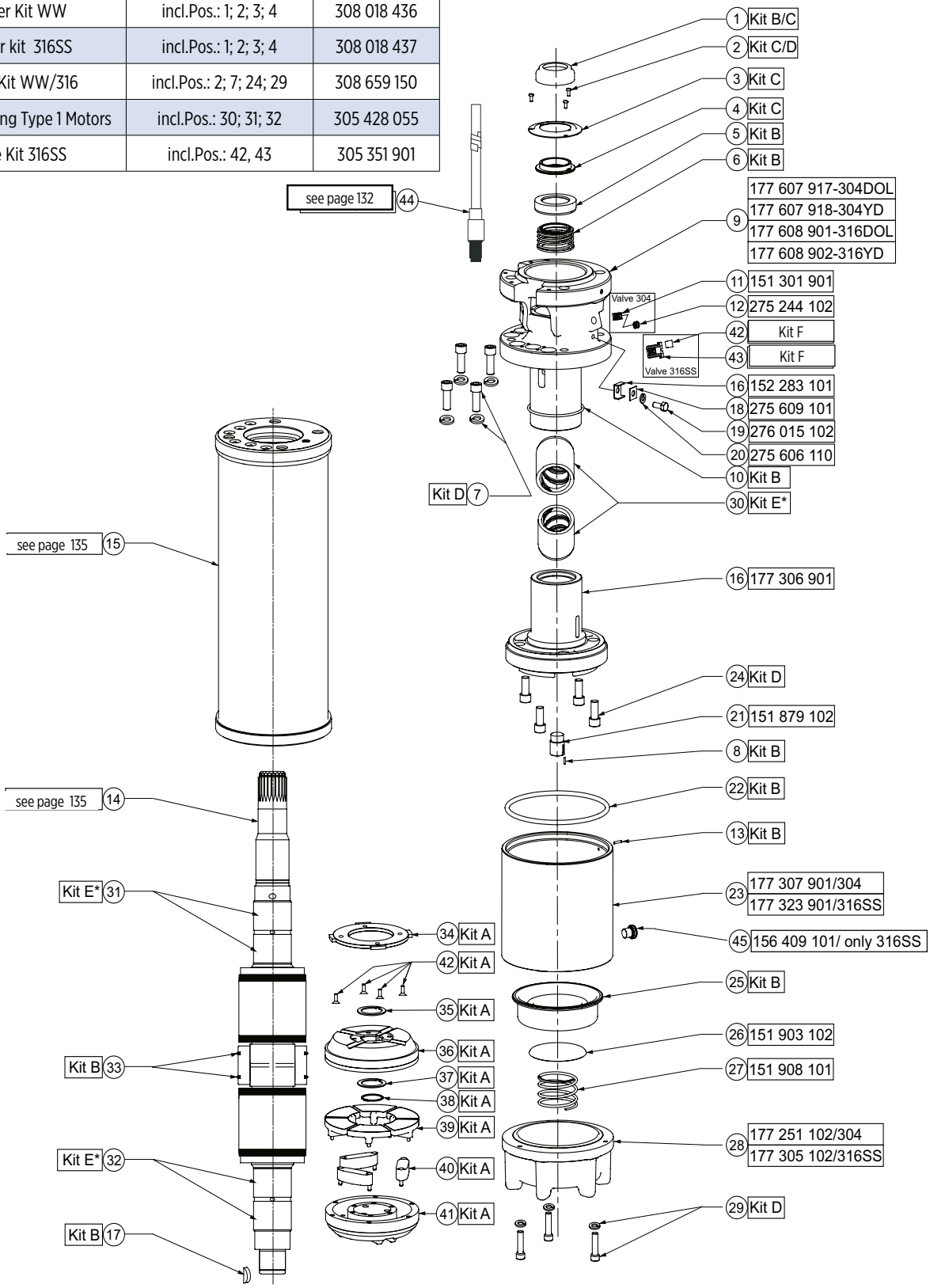
## Sizes

| $P_N$ [kW] | "L" [mm] | Shipping Weight [KG] | Motor Shipping Size [mm] |
|---|---|---|---|
| 30 | 1138 | 182 | 228 x 430 x 1632 |
| 37 | 1265 | 207 | 228 x 430 x 1632 |
| 45 | 1455 | 252 | 228 x 447 x 1981 |
| 55 | 1748 | 318 | 228 x 447 x 1981 |
| 75 | 1976 | 382 | 228 x 447 x 2438 |
| 93 | 2179 | 421 | 228 x 447 x 2438 |
| 110 | 2408 | 473 | 228 x 447 x 2438 |

## 8" Spare Parts WW/316SS HighTemp. 75 °C

| | | | |
|---|---|---|---|
| **Kit A** | Thrust Bearing | incl.Pos.: 34; 35; 36; 37; 38; 39; 40; 41; 42 | 305 428 020 |
| **Kit B** | Seal Kit | incl.Pos.: 1; 5; 6; 8; 10; 13; 22; 25; 33 | 308 018 435 |
| **Kit C1** | Slinger Kit WW | incl.Pos.: 1; 2; 3; 4 | 308 018 436 |
| **Kit C2** | Slinger kit 316SS | incl.Pos.: 1; 2; 3; 4 | 308 018 437 |
| **Kit D** | Screw Kit WW/316 | incl.Pos.: 2; 7; 24; 29 | 308 659 150 |
| **Kit E*** | Radial Bearing Type 1 Motors | incl.Pos.: 30; 31; 32 | 305 428 055 |
| **Kit F** | Valve Kit 316SS | incl.Pos.: 42, 43 | 305 351 901 |

* Parts are semi-finished



## 8" HighTemp 75°C Replacement Stators and Rotors 50/60Hz DOL

| $P_N$ [kW] | $P_N$ [HP] | [V] / [Hz] | Motor WW | Stator 304SS | Motor 316SS | Stator 316SS | Rotor |
|---|---|---|---|---|---|---|---|
| **30** | 40 | 380-415 / 50 | 2791009004X | 331659902 | 2791009204X | 331659903 | 575 122 919 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791609004X | 326653902 | 2791609204X | 326653903 | |
| **37** | 50 | 380-415 / 50 | 2791019004X | 331677902 | 2791019204X | 331677903 | 575 122 920 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791619004X | 326654902 | 2791619204X | 326654903 | |
| **45** | 60 | 380-415 / 50 | 2791029004X | 331678902 | 2791029204X | 331678903 | 575 122 921 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791629004X | 326655902 | 2791629204X | 326655903 | |
| **55** | 75 | 380-415 / 50 | 2791039004X | 331679902 | 2791039204X | 331679903 | 575 122 922 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791639004X | 326650902 | 2791639204X | 326650903 | |
| **75** | 100 | 380-415 / 50 | 2791049004X | 331680902 | 2791049204X | 331680903 | 575 122 923 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791649004X | 326583902 | 2791649204X | 326583903 | |
| **93** | 125 | 380-415 / 50 | 2791059004X | 331681902 | 2791059204X | 331681903 | 575 122 924 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791659004X | 326584902 | 2791659204X | 326584903 | |
| **110** | 150 | 380-415 / 50 | 2791069004X | 331660902 | 2791069204X | 331660903 | 575 122 918 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791669004X | 326651902 | 2791669204X | 326651903 | |

## 8" HighTemp 75°C Replacement Stators and Rotors 50/60Hz YΔ

| $P_N$ [kW] | $P_N$ [HP] | [V] / [Hz] | Motor WW | Stator 304SS | Motor 316SS | Stator 316SS | Rotor |
|---|---|---|---|---|---|---|---|
| 30 | **34,5** | 380-415 / 50 | 2791209004X | 331659905 | 2791209204X | 331659906 | 575 122 919 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791809004X | 326653905 | 2791809204X | 326653906 | |
| 37 | **42,5** | 380-415 / 50 | 2791219004X | 331677905 | 2791219204X | 331677906 | 575 122 920 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791819004X | 326654905 | 2791819204X | 326654906 | |
| 45 | **51,7** | 380-415 / 50 | 2791229004X | 331678905 | 2791229204X | 331678906 | 575 122 921 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791829004X | 326655905 | 2791829204X | 326655906 | |
| 55 | **64** | 380-415 / 50 | 2791239004X | 331679905 | 2791239204X | 331679906 | 575 122 922 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791839004X | 326650905 | 2791839204X | 326650906 | |
| 75 | **86,2** | 380-415 / 50 | 2791249004X | 331680905 | 2791249204X | 331680906 | 575 122 923 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791849004X | 326583905 | 2791849204X | 326583906 | |
| 93 | **106,9** | 380-415 / 50 | 2791259004X | 331681905 | 2791259204X | 331681906 | 575 122 924 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791859004X | 326584905 | 2791859204X | 326584906 | |
| 110 | **126,5** | 380-415 / 50 | 2791269004X | 331660905 | 2791269204X | 305506911 | 575 122 918 |
| | | 460 / 60 | | | | | |
| | | 380 / 60 | 2791869004X | 326651905 | 2791869204X | 326651906 | |

# 6" REWINDABLE MOTOR

**Rewindable motors with best class winding wires**

SAND FIGHTER | STAINLESS STEEL 304 | STAINLESS STEEL 316 | STAINLESS STEEL 904L

## FEATURES & BENEFITS

- 6" NEMA mounting design
- Stainless steel splined shaft
- Factory filled with Franklin's FES93 motor fill solution
- Liquid lubricated radial bearings and High capacity Kingsbury type thrust bearing for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Drinking water approvals

## STANDARD SPECIFICATION

- Ratings: 4 - 37 kW
- Max. storage temperature - 15 °C to + 60 °C
- Standard motor with PVC winding insulation (37 kW Standard with PE2/PA insulation)
- Nominal ambient temperature: 30 °C
  with 0.2 m/s cooling flow for 4 - 15 kW motors
  with 0.5 m/s cooling flow for 18.5 - 37 kW motors
- Standard Voltage: 380 - 415 V (50 Hz), 460 V (60 Hz)
- Voltage Tolerance: 50 Hz: -10 % / +6 % $U_N$ [380 - 415 V = (380 - 10 %) – (415 + 6 %)] 60 Hz: ±10 % $U_N$
- Protection IP68
- Motor protection: DIN 61947-4-1
- Frequency of starts: 20 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 4 m
- Installation orientation: Vertical / horizontal (shaft end heightened) - 37 kW motors may not be installed in horizontal position)
- Rotation counter clock wise facing shaft end (rotation reversible)
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials: 316SS and 904L
- Special voltages
- Retrofitable PT 100 temperature sensor
- Special lead lengths up to 50 m
- Motors up to 30 kW with PE2/PA winding insulation for max. ambient temperature of 50 °C
  (Standard cooling flows, 37 kW: max. 45 °C)



## 6" Rewindable Motors - Model Numbers *

| $P_N$ [kW] | $U_N$ / f [V] / [Hz] | Model Number Digit 1 – 6 | | Model Number Digit 7 – 10 | | | |
|---|---|---|---|---|---|---|---|
| | | DOL | YΔ | 304SS | 316SS | 904L | PE2/PA** |
| 4,0 | 380 - 415 / 50 460 / 60 | 262 610 | 262 710 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 380/ 60 | 262 660 | 262 780 | | | | |
| | 230 / 60 | 262 600 | 262 700 | | | | |
| 5,5 | 380 - 415 / 50 460 / 60 | 262 611 | 262 711 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 500 / 50 | 262 511 | 262 811 | | | | |
| | 380/ 60 | 262 661 | 262 781 | | | | |
| | 230 / 60 | 262 601 | 262 721 | | | | |
| 7,5 | 380 - 415 / 50 460 / 60 | 262 612 | 262 712 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 500 / 50 | 262 512 | 262 812 | | | | |
| | 380/ 60 | 262 662 | 262 782 | | | | |
| | 230 / 60 | 262 602 | 262 722 | | | | |
| 9,3 | 380 - 415 / 50 460 / 60 | 262 231 | 262 331 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 500 / 50 | 262 271 | 262 371 | | | | |
| | 380/ 60 | 262 221 | 262 321 | | | | |
| | 230 / 60 | 262 211 | 262 311 | | | | |
| 11 | 380 - 415 / 50 460 / 60 | 262 613 | 262 713 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 500 / 50 | 262 513 | 262 813 | | | | *7** |
| | 380/ 60 | 262 663 | 262 783 | | | | |
| | 230 / 60 | 262 603 | 262 723 | | | | |
| 13 | 380 - 415 / 50 460 / 60 | 262 232 | 262 332 | 8611 | 6611 | 7611 | *7** ONLY DOL |
| | 500 / 50 | 262 272 | 262 372 | | | | *7** |
| | 380/ 60 | 262 222 | 262 322 | | | | |
| | 230 / 60 | 262 212 | 262 312 | | | | |
| 15 | 380 - 415 / 50 460 / 60 | 262 614 | 262 714 | 8611 | 6611 | 7611 | *7** |
| | 500 / 50 | 262 514 | 262 814 | | | | |
| | 380/ 60 | 262 664 | 262 784 | | | | |
| | 230 / 60 | 262 604 | 262 724 | | | | |
| 18,5 | 380 - 415 / 50 460 / 60 | 262 615 | 262 715 | 8611 | 6611 | 7611 | *7** |
| | 500 / 50 | 262 515 | 262 815 | | | | |
| | 380/ 60 | 262 665 | 262 785 | | | | |
| | 230 / 60 | 262 605 | 262 725 | | | | |
| 22 | 380 - 415 / 50 460 / 60 | 262 616 | 262 716 | 8611 | 6611 | 7611 | *7** |
| | 500 / 50 | 262 516 | 262 816 | | | | |
| | 380/ 60 | 262 666 | 262 786 | | | | |
| | 230 / 60 | 262 606 | 262 726 | | | | |
| 26 | 380 - 415 / 50 460 / 60 | 262 233 | 262 333 | 8611 | 6611 | 7611 | *7** |
| | 500 / 50 | 262 273 | 262 373 | | | | |
| | 380/ 60 | - | 262 323 | | | | |
| 30 | 380 - 415 / 50 460 / 60 | 262 617 | 262 717 | 8611 | 6611 | 7611 | *7** |
| | 500 / 50 | 262 517 | 262 817 | | | | |
| | 380/ 60 | 262 667 | 262 787 | | | | |
| | 230 / 60 | - | 262 727 | | | | |
| 37 | 380 - 415 / 50 460 / 60 | 262 618 | 262 718 | 8711 | 6711 | 7711 | STANDARD |
| | 500 / 50 | 262 518 | 262 818 | | | | |
| | 380/ 60 | 262 668 | 262 788 | | | | |
| | 230 / 60 | - | 262 728 | | | | |

* VFD operation is only allowed up to 460V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH
** For VFD Operation is PE2/PA mandatory!

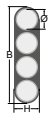
## 6" Rewindable Motors - Performance Data 50Hz

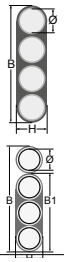
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min-1] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (PF) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **4** | 15500 | 380 | 2910 | 10,4 | 48 | 71 | 75 | 76 | 0,59 | 0,71 | 0,78 | 13,1 | 15,5 |
| | | 400 | 2930 | 10,6 | 51 | 68 | 73 | 76 | 0,53 | 0,65 | 0,73 | 13,1 | 17,3 |
| | | 415 | 2930 | 10,9 | 53 | 65 | 72 | 76 | 0,50 | 0,61 | 0,69 | 13,0 | 18,8 |
| **5,5** | 15500 | 380 | 2860 | 13,7 | 48 | 74 | 76 | 75 | 0,67 | 0,78 | 0,83 | 18,3 | 15,5 |
| | | 400 | 2890 | 13,3 | 51 | 72 | 76 | 76 | 0,62 | 0,74 | 0,81 | 18,2 | 17,3 |
| | | 415 | 2890 | 13,4 | 53 | 71 | 75 | 75 | 0,59 | 0,71 | 0,78 | 18,1 | 18,8 |
| | | 500 | 2890 | 10,6 | 41 | 72 | 76 | 76 | 0,62 | 0,74 | 0,81 | 17 | 18 |
| **7,5** | 15500 | 380 | 2860 | 18,3 | 59 | 77 | 78 | 76 | 0,70 | 0,80 | 0,84 | 25,0 | 19,2 |
| | | 400 | 2880 | 17,7 | 63 | 75 | 78 | 77 | 0,65 | 0,76 | 0,82 | 24,8 | 21,5 |
| | | 415 | 2890 | 17,7 | 65 | 73 | 77 | 77 | 0,61 | 0,73 | 0,80 | 24,7 | 23,4 |
| | | 500 | 2880 | 14,0 | 50 | 75 | 78 | 77 | 0,65 | 0,76 | 0,82 | 22 | 25 |
| **9,3** | 15500 | 380 | 2850 | 22,0 | 74 | 79 | 80 | 78 | 0,71 | 0,80 | 0,84 | 31,1 | 25,9 |
| | | 400 | 2870 | 21,4 | 78 | 78 | 79 | 78 | 0,64 | 0,76 | 0,82 | 31,0 | 29,0 |
| | | 415 | 2880 | 21,2 | 81 | 76 | 79 | 78 | 0,60 | 0,72 | 0,80 | 30,9 | 31,4 |
| | | 500 | 2870 | 17,1 | 62 | 78 | 79 | 78 | 0,64 | 0,76 | 0,82 | 29 | 31 |
| **11,0** | 15500 | 380 | 2860 | 25,8 | 93 | 78 | 80 | 78 | 0,71 | 0,80 | 0,85 | 36,7 | 31,5 |
| | | 400 | 2880 | 25,2 | 98 | 77 | 80 | 79 | 0,65 | 0,76 | 0,83 | 36,4 | 35,3 |
| | | 415 | 2890 | 25,1 | 102 | 75 | 78 | 79 | 0,61 | 0,73 | 0,80 | 36,3 | 38,2 |
| | | 500 | 2880 | 20,0 | 79 | 77 | 80 | 79 | 0,65 | 0,76 | 0,82 | 35 | 36 |
| **13,0** | 15500 | 380 | 2880 | 30,1 | 118 | 80 | 81 | 80 | 0,68 | 0,79 | 0,84 | 43,1 | 45,0 |
| | | 400 | 2900 | 29,6 | 125 | 78 | 80 | 80 | 0,61 | 0,74 | 0,81 | 42,8 | 50,3 |
| | | 415 | 2900 | 29,7 | 130 | 76 | 79 | 80 | 0,57 | 0,70 | 0,78 | 42,7 | 54,6 |
| | | 500 | 2900 | 23,7 | 100 | 78 | 80 | 80 | 0,61 | 0,74 | 0,81 | 50 | 43 |
| **15,0** | 15500 | 380 | 2880 | 33,9 | 140 | 81 | 82 | 81 | 0,71 | 0,81 | 0,85 | 49,7 | 53,9 |
| | | 400 | 2890 | 33,1 | 148 | 79 | 81 | 81 | 0,65 | 0,77 | 0,83 | 49,4 | 60,4 |
| | | 415 | 2900 | 33,0 | 154 | 77 | 80 | 81 | 0,60 | 0,73 | 0,81 | 49,3 | 65,5 |
| | | 500 | 2890 | 26,4 | 119 | 79 | 81 | 81 | 0,65 | 0,77 | 0,83 | 60 | 49 |
| **18,5** | 15500 | 380 | 2860 | 42,3 | 172 | 81 | 82 | 81 | 0,68 | 0,78 | 0,84 | 61,7 | 75,2 |
| | | 400 | 2880 | 42,0 | 182 | 78 | 81 | 81 | 0,61 | 0,74 | 0,80 | 61,2 | 84,3 |
| | | 415 | 2890 | 42,5 | 189 | 76 | 79 | 80 | 0,57 | 0,70 | 0,77 | 61,1 | 91,3 |
| | | 500 | 2880 | 33,6 | 146 | 78 | 81 | 81 | 0,61 | 0,74 | 0,80 | 84 | 61 |
| **22,0** | 15500 | 380 | 2880 | 49,1 | 218 | 82 | 84 | 83 | 0,68 | 0,78 | 0,84 | 72,6 | 91,2 |
| | | 400 | 2900 | 49,0 | 231 | 80 | 82 | 82 | 0,61 | 0,73 | 0,80 | 72,5 | 102,2 |
| | | 415 | 2910 | 49,6 | 240 | 77 | 81 | 82 | 0,56 | 0,69 | 0,77 | 72,2 | 110,7 |
| | | 500 | 2900 | 39,2 | 185 | 80 | 82 | 82 | 0,61 | 0,73 | 0,80 | 102 | 72 |
| **26** | 15500 | 380 | 2880 | 57,5 | 268 | 83 | 84 | 83 | 0,68 | 0,79 | 0,86 | 86,0 | 120,4 |
| | | 400 | 2900 | 56,7 | 284 | 81 | 83 | 83 | 0,61 | 0,74 | 0,83 | 85,6 | 134,7 |
| | | 415 | 2910 | 57,3 | 296 | 78 | 82 | 82 | 0,56 | 0,69 | 0,80 | 85,3 | 146,1 |
| | | 500 | 2900 | 45,7 | 227 | 80 | 83 | 83 | 0,61 | 0,74 | 0,81 | 135 | 86 |
| **30,0** | 27500 | 380 | 2900 | 66,4 | 328 | 82 | 84 | 83 | 0,67 | 0,78 | 0,84 | 98,8 | 135,0 |
| | | 400 | 2910 | 66,4 | 347 | 80 | 83 | 83 | 0,60 | 0,73 | 0,80 | 98,4 | 151,0 |
| | | 415 | 2910 | 67,5 | 361 | 77 | 81 | 82 | 0,55 | 0,68 | 0,77 | 98,2 | 163,0 |
| | | 500 | 2910 | 53,2 | 277 | 80 | 83 | 83 | 0,60 | 0,73 | 0,80 | 151 | 98 |
| **37** | 27500 | 380 | 2890 | 82,0 | 409 | 83 | 84 | 83 | 0,67 | 0,78 | 0,85 | 122,1 | 192,8 |
| | | 400 | 2900 | 81,9 | 433 | 80 | 83 | 83 | 0,60 | 0,72 | 0,80 | 121,6 | 215,8 |
| | | 415 | 2910 | 83,9 | 450 | 77 | 81 | 82 | 0,55 | 0,68 | 0,76 | 121,3 | 234,0 |
| | | 500 | 2900 | 65,6 | 346 | 80 | 83 | 83 | 0,60 | 0,72 | 0,80 | 216 | 122 |

## 6" Rewindable Motors - Performance Data 60Hz

| $P_N$ [kW] | $P_{max}$ [kW] | Thrust F [N] | $U_N$ [V] | $n_{max}$ [min1] | $I_{max}$ [A] | $I_A$ [A] | $\eta_{max}$ (Eff.) [%] at % load | | | cos φ $_{max}$ (Pf.) at % load | | | $T_{max}$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 4 | **4,6** | 15500 | 230 | 3520 | 21,0 | 106 | 70 | 75 | 77 | 0,52 | 0,64 | 0,73 | 12,5 | 18,6 |
| | | | 380 | 3530 | 13,3 | 61 | 66 | 72 | 77 | 0,51 | 0,63 | 0,71 | 12,4 | 15,0 |
| | | | 460 | 3520 | 10,1 | 51 | 70 | 76 | 78 | 0,56 | 0,67 | 0,75 | 12,5 | 15,3 |
| 5,5 | **6,3** | 15500 | 230 | 3490 | 26,1 | 106 | 74 | 78 | 78 | 0,61 | 0,73 | 0,80 | 17,3 | 15,9 |
| | | | 380 | 3480 | 15,4 | 61 | 76 | 78 | 78 | 0,64 | 0,75 | 0,81 | 17,3 | 15,0 |
| | | | 460 | 3480 | 12,9 | 51 | 74 | 77 | 77 | 0,65 | 0,76 | 0,82 | 17,3 | 15,1 |
| 7,5 | **8,6** | 15500 | 230 | 3490 | 35,9 | 146 | 75 | 79 | 79 | 0,58 | 0,71 | 0,78 | 23,6 | 22,4 |
| | | | 380 | 3480 | 20,8 | 81 | 76 | 79 | 79 | 0,64 | 0,75 | 0,81 | 23,6 | 20,2 |
| | | | 460 | 3470 | 17,2 | 64 | 75 | 78 | 78 | 0,67 | 0,77 | 0,82 | 23,7 | 19,4 |
| 9,3 | **10,7** | 15500 | 230 | 3490 | 44,4 | 183 | 75 | 79 | 79 | 0,59 | 0,71 | 0,78 | 29,3 | 28,9 |
| | | | 380 | 3470 | 25,6 | 100 | 77 | 80 | 80 | 0,64 | 0,75 | 0,81 | 29,4 | 25,9 |
| | | | 460 | 3460 | 20,8 | 78 | 78 | 80 | 80 | 0,67 | 0,78 | 0,82 | 29,4 | 24,4 |
| 11,0 | **12,7** | 15500 | 230 | 3490 | 51,2 | 220 | 77 | 80 | 81 | 0,60 | 0,72 | 0,79 | 34,6 | 35,6 |
| | | | 380 | 3490 | 30,3 | 129 | 77 | 81 | 81 | 0,62 | 0,74 | 0,80 | 34,5 | 34,3 |
| | | | 460 | 3480 | 25,0 | 98 | 78 | 81 | 80 | 0,68 | 0,77 | 0,83 | 34,7 | 31,5 |
| 13,0 | **15,0** | 15500 | 230 | 3500 | 62,4 | 288 | 76 | 80 | 81 | 0,55 | 0,68 | 0,76 | 40,7 | 50,5 |
| | | | 380 | 3500 | 36,3 | 164 | 77 | 81 | 82 | 0,59 | 0,71 | 0,78 | 40,7 | 47,2 |
| | | | 460 | 3490 | 29,0 | 125 | 78 | 81 | 81 | 0,65 | 0,76 | 0,82 | 40,9 | 43,3 |
| 15,0 | **17,3** | 15500 | 230 | 3500 | 65,9 | 325 | 80 | 83 | 83 | 0,63 | 0,74 | 0,81 | 47,0 | 59,5 |
| | | | 380 | 3490 | 39,1 | 188 | 81 | 83 | 83 | 0,66 | 0,77 | 0,82 | 47,2 | 56,5 |
| | | | 460 | 3490 | 32,1 | 151 | 80 | 83 | 83 | 0,68 | 0,78 | 0,84 | 47,1 | 55,6 |
| 18,5 | **21,3** | 15500 | 230 | 3490 | 85,4 | 402 | 77 | 81 | 82 | 0,59 | 0,71 | 0,78 | 58,1 | 81,8 |
| | | | 380 | 3490 | 52,5 | 249 | 76 | 80 | 81 | 0,58 | 0,70 | 0,77 | 58,1 | 83,6 |
| | | | 460 | 3480 | 40,6 | 184 | 80 | 82 | 82 | 0,65 | 0,76 | 0,81 | 58,4 | 74,5 |
| 22,0 | **25,3** | 15500 | 230 | 3510 | 100,2 | 520 | 82 | 84 | 84 | 0,65 | 0,74 | 0,77 | 68,8 | 96,6 |
| | | | 380 | 3510 | 59,9 | 309 | 82 | 84 | 84 | 0,67 | 0,75 | 0,78 | 68,8 | 94,9 |
| | | | 460 | 3500 | 47,1 | 232 | 83 | 84 | 84 | 0,72 | 0,79 | 0,82 | 69,1 | 85,8 |
| 26 | **29,9** | 15500 | 230 | 3510 | 118,3 | 657 | 83 | 85 | 85 | 0,63 | 0,72 | 0,76 | 81,3 | 135,0 |
| | | | 380 | 3500 | 67,5 | 360 | 83 | 85 | 85 | 0,62 | 0,74 | 0,81 | 81,6 | 121,4 |
| | | | 460 | 3500 | 55,7 | 287 | 83 | 85 | 85 | 0,64 | 0,76 | 0,84 | 81,6 | 117,2 |
| 30,0 | **34,5** | 27500 | 230 | 3510 | 135,7 | 758 | 78 | 82 | 83 | 0,58 | 0,71 | 0,78 | 93,8 | 139,6 |
| | | | 380 | 3510 | 79,6 | 436 | 79 | 83 | 84 | 0,62 | 0,74 | 0,81 | 93,9 | 132,9 |
| | | | 460 | 3500 | 64,4 | 346 | 81 | 84 | 84 | 0,64 | 0,75 | 0,82 | 94,0 | 126,4 |
| 37,0 | **42,6** | 27500 | 230 | 3510 | 169,9 | 937 | 77 | 81 | 82 | 0,59 | 0,71 | 0,78 | 115,8 | 193,6 |
| | | | 380 | 3510 | 102,8 | 567 | 77 | 81 | 82 | 0,59 | 0,71 | 0,78 | 115,8 | 193,6 |
| | | | 460 | 3500 | 79,1 | 430 | 82 | 84 | 85 | 0,63 | 0,75 | 0,81 | 116,0 | 177,8 |

## 6" Rewindable Motors - Motor Leads*

| DOL | $P_N$ [kW] | St.# | Ø [mm²] | H / B [mm] | Length [m] | Lead Mod.- Nr. | Motor Design up to 12.2012 | | | Motor Design starting 01.2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lead seal Kit WW | Lead seal Kit 316 SS | Lead seal Kit 904 L | Lead seal Kit |
|  | **4 - 13** | 1 | 4G2,5 | 7,0 x 19,0 | 4 | 308 710 100 | 308 660 801 | 308 660 821 | 308 660 831 | 308 660 811 |
| | **15 - 22** | 1 | 4G4 | 8,2 x 23,0 | 4 | 308 710 101 | 308 660 802 | 308 660 822 | 308 660 832 | 308 660 812 |
| | **26 - 37** | 1 | 4G6 | 9,0 x 25,0 | 4 | 308 710 103 | 308 660 803 | 308 660 823 | 308 660 833 | 308 660 813 |
| For PE2/PA motors additionally the special Tape **700 541 688** is absolutely necessary | | | | | | | | | | |

| YΔ | $P_N$ [kW] | St.# | Ø [mm²] | B / H [mm] | Length [m] | Lead Mod.- Nr. | Motor Design up to 12.2012 | | | Motor Design starting 01.2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lead seal Kit WW | Lead seal Kit 316 SS | Lead seal Kit 904 L | Lead seal Kit |
|  | **4 - 22** | 1 | 3X2,5 | 7,3 x 15,3 | 4 | 308 710 104 | 308 660 806 | 308 660 826 | 308 660 836 | 308 660 816 |
| | | 1 | 4G2,5 | 7,0 x 19,0 | 4 | | | | | |
| | **26 - 30** | 1 | 3X4 | 8,5 x 17,8 | 4 | 308 710 105 | 308 660 807 | 308 660 827 | 308 660 837 | 308 660 817 |
| | | 1 | 4G4 | 8,2 x 23,0 | 4 | | | | | |
|  | **37** | 1 | 3X4 | 8,5 x 17,8 | 4 | 308 710 106 | 308 660 807 | 308 660 827 | 308 660 837 | 308 660 817 |
| | | 1 | 4G4 | 8,2 x 23,0 | 4 | | | | | |
| For PE2/PA motors additionally the special Tape **700 541 688** is absolutely necessary | | | | | | | | | | |

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

## Ground Leads*

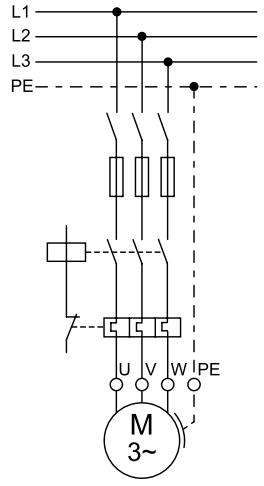
| | $P_N$ [kW] | Ø | Size [mm] | Type | Qty. | L (m) | Part Numbers 304SS / 316SS |
|---|---|---|---|---|---|---|---|
|  | all Ratings | 1G10 mm² | D 6,1 mm (±0,3) | VDE/KTW | 1 | 4 | 308 055 040 |

*only for 304SS and 316SS

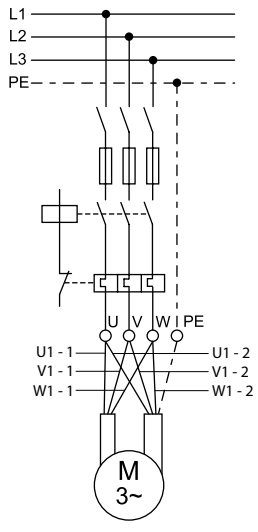
| Lead opening seal Kit | Motor Design starting 01.2013 | |
|---|---|---|
| **4 - 37 kW DOL / YΔ** | **Kit** | 308 660 815 |

## Electrical Connection

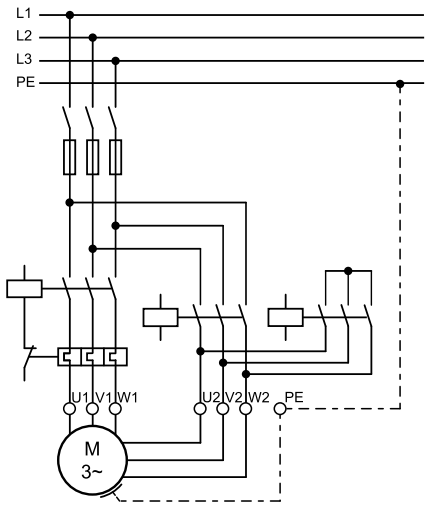
**DOL**




**DOL II**

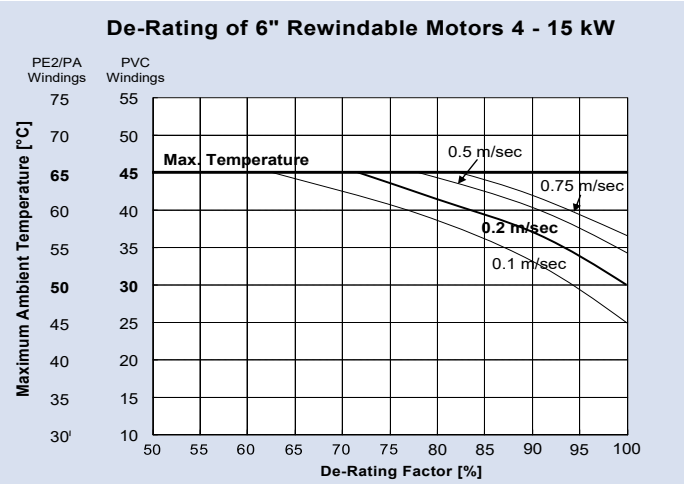


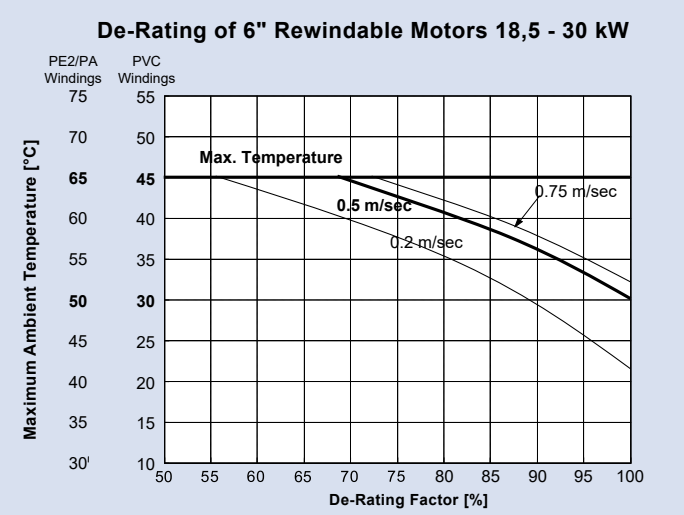

**YΔ**

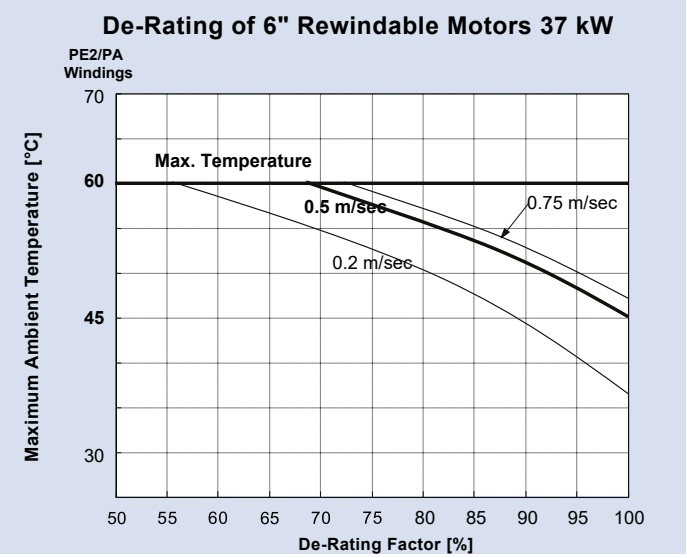



| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

# 6" Rewindable De-Rating Curves



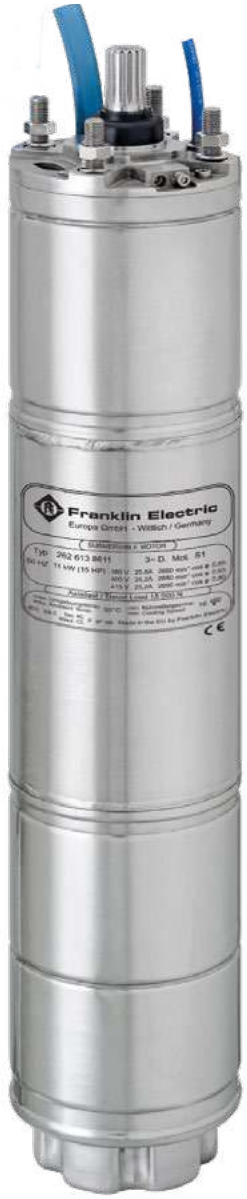



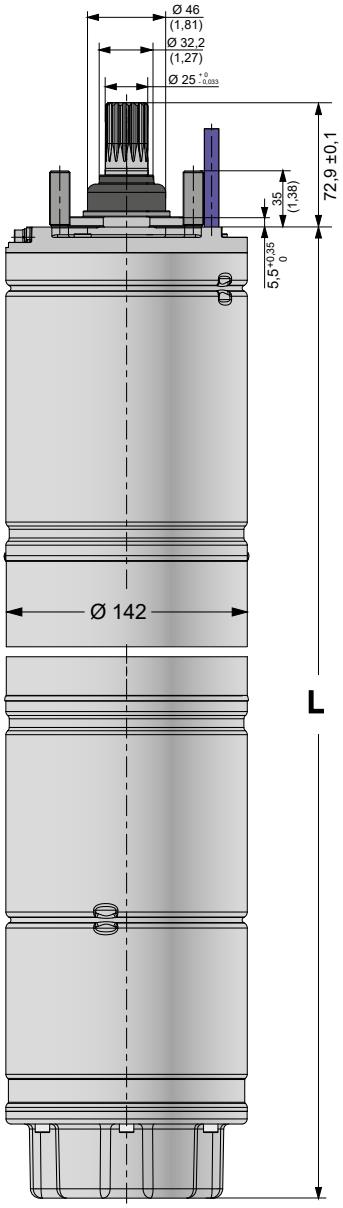



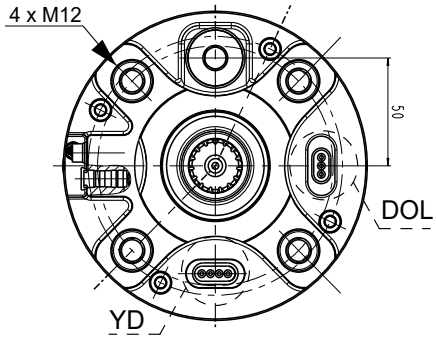

**If these conditions are not met please contact Franklin Electric !**

## 6" Rewindable Motor Design

## 304SS / 316SS / 904L




### Construction Materials

| Component | 304SS | 316SS | 904L |
|---|---|---|---|
| Shaft Extensions | 1.4462 | 1.4462 | 1.4462 |
| Slinger | EPDM | EPDM | EPDM |
| Seal | SiC/SiC | SiC/SiC | SiC/SiC |
| End bell, NEMA | 1.4308 | 1.4408 | 1.4539 |
| Stator Shell | 1.4301 | 1.4571 | 1.4539 |
| Diaphragm | EPDM | EPDM | EPDM |
| Diaphragm Cover | 1.4301 | 1.4404 | 1.4539 |

| P [kW] | Motor Lengths | Motor weights [kg] | | Motor Shipping Size | | |
|---|---|---|---|---|---|---|
| | L [mm] 304SS / 316SS /904L | 304SS / 316SS / 904L | | B [mm] | H [mm] | L [mm] |
| | | Motor | incl. pack | | | |
| **4** | 679 | 43 | 48 | 155 | 270 | 905 |
| **5,5** | 679 | 43 | 48 | | | |
| **7,5** | 699 | 45 | 50 | | | |
| **9,3** | 729 | 49 | 54 | | | |
| **11** | 759 | 53 | 58 | | | |
| **13** | 809 | 57 | 63 | 155 | 270 | 1135 |
| **15** | 854 | 61 | 67 | | | |
| **18,5** | 899 | 66 | 72 | | | |
| **22** | 989 | 77 | 83 | | | |
| **26** | 1094 | 88 | 95 | 155 | 270 | 1435 |
| **30** | 1194 | 98 | 105 | | | |
| **37** | 1274 | 105 | 112 | | | |

## PVC Insulation Standard Windings (380 – 415 V / 50 Hz and 460 V / 60 Hz)

| $P_N$ [kW] | Mod.-No. Windingkit | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YD (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **4** | 326 364 999 | 53+53+53+53 | 0,9 / 1,6 | PVC | Serie | 540 | 4,8800 | 5,1700 | 3,5000 |
| **5,5** | 326 364 999 | 53+53+53+53 | 0,9 / 1,6 | PVC | Serie | 540 | 4,8800 | 5,1700 | 3,5000 |
| **7,5** | 326 375 999 | 47+47+47+47 | 1,0 / 1,7 | PVC | Serie | 500 | 3,6710 | 4,0400 | 2,7200 |
| **9,3** | 326 374 999 | 41+41+41+41 | 1,1 / 1,8 | PVC | Serie | 466 | 2,8270 | 3,0200 | 2,0600 |
| **11** | 326 373 999 | 36+36+36+36 | 1,2 / 1,9 | PVC | Serie | 436 | 2,2200 | 2,3500 | 1,6060 |
| **13** | 326 372 999 | 30+30+30+30 | 1,3 / 2,0 | PVC | Serie | 400 | 1,7330 | 1,8800 | 1,2430 |
| **15** | 326 366 999 | 27+27+27+27 | 1,4 / 2,2 | PVC | Serie | 395 | 1,4550 | 1,5260 | 1,0160 |
| **18,5** | 326 371 999 | 23+23+23+23 | 1,5 / 2,3 | PVC | Serie | 362 | 1,1610 | 1,2220 | 0,8250 |
| **22** | 326 370 999 | 19+19+19+19 | 1,7 / 2,5 | PVC | Serie | 342 | 0,8520 | 0,9200 | 0,7130 |
| **26** | 326 378 999 | 16+16+16+16 | 1,9 /2,7 | PVC | Serie | 330 | 0,6570 | 0,6980 | 0,4700 |
| **30** | 326 369 999 | 27+27 | 1,4 / 2,2 | PVC | Parallel | 624 | 0,3810 | 0,6100 | 0,4120 |
| **37** | 326 377 999 | 12+12+12+12 | 2,0/ 2,9 / 3,1 | PE2/PA | Serie | 302 | 0,5420 | 0,5900 | 0,3840 |

## PE2/PA Insulation Standard Windings (380 – 415 V / 50 Hz and 460 V / 60 Hz)

| $P_N$ [kW] | Mod.-No. Windingkit | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YD (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **4** | 326 461 999 | 30+30+30+30 | 1,1 / 2,0 | PE2/PA | Serie Y | 311 | 1,8500 | - | 3,7000 |
| **5,5** | 326 461 999 | 30+30+30+30 | 1,1 / 2,0 | PE2/PA | Serie Y | 311 | 1,8500 | - | 3,7000 |
| **7,5** | 326 428 999 | 27+27+27+27 | 1,3 / 2,2 | PE2/PA | Serie Y | 295 | 1,2480 | - | 2,4960 |
| **9,3** | 326 429 999 | 23+24+24+23 | 1,4 / 2,4 | PE2/PA | Serie Y | 274 | 1,0060 | - | 2,3200 |
| **11** | 326 430 999 | 20+21+21+20 | 1,4 / 2,4 | PE2/PA | Serie Y | 255 | 0,9280 | - | 1,8560 |
| **13** | 326 431 999 | 17+18+18+17 | 1,6 / 2,6 | PE2/PA | Serie Y | 240 | 0,6670 | - | 1,3340 |
| **15** | 326 432 999 | 27+27+27+27 | 1,3 / 2,2 | PE2/PA | Serie | 395 | 1,6870 | 1,6870 | 1,2466 |
| **18,5** | 326 433 999 | 23+23+23+23 | 1,3 / 2,2 | PE2/PA | Serie | 362 | 1,5500 | 1,5500 | 1,0333 |
| **22** | 326 434 999 | 19+19+19+19 | 1,5 / 2,5 | PE2/PA | Serie | 342 | 1,0940 | 1,0940 | 0,7293 |
| **26** | 326 435 999 | 16+16+16+16 | 1,7 / 2,7 | PE2/PA | Serie | 330 | 0,8210 | 0,8210 | 0,5473 |
| **30** | 326 436 999 | 27+27 | 1,3 / 2,2 | PE2/PA | Parallel | 624 | 1,3260 | 0,6630 | 0,4420 |
| **37** | 326 377 999 | 12+12+12+12 | 2,0/ 2,9 / 3,1 | PE2/PA | Serie | 302 | 0,5420 | 0,5900 | 0,3840 |

## Insulation resistance (20°C / 500 VDC)

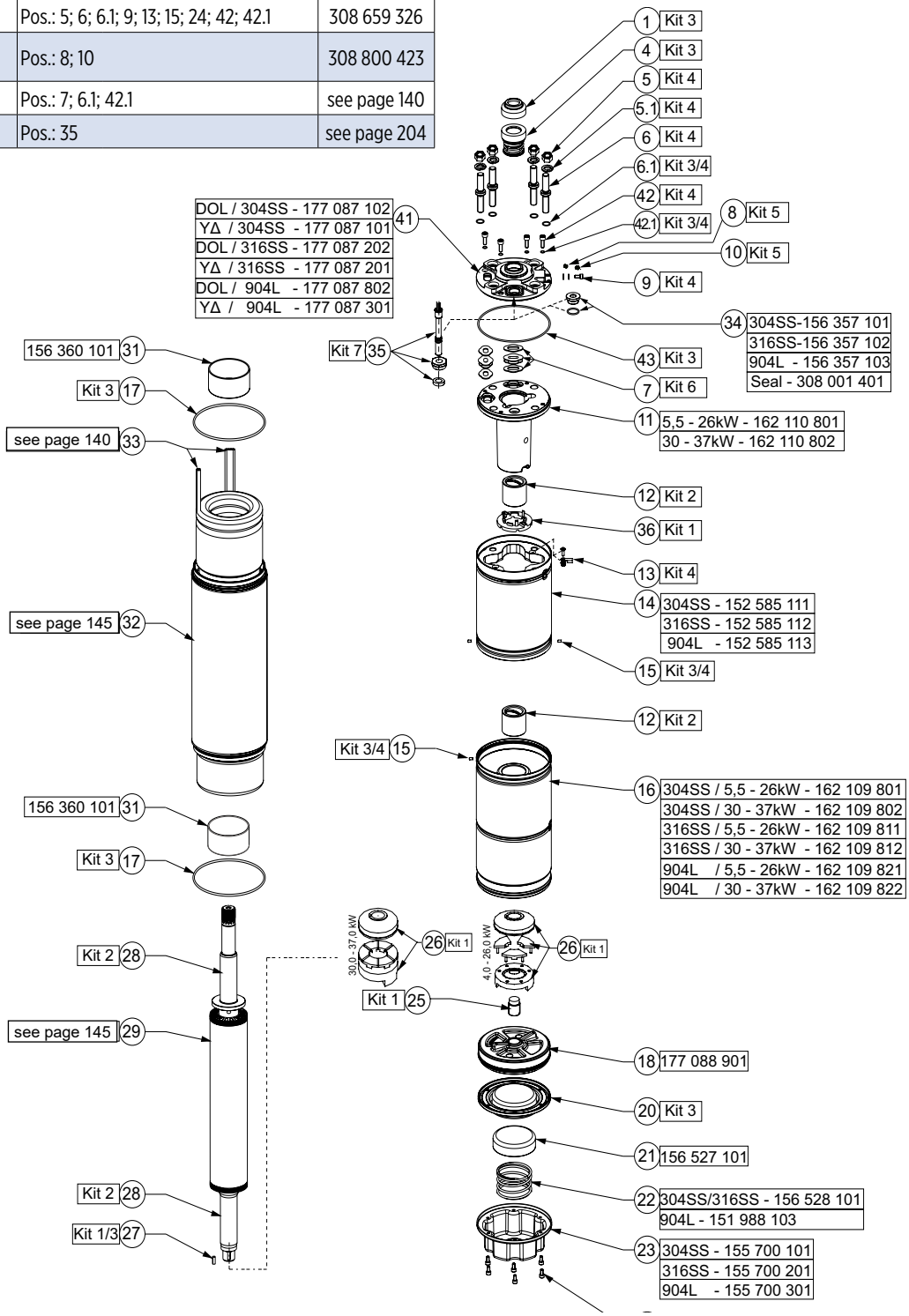
| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

## Motor Repair instruction

| | | | | |
|---|---|---|---|---|
| **Pictured Repair instruction** | **WW** | Motor Design up to 12.2012 | Mod.- Nb. : | 308 018 460 |
| | **316SS / 904L** | | | 308 018 *** |
| | **304SS / 316SS / 904L** | Motor Design starting 01.2013 | | 308 018 607 |

## 6" Rewindable Spare Parts 304SS / 316SS / 904L

| | | | | |
|---|---|---|---|---|
| Kit 1 | Thrust Bearing Kit | 4-26kW<br>30-37kW | Pos.: 17; 25; 26; 27; 36 | 308 750 301<br>308 750 302 |
| Kit 2 | Radial Bearing Kit | 4-26kW<br>30-37kW | Pos.: 12; 28 | 308 750 401<br>308 750 402 |
| Kit 3A | Seal Kit Standard<br>304SS / 316SS / 904L | Pos.: 1; 4; 6.1; 15; 17; 20; 34; 42.1, 43 | | 308 800 422 |
| Kit 3B | Seal Kit Viton<br>304SS / 316SS / 904L | Pos.: 1; 4; 6.1; 15; 17; 20; 34; 42.1, 43 | | 308 800 424 |
| Kit 4 | Screw Kit<br>304SS / 316SS | Pos.: 5; 5.1; 6; 6.1; 9; 13; 15; 24; 42; 42.1 | | 308 659 325 |
| | Screw Kit 904L | Pos.: 5; 6; 6.1; 9; 13; 15; 24; 42; 42.1 | | 308 659 326 |
| Kit 5 | Valve Kit<br>(all material versions) | Pos.: 8; 10 | | 308 800 423 |
| Kit 6 | Lead Seal Kit | Pos.: 7; 6.1; 42.1 | | see page 140 |
| Kit 7 | PT100 Kit | Pos.: 35 | | see page 204 |



## 304SS Stator and Rotor Model Number (380 - 415 Volts / 50Hz) (starting 08.2012)

| $P_N$ [kW] | Stator (incl. winding and 4m motor lead) | | | | Rotor |
|---|---|---|---|---|---|
| | DOL 304 | | YD 304 | | |
| | PVC | PE2/PA | PVC | PE2/PA | |
| 4 | 326 364 811 | 326 461 811 | 326 364 861 | | 161 177 801K |
| 5,5 | 326 364 811 | 326 461 811 | 326 364 861 | | 161 177 801K |
| 7,5 | 326 375 811 | 326 428 811 | 326 375 861 | | 161 177 802K |
| 9,3 | 326 374 811 | 326 429 811 | 326 374 861 | | 161 177 803K |
| 11 | 326 373 811 | 326 430 811 | 326 373 861 | | 161 177 804K |
| 13 | 326 372 811 | 326 431 811 | 326 372 861 | | 161 177 805K |
| 15 | 326 366 811 | 326 432 811 | 326 366 861 | 326 432 861 | 161 177 806K |
| 18,5 | 326 371 811 | 326 433 811 | 326 371 861 | 326 433 861 | 161 177 807K |
| 22 | 326 370 811 | 326 434 811 | 326 370 861 | 326 434 861 | 161 176 804K |
| 26 | 326 378 811 | 326 435 811 | 326 378 861 | 326 435 861 | 161 176 803K |
| 30 | 326 369 811 | 326 436 811 | 326 369 861 | 326 436 861 | 161 176 802K |
| 37 | | 326 377 811 | | 326 377 861 | 161 176 801K |

## 316SS Stator and Rotor Model Number (380 - 415 Volts / 50Hz) (starting 08.2012)

| $P_N$ [kW] | Stator (incl. winding and 4m motor lead) | | | | Rotor |
|---|---|---|---|---|---|
| | DOL 316SS | | YD 316SS | | |
| | PVC | PE2/PA | PVC | PE2/PA | |
| 4 | 326 364 821 | 326 461 821 | 326 364 871 | | 161 177 801K |
| 5,5 | 326 364 821 | 326 461 821 | 326 364 871 | | 161 177 801K |
| 7,5 | 326 375 821 | 326 428 821 | 326 375 871 | | 161 177 802K |
| 9,3 | 326 374 821 | 326 429 821 | 326 374 871 | | 161 177 803K |
| 11 | 326 373 821 | 326 430 821 | 326 373 871 | | 161 177 804K |
| 13 | 326 372 821 | 326 431 821 | 326 372 871 | | 161 177 805K |
| 15 | 326 366 821 | 326 432 821 | 326 366 871 | 326 432 871 | 161 177 806K |
| 18,5 | 326 371 821 | 326 433 821 | 326 371 871 | 326 433 871 | 161 177 807K |
| 22 | 326 370 821 | 326 434 821 | 326 370 871 | 326 434 871 | 161 176 804K |
| 26 | 326 378 821 | 326 435 821 | 326 378 871 | 326 435 871 | 161 176 803K |
| 30 | 326 369 821 | 326 436 821 | 326 369 871 | 326 436 871 | 161 176 802K |
| 37 | | 326 377 821 | | 326 377 871 | 161 176 801K |

## 904L Stator and Rotor Model Number (380 - 415 Volts / 50Hz) (starting 08.2012)

| $P_N$ [kW] | Stator (incl. winding and 4m motor lead) | | | | Rotor |
|---|---|---|---|---|---|
| | DOL 904L | | YD 904L | | |
| | PVC | PE2/PA | PVC | PE2/PA | |
| 4 | 326 364 831 | 326 461 831 | 326 364 881 | | 161 177 801K |
| 5,5 | 326 364 831 | 326 461 831 | 326 364 881 | | 161 177 801K |
| 7,5 | 326 375 831 | 326 428 831 | 326 375 881 | | 161 177 802K |
| 9,3 | 326 374 831 | 326 429 831 | 326 374 881 | | 161 177 803K |
| 11 | 326 373 831 | 326 430 831 | 326 373 881 | | 161 177 804K |
| 13 | 326 372 831 | 326 431 831 | 326 372 881 | | 161 177 805K |
| 15 | 326 366 831 | 326 432 831 | 326 366 881 | 326 432 881 | 161 177 806K |
| 18,5 | 326 371 831 | 326 433 831 | 326 371 881 | 326 433 881 | 161 177 807K |
| 22 | 326 370 831 | 326 434 831 | 326 370 881 | 326 434 881 | 161 176 804K |
| 26 | 326 378 831 | 326 435 831 | 326 378 881 | 326 435 881 | 161 176 803K |
| 30 | 326 369 831 | 326 436 831 | 326 369 881 | 326 436 881 | 161 176 802K |
| 37 | | 326 377 831 | | 326 377 881 | 161 176 801K |

# 8" REWINDABLE MOTOR

**Rewindable motors with best class winding wires**

SAND FIGHTER | WATER WELL WW CI PC / 304SS | OPTIONAL STAINLESS STEEL 316 | OPTIONAL STAINLESS STEEL 904L

## FEATURES & BENEFITS

- 8" double flange NEMA mounting design
- Stainless steel splined shaft
- Factory filled with Franklin's FES93 motor fill solution
- Liquid lubricated radial bearings and High capacity Kingsbury type 45 kN thrust bearing for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- High efficiency electrical design for low operation costs
- Drinking water approvals

## OPTIONS

- Higher-graded materials: 316SS and 904L
- Special voltages
- Retrofitable PT 100 temperature sensor
- PE2/PA winding insulation for max. ambient temperature of 50 °C (Standard cooling flows)
- Special lead lengths on request

High Efficiency System Paket




- NEMA Synchron motors
- Frequency converter
- matchet output filter

▶ 8" High Efficiency System

## STANDARD SPECIFICATION

- Ratings: 30 - 93 kW
- Max. storage temperature - 15 °C to + 60 °C
- Standard motor with PVC winding insulation
- Nominal ambient temperature: 30 °C
  with 0.2 m/s cooling flow for 30 - 52 kW motors
  with 0.5 m/s cooling flow for 55 - 93 kW motors
- Standard Voltage: 380 - 415 V (50 Hz), 460 V (60 Hz)
- Voltage Tolerance: 50 Hz: -10 % / +6 % $U_N$ [380 - 415 V = (380 - 10 %) – (415 + 6 %)], 60 Hz: ±10 % $U_N$
- Protection IP68
- Motor protection: DIN 61947-4-1
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 6 m
- Installation orientation: Vertical / horizontal (shaft end heightened) - 93 kW motors may not be installed in horizontal position)
- Rotation counter clock wise facing shaft end (rotation reversible)
- All motors with factory installed leads



## 8" Rewindable Motors - Model Numbers 50Hz / 60Hz *

| $P_N$ [kW] | $U_N$ / f | Model Number Digit 1 – 6 | | Model Number Digit 7 – 10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | [V] / [Hz] | DOL | YΔ | WW*** | 316 SS | 904L | PE2/PA** | | |
| | | | | | | | WW*** | 316 SS | 904L |
| **30** | 380 - 415 / 50 460 / 60 | 263 610 | 263 710 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 660 | 263 780 | | | | | | |
| **37** | 380 - 415 / 50 460 / 60 | 263 611 | 263 711 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 661 | 263 781 | | | | | | |
| **45** | 380 - 415 / 50 460 / 60 | 263 612 | 263 712 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 662 | 263 782 | | | | | | |
| **52** | 380 - 415 / 50 460 / 60 | 263 260 | 263 270 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 310 | 263 360 | | | | | | |
| **55** | 380 - 415 / 50 460 / 60 | 263 613 | 263 713 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 663 | 263 783 | | | | | | |
| **60** | 380 - 415 / 50 460 / 60 | 263 261 | 263 271 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 311 | 263 361 | | | | | | |
| **67** | 380 - 415 / 50 460 / 60 | 263 262 | 263 272 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 312 | 263 362 | | | | | | |
| **75** | 380 - 415 / 50 460 / 60 | 263 614 | 263 714 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 664 | 263 784 | | | | | | |
| **83** | 380 - 415 / 50 460 / 60 | 263 263 | 263 273 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 313 | 263 363 | | | | | | |
| **93** | 380 - 415 / 50 460 / 60 | 263 615 | 263 715 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 263 665 | 263 785 | | | | | | |

| $P_N$ [kW] | $U_N$ / f | Model Number Digit 1 – 6 | | Model Number Digit 7 – 10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | [V] / [Hz] | DOL | YΔ | WW | 316 SS | 904L | PE2/PA** | | |
| | | | | | | | WW | 316 SS | 904L |
| **30** | 500/ 50 | 263 620 | 263 790 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **37** | 500/ 50 | 263 621 | 263 791 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **45** | 500/ 50 | 263 622 | 263 792 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **52** | 500/ 50 | 263 240 | 263 340 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **55** | 500/ 50 | 263 623 | 263 793 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **60** | 500/ 50 | 263 241 | 263 341 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **67** | 500/ 50 | 263 242 | 263 342 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **75** | 500/ 50 | 263 624 | 263 794 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **83** | 500/ 50 | 263 243 | 263 343 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| **93** | 500/ 50 | 263 625 | 263 795 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |

* VFD operation is only allowed up to 460V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH
** For VFD Operation is PE2/PA mandatory!
*** WW motor - brackets Cast Iron Powder coated

## 8" Rewindable Motors - Performance Data 50Hz

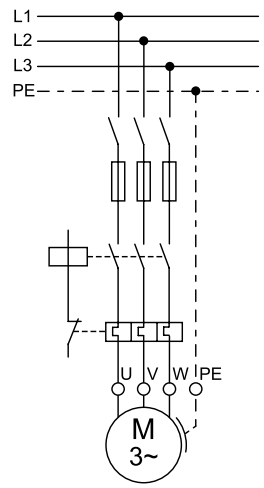
| $P_N$ [kW] | Thrust F[N] | $U_N$ [V] | $n_N$ [ $min^{-1}$ ] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cosφ (PF) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 30 | 45 000 | 380 | 2880 | 63 | 300 | 83,5 | 84,4 | 83,1 | 0,89 | 0,88 | 0,89 | 99 | 126 |
| | | 400 | 2900 | 60 | 318 | 83,6 | 85 | 84,3 | 0,80 | 0,86 | 0,89 | 99 | 141 |
| | | 415 | 2910 | 58 | 332 | 83,5 | 85,2 | 84,9 | 0,77 | 0,89 | 0,88 | 98 | 151 |
| | | 500 | 2880 | 48 | 228 | 84 | 84 | 83 | 0,84 | 0,88 | 0,89 | | |
| 37 | 45 000 | 380 | 2890 | 79 | 378 | 84,6 | 85,3 | 83,9 | 0,80 | 0,86 | 0,88 | 122 | 156 |
| | | 400 | 2900 | 76 | 400 | 83,9 | 85,2 | 84,6 | 0,74 | 0,82 | 0,86 | 122 | 176 |
| | | 415 | 2910 | 75 | 412 | 82,6 | 84,5 | 84,3 | 0,7 | 0,80 | 0,84 | 121 | 190 |
| | | 500 | 2890 | 60 | 287 | 85 | 85 | 84 | 0,80 | 0,86 | 0,88 | | |
| 45 | 45 000 | 380 | 2900 | 93 | 491 | 85,8 | 86,4 | 85,2 | 0,79 | 0,86 | 0,88 | 149 | 218 |
| | | 400 | 2910 | 90 | 520 | 85,3 | 86,5 | 85,9 | 0,74 | 0,82 | 0,86 | 148 | 241 |
| | | 415 | 2910 | 89 | 541 | 84,5 | 86,2 | 85,8 | 0,69 | 0,79 | 0,84 | 148 | 263 |
| | | 500 | 2905 | 73 | 393 | 85 | 87 | 86 | 0,74 | 0,82 | 0,86 | | |
| | | 1000 | 2910 | 35 | 208 | 85 | 88 | 87 | 0,81 | 0,87 | 0,89 | | |
| 52 | 45 000 | 380 | 2900 | 107 | 575 | 86,5 | 86,7 | 85,3 | 0,81 | 0,87 | 0,89 | 175 | 284 |
| | | 400 | 2910 | 103 | 608 | 86,4 | 87,1 | 86,2 | 0,76 | 0,84 | 0,87 | 175 | 318 |
| | | 415 | 2920 | 101 | 633 | 85,6 | 87 | 86,7 | 0,71 | 0,80 | 0,85 | 174 | 345 |
| | | 500 | 2915 | 84 | 437 | 87 | 87 | 85 | 0,81 | 0,87 | 0,85 | 170 | 338 |
| 55 | 45 000 | 380 | 2900 | 114 | 624 | 86,5 | 86,9 | 85,7 | 0,78 | 0,85 | 0,88 | 182 | 301 |
| | | 400 | 2915 | 110 | 660 | 85,9 | 87 | 86,4 | 0,72 | 0,82 | 0,86 | 181 | 340 |
| | | 415 | 2920 | 109 | 688 | 84,8 | 86,4 | 86,2 | 0,67 | 0,78 | 0,83 | 181 | 366 |
| | | 500 | 2910 | 88 | 474 | 86 | 87 | 86 | 0,78 | 0,85 | 0,86 | | |
| | | 1000 | 2910 | 45 | 250 | 76 | 87 | 86 | 0,76 | 0,83 | 0,87 | 181 | 301 |
| 60 | 45 000 | 380 | 2900 | 122 | 698 | 87,2 | 87,6 | 86,5 | 0,81 | 0,87 | 0,89 | 198 | 319 |
| | | 400 | 2910 | 116 | 725 | 86,8 | 87,7 | 87,0 | 0,77 | 0,84 | 0,88 | 197 | 357 |
| | | 415 | 2920 | 115 | 768 | 86,1 | 87,4 | 87,1 | 0,73 | 0,82 | 0,86 | 197 | 387 |
| | | 500 | 2910 | 93 | 530 | 86 | 87 | 86 | 0,78 | 0,85 | 0,88 | | |
| | | 1000 | 2920 | 46 | 300 | 87 | 88 | 87 | 0,77 | 0,84 | 0,88 | | |
| 67 | 45 000 | 380 | 2900 | 137 | 759 | 87,2 | 87,6 | 86,4 | 0,79 | 0,86 | 0,89 | 220 | 352 |
| | | 400 | 2910 | 133 | 797 | 86,5 | 87,5 | 86,9 | 0,74 | 0,82 | 0,86 | 220 | 395 |
| | | 415 | 2920 | 131 | 828 | 85,6 | 87 | 86,6 | 0,69 | 0,79 | 0,84 | 219 | 427 |
| | | 500 | 2900 | 104 | 576 | 87 | 88 | 86 | 0,79 | 0,86 | 0,89 | 220 | 392 |
| | | 1000 | 2910 | 52 | 330 | 87 | 88 | 87 | 0,74 | 0,82 | 0,86 | | |
| 75 | 45 000 | 380 | 2900 | 154 | 892 | 86,7 | 87,1 | 85,9 | 0,79 | 0,86 | 0,89 | 247 | 419 |
| | | 400 | 2910 | 148 | 942 | 86,2 | 87,3 | 86,7 | 0,74 | 0,83 | 0,87 | 246 | 472 |
| | | 415 | 2920 | 147 | 982 | 85,4 | 86,9 | 86,6 | 0,69 | 0,79 | 0,84 | 245 | 510 |
| | | 500 | 2910 | 118 | 678 | 87 | 87 | 86 | 0,79 | 0,86 | 0,86 | 246 | 472 |
| | | 1000 | 2910 | 60 | 377 | 74 | 83 | 87 | 0,86 | 0,87 | 0,87 | 246 | 472 |
| 83 | 45 000 | 380 | 2910 | 166 | 1019 | 87,8 | 88,3 | 87,2 | 0,81 | 0,87 | 0,90 | 275 | 483 |
| | | 400 | 2920 | 160 | 1077 | 87,5 | 88,4 | 87,6 | 0,77 | 0,84 | 0,88 | 273 | 544 |
| | | 415 | 2925 | 156 | 1120 | 87,2 | 88,4 | 88,0 | 0,73 | 0,82 | 0,86 | 273 | 586 |
| | | 500 | 2915 | 128 | 775 | 88 | 88 | 87 | 0,81 | 0,87 | 0,88 | | |
| 93 | 45 000 | 380 | 2910 | 188 | 1186 | 87,8 | 88,4 | 87,5 | 0,77 | 0,85 | 0,88 | 306 | 557 |
| | | 400 | 2920 | 183 | 1276 | 87,2 | 88,3 | 87,8 | 0,71 | 0,81 | 0,86 | 305 | 626 |
| | | 415 | 2930 | 184 | 1308 | 86,2 | 87,8 | 87,7 | 0,65 | 0,76 | 0,83 | 305 | 676 |
| | | 500 | 2910 | 144 | 902 | 88 | 88 | 87 | 0,77 | 0,85 | 0,87 | | |
| | | 1000 | 2920 | 73,7 | 508 | 87 | 88 | 88 | 0,72 | 0,80 | 0,85 | 304 | 622 |

## 8" Rewindable Motors - Performance Data 60Hz

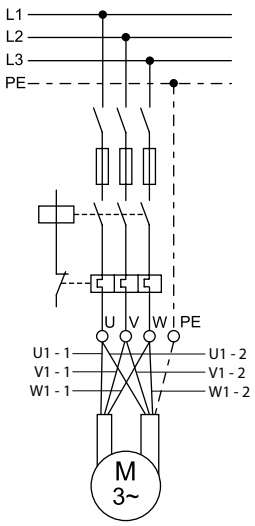
| $P_N$ [Kw] | $P_{max}$ [Kw] | Thrust F [N] | $U_N$ [V] | $n_{max}$ [ $min^{-1}$ ] | $I_{max}$ [A] | $I_A$ [A] | $\eta_{max}$ (Eff.) [%] at % load | | | $\cos\varphi_{max}$ (Pf.) at % load | | | $T_{max}$ [Nm] | $T_A$ [Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 30 | **34,5** | 45 000 | 380 | 3500 | 74 | 394 | 82,4 | 84,6 | 84,5 | 0,80 | 0,86 | 0,88 | 99 | 141 |
| | | | 460 | 3490 | 61 | 324 | 81,5 | 83,6 | 83,5 | 0,82 | 0,87 | 0,89 | 99 | 130 |
| 37 | **42,6** | 45 000 | 380 | 3510 | 92 | 514 | 83,0 | 85,2 | 85,4 | 0,72 | 0,81 | 0,85 | 122 | 178 |
| | | | 460 | 3490 | 75 | 407 | 83,8 | 85,3 | 84,8 | 0,77 | 0,84 | 0,87 | 123 | 162 |
| 45 | **51,8** | 45 000 | 380 | 3500 | 108 | 660 | 83,6 | 85,7 | 85,8 | 0,73 | 0,81 | 0,86 | 149 | 240 |
| | | | 460 | 3500 | 89 | 524 | 85,0 | 86,6 | 86,3 | 0,77 | 0,84 | 0,87 | 149 | 221 |
| 52 | **59,5** | 45 000 | 380 | 3510 | 125 | 765 | 85,4 | 87,0 | 86,9 | 0,75 | 0,83 | 0,87 | 175 | 300 |
| | | | 460 | 3505 | 102 | 606 | 85,0 | 86,6 | 86,2 | 0,79 | 0,86 | 0,88 | 175 | 276 |
| 55 | **63** | 45 000 | 380 | 3510 | 132 | 842 | 84,4 | 86,5 | 86,5 | 0,71 | 0,80 | 0,87 | 182 | 321 |
| | | | 460 | 3510 | 109 | 657 | 85,8 | 87,1 | 86,7 | 0,77 | 0,84 | 0,87 | 181 | 287 |
| 60 | **69** | 45 000 | 380 | 3510 | 141 | 931 | 86,2 | 87,7 | 87,7 | 0,77 | 0,84 | 0,87 | 198 | 362 |
| | | | 460 | 3510 | 116 | 734 | 85,4 | 86,9 | 86,7 | 0,80 | 0,86 | 0,88 | 198 | 332 |
| 67 | **77** | 45 000 | 380 | 3520 | 142 | 1037 | 84,4 | 86,4 | 86,7 | 0,73 | 0,82 | 0,84 | 220 | 396 |
| | | | 460 | 3510 | 131 | 803 | 85,7 | 87,2 | 86,9 | 0,77 | 0,85 | 0,87 | 220 | 366 |
| 75 | **86** | 45 000 | 380 | 3510 | 175 | 1143 | 86,3 | 87,8 | 87,4 | 0,77 | 0,85 | 0,88 | 247 | 427 |
| | | | 460 | 3510 | 145 | 947 | 86,3 | 87,8 | 87,4 | 0,77 | 0,85 | 0,88 | 247 | 427 |
| 83 | **95** | 45 000 | 380 | 3510 | 191 | 1377 | 86,0 | 88,0 | 88,0 | 0,75 | 0,83 | 0,89 | 274 | 532 |
| | | | 460 | 3510 | 158 | 1090 | 86,5 | 87,9 | 87,7 | 0,80 | 0,86 | 0,89 | 275 | 489 |
| 93 | **107** | 45 000 | 380 | 3510 | 218 | 1586 | 88,0 | 88,6 | 88,4 | 0,77 | 0,83 | 0,87 | 306 | 613 |
| | | | 460 | 3510 | 180 | 1256 | 86,7 | 88,3 | 88,3 | 0,76 | 0,83 | 0,87 | 306 | 561 |

## Electrical Connection

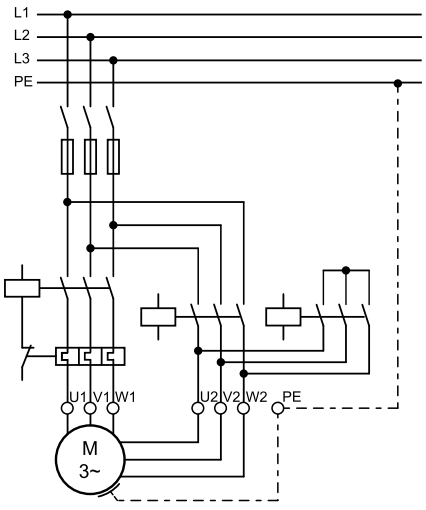
### DOL




### DOL II



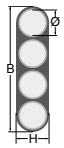

### YΔ



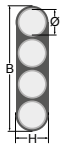
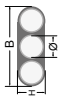

| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

## 8" Rewindable Motors - Motor Leads

### DOL

| Lead | $P_N$ [kW] | Ø ($mm^2$) | B / H (mm) | | Lengths (m) | Qty. | Lead Mod.- Nr. | Lead seal Kit WW/316 Mod.- Nr. | Lead seal Kit 904L Mod.- Nr. |
|---|---|---|---|---|---|---|---|---|---|
|  | 30 – 45 | 4G10 | B | 30,0 | 6 | 1 | 308 710 107 | 308 660 612 | 308 660 619 |
| | | | H | 10,5 | | | | | |
| | 52 – 93 | 4G16 | B | 38,0 | 6 | 1 | 308 710 108 | 308 660 618 | 308 660 620 |
| | | | H | 12,8 | | | | | |
|  | 93 (PE2/PA) | 3X25 | B | 37,5 | 6 | 1 | 308 710 109 | 308 660 613 | 308 660 621 |
| | | | H | 16,0 | | | | | |

### YΔ

| Lead | $P_N$ [kW] | Ø ($mm^2$) | B / H (mm) | | Lengths (m) | Qty. | Lead Mod.- Nr. | Lead seal Kit WW/316 Mod.- Nr. | Lead seal Kit 904L Mod.- Nr. |
|---|---|---|---|---|---|---|---|---|---|
|   | 30 – 60 | 3X6 | B | 19,5 | 6 | 1 | 308 710 110 | 308 660 614 | 308 660 622 |
| | | | H | 9,5 | | | | | |
| | | 4G6 | B | 25,0 | | 1 | | | |
| | | | H | 9,0 | | | | | |
| | 65 – 83 | 3X10 | B | 24,5 | 6 | 1 | 308 710 111 | 308 660 615 | 308 660 623 |
| | | | H | 11,5 | | | | | |
| | | 4G10 | B | 30,0 | | 1 | | | |
| | | | H | 10,5 | | | | | |
| | 93 | 3X16 | B | 30,3 | 6 | 1 | 308 710 112 | 308 660 616 | 308 660 624 |
| | | | H | 13,2 | | | | | |
| | | 4G16 | B | 38,0 | | 1 | | | |
| | | | H | 12,8 | | | | | |

For PE2/PA motors additionally the special Tape 700 541 688 is absolutely necessary

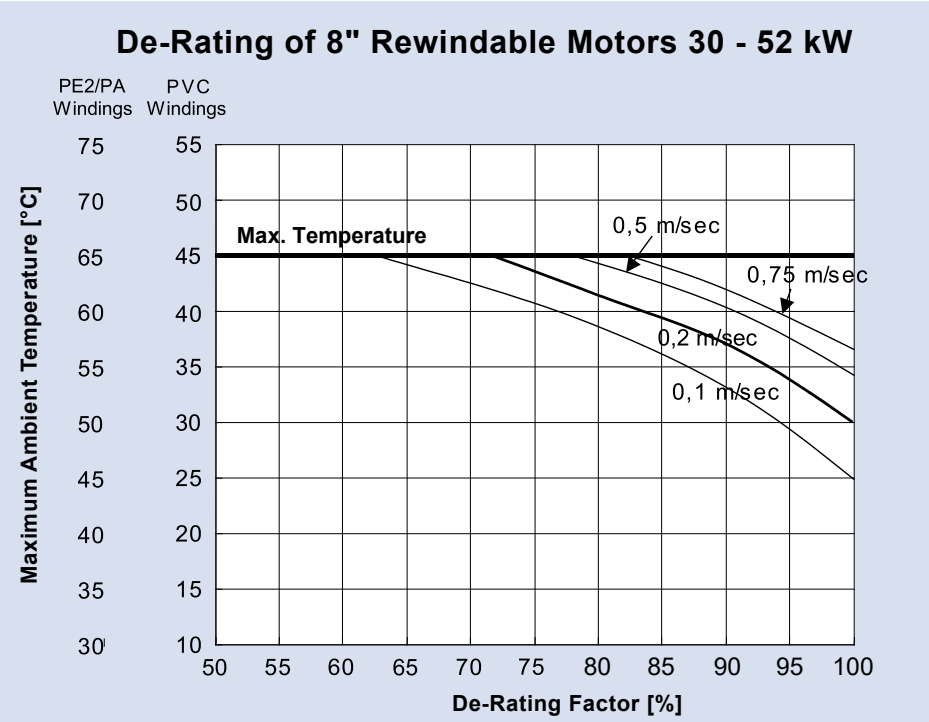
| Ground lead* (optional) | $P_N$ [kW] | Ø ($mm^2$) | D (mm) | Lengths (m) | Qty. | Mod.-Nr. |
|---|---|---|---|---|---|---|
|  | **all ratings** | 1G25 | 13,0 | 8 | 1 | 308 053 080 |

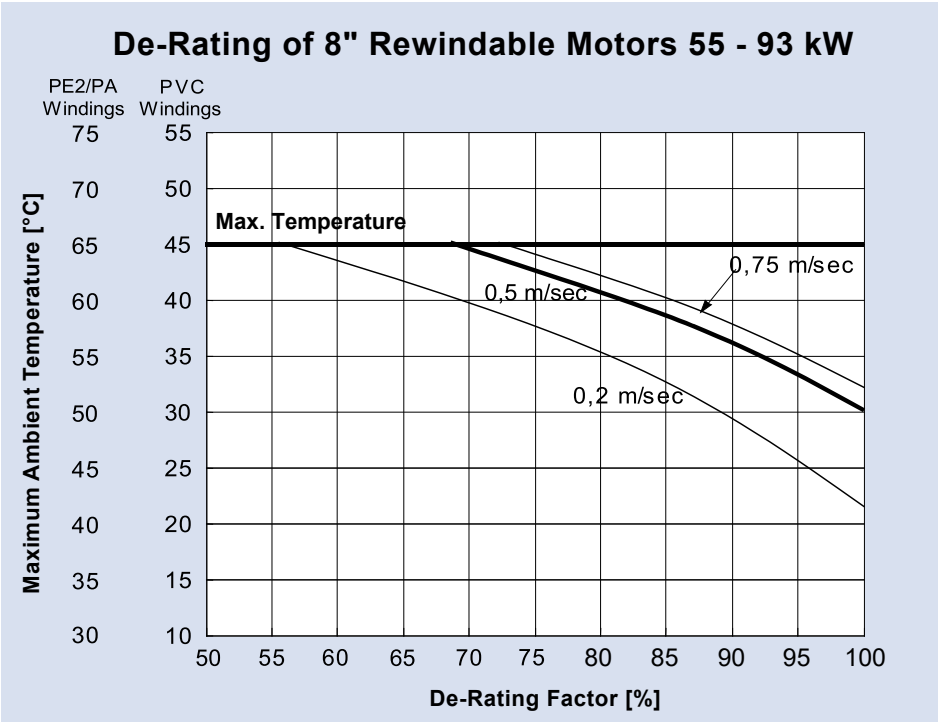
*only for WW and 316SS Motors

| Lead opening seal kit | 30 – 93 kW DOL / YΔ | Mod.- Nr.: | WW/316 | 308 660 617 |
|---|---|---|---|---|
| | | | 904L | 308 660 625 |

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

## 8" Rewindable De-Rating Curves




**If these conditions are not met please contact Franklin Electric !**

## PVC Insulation Windings (380 – 415 V / 50 Hz)

| $P_N$ [kW] | Mod.-No. Winding kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YD (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **30** | 326 349 999 | 9+10+9+10 | 2,2 / 3,1 | PVC | Series | 450,00 | 0,2640 | 0,5400 | 0,3700 |
| **37** | 326 101 999 | 17+17+17+17 | 1,6 / 2,4 | PVC | Parallel | 630,00 | 0,8930 | 0,4750 | 0,3110 |
| **45** | 326 110 999 | 14+14+14+14 | 1,8 / 2,6 | PVC | Parallel | 582,48 | 0,6545 | 0,3480 | 0,2350 |
| **52** | 326 120 999 | 12+12+12+12 | 1,9 / 2,7 | PVC | Parallel | 655,00 | 0,5695 | 0,3130 | 0,1900 |
| **55** | 326 119 999 | 11+12+11+12 | 2,0 / 2,9 | PVC | Parallel | 542,40 | 0,4925 | 0,2720 | 0,1730 |
| **60** | 326 129 999 | 10+10+10+10 | 2,2 / 3,1 | PVC | Parallel | 536,40 | 0,4024 | 0,2170 | 0,1430 |
| **67** | 326 128 999 | 9+10+9+10 | 2,2 / 3,1 | PVC | Parallel | 510,48 | 0,3823 | 0,2090 | 0,1390 |
| **75** | 326 135 999 | 8+9+8+9 | 1,6 / 2,4 2DR.II | PVC | Parallel | 990,72 | 0,3503 | 0,1930 | 0,1240 |
| **83** | 326 142 999 | 7+8+7+8 | 1,7 / 2,5 2DR.II | PVC | Parallel | 1008,00 | 0,3159 | 0,1670 | 0,1053 |
| **93** | 326 141 999 | 7+7+7+7 | 1,8 / 2,6 2DR.II | PVC | Parallel | 943,20 | 0,2630 | 0,1400 | 0,0940 |

## PE2/PA Insulation Windings (380 – 415 V / 50 Hz)

| $P_N$ [kW] | Mod.-No. Winding kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YD (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **30** | 326 514 999 | 9+10+9+10 | 2,0 / 3,1 | PE2/PA | Series | 360 | 0,3212 | 0,6424 | 0,4282 |
| **37** | 326 239 999 | 8+9+8+9 | 2,0 / 3,1 | PE2/PA | Series | 315 | 0,2874 | 0,5748 | 0,3832 |
| **45** | 326 248 999 | 14+14+14+14 | 1,6 / 2,6 | PE2/PA | Parallel | 582 | 0,8283 | 0,4141 | 0,2761 |
| **52** | 326 259 999 | 12+12+12+12 | 1,7 / 2,7 | PE2/PA | Parallel | 565 | 0,7113 | 0,3556 | 0,2371 |
| **55** | 326 258 999 | 11+12+11+12 | 1,9 / 2,9 | PE2/PA | Parallel | 542 | 0,5457 | 0,2728 | 0,1819 |
| **60** | 326 269 999 | 10+10+10+10 | 2,0 / 3,1 | PE2/PA | Parallel | 536 | 0,4868 | 0,2434 | 0,1622 |
| **67** | 326 268 999 | 9+10+9+10 | 2,0 / 3,1 | PE2/PA | Parallel | 510 | 0,4625 | 0,2312 | 0,1541 |
| **75** | 326 275 999 | 8+9+8+9 | 2,0 / 3,1 | PE2/PA | Parallel | 495 | 0,4483 | 0,2241 | 0,1494 |
| **83** | 326 283 999 | 7+8+7+8 | 1,5 / 2,5 2DR.II | PE2/PA | Parallel | 1008 | 0,4057 | 0,2028 | 0,1352 |
| **93** | 326 282 999 | 7+7+7+7 | 1,6 / 2,6 2DR.II | PE2/PA | Parallel | 943 | 0,3328 | 0,1664 | 0,1109 |

## PE2/PA Insulation Windings (500 V / 50 Hz)

| $P_N$ [kW] | Mod.-No. Winding kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] |
|---|---|---|---|---|---|---|---|
| **37** | 326 240 999 | 10+11+10+11 | 1,9 / 2,7 / 2,9 | PE2/PA | Series | 387 | 0,3934 |
| **45** | 326 250 999 | 9+9+9+9 | 2,0 / 2,9 / 3,1 | PE2/PA | Series | 371 | 0,3408 |
| **55** | 326 260 999 | 14+15+14+15 | 1,6 / 2,4 / 2,6 | PE2/PA | Parallel | 679 | 0,9703 |
| **67** | 326 270 999 | 12+12+12+12 | 1,7 / 2,5 / 2,7 | PE2/PA | Parallel | 640 | 0,8087 |
| **75** | 326 277 999 | 10+11+10+11 | 1,9 / 2,7 / 2,9 | PE2/PA | Parallel | 607 | 0,6137 |
| **93** | 326 284 999 | 9+9+9+9 | 2,0 / 2,9 / 3,1 | PE2/PA | Parallel | 601 | 0,5478 |

## PE2/PA Insulation Windings (380 V / 60 Hz)

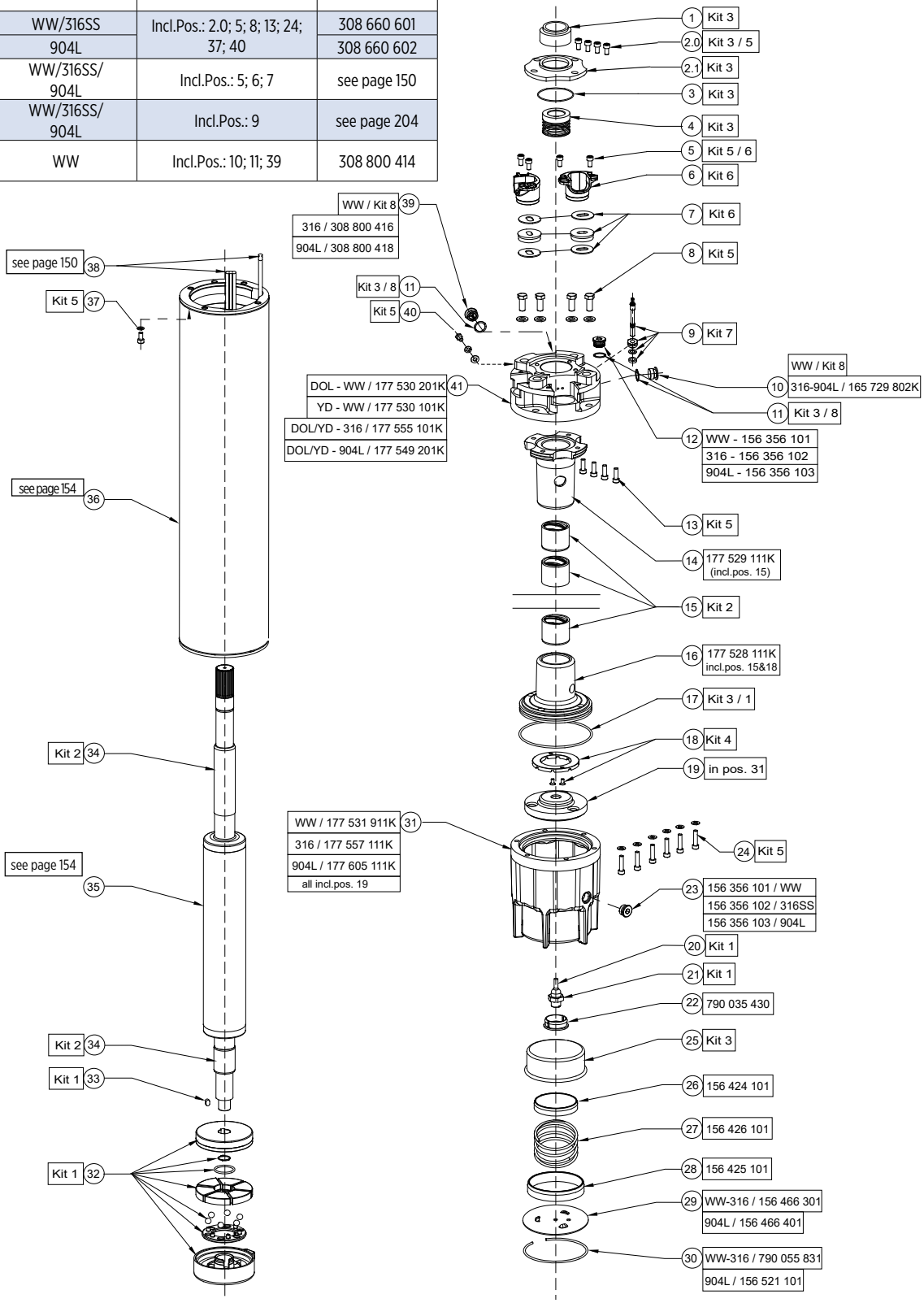
| $P_N$ [kW] | Mod.-No. Winding kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] |
|---|---|---|---|---|---|---|---|
| **37** | 326 237 999 | 13+14+13+14 | 1,7 / 2,5 / 2,7 | PE2/PA | Parallel | 504 | 0,6318 |
| **45** | 326 246 999 | 11+11+11+11 | 1,9 / 2,7 / 2,9 | PE2/PA | Parallel | 461 | 0,4616 |
| **52** | 326 585 999 | 9+10+9+10 | 2,0 / 2,9 / 3,1 | PE2/PA | Parallel | 451 | 0,4125 |
| **55** | 326 256 999 | 9+9+9+9 | 2,0 / 2,9 / 3,1 | PE2/PA | Parallel | 428 | 0,3855 |
| **60** | 326 586 999 | 8+8+8+8 | 1,5 / 2,3 / 2,5 | PE2/PA | Parallel | 865 | 0,3473 |
| **67** | 326 266 999 | 7+8+7+8 | 1,5 / 2,3 / 2,5 | PE2/PA | Parallel | 813 | 0,3246 |
| **75** | 326 273 999 | 6+7+6+7 | 1,7 / 2,5 / 2,7 | PE2/PA | Parallel | 766 | 0,2373 |
| **83** | 327 153 999 | 6+6+6+6 | 1,8 / 2,6 / 2,8 | PE2/PA | Parallel | 994 | 0,2240 |
| **93** | 326 280 999 | 5+6+5+6 | 1,9 / 2,7 / 2,9 | PE2/PA | Parallel | 748 | 0,1854 |

## Insulation resistance (20°C / 500 VDC)

| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

# 8" Rewindable Spare Parts

| | | | |
|---|---|---|---|
| **Kit 1**<br>**Thrust Bearing Kit** | WW/316SS/<br>904L | Incl.Pos.: 17; 20; 21; 32; 33 | 308 750 601 |
| **Kit 2**<br>**Radial Bearing Kit** | WW/316SS/<br>904L | Incl.Pos.: 15; 34 | 308 751 601 |
| **Kit 3**<br>**Seal Kit** | WW/316SS | Incl.Pos.: 1 - 4; 11; 17; 25 | 308 800 603 |
| | 904L | | 308 800 604 |
| **Kit 4**<br>**Up-Thrust**<br>**Bearing Kit** | WW/316SS/<br>904L | Incl.Pos.: 18 | 308 751 602 |
| **Kit 5**<br>**Screw Kit** | WW/316SS | Incl.Pos.: 2.0; 5; 8; 13; 24; 37; 40 | 308 660 601 |
| | 904L | | 308 660 602 |
| **Kit 6**<br>**Lead Seal Kit** | WW/316SS/<br>904L | Incl.Pos.: 5; 6; 7 | see page 150 |
| **Kit 7**<br>**PT100 Kit** | WW/316SS/<br>904L | Incl.Pos.: 9 | see page 204 |
| **Kit 8**<br>**Valve Kit** | WW | Incl.Pos.: 10; 11; 39 | 308 800 414 |



## WW / 316SS Stator and Rotor Model Number (380 - 415/ 460 Volts - 50 / 60Hz)

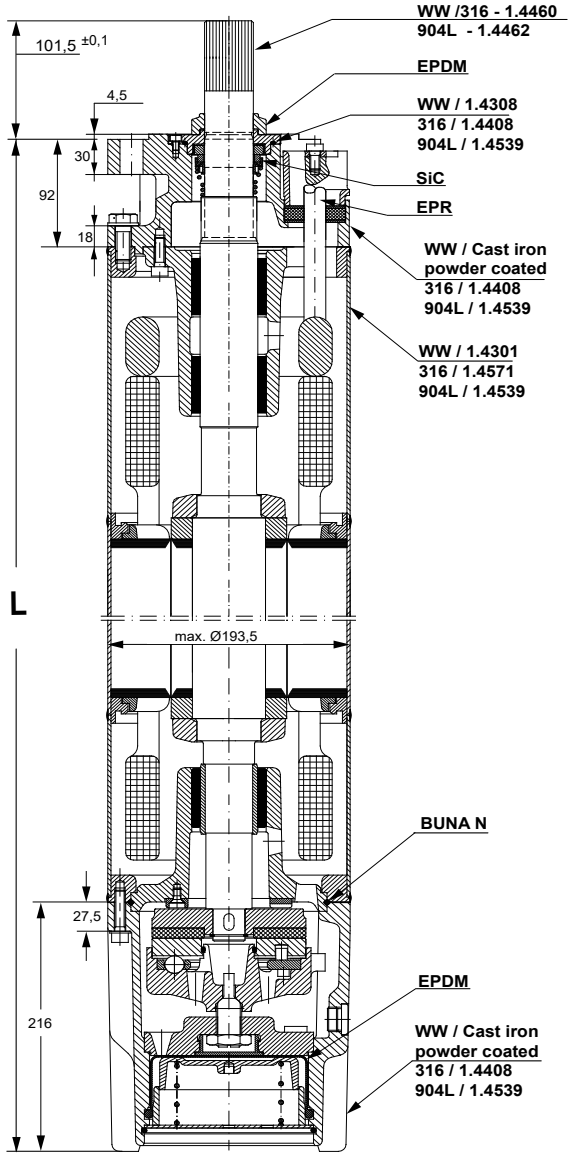
| $P_N$ [kW] | Stator (incl. winding and 6m motor lead) | | | | Rotor |
|---|---|---|---|---|---|
| | DOL PVC | DOL PE2/PA | YΔ PVC | YΔ PE2/PA | |
| **30** | 326 349 931 | 326 514 931 | 326 349 981 | 326 514 981 | 161 580 801K |
| **37** | 326 101 931 | 326 239 931 | 326 101 981 | 326 239 981 | 161 580 801K |
| **45** | 326 110 931 | 326 248 931 | 326 110 981 | 326 248 981 | 161 580 802K |
| **52** | 326 120 931 | 326 259 931 | 326 120 981 | 326 259 981 | 161 580 803K |
| **55** | 326 119 931 | 326 258 931 | 326 119 981 | 326 258 981 | 161 580 803K |
| **60** | 326 129 931 | 326 269 931 | 326 129 981 | 326 269 981 | 161 580 804K |
| **67** | 326 128 931 | 326 268 931 | 326 128 981 | 326 268 981 | 161 580 804K |
| **75** | 326 135 931 | 326 275 931 | 326 135 981 | 326 275 981 | 161 580 805K |
| **83** | 326 142 931 | 326 283 931 | 326 142 981 | 326 283 981 | 161 580 806K |
| **93** | 326 141 931 | 326 282 931 | 326 141 981 | 326 282 981 | 161 580 806K |

## 904L Stator and Rotor Model Number (380 - 415/ 460 Volts - 50 / 60Hz)

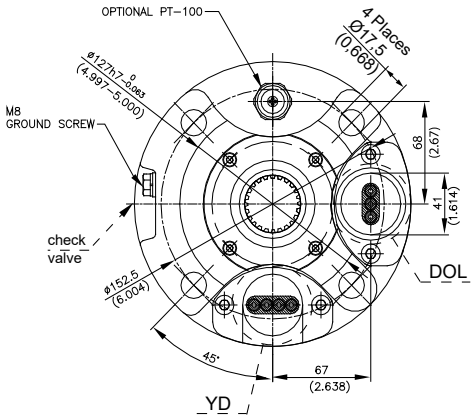
| $P_N$ [kW] | Stator (incl. winding and 6m motor lead) | | | | Rotor |
|---|---|---|---|---|---|
| | DOL PVC | DOL PE2/PA | YΔ PVC | YΔ PE2/PA | |
| **30** | 326 349 921 | 326 514 921 | 326 349 971 | 326 514 971 | 161 580 811K |
| **37** | 326 101 921 | 326 239 921 | 326 101 971 | 326 239 971 | 161 580 811K |
| **45** | 326 110 921 | 326 248 921 | 326 110 971 | 326 248 971 | 161 580 812K |
| **52** | 326 120 921 | 326 259 921 | 326 120 971 | 326 259 971 | 161 580 813K |
| **55** | 326 119 921 | 326 258 921 | 326 119 971 | 326 258 971 | 161 580 813K |
| **60** | 326 129 921 | 326 269 921 | 326 129 971 | 326 269 971 | 161 580 814K |
| **67** | 326 128 921 | 326 268 921 | 326 128 971 | 326 268 971 | 161 580 814K |
| **75** | 326 135 921 | 326 275 921 | 326 135 971 | 326 275 971 | 161 580 815K |
| **83** | 326 142 921 | 326 283 921 | 326 142 971 | 326 283 971 | 161 580 816K |
| **93** | 326 141 921 | 326 282 921 | 326 141 971 | 326 282 971 | 161 580 816K |

# Design 8" Rewindable Motors

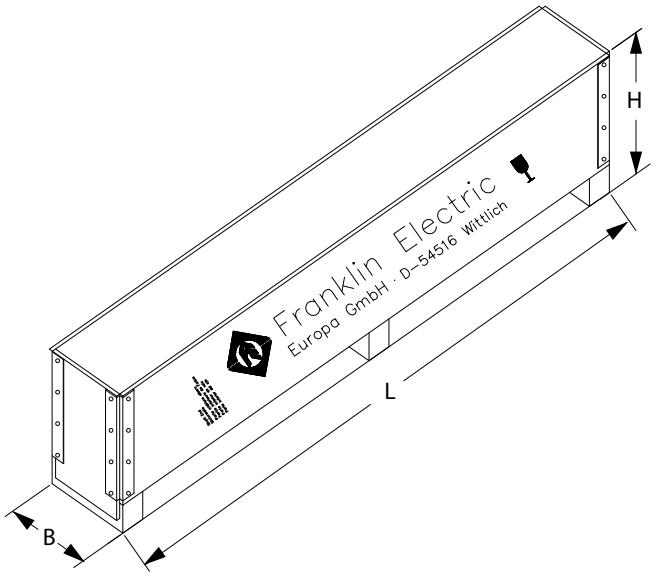
## Motor s - WW / 316SS / 904L




## End bell upper




## Motor Box




(Beispiel)

| $P_N$ [kW] | Motor lenght L [mm] | Weights [kg] | | Motor Shipping Size [mm] | | |
|---|---|---|---|---|---|---|
| | | Motor [kg] | incl. Motor Box [kg] | B | H | L |
| 30 | 1140 | 140 | 169 | 301 | 448 | 1596 |
| 37 | 1140 | 140 | 169 | | | |
| 45 | 1230 | 156 | 185 | | | |
| 52 | 1340 | 179 | 208 | | | |
| 55 | 1340 | 179 | 208 | | | |
| 60 | 1470 | 198 | 235 | 301 | 448 | 1996 |
| 67 | 1470 | 198 | 235 | | | |
| 75 | 1560 | 215 | 252 | | | |
| 83 | 1740 | 247 | 284 | | | |
| 93 | 1740 | 247 | 284 | | | |

# 8" REWINDABLE PERMANENT MAGNET MOTOR

WATER WELL WW CI PC / 304SS

STAINLESS STEEL 316

STAINLESS STEEL 904L

SAND FIGHTER

## BENEFITS & FEATURES

- 8" double flange NEMA mounting design
- High efficiency electrical design for low operation costs
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- Factory filled with Franklin's FES93 motor fill solution
- Drinking water approvals
- Stainless steel splined shaft
- Liquid lubricated radial bearings and High capacity Kingsbury type 45 kN thrust bearing for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded

## STANDARD SPECIFICATION

- Ratings: 75 / 100 / 130 kW (100 Hz - 3000 rpm, 120 Hz - 3600 rpm)
- Max. storage temperature - 15 °C to + 60 °C
- Standard motor with PE2/PA winding insulation
- Nominal ambient temperature: 30 °C with 0.5 m/s cooling flow
- System Supply Voltage: 400 V (100 Hz) / 460 V (120 Hz)
- Voltage Tolerance: ± 10 % $U_N$
- Protection IP68
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Motor protection: DIN 61947-4-1
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL-start
- All motors with factory installed leads, motor lead length: 6 m
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (rotation reversible)



### OPTIONS

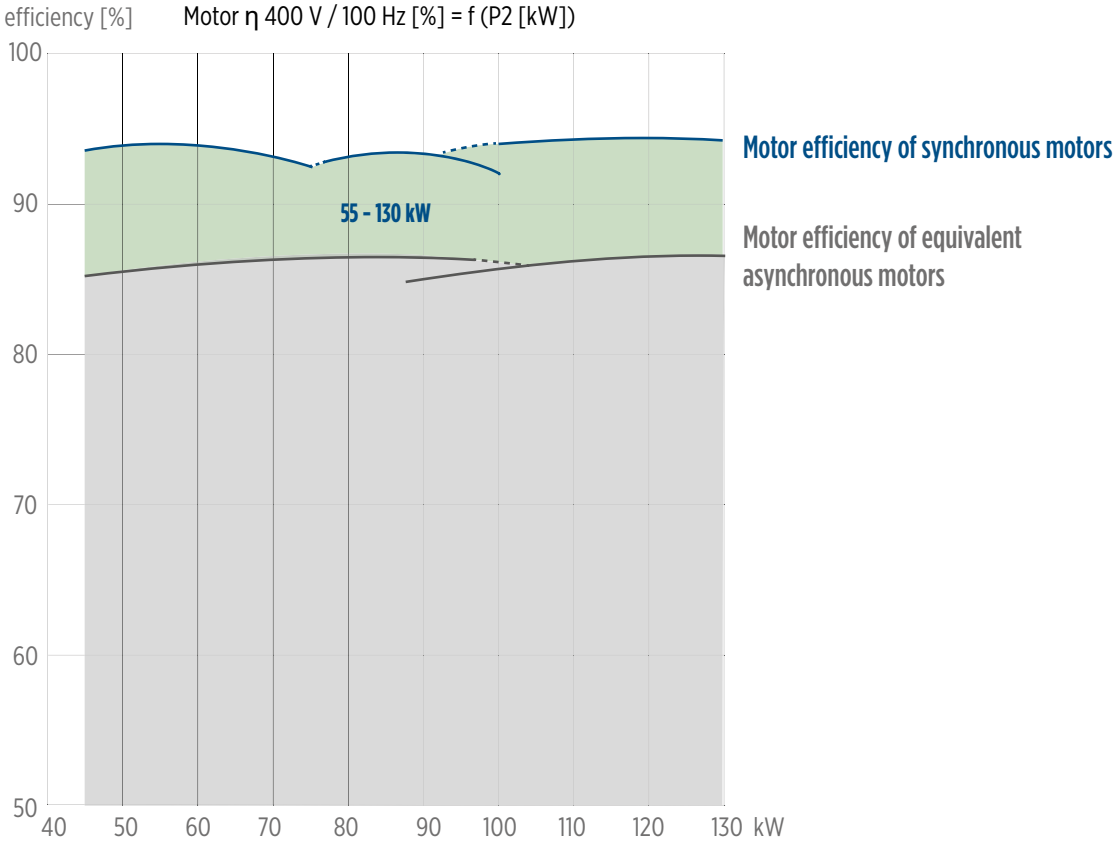
- Higher-graded materials: 316SS, 904L
- Special voltages
- Retrofitable PT 100 temperature sensor (VFD PT100 Plug-in card necessary, order no. 308 170 202)
- Special lead lengths

| $P_N$ [kW] | 400V / 100 Hz WW * Motor model number | 400V / 100 Hz 316SS Motor model number | 400V / 100 Hz 904L Motor model number |
|---|---|---|---|
| 75 | 263 014 5311 | 263 014 6311 | 263 014 7311 |
| 100 | 263 016 5311 | 263 016 6311 | 263 016 7311 |
| 130 | 263 018 5311 | 263 018 6311 | 263 018 7311 |

* WW (Water well)- Stator 304SS / Castings - CI Powder coated (see page material description in the catalog)

# 8" REWINDABLE PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM




## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 263 014 xxxx | 45 | 45 | 3000 | 74 | 1 | 93.3 | 0.96 | 143 | 1 |
| | 55 | 45 | 3000 | 91 | 1 | 93.3 | 0.96 | 175 | 1 |
| | 67 | 45 | 3000 | 112 | 1 | 93.0 | 0.96 | 213 | 1 |
| | 75 | 45 | 3000 | 128 | 1 | 92.5 | 0.96 | 239 | 1 |
| 263 016 xxxx | 75 | 45 | 3000 | 129 | 1 | 93.5 | 0.95 | 239 | 1 |
| | 83 | 45 | 3000 | 143 | 1 | 93.3 | 0.95 | 264 | 1 |
| | 93 | 45 | 3000 | 162 | 1 | 93.0 | 0.95 | 296 | 1 |
| | 100 | 45 | 3000 | 178 | 1 | 92.7 | 0.95 | 319 | 1 |
| 263 018 xxxx | 75 | 45 | 3000 | 125 | 1 | 93.8 | 0.97 | 239 | 1 |
| | 93 | 45 | 3000 | 153 | 1 | 93.7 | 0.97 | 296 | 1 |
| | 110 | 45 | 3000 | 186 | 1 | 93.3 | 0.97 | 350 | 1 |
| | 130 | 45 | 3000 | 225 | 1 | 92.6 | 0.96 | 414 | 1 |

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.

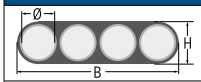
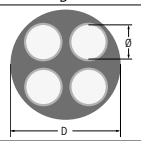
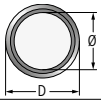
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR PERFORMANCE DATA 500 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 263 024 xxxx | 45 | 45 | 3000 | 60 | 1 | 93.2 | 0.95 | 143 | 1 |
| | 55 | 45 | 3000 | 74 | 1 | 93.2 | 0.95 | 175 | 1 |
| | 67 | 45 | 3000 | 91 | 1 | 93.0 | 0.95 | 213 | 1 |
| | 75 | 45 | 3000 | 103 | 1 | 92.5 | 0.95 | 239 | 1 |
| 263 026 xxxx | 75 | 45 | 3000 | 105 | 1 | 93.5 | 0.94 | 239 | 1 |
| | 83 | 45 | 3000 | 116 | 1 | 93.3 | 0.94 | 264 | 1 |
| | 93 | 45 | 3000 | 131 | 1 | 93.2 | 0.94 | 296 | 1 |
| | 100 | 45 | 3000 | 143 | 1 | 92.9 | 0.94 | 319 | 1 |
| 263 028 xxxx | 75 | 45 | 3000 | 102 | 1 | 93.8 | 0.96 | 239 | 1 |
| | 93 | 45 | 3000 | 124 | 1 | 93.7 | 0.96 | 296 | 1 |
| | 110 | 45 | 3000 | 151 | 1 | 93.3 | 0.96 | 350 | 1 |
| | 130 | 45 | 3000 | 183 | 1 | 92.6 | 0.96 | 414 | 1 |

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.

## MOTOR LEADS 400 V* DOL

| lead | kW | Ø [$mm^2$] | B / H [mm] | | length [m] | Qty. | lead model no. | lead seal kit WW/316 model no. | Lead seal kit 904L model no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 75 | 4G16 | B | 38,0 | 6 | 1 | 308 710 108 | 308 660 618 | 308 660 620 |
| | | | H | 12,8 | | | | | |
|  | 100 | 4G25 | D | 32 | 6 | 1 | 308 710 140 | 308 660 633 | 308 660 634 |
|  | 130 | 3RD 1X35 + Ground lead 1x35 | D | 15,3 | 6 | 1 | 308 710 151 | 308 660 641 | 308 660 642 |

| Lead opening seal kit | | qty. | model no. |
|---|---|---|---|
| 8" Rew | WW / 316SS | 1 | 308 660 617 |
| | 904L | 1 | 308 660 625 |

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

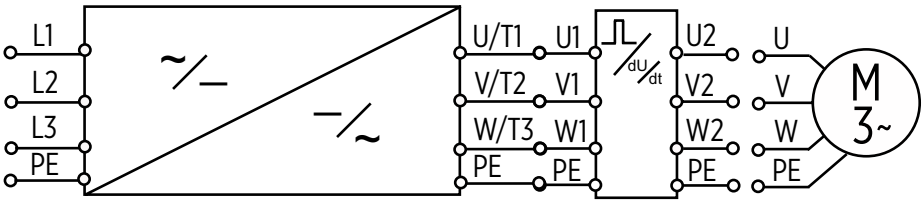
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR DROP LEADS 400 V / 100 HZ - 460 V / 120 HZ

| $P_N$ [kW] | cable size [mm²], copper wire - 90 °C rated insulation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 | 300 | 400 |
| 45 | 65 | 100 | 140 | 200 | 280 | 370 | 460 | | | | | |
| 55 | | 85 | 120 | 170 | 230 | 300 | 370 | 450 | | | | |
| 67 | | | 90 | 130 | 180 | 240 | 300 | 360 | 420 | | | |
| 75 | | | 80 | 115 | 160 | 200 | 260 | 310 | 370 | 460 | | |
| 83 | | | | 100 | 140 | 190 | 235 | 285 | 340 | 420 | | |
| 93 | | | | | 115 | 160 | 200 | 240 | 290 | 350 | 410 | |
| 110 | | | | | 100 | 140 | 170 | 210 | 250 | 305 | 360 | 440 |
| 130 | | | | | | 115 | 145 | 175 | 210 | 260 | 305 | 370 |

For lead lenghts > 120 m please consult Franklin Electric.
Further potential energy savings due to more conservative lead sizing (< 3 % voltage drop) at 50 °C ambient.

## ELECTRICAL CONNECTIONS DOL

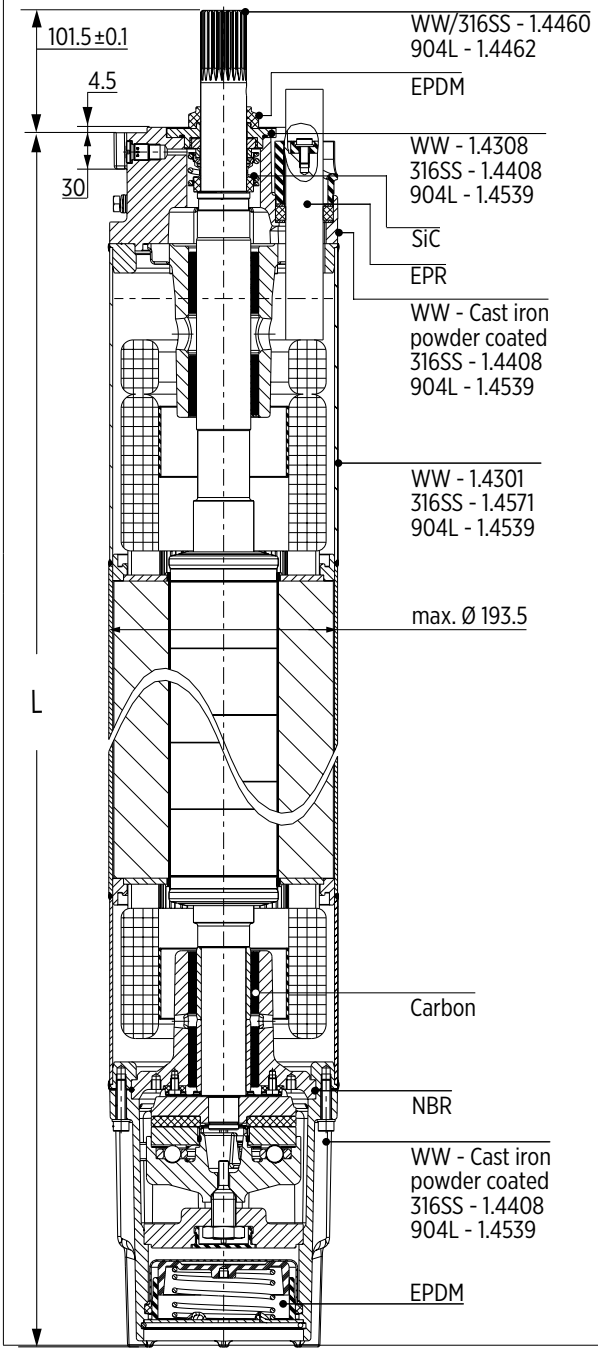



| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

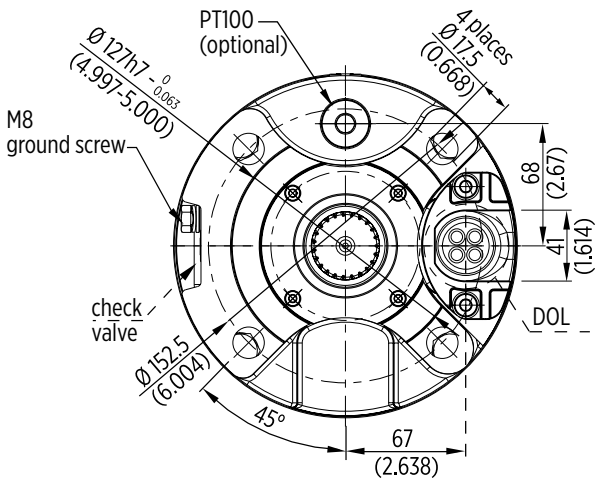
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR DIMENSIONS AND MATERIALS

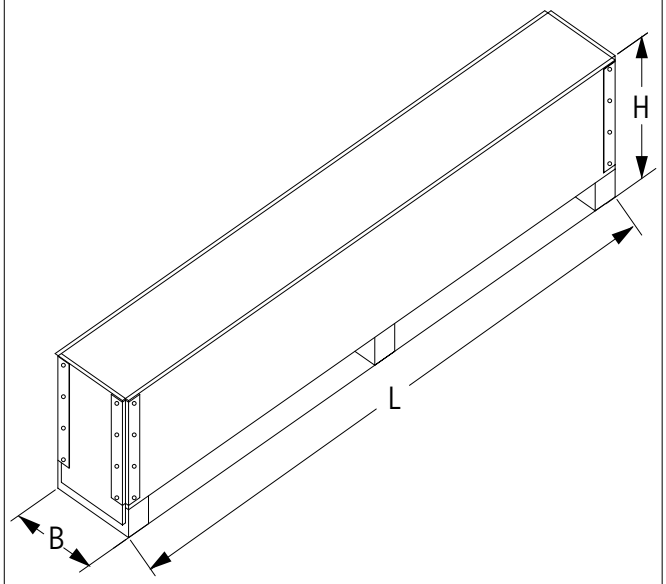
motor - WW / 316SS / 904L




end bell




motor box



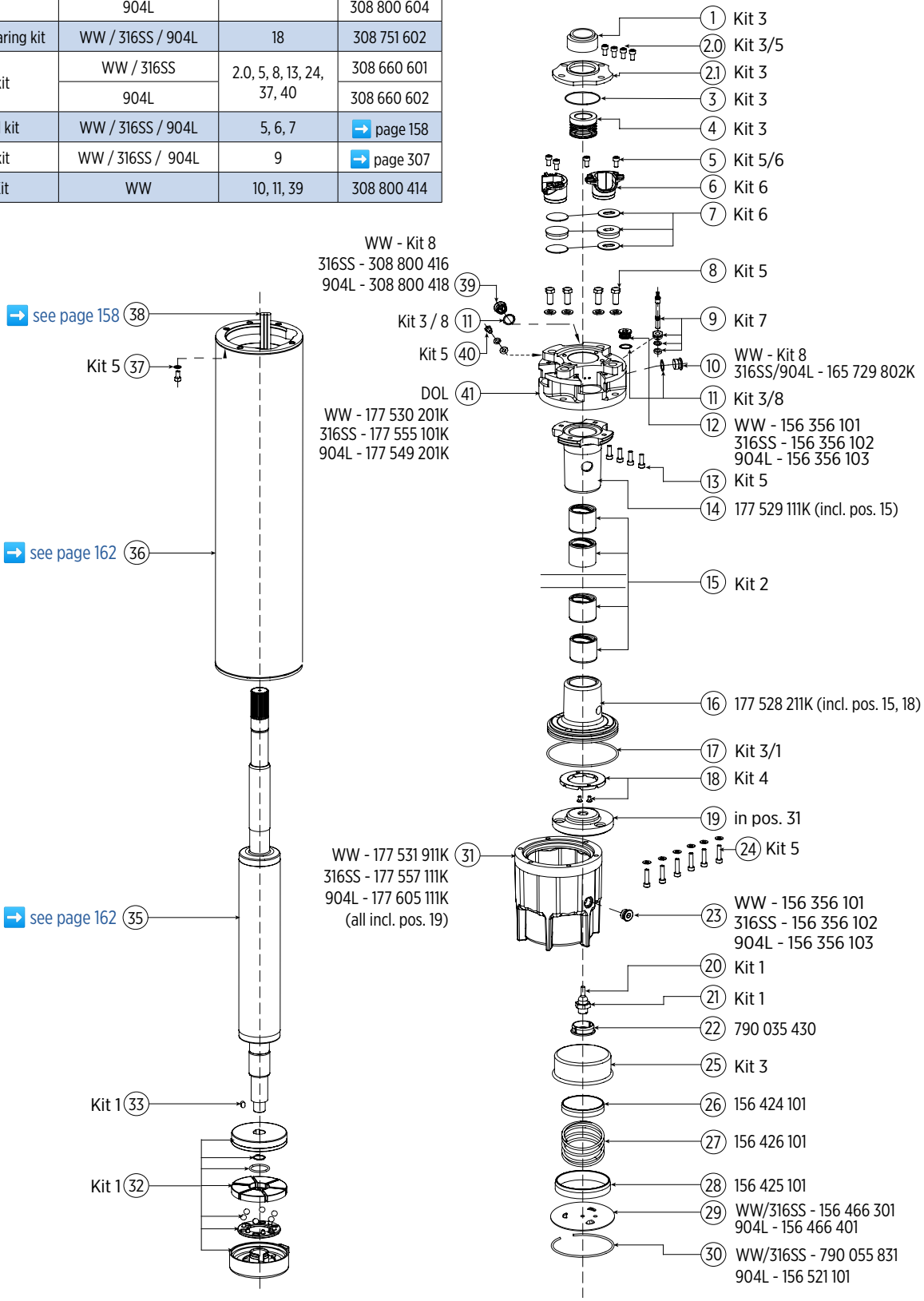

(sample drawing)

## MOTOR WEIGHTS 304SS / 316SS / 904L

| P [kW] | motor lenghts L [mm] | motor weights [kg] | | motor shipping size [mm] | | |
|---|---|---|---|---|---|---|
| | | without packaging | incl. packaging | B | H | L |
| 75 | 1205 | 150 | 179 | 301 | 448 | 1596 |
| 100 | 1316 | 169 | 198 | | | 1596 |
| 130 | 1482 | 205 | 237 | | | 1996 |

# SPARE PARTS 8" REWINDABLE PERMANENT MAGNET MOTOR

| Kit | Kit description | materials | incl. positions | order no. |
|---|---|---|---|---|
| 1 | Thrust bearing kit | WW / 316SS / 904L | 17, 20, 21, 32, 33 | 308 750 601 |
| 2 | Radial bearing kit | WW / 316SS / 904L | 15 | 308 751 603 |
| 3 | seal kit | WW / 316SS | 1-4, 11, 17, 25 | 308 800 603 |
| | | 904L | | 308 800 604 |
| 4 | Up-thrust bearing kit | WW / 316SS / 904L | 18 | 308 751 602 |
| 5 | Screw kit | WW / 316SS | 2.0, 5, 8, 13, 24, 37, 40 | 308 660 601 |
| | | 904L | | 308 660 602 |
| 6 | Lead seal kit | WW / 316SS / 904L | 5, 6, 7 | → page 158 |
| 7 | PT100 kit | WW / 316SS / 904L | 9 | → page 307 |
| 8 | Valve Kit | WW | 10, 11, 39 | 308 800 414 |



# SPARE PARTS 8" REWINDABLE PERMANENT MAGNET MOTOR

## STATOR AND ROTOR MODEL NUMBERS WW / 316 SS - 400 V / 100 HZ

| P [kW] | Stator (incl. windings and 6 m motor lead) | | | rotor | |
|---|---|---|---|---|---|
| | $U_N$ [V] | DOL [PE2/PA] | | | |
| | | motors starting 08/2017 | motors up to 07/2017 | motors starting 08/2017 | motors up to 07/2017 |
| 75 | 400 V | 327 154 702K | 327 154 901K | 161 123 811K | 161 123 801K |
| 100 | 400 V | 327 155 702K | 327 155 901K | 161 123 812K | 161 123 802K |
| 130 | 400 V | 327 156 701K | - | 161 123 814K | - |

## WINDING SPECIFICATION

| P [kW] | $U_N$ [V] | Model no. winding kit | Turns per coil | Wire diameter Ø [mm] | Type of Isolation | Group connection | Total wire length [m] | Resistance coil [Ω] | Resistance DOL (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| 75 | 400 | 327 154 999 | 16 | 1.9/2.1 & 1.8/2.8 (2GR II) | PE2/PA | Parallel Y | 290 | 0.146 | 0.167 |
| | 500 | 327 151 999 | 20 | 2.3/3.5 (2GR II) | | | 350 | 0.235 | 0.235 |
| 100 | 400 | 327 155 999 | 12 | 2.0/3.1 & 2.1./3.3 (2GR II) | PE2/PA | Parallel Y | 260 | 0.103 | 0.167 |
| | 500 | 327 144 999 | 17 | 2.5/3.8 (2GR II) | | | 350 | 0.213 | 0.213 |
| 130 | 400 | 327 156 999 | 20 | 2.3/3.2/3.5 (4GR II) | PE2/PA | Parallel Y | 486 | 0.115 | 0.121 |
| | 500 | | | | | | | | |

## INSULATION RESISTANCE (20 °C / 500 VDC)

| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

## MOTOR REPAIR INSTRUCTIONS

- Pictured repair instructions WW / 316SS / 904L (model no. 308 018 697)

# 10" REWINDABLE MOTOR

**Rewindable motors with best class winding wires**

SAND FIGHTER | WATER WELL WW CI PC / 304SS | OPTIONAL STAINLESS STEEL 316 | OPTIONAL STAINLESS STEEL 904L

## FEATURES & BENEFITS

- 10" double flange mounting design
- Factory filled with Franklin's FES93 motor fill solution
- High capacity Kingsbury type liquid lubricated 60 kN thrust bearing and radial bearings for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded
- Stainless Steel keyed shaft
- SandFighter™ sealing system with SIC mechanical seal and sand slinger is standard
- High efficiency electrical design for low operation costs
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Drinking water approvals

## STANDARD SPECIFICATION

- Ratings: 85 - 185 kW
- Max. storage temperature - 15 °C to + 60 °C
- Standard motor with PVC winding insulation
- Nominal ambient temperature: 25 °C with 0.5 m/s cooling flow
- Standard Voltage: 380 - 415 V (50 Hz), 460 V (60 Hz)
- Voltage Tolerance: 50 Hz: 380-415 V - 10 % / + 6 % $U_N$ [380 - 415 V = (380 - 10%) – (415 + 6 %)]; 60 Hz: 460V / ± 10 % $U_N$,
- Protection IP68
- Motor protection: DIN 61947-4-1
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 6 m
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation reversible)
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials: 316SS and 904L
- Special voltages
- Retrofitable PT 100 temperature sensor
- PE2/PA winding insulation for max. ambient temperature of 45 °C (Standard cooling flows)
- Special lead lengths on request

High Efficiency System Paket




- NEMA Synchron motors
- Frequency converter
- matchet output filter

▶10" High Efficiency System



## 10" Rewindable Motors - Model Numbers 50/60Hz *

| $P_N$ [kW] | $U_N$ / f | Model Numbers Digit 1 – 6 | | Model Numbers Digit 7 – 10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | [V] / [Hz] | DOL | YΔ | WW*** | 316 SS | 904L | PE2/PA** | | |
| | | | | | | | WW*** | 316 SS | 904L |
| **85** | 380 - 415 / 50<br>460 / 60 | 264 131 | 264 231 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 264 661 | 264 761 | | | | | | |
| **110** | 380 - 415 / 50<br>460 / 60 | 264 133 | 264 233 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 264 663 | 264 763 | | | | | | |
| **130** | 380 - 415 / 50<br>460 / 60 | 264 134 | 264 234 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 264 664 | 264 764 | | | | | | |
| **150** | 380 - 415 / 50<br>460 / 60 | 264 135 | 264 235 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | 264 665 | 264 765 | | | | | | |
| **185** | 380 - 415 / 50<br>460 / 60 | 264 136 | 264 236 | 5111 | 6111 | 7111 | 5311 | 6311 | 7311 |
| | 380 / 60 | | 264 766 | | | | | | |

* VFD operation is only allowed up to 460V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH
** For VFD Operation is PE2/PA mandatory!
*** WW motor - brackets Cast Iron Powder coated

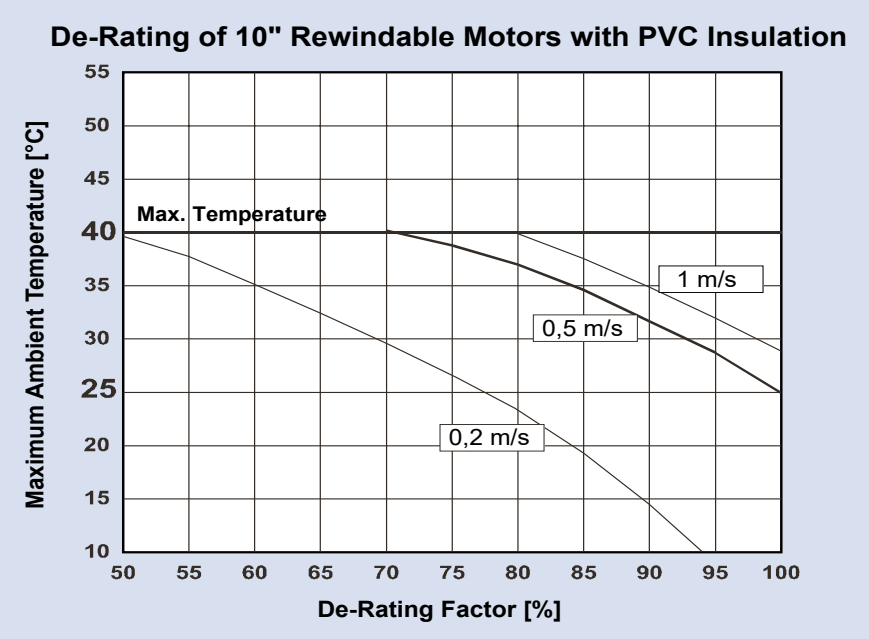
## 10" Rewindable Motors - Performance Data 50Hz

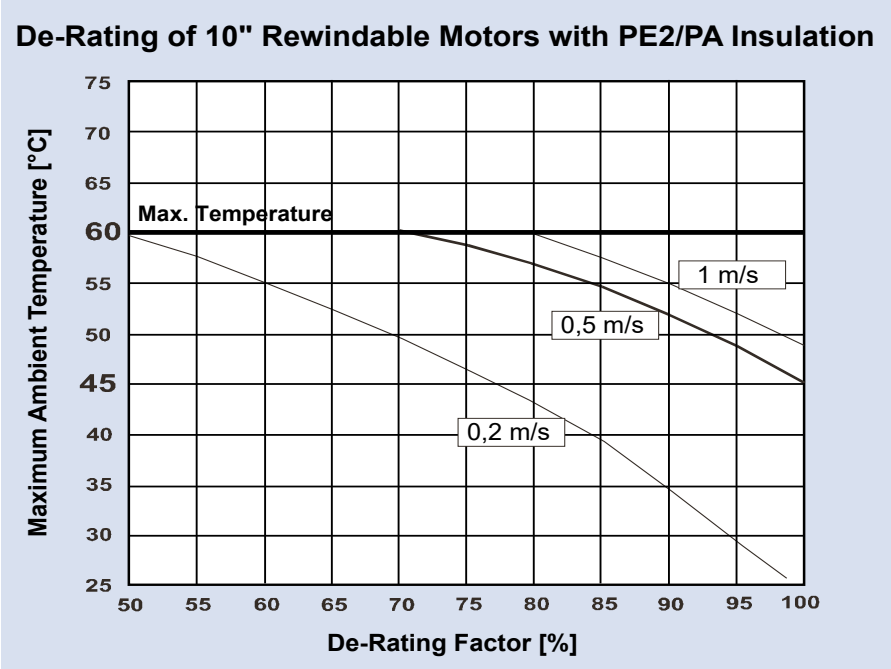
| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min-1] | $I_N$ [A] | $I_A$ [A] | η (Eff.) [%] at % load | | | cos φ (PF) at % load | | | $T_N$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| **85** | 60 000 | 380 | 2890 | 179 | 783 | 85 | 86 | 85 | 0,78 | 0,85 | 0,87 | 281 | 282 |
| | | 400 | 2900 | 174 | 828 | 83 | 85 | 85 | 0,72 | 0,81 | 0,85 | 280 | 316 |
| | | 415 | 2910 | 171 | 863 | 83 | 85 | 85 | 0,68 | 0,78 | 0,83 | 279 | 342 |
| | | 500 | 2890 | 136 | 595 | 84 | 85 | 84 | 0,78 | 0,84 | 0,87 | 281 | 282 |
| | | 525 | 2900 | 133 | 631 | 83 | 85 | 85 | 0,72 | 0,81 | 0,85 | 280 | 316 |
| | | 1000 | 2900 | 68 | 331 | 83 | 85 | 85 | 0,72 | 0,81 | 0,85 | 280 | 316 |
| **110** | 60 000 | 380 | 2910 | 235 | 1095 | 86 | 87 | 86 | 0,72 | 0,81 | 0,85 | 361 | 418 |
| | | 400 | 2920 | 232 | 1158 | 84 | 86 | 86 | 0,65 | 0,76 | 0,82 | 360 | 467 |
| | | 415 | 2920 | 233 | 1206 | 83 | 85 | 86 | 0,59 | 0,71 | 0,79 | 360 | 507 |
| | | 500 | 2910 | 180 | 875 | 86 | 87 | 86 | 0,69 | 0,79 | 0,83 | 360 | 432 |
| | | 525 | 2920 | 179 | 923 | 85 | 86 | 86 | 0,62 | 0,73 | 0,80 | 359 | 482 |
| | | 1000 | 2920 | 89 | 463 | 84 | 86 | 86 | 0,65 | 0,76 | 0,82 | 360 | 467 |
| **130** | 60 000 | 380 | 2900 | 266 | 1271 | 88 | 88 | 87 | 0,79 | 0,85 | 0,87 | 428 | 487 |
| | | 400 | 2920 | 256 | 1344 | 87 | 88 | 88 | 0,74 | 0,82 | 0,86 | 425 | 546 |
| | | 415 | 2920 | 255 | 1400 | 87 | 88 | 87 | 0,69 | 0,78 | 0,83 | 425 | 592 |
| | | 500 | 2900 | 202 | 966 | 87 | 88 | 87 | 0,79 | 0,85 | 0,87 | 428 | 487 |
| | | 525 | 2920 | 195 | 1024 | 87 | 88 | 87 | 0,73 | 0,81 | 0,85 | 425 | 546 |
| | | 1000 | 2910 | 104 | 523 | 87 | 88 | 87 | 0,76 | 0,83 | 0,86 | 426 | 516 |
| **150** | 60 000 | 380 | 2910 | 307 | 1502 | 87 | 87 | 86 | 0,79 | 0,85 | 0,88 | 492 | 568 |
| | | 400 | 2920 | 298 | 1590 | 86 | 88 | 87 | 0,73 | 0,81 | 0,85 | 491 | 635 |
| | | 415 | 2930 | 296 | 1655 | 86 | 87 | 87 | 0,67 | 0,77 | 0,83 | 489 | 689 |
| | | 500 | 2910 | 233 | 1142 | 87 | 87 | 86 | 0,79 | 0,85 | 0,88 | 492 | 568 |
| | | 525 | 2920 | 227 | 1211 | 86 | 87 | 87 | 0,73 | 0,81 | 0,85 | 491 | 635 |
| | | 1000 | 2920 | 117 | 636 | 86 | 88 | 87 | 0,73 | 0,81 | 0,85 | 491 | 635 |
| **185** | 60 000 | 380 | 2900 | 390 | 2030 | 87 | 88 | 87 | 0,72 | 0,81 | 0,85 | 609 | 913 |
| | | 400 | 2920 | 384 | 2148 | 86 | 88 | 88 | 0,64 | 0,75 | 0,81 | 605 | 1022 |
| | | 415 | 2920 | 389 | 2237 | 84 | 86 | 86 | 0,57 | 0,70 | 0,79 | 605 | 1109 |
| | | 500 | 2900 | 294 | 1500 | 87 | 88 | 87 | 0,72 | 0,81 | 0,85 | 610 | 888 |
| | | 525 | 2910 | 289 | 1580 | 86 | 87 | 87 | 0,65 | 0,76 | 0,82 | 607 | 988 |
| | | 1000 | 2900 | 148 | 859 | 87 | 88 | 87 | 0,72 | 0,81 | 0,85 | 609 | 913 |

## 10" Rewindable Motors - Performance Data 60Hz

| $P_N$ [kW] | $P_{max}$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min-1] | $I_{max}$ [A] | $I_A$ [A] | $\eta_{max}$ (Eff.) [%] at % load | | | cos $\varphi_{max}$ (PF) at % load | | | $T_{max}$ [Nm] | $T_A$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 85 | **98** | 60 000 | 460 | 3500 | 172 | 803 | 83 | 85 | 85 | 0,76 | 0,83 | 0,86 | 267 | 281 |
| | | | 380 | 3510 | 216 | 1120 | 82 | 84 | 85 | 0,69 | 0,78 | 0,83 | 267 | 325 |
| 110 | **127** | 60 000 | 460 | 3510 | 225 | 1160 | 84 | 86 | 86 | 0,71 | 0,80 | 0,84 | 345 | 375 |
| | | | 380 | 3510 | 273 | 1430 | 84 | 86 | 86 | 0,70 | 0,79 | 0,84 | 346 | 382 |
| 130 | **149** | 60 000 | 460 | 3510 | 254 | 1308 | 86 | 87 | 87 | 0,77 | 0,84 | 0,87 | 408 | 437 |
| | | | 380 | 3510 | 309 | 1710 | 85 | 87 | 86 | 0,73 | 0,82 | 0,86 | 408 | 474 |
| 150 | **173** | 60 000 | 460 | 3510 | 294 | 1557 | 85 | 87 | 87 | 0,77 | 0,84 | 0,87 | 469 | 508 |
| | | | 380 | 3510 | 362 | 1980 | 85 | 87 | 87 | 0,75 | 0,83 | 0,86 | 468 | 535 |
| 185 | **213** | 60 000 | 460 | 3510 | 377 | 2130 | 85 | 87 | 87 | 0,70 | 0,79 | 0,84 | 585 | 858 |
| | | | 380 | 3510 | 448 | 2690 | 84 | 87 | 87 | 0,66 | 0,77 | 0,87 | 583 | 896 |

## 10" Rewindable De-Rating Curves

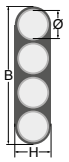
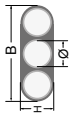


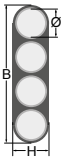
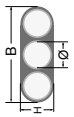

If these conditions are not met please contact Franklin Electric !

## 10" Rewindable Motors - Motor Leads

**DOL**

| Lead | $P_N$ [kW] | Ø [mm²] | B / H [mm] | | Lengths [m] | Qyt. | Lead Mod.- Nr. | Lead seal Kit WW / 316 Mod.- Nr. | Lead seal Kit 904L Mod.- Nr. |
|---|---|---|---|---|---|---|---|---|---|
|  | 85 | 4G25 | B | 44,3 | 6 | 1 | 308 710 116 | 308 660 720 | 308 660 724 |
| | | | H | 14,5 | | | | | |
| | 110 – 130 | 4G35 | B | 48,5 | 6 | 1 | 308 710 117 | 308 660 721 | 308 660 725 |
| | | | H | 16,5 | | | | | |
|  | 130 - 150 (PE2/PA) | 3X50 | B | 46,5 | 6 | 1 | 308 710 113 | 308 660 712 | 308 660 726 |
| | | | H | 19,5 | | | | | |
|  | 185** | 1X70 | D | 20,7 | 6 | 3 | 308 711 100 | 308 660 732 | 308 660 733 |

**YΔ**

| Lead | $P_N$ [kW] | Ø [mm²] | B / H [mm] | | Lengths [m] | Qyt. | Lead Mod.- Nr. | Lead seal Kit WW / 316 Mod.- Nr. | Lead seal Kit 904L Mod.- Nr. |
|---|---|---|---|---|---|---|---|---|---|
|   | **85** | 3X16 | B | 28,8 | 6 | 1 | 308 710 118 | 308 660 722 | 308 660 727 |
| | | | H | 12,2 | | | | | |
| | | 4G16 | B | 38,0 | | 1 | | | |
| | | | H | 12,8 | | | | | |
| | **110 - 150** | 3X25 | B | 37,5 | 6 | 1 | 308 710 114 | 308 660 713 | 308 660 728 |
| | | | H | 16 | | | | | |
| | | 4G25 | B | 44,3 | | 1 | | | |
| | | | H | 14,5 | | | | | |
| | **185** | 4G35 | B | 48,5 | 6 | 1 | 308 710 121 | 308 660 723 | 308 660 729 |
| | | | H | 16,5 | | | | | |
| | | 3X35 | B | 38,5 | | 1 | | | |
| | | | H | 16,5 | | | | | |

For PE2/PA motors additionally the special Tape **700 541 688** is absolutely necessary

| Ground lead* (optional) | Ø [mm²] | D Ø [mm] | Lengths [m] | St. | Mod.-Nr. |
|---|---|---|---|---|---|
|  | 1G25 | 13,0 | 8 | 1 | 308 053 080 |
| | 1G35 | 15,3 | 6 | 1 | 308 056 060 |

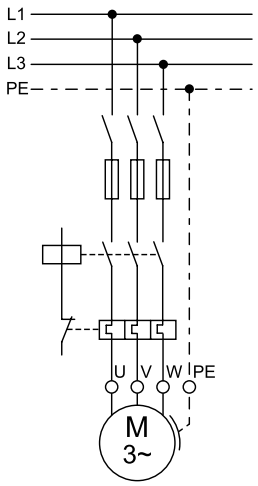
*only for WW and 316SS

| | | | |
|---|---|---|---|
| **Lead opening seal kit** | **85 – 185 kW DOL / YΔ** | WW / 316 | 308 660 715 |
| | | 904L | 308 660 730 |

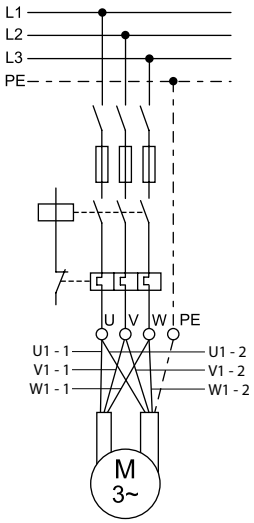
Cables are designed for submerged operation. For air operation please consult Franklin Electric.

## Electrical Connection

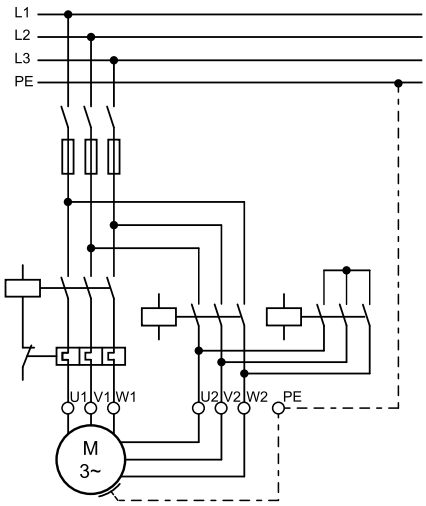
### DOL




### DOL II



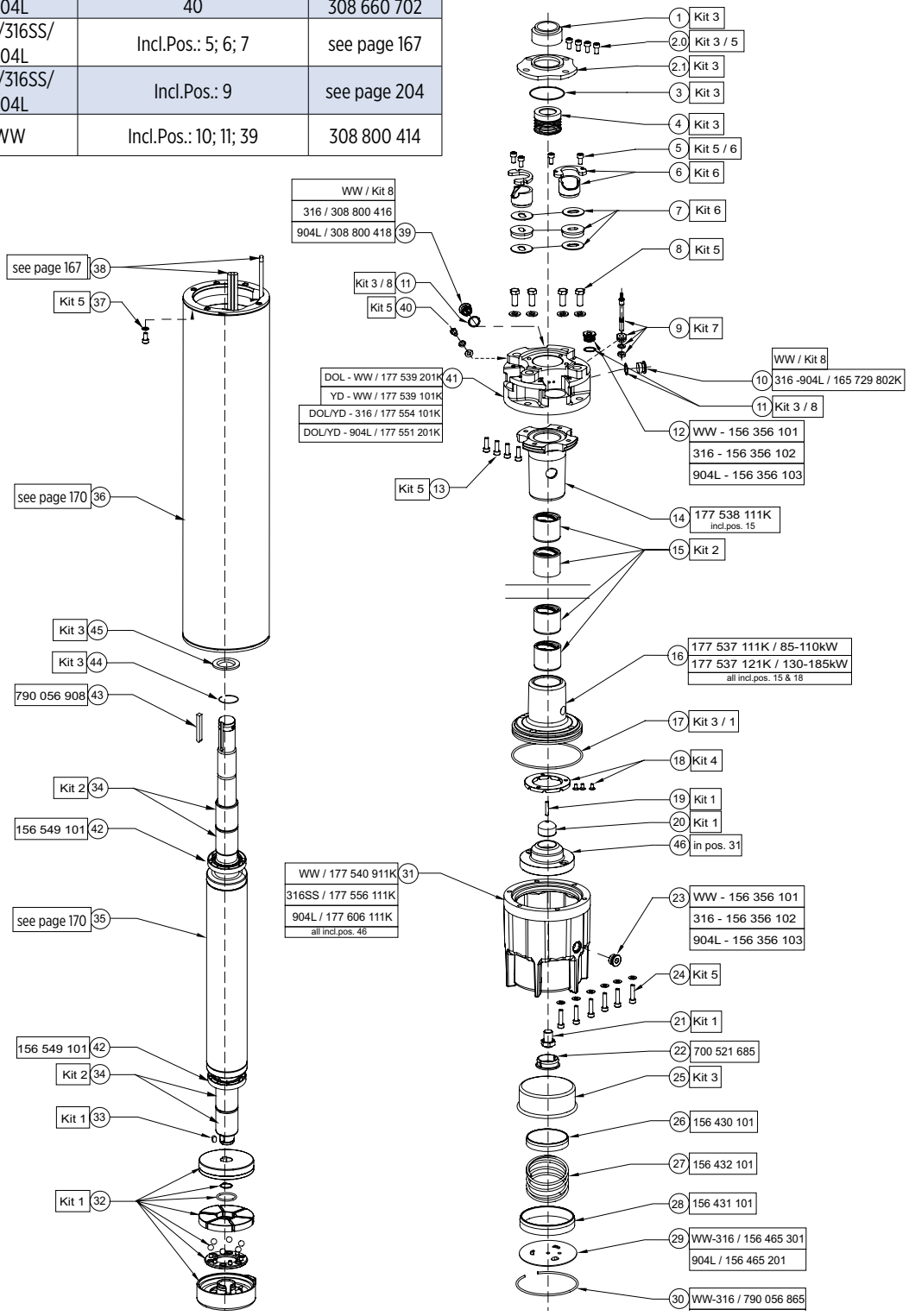

### YΔ




| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

## 10" Rewindable Spare Parts

| | | | |
|---|---|---|---|
| **Kit 1 Thrust Bearing Kit** | WW/316SS/ 904L | Incl.Pos.: 17; 19; 20; 21; 32; 33 | 308 750 701 |
| **Kit 2 Radial Bearing Kit** | WW/316SS/ 904L | Incl.Pos.: 15; 34 | 308 751 701 |
| **Kit 3 Seal Kit** | WW/316SS | Incl.Pos.: 1 - 4; 11; 17; 25 | 308 800 703 |
| | 904L | | 308 800 704 |
| **Kit 4 Up-Thrust Kit** | WW/316SS/ 904L | Incl.Pos.: 18 | 308 751 702 |
| **Kit 5 Screw Kit** | WW/316SS | Incl.Pos.: 2.0; 5; 8; 13; 24; 37; 40 | 308 660 701 |
| | 904L | | 308 660 702 |
| **Kit 6 Lead Seal Kit** | WW/316SS/ 904L | Incl.Pos.: 5; 6; 7 | see page 167 |
| **Kit 7 PT100 Kit** | WW/316SS/ 904L | Incl.Pos.: 9 | see page 204 |
| **Kit 8 Valve Kit** | WW | Incl.Pos.: 10; 11; 39 | 308 800 414 |



## Stator and Rotor Model Number (50 / 60Hz)

| $P_N$ [kW] | $U_N$ / f [V] / [Hz] | Stator ( incl. Winding and 6 m motor lead ) | | | | | | | | Rotor |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WW/316 | | 904L | | WW/316 | | 904L | | |
| | | DOL PVC | DOL PE2/PA | DOL PVC | DOL PE2/PA | YΔ PVC | YΔ PE2/PA | YΔ PVC | YΔ PE2/PA | |
| **85** | 380 - 415/50 460/60 | 326 150 931 | 326 292 931 | 326 150 921 | 326 292 921 | 326 150 981 | 326 292 981 | 326 150 971 | 326 292 971 | 176 379 801K |
| **110** | 380 - 415/50 460/60 | 326 158 931 | 326 302 931 | 326 158 921 | 326 302 921 | 326 158 981 | 326 302 981 | 326 158 971 | 326 302 971 | 176 379 802K |
| **130** | 380 - 415/50 460/60 | 326 168 931 | 326 314 931 | 326 168 921 | 326 314 921 | 326 168 981 | 326 314 981 | 326 168 971 | 326 314 971 | 176 379 803K |
| **150** | 380 - 415/50 460/60 | | | | | 326 177 981 | 326 325 981 | 326 177 971 | 326 325 971 | 176 379 804K |
| **185** | 380 - 415/50 460/60 | | 326 448 931 | | | 326 360 981 | 326 448 981 | 326 360 971 | 326 448 971 | 176 379 805K |

## PVC Insulation Standard Windings (380 – 415V/50Hz / 460V/60 Hz)

| $P_N$ [kW] | Mod.-No. Windingktis | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YΔ (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **85** | 326 150 999 | 11+11+11+11 | 2,5 / 3,6 | PVC | Parallel | 487,92 | 0,2825 | 0,141 | 0,094 |
| **110** | 326 158 999 | 8+9+8+9 | 2,8 / 4,0 | PVC | Parallel | 426,00 | 0,1955 | 0,1080 | 0,0680 |
| **130** | 326 168 999 | 7+8+7+8 | 2,2 / 3,1 2DR.II | PVC | Parallel | 849,60 | 0,1579 | 0,0789 | 0,0570 |
| **150** | 326 177 999 | 6+7+6+7 | 2,3 / 3,3 2DR.II | PVC | Parallel | 809,76 | 0,1374 | 0,0730 | 0,0458 |
| **185** | 326 360 999 | 5+5+6+5 | 2,5 / 3,6 2DR.II | PVC | Parallel | 736,56 | 0,1050 | 0,0570 | 0,035 |

## PE2/PA Insulation Standard Windings (380 – 415V/50Hz / 460V/60 Hz)

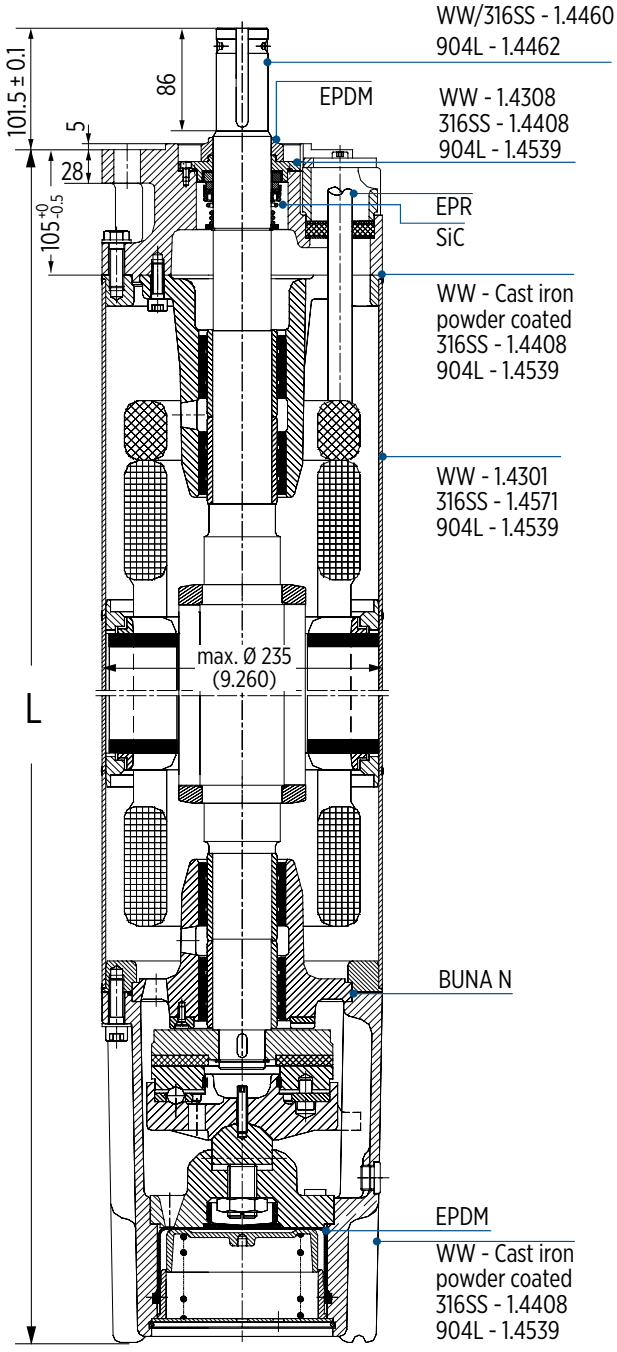
| $P_N$ [kW] | Mod.-No. Windingktis | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YΔ(U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **85** | 326 292 999 | 11+11+11+11 | 2,3 / 3,5 | PE2/PA | Parallel | 488 | 0,3337 | 0,1668 | 0,1112 |
| **110** | 326 302 999 | 8+9+8+9 | 2,6 / 3,9 | PE2/PA | Parallel | 426 | 0,2267 | 0,1133 | 0,0755 |
| **130** | 326 314 999 | 7+8+7+8 | 2,0 / 3,1 2DR.II | PE2/PA | Parallel | 850 | 0,1910 | 0,0955 | 0,0636 |
| **150** | 326 325 999 | 6+7+6+7 | 2,1 / 3,3 2DR.II | PE2/PA | Parallel | 810 | 0,1647 | 0,0823 | 0,0549 |
| **185** | 326 448 999 | 5+5+6+5 | 2,3 / 3,5 2DR.II | PE2/PA | Parallel | 735 | 0,1240 | 0,0620 | 0,0413 |

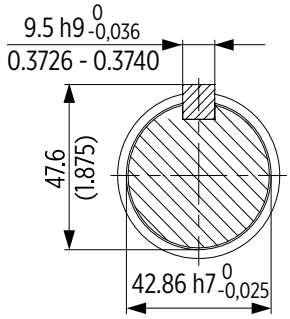
## Insulation resistant ( 20°C / 500 VDC)

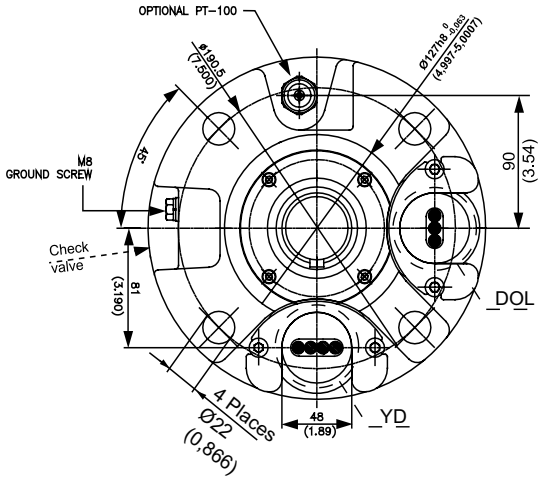
| | |
|---|---|
| New motor without drop cable | 400 > MΩ |
| Used motor without drop cable | 20 > MΩ |
| New motor with drop cable | 4 > MΩ |
| Used motor with drop cable | 1 MΩ |

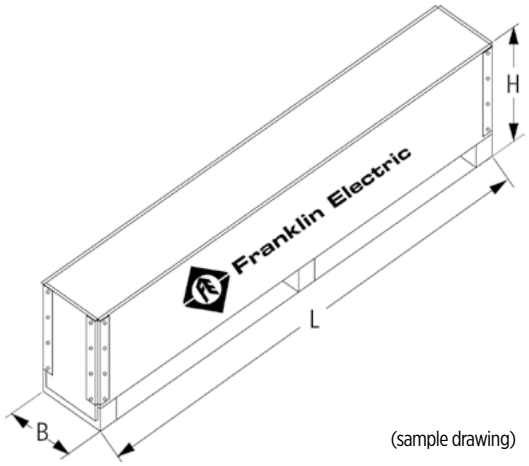
# 10" REWINDABLE STANDARD MOTOR

## 10" REWINDABLE MOTORS DIMENSION AND MATERIALS




(sample drawing)

| $P_N$ [kW] | Motor lengths | Motor weights [kg] | | Motor shipping size [mm] | | |
|---|---|---|---|---|---|---|
| | L [mm] | Motor | Incl. Pack | B | H | L |
| **85** | 1419 | 280 | 326 | 341 | 514 | 1896 |
| **110** | 1529 | 315 | 361 | | | |
| **130** | 1659 | 362 | 412 | 341 | 514 | 2246 |
| **150** | 1769 | 413 | 463 | | | |
| **185** | 1919 | 449 | 499 | | | |

# 10" REWINDABLE PERMANENT MAGNET MOTOR

**Rewindable motors with best class winding wires**

## BENEFITS & FEATURES

- 10" double flange mounting design
- Factory filled with Franklin's FES93 motor fill solution
- High capacity Kingsbury type liquid lubricated 60 kN thrust bearing and radial bearings for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded
- Stainless Steel keyed shaft
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Drinking water approvals




## STANDARD SPECIFICATION

- Motorleistung:
  - 150 kW - 200 kW - 250 kW (100 Hz - 3000 rpm)
  - 173 kW - 230 kW - 290 kW (120 Hz - 3600 rpm)
- Max. storage temperature -15°C to +60°C
- Standard motor with PE2/PA winding insulation
- Nominal ambient temperature: 30 °C with 0.5 m/s cooling flow
- System Supply Voltage: 400 V (100 Hz) / 460 V (120 Hz)
- Voltage Tolerance: ± 10 % $U_N$
- Protection IP68
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Motor protection: DIN 61947-4-1
- DOL- start
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- Motor lead length: 6 m
- Motors installation orientation: Vertical / horizontal (shaft end heightened) - 250 kW motors may not be installed horizontally
- Rotation counter clock wise facing shaft end (rotation reversible)
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials: 316SS and 904L
- Special voltages
- Retrofitable PT 100 temperature sensor
  VFD PT100 Plug-in card necessary (order no. 308 170 202)

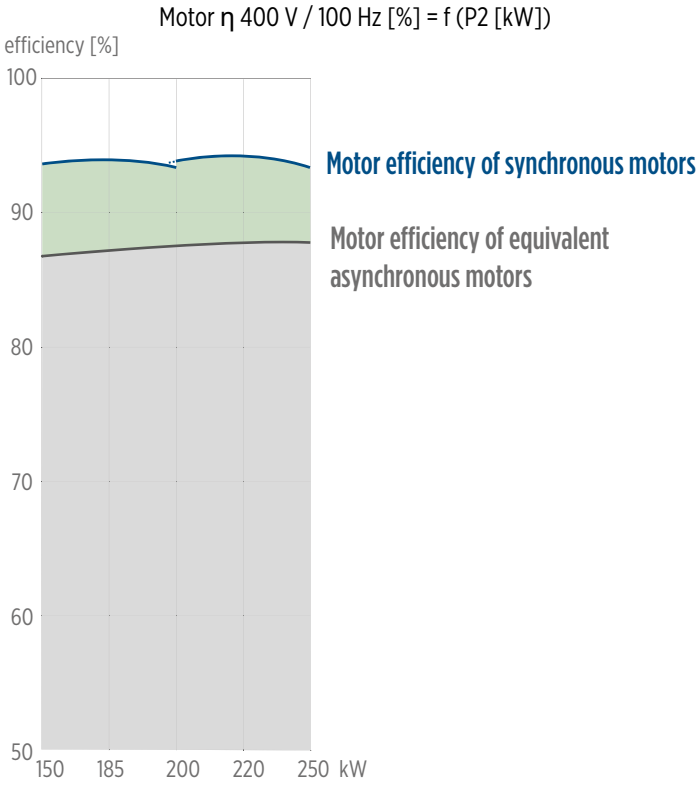
## MOTOR MODEL NUMBERS

| $P_N$ [kW] | $U_N$ [V] | 400V / 100 Hz WW * Motor model number | 400V / 100 Hz 316SS Motor model number | 400V / 100 Hz 904L Motor model number |
|---|---|---|---|---|
| 150 | 400 | 264 025 5311 | 264 025 6311 | 264 025 6311 |
| 200 | 400 | 264 028 5311 | 264 028 6311 | 264 028 7311 |
| 250 | 400 | 264 029 5311 | 264 029 6311 | 264 029 7311 |

* WW motor - brackets Cast Iron Powder coated

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM




## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 264 025 xxxx | 110 | 60 | 3000 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 60 | 3000 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 60 | 3000 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 264 028 xxxx | 150 | 60 | 3000 | 284 | 1 | 94.3 | 0.95 | 478 | 1 |
| | 185 | 60 | 3000 | 354 | 1 | 94.1 | 0.96 | 589 | 1 |
| | 200 | 60 | 3000 | 389 | 1 | 93.8 | 0.96 | 637 | 1 |
| 264 029 xxxx | 200 | 60 | 3000 | 377 | 1 | 94.5 | 0.95 | 637 | 1 |
| | 220 | 60 | 3000 | 423 | 1 | 94.3 | 0.96 | 701 | 1 |
| | 250 | 60 | 3000 | 497 | 1 | 93.8 | 0.96 | 796 | 1 |

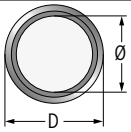
## MOTOR PERFORMANCE DATA 460 V / 120 HZ

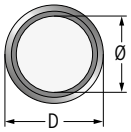
| motor model no. | $P_N$ [kW] | $P_{max.}$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_{MAX}$ [A] | $I_A/I_{MAX}$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 264 025 xxxx | 110 | 127 | 60 | 3600 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 150 | 60 | 3600 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 173 | 60 | 3600 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 264 028 xxxx | 150 | 173 | 60 | 3600 | 284 | 1 | 94,3 | 0,95 | 478 | 1 |
| | 185 | 213 | 60 | 3600 | 354 | 1 | 94,1 | 0,96 | 589 | 1 |
| | 200 | 230 | 60 | 3600 | 389 | 1 | 93,6 | 0,96 | 637 | 1 |
| 264 029 xxxx | 200 | 230 | 60 | 3600 | 377 | 1 | 94,5 | 0,95 | 637 | 1 |
| | 220 | 253 | 60 | 3600 | 423 | 1 | 94,3 | 0,96 | 701 | 1 |
| | 250 | 287 | 60 | 3600 | 497 | 1 | 93,6 | 0,96 | 796 | 1 |

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.

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR LEADS 10" REWINDABLE PERMANENT MAGNET MOTORS*

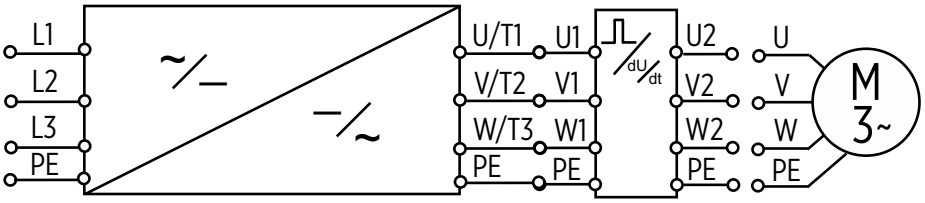
| lead | $P_N$ [kW] | $U_N$ [V] | ø [mm²] | D [mm] | lenghts [m] | qty. | lead set model no. (3 single wire lead) | lead seal kit model no. |
|---|---|---|---|---|---|---|---|---|
|  | all ratings | 400 | 3 x 1X70 | 20.7 | 6 | 1 | 308 711 100 | 308 660 740 |

| ground lead (optional) | Ø [mm²] | D [mm] | lengths [m] | qty. | lead model no. |
|---|---|---|---|---|---|
|  | 1G35 | 15.3 | 6 | 1 | 308 056 506 |

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

| Lead opening seal kit | | qty. | model no. |
|---|---|---|---|
| 10" Rew | WW / 316SS | 1 | 308 660 715 |
| | 904L | 1 | 308 660 730 |

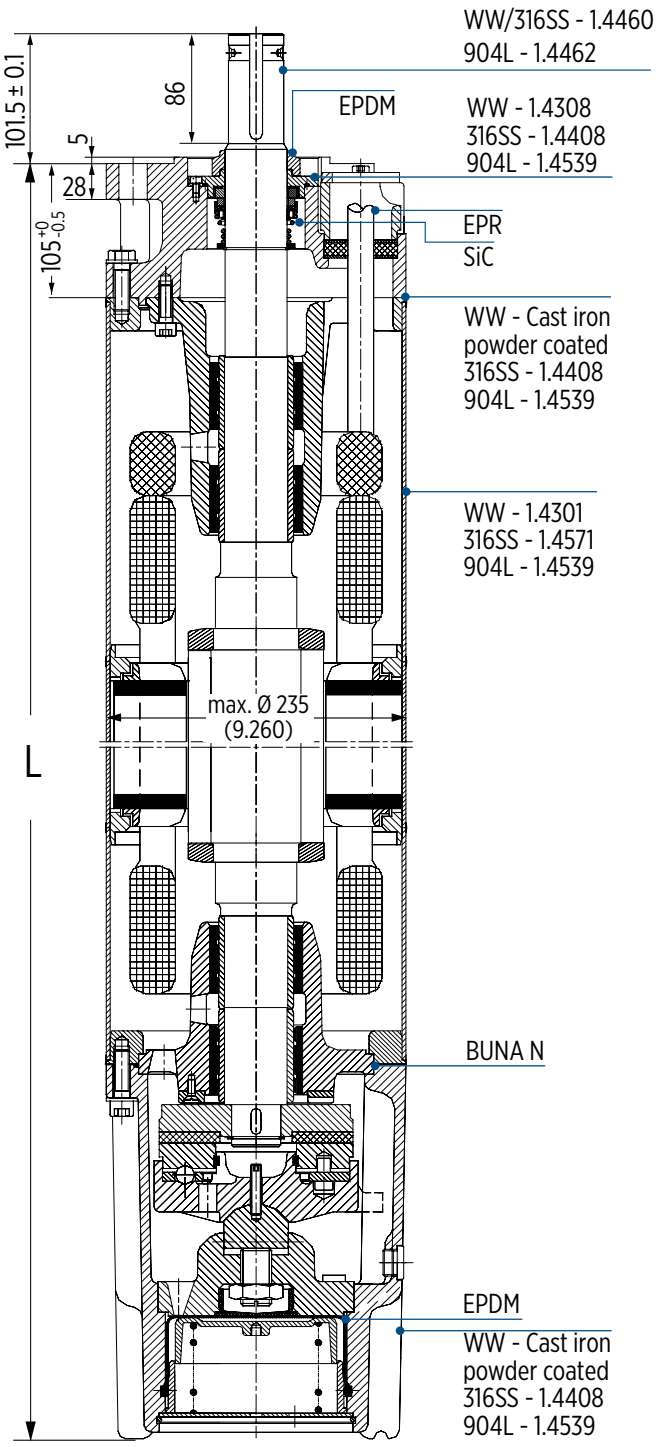
## ELECTRICAL CONNECTION DOL

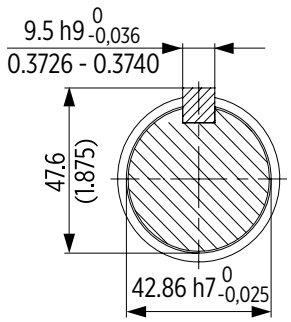


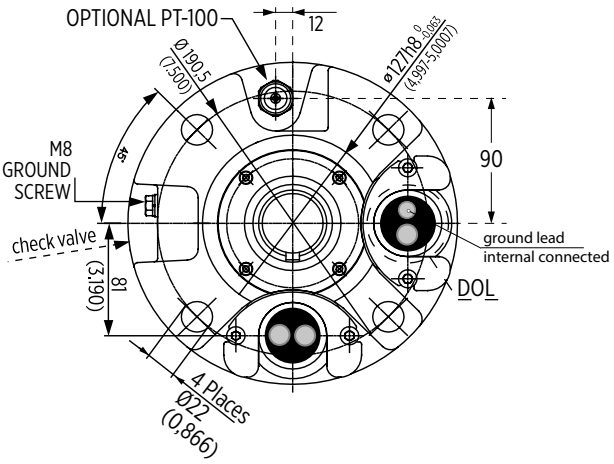

| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/ green |

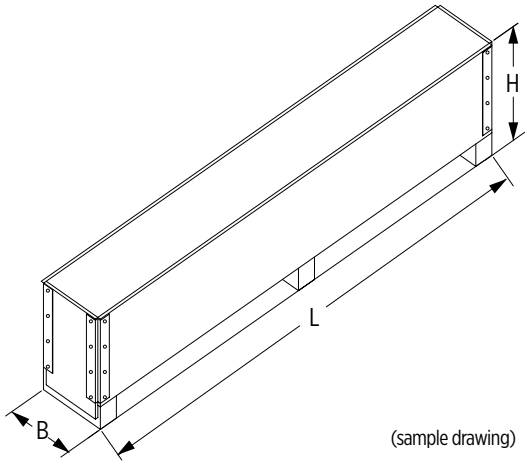
# 10" REWINDABLE PERMANENT MAGNET MOTOR

## 10" REWINDABLE PM MOTORS DIMENSION AND MATERIALS



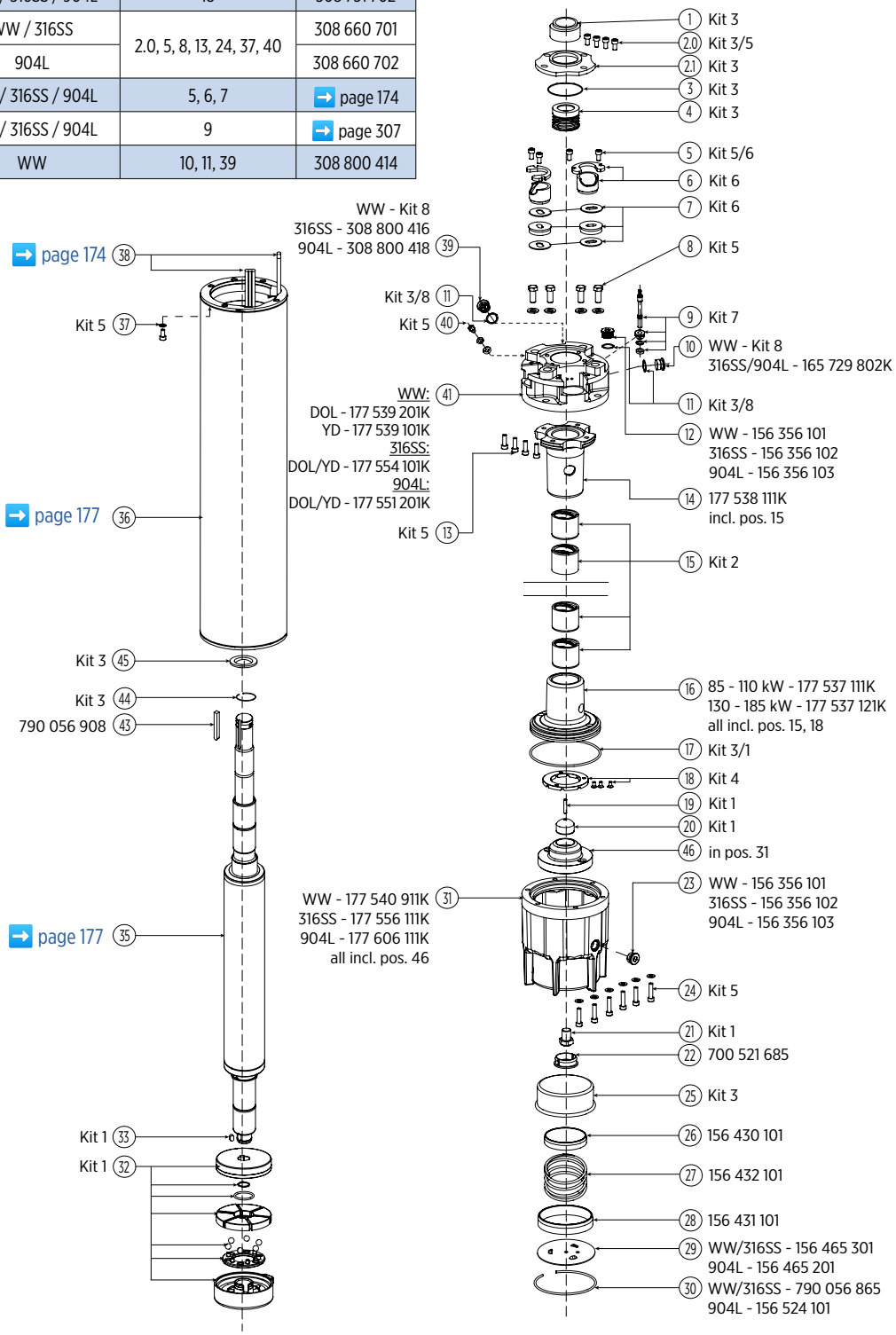

(sample drawing)

| $P_N$ [kW] | Motor lenghts L [mm] | Motor weights [kg] | Motor weights incl. box [kg] | Motor shipping size [mm] | | |
|---|---|---|---|---|---|---|
| | | | | B | H | L |
| 150 | 1549 | 311 | 361 | 341 | 514 | 2246 |
| 200 | 1659 | 331 | 381 | | | |
| 250 | 1769 | 350 | 400 | | | |

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## 10" REWINDABLE PERMANENT MAGNET MOTORS SPARE PARTS

| Kit | Kit description | materials | including positions | order no |
|---|---|---|---|---|
| 1 | Thrust bearing kit | WW / 316SS / 904L | 17, 19, 20, 21, 32, 33 | 308 750 701 |
| 2 | Radial bearing kit | WW / 316SS / 904L | 15 | 308 751 703 |
| 3 | seal kit | WW / 316SS | 1-4, 11, 17, 25 | 308 800 703 |
| | | 904L | | 308 800 704 |
| 4 | Up-thrust bearing kit | WW / 316SS / 904L | 18 | 308 751 702 |
| 5 | Screw kit | WW / 316SS | 2.0, 5, 8, 13, 24, 37, 40 | 308 660 701 |
| | | 904L | | 308 660 702 |
| 6 | Lead seal kit | WW / 316SS / 904L | 5, 6, 7 | ➡ page 174 |
| 7 | PT100 kit | WW / 316SS / 904L | 9 | ➡ page 307 |
| 8 | Valve Kit | WW | 10, 11, 39 | 308 800 414 |



# 10" REWINDABLE PERMANENT MAGNET MOTOR

## MODEL NUMBERS 400 V STATOR AND ROTOR - WW/316SS

| $P_N$ [kW] | $U_N$ [V] | Stator (incl. winding and 6m motor lead) | Rotor |
|---|---|---|---|
| 150 | 400 | 327 *** *** | 100000*******K |
| 200 | 400 | 327 640 931 | 10000005599K |
| 250 | 400 | 327 641 931 | 10000005857K |

## WINDING DATA 400 V

| $P_N$ [kW] | $U_N$ [V] | Model No. Winding kit | Turns per coil | Wire diameter [mm] | Type of Isolation | Groups connection | Total wire lenght [m] | Resistance coil [Ω] | Resistance Dol (U1-V1 [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| 150 | 400 | 327 6** *** | | | PE2/PA | Parallel Star | | | |
| 200 | 400 | 327 640 999 | 7 - 7 | 2,4 / 3,7 / 3,9 | PE2/PA | Parallel Star | 780 | 0,0305 | 0,0305 |
| 250 | 400 | 327 641 999 | 6 - 6 | 3,0 / 4,5 / 4,8 | PE2/PA | Parallel Star | 560 | 0,0265 | 0,0265 |

## INSULATION RESISTANCE (20 °C / 500 V DC)

| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

## MOTOR REPAIR INSTRUCTION

- Pictured repair instructions WW / 316SS / 904L (model no. 10000006792)

# 12" REWINDABLE MOTOR

**Rewindable motors with best class winding wires**

SAND FIGHTER

WATER WELL WW CI PC / 304SS

*OPTIONAL* STAINLESS STEEL 316

## FEATURES & BENEFITS

- 12" double flange mounting design
- Factory filled with Franklin's FES93 motor fill solution
- High capacity Kingsbury type liquid lubricated thrust bearing and radial bearings for 100 % maintenance free operation
- Pressure-equalizing diaphragm
- Stainless Steel keyed shaft
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Drinking water approvals

## OPTIONS

- Higher-graded materials: 316SS
- Special voltages
- Retrofitable PT 100 temperature sensor
- 80 kN Thrust load version
- Special lead lengths on request



## STANDARD SPECIFICATION

- Ratings: 185 - 400 kW
- Max. storage temperature - 15 °C to + 60 °C
- Nominal ambient temperature: 30 °C with 0.5 m/s cooling flow
- Standard Voltage:
  380 - 415 V (50 Hz), 460 V (60 Hz), 500 V (50 Hz), 1000 V (50 Hz)
- Voltage Tolerance:
  50 Hz: -10 % / +6 % $U_N$ [380 - 415 V = (380 - 10 %) – (415 + 6 %)]
  60 Hz: ±10 % $U_N$
- Protection IP68
- Motor protection: DIN 61947-4-1
- Frequency of starts: 5 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL / YΔ - start (pos. of cables 90 °)
- Motor lead length: 6 m
- Installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (rotation reversible)
- All motors with factory installed leads

## 12" Rewindable Motors - Model Numbers*

| $P_N$ [kW] | $U_N$ [V] / [Hz] | Model Numbers Digit 1 – 6 | | Model Numbers Digit 7 – 10 | | | |
|---|---|---|---|---|---|---|---|
| | | DOL | YΔ | WW** | 316SS | High Thrust 80kN | |
| | | | | | | WW** | 316SS |
| 185 | 380 - 415 / 50 460 / 60 | 265 610 | 265 710 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 620 | 265 790 | | | | |
| | 1000 / 50 | 265 510 | | | | | |
| 220 | 380 - 415 / 50 460 / 60 | 265 611 | 265 711 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 621 | 265 791 | | | | |
| | 1000 / 50 | 265 511 | | | | | |
| 250 | 380 - 415 / 50 460 / 60 | 265 612 | 265 712 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 622 | 265 792 | | | | |
| | 1000 / 50 | 265 512 | | | | | |
| 300 | 380 - 415 / 50 460 / 60 | 265 614 | 265 714 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 624 | 265 794 | | | | |
| | 1000 / 50 | 265 514 | | | | | |
| 350 | 380 - 415 / 50 460 / 60 | | 265 716 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 626 | 265 796 | | | | |
| | 1000 / 50 | 265 516 | | | | | |
| 400 | 380 - 415 / 50 460 / 60 | | 265 717 | 5011 | 6011 | 5111 | 6111 |
| | 500 / 50 | 265 627 | 265 797 | | | | |
| | 1000 / 50 | 265 517 | | | | | |

* VFD operation is only allowed up to 460V supply voltage, for higher voltages please consult Franklin Electric Europa GmbH

** WW motor - brackets Cast Iron Powder coated

## 12" Rewindable Motors - Performance Data 50Hz

| $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min-1] | $I_N$ [A] | $I_A/I_{N.}$ [A] | η (Eff.) [%] at % load | | | cos φ (PF) at % load | | | $T_N$ [Nm] | $T_A/T_N$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 185 | 60 000 | 380 | 2940 | 368 | 4,70 | 88 | 88 | 87 | 0,82 | 0,87 | 0,88 | 602 | 0,81 |
| | | 400 | 2945 | 351 | 5,30 | 87 | 88 | 87 | 0,79 | 0,85 | 0,86 | 600 | 0,90 |
| | | 415 | 2950 | 344 | 5,76 | 87 | 88 | 88 | 0,76 | 0,84 | 0,84 | 599 | 0,97 |
| | | 500 | 2940 | 286 | 5,30 | 87 | 88 | 87 | 0,79 | 0,85 | 0,87 | 600 | 0,90 |
| | | 1000 | 2945 | 141 | 5,30 | 87 | 88 | 87 | 0,79 | 0,85 | 0,86 | 600 | 0,90 |
| 220 | 60 000 | 380 | 2930 | 448 | 4,79 | 88 | 88 | 87 | 0,83 | 0,87 | 0,88 | 716 | 0,77 |
| | | 400 | 2935 | 430 | 5,40 | 88 | 89 | 88 | 0,80 | 0,86 | 0,87 | 714 | 0,84 |
| | | 415 | 2940 | 427 | 5,85 | 88 | 89 | 88 | 0,77 | 0,85 | 0,84 | 712 | 0,94 |
| | | 500 | 2940 | 334 | 5,40 | 88 | 89 | 88 | 0,80 | 0,86 | 0,88 | 714 | 0,84 |
| | | 1000 | 2945 | 177 | 5,40 | 88 | 89 | 88 | 0,80 | 0,86 | 0,87 | 714 | 0,84 |
| 250 | 60 000 | 380 | 2930 | 507 | 4,7 | 87 | 87 | 86 | 0,85 | 0,88 | 0,85 | 815 | 0,85 |
| | | 400 | 2935 | 481 | 5,2 | 88 | 89 | 88 | 0,80 | 0,85 | 0,80 | 812 | 0,95 |
| | | 415 | 2940 | 471 | 5,6 | 88 | 89 | 88 | 0,76 | 0,83 | 0,76 | 812 | 1,02 |
| | | 500 | 2935 | 385 | 5,2 | 88 | 89 | 88 | 0,80 | 0,85 | 0,88 | 812 | 0,95 |
| | | 1000 | 2930 | 193 | 5,2 | 88 | 89 | 88 | 0,80 | 0,85 | 0,85 | 812 | 0,95 |
| 300 | 60 000 | 380 | 2940 | 586 | 4,9 | 88 | 89 | 87 | 0,87 | 0,90 | 0,88 | 974 | 0,83 |
| | | 400 | 2945 | 551 | 5,6 | 88 | 89 | 88 | 0,85 | 0,89 | 0,88 | 971 | 0,94 |
| | | 415 | 2950 | 532 | 6,0 | 88 | 89 | 88 | 0,83 | 0,88 | 0,89 | 970 | 1,03 |
| | | 500 | 2945 | 435 | 5,6 | 88 | 89 | 88 | 0,85 | 0,89 | 0,88 | 971 | 0,94 |
| | | 1000 | 2945 | 217 | 5,6 | 88 | 89 | 88 | 0,85 | 0,89 | 0,88 | 971 | 0,94 |
| 350 | 60 000 | 380 | 2920 | 720 | 4,7 | 88 | 88 | 86 | 0,85 | 0,88 | 0,87 | 1140 | 0,80 |
| | | 400 | 2930 | 676 | 5,2 | 88 | 88 | 87 | 0,82 | 0,87 | 0,88 | 1137 | 0,90 |
| | | 415 | 2935 | 652 | 5,4 | 87 | 88 | 87 | 0,79 | 0,86 | 0,87 | 1135 | 0,95 |
| | | 500 | 2930 | 541 | 5,2 | 88 | 88 | 87 | 0,82 | 0,87 | 0,87 | 1137 | 0,90 |
| | | 1000 | 2930 | 270 | 5,2 | 88 | 88 | 87 | 0,82 | 0,87 | 0,87 | 1137 | 0,90 |
| 400 | 60 000 | 380 | 2920 | 795 | 4,2 | 90 | 90 | 89 | 0,85 | 0,88 | 0,87 | 1306 | 0,73 |
| | | 400 | 2930 | 750 | 4,8 | 90 | 90 | 90 | 0,82 | 0,87 | 0,87 | 1301 | 0,84 |
| | | 415 | 2940 | 719 | 5,2 | 89 | 90 | 90 | 0,80 | 0,85 | 0,87 | 1299 | 0,92 |
| | | 500 | 2930 | 600 | 4,8 | 90 | 90 | 90 | 0,82 | 0,87 | 0,87 | 1301 | 0,84 |
| | | 1000 | 2935 | 289 | 4,8 | 90 | 90 | 90 | 0,82 | 0,87 | 0,87 | 1301 | 0,84 |

## 12" Rewindable Motors - Performance Data 60Hz

| $P_N$ [kW] | $P_{max}$ [kW] | Thrust F [N] | $U_N$ [V] | $n_N$ [min-1] | $I_{max}$ [A] | $I_A/I_N$ [A] | $\eta_{max}$ (Eff.) [%] at % load | | | $\cos\varphi_{max}$ (PF) at % load | | | $T_{max}$ [Nm] | $T_A/T_N$ [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| 185 | **212** | 60 000 | 460 | 3540 | 339 | | | | | | | 0,87 | | |
| | | | | | | | | | | | | | | |
| 220 | **252** | 60 000 | 460 | 3530 | 425 | 5,44 | 90 | 91 | 91 | 0,81 | 0,84 | 0,86 | 776 | 0,95 |
| | | | | | | | | | | | | | | |
| 250 | **287** | 60 000 | 460 | 3530 | 462 | 5,44 | 90 | 91 | 91 | 0,81 | 0,84 | 0,84 | 776 | 0,95 |
| | | | | | | | | | | | | | | |
| 300 | **345** | 60 000 | 460 | 3530 | 533 | 5,85 | 90 | 91 | 91 | 0,85 | 0,89 | 0,89 | 928 | 0,94 |
| | | | | | | | | | | | | | | |
| 350 | **402** | 60 000 | 460 | 3530 | 647 | 5,13 | 89 | 90 | 90 | 0,83 | 0,87 | 0,88 | 1085 | 0,90 |
| | | | | | | | | | | | | | | |
| 400 | **460** | 60 000 | 460 | 3520 | 745 | 4,79 | 89 | 90 | 90 | 0,84 | 0,87 | 0,87 | 1243 | 0,84 |
| | | | | | | | | | | | | | | |

## 12" Rewindable Motors - Motor Leads*

| Lead | Ø [mm²] | D [mm] | Lengths [m] | Motor [kW] 380 - 415V /50Hz 460V / 60Hz | Motor [kW] 500V/ 50Hz | Motor [kW] 1000V / 50Hz | Qyt. | Lead Kit (3 Single Leads) | Lead seal Kit. |
|---|---|---|---|---|---|---|---|---|---|
|  | 1X70 | 20,7 | 6 | 185 - 300 DOL<br>300 -400 **YΔ**** | 185 - 400 DOL | - | **DOL 1**<br>**YΔ 2** | 308 711 100 | 308 661 120 |
| | 1X35 | 15,3 | 6 | 185 - 250 **YΔ**** | 185 - 400 **YΔ**** | 185 - 400 DOL | **DOL 1**<br>**YΔ 2** | 308 711 101 | 308 661 121 |

For this standard PE2/PA motors must additionally ordered the special Tape 700 541 688, is absolutely necessary.
** For YΔ motors please order two Lead (sealing) kits

| Ground lead* (optional) | Ø [mm²] | D Ø [mm] | Lengths [m] | St. | Mod.-Nr. |
|---|---|---|---|---|---|
|  | 1G25 | 13,0 | 8 | 1 | 308 053 080 |
| | 1G35 | 15,3 | 6 | 1 | 308 056 060 |

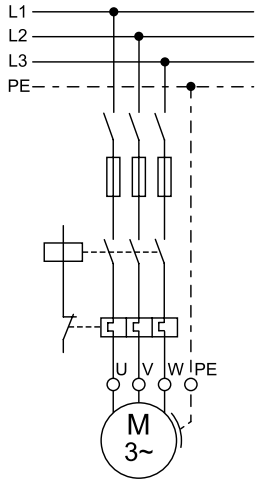
*only for WW and 316SS

| Lead opening seal kit | 250 - 400 kW - DOL / YΔ | 308 661 122 |
|---|---|---|

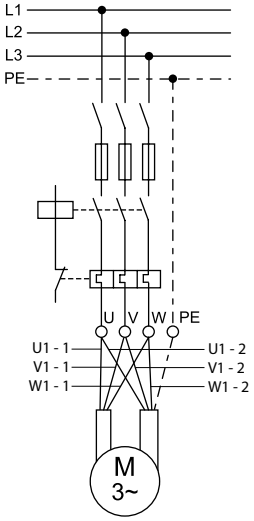
Cables are designed for submerged operation. For air operation please consult Franklin Electric.

## Electrical Connection

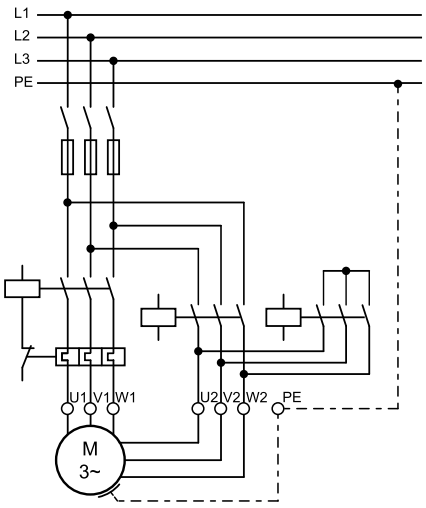
### DOL




### DOL II



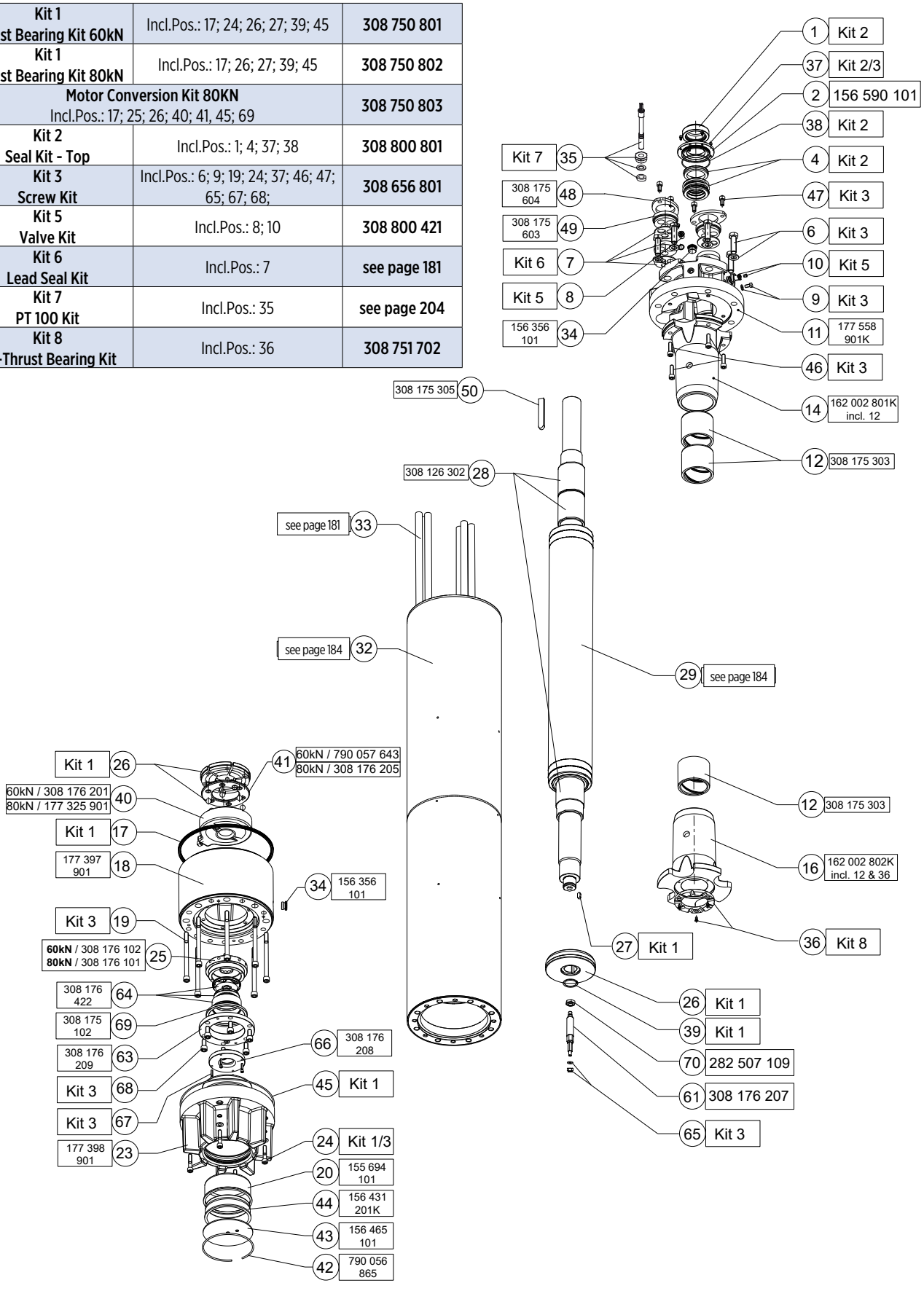

### YΔ




| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

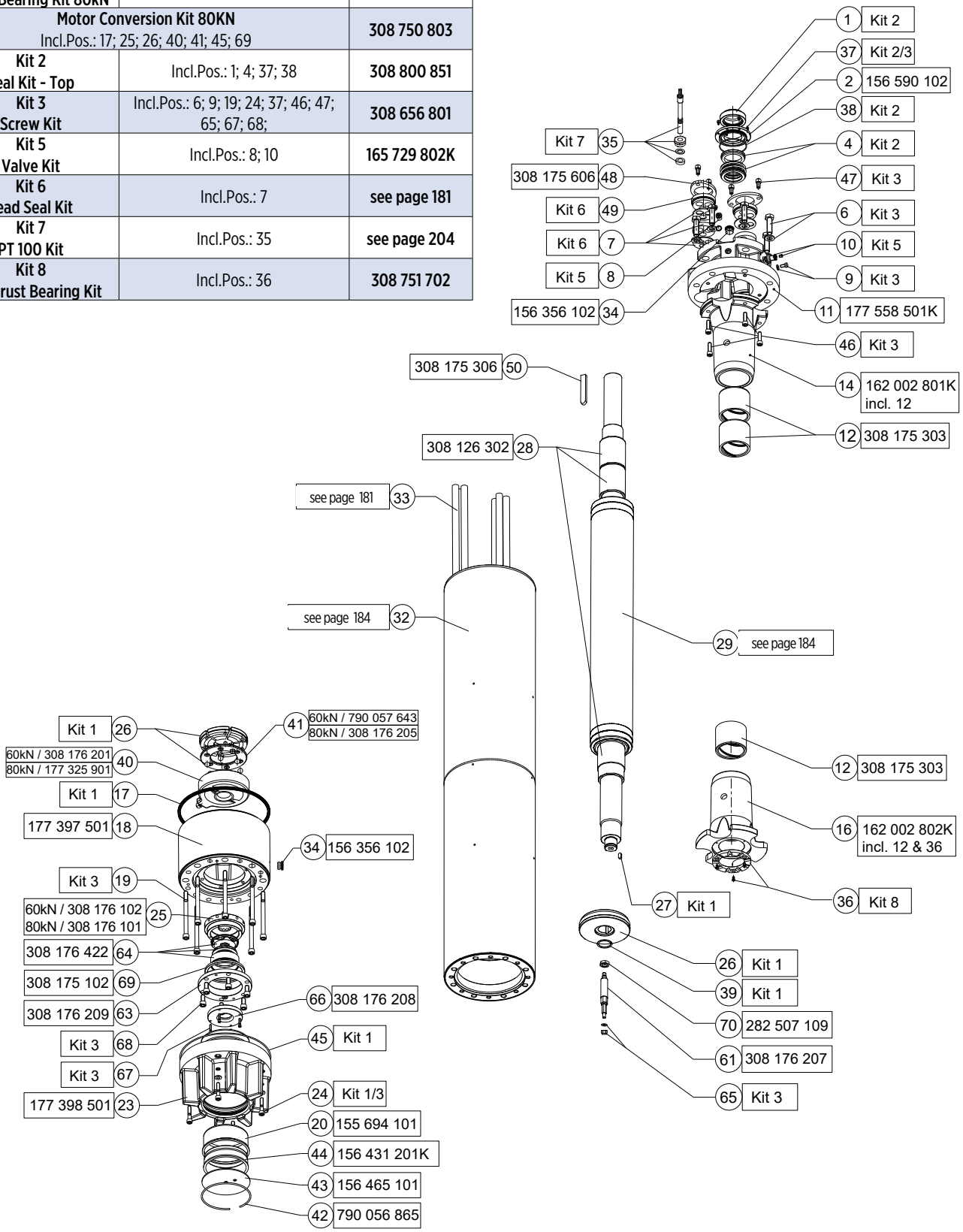
## 12" Rewindable Spare Parts WW

| | | |
|---|---|---|
| **Kit 1<br>Thrust Bearing Kit 60kN** | Incl.Pos.: 17; 24; 26; 27; 39; 45 | **308 750 801** |
| **Kit 1<br>Thrust Bearing Kit 80kN** | Incl.Pos.: 17; 26; 27; 39; 45 | **308 750 802** |
| **Motor Conversion Kit 80KN**<br>Incl.Pos.: 17; 25; 26; 40; 41, 45; 69 | | **308 750 803** |
| **Kit 2<br>Seal Kit - Top** | Incl.Pos.: 1; 4; 37; 38 | **308 800 801** |
| **Kit 3<br>Screw Kit** | Incl.Pos.: 6; 9; 19; 24; 37; 46; 47; 65; 67; 68; | **308 656 801** |
| **Kit 5<br>Valve Kit** | Incl.Pos.: 8; 10 | **308 800 421** |
| **Kit 6<br>Lead Seal Kit** | Incl.Pos.: 7 | **see page 181** |
| **Kit 7<br>PT 100 Kit** | Incl.Pos.: 35 | **see page 204** |
| **Kit 8<br>Up-Thrust Bearing Kit** | Incl.Pos.: 36 | **308 751 702** |



## 12" Rewindable Spare Parts 316SS

| | | |
|---|---|---|
| **Kit 1**<br>**Thrust Bearing Kit 60kN** | Incl.Pos.: 17; 24; 26; 27; 39; 45 | **308 750 801** |
| **Kit 1**<br>**Thrust Bearing Kit 80kN** | Incl.Pos.: 17; 26; 27; 39; 45 | **308 750 802** |
| **Motor Conversion Kit 80KN**<br>Incl.Pos.: 17; 25; 26; 40; 41; 45; 69 | | **308 750 803** |
| **Kit 2**<br>**Seal Kit - Top** | Incl.Pos.: 1; 4; 37; 38 | **308 800 851** |
| **Kit 3**<br>**Screw Kit** | Incl.Pos.: 6; 9; 19; 24; 37; 46; 47; 65; 67; 68; | **308 656 801** |
| **Kit 5**<br>**Valve Kit** | Incl.Pos.: 8; 10 | **165 729 802K** |
| **Kit 6**<br>**Lead Seal Kit** | Incl.Pos.: 7 | **see page 181** |
| **Kit 7**<br>**PT 100 Kit** | Incl.Pos.: 35 | **see page 204** |
| **Kit 8**<br>**Up-Thrust Bearing Kit** | Incl.Pos.: 36 | **308 751 702** |



## WW/316SS Stator and Rotor Model Number (380 - 415 Volts / 50Hz)

| $P_N$ [kW] | $U_N$ / f [V] / [Hz] | Stator ( incl. Winding and 6 m motor lead ) | | | | Rotor |
|---|---|---|---|---|---|---|
| | | DOL PVC | DOL PE2/PA | YΔ PVC | YΔ PE2/PA | |
| **185** | 380 - 415 / 50<br>460 / 60 | | 327 013 902K | | 326 013 952K | 176 381 501K |
| **220** | 380 - 415 / 50<br>460 / 60 | | 326 639 902K | | 326 639 952K | 176 381 501K |
| **250** | 380 - 415 / 50<br>460 / 60 | | 326 639 902K | | 326 639 952K | 176 381 501K |
| **300** | 380 - 415 / 50<br>460 / 60 | | 326 640 902K | | 326 640 952K | 176 381 502K |
| **350** | 380 - 415 / 50<br>460 / 60 | | | | 326 696 952K | 176 381 504K |
| **400** | 380 - 415 / 50<br>460 / 60 | | | | 326 641 952K | 176 381 503K |

## Insulation Standard Windings (380 – 415 Volts 50 Hz)

| $P_N$ [kW] | Mod.-No. Winding-kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YΔ (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **185** | 327 013 999 | 6+6+6+6 | 2,6 / 3,9 (2GrII) | PE2/PA | Parallel Delta | 794 | 0,1061 | | |
| **220** | 326 639 999 | 5+6+5+6 | 2,7 / 4,1 (2GrII) | PE2/PA | Parallel Delta | 770 | 0,0235 | | |
| **250** | 326 639 999 | 5+6+5+6 | 2,7 / 4,1 (2GrII) | PE2/PA | Parallel Delta | 770 | 0,0235 | | |
| **300** | 326 640 999 | 4+5+4+5 | 3,0 / 4,5 (2GrII) | PE2/PA | Parallel Delta | 720 | 0,0178 | | |
| **350** | 326 696 999 | 4+4+4+5 | 3,0 / 4,5 (2GrII) | PE2/PA | Parallel Delta | 706 | 0,0175 | | |
| **400** | 326 641 999 | 4+4+4+4 | 3,4 / 5,0 (2GrII) | PE2/PA | Parallel Delta | 700 | 0,0133 | | |

## Insulation Standard Windings (500 Volts 50 Hz)

| $P_N$ [kW] | Mod.-No. Winding-kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YΔ (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **185** | 326 *** 999 | | | | | | | | |
| **220** | 326 701 999 | 7+7+7+7 | 2,5 / 3,8 (2GrII) | PE2/PA | Parallel Delta | 889 | 0,0244 | | |
| **250** | 326 702 999 | 6+7+7+7 | 2,5 / 3,8 (2GrII) | PE2/PA | Parallel Delta | 924 | 0,0331 | | |
| **300** | 326 703 999 | 5+6+5+6 | 2,7 / 4,1 (2GrII) | PE2/PA | Parallel Delta | 861 | 0,0265 | | |
| **350** | 326 697 999 | 5+5+5+6 | 2,7 / 4,1 (2GrII) | PE2/PA | Parallel Delta | 856 | 0,0263 | | |
| **400** | 326 704 999 | 5+5+5+5 | 3,0 / 4,5 (2GrII) | PE2/PA | Parallel Delta | 848 | 0,0221 | | |

## Insulation Standard Windings (1000 Volts 50 Hz)

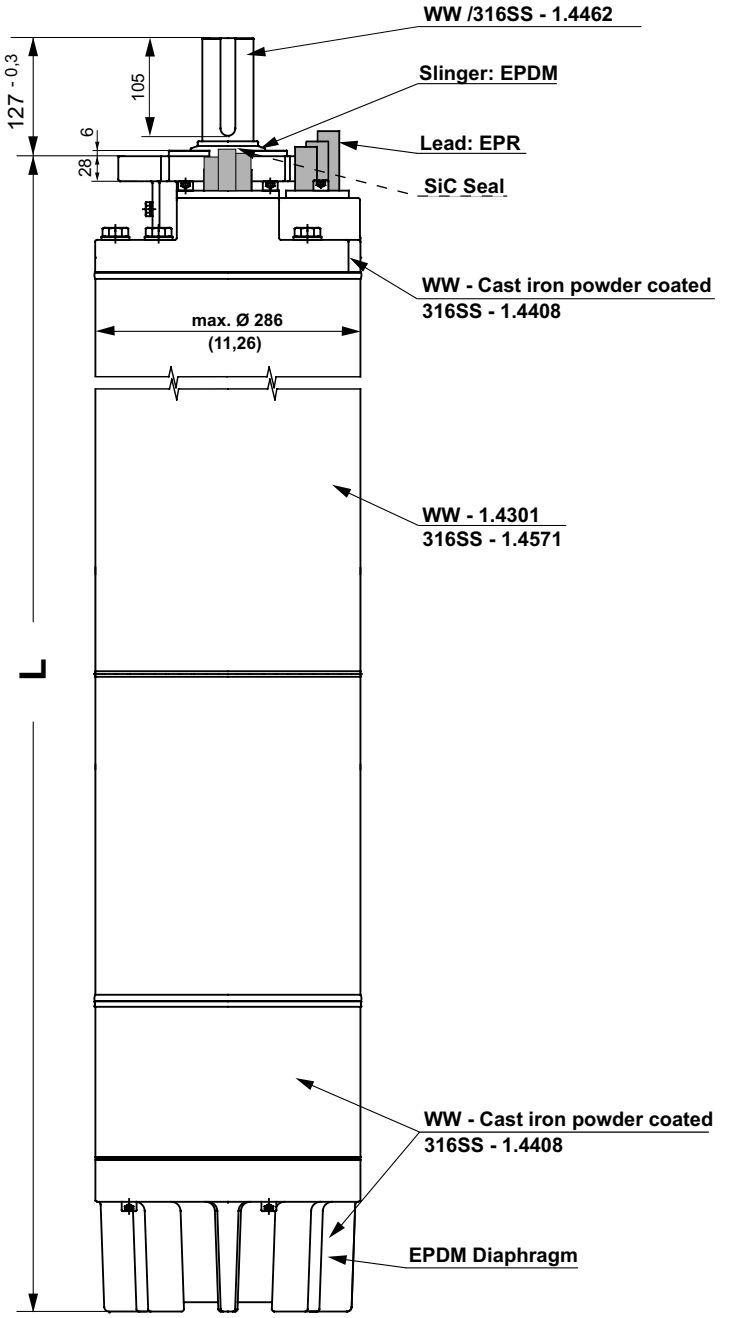
| $P_N$ [kW] | Mod.-No. Winding-kits | Turns per coil | Wire diameter [mm] | Type of Isolation | Group connection | Total Wire length [m] | Resistance coil [Ω] | Resistance YΔ (U1-U2) [Ω] | Resistance Dol (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| **185** | 327 016 999 | 15+15+15+15 | 2,3 / 3,5 | PE2/PA | Parallel Delta | 1138 | 0,7836 | | 0,221 |
| **220** | 326 928 999 | 14+14+14+14 | 2,5 / 3,8 | PE2/PA | Parallel Delta | 902 | 0,5251 | | 0,177 |
| **250** | 326 699 999 | 13+14+13+14 | 2,5 / 3,8 | PE2/PA | Parallel Delta | 888 | 0,1290 | | 0,165 |
| **300** | 326 700 999 | 11+11+11+11 | 2,7 / 4,1 | PE2/PA | Parallel Delta | 825 | 0,1024 | | 0,135 |
| **350** | 326 698 999 | 10+11+10+11 | 2,7 / 4,1 | PE2/PA | Parallel Delta | 820 | 0,1017 | | 0,136 |
| **400** | 326 674 999 | 10+10+10+10 | 3,0 / 4,5 | PE2/PA | Parallel Delta | 812 | 0,0815 | | 0,106 |

## Insulation resistant ( 20°C / 500 VDC)

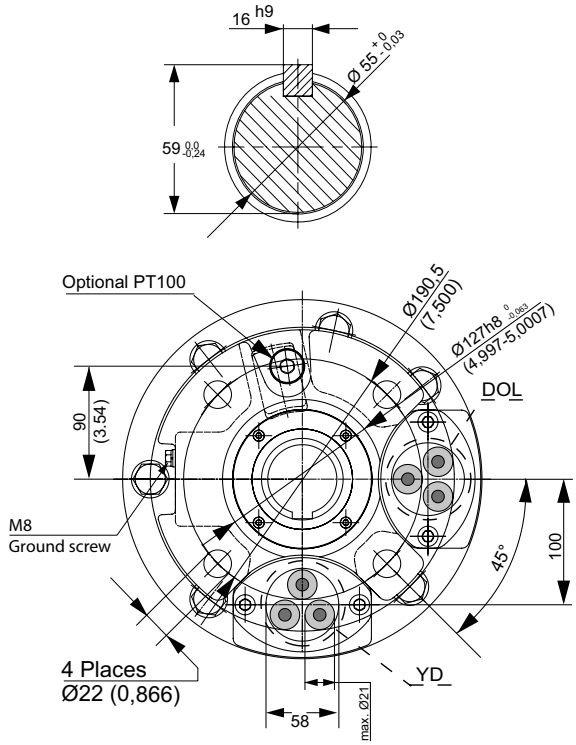
| | |
|---|---|
| New motor without drop cable | 400 > MΩ |
| Used motor without drop cable | 20 > MΩ |
| New motor with drop cable | 4 > MΩ |
| Used motor with drop cable | 1 MΩ |

## 12" Motor Design WW / 316SS

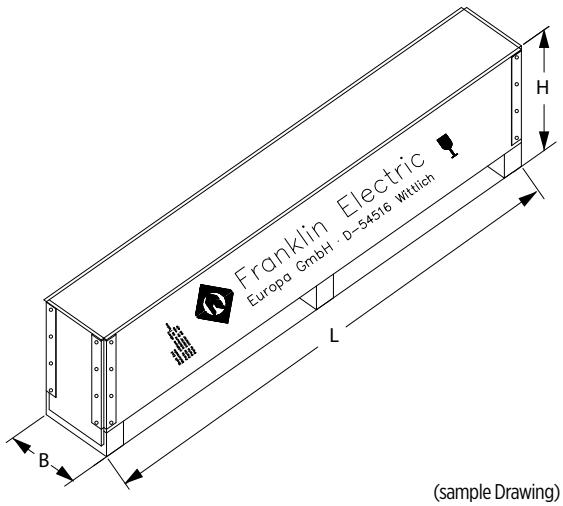
### Motor - WW / 316SS




### End Bell




### Motor Box




(sample Drawing)

| $P_N$ [kW] | Motor Lengths | Motor Weights | | Motor Shipping Size [mm] | | |
|---|---|---|---|---|---|---|
| | L [mm] | Motor [kg] | incl. Pack [kg] | B | H | L |
| **185** | 1893 | 663 | 743 | 396 | 572 | 2296 |
| **220** | 1893 | 663 | 743 | | | |
| **250** | 1893 | 663 | 743 | | | |
| **300** | 2043 | 726 | 806 | 396 | 572 | 2596 |
| **350** | 2143 | 769 | 849 | | | |
| **400** | 2193 | 794 | 874 | | | |

# SubMonitor
## Motor Protection

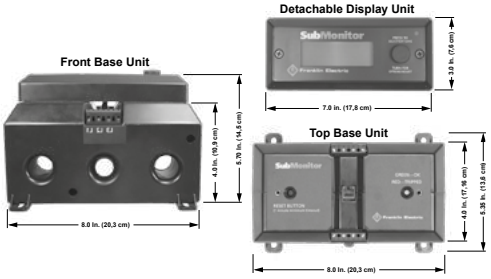



The SubMonitor is designed to protect 3-phase pumps with horsepower ratings between 3 and 200 Hp. Current, voltage and motor temperature are monitored using three integrated current transformers. A digital display provides current and voltage readings for all three legs and allows the user to set up the SubMonitor quickly and easily. The SubMonitor is the latest innovation in 3-phase pump protection from Franklin Electric. Using state-of-the-art technology, the SubMonitor provides the ultimate protection for a pump and motor. There is simply no better way to protect a large 3-phase submersible pump investment than with a SubMonitor. It's the protection device that can sense overheating straight from the motor windings! And it is made by the world leader in submersible motors - Franklin Electric.

| Model number | |
|---|---|
| **Premium Package** | 586 000 5100 |
| **Input Voltage** | 190 – 600 VAC |
| **Frquency** | 60/50 Hz |
| **Motor Service Factor Amps** | 3 to 359 Amps |
| **Maximum Conductor Size Through Sensors** | |
| Max. Diameter | 0.920 in. (23 mm) |
| **Trip Response** | |
| Motor,<br>Under / Overload,<br>Under / Overvoltage,<br>Overheat<br>Unbalance | 3 seconds |
| **Control Circuit Rating** | 1.5 Amp AC, up to 600 volts |
| **Signal Circuit Rating** | 1 Amp AC, up to 250 volts<br>(Incandescent: 100 watts max.) |
| **Wiring Terminals** | |
| Wire Gauge | #12 to #18 AWG |
| Tighten to | 4.5 in-lbs |
| **Weight (SubMonitor)** | 2,75 kg |
| **Carton Size<br>(Std. Unit)** | 7,75 in x 11,5 in x 6,75 in (197 mm x 292 mm x 171 mm) |
| **Shipping Weight<br>(Std. Unit)** | 3,1 kg |

**Product advantages:**

- Quick setup to monitor a motor, simply enter the Line Frequency (Hz), Line Voltage (volts), and Motor Service Factor Amp rating
- Digital display indicates voltage and current on all three legs at the same time, and fault messages are in easily understandable text
- Monitors - Under/Overload; Under/Overvoltage; Current Unbalance; Overheated Motor (Submonitor Equipped); False Start (Chattering); Phase Reversal
- For motors with service factor amp ratings between 3 and 359 amps
- One unit covers the entire range from 190 to 600 Volts
- No need to make additional turns around the CT or add external CTs
- Password Protection Option
- DIN Rail Mounting Option
- Stores fault, setting changes, and pump run-time, that can be accessed through the display
- the lightning protection is already included in the Premium Package
- Detachable NEMA 3R display unit can be mounted on panel door
- UL 508 Listed




## SubMonitor Accessory




**D3 Data Download Tool**

D3 is a service tool that provides the capability to download data from SubMonitor and transfer that data to a PC.

**Includes:**

- D3 unit
- Transfer software
- USB cable

**Part Nb.: 585 001 1100**

# ACCESSORIES SUBMERSIBLE MOTORS

## SUBSTARTSC® PSC 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.




- 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 |

## Specifications

| | |
|---|---|
| **Mechanical** | |
| **Protection level** | IP54 |
| **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 | |

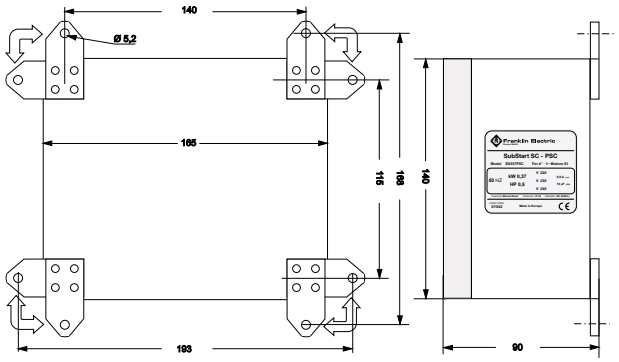
## Model Parameters

| 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

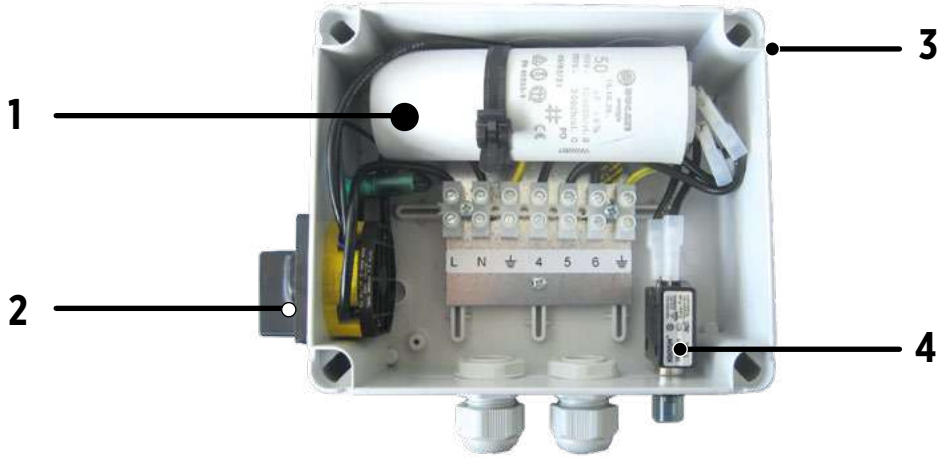
## Dimension




| Rating [kW] | SubStartSC 1- PSC | | | Packing dimensions | | | Weight [kg] |
|---|---|---|---|---|---|---|---|
| | B [mm] | H [mm] | T [mm] | B [mm] | H [mm] | T [mm] | |
| 0,25 - 2,2 | 165 | 140 | 82 | 240 | 180 | 100 | 1,4 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SubStartSC® Spare parts








### Part 1: 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 |

### Part 4: 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 |





### Part 2: Rotary- Switch Kit

| Mod. Nb. |
|---|
| 308 005 822 |

### Part 3: Rocker- Switch Kit

| Mod. Nb. |
|---|
| 308 005 821 |

# ACCESSORIES SUBMERSIBLE MOTORS

## 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



- 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 |

## Specifications

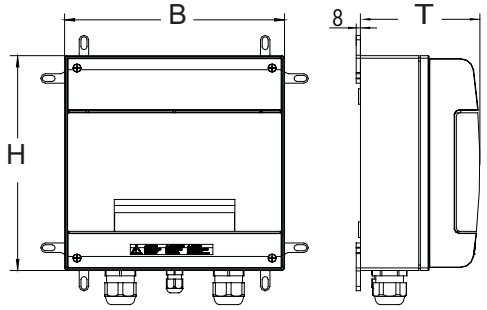
| Electrical Specifications | |
|---|---|
| Working Voltage | 3- / 50Hz<br>380 - 415V / -10% +6% |
| Voltage tolerance | 380V -10% / 415V+6% |
| Rated insulation voltage | 400 Vac |
| Rated short-time withstand current | 50 kA |
| Rated conditional short-circuit current | 50 kA |
| Current | 5A, 9A, 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 |

## Dimension

| Rating [kW] | SubStart3P H [mm] | SubStart3P B [mm] | SubStart3P T [mm] | Packing dimensions H [mm] | Packing dimensions B [mm] | Packing dimensions T [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|
| **0,37kW - 4,0kW** | 184 | 190 | 106 | 200 | 250 | 120 | 1,2 |
| **5,5kW** | 250 | 256 | 140 | 260 | 330 | 160 | 1.2 |
| **7,5kW** | 250 | 256 | 140 | 260 | 330 | 160 | 2.3 |

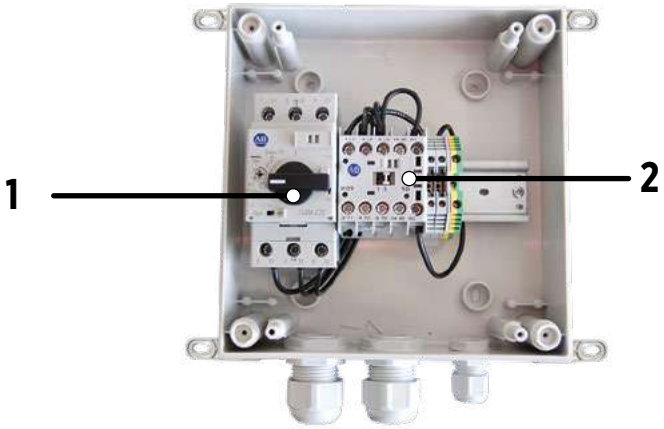



## Specifications

| 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 |
| 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) |

# ACCESSORIES SUBMERSIBLE MOTORS

## SubStart3P® Spare parts








## Part 1: 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 |

## Part 2: 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 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SUBTRONICSC® 1~ PSC Submersible 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.




- 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

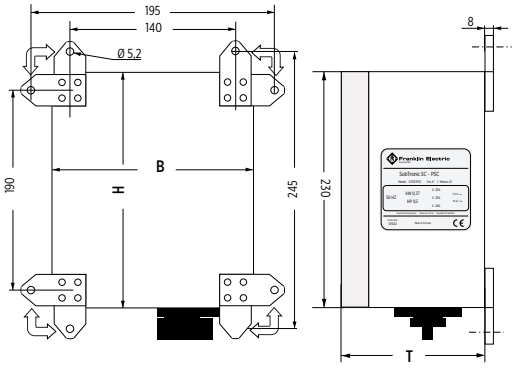
| | |
|---|---|
| **Mounting** | Easy wall mounting offering various options without destroying the protection rating of the enclosure. |
| **Wiring** | Reliable connectors are provided for ease of wiring. |
| **Motor compatible design** | |
| **Matching range** | The SubTronicSC® Protector range was 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. |

## Specifications

| | |
|---|---|
| **Mechanical** | |
| **Protection level** | IP54 |
| **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. | |

## Dimension

| Rating [kW] | SubTronicSC 1~ PSC | | | Packing dimensions | | | Weight [kg] |
|---|---|---|---|---|---|---|---|
| | B [mm] | H [mm] | T [mm] | B [mm] | H [mm] | T [mm] | |
| 0,25 - 2,2 | 180 | 230 | 82 | 200 | 290 | 100 | 1,4 |

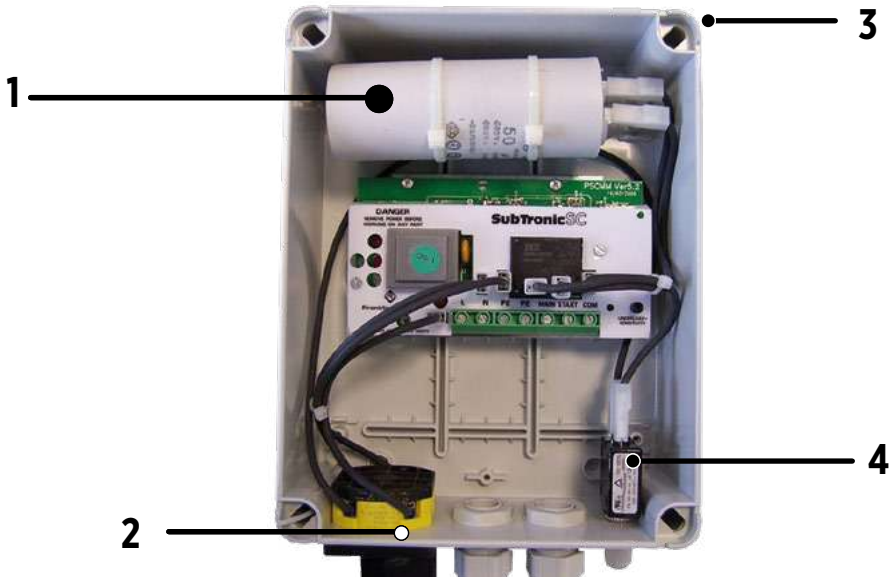



## Model Parameters

| 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 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SubTronicSC® Spare parts








### Part 1: 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 |

### Part 4: 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 |





### Part 2: Rotary- Switch Kit

| Mod. Nb. |
|---|
| 308 005 822 |

### Part 3: Rocker- Switch Kit

| Mod. Nb. |
|---|
| 308 005 821 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SUBTRONIC3P® Three phase Submersible 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.

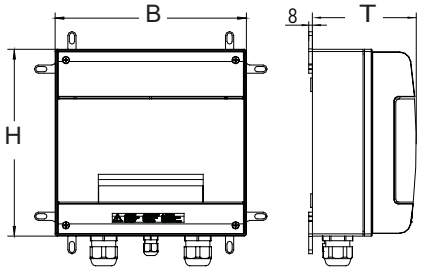


## Ergonomically designed

| | |
|---|---|
| **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. |

## Dimension

| Leistung [kW] | SubTronic3P H [mm] | B [mm] | T [mm] | Packing dimensions H [mm] | B [mm] | T [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|
| 0,37kW - 4,0kW | 184 | 190 | 106 | 200 | 250 | 120 | 1.4 |
| 5,5kW - 7,5kW | 250 | 256 | 140 | 260 | 330 | 160 | 2.8 |




## 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 |
| **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<br>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 | |

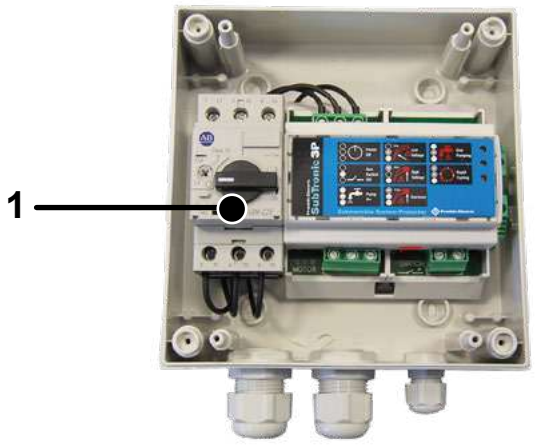
## Model Parameters

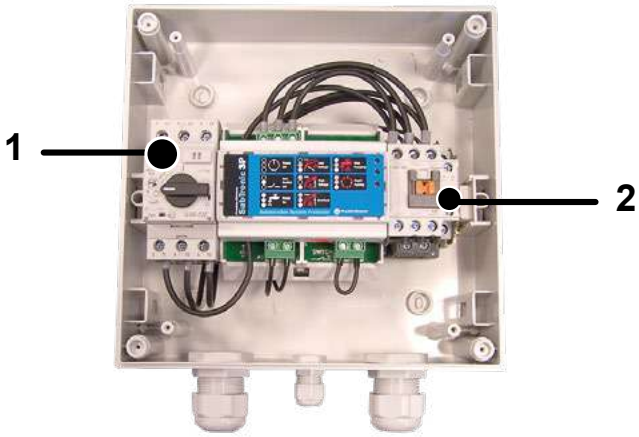
| Motor Rating [kW] | Type 3 phase / 400V 50Hz | Model Number | Nom. Current [A] | Max. Current [A] |
|---|---|---|---|---|
| **0,37** | ST037P3 | 288 500 3511 | 1,1 | 5,4 |
| **0,55** | ST055P3 | 288 501 3511 | 1,6 | 7,4 |
| **0,75** | ST075P3 | 288 502 3511 | 2 | 10,6 |
| **1,10** | ST110P3 | 288 503 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 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SubTronic3P® Spare parts

| 0,37kW - 3,0kW | 3,7kW - 7,5kW |
|---|---|








### Part 1: 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 |

### Part 2: Contactor - > 3,7 kW

| 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 |

# ACCESSORIES SUBMERSIBLE MOTORS

## 1~ 3- WIRE MOTOR CONTROL BOXES

**Application:** Control and Protection of Franklin Electric 3-wire single phase motors.

**Specification:**

- 50 Hz - 220 / 230V
- 60Hz - 115 / 230V
- Degree of protection: IP 23
- Metal version
- Includes starting capacitor
- Manual reset overload
- Max. Amb Temp. -20°C - +40°C



## ORDERING INFORMATION 50 HZ

| 3-wire Motors 50 Hz | | Control Box 50 Hz | Weights |
|---|---|---|---|
| [kW] | [V] | Mod. Nummer | [kg] |
| **0,25** | 220 / 230 | 280 355 2115 | 1,8 |
| **0,37** | | | |
| **0,55** | 220 / 230 | 280 357 2115 | |
| **0,75** | 220 / 230 | 280 358 2115 | |
| **1,1** | 220 / 230 | 282 350 8114 | 2,3 |
| **1,5** | 220 / 230 | 282 351 8114 | |
| **2,2** | 220 / 230 | 282 352 8114 | 3,2 |
| **3,7** | 220 / 230 | 282 253 4014 | 5,1 |

## SPARE PARTS CONTROL BOXES 50 HZ

| $P_N$ [kW] | Control Box Model number | Relay-Kit | Qty. | Start Capacitor | Qty. | Run Capacitor | Qty. | Overload relay of main phases | Qty. | Overload relay of start phases | Qty. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **0,37** | 2803552115 | 305213912 | 1 | 305218957 **48µF 220V** | 1 | --------- | 0 | * | 1 | --------- | 0 |
| **0,55** | 2803572115 | 305213912 | 1 | 305218906 **65µF 220V** | 1 | --------- | 0 | * | 1 | --------- | 0 |
| **0,75** | 2803582115 | 305213912 | 1 | 305218918 **95µF 220V** | 1 | --------- | 0 | * | 1 | --------- | 0 |
| **1,1** | 2823508114 | 305213912 | 1 | 305207913 **115µ220V** | 1 | 305 204 902 **10µF 370V** | 1 | 305 215 914 | 1 | --------- | 0 |
| **1,5** | 2823518114 | 305213912 | 1 | 305208915 **208µF 220V** | 1 | 305 204 903 **20µF 370V** | 1 | 305 215 902 | 1 | 305 215 906 | 1 |
| **2,2** | 2823528114 | 305213912 | 1 | 305208919 **300µF 220V** | **1** | 305 203 902 **35µF 370V** | **1** | 305 215 915 | 1 | 305 215 918 | 1 |
| **3,7** | 2822534014 | 305213912 | 1 | 305208915 **208µF 220V** | 2 | 305 203 909 **45µF 370V** | 1 | 305 214 902 | 1 | 305 215 902 | 1 |
| | | | | | | 305 203 901 **30µF 370V** | 1 | | | | |

# ACCESSORIES SUBMERSIBLE MOTORS

## ORDERING INFORMATION 60HZ

| 3-wire Motors 60 Hz | | Control Box 60 Hz | Weights |
|---|---|---|---|
| [kW] | [V] | Mod. Number | [kg] |
| 0,44 | 115 | 280 102 4915 | 1,8 |
| | 230 | 280 103 4915 | |
| 0,59 | 115 | 280 104 4915 | |
| | 230 | 280 105 4915 | |
| 0,83 | 230 | 280 107 4915 | |
| 1,0 | 230 | 280 108 4915 | |
| 1,4 | 230 | 282 300 8110 | 2,3 |
| 1,8 | 230 | 282 301 8110 | |
| 2,5 | 230 | 282 302 8110 | 3,2 |
| 4,2 | 230 | 282 113 8110 | 5,1 |

## SPARE PARTS CONTROL BOXES 60 HZ

| $P_N$ [kW] | Voltage [V] | Control Box Model number | Relay-Kit | Qty. | Start Capacitor | Qty. | Run Capacitor | Qty. | Overload relay of main phases | Qty. | Overload relay of start phases | Qty. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0,44** | 115 | 280 102 4915 | 305 101 905 | 1 | 305 207 905 159-191µF 110V | 1 | - | 0 | - | 0 | - | 0 |
| | 230 | 280 103 4915 | 305 101 901 | 1 | 305 207 905 43-53µF 220V | 1 | | | | | | |
| **0,59** | 115 | 280 104 4915 | 305 101 906 | 1 | 305 207 951 250-300µF 125V | 1 | - | 0 | - | 0 | - | 0 |
| | 230 | 280 105 4915 | 305 101 902 | 1 | 305 207 905 59-71µF 220V | 1 | | | | | | |
| **0,83** | 230 | 280 107 4915 | 305 101 903 | 1 | 305 207 918 86-103µF 220V | 1 | - | 0 | - | 0 | - | 0 |
| **1,0** | 230 | 280 108 4915 | 305 101 904 | 1 | 305 207 913 105-126µF 220V | 1 | - | 0 | - | 0 | - | 0 |
| **1,4** | 230 | 282 300 8110 | 155 031 102 | 1 | 305 207 937 105-126µF 220V | 1 | 155 328 101 15µF 370V | 1 | 275 411 113 | 1 | 275 411 114 | 1 |
| **1,8** | 230 | 282 301 8110 | 155 031 102 | 1 | 305 207 937 105-126µF 220V | 1 | 155 328 103 20µF 370V | 1 | 275 411 113 | 1 | 275 411 117 | 1 |
| **2,5** | 230 | 282 302 8110 | 155 031 102 | 1 | 305 206 923 208-250µF 220V | 1 | 155 327 109 45µF 370V | 1 | 275 411 115 | 1 | 275 411 118 | 1 |
| **4,2** | 230 | 282 113 8110 | 155 031 601 | 1 | 275 468 118 216-259µF 330V | 1 | 155 327 114 40µF 370V | 1 | 275 406 102 | 1 | 275 411 119 | 1 |

## DIMENSION CONTROL BOXES [mm]

| 0,25 (0,44) – 0,75 (1,0) kW | | | 1,1 (1,4) kW / 1,5(1,8) kW / 2,2(2,5) kW | | | 3,7 (4,2) kW | | |
|---|---|---|---|---|---|---|---|---|
| A | B | C | A | B | C | A | B | C |
| 125 | 215 | 68 | 205 | 216 | 154 | 205 | 384 | 154 |

# ACCESSORIES SUBMERSIBLE MOTORS

## SUBDRIVE CONNECT DRIVE

This new generation of our proven constant pressure system, includes all the functionality of the current design, as well as the benefits and advanced features of the new SubDrive Connect System. Taking into account over 16 years of field experience with the SubDrive Family, the new platform is capable to optimize system performance, water pressure supply and system operating diagnostics.
In addition to the enhanced features below, the Connect models offering Wi-Fi connection for use with the FE Connect mobile application. With state of the art technology and well-chosen components, the new SubDrive Controllers provides constant pressure through variable speed control of submersible pumps.




### Features:

- Constant water pressure with a wide range of settings (0.5 to 9.5bar)
- User-defined motor frequency range
- 4-20mA analog pressure transducer included
- FE Connect Mobile Application for advanced settings and monitoring
- Plug and play system
- Built-in diagnostics and protection
- Easy-to-read LCD display for system pressure and fault identification
- Built-in duplex alternator for dual drive operation
- Proven components for long-term reliability
- Backwards compatibility and easy installation
- Single-phase 3-Wire motor operation (60Hz)
- Advanced motor soft-start feature increases motor life
- CE, cULus and UL approved

### System Options:

- Moisture Sensor – Weet floor identification
- 4-20mA analog pressure transducer – 6, 10, 16bar
- Outdoor rated cable kit for analog pressure transducer
- Communication cable kit for built-in duplex alternator
- Replacement Kit for Input and Display Board
- Input and Output Filter
- Lightning Arrestor
- Fan Replacement Kit
- Standard SubDrive Pressure Switch

### Service / Support:

- Easy commissioning by plug and play system
- User defined set-up
- Spare part kits for electronic controller and motor (on Request)
- Franklin Electric Connect Mobile Application

### SubDrive Connect ordering Information:

| Drive Model | Order Nb. | Three Phase Motors / 230V | | Single-Phase (3-Wire) Motors 60 Hz |
|---|---|---|---|---|
| | | 50 Hz | 60 Hz | |
| **SubDrive 1100** | **5870205153C** | 0,75kW - 1,1kW | 0,75kW - 1,1kW | 0,37kW - 1,1kW |
| **SubDrive 1500** | **5870205353C** | 0,75kW - 1,5kW | 0,75kW - 1,5kW | 0,37kW - 1,5kW |
| **SubDrive 2200** | **5870205453C** | 0,75kW - 2,2kW | 0,75kW - 2,2kW | 0,37kW - 2,2kW |

### SubDrive Connect Specification:

| Drive Model | SD 1100 | SD 1500 | SD 2200 |
|---|---|---|---|
| **SubDrive Model Nb.** | **5870205153C** | **5870205353C** | **5870205453C** |
| | | | |
| **Input Voltage** | 230V AC, 1-phase | 230V AC, 1-phase | 230V AC, 1-phase |
| **Max. Input Amps** | 12 A | 19 A | 23 A |
| **Output Frequency** | 30 - 77 Hz | 30 - 77 Hz | 30 - 77 Hz |
| **Max. Output Amps** | 5,9 A (3-phase) 10,4 (single-phase) | 8,1 A (3-phase) 13,2 (single-phase) | 0,9 A (3-phase) 13,2 (single-phase) |
| **Pressure Range** | 0,5 - 9,5 bar | 0,5 - 9,5 bar | 0,5 - 9,5 bar |

## PRESSURE SWITCH SUBDRIVE - CONSTANT-PRESSURE CONTROLLER

The pressure switch signals continuously prevailing in the water supply system pressure to the SubDrive controller.



**Mod.Nr.: 223 995 801**

# ACCESSORIES SUBMERSIBLE MOTORS

## Lead Splicing Kit up to 95 MM²



- Connection kit for cable extensions with cable connection sleeves for cable cross-sections up to 95 mm².
- Suitable for all common cable materials
- Long service life
- High electrical insulation values and mechanical strength
- Quick and easy assembly
- Components: Transparent plastic shell, ready-to-mix casting resin, insulating tape, installation instructions

| Tech. Description | Mod. Nb. | Description | for cross-sections up to [mm²] | L [mm] | Ø [mm] | H [mm] | Max. cable Ø [mm] |
|---|---|---|---|---|---|---|---|
| • 4 wire<br>• up to 95mm²<br>• up to 1,2kV | 308 090 930 | Splicing Kit 10 | 1.5 - 10 | 190 | 36 | 50 | 26 |
| | 308 090 931 | Splicing Kit 25 | 10 - 25 | 260 | 47 | 63 | 34 |
| | 308 090 932 | Splicing Kit 50 | 25 - 50 | 360 | 55 | 75 | 43 |
| | 308 090 933 | Splicing Kit 95 | 50 - 95 | 400 | 70 | 95 | 48 |

## 4" Lead Termination Kit

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

**Technical Description:**

- Max. current 18 Ampere in air @ max. 50°C ambient temperature
- Max. current 23 Ampere submersed in water @ max. 30°C ambient temperature
- Max. voltage 750 V



| Kit- Type | Mod. Number | Description | Material Cable plug |
|---|---|---|---|
| Standard 304SS | 308 090 901 | w/o Strain relief | Brass |
| Strain Relief 304SS | 308 090 902 | with. Strain relief | Brass |
| Standard 316SS | 308 090 911 | w/o Strain relief | 1.4404 |

## DOUBLE PLUG LEAD 4" MOTOR DESIGN

- Connected between termination kit and 4" motor, required for use of lead termination kit.
- Max. current: 18 Ampere in air at max. 50 °C ambient temperature, 23 Ampere submersed in water at max. 30 °C ambient temperature
- Max. voltage: 750 V AC

| Model no. **2- wire Motors** | Material | Description: | Model no. **PSC / 3-wire/ 3-Phase Motors** | Material | Description | |
|---|---|---|---|---|---|---|
| 308 130 061 | 304SS | 3X1,5 mm² 1,5 m - w/o. Strain relief | 308 130 041 | 304SS | 3x1.5 / 1G 1.5 mm² 1.50 m - w/o strain relief |  |
| - | 316SS | | 308 130 051 | 316SS | | |
| 308 130 062 | 304SS | 3X1,5 mm² 2,5 m - w/o Strain relief | 308 130 042 | 304SS | 3x1.5 / 1G 1.5 mm² 2.50 m - w/o strain relief | |
| - | 316SS | | 308 130 052 | 316SS | | |
| 308 130 021 | 304SS | 3X1,5 mm² 1,5 m - with. Strain relief(Brass) | 308 130 031 | 304SS | 3x1.5 / 1G 1.5 mm² 1.50 m - with strain relief(Brass) | |
| - | 316SS | | - | 316SS | | |
| 308 130 022 | 304SS | 3X1,5 mm² 2,5 m - with. Strain relief(Brass) | 308 130 032 | 304SS | 3x1.5 / 1G 1.5 mm² 2.50 m - with strain relief(Brass) | |
| - | 316SS | | - | 316SS | | |

### 4" Motor 4000N Design with flat lead plug - start 07.2016 up to 12.2020

| L (m) | Mat. | Mod. No. | PSC / 3 - wire / 3-Phase |
|---|---|---|---|
| 1,5 | 316SS | 308 130 011 | 3X1,5 & 1G1,5mm² 1,5 m - w/o. Strain relief |
| 2,5 | 316SS | 308 130 012 | |



# ACCESSORIES SUBMERSIBLE MOTORS

## DOUBLE PLUG LEAD 4" MOTOR DESIGN

### 4" Motor Design with round lead plug 9.3kW

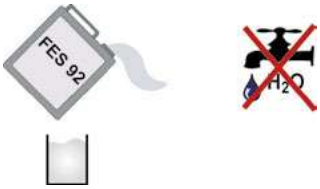
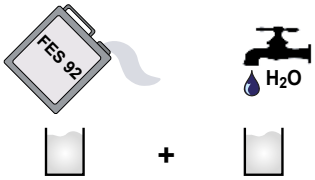
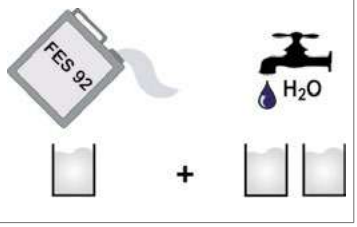
| L (m) | Mat. | Mod. No. | 3-Phase |
|---|---|---|---|
| 1,5 | 316SS | **309 116 501** | 3X1,5 & 1G1,5mm² 1,5 m - w/o. Strain relief |
| 2,5 | 316SS | **309 116 502** | |



## CORROSION PROTECTION 4" MOTORS

| Description | Model no. | |
|---|---|---|
| ■ For use in more aggressive media<br>■ Mounting on the bottom of the motors<br>■ Material: GG 25<br><br>System of operation: Wells with extremely high levels of chlorides and other elements combined with high temperatures will attack almost any type of metal, including stainless steel. When in contact with a more noble metal, the less noble metal becomes the anode of a galvanic cell. Oxidation occurs at the anode. It slowly dissolves (sacrificial anode), leaving the more noble metal unaffected. The result is a longer service life of the motor/pump unit in more aggressive media. | 4000 N: 308 250 912<br>Design up to 06.2016<br><br>4000 N: 308 250 914<br>Design staring 07.2016<br><br>6500 N: 308 250 913 |  <br>4000N 6500N |

## MOTOR FILLING LIQUID

| Description | FES92 | FES91 | FES93 |
|---|---|---|---|
| 5 l motor filling liquid FES92<br>model no. 308 353 941  |  |  |  |

| motor type | required motor filling |
|---|---|
| 4" encapsulated motor Standard / PM motor | FES93 |
| 6" encapsulated Standard / PM motor | FES91 |
| 6" encapsulated High Temp motor | FES92 |

| motor type | required motor filling |
|---|---|
| 8" encapsulated Standard motor | FES91 |
| 8" encapsulated High Temp 75 motor | FES92 |
| 6"/8"/10"/12" rewindable Standard / PM motor | FES93 |

## MOTOR FILLING KIT

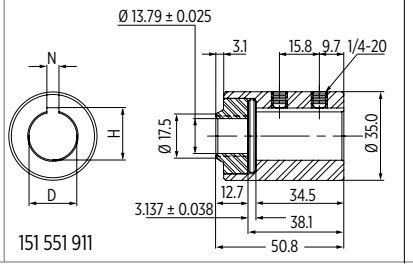
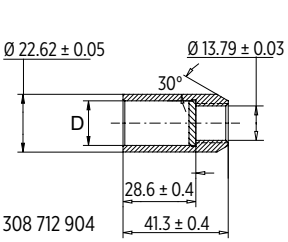
| Description | Model no. | |
|---|---|---|
| This kit contains all necessary tools to check and replenish Franklin Electric submersible motors (up 4" High Thrust 6500N) with filling liquid FES 91 /92 / 93 (fill solution/concentrate must be ordered separately). | 308 726 103 |  |

# ACCESSORIES SUBMERSIBLE MOTORS

## MOTOR/PUMP COUPLINGS

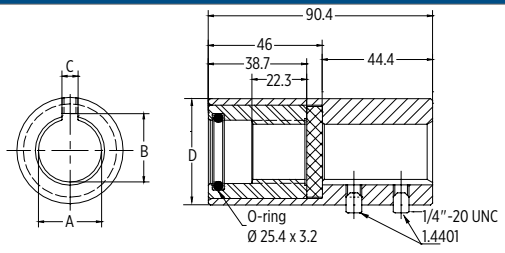
- Motor-pump couplings for matching Franklin Electric motors to a variety of pump shafts.
- Couplings are designed to transmit the pump thrust to the motor in order to provide maximum benefits from the Franklin internal thrust bearing construction.
- Hardened Stainless steel spacer discs in the 4" and 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

| Description | Dimensions |
|---|---|
| ■ 4" motor/pump coupling<br>■ NEMA Standard measuring on motor shaft<br>■ separate washer between motor and pump shafts<br>■ Material: 304SS / 316SS |  <br>151 551 911<br>  <br>308 712 904<br>  |

| Model no. | Coupling Material DIN (AISI) | Dimension D [mm] Max. / Min. | Dimension N [mm] Max. / Min. | Dimension H [mm] Max. / Min. |
|---|---|---|---|---|
| 151 551 911 | 304SS | 19.075 / 19.063 | 4.838 / 4.788 | 20.70 / 20.53 |
| 308 712 904 | 316SS | 17.50 / 17.48 | | |

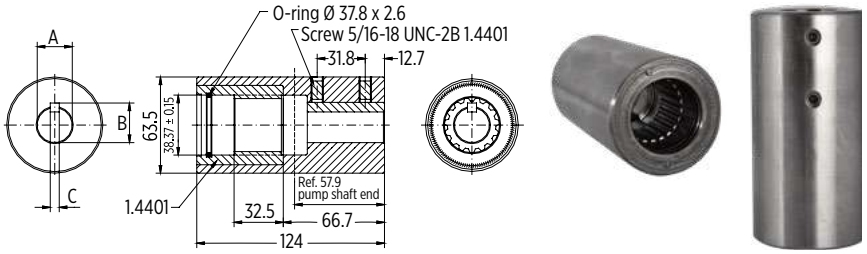
### 6" Motor/pump couplings

| Description | Dimensions |
|---|---|
| ■ 6" motor/pump coupling<br>■ NEMA Standard measuring on motor shaft<br>■ separate washer between motor and pump shafts<br>■ Material: 304SS / 316SS |  <br>  |

| Model no. | Coupling Material DIN (AISI) | Dimension A [mm] Max. / Min. | Dimension B [mm] Max. / Min. | Dimension C [mm] Max. / Min. | Dimension D [mm] |
|---|---|---|---|---|---|
| 151 935 902 | 1.4005 (304SS) | 19,07 / 19,06 | 20,70 / 20,52 | 4,84 / 4,79 | 43,0 |
| 151 935 922 | 1.4401 (316SS) | | | | |
| 151 935 910 | 1.4005 (304SS) | 20,02/ 20,01 | 22,76 / 22,60 | 6,05 / 6,00 | 43,0 |
| 151 935 927 | 1.4401 (316SS) | | | | |
| 151 935 908 | 1.4005 (304SS) | 22,02/ 22,01 | 25,53 / 25,32 | 8,03 / 7,98 | 43,0 |
| 151 935 928 | 1.4401 (316SS) | | | | |
| 151 935 901 | 1.4005 (304SS) | 22,25 / 22,24 | 24,54 / 24,36 | 6,43 / 6,38 | 43,0 |
| 151 935 921 | 1.4401 (316SS) | | | | |
| 151 935 906 | 1.4005 (304SS) | 25,02 / 25,01 | 28,70 / 28,30 | 8,03 / 7,98 | 43,0 |
| 151 935 926 | 1.4401 (316SS) | | | | |
| 151 935 909 | 1.4005 (304SS) | 25,42 / 25,41 | 27,74 / 27,56 | 6,43 / 6,38 | 43,0 |
| 151 935 929 | 1.4401 (316SS) | | | | |

# ACCESSORIES SUBMERSIBLE MOTORS

## 8" Motor/pump couplings

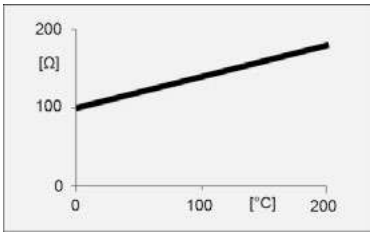
| Description | Dimensions |
|---|---|
| ■ Material: 304SS / 316SS<br>■ NEMA standard measuring on motor shaft<br>■ Separation washer between motor and pump shaft |  |

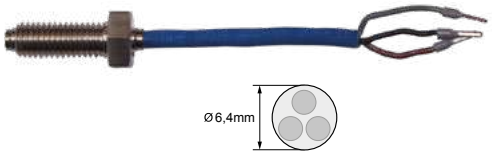
| Model no. | Coupling Material DIN (AISI) | Dimension A [mm] Max. / Min. | Dimension B [mm] Max. / Min. | Dimension C [mm] Max. / Min. |
|---|---|---|---|---|
| 156 563 901 | 1.4005 (304SS) | 25.425 / 25.413 | 28.27 / 28.17 | 6.38 / 6.32 |
| 156 563 921 | 1.4404 (316SS) | | | |
| 156 563 902 | 1.4005 (304SS) | 30.188 / 30.175 | 33.73 / 33.63 | 7.96 / 7.91 |
| 156 563 922 | 1.4404 (316SS) | | | |
| 156 563 903 | 1.4005 (304SS) | 31.775 / 31.763 | 35.36 / 35.26 | 7.96 / 7.91 |
| 156 563 923 | 1.4404 (316SS) | 38.125 / 38.113 | | |
| 156 563 904 | 1.4005 (304SS) | 38.125 / 38.113 | 42.37 / 42.27 | 9.55 / 9.50 |
| 156 563 924 | 1.4404 (316SS) | 38.125 / 38.113 | | |
| 156 563 905 | 1.4005 (304SS) | 19.085 / 19.063 | 20.70 / 20.52 | 4.84 / 4.79 |
| 156 563 906 | 1.4005 (304SS) | 30.188 / 30.175 | 33.02 / 32.92 | 6.38 / 6.32 |
| 156 563 926 | 1.4404 (316SS) | 30.188 / 30.175 | 33.02 / 32.92 | 6.38 / 6.32 |
| 156 563 907 | 1.4005 (304SS) | 22.250 / 22.238 | 24.54 / 24.36 | 6.43 / 6.38 |
| 156 563 908 | 1.4005 (304SS) | 22.024 / 22.011 | 25.53 / 25.32 | 8.03 / 7.98 |
| 156 563 931 | 1.4404 (316SS) | | | |
| 156 563 929 | 1.4404 (316SS) | 42.888 / 42.850 | 47.12 / 47.04 | 9.55 / 9.50 |

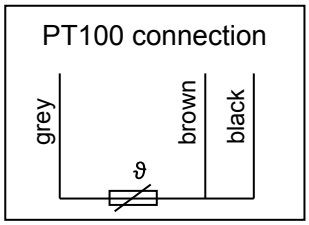
# ACCESSORIES SUBMERSIBLE MOTORS

## PT 100 SENSOR - 6"/8"ENCAPSULATED MOTORS (STANDARD & PM)

The PT100 is a precision platinum wire resistor that is specifi ed occasionally as a temperature input for process control equipment. A jacketed control lead must be run from the PT100 lead to the above-ground equipment. The above-ground equipment is not available from Franklin Electric and is typically part of a custom panel or data acquisition system. PT100 sensor retrofit kits from Franklin Electric come with complete instructions and allow for easy field installation.
(Franklin Electric does not offer the required sensing device, it is available from speciality dealers.)




To install the PT100 sensor bolt, remove the top end bell bolt that is opposite of the lead and replace it with the PT100 screw. Tighten the sensor bolt to the torque values shown below.

| | | |
|---|---|---|
| 6" PT100 - | 4kW- 45kW | 54- 61 Nm |
| 8" PT100 - | 30kW- 45kW | 54- 61 Nm |
| 8" PT100 - | 30kW- 45kW | 54- 61 Nm |
| | 55kW- 150kW | 115- 122 Nm |

## PT 100 SENSOR - 6"/8" CT STANDARD MOTORS SETTINGS

| Conditions | Temp. of the water without motor operation | Max. Trip temp. / Resistance Setting (for standard Lead lenght) |
|---|---|---|
| **Motor operating at nameplate output with 0.16 m/sec flow past the motor** | 10°C | 40°C / 115,5 Ω |
| | 15°C | 44°C / 117,0 Ω |
| | 20°C | 48°C / 118,6 Ω |
| | 25°C | 51°C / 119,7 Ω |
| | 30°C | 55°C / 121,3 Ω |
| **Motor that has been Derated with 1 m/sec flow past the motor** | 35°C | 59°C / 122,8 Ω |
| | 40°C | 63°C / 124,3 Ω |
| | 45°C | 66°C / 125,5 Ω |
| | 50°C | 70°C / 127,0 Ω |
| | 55°C | 74°C / 128,6 Ω |
| | 60°C | 78°C / 130,1 Ω |

## PT 100 SENSOR - 6" CT PM MOTORS SETTINGS

| 6" CT PM Motor rating [kW] | max. Medium Temp. [°C] | Cooling flow along the motor [m/s] | Max. Trip temp. / Resistance Setting (for standard Lead lenght) |
|---|---|---|---|
| 11 | 30 | 0,2 | 47 °C / 121,3 Ω |
| 22 | 30 | 0,2 | |
| 45 | 30 | 0,5 | |

## PT100 SENSOR - 6" CT STANDARD MOTORS*

| Kit Number | Motor Type | Wire Insul. | Screw Material | max. Medium Temp. | Lead [mm²] | Lead length [m] |
|---|---|---|---|---|---|---|
| 305 327 903 | 6" all Ratings - ½ - 13 UNC<br>Europe motors up to : 07. 2002<br>US motors starting : 11.2001 | Rubber | 316SS | 60°C | 3X0,5 | 10 |

## PT100 SENSOR - 8" CT STANDARD MOTORS*

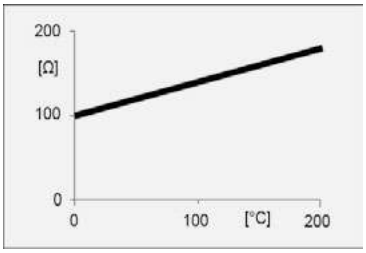
| Kit Number | Motor Type | Wire Insul. | Screw Material | max. Medium Temp. | Lead [mm²] | Lead length [m] |
|---|---|---|---|---|---|---|
| 305 326 902 | Motors Type 2.1 up to 09.2020 | Rubber | 316SS | 60°C | 3X0,5 | 10 |
| 305 326 901 | Motors Type 1 and Motors Typ 2.1 starting 09.2020 | Rubber | 316SS | 60°C | 3X0,5 | 10 |

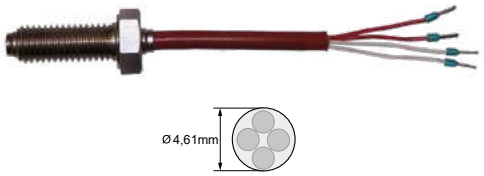
* The PT100 sensor is not a motor overload protector, which means the warranty will be voided if a separate motor protector is not installed as required by the Franklin Electric Application Installation Maintenance Manual (AIM).

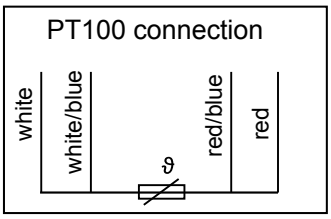
# ACCESSORIES SUBMERSIBLE MOTORS

## PT100 SENSOR - 6"/8" CT HIGHTEMP MOTORS*

Its ohmic resistance is proportional to the sensed temperature. The FE field replaceable PT100 is potted into a screw holding the upper end bell. Because of his remote position relative to the windings, the sensing relay should be adjusted according to the below table.




To install the PT100 sensor bolt, remove the top end bell bolt that is opposite of the lead and replace it with the PT100 screw. Tighten the sensor bolt to the torque values shown below.

6" PT100 - 4kW- 30kW 54- 61 Nm
8" PT100 - 30kW- 110kW 115 - 122 Nm

Franklin Electric does not offer the required sensing device, it is available from speciality dealers.

| Conditions | Temp. of the water without motor operation | Max. Trip temp. / Resistance Setting |
|---|---|---|
| **Motor operating at nameplate output with 0.16 m/sec flow past the motor** | 50°C | 60°C |
| | 60°C | 70°C |
| | 70°C | 80°C |
| | 75°C | 85°C |
| | 80°C | 90°C |
| | 90°C | 100°C |

## PT100 SENSOR - 6" CT HIGHTEMP 90°C MOTORS*

| Kit Number | Motor Type | Wire Insul. | Screw Material | max. Medium Temp. | Lead [mm²] | Lead length [m] |
|---|---|---|---|---|---|---|
| **156 098 111K** | 4 - 30kW | Silicon | 1.4571 | 90°C | 4X0,35 | 10 |
| **156 098 112K** | | Silicon | 1.4571 | 90°C | 4X0,35 | 130 |

## PT100 SENSOR - 8" CT HIGHTEMP 75°C MOTORS*

| Kit Number | Motor Type | Wire Insul. | Screw Material | max. Medium Temp. | Lead [mm²] | Lead length [m] |
|---|---|---|---|---|---|---|
| **156 098 116K** | 30 - 110kW (Type 1) | Silicon | 1.4571 | 90°C | 4X0,35 | 10 |
| **156 098 117K** | | Silicon | 1.4571 | 90°C | 4X0,35 | 130 |

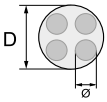
* The PT100 sensor is not a motor overload protector, which means the warranty will be voided if a separate motor protector is not installed as required by the Franklin Electric Application Installation Maintenance Manual (AIM).

# ACCESSORIES SUBMERSIBLE MOTORS

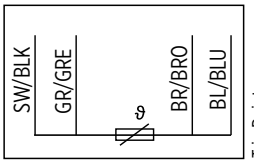
## PT100 Sensor - 6"/8"/10"/12" Standard Rewindable Motors Standard and PM*

- Fitted into the upper end bell flange , all end bells 6" ,8", 10" and 12" Standard Rewindable Motors are prepare for installation PT100
- Measures the temperature of the filling liquid
- Conductor with a resistance proportional to the temperature
- Allows monitoring the temperature continuously

The above-ground equipment is not available from Franklin Electric and is typically part of a custom panel or data acquisition system. PT100 sensor retrofit kits from Franklin Electric come with complete instructions and allow for easy field installation.






| Lead lenght [m] | Ø [mm²] | D [mm] | 6" Rew Redesign starting 08.2012 | | 8" / 10" / 12" | | Setting Temperature | |
|---|---|---|---|---|---|---|---|---|
| | | | 304/316 | 904L | WW/316 | 904L | Standard Motors | PM Motors |
| 10 | 4X0,5 | 8 | 308 016 501 | 308 016 522 | 308 016 401 | 308 016 422 | PVC = 55°C<br>PE2/PA = 75°C | 8" REW PM Motors: 55 °C<br>10" REW PM Motors: 65 °C |
| 20 | 4X0,5 | 8 | 308 016 502 | - | 308 016 402 | - | | |
| 30 | 4X0,5 | 8 | 308 016 503 | - | 308 016 403 | - | | |
| 50 | 4X0,5 | 8 | 308 016 505 | 308 016 526 | 308 016 405 | 308 016 426 | | |

*The PT100 is not a motor overload protector, which means the warranty will be voided if a separate motor protector is not installed as required by the Franklin Electric Application Installation Maintenance Manual (AIM)

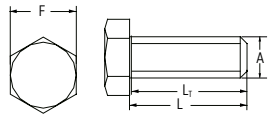
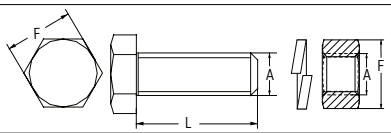
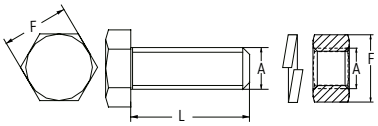
## 6" PEMANENT STAR PLUG

For some applications it may be necessary to permanently run a star-delta submersible motor in star connection. This may be achieved by using the PERMANENT-STAR-PLUG . This connector short - circuits all three pins in one of the two motor sockets and is designed to replace one lead.

**Part- Nb.: 304**- 308 065 901
**Part- Nb.: 316SS** - 308 065 951



## MOTOR/PUMP CONNECTION SCREW KITS

| | Motor type | Material | L / $L_T$ [mm] | Thread type | F [mm] | Model no. |
|---|---|---|---|---|---|---|
|  | 6" CT | 316SS | 38.1 | 1/2-20UNF | 19 | 308 659 318 |
|  | 8" / 8" REW | 316SS | 70 | M16 | 24 | 308 659 327 |
|  | 10" / 12" REW | 316SS | 80 | M20 | 30 | 308 659 319 |

# ACCESSORIES SUBMERSIBLE MOTORS

# COOLING SLEEVE FOR SUBMERSIBLE MOTOR PUMPS

The heat loss generated by the submersible motor must be dissipated to the pumped medium by means of convection. If the minimum cooling speed along the submersible motor cannot be guaranteed, it is mandatory to install a cooling jacket in order to generate sufficient cooling.



To provide cooling, the pump-motor unit is supplemented by a cooling sleeve. This separate „sheet metal jacket“ is sealed above the pump inlet. The pumped medium is thus sucked in from below and directed past the motor in order to dissipate the generated motor heat loss (convection).

Appropriate brackets and inlet strainers are available for horizontal installation in an open body of water, e.g. a tank, a lake or a flowing body of water.

## COMPONENTS COOLING SLEEVE KIT

1. Cooling sleeve tube (Stainless steel)
2. Pump sealing ring (EPDM) with drinking water approval
3. Motor spacer
4. Pipe clamps
5. Filter strainer (accessories)
6. Console (accessory for horizontal mounting)




## COOLING SLEEVE FOR 4" SUBMERSIBLE MOTOR PUMPS

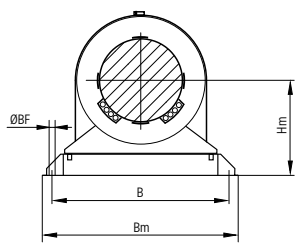
| FE pump type | | FE motors | | dimensions [mm] | model no. cooling sleeve 304SS** | Accessories | |
|---|---|---|---|---|---|---|---|
| | | type* | $P_N$ [kW] | | | model no. strainer | model no. support brackets (for horizontal installation) |
| 4" | VS 1, VS 2, VS 3 VS 4, VS 6, VS 7 VS 8, VS 10 | 4" CT | 1- / bis 0.75 3- / bis 1.5 | Ø 115 x 400 | **309 005 101** | **309 005 161** [Ø 115 mm x 117 mm] | **309 005 601** (Set = 2 pcs.) |
| | | | 1- / 1.1 - 1.5 3- / 2.2 - 3.0 | Ø 115 x 500 | **309 005 102** | | |
| | | | 1- / 2.2 3- / 3.7 - 5.5 | Ø 115 x 800 | **309 005 103** | | **309 005 602** (Set = 2 pcs.) |
| | | | 3- / 7.5 | Ø 115 x 1000 | **309 005 104** | | |
| | VS 15 | 4" CT | 1- / 2.2 3- / 2.2 - 3.0 | Ø 145 x 625 | **309 005 105** | **309 005 261** [Ø 145 mm x 158 mm] | **309 005 603** (Set = 2 pcs.) |
| | | | 3- / 3.7 - 5.5 | Ø 145 x 800 | **309 005 106** | | |
| | | | 3- / 7.5 | Ø 145 x 1000 | **309 005 107** | | |

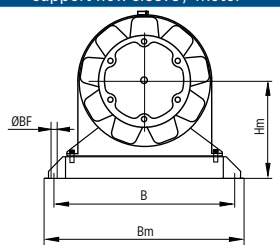
* CT: encapsulated motors

** 316SS version: "N" added to model no.

## DIMENSIONS SUPPORT BRACKETS 4"

| support pump | support flow sleeve / motor |
|---|---|




| Support brackets model no. | Middle height | Support pump | | | Support flow sleeve / motor | | |
|---|---|---|---|---|---|---|---|
| | Hm [mm] | B [mm] | Bm [mm] | Ø BF [mm] | B [mm] | Bm [mm] | Ø BF [mm] |
| 309 005 601 | 100 | 185 | 220 | 11 | 185 | 220 | 11 |
| 309 005 602 | 100 | 235 | 275 | 11 | 235 | 275 | 11 |

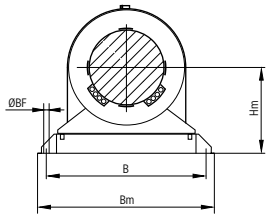
## COOLING SLEEVE FOR 6" SUBMERSIBLE MOTOR PUMPS

| FE pump type | | FE motors | | dimensions [mm] | model no. cooling sleeve 304SS** | Accessories | |
|---|---|---|---|---|---|---|---|
| | | type* | $P_N$ [kW] | | | model no. strainer | model no. support brackets (for horizontal installation) |
| 6" | VS 14, VS 19, VS 30 | 4" CT PM | 3- / 2,2 - 4,0 | Ø 160 x 500 | 309 005 325 | 309 005 361 [Ø 160 mm x 158 mm] | 309 005 611 (Set = 2 Stk.) |
| | | 4" CT | 3- / 2,2 | Ø 160 x 625 | 309 005 301 | | |
| | | 4" CT | 3- / 3,7 - 5,5 | Ø 160 x 800 | 309 005 302 | | |
| | | 4" CT | 3- / 7,5 | Ø 160 x 1000 | 309 005 303 | | |
| | | 6" CT | 4,0 | Ø 180 x 625 | 309 005 304 | 309 005 461 [Ø 180 mm x 192 mm] | 309 005 612 (Set = 2 Stk.) |
| | | 6" CT | 5,5 - 11 | Ø 180 x 800 | 309 005 305 | | |
| | | 6" RW | 4 - 9,3 | Ø 180 x 800 | | | |
| | | 6" CT | 15 - 22 | Ø 180 x 1000 | 309 005 307 | | |
| | | 6" RW | 11 - 18,5 | Ø 180 x 1000 | | | |
| | | 6" CT | 30 | Ø 180 x 1250 | 309 005 309 | | |
| | | 6" RW | 22 - 30 | Ø 180 x 1250 | | | |
| | | 6" CT | 37 | Ø 180 x 1700 | 309 005 313 | | 309 005 613 (Set = 3 Stk.) |
| | | 6" RW | 37 | Ø 180 x 1700 | | | |
| | | 6" CT | 45 | Ø 180 x 1700 | | | |
| 6" | VS 46 VS 65 | 4" CT | 3,0 - 4 | Ø 180 x 800 | 309 005 314 | 309 005 461 [Ø 180 mm x 192 mm] | 309 005 612 (Set = 2 Stk.) |
| | | 4" CT | 5,5 - 7,5 | Ø 180 x 1000 | 309 005 315 | | |
| | | 6" CT | 4 - 11 | Ø 200 x 800 | 309 005 316 | 309 005 471 [Ø 200 mm x 192 mm] | 309 005 622 (Set = 2 Stk.) |
| | | 6" RW | 4 - 7,5 | Ø 200 x 800 | | | |
| | | 6" CT | 15 - 22 | Ø 200 x 1000 | 309 005 318 | | |
| | | 6" RW | 9,3 - 18,5 | Ø 200 x 1000 | | | |
| | | 6" CT | 30 | Ø 200 x 1250 | 309 005 320 | | |
| | | 6" RW | 22 - 26 | Ø 200 x 1250 | | | |
| | | 6" CT | 37 - 45 | Ø 200 x 1700 | 309 005 322 | | 309 005 623 (Set = 3 Stk.) |
| | | 6" RW | 30 - 37 | Ø 200 x 1700 | | | |
| | | 8" CT | 55 | Ø 254 x 1500 | 309 005 324 | 309 005 481 [Ø 256 mm x 325 mm] | 309 005 624 (Set = 3 Stk.) |
| | | 8" RW | 45 - 55 | | | | |

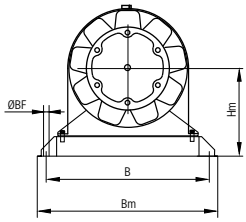
* CT: encapsulated motors, RW: rewindable motors
** 316SS version: "N" added to model no.; 904L version: "R" added to model no. (available on request only for RW Motors up to 10")

## DIMENSIONS SUPPORT BRACKETS 6"

support pump




support flow sleeve / motor




| Support brackets model no. | Middle height | Support pump | | | Support flow sleeve / motor | | |
|---|---|---|---|---|---|---|---|
| | Hm [mm] | B [mm] | Bm [mm] | Ø BF [mm] | B [mm] | Bm [mm] | Ø BF [mm] |
| 309 005 611 | 125 | 280 | 330 | 11 | 280 | 330 | 11 |
| 309 005 612 | 140 | 260 | 310 | 11 | 300 | 350 | 11 |
| 309 005 613 | 140 | 260 | 310 | 11 | 300 | 350 | 11 |
| 309 005 622 | 150 | 320 | 370 | 11 | 320 | 370 | 11 |
| 309 005 623 | 150 | 320 | 370 | 11 | 320 | 370 | 11 |
| 309 005 624 | 200 | 280 | 330 | 15 | 380 | 430 | 15 |

# COOLING SLEEVE FOR 8" SUBMERSIBLE MOTOR PUMPS

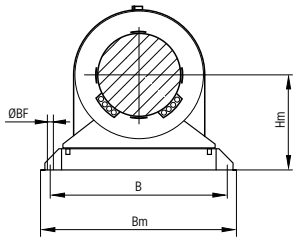
| FE pump type | | FE motors | | dimensions [mm] | model no. cooling sleeve 304SS** | Accessories | |
|---|---|---|---|---|---|---|---|
| | | type* | $P_N$ [kW] | | | model no. strainer | model no. support brackets (for horizontal installation) |
| 8" | VS 78 | 6" CT | 7,5 - 18,5 | Ø 225 x 1000 | 309 005 501 | 309 005 491 [Ø 225 mm x 240 mm] | 309 005 631 (Set = 2 Stk.) |
| | | 6" RW | 7,5 - 15 | Ø 225 x 1000 | | | |
| | | 6" CT | 22 - 30 | Ø 225 x 1250 | 309 005 503 | | |
| | | 6" RW | 18,5 - 26 | Ø 225 x 1250 | | | |
| | | 6" CT | 37 | Ø 225 x 1700 | 309 005 505 | | 309 005 632 (Set = 3 Stk.) |
| | | 6" RW | 30 - 37 | Ø 225 x 1700 | | | |
| | | 8" CT | 45 | Ø 254 x 1250 | 309 005 507 | 309 005 481 [Ø 256 mm x 325 mm] | 309 005 633 (Set = 2 Stk.) |
| | | 8" RW | 30 - 37 | Ø 254 x 1250 | | | |
| | | 8" CT | 55 | Ø 254 x 1500 | 309 005 509 | | 309 005 634 (Set = 3 Stk.) |
| | | 8" RW | 45 - 55 | | | | |
| | | 8" CT | 75 | Ø 254 x 1700 | 309 005 510 | | |
| | | 8" RW | 60 - 83 | | | | |
| | | 8" CT | 93 | Ø 254 x 2000 | 309 005 511 | | |
| | | 8" RW | 93 | | | | |
| 8" | VS 97 | 6" CT | 7,5 - 18,5 | Ø 254 x 1000 | 309 005 512 | 309 005 481 [Ø 256 mm x 325 mm] | 309 005 633 (Set = 2 Stk.) |
| | | 6" RW | 9,3 - 13 | Ø 254 x 1000 | | | |
| | | 6" CT | 22 - 30 | Ø 254 x 1250 | 309 005 514 | | |
| | | 6" RW | 18,5 - 26 | Ø 254 x 1250 | | | |
| | | 6" CT | 37 | Ø 254 x 1700 | 309 005 516 | | 309 005 634 (Set = 3 Stk.) |
| | | 6" RW | 30 - 37 | Ø 254 x 1700 | | | |
| | | 8" CT | 45 | Ø 285 x 1250 | 309 005 518 | 309 005 526 [Ø 285 mm x 325 mm] | 309 005 637 (Set = 2 Stk.) |
| | | 8" RW | 30 - 37 | Ø 285 x 1250 | | | |
| | | 8" CT | 55 | Ø 285 x 1500 | 309 005 520 | | 309 005 638 (Set = 3 Stk.) |
| | | 8" RW | 45 - 55 | | | | |
| | | 8" CT | 75 | Ø 285 x 1700 | 309 005 521 | | |
| | | 8" RW | 60 - 83 | | | | |
| | | 8" CT | 93 | Ø 285 x 2000 | 309 005 522 | | |
| | | 8" RW | 93 | | | | |
| 8" | VSC 114 VSC 132 VSC 156 | 6" CT | 7,5 - 9,3 | Ø 254 x 800 | 309 008 002 | 309 005 481 [Ø 256 mm x 325 mm] | 309 005 640 (Set = 2 Stk.) |
| | | 6" CT | 11 - 22 | Ø 254 x 1000 | 309 008 001 | | |
| | | 6" CT | 30 | Ø 254 x 1250 | 309 008 003 | | |
| | | 6" CT | 37 - 45 | Ø 254 x 1800 | 309 008 004 | | 309 005 641 (Set = 3 Stk.) |
| | | 6" RW | 7,5 - 9,3 | Ø 254 x 900 | 309 008 005 | | 309 005 640 (Set = 2 Stk.) |
| | | 6" RW | 11 - 18,5 | Ø 254 x 1250 | 309 008 003 | | |
| | | 6" RW | 22 - 26 | Ø 254 x 1250 | | | |
| | | 6" RW | 30 - 37 | Ø 254 x 1500 | 309 008 004 | | 309 005 641 (Set = 3 Stk.) |
| | | 8" CT | 55 | Ø 285 x 1500 | 309 008 009 | 309 005 526 [Ø 285 mm x 325 mm] | 309 005 642 (Set = 3 Stk.) |
| | | 8" RW | 45 - 55 | Ø 285 x 1500 | | | |
| | | 8" CT | 75 | Ø 285 x 1700 | 309 008 010 | | |
| | | 8" RW | 60 - 75 | Ø 285 x 1700 | | | |
| | | 8" RW | 83 - 93 | Ø 285 x 2000 | 309 008 012 | | |
| | | 8" CT | 93 | Ø 285 x 2000 | | | |
| | | 8" CT | 110 | Ø 285 x 2200 | 309 008 013 | | |
| | | 8" CT | 130 | Ø 285 x 2400 | 309 008 014 | | |
| | | 8" CT | 150 | Ø 285 x 2600 | 309 008 015 | | |
| | | 10" RW | 110 - 130 | Ø 330 x 1750 | 309 008 016 | 309 005 523 [Ø 330 mm x 385 mm] | 309 005 643 (Set = 3 Stk.) |
| | | 10" RW | 150 - 185 | Ø 330 x 2000 | 309 008 017 | | |

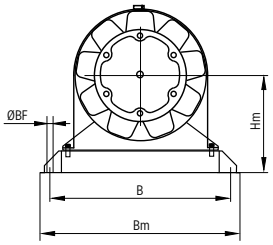
* CT: encapsulated motors, RW: rewindable motors

** 316SS version: "N" added to model no.; 904L version: "R" added to model no. (available on request only for RW Motors up to 10")

# DIMENSIONS SUPPORT BRACKETS 8"

| support pump | support flow sleeve / motor |
|---|---|




| Support brackets model no. | Middle height | Support pump | | | Support flow sleeve / motor | | |
|---|---|---|---|---|---|---|---|
| | Hm [mm] | B [mm] | Bm [mm] | Ø BF [mm] | B [mm] | Bm [mm] | Ø BF [mm] |
| 309 005 631 | 200 | 320 | 370 | 15 | 360 | 410 | 15 |
| 309 005 632 | 200 | 320 | 370 | 15 | 360 | 410 | 15 |
| 309 005 633 | 200 | 320 | 370 | 15 | 380 | 430 | 15 |
| 309 005 634 | 200 | 320 | 370 | 15 | 380 | 430 | 15 |
| 309 005 637 | 225 | 320 | 370 | 15 | 410 | 460 | 15 |
| 309 005 638 | 225 | 320 | 370 | 15 | 410 | 460 | 15 |
| 309 005 640 | 200 | 320 | 370 | 15 | 380 | 430 | 15 |
| 309 005 641 | 200 | 320 | 370 | 15 | 380 | 430 | 15 |
| 309 005 642 | 225 | 320 | 370 | 15 | 410 | 460 | 15 |
| 309 005 643 | 250 | 320 | 370 | 15 | 450 | 500 | 15 |

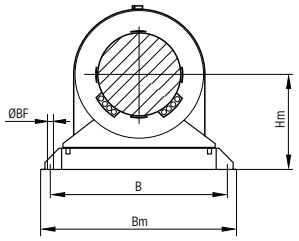
## COOLING SLEEVE FOR 10" SUBMERSIBLE MOTOR PUMPS

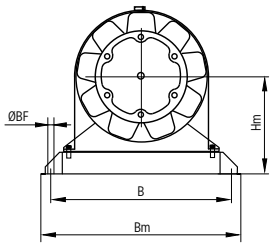
| FE pump type | | FE motors | | dimensions [mm] | model no. cooling sleeve 304SS** | Accessories | |
|---|---|---|---|---|---|---|---|
| | | type* | $P_N$ [kW] | | | model no. strainer | model no. support brackets (for horizontal installation) |
| 10" | VSC 204<br>VSC 264<br>VSC 304 | 8" CT | 37 | Ø 330 x 1250 | 309 008 018 | 309 005 523<br>[Ø 330 mm x 385 mm] | 309 005 644<br>(Set = 2 Stk.) |
| | | 8" CT | 55 | Ø 330 x 1500 | 309 008 019 | | 309 005 645<br>(Set = 3 Stk.) |
| | | 8" RW | 37 - 67 | | | | |
| | | 8" CT | 75 | Ø 330 x 1700 | 309 008 020 | | |
| | | 8" RW | 75 | | | | |
| | | 8" RW | 83 - 93 | Ø 330 x 2000 | 309 008 022 | | |
| | | 8" CT | 93 | Ø 330 x 2000 | | | |
| | | 8" CT | 110 | Ø 330 x 2200 | 309 008 023 | | |
| | | 8" CT | 130 | Ø 330 x 2400 | 309 008 024 | | |
| | | 8" CT | 150 | Ø 330 x 2600 | 309 008 025 | | |
| | | 10" RW | 110 - 130 | Ø 380 x 1750 | 309 008 026 | | |
| | | 10" RW | 150 - 185 | Ø 380 x 2000 | 309 008 027 | 309 005 524<br>[Ø 330 mm x 385 mm] | 309 005 646<br>(Set = 3 Stk.) |
| | VSC 204<br>VSC 264 | 12" RW | 220 - 250 | Ø 380 x 2100 | 309 008 028 | | |
| | | 12" RW | 300 - 350 | Ø 380 x 2300 | 309 008 029 | | |
| | VSC 304 | 12" RW | 220 - 300 | Ø 420 x 2250 | 309 008 030 | 309 005 525<br>[Ø 420 mm x 400 mm] | 309 005 647<br>(Set = 3 Stk.) |
| | | 12" RW | 350 - 100 | Ø 420 x 2400 | 309 008 031 | | |

* CT: encapsulated motors, RW: rewindable motors
** 316SS version: "N" added to model no.; 904L version: "R" added to model no. (available on request only for RW Motors up to 10")

## DIMENSIONS SUPPORT BRACKETS 10"

| support pump | support flow sleeve / motor |
|---|---|




| Support brackets model no. | Middle height | Support pump | | | Support flow sleeve / motor | | |
|---|---|---|---|---|---|---|---|
| | Hm [mm] | B [mm] | Bm [mm] | Ø BF [mm] | B [mm] | Bm [mm] | Ø BF [mm] |
| 309 005 644 | 250 | 380 | 430 | 15 | 450 | 500 | 15 |
| 309 005 645 | 250 | 380 | 430 | 15 | 450 | 500 | 15 |
| 309 005 646 | 270 | 390 | 440 | 15 | 500 | 550 | 15 |
| 309 005 647 | 300 | 400 | 450 | 15 | 550 | 600 | 15 |

# ACCESSORIES SUBMERSIBLE MOTORS

## Surge Arrestor

These surge arrestors or their equivalents are highly recommended for protecting submersible motors from a variety of commonly occurring high voltage spikes which can damage the motor insulation system and cause motor winding failure. These arrestors will not, as is true of any surge protection equipment, protect the motor from a direct lightning strike.

**Part-Nb.:** 155 440 902




## 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 - 13A/800V DC - 308 170 313
12 - 22A/800V DC - 308 170 325
25A/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 3,4 bar;  can be changed.

**Mod.Nr.:  223 995 901**



## Pressure Switch SubDrive Connect

The pressure switch signals continuously prevailing in the water supply system pressure to the SubDrive controller.

**Mod.Nr.:  226 905 906**



# OVERVIEW HIGH EFFICIENCY SYSTEMS

## Overview packaged deals

### PACKAGED DEAL 4"

- 4" encapsulated synchronous submersible motor
- 4"/6" submersible pump
- Variable frequency drive
- Matching output filter for 400 V systems
- Flow switch (Solar systems 4 - 7.5 kW)

- Motor range:
  1.1 / 2.2 / 3.0 / 4.0 / 7.5 kW (100 Hz - 3000 rpm)
  1.2 / 2.5 / 3.4 / 4.6 / 8.6 kW (120 Hz - 3600 rpm)
- System Power Supply: 220-400 / 460 V ± 10 % (50/60 Hz)

4" HES

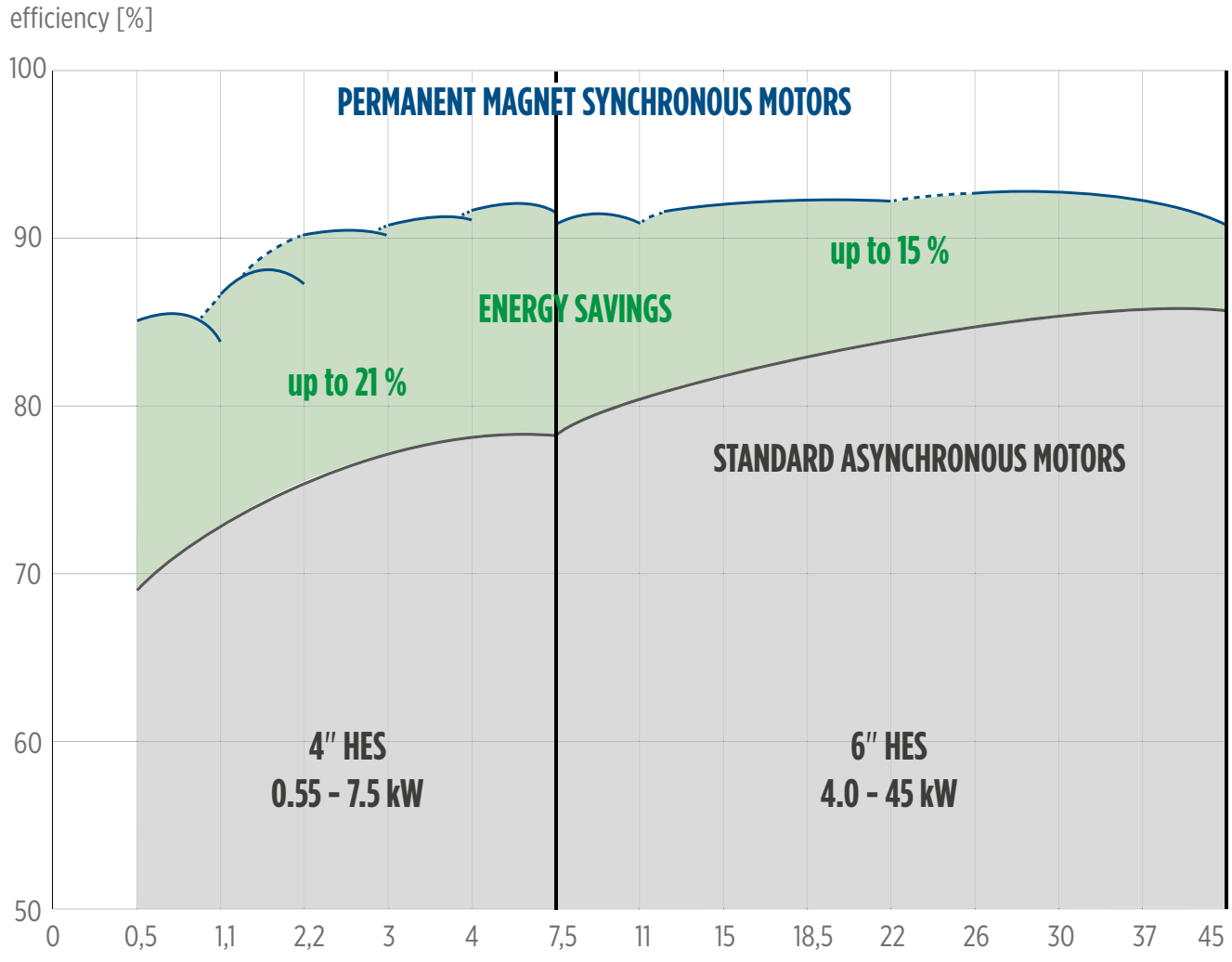
### PACKAGED DEAL 6"

- 6" encapsulated synchronous submersible motor
- 6" submersible pump (optional)
- Variable frequency drive
- Matching output filter
- Flow switch (Solar systems)

- Motor range:
  4.0 – 11.0 / 13.0 – 22.0 / 26.0 - 45.0 kW (100 Hz - 3000 rpm)
  4.5 – 12.7 / 15.0 – 25.0 / 30.0 - 51.7 kW (120 Hz - 3600 rpm)
- System Power Supply: 380-400 V / 460 V ± 10 % (50/60 Hz)

6" HES

### Motor performance curves 4"/6"/8"/10"



# OVERVIEW HIGH EFFICIENCY SYSTEMS

## Overview packaged deals




### PACKAGED DEAL 8"

- 8" rewindable synchronous submersible motor
- 8" submersible pump (optional)
- Variable frequency drive
- Matching output filter
- Flow switch (Solar systems)

- Motor range: 75 / 100 / 130 kW (100 Hz - 3000 rpm)
  86.3 / 115 / 150 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 / 460 V ± 10 % (50/60 Hz)

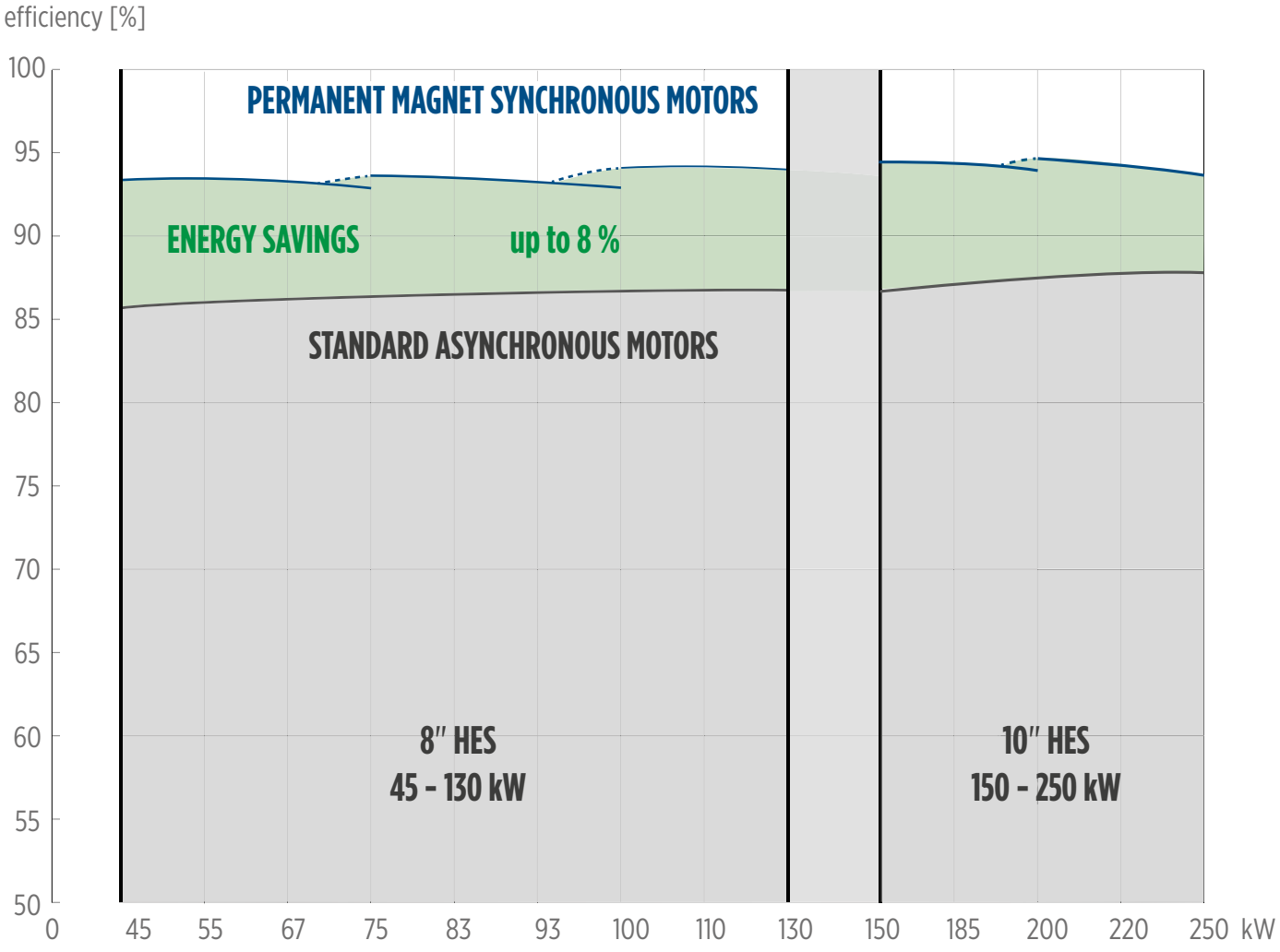
**8" HES**

### PACKAGED DEAL 10"

- 10" rewindable synchronous submersible motor
- 10" submersible pump VSC10 (optional)
- Variable frequency drive
- Matching output filter
- Flow switch (Solar systems)

- Motor range: 190 - 250 kW (100 Hz - 3000 rpm)
  230 - 290 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 / 460 V ± 10 % (50/60 Hz)

**10" HES**

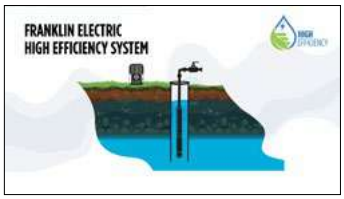


# OVERVIEW HIGH EFFICIENCY SYSTEMS (HES)

## Energy savings with the permanent magnet motor technology

The key factor for energy savings and superior efficiency is the permanent magnet technology of the motor. Instead of a short-circuit induction type rotor, the high efficiency motor contains a permanent magnet rotor design with buried magnets and magnetic core segments.

Of course, the PM motor also has all the advantages of standard Franklin motors, such as Franklin Electric's proven StatorSHIELD encapsulation system in the 4" and 6" motors with its encapsulated windings, or the hydrodynamic liquid-lubricated bearings and Kingsbury thrust bearings that provide maintenance-free operation.




Click to view the video about cost savings of Franklin Electric High Efficiency Systems



### SandFighter® sealing system

SandFighter® sealing system with SiC mechanical seal and sand slinger (6-12")

### StatorSHIELD™ – Franklin encapsulation system (4"/6" HES)

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

### Hydrodynamic liquid lubricated radial bearings

100 % maintenance free operation for all Franklin Electric encapsulated and rewindable motors.

### Permanent Magnet Technology

Motor rotos are equipped with permanent magnets that eliminate rotor losses thus significantly reducing motor current and heat rise.

### Kingsbury type thrust bearing

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

### Pressure-equalizing diaphragm



### NEMA mounting design

Standard NEMA dimensions for all motors 4" - 8"
10" motors with double flange mounting design according to industry standards

### Best class winding wires in rewindable motors

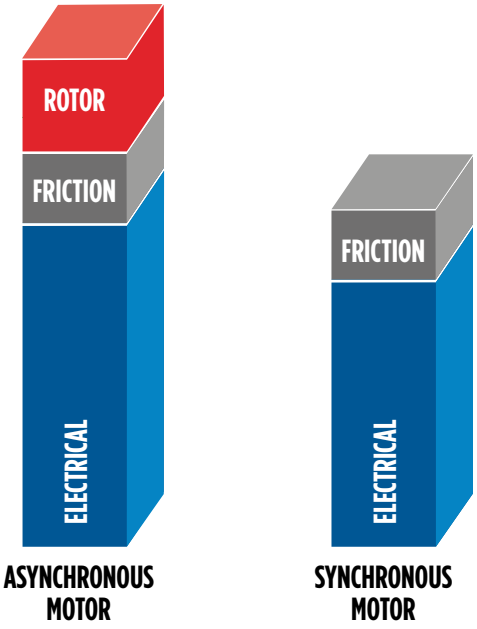
The rewindable motors are equipped with best class winding wires. The windings can easily be replaced. The Franklin motors are factory filled with Franklin's FES non-toxic water soluble fill solution.

# OVERVIEW HIGH EFFICIENCY SYSTEMS (HES)

## Energy savings with the permanent magnet motor technology

The total rotor losses of a PM motor are eliminated, resulting in a significant improvement in efficiency. In addition, the PM motor has less temperature heat rise and requires lower Amps to run at the same pump load.

### Overall electrical and mechanical losses of a submersible motor




- No rotor losses with permanent magnet motors
- Significant improvement in efficiency
- Synchronous speed (no slip)

HIGH EFFICIENCY

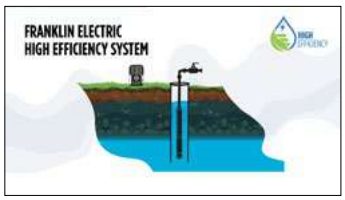
## EASY INSTALLATION AND REMOTE-CONTROL

For the operation of a PM motor, a frequency converter is required.
Franklin Electric offers various models for the different systems:

- Operation with grid or solar supply
- Easy and fast commissioning due to initial configuration wizard
- Remote control and real-time monitoring via Mobile App (4")
- Remote assistance from the Franklin Electric support team (4")

Youtube tutorial configuration High Efficiency Systems:
➡ configuration tutorial

Click to view the video about cost savings of Franklin Electric High Efficiency Systems






# OVERVIEW HIGH EFFICIENCY SOLAR SYSTEMS

## PACKAGED SOLAR DEAL




- Synchronous submersible motor
- Submersible pump
- Variable frequency drive
- Matching output filter
- Flow switch (systems ≥ 4 kW)

- **One-stop shop and perfectly matching components guarantee first-class performance/efficiency**
- **Direct DC feeding, AC and DC power source compatible**
- **Suitable for the use in remote areas and harsh environments without grid supply**
- **Robust Electronics enclosure designs**

### Maximum system performance through MPPT algorithm

- **The Franklin Electric MPPT algorithm maximizes the system performance.**

The solar system must be carefully sized to achieve the desired system performance. In addition to solar irradiance, this depends on the number of solar panels and how well the solar drive controls motor and pump.

### 4″ Solar Voltage Boost (up to 2.2 kW)

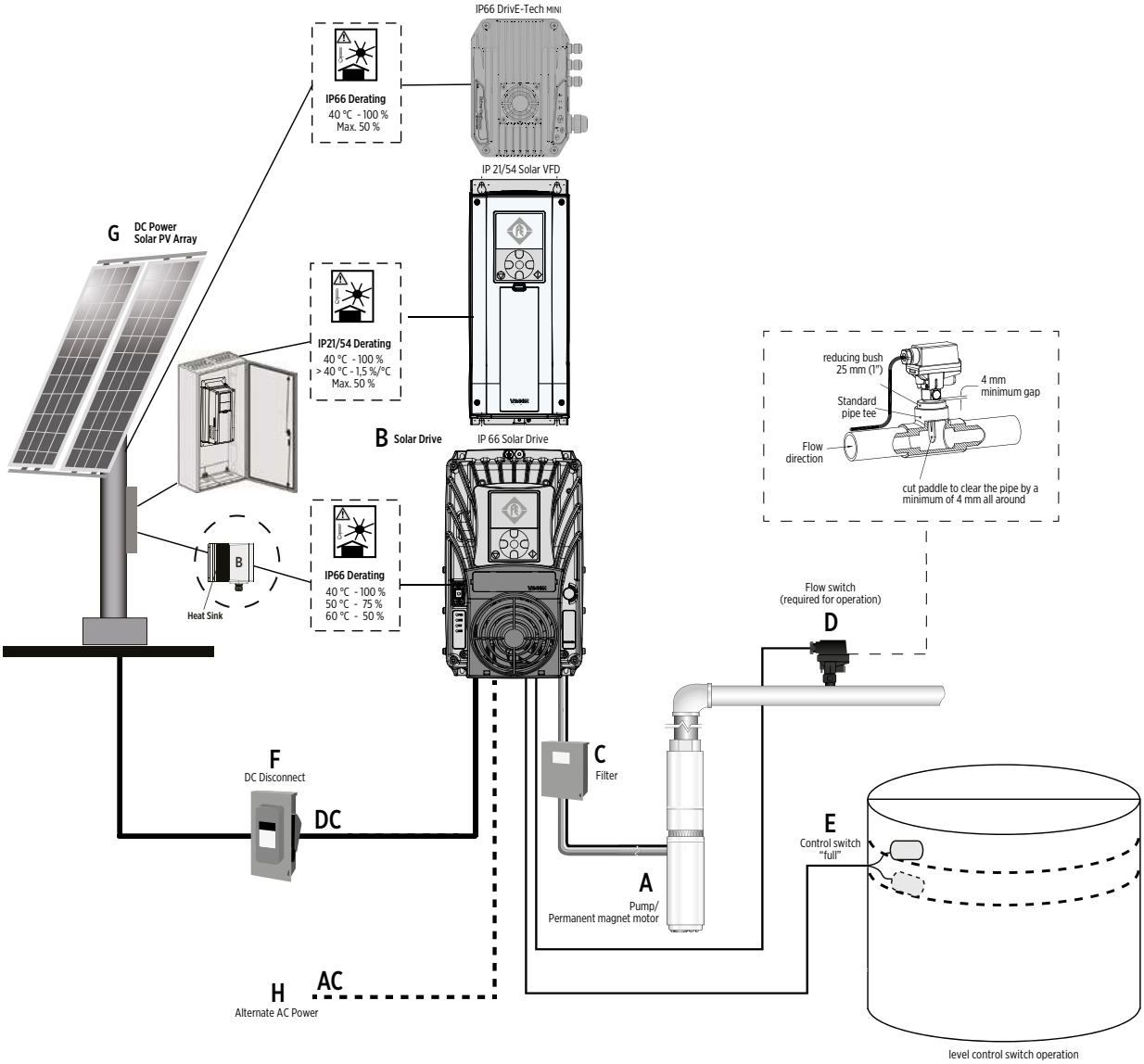
- **Sizing in power rather than voltage**
- **Less panels, more water respectively**
- **Reduction of required Solar panels**
- **Saving of investments and installation work**

To generate the required voltage level to operate the system at full speed, enough solar panels need to be connected in series. With changing weather conditions, the voltage can drop, causing the system to immediately reduce pump speed to keep running. This reduces the amount of water pumped, but not just linearly. Due to pump affinity laws, the pump head or pressure is reduced squared, which then leads to a further reduction in water flow as it runs at a different pump operating point.

The Franklin Electric High Efficiency Solar system avoids dead head (zero flow) situation, when the pump is still operating, but it's not generating enough head to overcome a certain level. With the lower energy consumption of the High Efficiency System, there is an additional safety reserve to pump more water, or for a longer time period.

# OVERVIEW HIGH EFFICIENCY SOLAR SYSTEMS

## Solar system installation




A. High Efficiency permanent magnet motor and pump
B. HES Solar drives
C. Output filter
D. Flow-Switch (< 4 kW optional: > 4 m³/h: 226 019 101; < 4 m³/h: 226 014 101)
E. Level Control Switch (optional: 308 170 209)
F. DC Disconnect (optional 0 - 11A/800V DC - 308 170 313; 12 - 22A/800V DC - 308 170 325)
G. Solar Array, not included
H. Alternate AC Power supply, not included (only one supply source at a time)

# 4" CT HIGH EFFICIENCY SYSTEM

**Packaged Submersible Borehole System with energy savings up to 21 %***

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

- Up to 15 points (21 %) improved motor efficiency*
- Excellent partial load behaviour (SKU reduction)
- Due to the high motor efficiency, amps are significantly reduced, which might lead to smaller drop lead cross size and thus cost saving.
- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
- Power factor corrected input (No power compensation needed)

### EASY INSTALLATION

- Easy system set-up due to Franklin Electric App in combination with tailored pre-settings

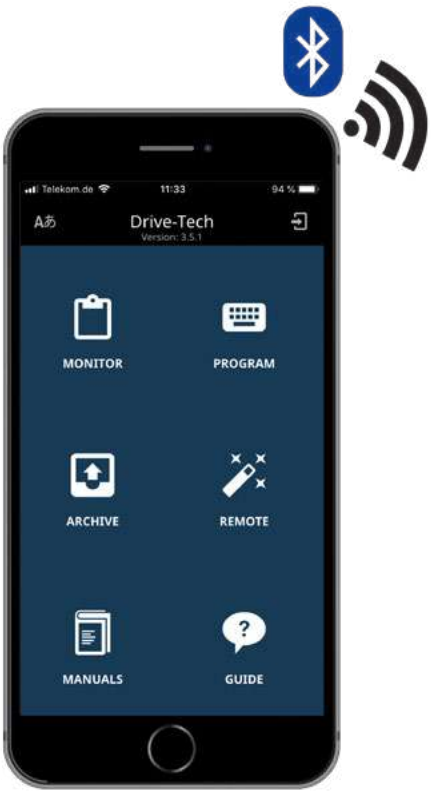
### INCREASED LIFETIME

- Incorporated Soft start and protection features (no additonal investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

### UP-TO-DATE CONNECTIVITY



- Factory-featured with Bluetooth 4.0 Connectivity
- Remote control and maintenance via Mobile App




### FULLY SUPPORTED



- Fully supported by the Technical Support Professionals and Field Service Engineers

### APPLICATIONS




* in comparison to current asynchronous technology

# 4" CT HIGH EFFICIENCY SYSTEM

## Packaged Submersible Borehole System with energy savings up to 21 %*

## SPECIFICATION

- Motor range:
  1.1 / 2.2 / 3.0 / 4.0 / 7.5 kW (100 Hz - 3000 rpm)
  1.2 / 2.5 / 3.4 / 4.6 / 8.6 kW (120 Hz - 3600 rpm)
- System Power Supply: 220 V - 400 V ± 10 %
- System Supply Frequency: 50 Hz - 60 Hz ± 2 %
- Nominal ambient temperature: motor: 30 °C, electronics: 50 °C (> 40 °C with derating)
- Motor installation orientation: Vertical / horizontal (shaft end heightened)
- Protection: motor: IP68, insulation class B
  drive: IP66/65 (up to 4 kW), IP66/21 (up to 7.5 kW)
  filter: IP00
- 220/230 V kits without additional output filter

## OPTIONS

- Special Voltages
- Higher-graded material: 316SS
- Sinus output filters in IP00 (400 V)
- VFD IP21 for 400 V systems
- Solar

## PACKAGED DEAL




- 4" encapsulated synchronous submersible NEMA motor
- 4"/6" submersible pump
- Variable frequency drive
- Matching output filter for 400 V systems




* in comparison to current asynchronous technology

# 4" CT HIGH EFFICIENCY SYSTEM (HES) PACKAGES

## GRID PUMP KITS 220 V AC

| High Efficiency System | | Controller | | Pump (BSPP) | | | | Motor | |
|---|---|---|---|---|---|---|---|---|---|
| Model | Order No. | Drive Model | Part No. | m³/h | Stages | Pump | Part No. | $P_N$ [kW] | Part No. |
| 1/26 4HES 220 1.1 kW | 308071126 | Drive-Tech MINI 2.011 | 002149112 | 1 | 26 | 4" VS 1/26 | 602012601050063 | 1.1 | 2340716721L |
| 2/20 4HES 220 1.1 kW | 308071220 | | | 2 | 20 | 4" VS 2/20 | 602022001050063 | | |
| 4/14 4HES 220 1.1 kW | 308071414 | | | 4 | 14 | 4" VS 4/14 | 602041401050063 | | |
| 2/27 4HES 220 2.2 kW | 308072227 | Drive-Tech MINI 2.015 | 002149152 | 2 | 27 | 4" VS 2/27 | 602022701050063 | 2.2 | 2340726721L |
| 4/27 4HES 220 2.2 kW | 308072427 | | | 4 | 27 | 4" VS 4/27 | 602042701050063 | | |
| 6/13 4HES 220 2.2 kW | 308072613 | | | 6 | 13 | 4" VS 6/13 | 602061301060063 | | |
| 6/19 4HES 220 3.0 kW | 308073619 | Drive-Tech 3.030 MP | 314000161 | 6 | 19 | 4" VS 6/19 | 602061901060063 | 3.0 | 2340736721L |
| 4/44 4HES 220 4.0 kW | 308074444 | Drive-Tech 3.030 MP | 314000161 | 4 | 44 | 4" VS 4/44 | 602044401050063 | 4.0 | 2340743421L |
| 6/34 4HES 220 4.0 kW | 308074634 | | | 6 | 34 | 4" VS 6/34 | 602063401060063 | | |
| 8/23 4HES 220 4.0 kW | 308074823 | | | 8 | 23 | 4" VS 8/23 | 602082301060063 | | |
| 10/08 4HES 220 4.0 kW | 308074108 | | | 10 | 18 | 4" VS 10/18 | 602121801060063 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4HES 220 0.55 - 1.1 kW | 308071001 | Drive-Tech MINI 2.011 | 002149112 | - | - | - | - | 1.1 | 2340716721L |
| 4HES 220 1.1 - 2.2 kW | 308072001 | Drive-Tech MINI 2.015 | 002149152 | - | - | - | - | 2.2 | 2340726721L |
| 4HES 220 2.2 - 3.0 kW | 308073001 | Drive-Tech 3.030 MP | 314000161 | - | - | - | - | 3.0 | 2340736721L |
| 4HES 220 3.0 - 4.0 kW | 308074001 | Drive-Tech 3.030 MP | 314000161 | - | - | - | - | 4.0 | 2340743421L |

## GRID PUMP KITS 380 V AC WITH DV/DT FILTER

| High Efficiency System | | Controller | | Pump (BSPP) | | | | Motor | | Output filter |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | Order No. | Drive Model | Part No. | m³/h | Stages | Pump | Part No. | $P_N$ [kW] | Part No. | Part No. |
| 2/27 4HES 380 2.2 kW | 308062227 | Drive-Tech MINI 4.011 | 314000162 | 2 | 27 | 4" VS 2/27 | 602022701050063 | 2.2 | 2340626721L | 002 352 414 |
| 4/27 4HES 380 2.2 kW | 308062427 | | | 4 | 27 | 4" VS 4/27 | 602042701050063 | | | |
| 6/13 4HES 380 2.2 kW | 308062613 | | | 6 | 13 | 4" VS 6/13 | 602061301060063 | | | |
| 6/19 4HES 380 3.0 kW | 308063619 | Drive-Tech MINI 4.022 | 314000163 | 6 | 19 | 4" VS 6/19 | 602061901060063 | 3.0 | 2340636721L | 002 352 414 |
| 4/44 4HES 380 4.0 kW | 308064444 | Drive-Tech MINI 4.040 | 314000164 | 4 | 44 | 4" VS 4/44 | 602044401050063 | 4.0 | 2340643421L | 002 352 414 |
| 6/34 4HES 380 4.0 kW | 308064634 | | | 6 | 34 | 4" VS 6/34 | 602063401060063 | | | |
| 8/23 4HES 380 4.0 kW | 308064823 | | | 8 | 23 | 4" VS 8/23 | 602082301060063 | | | |
| 10/08 4HES 380 4.0 kW | 308064108 | | | 10 | 18 | 4" VS 10/18 | 602121801060063 | | | |
| 15/21 4HES 380 5.5 kW | 308066151 | Drive-Tech MINI 4.040 | 314000164 | 15 | 21 | 4" VS 15/21 | 602152101060063 | 5.5 | 2340643421L | 002 352 414 |
| 30/06 4HES 380 5.5 kW | 308066306 | | | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | |
| 46/05 4HES 380 5.5 kW | 308066091 | | | 46 | 5 | 6" VS 46/05 | ETH11460140 | | | |
| 46/05 4 HES 380 7.5 kW | 308066465 | 100 16A | 314000108 | 46 | 5 | 6" VS 46/05 | ETH11460140 | 7.5 | 2340663421L | 314005101 |
| 30/06 4HES 380 7.5 kW | 308066092 | | | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4HES 380 1.1 - 2.2 kW | 308062001 | Drive-Tech MINI 4.011 | 314000162 | - | - | - | - | 2.2 | 2340626721L | 002 352 414 |
| 4HES 380 2.2 - 3.0 kW | 308063001 | Drive-Tech MINI 4.022 | 314000163 | - | - | - | - | 3.0 | 2340636721L | 002 352 414 |
| 4HES 380 3.0 - 4.0 kW | 308064001 | Drive-Tech MINI 4.040 | 314000164 | - | - | - | - | 4.0 | 2340643421L | 002 352 414 |
| 4HES 380 5.5 kW | 308066003 | Drive-Tech MINI 4.040 | 314000164 | - | - | - | - | 5.5 | 2340663421L | 002 352 414 |
| 4HES 380 7.5kW | 308066001 | 100 16A | 100 16A | - | - | - | - | 7.5 | 2340663421L | 314005101 |

Motor lead length: ≤ 2,2 kW: 1.50 m; ≥ 3 kW: 2.50 m
316SS kits with additional digit "B" (e.g. 308062001 B)

# 4" CT HIGH EFFICIENCY SYSTEM (HES) PACKAGE

## GRID PUMP KITS 380 V AC WITH SINUS FILTER

| High Efficiency System | | Controller | | Pump (BSPP) | | | | Motor | | Output filter |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | Order No. | Drive Model | Part No. | $m^3/h$ | Stages | Pump | Part No. | $P_N$ [kW] | Part No. | Part No. |
| 2/27 4HES 380 2.2 kW-Sin | 308062091 | Drive-Tech MINI 4.011 | 314000162 | 2 | 27 | 4" VS 2/27 | 602022701050063 | 2.2 | 2340626721L | 002 347 013 |
| 4/27 4HES 380 2.2 kW-Sin | 308062092 | | | 4 | 27 | 4" VS 4/27 | 602042701050063 | | | |
| 6/13 4HES 380 2.2 kW-Sin | 308062093 | | | 6 | 13 | 4" VS 6/13 | 602061301060063 | | | |
| 6/19 4HES 380 3.0 kW-Sin | 308063091 | Drive-Tech MINI 4.022 | 314000163 | 6 | 19 | 4" VS 6/19 | 602061901060063 | 3.0 | 2340636721L | 002 347 013 |
| 4/44 4HES 380 4.0 kW-Sin | 308064091 | Drive-Tech MINI 4.040 | 314000164 | 4 | 44 | 4" VS 4/44 | 602044401050063 | 4.0 | 2340643421L | 002 347 013 |
| 6/34 4HES 380 4.0 kW-Sin | 308064092 | | | 6 | 34 | 4" VS 6/34 | 602063401060063 | | | |
| 8/23 4HES 380 4.0 kW-Sin | 308064093 | | | 8 | 23 | 4" VS 8/23 | 602082301060063 | | | |
| 10/08 4HES 380 4.0 kW-Sin | 308064094 | | | 10 | 18 | 4" VS 10/18 | 602121801060063 | | | |
| 15/21 4HES 380 5.5 kW-Sin | 308066097 | Drive-Tech MINI 4.040 | 314000164 | 15 | 21 | 4" VS 15/21 | 602152101060063 | 7.5 | 2340663421L | 002347011 |
| 30/06 4HES 380 5.5 kW-Sin | 308066093 | | | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | |
| 46/05 4HES 380 5.5 kW-Sin | 308066094 | | | 46 | 5 | 6" VS 46/05 | ETH11460140 | | | |
| 46/05 4 HES 380 7.5 kW-Sin | 308066095 | 100 16A | 314000108 | 46 | 5 | 6" VS 46/05 | ETH11460140 | 7.5 | 2340663421L | 002347011 |
| 30/06 4HES 380 7.5 kW-Sin | 308066096 | | | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4HES 380 1.1 - 2.2 kW-Sin | 308062002 | Drive-Tech MINI 4.011 | 314000162 | - | - | - | - | 2.2 | 2340626721L | 002 347 013 |
| 4HES 380 2.2 - 3.0 kW-Sin | 308063002 | Drive-Tech MINI 4.022 | 314000163 | - | - | - | - | 3.0 | 2340636721L | 002 347 013 |
| 4HES 380 3.0 - 4.0 kW-Sin | 308064002 | Drive-Tech MINI 4.040 | 314000164 | - | - | - | - | 4.0 | 2340643421L | 002 347 013 |
| 4HES 380 5.5 kW-Sin | 308066004 | Drive-Tech MINI 4.040 | 314000164 | - | - | - | - | 7.5 | 2340663421L | 002 347 011 |
| 4HES 380 7.5 kW-Sin | 308066002 | 100 16A | 314000108 | - | - | - | - | 7.5 | 2340663421L | 002 347 011 |

Motor lead length: ≤ 2.2 kW: 1.50 m; ≥ 3 kW: 2.50 m
316SS kits with additional digit "B" (e.g. 308062001 B)
*For lead lenghts up to 120 m use dv/dt filter, for > 120 m use sinus filter

# 4" CT HIGH EFFICIENCY SOLAR SYSTEM

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
  Less panels, more water respectively
- Integrated voltage "boost" (up to 2.2 kW) significantly reduces number of solar panels
- Direct DC feeding
- MPPT algorithm maximizes system performance

### UP-TO-DATE CONNECTIVITY



- Factory-featured with Bluetooth 4.0 Smart Connectivity
- Remote control and maintanance via Mobile App

### PACKAGED DEAL




- 4" encapsulated synchronous submersible NEMA Solar motor
- 4"/6" submersible pump
- Variable frequency drive
- Flow switch (for systems > 4 kW)

### FULLY SUPPORTED



- Fully supported by the Technical Support
  Professionals and Field Service Engineers

## SPECIFICATION

- Motor range:
  1.1 / 2.2 / 3.0 / 4.0 / 7.5 kW (100 Hz - 3000 rpm)
  1.2 / 2.5 / 3.4 / 4.6 / 8.6 kW (120 Hz - 3600 rpm)
- System Power Supply: ≤ 2.2 kW: 90 - 400 V DC / AC Backup: 90 - 265 V
  ≥ 3.0 kW: 160 - 850 V DC / AC Backup: 190 - 520 V
  ≥ 4 kW: 380 - 500 V AC / 400 - 800 V DC
- Motor installation orientation: Vertical / horizontal (shaft end heightened)
- Backup Power supply / Direct AC feeding to maximize system runtime
- Top class protection with Electronics in IP66 / 65 / 21
  No cabinet - no cooling fan / dust filter - no maintanance

### OPTIONS

- Special Voltages
- Higher-graded material: 316SS

# 4" CT HIGH EFFICIENCY SOLAR SYSTEM PUMPING KITS

## SOLAR KITS 220 V / 380 V

| High Efficiency System | | Solar Controller | | | Solar Pump (BSPP) | | | | Motor | | Output Filter | | Flow Switch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | Order No. | Drive Model | Part No. | IP | $m^3/h$ | Stages | Pump | Part No. | $P_N$ [kW] | Part No. | Filter Type | Part No. | Model | Part No. |
| 1/19 4HES 220 0.75 Solar | 308071119S | DTm Solar 2.005 MP | 314000165 | 66 | 1 | 19 | 4" VS 1/19 | 602011901050063 | 1.1 | 2340716721L | - | - | - | - |
| 1/26 4HES 220 1.1 Solar | 308071126S | DTm Solar 2.011 MP | 314000166 | 66 | 1 | 26 | 4" VS 1/26 | 602012601050063 | 1.1 | 2340716721L | - | - | - | - |
| 2/20 4HES 220 1.1 Solar | 308071220S | | | 66 | 2 | 20 | 4" VS 2/20 | 602022001050063 | | | | | | |
| 4/14 4HES 220 1.1 Solar | 308071414S | | | 66 | 4 | 14 | 4" VS 4/14 | 602041401050063 | | | | | | |
| 2/27 4HES 220 2.2 Solar | 308072227S | DTm Solar 2.015 MP | 314000167 | 66 | 2 | 27 | 4" VS 2/27 | 602022701050063 | 2.2 | 2340726721L | - | - | - | - |
| 4/27 4HES 220 2.2 Solar | 308072427S | | | 66 | 4 | 27 | 4" VS 4/27 | 602042701050063 | | | | | | |
| 6/13 4HES 220 2.2 Solar | 308072613S | | | 66 | 6 | 13 | 4" VS 6/13 | 602061301060063 | | | | | | |
| 6/19 4HES 220 3.0 Solar | 308073619S | Drive-Tech 3.030 MP | 314000161 | 65 | 6 | 19 | 4" VS 6/19 | 602061901060063 | 3.0 | 2340736721L | - | - | - | - |
| 4/44 4HES 220 4.0 Solar | 308074444S | Drive-Tech 3.030 MP | 314000161 | 65 | 4 | 44 | 4" VS 4/44 | 602044401050063 | 4.0 | 2340743421L | - | - | - | - |
| 6/34 4HES 220 4.0 Solar | 308074634S | | | 65 | 6 | 34 | 4" VS 6/34 | 602063401060063 | | | | | | |
| 8/23 4HES 220 4.0 Solar | 308074823S | | | 65 | 8 | 23 | 4" VS 8/23 | 602082301060063 | | | | | | |
| 10/08 4HES 220 4.0 Solar | 308074108S | | | 65 | 10 | 18 | 4" VS 10/18 | 602121801060063 | | | | | | |
| 15/21 4HES 380 7.5 Solar | 308066151S | 100 16A | 314000108 | 21 | 15 | 21 | 4" VS 15/21 | 602152101060063 | 7.5 | 2340663421L | - | 314005101 | F21 >4m³/h | 226019101 |
| 30/06 4HES 380 7.5 Solar | 308066306S | | | 21 | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | | | | |
| 46/05 4HES 380 7.5 Solar | 308066465S | | | 21 | 46 | 5 | 6" VS 46/05 | ETH11460140 | | | | | | |
| 15/21 4HES 380 7.5 Solar | 308066092S | 100 X 16A | 314000109 | 66 | 15 | 21 | 4" VS 15/21 | 602152101060063 | 7.5 | 2340663421L | - | 314005101 | F21 >4m³/h | 226019101 |
| 30/06 4HES 380 7.5 Solar | 308066091S | | | 66 | 30 | 6 | 6" VS 30/06 | ETH11300150 | | | | | | |
| 46/05 4HES 380 7.5 Solar | 308066093S | | | 66 | 46 | 5 | 6" VS 46/05 | ETH11460140 | | | | | | |
| 4HES 220 0.55-0.75 Solar | 308071002S | DTm Solar 2.005 MP | 314000165 | 66 | - | - | - | - | 0.55-0.75 | 2340716721L | - | - | - | - |
| 4HES 220 0.55 - 1.1 Solar | 308071001S | DTm Solar 2.011 MP | 314000166 | 66 | - | - | - | - | 0.55-1.1 | 2340716721L | - | - | - | - |
| 4HES 220 1.1 - 2.2 Solar | 308072001S | DTm Solar 2.015 MP | 314000167 | 67 | - | - | - | - | 1.1-2.2 | 2340726721L | - | - | - | - |
| 4HES 220 2.2 - 3.0 Solar | 308073001S | Drive-Tech 3.030 MP | 314000161 | 65 | - | - | - | - | 2.2-3.0 | 2340736721L | - | - | - | - |
| 4HES 220 3.0 - 4.0 Solar | 308074001S | Drive-Tech 3.030 MP | 314000161 | 65 | - | - | - | - | 3.0-4.0 | 2340743421L | - | - | - | - |
| 4HES 380 7.5 Solar | 308066001S | 100 16A | 314000108 | 21 | - | - | - | - | 7.5 | 2340663421L | dv/dt | 314005101 | F21 >4m³/h | 226019101 |
| 4HES 380 7.5 Solar | 308066005S | 100 X 16A | 314000109 | 66 | - | - | - | - | 7.5 | 2340663421L | dv/dt | 314005101 | F21 >4m³/h | 226019101 |

Motor lead length: ≤ 2.2 kW: 1.50 m; ≥ 3 kW: 2.50 m
316SS kits with additional digit "B" (e.g. 308062001 B)

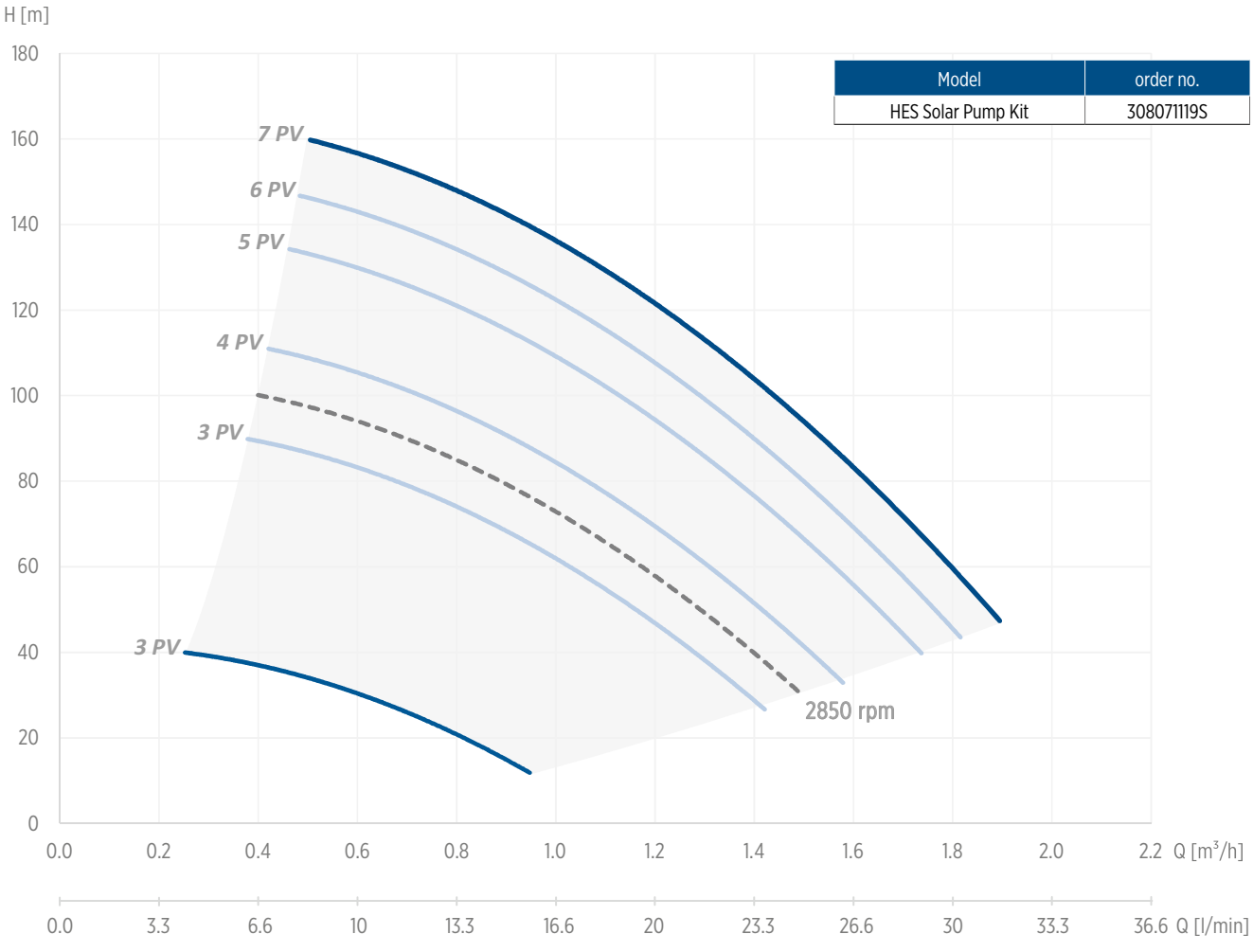
# 4" CT HIGH EFFICIENCY PUMPING KITS 0.55 – 0.75 KW

## VS 1/19 - 230 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|
| | 3 | 3 | 4 | 5 | 6 | 7 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | |
| 10 | 1.0 | 1.6 | | | | | |
| 20 | 0.8 | 1.5 | | | | | |
| 30 | 0.6 | 1.4 | 1.6 | | | | 1.5 |
| 40 | 0.3 | 1.3 | 1.5 | 1.7 | | | 1.4 |
| 50 | | 1.2 | 1.4 | 1.7 | 1.8 | 1.9 | 1.3 |
| 60 | | 1.0 | 1.3 | 1.6 | 1.7 | 1.8 | 1.2 |
| 70 | | 0.9 | 1.2 | 1.5 | 1.6 | 1.7 | 1.1 |
| 80 | | 0.7 | 1.1 | 1.4 | 1.5 | 1.7 | 0.9 |
| 90 | | 0.4 | 0.9 | 1.3 | 1.4 | 1.6 | 0.8 |
| 100 | | | 0.7 | 1.2 | 1.3 | 1.5 | 0.4 |
| 110 | | | 0.5 | 1.0 | 1.2 | 1.4 | |
| 120 | | | | 0.8 | 1.1 | 1.2 | |
| 130 | | | | 0.6 | 0.9 | 1.2 | |
| 140 | | | | | 0.7 | 1.0 | |
| 150 | | | | | 0.5 | 0.8 | |
| 160 | | | | | | 0.6 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308071119S |

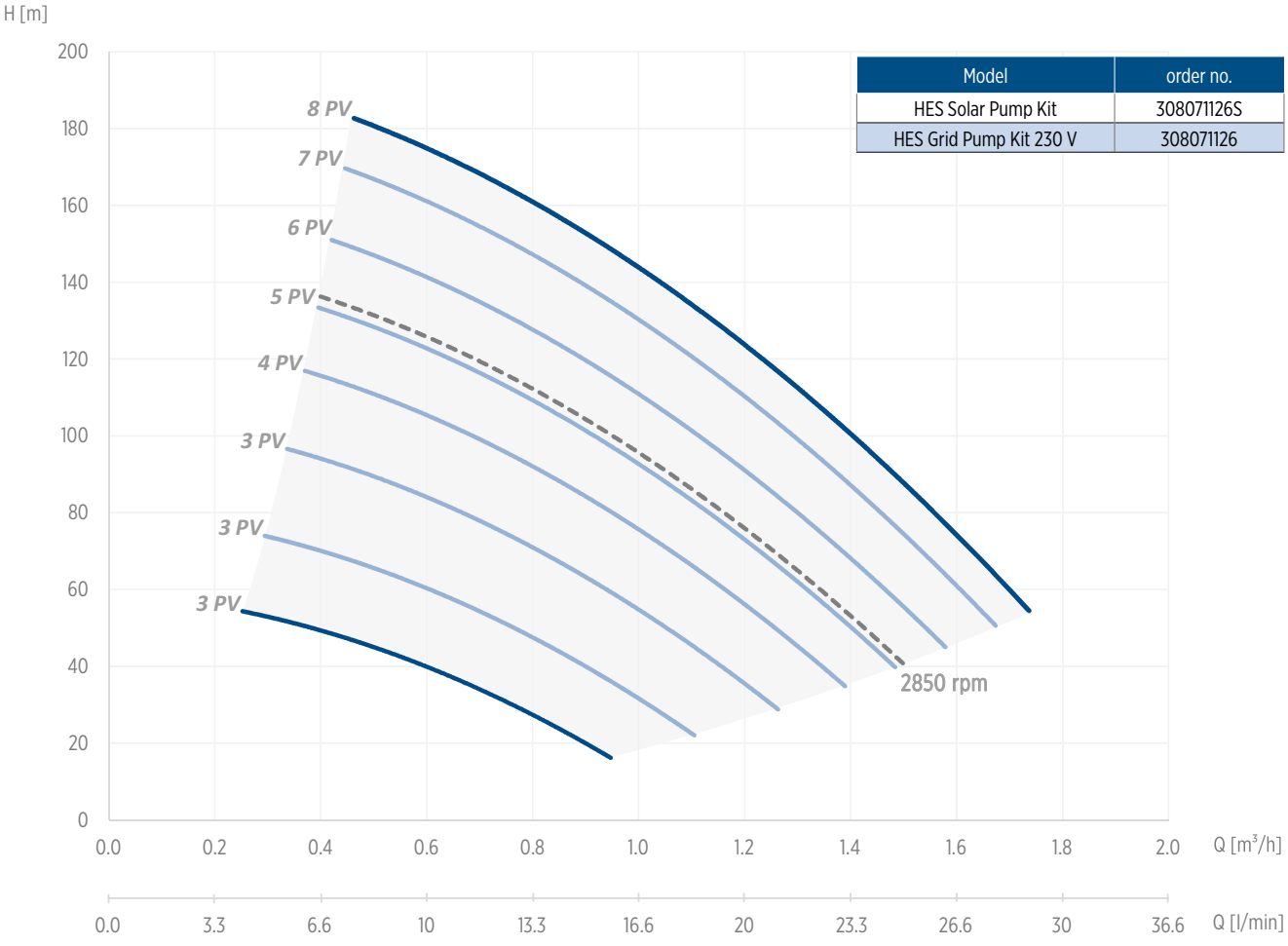


# 4" CT HIGH EFFICIENCY PUMPING KITS 0.55 – 1.1 KW

## VS 1/26 - 230 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 40 | 0.6 | 0.9 | 1.2 | 1.4 | 1.5 | | | | 1.5 |
| 50 | 0.4 | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.7 | 1.8 | 1.5 |
| 60 | | 0.6 | 1.0 | 1.2 | 1.3 | 1.5 | 1.6 | 1.7 | 1.4 |
| 70 | | 0.4 | 0.8 | 1.1 | 1.2 | 1.4 | 1.6 | 1.7 | 1.3 |
| 80 | | | 0.7 | 1.0 | 1.1 | 1.3 | 1.5 | 1.6 | 1.2 |
| 90 | | | 0.5 | 0.9 | 1.1 | 1.2 | 1.4 | 1.5 | 1.1 |
| 100 | | | | 0.7 | 0.9 | 1.1 | 1.3 | 1.4 | 1.0 |
| 110 | | | | 0.6 | 0.8 | 1.0 | 1.2 | 1.3 | 0.9 |
| 120 | | | | | 0.7 | 0.9 | 1.2 | 1.2 | 0.7 |
| 130 | | | | | 0.5 | 0.8 | 1.0 | 1.2 | 0.5 |
| 140 | | | | | | 0.7 | 0.9 | 1.1 | |
| 150 | | | | | | 0.5 | 0.8 | 1.0 | |
| 160 | | | | | | | 0.6 | 0.8 | |
| 170 | | | | | | | 0.5 | 0.7 | |



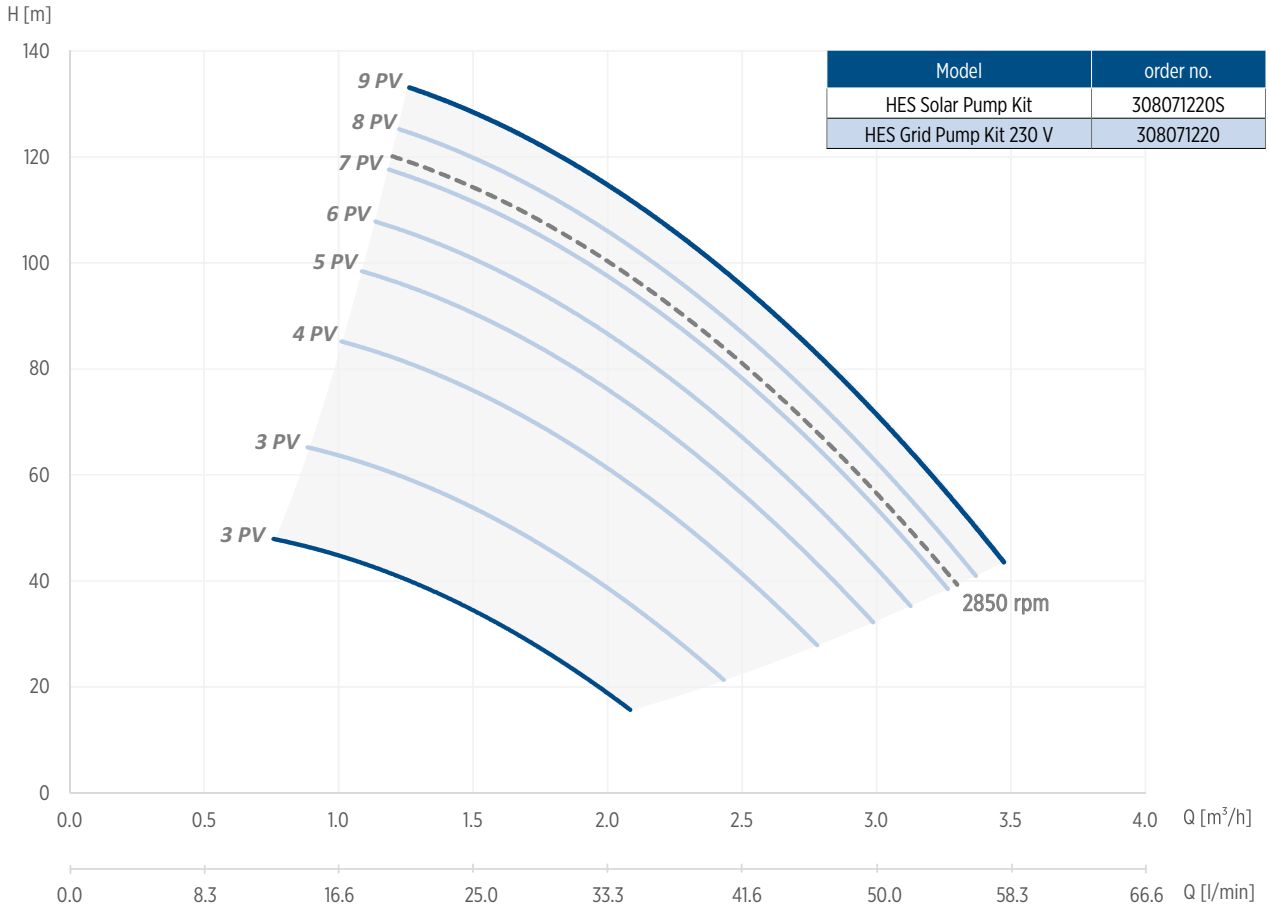

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308071126S |
| HES Grid Pump Kit 230 V | 308071126 |

# 4" CT HIGH EFFICIENCY PUMPING KITS 0.55 – 1.1 KW

## VS 2/20 - 230 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 10 | | | | | | | | | |
| 20 | 2.0 | 2.4 | | | | | | | |
| 30 | 1.7 | 2.3 | 2.7 | 3.0 | | | | | |
| 40 | 1.3 | 2.0 | 2.5 | 2.8 | 3.0 | 3.2 | 3.3 | 3.5 | 3.1 |
| 50 | | 1.6 | 2.3 | 2.6 | 2.8 | 3.1 | 3.2 | 3.4 | 2.9 |
| 60 | | 1.2 | 2.0 | 2.4 | 2.7 | 2.9 | 3.0 | 3.2 | 2.8 |
| 70 | | | 1.7 | 2.2 | 2.4 | 2.7 | 2.8 | 3.0 | 2.5 |
| 80 | | | 1.3 | 1.9 | 2.2 | 2.5 | 2.6 | 2.8 | 2.3 |
| 90 | | | | 1.6 | 1.9 | 2.2 | 2.4 | 2.6 | 2.0 |
| 100 | | | | 1.0 | 1.6 | 1.9 | 2.2 | 2.4 | 1.7 |
| 110 | | | | | 1.1 | 1.6 | 1.9 | 2.1 | 1.2 |
| 120 | | | | | | 1.1 | 1.5 | 1.8 | |
| 130 | | | | | | | 1.0 | 1.5 | |



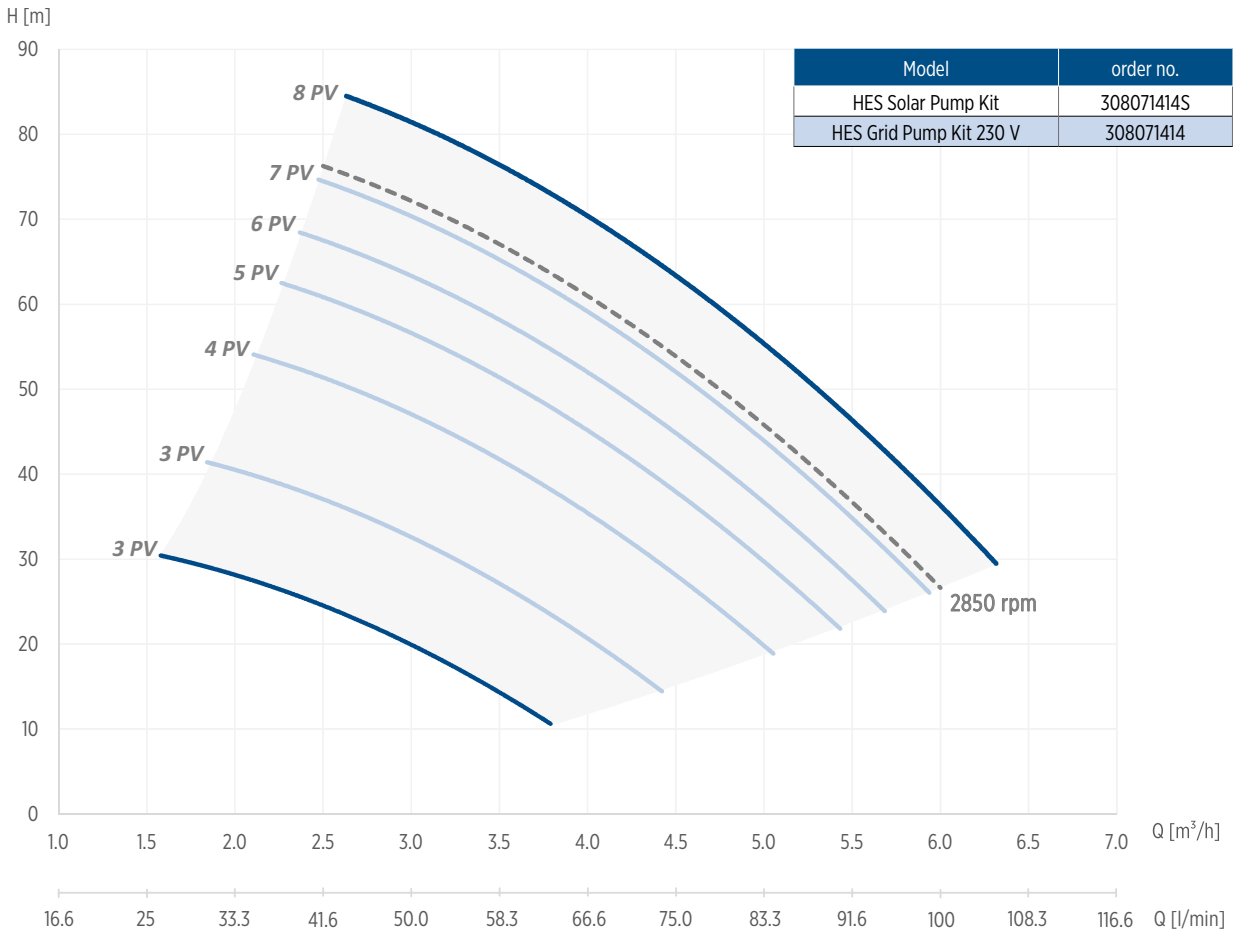

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308071220S |
| HES Grid Pump Kit 230 V | 308071220 |

# 4" CT HIGH EFFICIENCY PUMPING KITS 0.55 – 1.1 KW

## VS 4/14 - 230 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|
| | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | |
| 10 | 3.8 | | | | | | | |
| 15 | 3.5 | 4.3 | | | | | | |
| 20 | 3.0 | 4.0 | 5.0 | 5.5 | | | | |
| 25 | 2.5 | 3.6 | 4.7 | 5.2 | 5.6 | 6.1 | | 6.2 |
| 30 | 1.7 | 3.3 | 4.4 | 5.0 | 5.3 | 5.8 | 6.3 | 5.9 |
| 35 | | 2.7 | 4.0 | 4.6 | 5.1 | 5.6 | 6.1 | 5.7 |
| 40 | | 2.2 | 3.6 | 4.3 | 4.8 | 5.3 | 5.8 | 5.4 |
| 45 | | | 3.2 | 4.0 | 4.5 | 5.0 | 5.5 | 5.1 |
| 50 | | | 2.7 | 3.6 | 4.2 | 4.7 | 5.3 | 4.8 |
| 55 | | | 2.1 | 3.2 | 3.7 | 4.4 | 5.0 | 4.5 |
| 60 | | | | 2.6 | 3.3 | 4.1 | 4.7 | 4.2 |
| 65 | | | | 2.0 | 2.8 | 3.6 | 4.4 | 3.7 |
| 70 | | | | | 2.2 | 3.2 | 4.0 | 3.3 |
| 75 | | | | | | 2.7 | 3.6 | 2.8 |
| 80 | | | | | | | 3.2 | |
| 85 | | | | | | | 2.7 | |



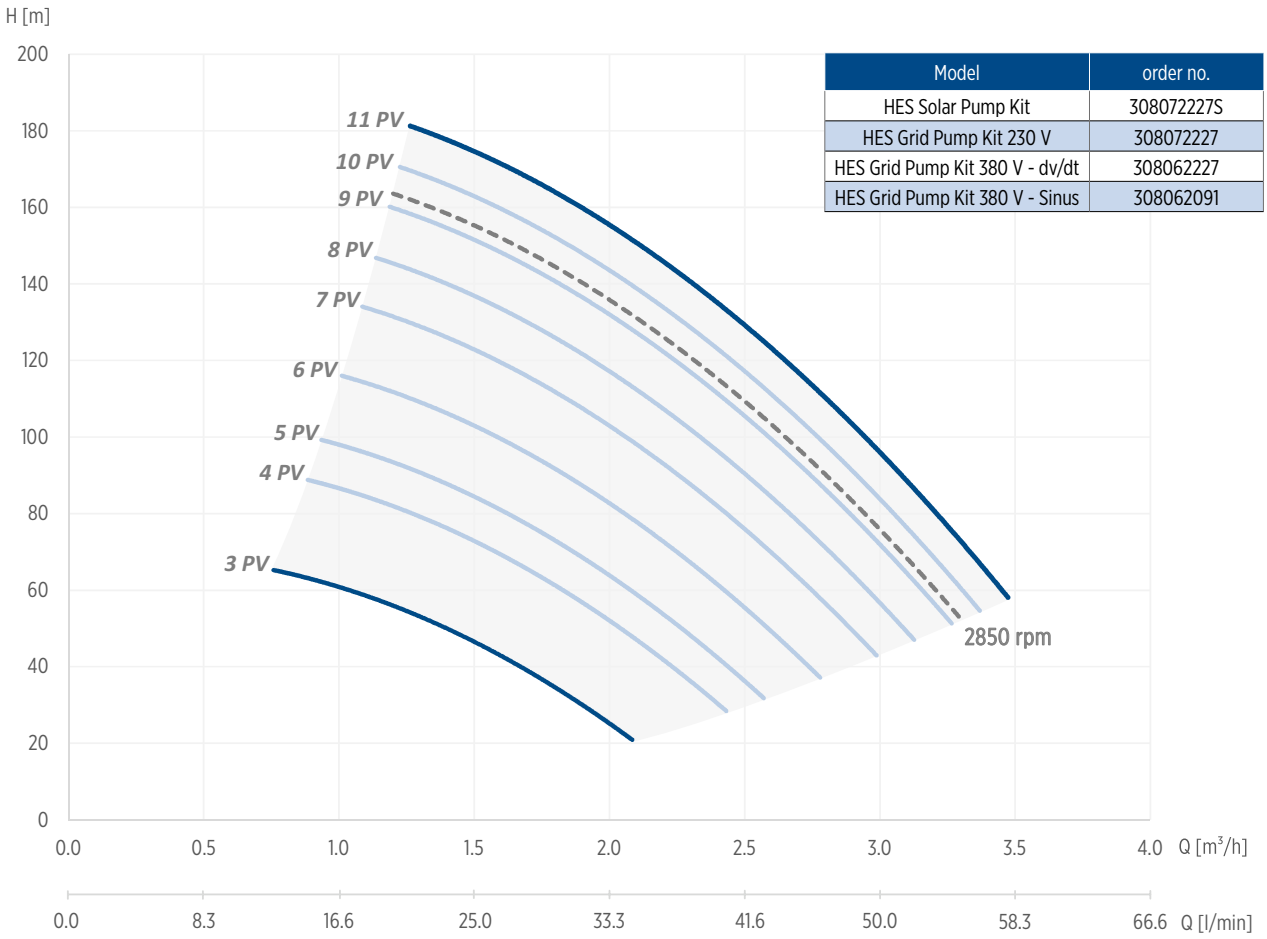

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308071414S |
| HES Grid Pump Kit 230 V | 308071414 |

# 4" CT HIGH EFFICIENCY PUMPING KITS 1.1 – 2.2 KW

## VS 2/27- 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | | |
| 40 | 1.6 | 2.2 | 2.5 | 2.7 | 3.0 | | | | | |
| 50 | 1.3 | 2.0 | 2.2 | 2.6 | 2.9 | 3.1 | 3.3 | 3.4 | | 3.4 |
| 60 | 1.0 | 1.8 | 2.1 | 2.4 | 2.7 | 3.0 | 3.2 | 3.3 | 3.5 | 3.3 |
| 70 | | 1.6 | 1.9 | 2.2 | 2.6 | 2.8 | 3.0 | 3.2 | 3.3 | 3.1 |
| 80 | | 1.3 | 1.6 | 2.1 | 2.4 | 2.7 | 2.9 | 3.1 | 3.2 | 3.0 |
| 90 | | 0.9 | 1.3 | 1.9 | 2.3 | 2.5 | 2.8 | 2.9 | 3.1 | 2.9 |
| 100 | | | 1.0 | 1.6 | 2.1 | 2.3 | 2.6 | 2.8 | 3.0 | 2.7 |
| 110 | | | | 1.3 | 1.8 | 2.2 | 2.4 | 2.6 | 2.8 | 2.5 |
| 120 | | | | 0.9 | 1.6 | 2.0 | 2.3 | 2.5 | 2.7 | 2.4 |
| 130 | | | | | 1.3 | 1.7 | 2.0 | 2.3 | 2.5 | 2.2 |
| 140 | | | | | | 1.4 | 1.8 | 2.1 | 2.3 | 1.9 |
| 150 | | | | | | | 1.6 | 1.9 | 2.1 | 1.7 |
| 160 | | | | | | | 1.2 | 1.6 | 1.9 | 1.3 |
| 170 | | | | | | | | 1.3 | 1.7 | |
| 180 | | | | | | | | | 1.3 | |



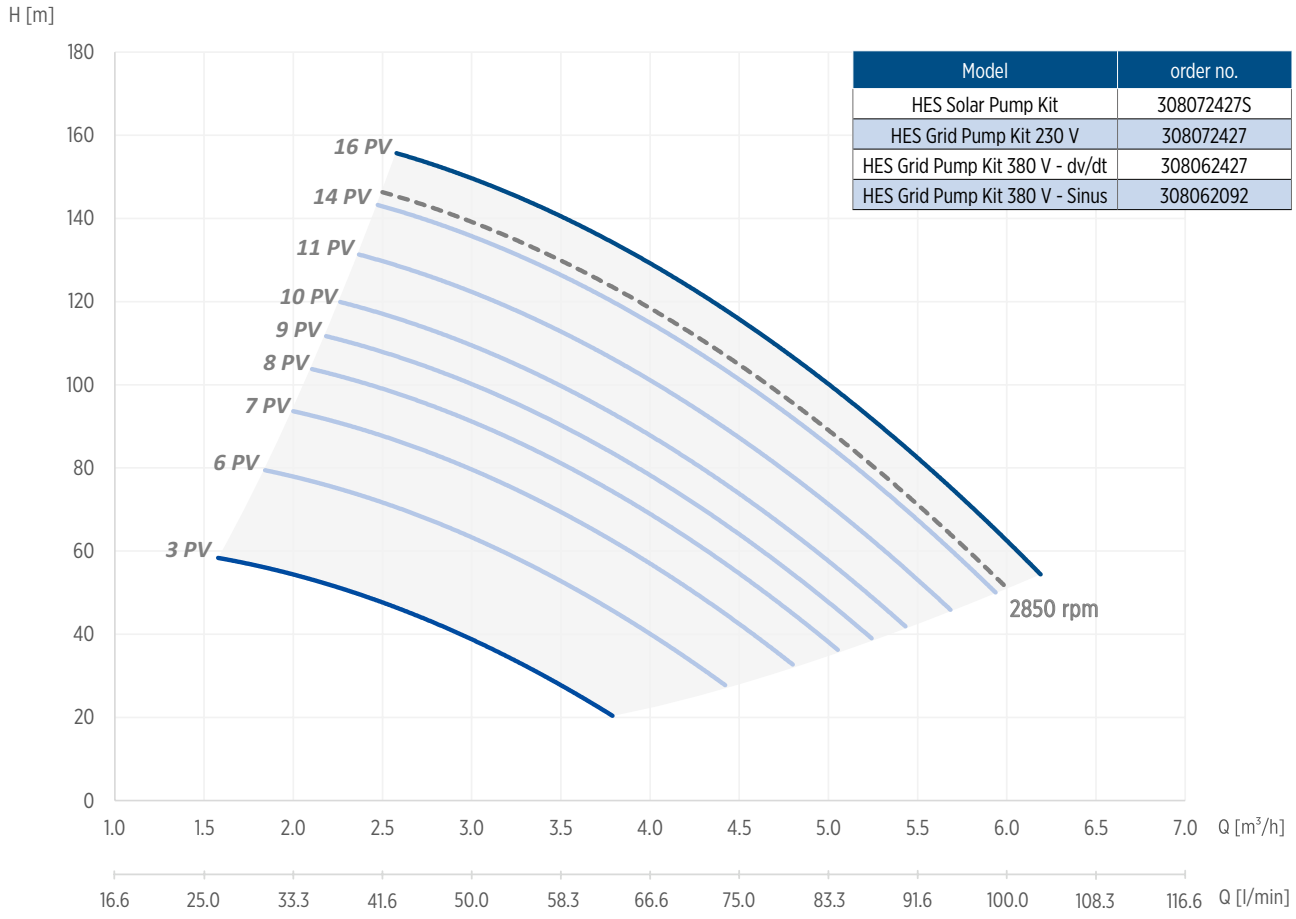

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308072227S |
| HES Grid Pump Kit 230 V | 308072227 |
| HES Grid Pump Kit 380 V - dv/dt | 308062227 |
| HES Grid Pump Kit 380 V - Sinus | 308062091 |

# 4" CT HIGH EFFICIENCY PUMPING KITS 1.1 - 2.2 KW

## VS 4/27 - 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 7 | 8 | 9 | 10 | 11 | 14 | 16 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | | |
| 40 | 3.0 | 4.0 | 4.6 | 4.9 | 5.2 | 5.5 | 5.8 | | | |
| 50 | 2.5 | 3.6 | 4.3 | 4.6 | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.1 |
| 60 | 1.5 | 3.2 | 3.9 | 4.3 | 4.6 | 4.9 | 5.3 | 5.7 | 6.1 | 5.8 |
| 70 | | 2.6 | 3.5 | 4.0 | 4.3 | 4.6 | 5.0 | 5.4 | 5.9 | 5.6 |
| 80 | | 1.8 | 3.0 | 3.6 | 3.9 | 4.3 | 4.7 | 5.2 | 5.5 | 5.4 |
| 90 | | | 2.3 | 3.1 | 3.5 | 3.9 | 4.4 | 4.9 | 5.4 | 5.0 |
| 100 | | | | 2.4 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 4.7 |
| 110 | | | | | 2.3 | 3.0 | 3.6 | 4.2 | 4.7 | 4.4 |
| 120 | | | | | | 2.3 | 3.1 | 3.8 | 4.4 | 4.0 |
| 130 | | | | | | | 2.5 | 3.3 | 3.7 | 3.5 |
| 140 | | | | | | | | 2.7 | 3.2 | 3.0 |
| 150 | | | | | | | | | 2.5 | |




| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308072427S |
| HES Grid Pump Kit 230 V | 308072427 |
| HES Grid Pump Kit 380 V - dv/dt | 308062427 |
| HES Grid Pump Kit 380 V - Sinus | 308062092 |

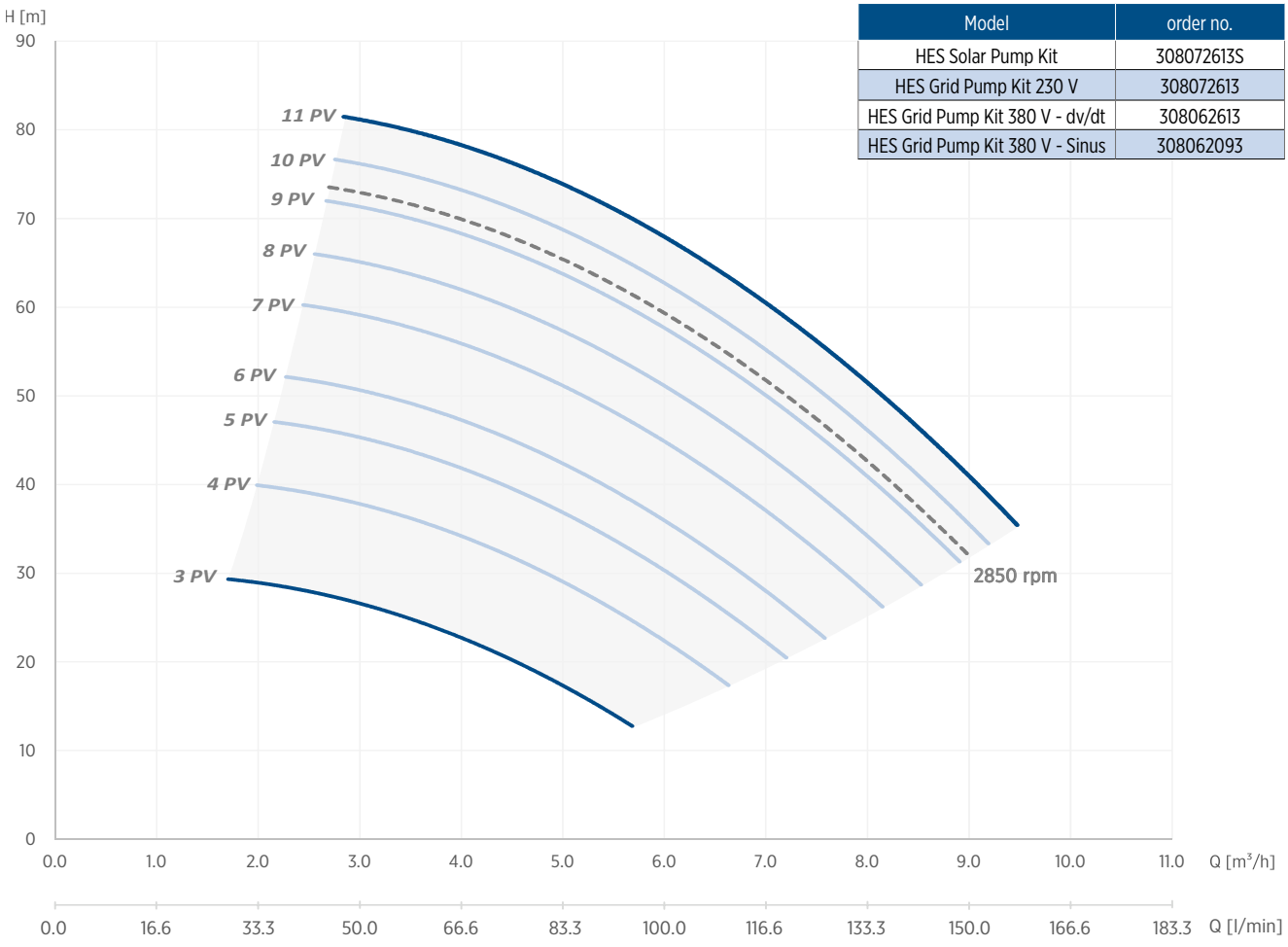
# 4" CT HIGH EFFICIENCY PUMPING KITS 1.1 – 2.2 KW

## VS 6/13- 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | | |
| 20 | 4.5 | 6.3 | 7.2 | 7.9 | | | | | | |
| 25 | 3.5 | 5.6 | 6.8 | 7.3 | 8.3 | | | | | |
| 30 | 1.8 | 4.9 | 6.0 | 6.9 | 7.9 | 8.4 | 9.0 | | | 9.2 |
| 35 | | 3.9 | 5.5 | 6.2 | 7.4 | 8.0 | 8.5 | 9.0 | 9.5 | 8.8 |
| 40 | | 2.0 | 4.6 | 5.5 | 6.8 | 7.4 | 8.0 | 8.6 | 9.0 | 8.3 |
| 45 | | | 3.5 | 4.5 | 6.0 | 6.9 | 7.7 | 8.1 | 8.7 | 7.9 |
| 50 | | | | 3.2 | 5.2 | 6.2 | 7.0 | 7.7 | 8.0 | 7.3 |
| 55 | | | | | 4.5 | 5.5 | 6.5 | 7.0 | 7.5 | 6.8 |
| 60 | | | | | 2.6 | 4.5 | 5.8 | 6.4 | 7.0 | 5.0 |
| 65 | | | | | | 3.5 | 4.9 | 5.7 | 6.5 | 5.2 |
| 70 | | | | | | | 3.5 | 4.9 | 5.9 | 3.7 |
| 75 | | | | | | | | 4.0 | 5.0 | |
| 80 | | | | | | | | | 3.5 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308072613S |
| HES Grid Pump Kit 230 V | 308072613 |
| HES Grid Pump Kit 380 V - dv/dt | 308062613 |
| HES Grid Pump Kit 380 V - Sinus | 308062093 |



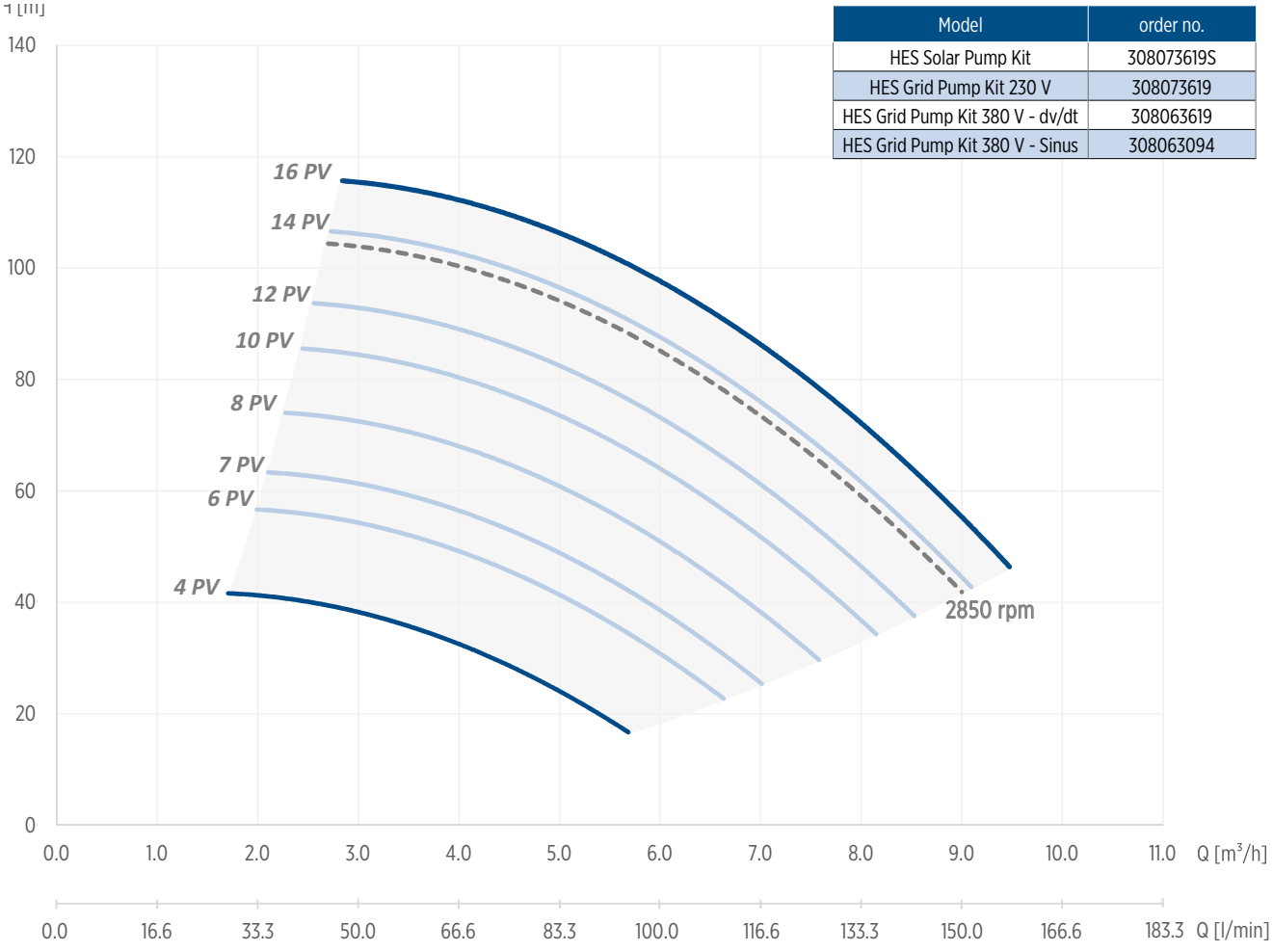
# 4" CT HIGH EFFICIENCY PUMPING KITS 2.2 - 3.0 KW

## VS 6/19- 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 4 | 6 | 7 | 8 | 10 | 12 | 14 | 16 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 30 | 4.5 | 6.1 | 6.7 | 7.6 | 8.4 | | | | |
| 40 | 2.5 | 5.1 | 5.9 | 6.9 | 7.8 | 8.4 | 9.2 | 9.8 | 9.1 |
| 50 | | 3.9 | 4.9 | 6.1 | 7.1 | 7.8 | 8.7 | 9.3 | 8.6 |
| 60 | | | 3.3 | 5.1 | 6.4 | 7.1 | 8.1 | 8.7 | 8.0 |
| 70 | | | | 3.6 | 5.4 | 6.3 | 7.4 | 8.1 | 7.4 |
| 80 | | | | | 4.1 | 5.3 | 6.7 | 7.5 | 6.6 |
| 90 | | | | | | 3.8 | 5.8 | 6.7 | 5.6 |
| 100 | | | | | | | 4.5 | 5.8 | 4.4 |
| 110 | | | | | | | | 4.4 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308073619S |
| HES Grid Pump Kit 230 V | 308073619 |
| HES Grid Pump Kit 380 V - dv/dt | 308063619 |
| HES Grid Pump Kit 380 V - Sinus | 308063094 |



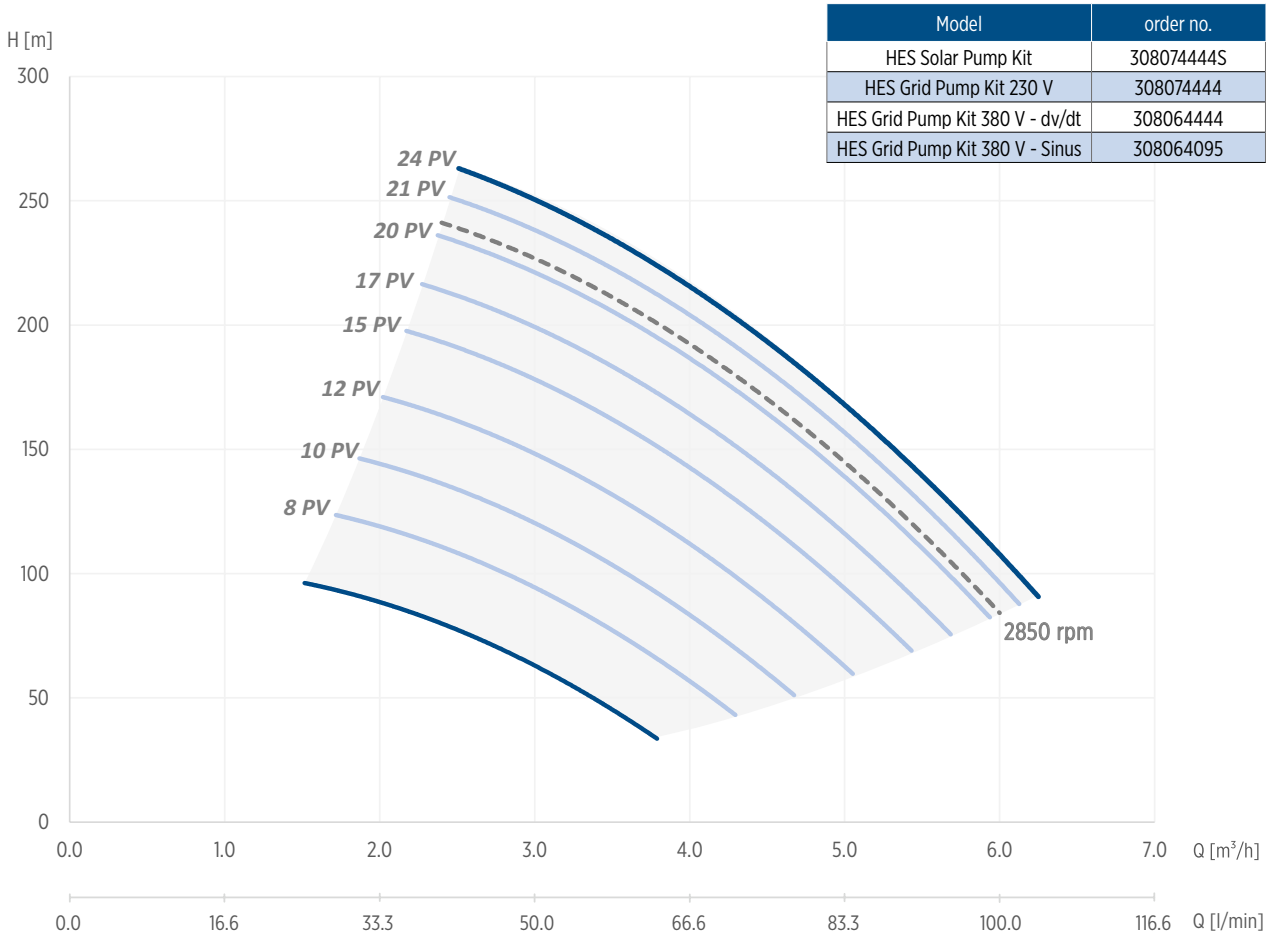
# 4" CT HIGH EFFICIENCY PUMPING KITS 3.0 – 4.0 KW

## VS 4/44 - 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 8 | 10 | 12 | 15 | 17 | 20 | 21 | 24 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 100 | 3.1 | 3.6 | 4.3 | 4.9 | 5.3 | 5.7 | 5.9 | 6.1 | 6.0 |
| 110 | 2.8 | 3.3 | 4.1 | 4.7 | 5.1 | 5.5 | 5.8 | 6.0 | 5.7 |
| 120 | 2.4 | 3.0 | 3.8 | 4.5 | 4.9 | 5.3 | 5.6 | 5.8 | 5.5 |
| 130 | 1.8 | 2.7 | 3.6 | 4.3 | 4.7 | 5.2 | 5.5 | 5.7 | 5.5 |
| 140 | | 2.2 | 3.3 | 4.1 | 4.5 | 5.0 | 5.3 | 5.5 | 5.2 |
| 150 | | 1.6 | 3.0 | 3.8 | 4.3 | 4.8 | 5.1 | 5.2 | 5.0 |
| 160 | | | 2.6 | 3.6 | 4.1 | 4.6 | 4.9 | 5.2 | 4.8 |
| 170 | | | 2.1 | 3.3 | 3.9 | 4.4 | 4.8 | 5.0 | 4.7 |
| 180 | | | | 2.9 | 3.6 | 4.2 | 4.6 | 4.8 | 4.5 |
| 190 | | | | 2.6 | 3.3 | 3.9 | 4.3 | 4.5 | 4.0 |
| 210 | | | | | 2.6 | 3.4 | 3.9 | 4.2 | 3.5 |
| 220 | | | | | 2.1 | 3.1 | 3.6 | 3.9 | 3.2 |
| 230 | | | | | | 2.7 | 3.3 | 3.8 | 2.8 |
| 240 | | | | | | | 3.0 | 3.3 | |
| 250 | | | | | | | 2.5 | 3.0 | |
| 260 | | | | | | | | 2.6 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308074444S |
| HES Grid Pump Kit 230 V | 308074444 |
| HES Grid Pump Kit 380 V - dv/dt | 308064444 |
| HES Grid Pump Kit 380 V - Sinus | 308064095 |



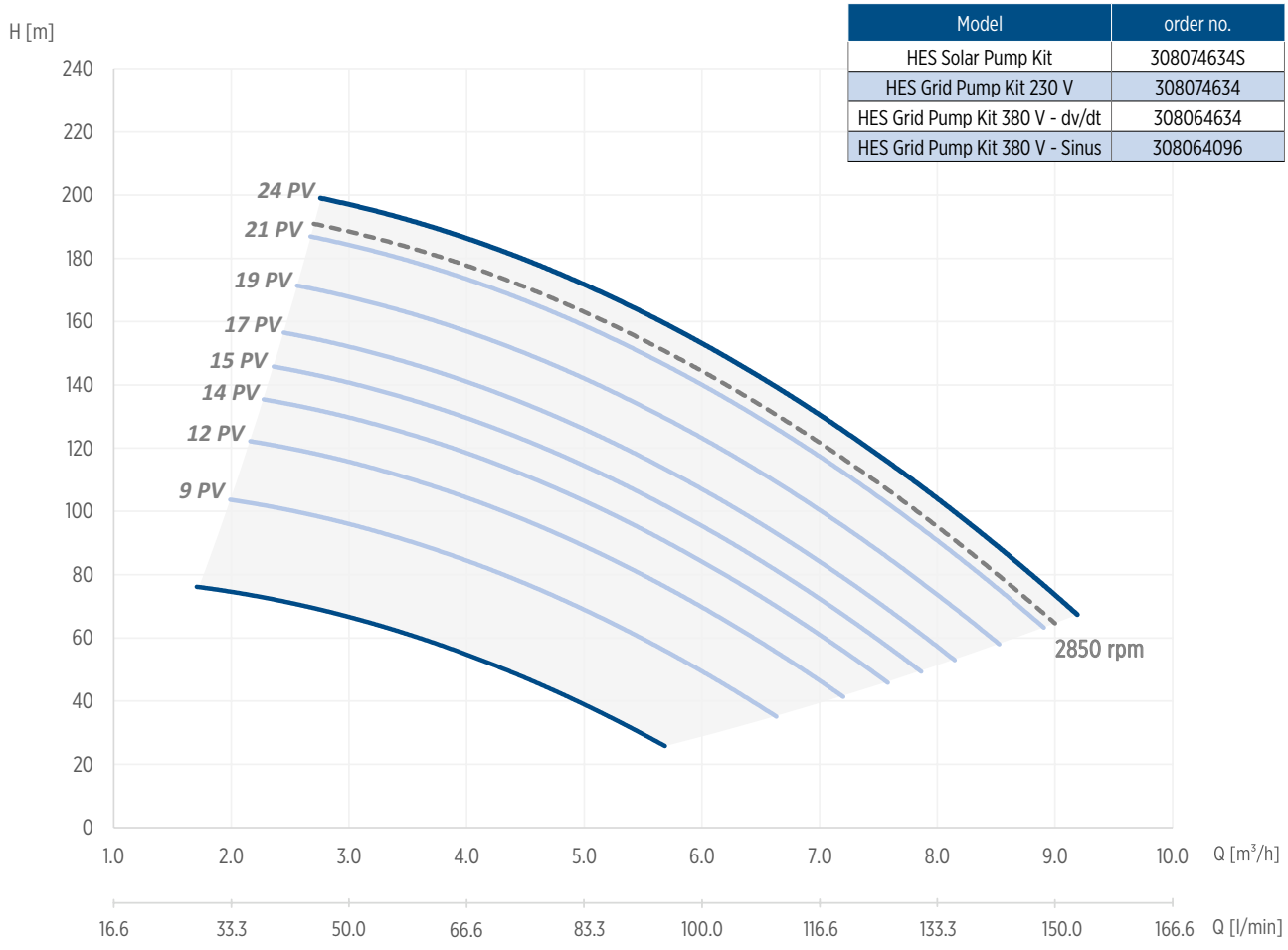
# 4" CT HIGH EFFICIENCY PUMPING KITS 3.0 – 4.0 KW

## VS 6/34- 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 9 | 12 | 14 | 15 | 17 | 19 | 21 | 24 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 50 | 6.0 | 6.9 | 7.4 | 7.8 | 8.2 | | | | |
| 60 | 5.5 | 6.4 | 7.0 | 7.5 | 7.9 | 8.5 | 9.0 | 9.4 | 9.2 |
| 70 | 4.9 | 6.0 | 6.6 | 7.1 | 7.5 | 8.1 | 8.7 | 9.1 | 8.9 |
| 80 | 4.3 | 5.5 | 6.2 | 6.7 | 7.2 | 7.8 | 8.4 | 8.8 | 8.5 |
| 90 | 3.6 | 4.9 | 5.7 | 6.3 | 6.8 | 7.4 | 8.0 | 8.5 | 8.2 |
| 100 | 2.5 | 4.3 | 5.2 | 5.8 | 6.3 | 7.0 | 7.7 | 8.1 | 7.9 |
| 110 | | 3.5 | 4.6 | 5.3 | 5.9 | 6.6 | 7.3 | 7.8 | 7.5 |
| 120 | | 2.5 | 3.9 | 4.7 | 5.3 | 6.2 | 6.9 | 7.4 | 7.0 |
| 130 | | | 3.0 | 4.0 | 4.8 | 5.7 | 6.5 | 7.0 | 6.7 |
| 140 | | | | 3.1 | 4.1 | 5.1 | 6.0 | 6.6 | 6.1 |
| 150 | | | | | 3.2 | 4.5 | 5.5 | 6.2 | 5.7 |
| 160 | | | | | 1.8 | 3.8 | 4.9 | 5.7 | 5.0 |
| 170 | | | | | | 2.8 | 4.3 | 5.1 | 4.4 |
| 180 | | | | | | | 3.4 | 4.5 | 3.6 |
| 190 | | | | | | | 2.2 | 3.7 | 2.3 |
| 200 | | | | | | | | 2.6 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308074634S |
| HES Grid Pump Kit 230 V | 308074634 |
| HES Grid Pump Kit 380 V - dv/dt | 308064634 |
| HES Grid Pump Kit 380 V - Sinus | 308064096 |



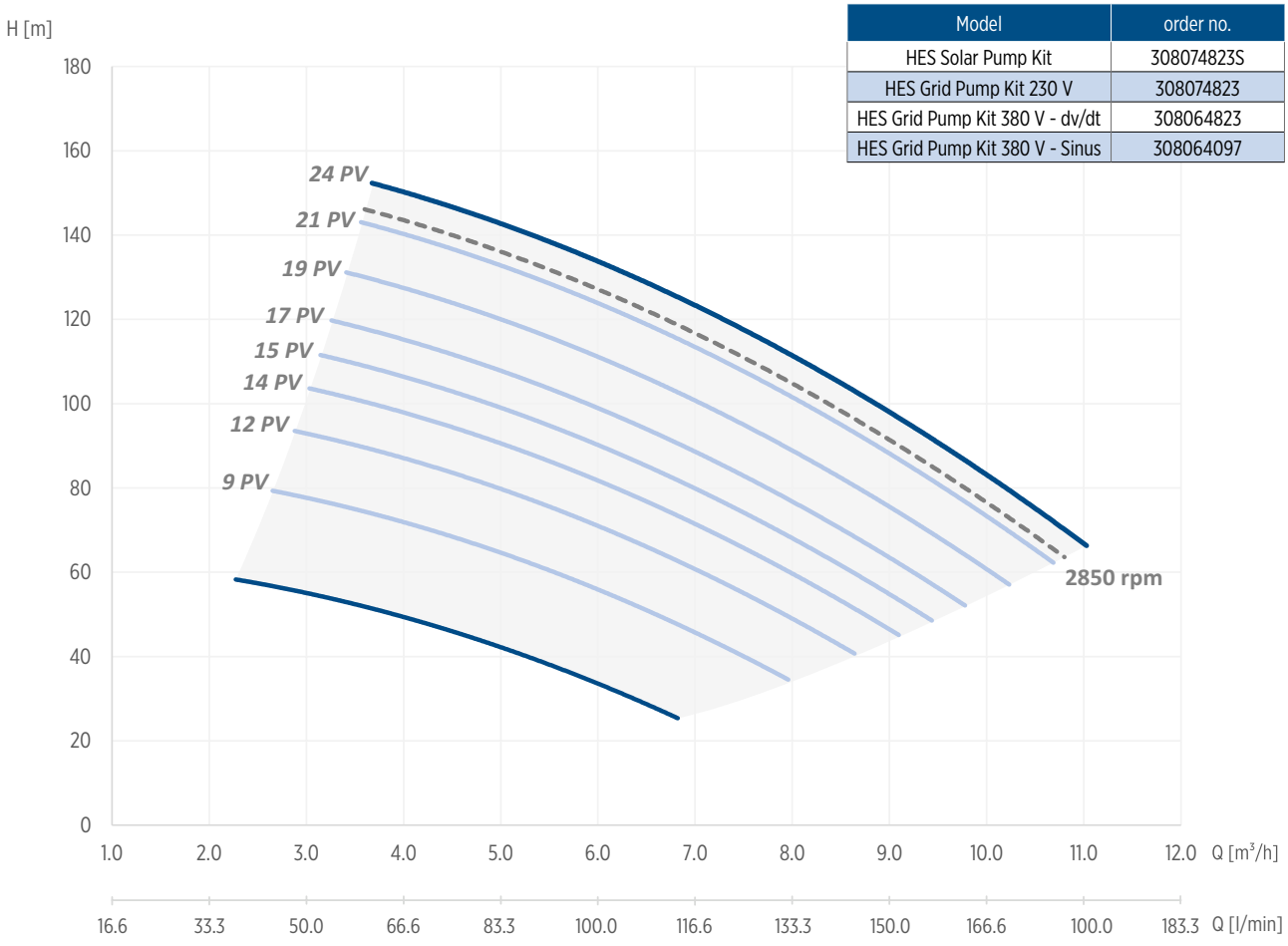
# 4" CT HIGH EFFICIENCY PUMPING KITS 3.0 – 4.0 KW

## VS 8/23 - 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 9 | 12 | 14 | 15 | 17 | 19 | 21 | 24 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 50 | 6.6 | 7.9 | 8.7 | 9.3 | | | | | |
| 60 | 5.6 | 7.1 | 8.0 | 8.6 | 9.2 | 10.0 | 10.8 | | 11.0 |
| 70 | 4.3 | 6.1 | 7.1 | 7.8 | 8.5 | 9.4 | 10.2 | 10.8 | 10.4 |
| 80 | 2.5 | 5.0 | 6.2 | 7.0 | 7.7 | 8.7 | 9.6 | 10.2 | 9.8 |
| 90 | | 3.5 | 5.1 | 6.0 | 6.9 | 7.9 | 8.9 | 9.6 | 9.1 |
| 100 | | | 3.7 | 4.9 | 5.9 | 7.1 | 8.1 | 8.9 | 8.3 |
| 110 | | | | 3.4 | 4.7 | 6.1 | 7.3 | 8.1 | 7.5 |
| 120 | | | | | 3.2 | 5.0 | 6.4 | 7.3 | 6.6 |
| 130 | | | | | | 3.6 | 5.3 | 6.4 | 5.5 |
| 140 | | | | | | | 4.0 | 5.3 | 4.2 |
| 150 | | | | | | | | 4.0 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308074823S |
| HES Grid Pump Kit 230 V | 308074823 |
| HES Grid Pump Kit 380 V - dv/dt | 308064823 |
| HES Grid Pump Kit 380 V - Sinus | 308064097 |



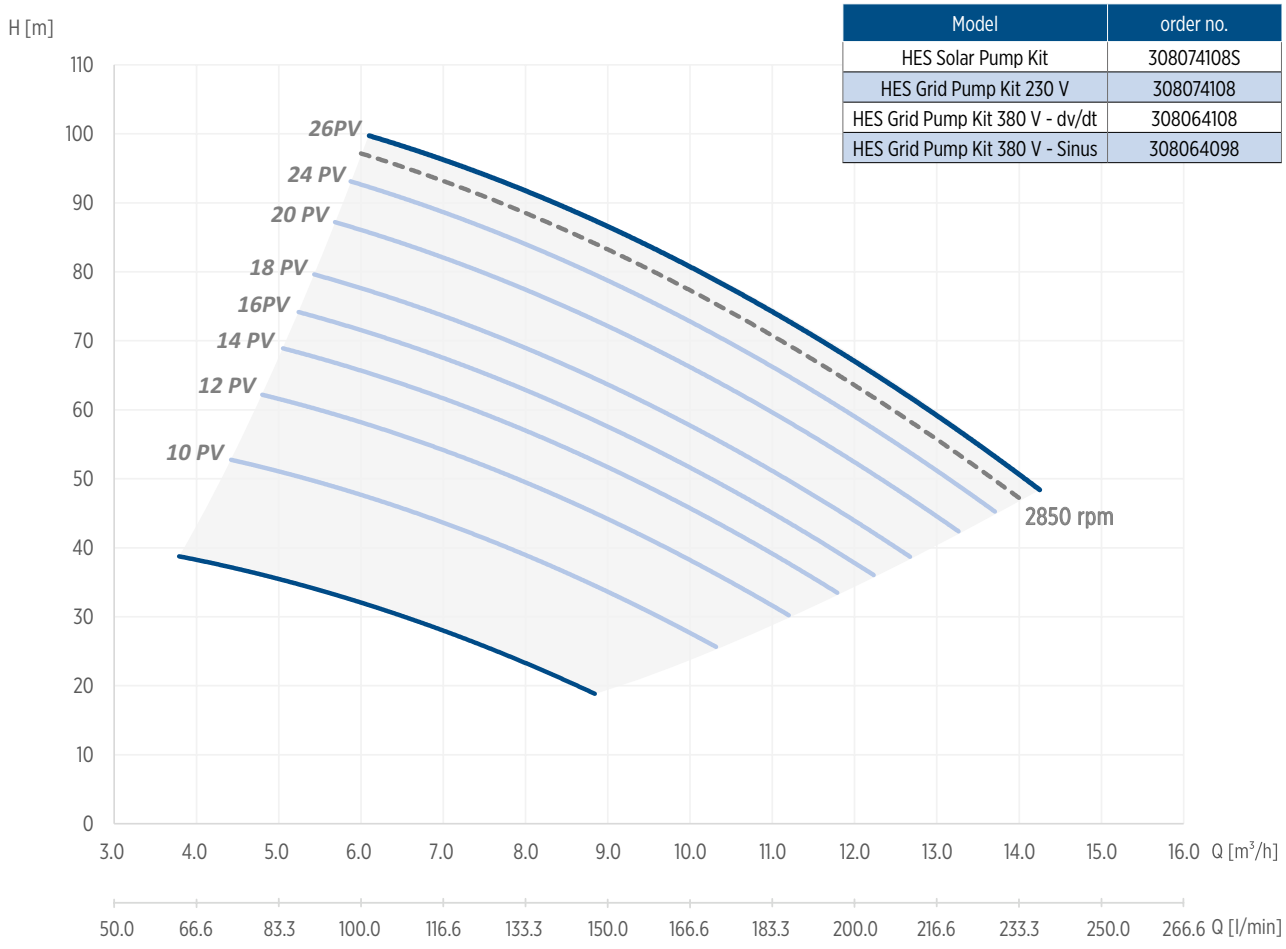
# 4" CT HIGH EFFICIENCY PUMPING KITS 3.0 – 4.0 KW

## VS 10/18- 230 V / 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|
| | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 26 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | |
| 30 | 9.6 | 11.2 | 12.3 | | | | | | |
| 35 | 8.8 | 10.5 | 11.6 | 12.4 | | | | | |
| 40 | 7.8 | 9.7 | 10.9 | 11.7 | 12.5 | 13.5 | | | |
| 45 | 6.7 | 8.9 | 10.1 | 11.0 | 11.9 | 12.9 | 13.7 | | 14.3 |
| 50 | | 7.9 | 9.3 | 10.3 | 11.2 | 12.3 | 13.1 | 14.0 | 13.7 |
| 55 | | 6.8 | 8.4 | 9.4 | 10.4 | 11.7 | 12.5 | 13.5 | 13.1 |
| 60 | | 5.5 | 7.4 | 8.6 | 9.6 | 10.9 | 11.9 | 13.0 | 12.4 |
| 65 | | | 6.2 | 7.6 | 8.8 | 10.2 | 11.2 | 12.2 | 11.9 |
| 70 | | | | 6.4 | 7.8 | 9.4 | 10.4 | 11.5 | 11.4 |
| 75 | | | | 5.0 | 6.7 | 8.5 | 9.6 | 11.1 | 10.5 |
| 80 | | | | | 5.3 | 7.5 | 8.8 | 10.1 | 9.8 |
| 85 | | | | | | 6.3 | 7.8 | 9.1 | 8.9 |
| 90 | | | | | | | 6.7 | 8.5 | 7.9 |
| 95 | | | | | | | | 7.2 | 6.9 |
| 100 | | | | | | | | 6.1 | 5.5 |

| Model | order no. |
|---|---|
| HES Solar Pump Kit | 308074108S |
| HES Grid Pump Kit 230 V | 308074108 |
| HES Grid Pump Kit 380 V - dv/dt | 308064108 |
| HES Grid Pump Kit 380 V - Sinus | 308064098 |



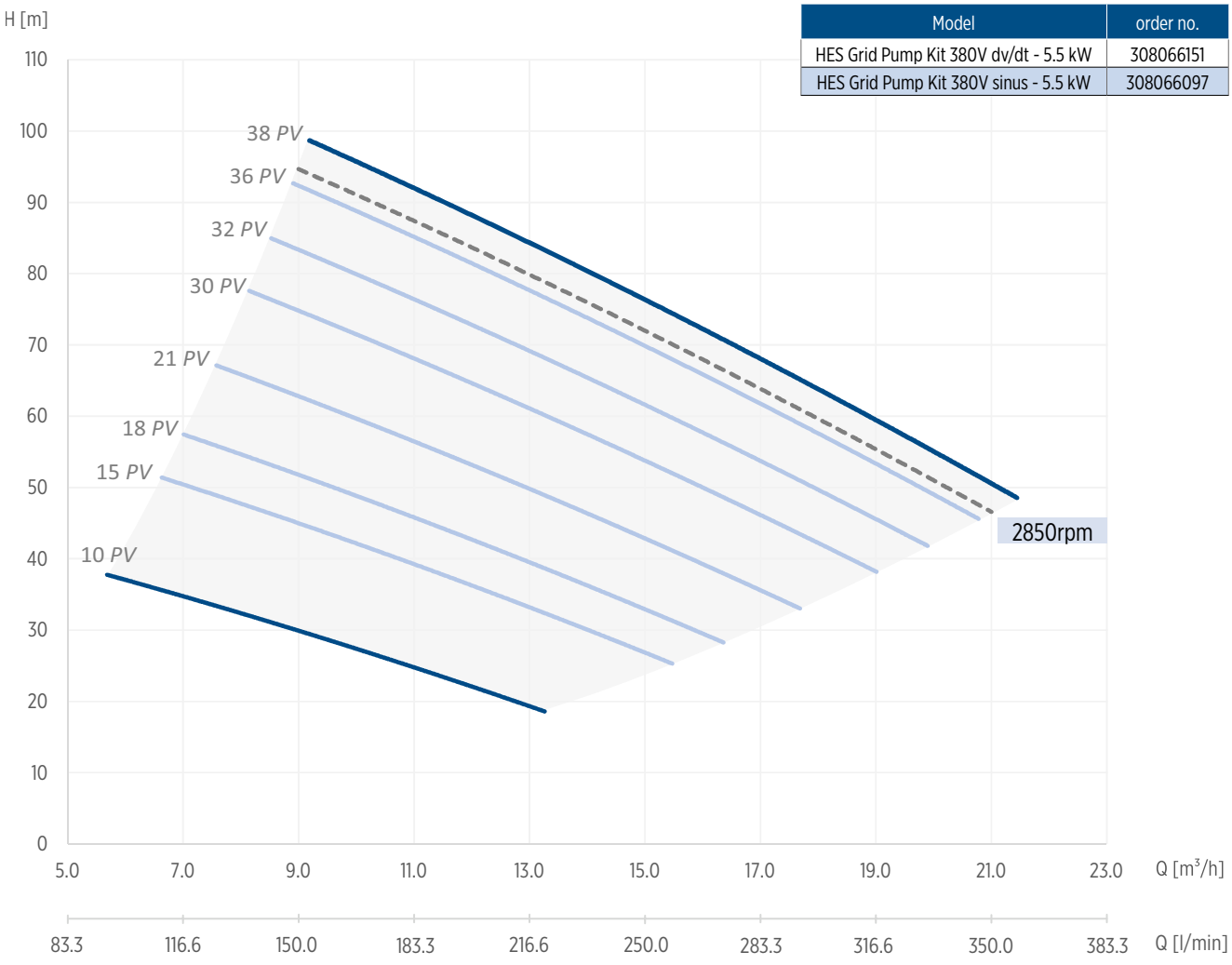
# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 15/21 - 5.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|
| | 15 | 18 | 21 | 30 | 32 | 36 | 38 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | |
| 20 | 17.0 | 18.7 | | | | | | |
| 30 | 14.0 | 15.9 | 18.5 | 21.0 | | | | |
| 40 | 10.7 | 12.8 | 15.8 | 18.6 | 20.3 | 22.0 | 23.3 | 22.5 |
| 50 | 7.2 | 9.6 | 12.9 | 16.0 | 17.9 | 19.8 | 21.1 | 20.2 |
| 60 | | 6.1 | 9.9 | 13.3 | 15.4 | 17.4 | 18.9 | 17.9 |
| 70 | | | 6.6 | 10.4 | 12.8 | 15.0 | 16.5 | 15.5 |
| 80 | | | | 7.4 | 10.0 | 12.4 | 14.1 | 13.0 |
| 90 | | | | | | 9.7 | 11.5 | 10.3 |
| 100 | | | | | | | 8.8 | 7.5 |

| Model | order no. |
|---|---|
| HES Grid Pump Kit 380V dv/dt - 5.5 kW | 308066151 |
| HES Grid Pump Kit 380V sinus - 5.5 kW | 308066097 |



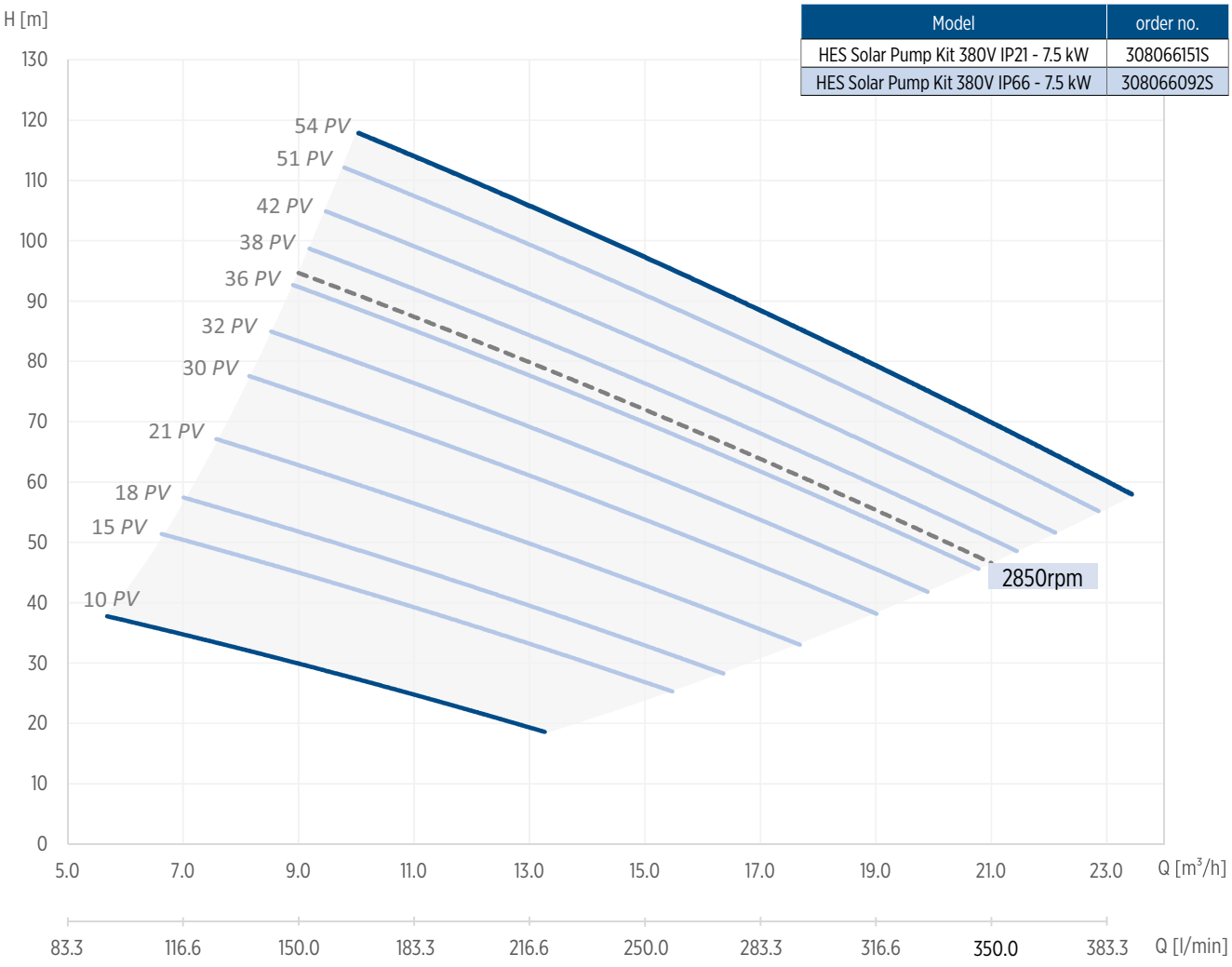
# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 15/21 - 7.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 18 | 21 | 30 | 32 | 36 | 38 | 42 | 51 | 54 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | | | |
| 20 | 17.0 | 18.7 | | | | | | | | | |
| 30 | 14.0 | 15.9 | 18.5 | 21.0 | | | | | | | |
| 40 | 10.7 | 12.8 | 15.8 | 18.6 | 20.3 | 22.0 | 23.3 | 24.5 | | | 22.5 |
| 50 | 7.2 | 9.6 | 12.9 | 16.0 | 17.9 | 19.8 | 21.1 | 22.4 | | | 20.2 |
| 60 | | 6.1 | 9.9 | 13.3 | 15.4 | 17.4 | 18.9 | 20.3 | 22.0 | 23.0 | 17.9 |
| 70 | | | 6.6 | 10.4 | 12.8 | 15.0 | 16.5 | 18.1 | 19.8 | 21.0 | 15.5 |
| 80 | | | | 7.4 | 10.0 | 12.4 | 14.1 | 15.7 | 17.7 | 19.0 | 13.0 |
| 90 | | | | | | 9.7 | 11.5 | 13.3 | 15.6 | 16.8 | 10.3 |
| 100 | | | | | | | 8.8 | 10.8 | 13.0 | 14.5 | 7.5 |
| 110 | | | | | | | | 8.1 | 10.5 | 12.3 | |
| 120 | | | | | | | | | | 9.7 | |

| Model | order no. |
|---|---|
| HES Solar Pump Kit 380V IP21 - 7.5 kW | 308066151S |
| HES Solar Pump Kit 380V IP66 - 7.5 kW | 308066092S |



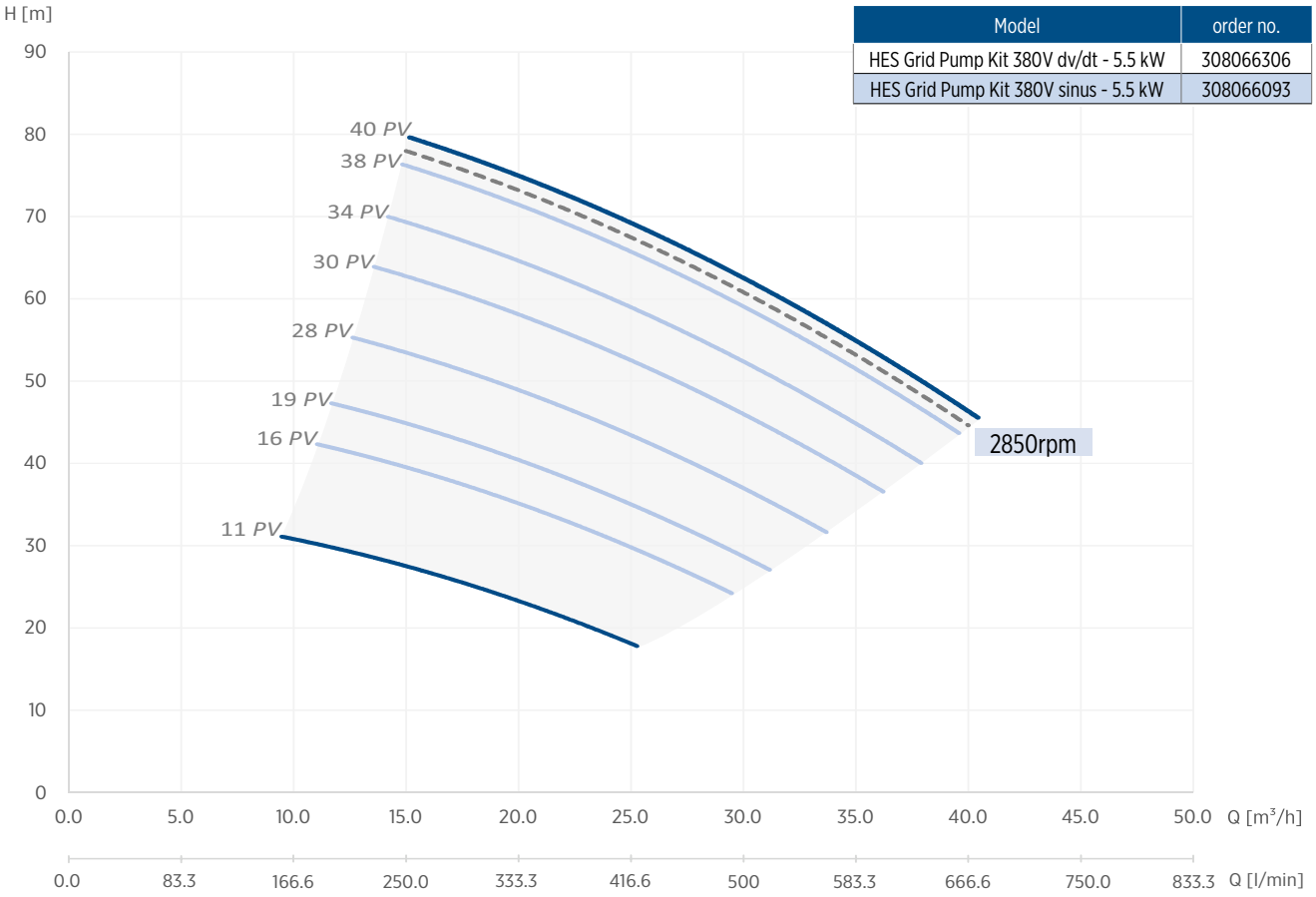
# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 30/06 - 5.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|
| | 16 | 19 | 28 | 30 | 34 | 38 | 40 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | |
| 30 | 28.8 | 29.0 | | | | | | |
| 35 | 20.2 | 25.0 | 31.4 | | | | | |
| 40 | 14.4 | 20.4 | 27.8 | 34.0 | 39.7 | | | 42.5 |
| 45 | | 14.9 | 23.7 | 30.7 | 34.9 | 38.9 | 41.0 | 39.8 |
| 50 | | | 18.9 | 27.0 | 31.7 | 35.9 | 38.0 | 36.9 |
| 55 | | | 13.0 | 22.9 | 28.1 | 32.8 | 35.0 | 33.9 |
| 60 | | | | 18.0 | 24.2 | 29.4 | 32.0 | 30.6 |
| 65 | | | | 12.0 | 19.6 | 26.6 | 28.5 | 26.9 |
| 70 | | | | | 14.2 | 21.4 | 24.9 | 22.9 |
| 75 | | | | | | 16.4 | 20.0 | 18.2 |
| 80 | | | | | | | 15.0 | |

| Model | order no. |
|---|---|
| HES Grid Pump Kit 380V dv/dt - 5.5 kW | 308066306 |
| HES Grid Pump Kit 380V sinus - 5.5 kW | 308066093 |

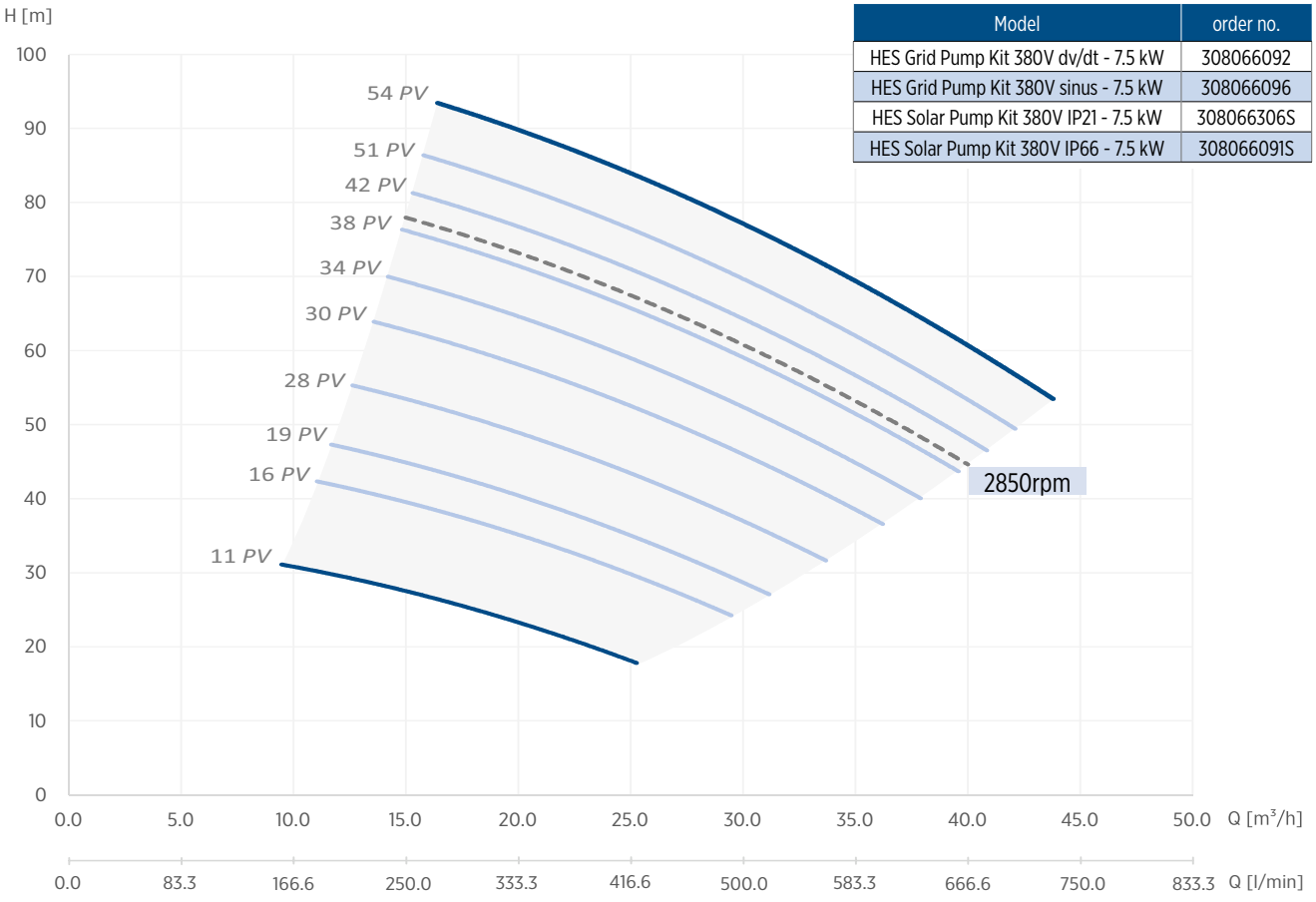


# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 30/06 - 7.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 19 | 28 | 30 | 34 | 38 | 42 | 51 | 54 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | | | |
| 30 | 28.8 | 29.0 | | | | | | | | |
| 35 | 20.2 | 25.0 | 31.4 | | | | | | | |
| 40 | 14.4 | 20.4 | 27.8 | 34.0 | 39.7 | 41.6 | | | | 42.5 |
| 45 | | 14.9 | 23.7 | 30.7 | 34.9 | 38.9 | 41.7 | 44.4 | | 39.8 |
| 50 | | | 18.9 | 27.0 | 31.7 | 35.9 | 39.0 | 41.8 | 45.5 | 36.9 |
| 55 | | | 13.0 | 22.9 | 28.1 | 32.8 | 36.0 | 39.1 | 43.0 | 33.9 |
| 60 | | | | 18.0 | 24.2 | 29.4 | 32.9 | 36.2 | 40.0 | 30.6 |
| 65 | | | | 12.0 | 19.6 | 26.6 | 29.5 | 33.1 | 37.0 | 26.9 |
| 70 | | | | | 14.2 | 21.4 | 25.8 | 29.8 | 35.0 | 22.9 |
| 75 | | | | | | 16.4 | 21.6 | 26.1 | 31.5 | 18.2 |
| 80 | | | | | | | 16.7 | 22.0 | 28.0 | |
| 85 | | | | | | | | 17.3 | 24.5 | |
| 90 | | | | | | | | | 20.0 | |




| Model | order no. |
|---|---|
| HES Grid Pump Kit 380V dv/dt - 7.5 kW | 308066092 |
| HES Grid Pump Kit 380V sinus - 7.5 kW | 308066096 |
| HES Solar Pump Kit 380V IP21 - 7.5 kW | 308066306S |
| HES Solar Pump Kit 380V IP66 - 7.5 kW | 308066091S |

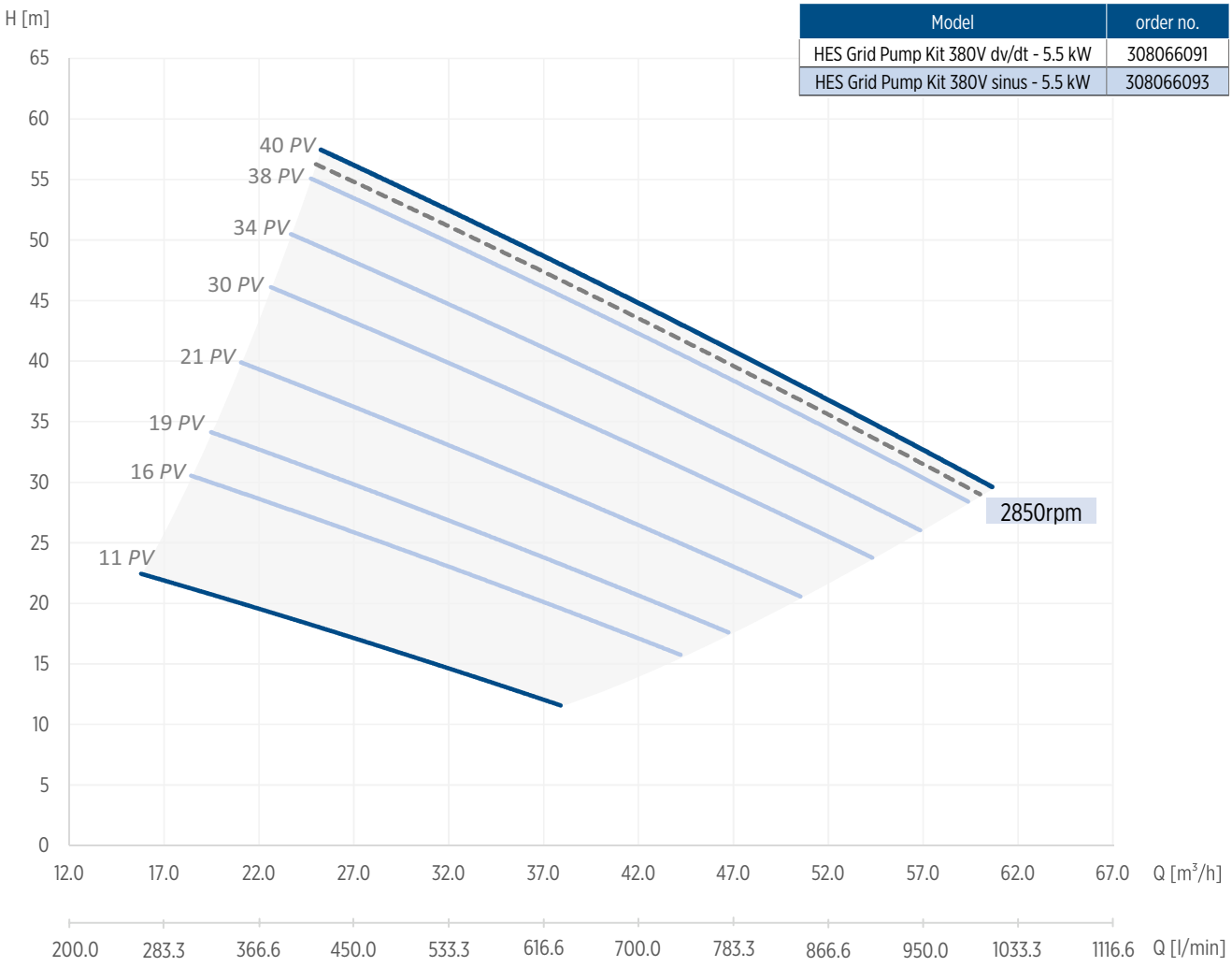
# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 46/05 - 5.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | PV-Panel Select | | | | | | | rpm [min⁻¹] |
|---|---|---|---|---|---|---|---|---|
| | 16 | 19 | 21 | 30 | 34 | 38 | 40 | 2850 |
| | Flow - cubic meter / hour [m³/h] | | | | | | | |
| 15 | 45.3 | 50.6 | | | | | | |
| 20 | 37.1 | 42.9 | 51.2 | 59.1 | | | | |
| 25 | 28.5 | 35.0 | 44.1 | 52.6 | 58.0 | 63.3 | | 64.6 |
| 30 | 19.4 | 26.6 | 36.6 | 45.8 | 51.7 | 57.3 | 61.3 | 58.7 |
| 35 | | 17.9 | 28.9 | 38.9 | 45.2 | 51.2 | 54.6 | 52.6 |
| 40 | | | 20.9 | 31.7 | 38.5 | 44.9 | 48.0 | 46.4 |
| 45 | | | | 24.3 | 31.5 | 38.4 | 42.0 | 40.0 |
| 50 | | | | | 24.4 | 31.7 | 36.0 | 33.5 |
| 55 | | | | | | 24.8 | 30.0 | 26.7 |

| Model | order no. |
|---|---|
| HES Grid Pump Kit 380V dv/dt - 5.5 kW | 308066091 |
| HES Grid Pump Kit 380V sinus - 5.5 kW | 308066093 |



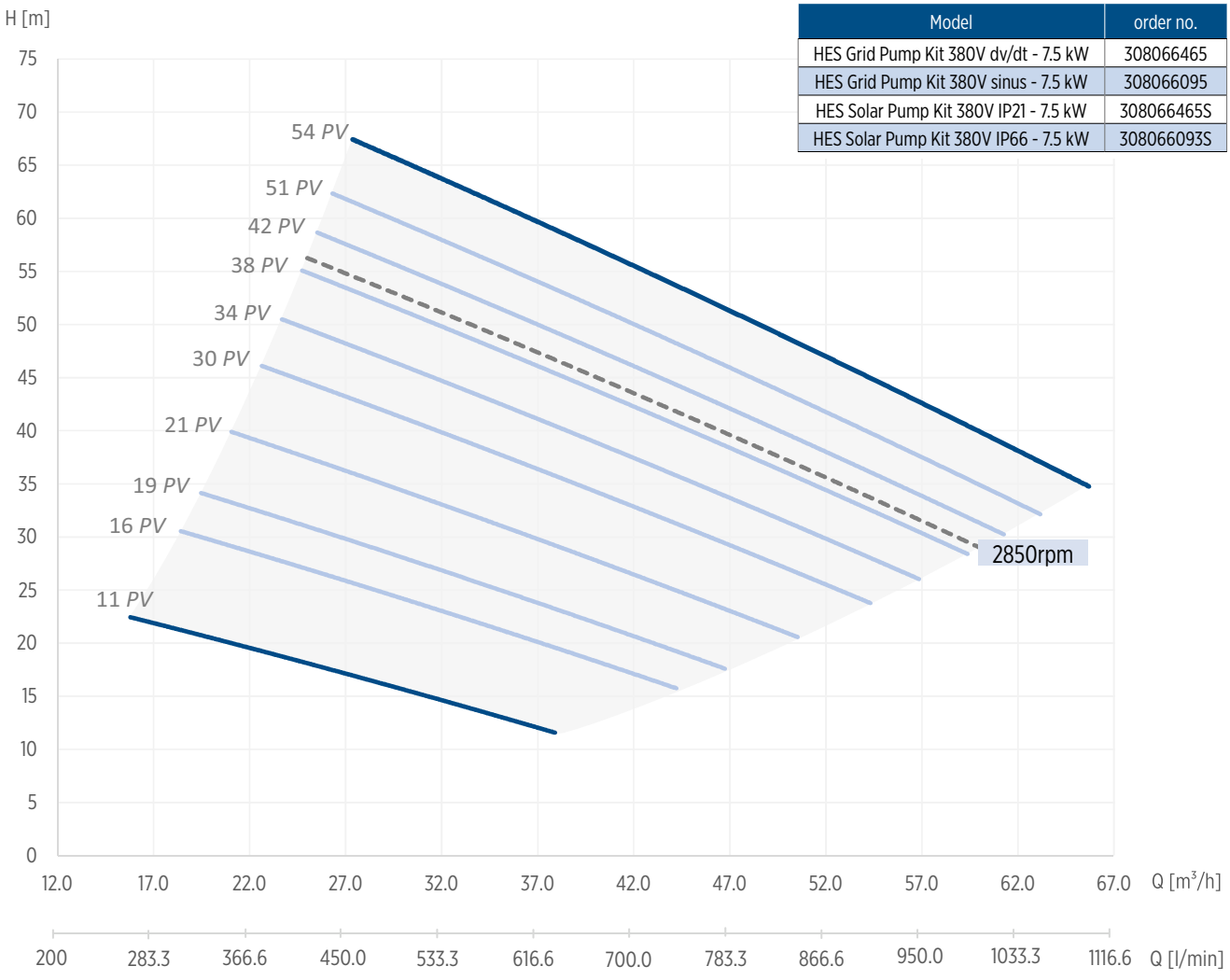
# 4" CT HIGH EFFICIENCY PUMPING KITS 4.0 – 7.5 KW

## VS 46/05 - 7.5 KW - 380 V - 3 PH

Standard Polycrystalline PV-Panel 270 Wmp (STC Condition 1000 W/m²)

| Head [m] | 16 | 19 | 21 | 30 | 34 | 38 | 42 | 51 | 54 | rpm [min⁻¹] 2850 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 45.3 | 50.6 | | | | | | | | |
| 20 | 37.1 | 42.9 | 51.2 | 59.1 | | | | | | |
| 25 | 28.5 | 35.0 | 44.1 | 52.6 | 58.0 | 63.3 | 67.2 | | | 64.6 |
| 30 | 19.4 | 26.6 | 36.6 | 45.8 | 51.7 | 57.3 | 61.4 | 65.4 | | 58.7 |
| 35 | | 17.9 | 28.9 | 38.9 | 45.2 | 51.2 | 55.5 | 59.8 | 66.5 | 52.6 |
| 40 | | | 20.9 | 31.7 | 38.5 | 44.9 | 49.5 | 54.0 | 60.4 | 46.4 |
| 45 | | | | 24.3 | 31.5 | 38.4 | 43.3 | 48.0 | 54.0 | 40.0 |
| 50 | | | | | 24.4 | 31.7 | 36.9 | 42.0 | 49.0 | 33.5 |
| 55 | | | | | | 24.8 | 30.4 | 35.7 | 43.0 | 26.7 |
| 60 | | | | | | | 23.7 | 29.3 | 37.0 | |
| 65 | | | | | | | | 22.8 | 31.0 | |

| Model | order no. |
|---|---|
| HES Grid Pump Kit 380V dv/dt - 7.5 kW | 308066465 |
| HES Grid Pump Kit 380V sinus - 7.5 kW | 308066095 |
| HES Solar Pump Kit 380V IP21 - 7.5 kW | 308066465S |
| HES Solar Pump Kit 380V IP66 - 7.5 kW | 308066093S |



# 6" CT HIGH EFFICIENCY SYSTEM

**Packaged Submersible Borehole System with energy savings up to 15 %***

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

- Up to 15 % improved motor efficiency (system up to 11 %) with excellent partial load behaviour (SKU reduction)*
- Due to the high motor efficiency, amps are significantly reduced, which might lead to smaller drop lead cross size and thus cost saving
- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
- Power factor corrected input (No power compensation needed)
- Significant lower motor heat rise (Increased lifetime)

### EASY INSTALLATION

- Easy system set-up due tailored pre-settings, user interface and own Franklin Electric software

### INCREASED LIFETIME

- Incorporated Soft start and protection features (no additonal investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

### CONNECTIVITY

- Communication ModBus (RS485 and Ethernet)

### FULLY SUPPORTED

- Fully supported by the Technical Support Professionals and Field Service Engineers

### PACKAGED DEAL




- 6" encapsulated synchronous submersible NEMA motor
- Variable frequency drive
- Matching output filter



* in comparsion to asynchronous technology

# 6" CT HIGH EFFICIENCY SYSTEM

**Packaged Submersible Borehole System with encapsulated Permanent Magnet motor**

## SPECIFICATION

- Motor range: 4.0 – 11.0 kW / 13.0 – 22.0 kW / 26.0 - 45.0 kW (100 Hz - 3000 rpm)
  4.6 – 12.7 kW / 15.0 – 25.0 kW / 30.0 - 51.7 kW (120 Hz - 3600 rpm)
- System Power Supply: 380 - 400 / 460 V ± 10 %
- System Supply Frequency: 50/60 Hz ± 6 %
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Protection: motor: IP68, insulation class F
  drive: IP66/54/21
  filter: IP54/00

## OPTIONS

- Plug-in card 6x DI/DO - 308 170 201
- Plug-in card PT100 - 308 170 202
- Plug-in card Profibus - 308 170 203
- Plug-in card 1x AI & 2x AO 308 170 206

## APPLICATIONS







Find the right High Efficieny System with the **Franklin Electric Online Selection Tool** including payback calculator ➡️https://fehighefficiency.franklinwater.eu/

# 6" CT HIGH EFFICIENCY SYSTEM

## 6" HES KITS

### 6" HES KITS (6" PM 304SS motor 380 V - VFD - DV/DT filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Part no. | Drive Model | Part no. | IP | $m^3/h$ | Stages | Pump | Part No. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 6HES 380 4.0-7.5 kW IP21 | 308 080 016 | 100 16A | 314 000 108 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005 101 | 00 |
| 6HES 380 4.0-7.5 kW IP66 | 308 080 216 | 100X 16A | 314 000 109 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005 110 | 54 |
| 6HES 380 9.3-11 kW IP21 | 308 080 023 | 100 23A | 314 000 101 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005 101 | 00 |
| 6HES 380 9.3-11 kW IP66 | 308 080 223 | 100X 23A | 314 000 105 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005 110 | 54 |
| 6HES 380 13-15 kW IP21 | 308 084 031 | 100 31A | 314 000 199 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 102 | 00 |
| 6HES 380 13-15 kW IP66 | 308 084 231 | 100X 31A | 314 000 200 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 111 | 54 |
| 6HES 380 18.5 kW IP21 | 308 084 038 | 100 38A | 314 000 102 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 102 | 00 |
| 6HES 380 18.5 kW IP66 | 308 084 238 | 100X 38A | 314 000 106 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 111 | 54 |
| 6HES 380 22 kW IP21 | 308 084 046 | 100 46A | 314 000 131 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 103 | 00 |
| 6HES 380 22 kW IP66 | 308 084 246 | 100X 46A | 314 000 159 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005 112 | 54 |
| 6HES 380 26-30 kW IP21 | 308 086 061 | 100 61A | 314 000 103 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 103 | 00 |
| 6HES 380 26-30 kW IP66 | 308 086 261 | 100X 61A | 314 000 107 | 66 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 112 | 54 |
| 6HES 380 37 kW IP21 | 308 086 087 | 100 87A | 314 000 104 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 104 | 00 |
| 6HES 380 37 kW IP54 | 308 086 287 | 100 87A IP54 | 314 000 120 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 118 | 54 |
| 6HES 380 45 kW IP21 | 308 086 010 | 100 105A | 314 000 132 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 137 | 00 |
| 6HES 380 45 kW IP54 | 308 086 210 | 100 105A IP54 | 314 000 201 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005 124 | 54 |

### 6" HES KITS (6" PM 304SS motor 380 V - VFD - SINUS filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Part no. | Drive Model | Part no. | IP | $m^3/h$ | Stages | Pump | Part No. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 6HES 380 4.0-7.5 kW Sin IP21 | 308 080 116 | 100 16A | 314 000 108 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 105 | 00 |
| 6HES 380 4.0-7.5 kW Sin IP66 | 308 080 316 | 100X 16A | 314 000 109 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 117 | 54 |
| 6HES 380 9.3-11 kW Sin IP21 | 308 080 123 | 100 23A | 314 000 101 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 106 | 00 |
| 6HES 380 9.3-11 kW Sin IP66 | 308 080 323 | 100X 23A | 314 000 105 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 113 | 54 |
| 6HES 380 13-15 kW Sin IP21 | 308 084 131 | 100 31A | 314 000 199 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 106 | 00 |
| 6HES 380 13-15 kW Sin IP66 | 308 084 331 | 100X 31A | 314 000 200 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 115 | 54 |
| 6HES 380 18.5 kW Sin IP21 | 308 084 138 | 100 38A | 314 000 102 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 107 | 00 |
| 6HES 380 18.5 kW Sin IP66 | 308 084 338 | 100X 38A | 314 000 106 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 115 | 54 |
| 6HES 380 22 kW Sin IP21 | 308 084 146 | 100 46A | 314 000 131 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 107 | 00 |
| 6HES 380 22 kW Sin IP66 | 308 084 346 | 100X 46A | 314 000 159 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 116 | 54 |
| 6HES 380 26-30 kW Sin IP21 | 308 086 161 | 100 61A | 314 000 103 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 108 | 00 |
| 6HES 380 26-30 kW Sin IP66 | 308 086 361 | 100X 61A | 314 000 107 | 66 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 116 | 54 |
| 6HES 380 37 kW Sin IP21 | 308 086 187 | 100 87A | 314 000 104 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 109 | 00 |
| 6HES 380 37 kW Sin IP54 | 308 086 387 | 100 87A IP54 | 314 000 120 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 138 | 54 |
| 6HES 380 45 kW Sin IP21 | 308 086 110 | 100 105A | 314 000 132 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 109 | 00 |
| 6HES 380 45 kW Sin IP54 | 308 086 310 | 100 105A IP54 | 314 000 201 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 138 | 54 |

* Non-stock items; kits with 316SS Motors 308 08x xxx "B"
kits with motor brackets Cast Iron Powder coated 308 08x xxx "D"; for lead lengths > 120 m please consult Franklin Electric.

# 6" CT HIGH EFFICIENCY SYSTEM

## 3~ MOTOR PERFORMANCE DATA 380 V / 100 HZ

| System model number | $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | n [$min^{-1}$] | $I_N$ [A] | $I_A / I_N$ | η [%] | cos phi | $T_N$ [Nm] | $T_A / T_N$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 308 080 X16 | 4 | 15500 | 380 | 3000 | 9.2 | 1 | 87.1 | 0.95 | 12.7 | 1 |
| | 5.5 | | | | 11 | 1 | 89.8 | 0.95 | 17.5 | 1 |
| | 7.5 | | | | 14.1 | 1 | 90.9 | 0.95 | 23.9 | 1 |
| 308 080 X23 | 9.3 | 15500 | 380 | 3000 | 17.2 | 1 | 91.2 | 0.95 | 29.6 | 1 |
| | 11 | | | | 20.5 | 1 | 90.9 | 0.95 | 35.0 | 1 |
| 308 084 X31 | 13 | 15500 | 380 | 3000 | 25.3 | 1 | 91.4 | 0.95 | 41.4 | 1 |
| | 15 | | | | 28.3 | 1 | 91.8 | 0.95 | 47.7 | 1 |
| 308 084 X38 | 18.5 | 15500 | 380 | 3000 | 34.1 | 1 | 92.1 | 0.95 | 58.9 | 1 |
| 308 084 X46 | 22 | 15500 | 380 | 3000 | 40.7 | 1 | 92.0 | 0.95 | 70.0 | 1 |
| 308 086 X61 | 26 | 27500 | 380 | 3000 | 51.2 | 1 | 92.3 | 0.95 | 82.8 | 1 |
| | 30 | | | | 57.8 | 1 | 92.5 | 0.95 | 95.5 | 1 |
| 308 086 X87 | 37 | 27500 | 380 | 3000 | 71.3 | 1 | 92.1 | 0.95 | 117.8 | 1 |
| 308 086 X10 | 45 | 27500 | 380 | 3000 | 90 | 1 | 90.8 | 0.95 | 143.2 | 1 |

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| Process reference | Control reference | Flow meter | Pressure sensor | Level sensor | PT100 sensor & Drive slot card | Flow switch (digital) |
|---|---|---|---|---|---|---|
| Q - Flow | No (Optional) | mandatory | | | optional | |
| | P | mandatory | mandatory | | | |
| | H | mandatory | | mandatory | | |
| P - pressure | No (Optional) | Yes* | mandatory | | optional | |
| | Q | mandatory | mandatory | | | |
| | H | | mandatory | mandatory | | |
| H - level | No (Optional) | Yes* | | mandatory | optional | |
| | Q | mandatory | | mandatory | | |
| | P | | mandatory | mandatory | | |
| Direct Mode | No | Yes** | No | No | optional | No |
| | | | | | | |
| Manual Mode | No | | | | Yes* | |

*please consult Franklin Electric, **must be verified according to PLC requirement

# 6" CT HIGH EFFICIENCY SOLAR SYSTEM

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
  Less panels, more water respectively
- MPPT algorithm maximizes system performance
- Solar drive available in IP21/54 and IP66 enclosure rating
- AC and DC power source compatible

### CONNECTIVITY

- Communication ModBus (RS485 and Ethernet)

### PACKAGED DEAL




- 6" encapsulated 304SS synchronous submersible NEMA motor
- Variable frequency drive
- Matching output filter
- Flow switch

### FULLY SUPPORTED



- Fully technical support
  Professionals and Field Service Engineers

## SPECIFICATION

- Motor range: 4.0 – 11.0 kW / 13.0 – 22.0 kW / 26.0 – 45.0 kW (100 Hz - 3000 rpm)
  4.6 – 12.7 kW / 15.0 – 25.0 kW / 30.0 - 51.7 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 - 800 V DC / 380 - 400 V AC
- AC System Supply Frequency: 50/60 Hz ± 6 %
- Motors installation orientation: Vertical / horizontal (shaft end heightened)

# 6" CT HIGH EFFICIENCY SOLAR SYSTEM

## 6" HES SOLAR KITS

### 6" HES SOLAR KITS (6" PM 304SS motor 380 V - VFD - DV/DT filter - flow switch)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Part no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 6HES 380 4.0-7.5 kW IP21 | 308 080 016S | 100 16A | 314000108 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005 101 | 00 |
| 6HES 380 4.0-7.5 kW IP66 | 308 080 216S | 100X 16A | 314000109 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005110 | 54 |
| 6HES 380 9.3-11 kW IP21 | 308 080 023S | 100 23A | 314000101 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005101 | 00 |
| 6HES 380 9.3-11 kW IP66 | 308 080 223S | 100X 23A | 314000105 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | dv/dt | 314 005110 | 54 |
| 6HES 380 13-15 kW IP21 | 308 084 031S | 100 31A | 314000199 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005102 | 00 |
| 6HES 380 13-15 kW IP66 | 308 084 231S | 100X 31A | 314000200 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005111 | 54 |
| 6HES 380 18.5 kW IP21 | 308 084 038S | 100 38A | 314000102 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005102 | 00 |
| 6HES 380 18.5 kW IP66 | 308 084 238S | 100X 38A | 314000106 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005111 | 54 |
| 6HES 380 22 kW IP21 | 308 084 046S | 100 46A | 314000131 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005103 | 00 |
| 6HES 380 22 kW IP66 | 308 084 246S | 100X 46A | 314000159 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | dv/dt | 314 005112 | 54 |
| 6HES 380 26-30 kW IP21 | 308 086 061S | 100 61A | 314000103 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005103 | 00 |
| 6HES 380 26-30 kW IP66 | 308 086 261S | 100X 61A | 314000107 | 66 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005112 | 54 |
| 6HES 380 37 kW IP21 | 308 086 087S | 100 87A | 314000104 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005104 | 00 |
| 6HES 380 37 kW IP54 | 308 086 287S | 100 87A IP54 | 314000120 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005118 | 54 |
| 6HES 380 45 kW IP21 | 308 086 010S | 100 105A | 314000132 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005137 | 00 |
| 6HES 380 45 kW IP54 | 308 086 210S | 100 105A IP54 | 314000201 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | dv/dt | 314 005124 | 54 |

### 6" HES SOLAR KITS (6" PM 304SS motor 380 V - VFD - SINUS filter - flow switch)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Part no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 6HES 380 4.0-7.5 kW Sin IP21 | 308 080 116S | 100 16A | 314 000 108 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 105 | 00 |
| 6HES 380 4.0-7.5 kW Sin IP66 | 308 080 316S | 100X 16A | 314 000 109 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 117 | 54 |
| 6HES 380 9.3-11 kW Sin IP21 | 308 080 123S | 100 23A | 314 000 101 | 21 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 106 | 00 |
| 6HES 380 9.3-11 kW Sin IP66 | 308 080 323S | 100X 23A | 314 000 105 | 66 | - | - | - | - | 11 | 380 | 236 080 1461 | Sinus | 314 005 113 | 54 |
| 6HES 380 13-15 kW Sin IP21 | 308 084 131S | 100 31A | 314 000 199 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 106 | 00 |
| 6HES 380 13-15 kW Sin IP66 | 308 084 331S | 100X 31A | 314 000 200 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 115 | 54 |
| 6HES 380 18.5 kW Sin IP21 | 308 084 138S | 100 38A | 314 000 102 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 107 | 00 |
| 6HES 380 18.5 kW Sin IP66 | 308 084 338S | 100X 38A | 314 000 106 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 115 | 54 |
| 6HES 380 22 kW Sin IP21 | 308 084 146S | 100 46A | 314 000 131 | 21 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 107 | 00 |
| 6HES 380 22 kW Sin IP66 | 308 084 346S | 100X 46A | 314 000 159 | 66 | - | - | - | - | 22 | 380 | 236 084 1461 | Sinus | 314 005 116 | 54 |
| 6HES 380 26-30 kW Sin IP21 | 308 086 161S | 100 61A | 314 000 103 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 108 | 00 |
| 6HES 380 26-30 kW Sin IP66 | 308 086 361S | 100X 61A | 314 000 107 | 66 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 116 | 54 |
| 6HES 380 37 kW Sin IP21 | 308 086 187S | 100 87A | 314 000 104 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 109 | 00 |
| 6HES 380 37 kW Sin IP54 | 308 086 387S | 100 87A IP54 | 314 000 120 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 138 | 54 |
| 6HES 380 45 kW Sin IP21 | 308 086 110S | 100 105A | 314 000 132 | 21 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 109 | 00 |
| 6HES 380 45 kW Sin IP54 | 308 086 310S | 100 105A IP54 | 314 000 201 | 54 | - | - | - | - | 45 | 380 | 236 086 1461 | Sinus | 314 005 138 | 54 |

* Non-stock items; kits with 316SS Motors 308 08x xxx "B"; kits with WW motor - brackets Cast Iron Powder coated 308 08x xxx "D"; for lead lengths > 120 m please consult Franklin Electric.

# 6" CT HIGH EFFICIENCY SOLAR SYSTEM

## 3~ MOTOR PERFORMANCE DATA 380 V / 100 HZ

| system model no. | $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | n [$min^{-1}$] | $I_N$ [A] | $I_A / I_N$ | η [%] | cos phi | $T_N$ [Nm] | $T_A / T_N$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 308 080 X16S | 4 | 15500 | 380 | 3000 | 9.2 | 1 | 87.1 | 0.95 | 12.7 | 1 |
| | 5.5 | | | | 11 | 1 | 89.8 | 0.95 | 17.5 | 1 |
| | 7.5 | | | | 14.1 | 1 | 90.9 | 0.95 | 23.9 | 1 |
| 308 080 X23S | 9.3 | 15500 | 380 | 3000 | 17.2 | 1 | 91.2 | 0.95 | 29.6 | 1 |
| | 11 | | | | 20.5 | 1 | 90.9 | 0.95 | 35.0 | 1 |
| 308 084 X31S | 13 | 15500 | 380 | 3000 | 25.3 | 1 | 91.4 | 0.95 | 41.4 | 1 |
| | 15 | | | | 28.3 | 1 | 91.8 | 0.95 | 47.7 | 1 |
| 308 084 X38S | 18.5 | 15500 | 380 | 3000 | 34.1 | 1 | 92.1 | 0.95 | 58.9 | 1 |
| 308 084 X46S | 22 | 15500 | 380 | 3000 | 40.7 | 1 | 92.0 | 0.95 | 70.0 | 1 |
| 308 086 X61S | 26 | 27500 | 380 | 3000 | 51.2 | 1 | 92.3 | 0.95 | 82.8 | 1 |
| | 30 | | | | 57.8 | 1 | 92.5 | 0.95 | 95.5 | 1 |
| 308 086 X87S | 37 | 27500 | 380 | 3000 | 71.3 | 1 | 92.1 | 0.95 | 117.8 | 1 |
| 308 086 X10S | 45 | | | | 90 | 1 | 90.8 | 0.95 | 143.2 | 1 |

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| Process reference | Control reference | Flow meter | Pressure sensor | Level sensor | PT100 sensor & Drive slot card | Flow switch (digital) |
|---|---|---|---|---|---|---|
| Solar | No | | | | optional | mandatory |

# 8" REW HIGH EFFICIENCY SYSTEM

**Packaged Submersible Borehole System with energy savings up to 8 %***

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

HIGH EFFICIENCY

- Up to 8 % improved motor efficiency* with excellent partial load behaviour (SKU reduction)*
- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
- Power factor corrected input (No power compensation needed)
- Significant lower motor heat rise (Increased lifetime)
- Easy system set-up due tailored pre-settings, user interface and own Franklin Electric software
- Communication ModBus (RS485 and Ethernet, optional Profibus)

### INCREASED LIFETIME

- Incorporated Soft start and protection features (no additonal investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

### FULLY SUPPORTED

- Easy system commissioning due to integrated start-up wizard with tailored pre settings.
- Fully supported by the Technical Support Professionals and Field Service Engineers

### PACKAGED DEAL




- 8" rewindable synchronous submersible NEMA motor
- Variable frequency drive
- Matching output filter

### APPLICATIONS















* in comparsion to asynchronous technology

# 8" REW HIGH EFFICIENCY SYSTEM

## SPECIFICATION

- Motor range: 75 / 100 / 130 kW (100 Hz - 3000 rpm)
  86.3 / 115 / 150 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 -460 V ± 10 %
- System Power Supply Frequency: 50/60 Hz ±6 %
- Nominal ambient temperature: motor: 30 °C, electronics: 50 °C (> 40 °C with derating)
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Protection: motor: IP68, insulation class Y
  drive: IP21/54
  filter: IP21/54

## OPTIONS

- Special Voltages
- Higher-graded material: 316SS, 904L
- Retrofitable PT 100 temperature sensor
  VFD PT100 Plug-in card necessary (order no. 308 170 202)
- Sinus output filters in IP54 and IP00
- Plug-in card 6x DI/DO (order no. 308 170 201)
- Plug-in card 1x AI & 2x AO (order no. 308 170 206)
- Plug-in card Profibus (order no. 308 170 203)

## 8" HES KITS

### 8" HES KITS (8" PM WW motor 400 V - VFD - DV/DT filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order No. | Drive Model | Part No. | IP | m³/h | Stages | Pump | Part No. | [kW] | [V] | Part No. | Filter type | Part No. | IP |
| 8HES 400 75 kW IP21 | 308014001 | 100 140A | 314000116 | 21 | - | - | - | - | 75 | 400 | 2630145311 | dv/dt | 314 005 130 | 00 |
| 8HES 400 75 kW IP54 | 308014201 | 100 140A IP54 | 314000113 | 54 | - | - | - | - | 75 | 400 | 2630145311 | dv/dt | 314 005 124 | 54 |
| 8HES 400 100 kW IP21 | 308016001 | 100 205A | 314000117 | 21 | - | - | - | - | 100 | 400 | 2630165311 | dv/dt | 314 005 119 | 00 |
| 8HES 400 100 kW IP54 | 308016201 | 100 205A IP54 | 314000114 | 54 | - | - | - | - | 100 | 400 | 2630165311 | dv/dt | 314 005 125 | 54 |
| 8HES 400 130 kW IP21 | 308018001 | 100 261A | 314000207 | 21 | - | - | - | - | 130 | 400 | 2630185311 | dv/dt | 314 005 120 | 00 |
| 8HES 400 130 kW IP54 | 308018201 | 100 261A IP54 | 314000208 | 54 | - | - | - | - | 130 | 400 | 2630185311 | dv/dt | 314 005 126 | 54 |

### 8" HES KITS (8" PM WW motor 400 V - VFD - SINUS filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order No. | Drive Model | Part No. | IP | m³/h | Stages | Pump | Part No. | [kW] | [V] | Part No. | Filter type | Part No. | IP |
| 8HES 400 75 kW Sin IP21 | 308014101 | 100 140A | 314000116 | 21 | - | - | - | - | 75 | 400 | 2630145311 | Sinus | 314 005 121 | 00 |
| 8HES 400 75 kW Sin IP54 | 308014301 | 100 140A IP54 | 314000113 | 54 | - | - | - | - | 75 | 400 | 2630145311 | Sinus | 314 005 127 | 54 |
| 8HES 400 100 kW Sin IP21 | 308016101 | 100 205A | 314000117 | 21 | - | - | - | - | 100 | 400 | 2630165311 | Sinus | 314 005 122 | 00 |
| 8HES 400 100 kW Sin IP54 | 308016301 | 100 205A IP54 | 314000114 | 54 | - | - | - | - | 100 | 400 | 2630165311 | Sinus | 314 005 128 | 54 |
| 8HES 400 130 kW Sin IP21 | 308018101 | 100 261A | 314000207 | 21 | - | - | - | - | 130 | 400 | 2630185311 | Sinus | 314 005 171 | 00 |
| 8HES 400 130 kW Sin IP54 | 308017301 | 100 261A IP54 | 314000208 | 54 | - | - | - | - | 130 | 400 | 2630185311 | Sinus | 314 005 170 | 54 |

* Kits with WW motor - brackets Cast Iron Powder coated

# 8" REW HIGH EFFICIENCY SYSTEM

## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| HES model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 308 014 X01 | 45 | 45 | 3000 | 74 | 1 | 93.3 | 0.96 | 143 | 1 |
| | 55 | 45 | 3000 | 91 | 1 | 93.3 | 0.96 | 175 | 1 |
| | 67 | 45 | 3000 | 112 | 1 | 93.0 | 0.96 | 213 | 1 |
| | 75 | 45 | 3000 | 128 | 1 | 92.5 | 0.96 | 239 | 1 |
| 308 016 X01 | 75 | 45 | 3000 | 129 | 1 | 93.5 | 0.95 | 239 | 1 |
| | 83 | 45 | 3000 | 143 | 1 | 93.3 | 0.95 | 264 | 1 |
| | 93 | 45 | 3000 | 162 | 1 | 93.0 | 0.95 | 296 | 1 |
| | 100 | 45 | 3000 | 178 | 1 | 92.7 | 0.95 | 319 | 1 |
| 308 018 X01 | 75 | 45 | 3000 | 125 | 1 | 93.8 | 0.97 | 239 | 1 |
| | 93 | 45 | 3000 | 153 | 1 | 93.7 | 0.97 | 296 | 1 |
| | 110 | 45 | 3000 | 186 | 1 | 93.3 | 0.97 | 350 | 1 |
| | 130 | 45 | 3000 | 225 | 1 | 92.6 | 0.96 | 414 | 1 |

## MOTOR PERFORMANCE DATA 500 V / 100 HZ

| HES model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 308 024 X01 | 45 | 45 | 3000 | 60 | 1 | 93.2 | 0.95 | 143 | 1 |
| | 55 | 45 | 3000 | 74 | 1 | 93.2 | 0.95 | 175 | 1 |
| | 67 | 45 | 3000 | 91 | 1 | 93.0 | 0.95 | 213 | 1 |
| | 75 | 45 | 3000 | 103 | 1 | 92.5 | 0.95 | 239 | 1 |
| 308 026 X01 | 75 | 45 | 3000 | 105 | 1 | 93.5 | 0.94 | 239 | 1 |
| | 83 | 45 | 3000 | 116 | 1 | 93.3 | 0.94 | 264 | 1 |
| | 93 | 45 | 3000 | 131 | 1 | 93.2 | 0.94 | 296 | 1 |
| | 100 | 45 | 3000 | 143 | 1 | 92.9 | 0.94 | 319 | 1 |
| 308 028 X01 | 75 | 45 | 3000 | 102 | 1 | 93.8 | 0.96 | 239 | 1 |
| | 93 | 45 | 3000 | 124 | 1 | 93.7 | 0.96 | 296 | 1 |
| | 110 | 45 | 3000 | 151 | 1 | 93.3 | 0.96 | 350 | 1 |
| | 130 | 45 | 3000 | 183 | 1 | 92.6 | 0.96 | 414 | 1 |

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.




Find the right High Efficieny System with the **Franklin Electric Online Selection Tool** including payback calculator ➡ https://fehighefficiency.franklinwater.eu/

# 8" REW HIGH EFFICIENCY SYSTEM

## MOTOR PERFORMANCE DATA 480 V / 120 HZ

| HES model no. | $P_N$ [kW/HP] | $P_{MAX}$ [kW/HP] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_{MAX}$ [A] | $I_A/I_{MAX}$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 308 014 X01 | 45 / 60 | 52 / 70 | 45 | 3600 | 74 | 1 | 93.3 | 0.96 | 137 | 1 |
| | 55 / 74 | 63 / 84 | 45 | 3600 | 91 | 1 | 93.3 | 0.96 | 167 | 1 |
| | 67 / 90 | 77 / 103 | 45 | 3600 | 112 | 1 | 93.0 | 0.96 | 204 | 1 |
| | 75 / 100 | 86 / 115 | 45 | 3600 | 128 | 1 | 92.5 | 0.96 | 229 | 1 |
| 308 016 X01 | 75 / 100 | 86 / 115 | 45 | 3600 | 129 | 1 | 93.5 | 0.95 | 229 | 1 |
| | 83 / 111 | 95 / 127 | 45 | 3600 | 143 | 1 | 93.3 | 0.95 | 252 | 1 |
| | 93 / 125 | 107 / 143 | 45 | 3600 | 162 | 1 | 93.0 | 0.95 | 284 | 1 |
| | 100 / 134 | 115 / 154 | 45 | 3600 | 178 | 1 | 92.7 | 0.95 | 305 | 1 |
| 308 018 X01 | 75 / 100 | 86 / 116 | 45 | 3000 | 125 | 1 | 93.8 | 0.97 | 239 | 1 |
| | 93 / 125 | 107 / 143 | 45 | 3000 | 153 | 1 | 93.7 | 0.97 | 296 | 1 |
| | 110 / 134 | 127 / 170 | 45 | 3000 | 186 | 1 | 93.3 | 0.97 | 350 | 1 |
| | 130 / 174 | 150 / 200 | 45 | 3000 | 225 | 1 | 92.6 | 0.96 | 414 | 1 |

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.

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| process reference | control reference | flow meter | pressure sensor | level sensor | PT100 sensor & drive slot card |
|---|---|---|---|---|---|
| Q - Flow | No (Optional) | mandatory | | | |
| | P | mandatory | mandatory | | |
| | H | mandatory | | mandatory | |
| P - pressure | No (Optional) | Yes* | mandatory | | |
| | Q | mandatory | mandatory | | |
| | H | | mandatory | mandatory | |
| H - level | No (Optional) | Yes* | | mandatory | mandatory* |
| | Q | mandatory | | mandatory | |
| | P | | mandatory | mandatory | |
| Direct mode | No | Yes** | No | No | mandatory* |
| Manual mode | No | | | | Yes* |

* please consult Franklin Electric
** needs to be evaluated to PLC

# 8" REW HIGH EFFICIENCY SOLAR SYSTEM

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY IN SOLAR APPLICTIONS




- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
  Less panels, more water respectively
- Solar drive available in IP00/21 enclosure rating
- AC and DC power source compatible
- MPPT algorithm maximizes system performance

### CONNECTIVITY

- Communication ModBus (RS485 and Ethernet)

### PACKAGED DEAL




- 8" rewindable synchronous submersible NEMA motor
- Variable frequency drive
- Matching output filter
- Flow switch

### FULLY SUPPORTED



- Fully supported by the Technical Support Professionals and Field Service Engineers

## SPECIFICATION

- Motor range: 37 - 130 kW (100 Hz - 3000 rpm)
- System Power Supply: 400 - 800 V DC
- AC System Supply Frequency: 50 - 60 Hz ± 6%
- Nominal ambient temperature: motor: 30 °C, electronics: 50 °C (> 40 °C with derating)
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Protection: motor: IP68, insulation class Y
  drive: IP00/21
  filter: IP00

# 8" REW HIGH EFFICIENCY SOLAR SYSTEM

## 8" HES SOLAR KITS

### 8" HES SOLAR KITS (8" PM WW motor 400 V - VFD - DV/DT filter - flow switch)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | | Flow Switch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order No. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP | Part no. | Model |
| 8HES Solar 400 75 kW IP21 | 308 014 002S | 100 140A | 314 000 116 | 21 | - | - | - | - | 75 | 400 | 263 014 5311 | dv/dt | 314 005 130 | 00 | 226 019 101 | F21 |
| 8HES Solar 400 100 kW IP21 | 308 016 002S | 100 205A | 314 000 117 | 21 | - | - | - | - | 100 | 400 | 263 016 5311 | dv/dt | 314 005 119 | 00 | 226 019 101 | F21 |
| 8HES Solar 400 130 kW IP21 | 308 018 002S | 100 261A | 314 000 207 | 21 | - | - | - | - | 130 | 400 | 263 018 5311 | dv/dt | 314 005 120 | 00 | 226 019 101 | F21 |

### 8" HES SOLAR KITS (8" PM WW motor 400 V - VFD - SINUS filter - flow switch)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | | Flow Switch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order No. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP | Part no. | Model |
| 8HES Solar 400 75 kW Sin IP21 | 308 014 102S | 100 140A | 314000116 | 21 | - | - | - | - | 75 | 400 | 263 014 5311 | Sinus | 314 005 121 | 00 | 226 019 101 | F21 |
| 8HES Solar 400 100 kW Sin IP21 | 308 016 102S | 100 205A | 314000117 | 21 | - | - | - | - | 100 | 400 | 263 016 5311 | Sinus | 314 005 122 | 00 | 226 019 101 | F21 |
| 8HES Solar 400 130 kW Sin IP21 | 308 018 102S | 100 261A | 314000207 | 21 | - | - | - | - | 130 | 400 | 263 018 5311 | Sinus | 314 005 171 | 00 | 226 019 101 | F21 |

* Kits with WW motor - brackets Cast Iron Powder coated
Non-stock items, more ratings and IP54 kits on demand
For lead lengths > 120 m please consult Franklin Electric

## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| HES model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 308 014 X01 S | 75 | 45 | 3000 | 128 | 1 | 92.5 | 0.96 | 239 | 1 |
| 308 016 X01 S | 100 | 45 | 3000 | 178 | 1 | 92.7 | 0.95 | 319 | 1 |
| **308 018 X01 S** | **130** | **45** | **3000** | **225** | **1** | **92.6** | **0.96** | **414** | **1** |

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.

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| process reference | control reference | flow meter | pressure sensor | level sensor | PT100 sensor & slot card | Flow switch (dgital) |
|---|---|---|---|---|---|---|
| Solar | - | - | - | - | Yes* | mandatory |

* please consult Franklin Electric

# 10" REW HIGH EFFICIENCY SYSTEM

**Packaged Submersible Borehole System with energy savings up to 7 %***

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

HIGH EFFICIENCY

- Up to 7 % improved motor efficiency* with excellent partial load behaviour (SKU reduction)*
- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
- Power factor corrected input (No power compensation needed)
- Significant lower motor heat rise (Increased lifetime)
- Easy system set-up due tailored pre-settings, user interface and own Franklin Electric software
- Communication ModBus (RS485 and Ethernet)

### INCREASED LIFETIME

- Incorporated Soft start and protection features (no additonal investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

### FULLY SUPPORTED

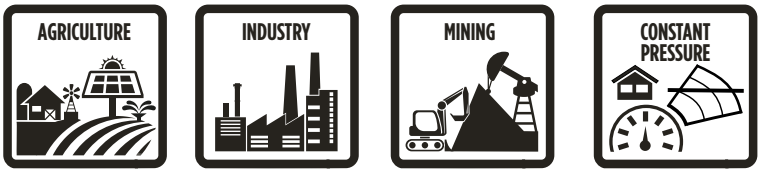
- Easy system commissioning due to integrated start-up wizard with tailored pre settings.
- Fully supported by the Technical Support Professionals and Field Service Engineers

### PACKAGED DEAL




- 10" rewindable synchronous submersible motor
- Variable frequency drive
- Matching output filter

### APPLICATIONS






* in comparsion to asynchronous technology

# 10" REW HIGH EFFICIENCY SYSTEM

## SPECIFICATION

- Motor range:
  - 150 kW - 200 kW - 250 kW (100 Hz - 3000 rpm)
  - 173 kW - 230 kW - 290 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 V / 460 V ±10 % (50 Hz)
- System Supply Frequency: 50 Hz - 60 Hz ±2 %
- Nominal ambient temperature: motor: 30 °C, electronics: 50 °C (> 40 °C with derating)
- Motors installation orientation: Vertical / horizontal (shaft end heightened) - 250 kW motors may not be installed horizontally
- MPPT algorithm maximizes system performance
- Protection: motor: IP68, insulation class Y
  drive: IP00
  filter: IP00

## OPTIONS

- Special Voltages
- IP54 electronics
- Higher-graded material: 316SS, 904L
- Sinus output filters
- Retrofitable PT 100 temperature sensor
  VFD PT100 Plug-in card necessary (order no. 308 170 202)
- Plug-in card 6x DI/DO (order no. 308 170 201)
- Plug-in card PT100 (order no. 308 170 202)
- Plug-in card 1x AI & 2x AO (order no. 308 170 206)
- Plug-in card Profibus (order no. 308 170 203)

## 10" HES KITS

### 10" HES KITS (10" PM WW Motor 400 V - FU - DU/dt Filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 10HES 400 150 kW IP00 | 308 025 001 | Drive 100 310A | 314 000 118 | 00 | | | | | 150 | 380 | 264 025 5311 | DU/dt | 314 005 120 | 00 |
| 10HES 400 190 kW IP00 | 308 028 002 | Drive 100 385A | 314 000 203 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | DU/dt | 314 005 166 | 00 |
| 10HES 400 200 kW IP00 | 308 028 001 | Drive 100 460A | 314 000 202 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | DU/dt | 314 005 166 | 00 |
| 10HES 400 250 kW IP00 | 308 029 001 | Drive 100 520A | 314 000 204 | 00 | - | - | - | - | 250 | 380 | 264 029 5311 | DU/dt | 314 005 167 | 00 |

### 10" HES KITS (10" PM WW Motor 400 V - FU - SINUS Filter)*

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 10HES 400 150 kW Sin IP00 | 308 025 002 | Drive 100 310A | 314 000 118 | 00 | - | - | - | - | 150 | 380 | 264 025 5311 | Sinus | 314 005 123 | 00 |
| 10HES 400 190 kW Sin IP00 | 308 028 102 | Drive 100 385A | 314 000 203 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | Sinus | 314 005 168 | 00 |
| 10HES 400 200 kW Sin IP00 | 308 028 101 | Drive 100 460A | 314 000 202 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | Sinus | 314 005 168 | 00 |
| 10HES 400 250 kW Sin IP00 | 308 029 101 | Drive 100 520A | 314 000 204 | 00 | - | - | - | - | 250 | 380 | 264 029 5311 | Sinus | 314 005 169 | 00 |

* Kits with WW motor - brackets Cast Iron Powder coated

# 10" REW HIGH EFFICIENCY SYSTEM

## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| HES model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 308 025 *** | 110 | 60 | 3000 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 60 | 3000 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 60 | 3000 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 308 028 *** | 150 | 60 | 3000 | 284 | 1 | 94.3 | 0.95 | 478 | 1 |
| | 185 | 60 | 3000 | 354 | 1 | 94.1 | 0.96 | 589 | 1 |
| | 200 | 60 | 3000 | 389 | 1 | 93.8 | 0.96 | 637 | 1 |
| 308 029 *** | 200 | 60 | 3000 | 377 | 1 | 94.5 | 0.95 | 637 | 1 |
| | 220 | 60 | 3000 | 423 | 1 | 94.3 | 0.96 | 701 | 1 |
| | 250 | 60 | 3000 | 497 | 1 | 93.8 | 0.96 | 796 | 1 |

## MOTOR PERFORMANCE DATA 460 V / 120 HZ

| HES model no. | $P_N$ [kW] | $P_{max.}$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_{MAX}$ [A] | $I_A/I_{MAX}$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 308 025 *** | 110 | 127 | 60 | 3600 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 150 | 60 | 3600 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 173 | 60 | 3600 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 308 028 *** | 150 | 173 | 60 | 3600 | 284 | 1 | 94,3 | 0,95 | 478 | 1 |
| | 185 | 213 | 60 | 3600 | 354 | 1 | 94,1 | 0,96 | 589 | 1 |
| | 200 | 230 | 60 | 3600 | 389 | 1 | 93,6 | 0,96 | 637 | 1 |
| 308 029 *** | 200 | 230 | 60 | 3600 | 377 | 1 | 94,5 | 0,95 | 637 | 1 |
| | 220 | 253 | 60 | 3600 | 423 | 1 | 94,3 | 0,96 | 701 | 1 |
| | 250 | 287 | 60 | 3600 | 497 | 1 | 93,6 | 0,96 | 796 | 1 |

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.

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| process reference | control reference | flow meter | pressure sensor | level sensor | PT100 sensor &slot card |
|---|---|---|---|---|---|
| Q - Flow | No (Optional) | mandatory | | | Optional |
| | P | mandatory | mandatory | | |
| | H | mandatory | | mandatory | |
| P - pressure | No (Optional) | Yes* | mandatory | | mandatory* |
| | | mandatory | mandatory | | |
| H - level | No (Optional) | Yes* | | mandatory | mandatory* |
| | Q | mandatory | | mandatory | |
| Direct mode | No | Yes** | No | No | mandatory* |
| Manual mode | No | | | Yes* | |

* please consult Franklin Electric
** need to be evaluated to PLC

# 10" REW HIGH EFFICIENCY SOLAR SYSTEM

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY IN SOLAR APPLICATIONS

HIGH EFFICIENCY

- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
  Less panels, more water respectively
- Solar drive available in IP00 enclosure rating
- AC and DC power source compatible
- MPPT algorithm maximizes system performance

### PACKAGED DEAL




- 10" rewindable synchronous submersible motor
- Variable frequency drive
- Matching output filter
- Flow switch (Solar systems)

### FULLY SUPPORTED

- Fully supported by the Technical Support Professionals and Field Service Engineers

## SPECIFICATION

- Motor range: 150 - 250 kW (100 Hz - 3000 rpm), 230 - 290 kW (120 Hz - 3600 rpm)
- System Power Supply: 400 - 800 V (min. starting voltage 440 V)
- Frequency: 30 - fN
- Nominal ambient temperature: motor: 30 °C, electronics: 50 °C (> 40 °C with derating)
- Motors installation orientation: Vertical / horizontal (shaft end heightened) - 250kW motors may not be installed horizontally
- Protection: motor: IP68, insulation class Y
  drive: IP00
  filter: IP00

## 10" HES SOLAR KITS

**10" HES KITS (10" PM WW Motor 400 V - FU - DU/dt Filter)***

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 10HES 400 150 kW IP00 | 308 025 001S | Drive 100 310A | 314 000 118 | 00 | | | | | 150 | 380 | 264 025 5311 | DU/dt | 314 005 120 | 00 |
| 10HES 400 190 kW IP00 | 308 028 002S | Drive 100 385A | 314 000 203 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | DU/dt | 314 005 166 | 00 |
| 10HES 400 200 kW IP00 | 308 028 001S | Drive 100 460A | 314 000 202 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | DU/dt | 314 005 166 | 00 |
| 10HES 400 250 kW IP00 | 308 029 001S | Drive 100 520A | 314 000 204 | 00 | - | - | - | - | 250 | 380 | 264 029 5311 | DU/dt | 314 005 167 | 00 |

**10" HES KITS (10" PM WW Motor 400 V - FU - SINUS Filter)***

| High Efficiency System | | Controller | | | Pump (BSPP) | | | | Motor | | | Output Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HES Model | Order no. | Drive Model | Part no. | IP | m³/h | Stages | Pump | Part no. | [kW] | [V] | Part no. | Filter type | Part no. | IP |
| 10HES 400 150 kW Sin IP00 | 308 025 002S | Drive 100 310A | 314 000 118 | 00 | - | - | - | - | 150 | 380 | 264 025 5311 | Sinus | 314 005 123 | 00 |
| 10HES 400 190 kW Sin IP00 | 308 028 102S | Drive 100 385A | 314 000 203 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | Sinus | 314 005 168 | 00 |
| 10HES 400 200 kW Sin IP00 | 308 028 101S | Drive 100 460A | 314 000 202 | 00 | - | - | - | - | 200 | 380 | 264 028 5311 | Sinus | 314 005 168 | 00 |
| 10HES 400 250 kW Sin IP00 | 308 029 101S | Drive 100 520A | 314 000 204 | 00 | - | - | - | - | 250 | 380 | 264 029 5311 | Sinus | 314 005 169 | 00 |

* Kits with WW motor - brackets Cast Iron Powder coated

# 10" REW HIGH EFFICIENCY SOLAR SYSTEM

## SOLAR PUMP KITS 400 V

| $P_N$ [kW] | For panel mount | |
|---|---|---|
| | VFD IP00 & dV/dt IP00 filter | VFD IP00 & Sinus IP00 filter |
| 150 | 308 025 001S | 308 025 101S |
| 190 | 308 028 002S | 308 028 102S |
| 200 | 308 028 001S | 308 028 101S |
| 250 | 308 029 001S | 308 029 101S |

## CONTROL MODES AND NECESSARY SENSOR TECHNOLOGIES

| process reference | control reference | flow meter | pressure sensor | level sensor | PT100 sensor &slot card | Flow switch (digital) |
|---|---|---|---|---|---|---|
| Solar | | | | | Yes* | mandatory |

* please consult Franklin Electric

# 4" / 6" / 8" / 10"
# HES - SYSTEM COMPONENTS

# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## SPECIFICATION

- 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: 4kN motors standard, 6.5kN motors optional)
- Drinking water approvals



- 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 rpm)
- Voltage tolerance: ± 10 % $U_N$
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Protection IP68 / insulation class B
- DOL- start
- 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] | Thrust F [N] | $U_N$ [V] | f [Hz] | Digit 1 - 6 | Digit 7 - 10 | |
|---|---|---|---|---|---|---|
| | | | | | Standard 304SS | Standard 316SS |
| | | | | | Single pack with lead* | Single pack with lead* |
| 0.55 - 1.1 | 4000 | 220 | 100 | 234 071 | 6721L | 6821L |
| | | | 120 | 234 051 | | |
| 1.1 - 2.2 | 4000 | 220 | 100 | 234 072 | 6721L | 6821L |
| | | | 120 | 234 052 | | |
| 2.2 - 3.0 | 4000 | 220 | 100 | 234 073 | 6721L | 6821L |
| | | | 120 | 234 053 | | |
| 3.0 - 4.0 | 6500 | 220 | 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

# 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 | 0.97 | 2.4 | |
| | | 1.1 | | | | 3.8 | | 83.5 | 0.99 | 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 | 0.97 | 4.8 | |
| | | 2.2 | | | | 7.0 | | 87.0 | 0.99 | 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 | 0.97 | 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 | 0.96 | 11.8 | |
| | | 4.0 | | | | 13.0 | | 91.0 | 0.97 | 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 | 0,97 | 2,4 | |
| | | 1,1 | | | | 3,8 | | 83,5 | 0,99 | 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 | 0,95 | 4,8 | |
| | | 2,2 | | | | 7,1 | | 87,0 | 0,96 | 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 | 0,97 | 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 | 0,96 | 11,8 | |
| | | 4,0 | | | | 12,5 | | 91,0 | 0,97 | 12,7 | |

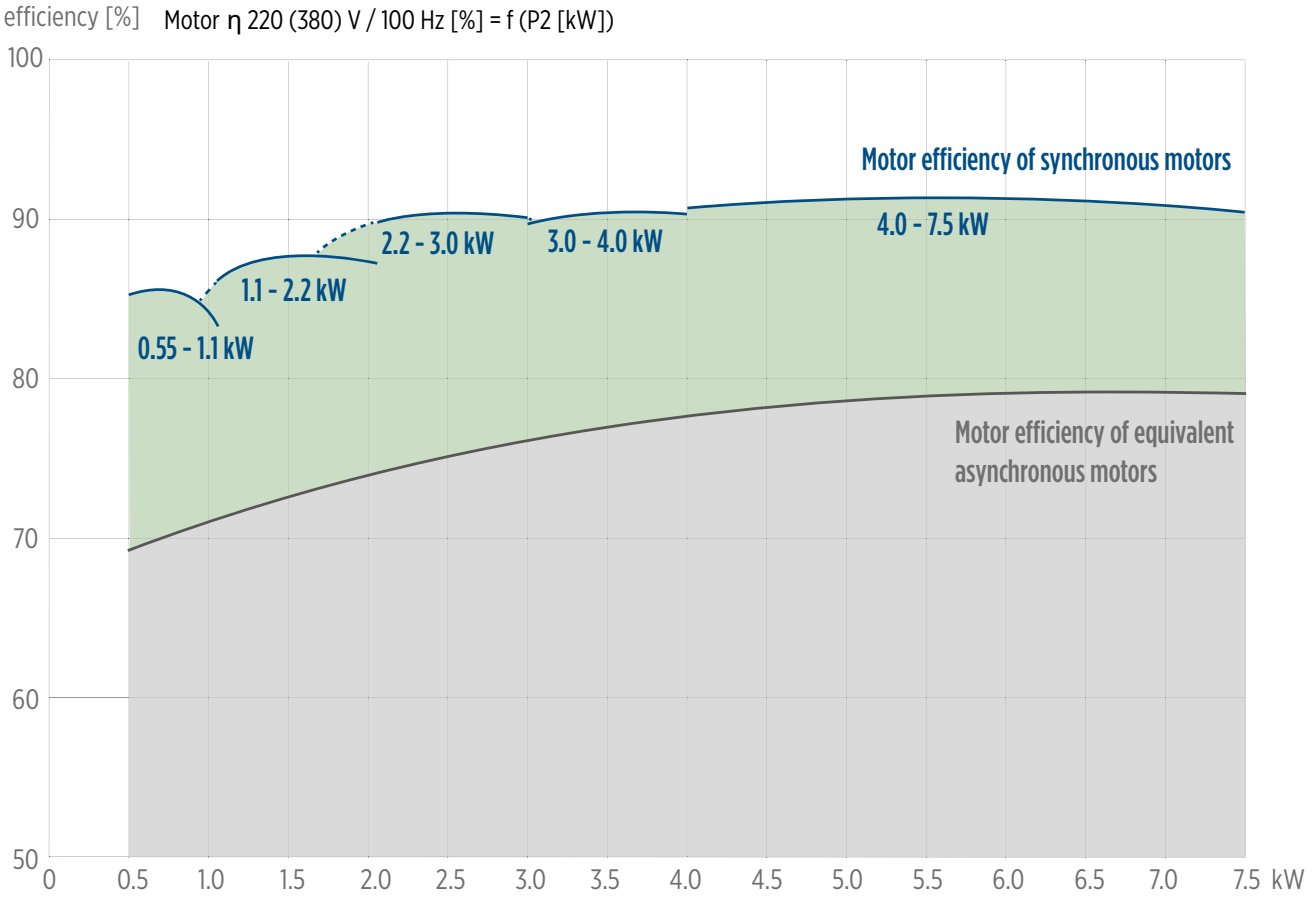
## MOTOR PERFORMANCE DATA 380 V / 100 HZ

| 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 | 0.96 | 4.8 | |
| | | 2.2 | | | | 4.0 | | 87.0 | 0.97 | 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 | 0.97 | 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 | 0.97 | 11.8 | |
| | | 4.0 | | | | 7.3 | | 90.2 | 0.98 | 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 | 0.95 | 17.5 | |
| | | 7.5 | | | | 13.1 | | 90.5 | 0.96 | 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.

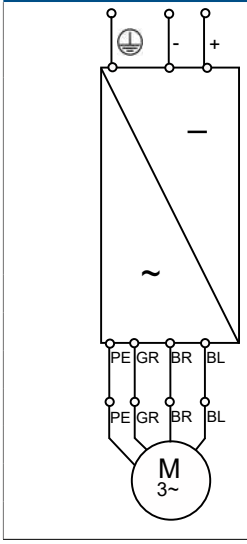
# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

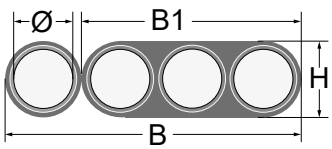
## EFFICIENCY CURVE AT 3000 RPM

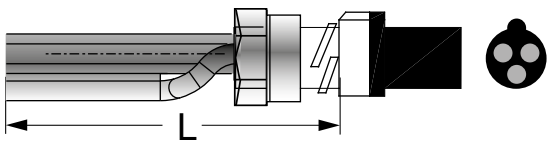



## MOTOR LEADS / ELECTRICAL CONNECTION 3~ MOTORS

| 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 | 5.0 |




| 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.

# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## WINDING RESISTANCE 220 V / 100 HZ

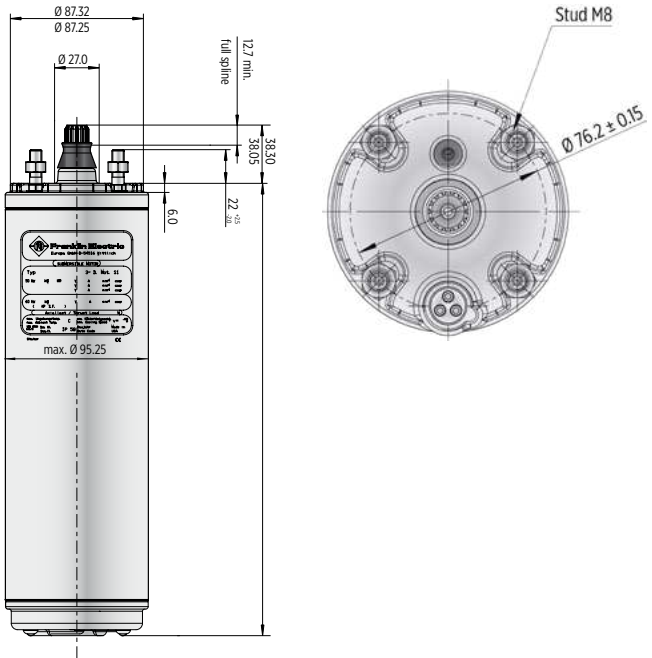
| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V (Ohm) | Rotor Ref. |
|---|---|---|---|---|
| 0.55 - 1.1 | 220 | 327 460 *** | 7.7 - 8.14 | 178 172 901 |
| 1.1 - 2.2 | 220 | 327 461 *** | 2.30 - 2.40 | 178 172 903 |
| 2.2 - 3.0 | 220 | 327 462 *** | 1.45 - 1.54 | 178 172 904 |
| 3.0 - 4.0 | 220 | 327 463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

## WINDING RESISTANCE 380 V / 100 HZ

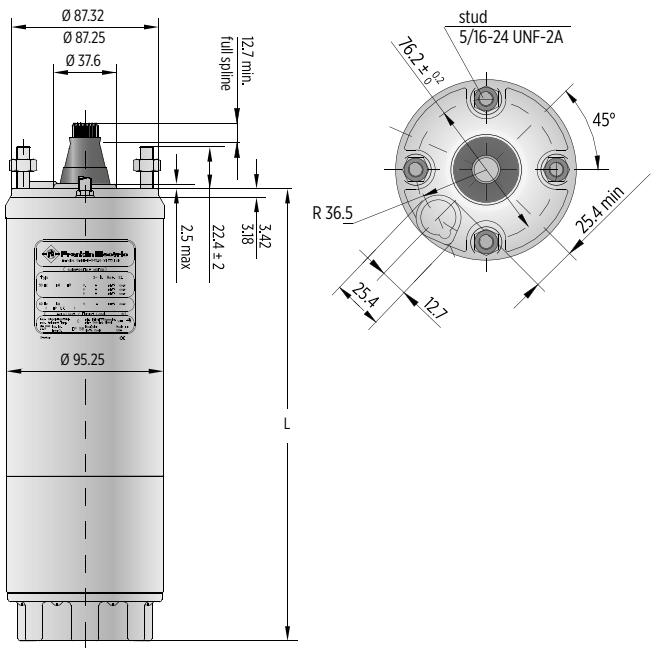
| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V (Ohm) | Rotor Ref. |
|---|---|---|---|---|
| 1.1 - 2.2 | 380 | 327 451 *** | 8.0 - 8.4 | 178 172 903 |
| 2.2 - 3.0 | 380 | 327 452 *** | 4.4 - 4.62 | 178 172 904 |
| 3.0 - 4.0 | 380 | 327 453 *** | 2.7 - 2.9 | 178 173 921 |
| 4.0 - 7.5 | 380 | 327 454 ***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

## MOTOR DIMENSIONS

0.55 - 3.0 kW [4000 N]




3.0 - 7.5 kW [6500 N]



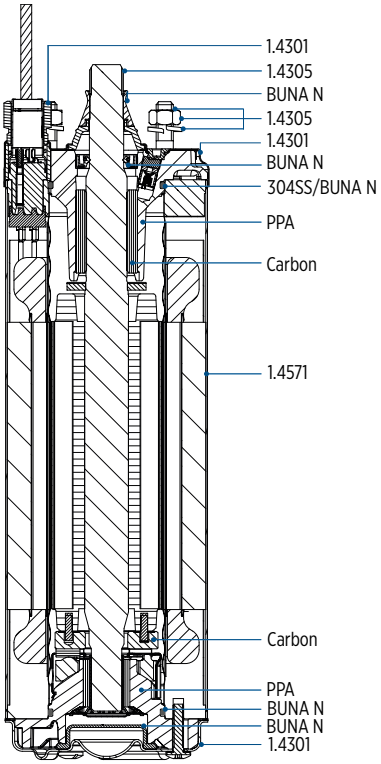

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | L [mm] | M [kg] | Motor with lead in single pack [mm] | [kg] |
|---|---|---|---|---|---|---|
| 0.55 - 1.1 | 220 | 4000 | 218 | 5.2 | 530 x 100 x 110 | 6 |
| 1.1 - 2.2 | 220 | 4000 | 263 | 7.2 | 530 x 100 x 110 | 8 |
| 2.2 - 3.0 | 220 | 4000 | 353 | 9.2 | 560 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

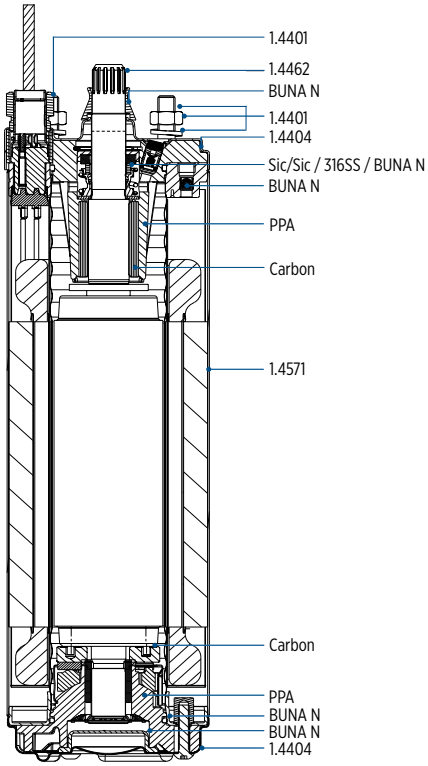
# 4" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## MOTOR MATERIALS 4000 N

**304SS**

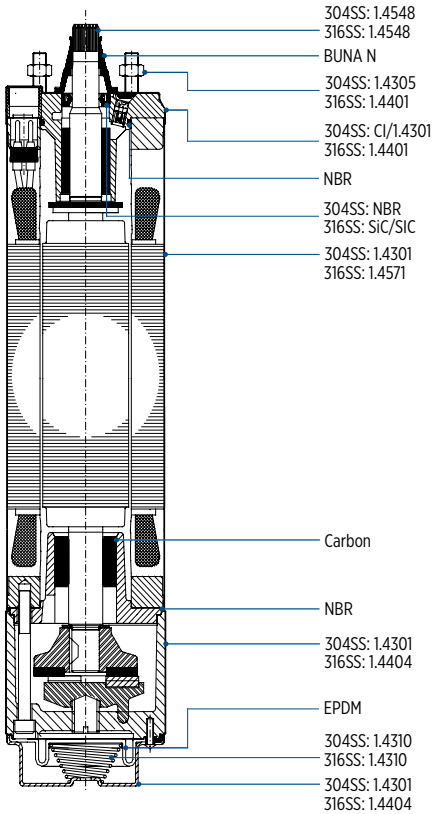



**316SS**



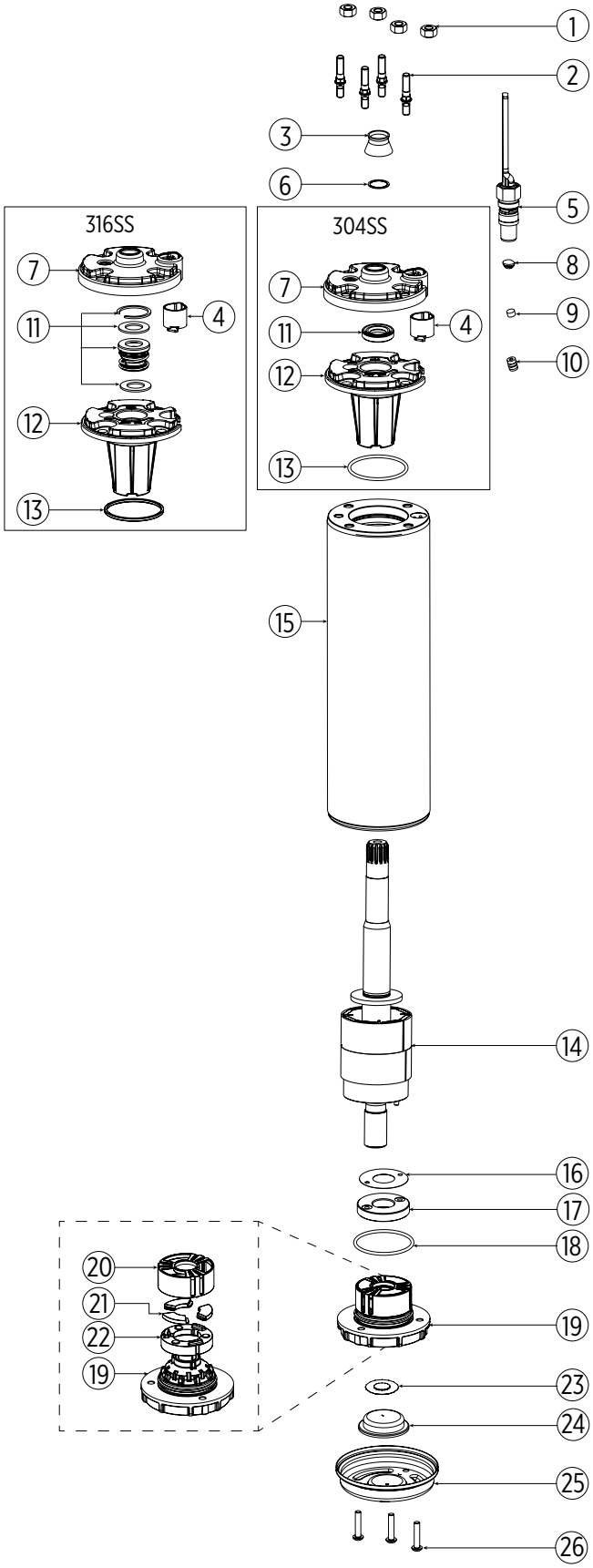

## MOTOR MATERIALS HIGH THRUST 6500 N

**304SS / 316SS**



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

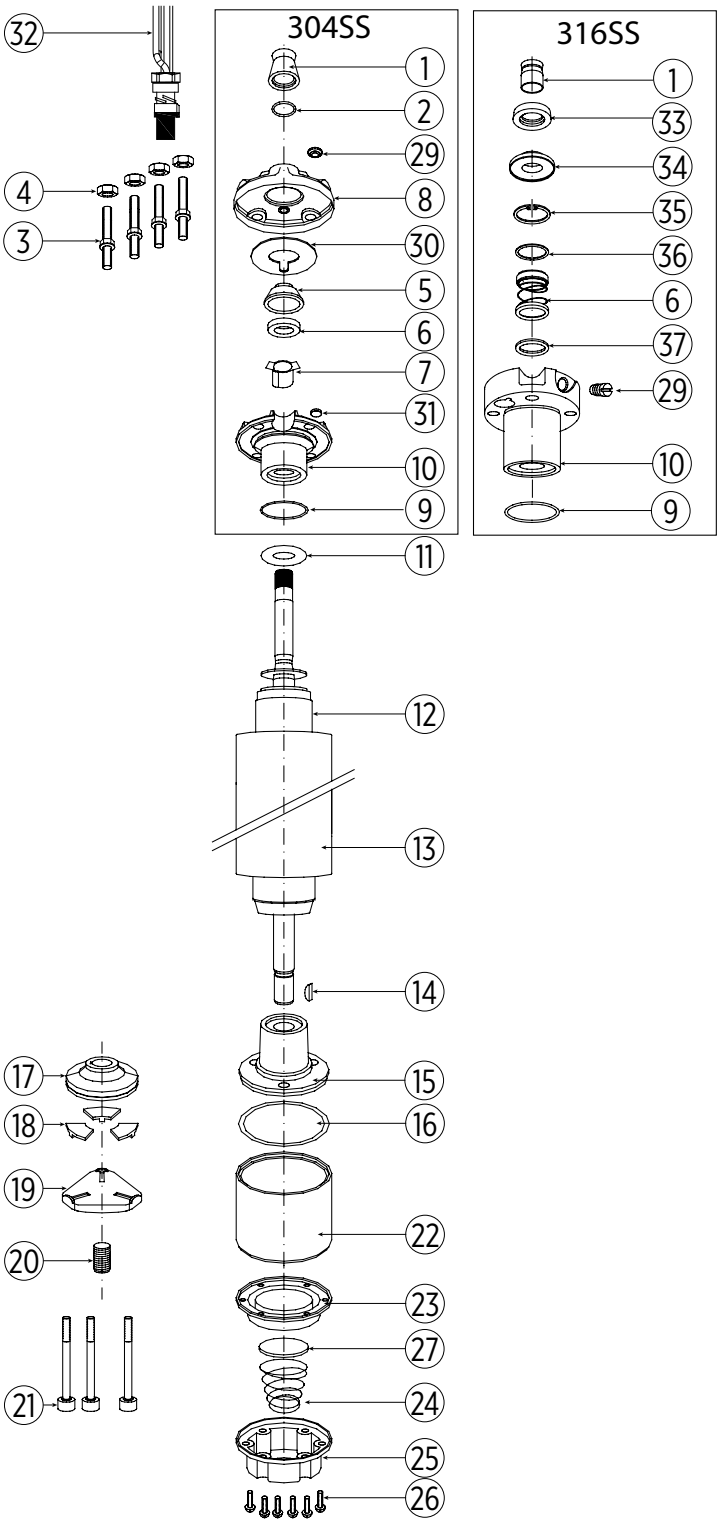
## MOTOR PARTS DESCRIPTION




| 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<br>151820103 |
| 5 | motor lead | 1 | ➡ see page 263 |
| 6 | washer | 1 | Kit B |
| 7 | top endbell, cover 304SS | 1 | Kit A<br>150262151 |
| | top endbell, cover 316SS | 1 | Kit A<br>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 268 |
| 15 | stator | 1 | ➡ see page 268 |
| 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<br>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 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 | ➡ see page 268 |
| 13 | stator | 1 | ➡ see page 268 |
| 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 | adjustimg screw | 1 | 151 048 103 |
| 21 | screws | 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 | screws | 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 |
| 32 | motor lead | 1 | ➡ see page 263 |
| 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 | Kit B |

# 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, 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

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## BENEFITS & FEATURES

- Double-flange 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 -15 °C - + 60 °C
- High capacity Kingsbury type liquid lubricated thrust bearing for 100 % maintenance free operation
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- All motors manufactured in ISO 9001 certified plants and 100% tested
- Drinking water approvals

## STANDARD SPECIFICATION

- Ratings: 4 - 45 kW (100 Hz - 3000 rpm)
- Thrust load: 15.5 kN: 4 - 22 kW, 27.5 kN: 26 - 45 kW
- System Supply Voltage: 380 V (100 Hz)
- Voltage Tolerance: ±10 % $U_N$
- Nominal ambient temperature: 30 °C
  4 - 22 kW: with 0.16 m/s cooling flow; > 22 kW: with 0.5 m/s cooling flow
- Protection IP68 and insulation class F
- DOL- start
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Frequency of starts: 20 starts/hour (with min. 3 minutes resting time), equally distributed
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (Rotation reversible)
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials: 304SS, 316SS
- Retrofitable PT 100 temperature sensor (VFD PT100 Plug-in card necessary, order no. 308 170 202)
- Special lead lengths
- High Thrust design 45 kN
- 120 Hz electrical design



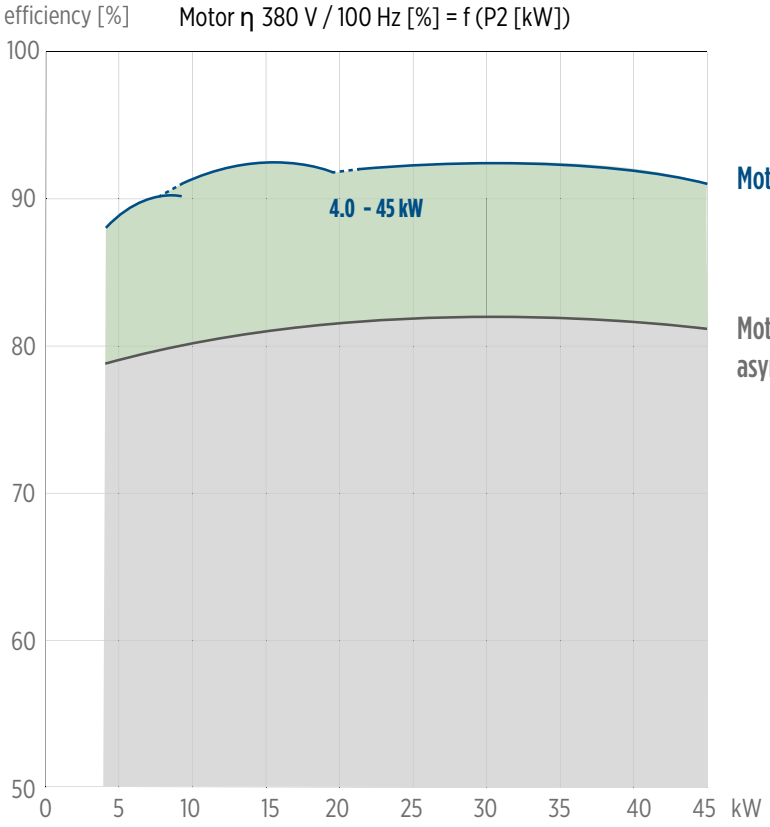
## 3~ DOL MODEL NUMBERS 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Digit 1 - 6 | Digit 7 - 10 | | |
|---|---|---|---|---|---|---|
| | | | | WW** | 304SS | Standard 316SS |
| | | | | Single pack with pre-installed lead* | Single pack with pre-installed lead* | Single pack with pre-installed lead* |
| 4 - 11 | 380 | 15.500 | 236 080 | 9561 | 1461 | 1561 |
| 13 - 22 | 380 | 15.500 | 236 084 | 9561 | 1461 | 1561 |
| 26 - 45 | 380 | 27.500 | 236 086 | 9561 | 1461 | 1561 |

* with 4 m motor short lead
** WW (Water well)- Stator 304SS / Castings - CI Powder coated (see page material description in the catalog)

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM



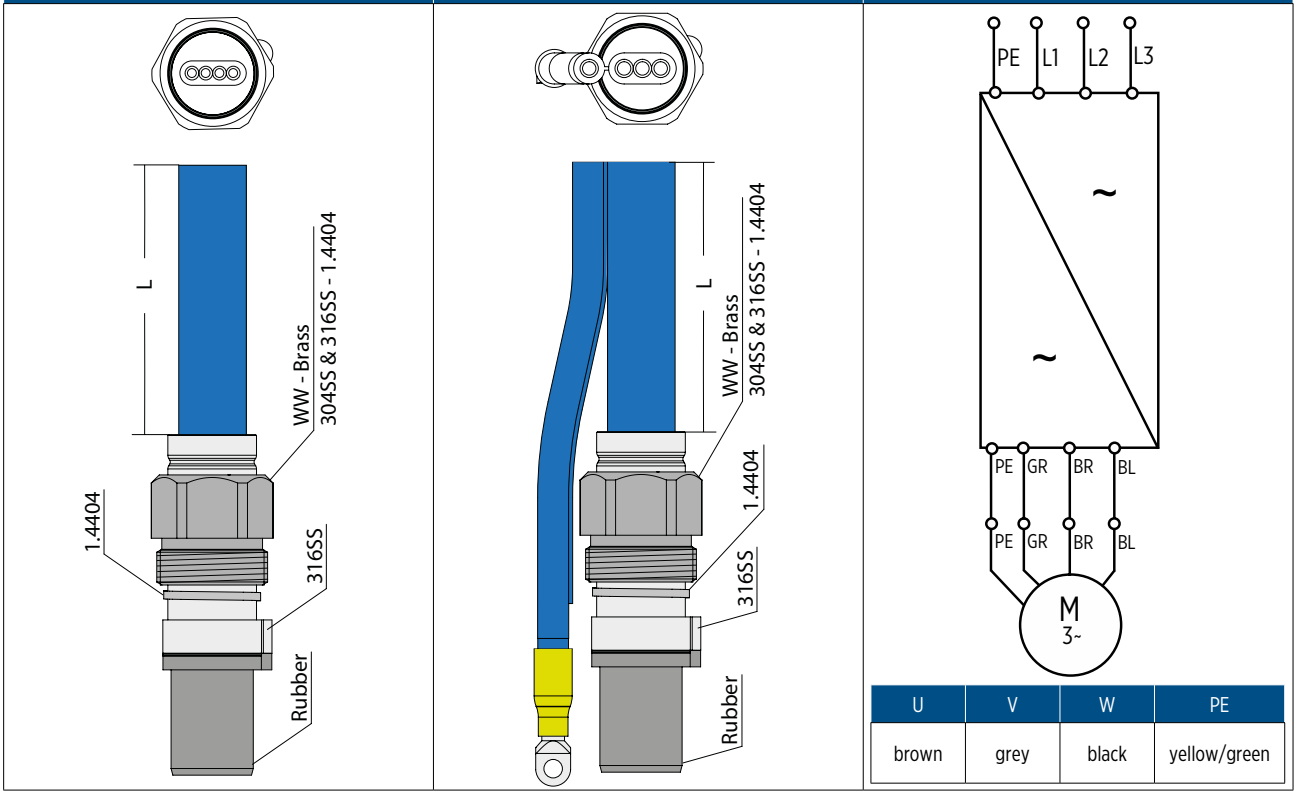

## 3~ MOTOR PERFORMANCE DATA 380 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [N] | $U_N$ [V] | n [min$^{-1}$] | $I_N$ [A] | $I_A / I_N$ | η [%] | cos phi | $T_N$ [Nm] | $T_A / T_N$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 236 080 xxxx | 4 | 15500 | 380 | 3000 | 9.2 | 1 | 87.1 | 0.95 | 12.7 | 1 |
| | 5.5 | | | | 11.0 | 1 | 89.8 | 0.95 | 17.5 | 1 |
| | 7.5 | | | | 14.1 | 1 | 90.9 | 0.95 | 23.9 | 1 |
| 236 080 xxxx | 9.3 | 15500 | 380 | 3000 | 17.2 | 1 | 91.2 | 0.95 | 29.6 | 1 |
| | 11 | | | | 20.5 | 1 | 90.9 | 0.95 | 35.0 | 1 |
| 236 084 xxxx | 13 | 15500 | 380 | 3000 | 25.3 | 1 | 91.4 | 0.95 | 41.4 | 1 |
| | 15 | | | | 28.3 | 1 | 91.8 | 0.95 | 47.7 | 1 |
| 236 084 xxxx | 18.5 | 15500 | 380 | 3000 | 34.1 | 1 | 92.1 | 0.95 | 58.9 | 1 |
| 236 084 xxxx | 22 | 15500 | 380 | 3000 | 40.7 | 1 | 92.0 | 0.95 | 70.0 | 1 |
| 236 086 xxxx | 26 | 27500 | 380 | 3000 | 51.2 | 1 | 92.3 | 0.95 | 82.8 | 1 |
| | 30 | | | | 57.8 | 1 | 92.5 | 0.95 | 95.5 | 1 |
| 236 086 xxxx | 37 | 27500 | 380 | 3000 | 71.3 | 1 | 92.1 | 0.95 | 117.8 | 1 |
| 236 086 xxxx | 45 | 27500 | 380 | 3000 | 90.0 | 1 | 90.8 | 0.95 | 143.2 | 1 |

# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

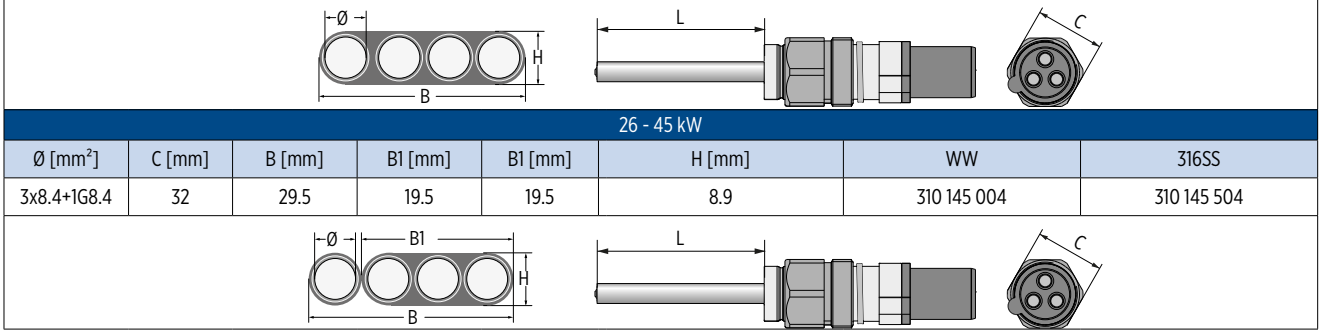
## ELECTRICAL CONNECTION AND MOTOR LEADS 3~ DOL

| 4G4 mm² | 3 x 8.4 + 1G 8.4 mm² | Electrical connection |
|---|---|---|




| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

| Motor lead* | | | | | | |
|---|---|---|---|---|---|---|
| 4 - 22 kW | | | | | | |
| Ø [mm²] | C [mm] | B [mm] | H [mm] | L [m] | WW | 316SS |
| 4G4 | 32 | 19 | 7 | 4 | 310 125 004 | 310 125 504 |
| 26 - 45 kW | | | | | | |
| Ø [mm²] | C [mm] | B [mm] | B1 [mm] | B1 [mm] | H [mm] | WW | 316SS |
| 3x8.4+1G8.4 | 32 | 29.5 | 19.5 | 19.5 | 8.9 | 310 145 004 | 310 145 504 |




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

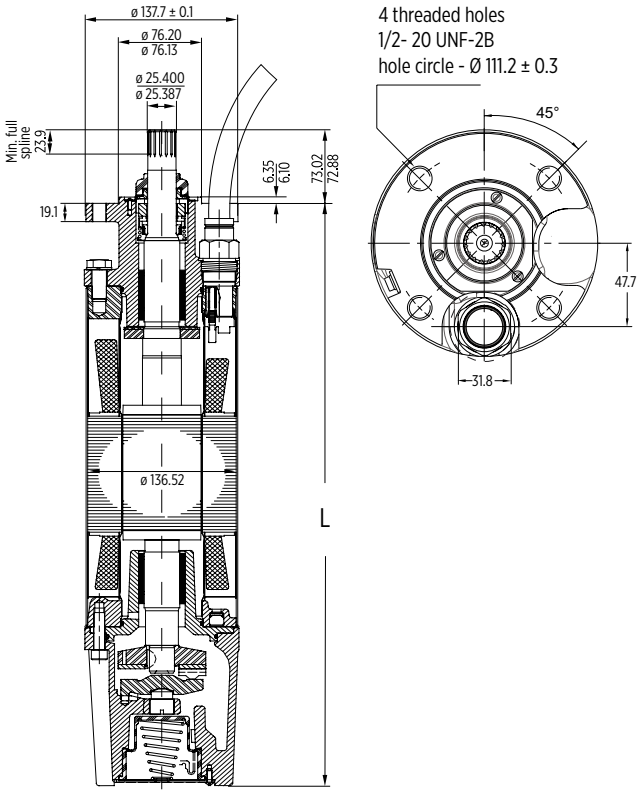
## WINDING RESISTANCE 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Stator Ref. | U - V [Ohm]* | Rotor Ref. |
|---|---|---|---|---|
| 4 - 11 | 380 | 327 245 ... | 0.86 | 178 130 921 |
| 13 - 22 | 380 | 327 250 ... | 0.33 | 178 130 923 |
| 26 - 45 | 380 | 327 257 ... | 0.19 | 178 130 925 |

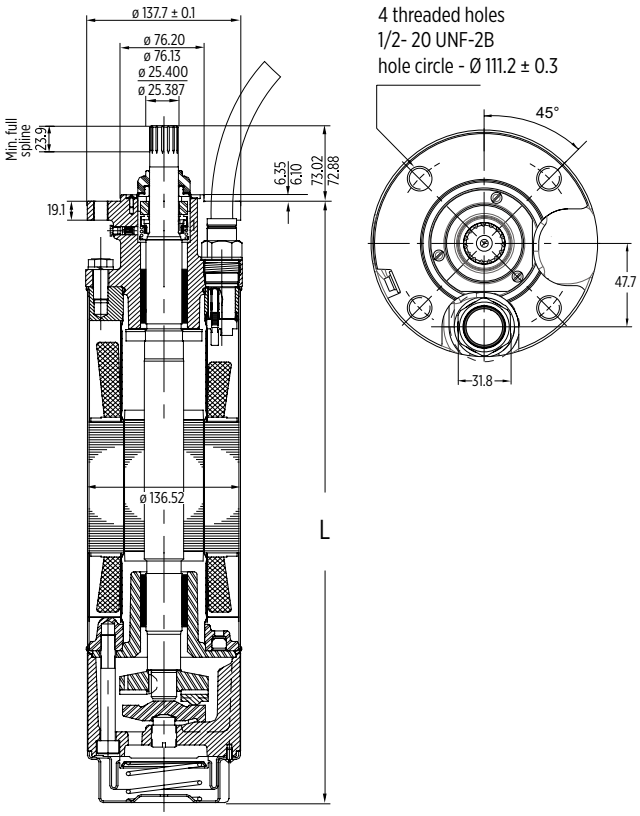
# 6" 3~ ENCAPSULATED PERMANENT MAGNET MOTOR

## MOTOR DIMENSIONS AND MATERIALS

### WW



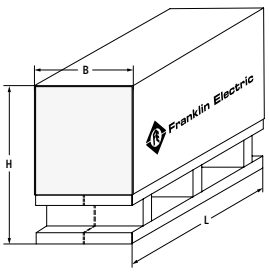

### 304SS & 316SS




## MOTOR DIMENSIONS

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | WW L [mm] | 304SS/316SSS L [mm] | M [kg] | Motor with lead in single pack B x H x L [mm] | Motor with lead in single pack [kg] | Motor packing |
|---|---|---|---|---|---|---|---|---|
| 4 - 11 | 380 | 15.500 | 634,5 | 625,2 | 43,0 | 155 x 340 x 800 | 45 | |
| 13 - 22 | 380 | 15.500 | 793,5 | 784,2 | 57,4 | 155 x 340 x 1070 | 61 | |
| 26 - 45 | 380 | 27.500 | 1020,5 | 1011,2 | 78,0 | 155 x 340 x 1070 | 84 | |

Tolerances according to NEMA MG 1-18.388




## MOTOR MATERIAL DESCRIPTION

| Part | WW | 304SS | 316SS |
|---|---|---|---|
| Shell | 1.4301 | 1.4301 | 1.4571 |
| Upper end bell | Cast iron powder coated | 1.4301 | 1.4408 |
| Thrust housing | Cast iron powder coated | 1.4301 | 1.4408 |
| Mechanical seal | SiC / SiC | SiC / SiC | SiC / SiC |
| Seal cover | 1.4301 | 1.4301 | 1.4401 |
| Slinger | EPDM | EPDM | EPDM |
| Shaft end* | 1.4021 | 1.4021 | 1.4462 |
| Diaphragm | EPDM | EPDM | EPDM |
| Lead | EPR | EPR | EPR |

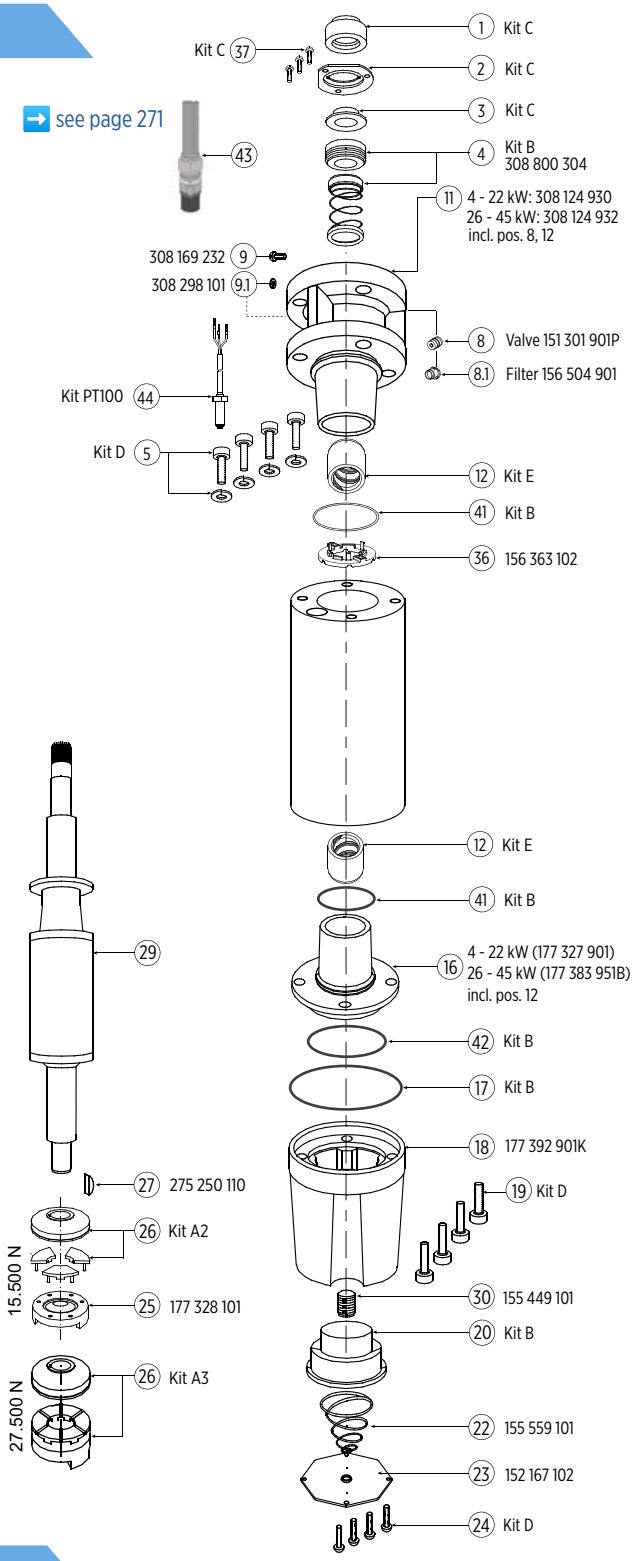
* running change to 1.4462 (WIP)

# 6" 3~ ENCAPSULATED PM MOTOR WW SPARE PARTS

## MOTOR PARTS DESCRIPTION

| Kit | part description | incl. positions | order no. |
|---|---|---|---|
| Kit A2 15.500N | Thrust bearing kit up to 22 kW | 26 | 308 750 120 |
| Kit A3 27.500N | Thrust bearing kit 26 - 45 kW | 26 | 308 750 120 |
| Kit B1 | Seal kit | 4, 17, 20, 41, 42 | 308 800 125 |
| Kit C1 | Slinger kit | 1, 2, 3, 37 | 308 725 101 |
| Kit D1 | Screw kit | 5, 19, 24 | 308 659 121 |
| Kit E1* | Radial bearing kit up to 22 kW | 12 | 308 678 103 |
| Kit E2 | Radial bearing kit 26 - 45 kW | 12 | 308 678 110 |
| PT100 Kit | | | see page 306 |

* Kit without rotor shaft sleeves, flange replacement bushings are unfinished




## SPARE PARTS STATOR AND ROTOR WW 380 V / 100 HZ

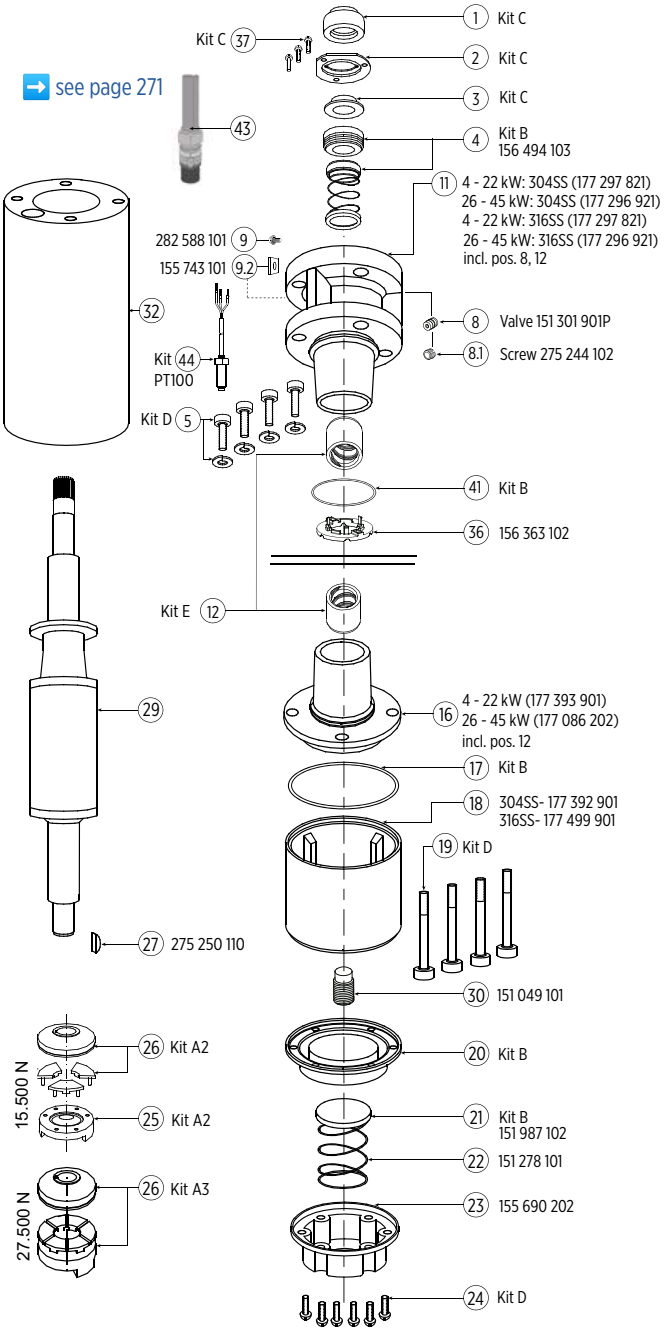
| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | Stator Model No. | Rotor |
|---|---|---|---|---|---|
| 4 - 11 | 380 | 15.500 | 236 080 9561 | 327 245 963K | 178 130 901K |
| 13 - 22 | 380 | 15.500 | 236 084 9561 | 327 250 963K | 178 130 903K |
| 26 - 45 | 380 | 27.500 | 236 086 9561 | 327 257 963K | 178 130 905K |

# 6" 3~ ENCAPSULATED PM MOTOR SPARE PARTS 304SS / 316SS

## MOTOR PARTS DESCRIPTION

| Kit | part description | incl. positions | order no. |
|---|---|---|---|
| Kit A2 | Thrust bearing kit 15.500 N | 26 | 308 750 120 |
| Kit A3 | Thrust bearing kit 27.500 N | 26 | 308 750 200 |
| Kit B3 | Seal kit | 4, 17, 20, 21, 41, 44 | 308 800 250 |
| Kit C3 | Slinger kit | 1, 2, 3, 37 | 308 725 150 |
| Kit D5 | Screw kit | 5, 19, 24 | 308 659 155 |
| Kit E1* | Radial bearing kit up to 22 kW | 12 | 308 678 103 |
| Kit E2 | Radial bearing kit 26 - 45 kW | 12 | 308 678 110 |
| PT100 Kit | | | see page 306 |

* Kit without rotor shaft sleeves, flange replacement bushings are unfinished




## SPARE PARTS STATOR AND ROTOR 304SS / 316SS 380 V / 100 HZ

| $P_N$ [kW] | $U_N$ [V] | Thrust F [N] | Motor Model No. | | Stator Model No. | Rotor |
|---|---|---|---|---|---|---|
| | | | WW | 316SS | | |
| 4 - 11 | 380 | 15.500 | 236 080 1461 | 236 080 1561 | 327 245 983K | 178 130 921K |
| 13 - 22 | 380 | 15.500 | 236 084 1461 | 236 084 1561 | 327 250 983K | 178 130 923K |
| 26 - 45 | 380 | 27.500 | 236 086 1461 | 236 086 1561 | 327 257 983K | 178 130 925K |

# 8" REWINDABLE PERMANENT MAGNET MOTOR

WATER WELL WW CI PC / 304SS | STAINLESS STEEL 316 | STAINLESS STEEL 904L

SAND FIGHTER

## BENEFITS & FEATURES

- 8" double flange NEMA mounting design
- High efficiency electrical design for low operation costs
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- Factory filled with Franklin's FES93 motor fill solution
- Drinking water approvals
- Stainless steel splined shaft
- Liquid lubricated radial bearings and High capacity Kingsbury type 45 kN thrust bearing for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded

## STANDARD SPECIFICATION

- Ratings: 75 / 100 / 130 kW (100 Hz - 3000 rpm, 120 Hz - 3600 rpm)
- Max. storage temperature - 15 °C to + 60 °C
- Standard motor with PE2/PA winding insulation
- Nominal ambient temperature: 30 °C with 0.5 m/s cooling flow
- System Supply Voltage: 400 V (100 Hz) / 460 V (120 Hz)
- Voltage Tolerance: ± 10 % $U_N$
- Protection IP68
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Motor protection: DIN 61947-4-1
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- DOL-start
- All motors with factory installed leads, motor lead length: 6 m
- Motors installation orientation: Vertical / horizontal (shaft end heightened)
- Rotation counter clock wise facing shaft end (rotation reversible)



## OPTIONS

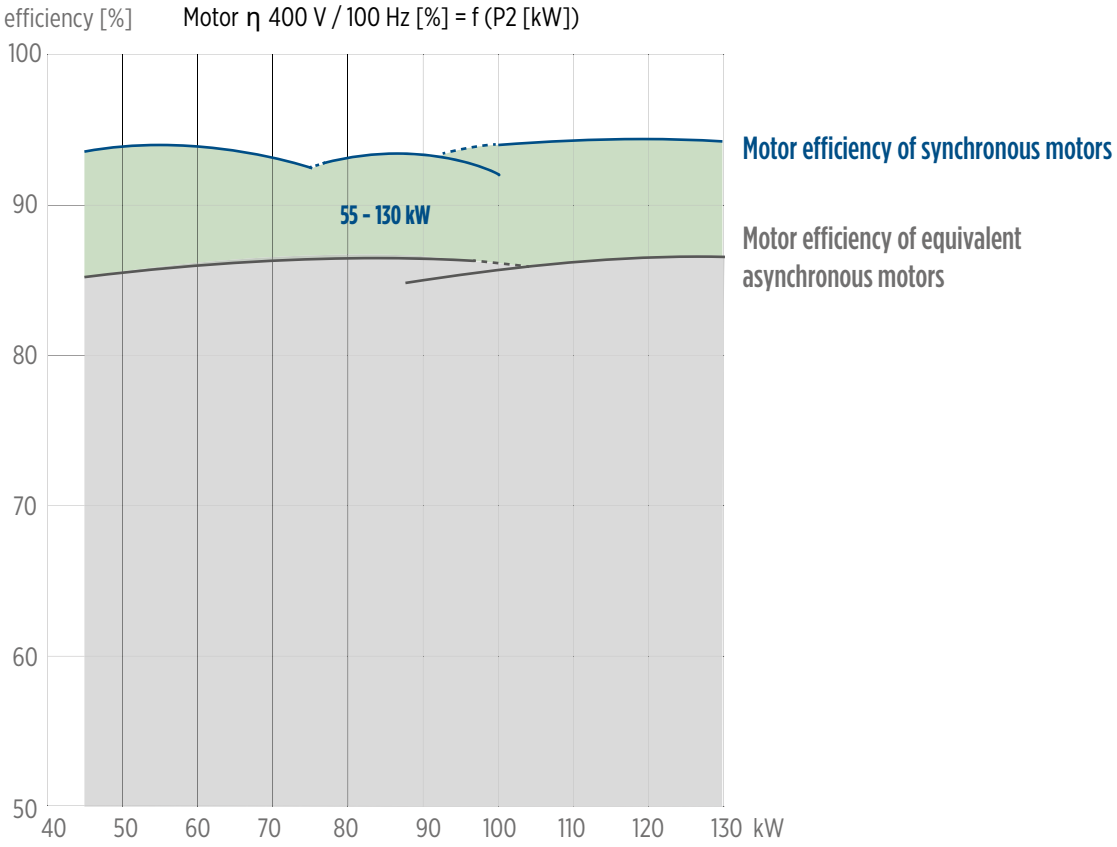
- Higher-graded materials: 316SS, 904L
- Special voltages
- Retrofitable PT 100 temperature sensor (VFD PT100 Plug-in card necessary, order no. 308 170 202)
- Special lead lengths

| $P_N$ [kW] | 400V / 100 Hz WW * Motor model number | 400V / 100 Hz 316SS Motor model number | 400V / 100 Hz 904L Motor model number |
|---|---|---|---|
| 75 | 263 014 5311 | 263 014 6311 | 263 014 7311 |
| 100 | 263 016 5311 | 263 016 6311 | 263 016 7311 |
| 130 | 263 018 5311 | 263 018 6311 | 263 018 7311 |

* WW (Water well)- Stator 304SS / Castings - CI Powder coated (see page material description in the catalog)

# 8" REWINDABLE PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM




## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 263 014 xxxx | 45 | 45 | 3000 | 74 | 1 | 93.3 | 0.96 | 143 | 1 |
| | 55 | 45 | 3000 | 91 | 1 | 93.3 | 0.96 | 175 | 1 |
| | 67 | 45 | 3000 | 112 | 1 | 93.0 | 0.96 | 213 | 1 |
| | 75 | 45 | 3000 | 128 | 1 | 92.5 | 0.96 | 239 | 1 |
| 263 016 xxxx | 75 | 45 | 3000 | 129 | 1 | 93.5 | 0.95 | 239 | 1 |
| | 83 | 45 | 3000 | 143 | 1 | 93.3 | 0.95 | 264 | 1 |
| | 93 | 45 | 3000 | 162 | 1 | 93.0 | 0.95 | 296 | 1 |
| | 100 | 45 | 3000 | 178 | 1 | 92.7 | 0.95 | 319 | 1 |
| 263 018 xxxx | 75 | 45 | 3000 | 125 | 1 | 93.8 | 0.97 | 239 | 1 |
| | 93 | 45 | 3000 | 153 | 1 | 93.7 | 0.97 | 296 | 1 |
| | 110 | 45 | 3000 | 186 | 1 | 93.3 | 0.97 | 350 | 1 |
| | 130 | 45 | 3000 | 225 | 1 | 92.6 | 0.96 | 414 | 1 |

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.

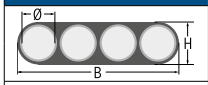
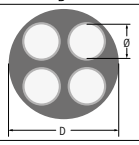
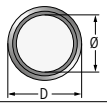
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR PERFORMANCE DATA 500 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [$min^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 263 024 xxxx | 45 | 45 | 3000 | 60 | 1 | 93.2 | 0.95 | 143 | 1 |
| | 55 | 45 | 3000 | 74 | 1 | 93.2 | 0.95 | 175 | 1 |
| | 67 | 45 | 3000 | 91 | 1 | 93.0 | 0.95 | 213 | 1 |
| | 75 | 45 | 3000 | 103 | 1 | 92.5 | 0.95 | 239 | 1 |
| 263 026 xxxx | 75 | 45 | 3000 | 105 | 1 | 93.5 | 0.94 | 239 | 1 |
| | 83 | 45 | 3000 | 116 | 1 | 93.3 | 0.94 | 264 | 1 |
| | 93 | 45 | 3000 | 131 | 1 | 93.2 | 0.94 | 296 | 1 |
| | 100 | 45 | 3000 | 143 | 1 | 92.9 | 0.94 | 319 | 1 |
| 263 028 xxxx | 75 | 45 | 3000 | 102 | 1 | 93.8 | 0.96 | 239 | 1 |
| | 93 | 45 | 3000 | 124 | 1 | 93.7 | 0.96 | 296 | 1 |
| | 110 | 45 | 3000 | 151 | 1 | 93.3 | 0.96 | 350 | 1 |
| | 130 | 45 | 3000 | 183 | 1 | 92.6 | 0.96 | 414 | 1 |

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.

## MOTOR LEADS 400 V* DOL

| lead | kW | Ø [$mm^2$] | B / H [mm] | | length [m] | Qty. | lead model no. | lead seal kit 304/316 model no. | Lead seal kit 904L model no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 75 | 4G16 | B | 38,0 | 6 | 1 | 308 710 108 | 308 660 618 | 308 660 620 |
| | | | H | 12,8 | | | | | |
|  | 100 | 4G25 | D | 32 | 6 | 1 | 308 710 140 | 308 660 633 | 308 660 634 |
|  | 130 | 3RD 1X35 + Ground lead 1x35 | D | 15,3 | 6 | 1 | 308 710 151 | 308 660 641 | 308 660 642 |

| Lead opening seal kit | | qty. | model no. |
|---|---|---|---|
| 8" Rew | WW / 316SS | 1 | 308 660 617 |
| | 904L | 1 | 308 660 625 |

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

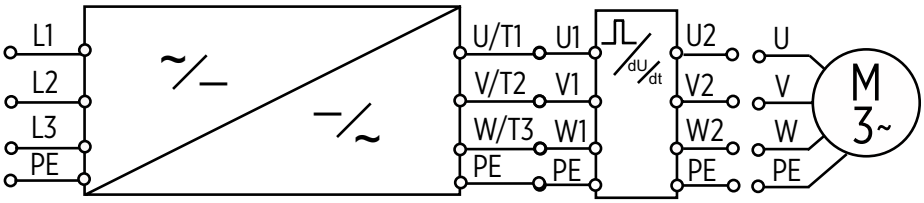
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR DROP LEADS 400 V / 100 HZ - 460 V / 120 HZ

| $P_N$ [kW] | cable size [mm²], copper wire - 90 °C rated insulation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 | 300 | 400 |
| 45 | 65 | 100 | 140 | 200 | 280 | 370 | 460 | | | | | |
| 55 | | 85 | 120 | 170 | 230 | 300 | 370 | 450 | | | | |
| 67 | | | 90 | 130 | 180 | 240 | 300 | 360 | 420 | | | |
| 75 | | | 80 | 115 | 160 | 200 | 260 | 310 | 370 | 460 | | |
| 83 | | | | 100 | 140 | 190 | 235 | 285 | 340 | 420 | | |
| 93 | | | | | 115 | 160 | 200 | 240 | 290 | 350 | 410 | |
| 110 | | | | | 100 | 140 | 170 | 210 | 250 | 305 | 360 | 440 |
| 130 | | | | | | 115 | 145 | 175 | 210 | 260 | 305 | 370 |

For lead lenghts > 120 m please consult Franklin Electric.
Further potential energy savings due to more conservative lead sizing (< 3 % voltage drop) at 50 °C ambient.

## ELECTRICAL CONNECTIONS DOL

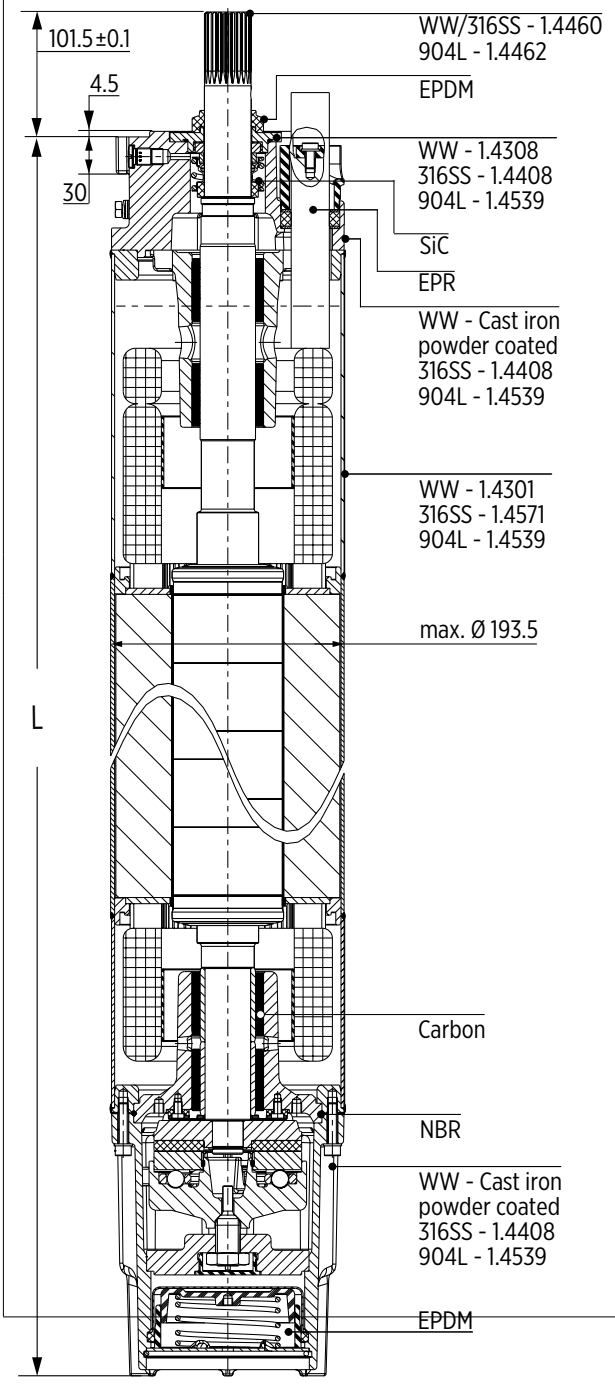



| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/green |

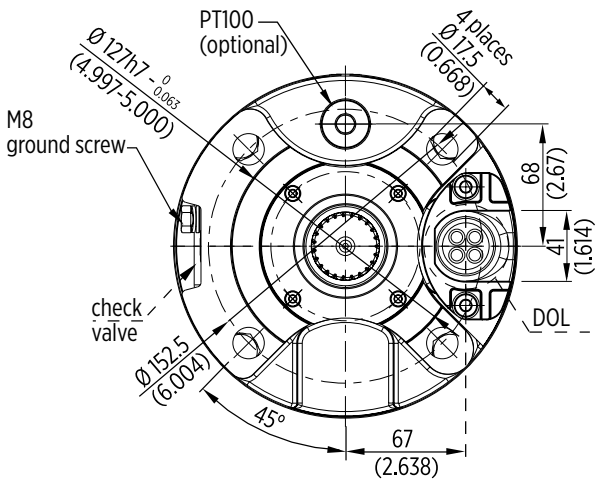
# 8" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR DIMENSIONS AND MATERIALS

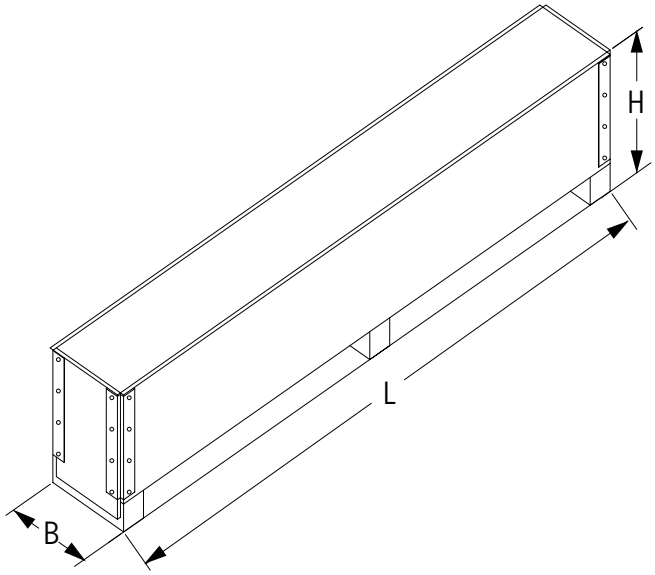
WW / 316SS / 904L




end bell




motor box



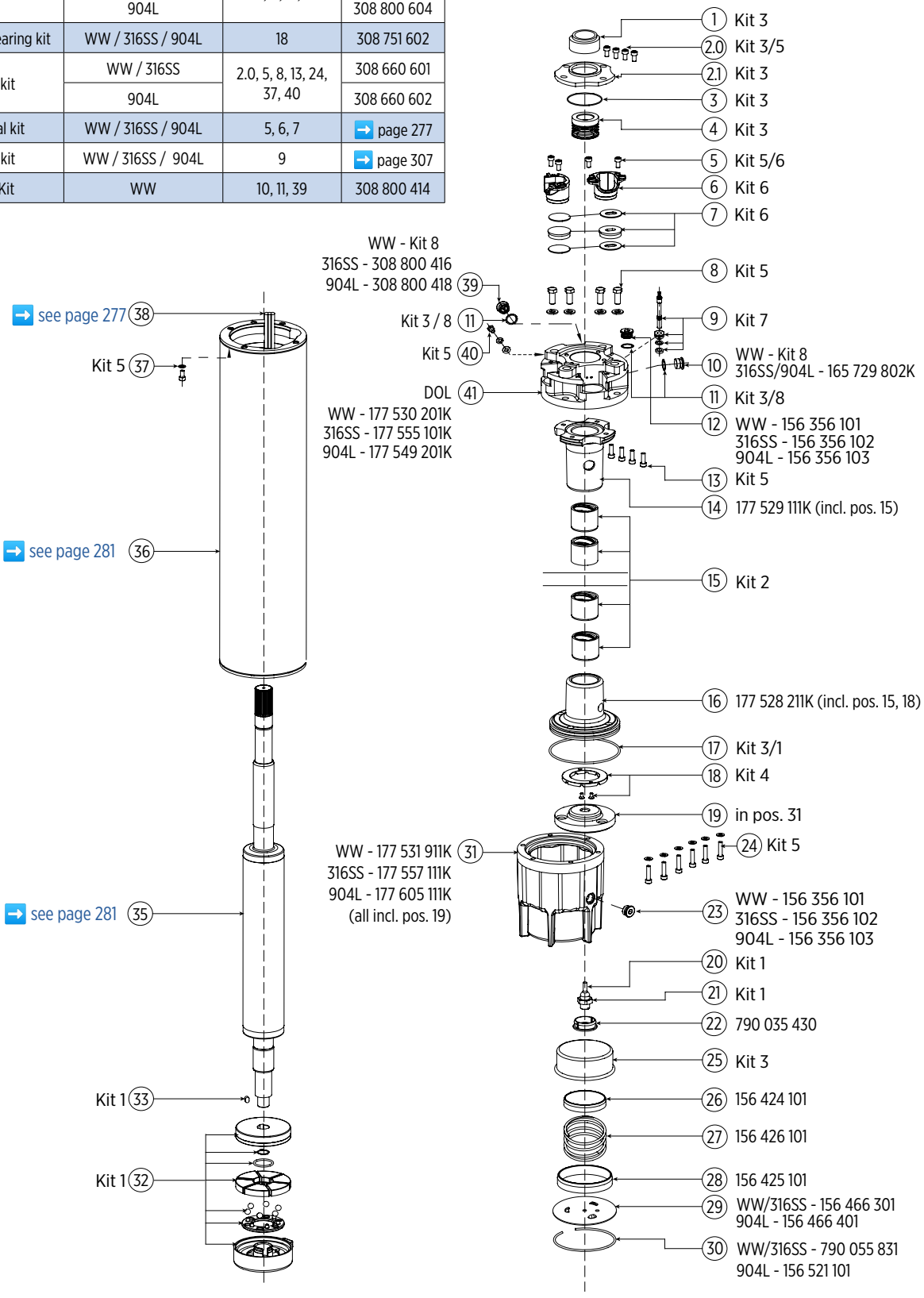

(sample drawing)

## MOTOR WEIGHTS 304SS / 316SS / 904L

| P [kW] | motor lenghts L [mm] | motor weights [kg] | | motor shipping size [mm] | | |
|---|---|---|---|---|---|---|
| | | without packaging | incl. packaging | B | H | L |
| 75 | 1205 | 150 | 179 | 301 | 448 | 1596 |
| 100 | 1316 | 169 | 198 | | | 1596 |
| 130 | 1482 | 205 | 237 | | | 1996 |

# SPARE PARTS 8" REWINDABLE PERMANENT MAGNET MOTOR

| Kit | Kit description | materials | incl. positions | order no. |
|---|---|---|---|---|
| 1 | Thrust bearing kit | WW / 316SS / 904L | 17, 20, 21, 32, 33 | 308 750 601 |
| 2 | Radial bearing kit | WW / 316SS / 904L | 15 | 308 751 603 |
| 3 | seal kit | WW / 316SS | 1-4, 11, 17, 25 | 308 800 603 |
| | | 904L | | 308 800 604 |
| 4 | Up-thrust bearing kit | WW / 316SS / 904L | 18 | 308 751 602 |
| 5 | Screw kit | WW / 316SS | 2.0, 5, 8, 13, 24, 37, 40 | 308 660 601 |
| | | 904L | | 308 660 602 |
| 6 | Lead seal kit | WW / 316SS / 904L | 5, 6, 7 | → page 277 |
| 7 | PT100 kit | WW / 316SS / 904L | 9 | → page 307 |
| 8 | Valve Kit | WW | 10, 11, 39 | 308 800 414 |



# SPARE PARTS 8" REWINDABLE PERMANENT MAGNET MOTOR

## STATOR AND ROTOR MODEL NUMBERS WW / 316 SS - 400 V / 100 HZ

| P [kW] | Stator (incl. windings and 6 m motor lead) | | | rotor | |
|---|---|---|---|---|---|
| | $U_N$ [V] | DOL [PE2/PA] | | | |
| | | motors starting 08/2017 | motors up to 07/2017 | motors starting 08/2017 | motors up to 07/2017 |
| 75 | 400 V | 327 154 702K | 327 154 901K | 161 123 811K | 161 123 801K |
| 100 | 400 V | 327 155 702K | 327 155 901K | 161 123 812K | 161 123 802K |
| 130 | 400 V | 327 156 701K | - | 161 123 814K | - |

## WINDING SPECIFICATION

| P [kW] | $U_N$ [V] | Model no. winding kit | Turns per coil | Wire diameter Ø [mm] | Type of Isolation | Group connection | Total wire length [m] | Resistance coil [Ω] | Resistance DOL (U1-V1) [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| 75 | 400 | 327 154 999 | 16 | 1.9/2.1 & 1.8/2.8 (2GR II) | PE2/PA | Parallel Y | 290 | 0.146 | 0.167 |
| | 500 | 327 151 999 | 20 | 2.3/3.5 (2GR II) | | | 350 | 0.235 | 0.235 |
| 100 | 400 | 327 155 999 | 12 | 2.0/3.1 & 2.1./3.3 (2GR II) | PE2/PA | Parallel Y | 260 | 0.103 | 0.167 |
| | 500 | 327 144 999 | 17 | 2.5/3.8 (2GR II) | | | 350 | 0.213 | 0.213 |
| 130 | 400 | 327 156 999 | 20 | 2.3/3.2/3.5 (4GR II) | PE2/PA | Parallel Y | 486 | 0.115 | 0.121 |
| | 500 | | | | | | | | |

## INSULATION RESISTANCE (20 °C / 500 VDC)

| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

## MOTOR REPAIR INSTRUCTIONS

Í Pictured repair instructions WW / 316SS / 904L (model no. 308 018 697)

# 10" REWINDABLE PERMANENT MAGNET MOTOR

**Rewindable motors with best class winding wires**

## BENEFITS & FEATURES

- 10" double flange mounting design
- Factory filled with Franklin's FES93 motor fill solution
- High capacity Kingsbury type liquid lubricated 60 kN thrust bearing and radial bearings for 100 % maintenance free operation
- Pressure-equalizing diaphragm, spring pre-loaded
- Stainless Steel keyed shaft
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- Drinking water approvals




## STANDARD SPECIFICATION

- Motorleistung:
  - 150 kW - 200 kW - 250 kW (100 Hz - 3000 rpm)
  - 173 kW - 230 kW - 290 kW (120 Hz - 3600 rpm)
- Max. storage temperature -15°C to +60°C
- Standard motor with PE2/PA winding insulation
- Nominal ambient temperature: 30 °C with 0.5 m/s cooling flow
- System Supply Voltage: 400 V (100 Hz) / 460 V (120 Hz)
- Voltage Tolerance: ± 10 % $U_N$
- Protection IP68
- Standard Motor: WW- Water well Design (Stator 304SS / Castings - CI Powder coated)
- Motor protection: DIN 61947-4-1
- DOL- start
- Frequency of starts: 10 starts/ hour (with min. 3 minutes resting time), equally distributed
- Motor lead length: 6 m
- Motors installation orientation: Vertical / horizontal (shaft end heightened) - 250 kW motors may not be installed horizontally
- Rotation counter clock wise facing shaft end (rotation reversible)
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials: 316SS and 904L
- Special voltages
- Retrofitable PT 100 temperature sensor
  VFD PT100 Plug-in card necessary (order no. 308 170 202)

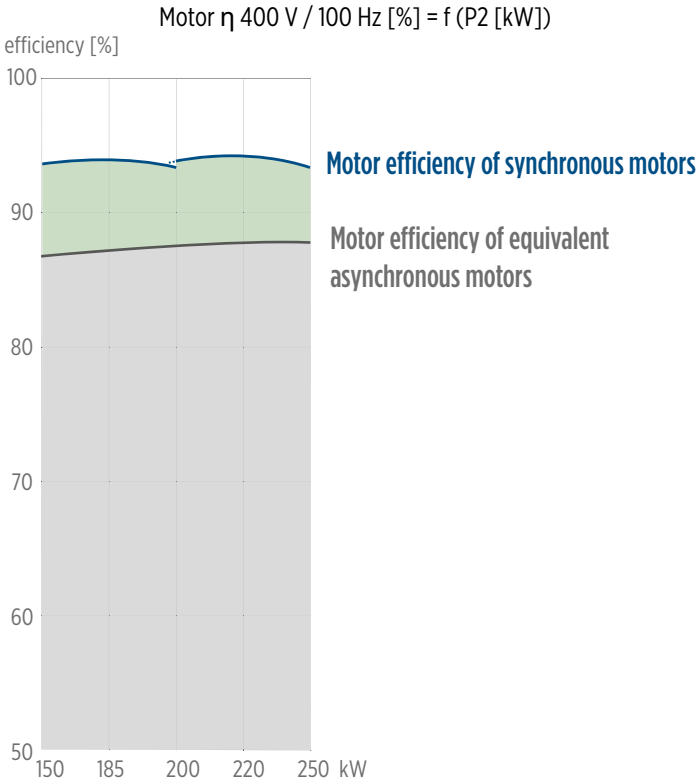
## MOTOR MODEL NUMBERS

| $P_N$ [kW] | $U_N$ [V] | 400V / 100 Hz WW * Motor model number | 400V / 100 Hz 316SS Motor model number | 400V / 100 Hz 904L Motor model number |
|---|---|---|---|---|
| 150 | 400 | 264 025 5311 | 264 025 6311 | 264 025 6311 |
| 200 | 400 | 264 028 5311 | 264 028 6311 | 264 028 7311 |
| 250 | 400 | 264 029 5311 | 264 029 6311 | 264 029 7311 |

* WW (Water well)- Stator 304SS / Castings - CI Powder coated (see page material description in the catalog)

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## EFFICIENCY CURVE AT 3000 RPM




## MOTOR PERFORMANCE DATA 400 V / 100 HZ

| motor model no. | $P_N$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_N$ [A] | $I_A/I_N$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 264 025 xxxx | 110 | 60 | 3000 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 60 | 3000 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 60 | 3000 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 264 028 xxxx | 150 | 60 | 3000 | 284 | 1 | 94.3 | 0.95 | 478 | 1 |
| | 185 | 60 | 3000 | 354 | 1 | 94.1 | 0.96 | 589 | 1 |
| | 200 | 60 | 3000 | 389 | 1 | 93.8 | 0.96 | 637 | 1 |
| 264 029 xxxx | 200 | 60 | 3000 | 377 | 1 | 94.5 | 0.95 | 637 | 1 |
| | 220 | 60 | 3000 | 423 | 1 | 94.3 | 0.96 | 701 | 1 |
| | 250 | 60 | 3000 | 497 | 1 | 93.8 | 0.96 | 796 | 1 |

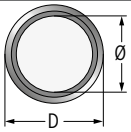
## MOTOR PERFORMANCE DATA 460 V / 120 HZ

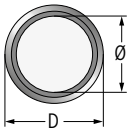
| motor model no. | $P_N$ [kW] | $P_{max.}$ [kW] | Thrust F [kN] | $n_N$ [min$^{-1}$] | $I_{MAX}$ [A] | $I_A/I_{MAX}$* [A] | η [%] | cos phi | $T_N$ [Nm] | $T_A/T_N$* [Nm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 264 025 xxxx | 110 | 127 | 60 | 3600 | 199,5 | 1 | 93,0 | 0,93 | 353 | 1 |
| | 130 | 150 | 60 | 3600 | 236,1 | 1 | 93,0 | 0,93 | 415 | 1 |
| | 150 | 173 | 60 | 3600 | 274,0 | 1 | 93,0 | 0,93 | 478 | 1 |
| 264 028 xxxx | 150 | 173 | 60 | 3600 | 284 | 1 | 94,3 | 0,95 | 478 | 1 |
| | 185 | 213 | 60 | 3600 | 354 | 1 | 94,1 | 0,96 | 589 | 1 |
| | 200 | 230 | 60 | 3600 | 389 | 1 | 93,6 | 0,96 | 637 | 1 |
| 264 029 xxxx | 200 | 230 | 60 | 3600 | 377 | 1 | 94,5 | 0,95 | 637 | 1 |
| | 220 | 253 | 60 | 3600 | 423 | 1 | 94,3 | 0,96 | 701 | 1 |
| | 250 | 287 | 60 | 3600 | 497 | 1 | 93,6 | 0,96 | 796 | 1 |

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.

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## MOTOR LEADS 10" REWINDABLE PERMANENT MAGNET MOTORS*

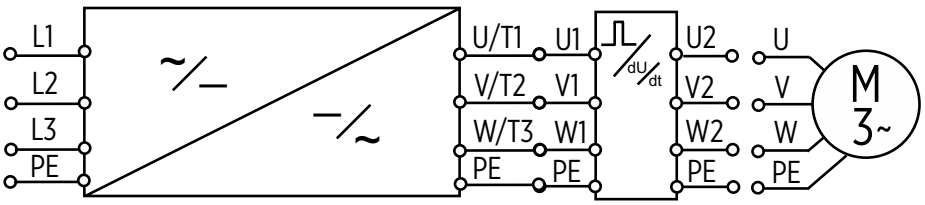
| lead | $P_N$ [kW] | $U_N$ [V] | ø [mm²] | D [mm] | lenghts [m] | qty. | lead set model no. (3 single wire lead) | lead seal kit model no. |
|---|---|---|---|---|---|---|---|---|
|  | all ratings | 400 | 3 x 1X70 | 20.7 | 6 | 1 | 308 711 100 | 308 660 740 |

| ground lead (optional) | Ø [mm²] | D [mm] | lengths [m] | qty. | lead model no. |
|---|---|---|---|---|---|
|  | 1G35 | 15.3 | 6 | 1 | 308 056 506 |

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

| Lead opening seal kit | | qty. | model no. |
|---|---|---|---|
| 10" Rew | WW / 316SS | 1 | 308 660 715 |
| | 904L | 1 | 308 660 730 |

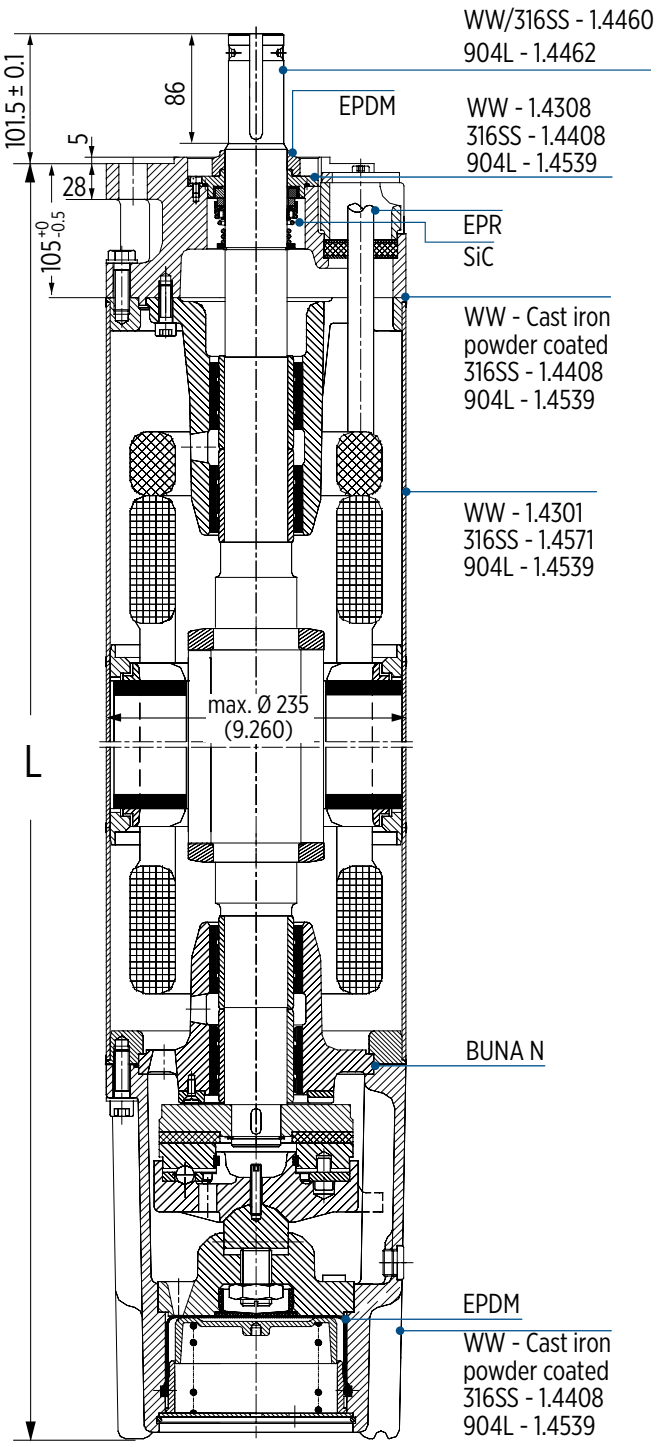
## ELECTRICAL CONNECTION DOL

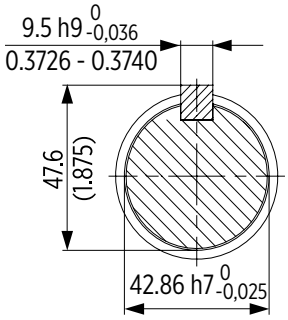


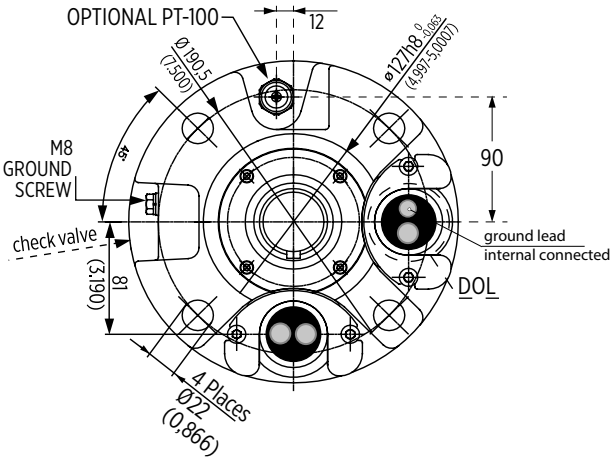

| U | V | W | PE |
|---|---|---|---|
| brown | grey | black | yellow/ green |

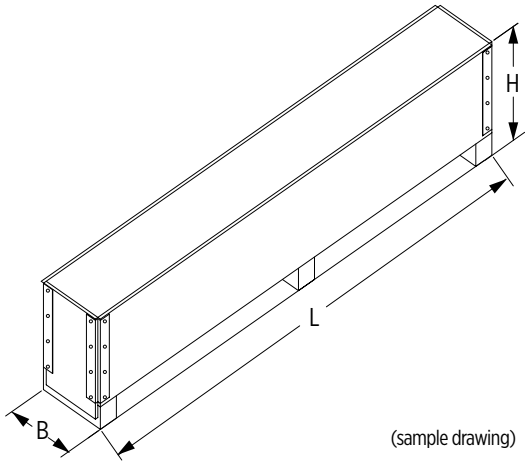
# 10" REWINDABLE PERMANENT MAGNET MOTOR

## 10" REWINDABLE PM MOTORS DIMENSION AND MATERIALS



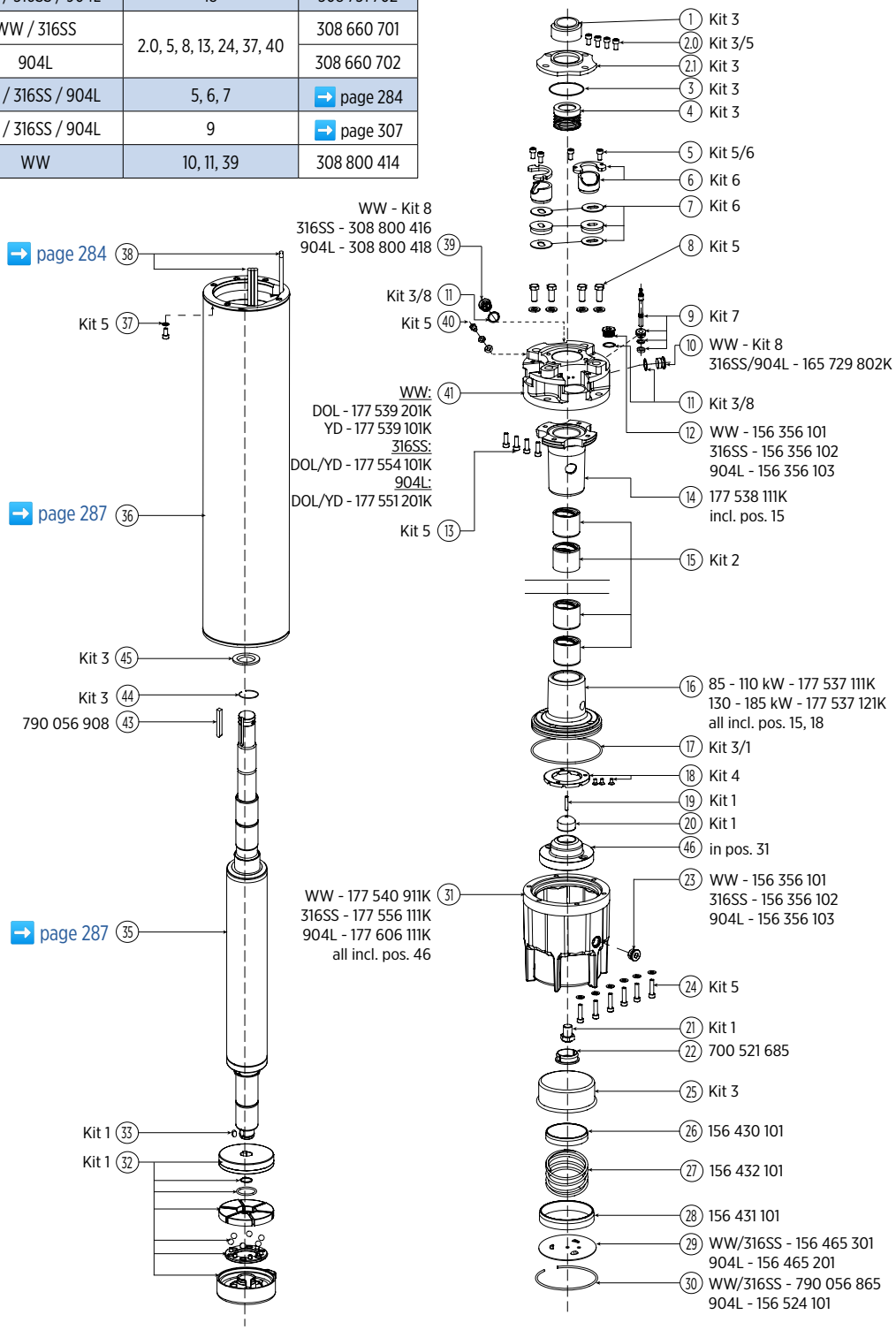

(sample drawing)

| $P_N$ [kW] | Motor lenghts L [mm] | Motor weights [kg] | Motor weights incl. box [kg] | Motor shipping size [mm] | | |
|---|---|---|---|---|---|---|
| | | | | B | H | L |
| 150 | 1549 | 311 | 361 | 341 | 514 | 2246 |
| 200 | 1659 | 331 | 381 | | | |
| 250 | 1769 | 350 | 400 | | | |

# 10" REWINDABLE PERMANENT MAGNET MOTOR

## 10" REWINDABLE PERMANENT MAGNET MOTORS SPARE PARTS

| Kit | Kit description | materials | including positions | order no |
|---|---|---|---|---|
| 1 | Thrust bearing kit | WW / 316SS / 904L | 17, 19, 20, 21, 32, 33 | 308 750 701 |
| 2 | Radial bearing kit | WW / 316SS / 904L | 15 | 308 751 703 |
| 3 | seal kit | WW / 316SS | 1-4, 11, 17, 25 | 308 800 703 |
| | | 904L | | 308 800 704 |
| 4 | Up-thrust bearing kit | WW / 316SS / 904L | 18 | 308 751 702 |
| 5 | Screw kit | WW / 316SS | 2.0, 5, 8, 13, 24, 37, 40 | 308 660 701 |
| | | 904L | | 308 660 702 |
| 6 | Lead seal kit | WW / 316SS / 904L | 5, 6, 7 | → page 284 |
| 7 | PT100 kit | WW / 316SS / 904L | 9 | → page 307 |
| 8 | Valve Kit | WW | 10, 11, 39 | 308 800 414 |



# 10" REWINDABLE PERMANENT MAGNET MOTOR

## MODEL NUMBERS 400 V STATOR AND ROTOR - WW/316SS

| $P_N$ [kW] | $U_N$ [V] | Stator (incl. winding and 6m motor lead) | Rotor |
|---|---|---|---|
| 150 | 400 | 327 *** *** | 10000011381K |
| 200 | 400 | 327 640 931 | 10000005599K |
| 250 | 400 | 327 641 931 | 10000005857K |

## WINDING DATA 400 V

| $P_N$ [kW] | $U_N$ [V] | Model No. Winding kit | Turns per coil | Wire diameter [mm] | Type of Isolation | Groups connection | Total wire lenght [m] | Resistance coil [Ω] | Resistance Dol (U1-V1 [Ω] |
|---|---|---|---|---|---|---|---|---|---|
| 150 | 400 | 327 6** *** | | | PE2/PA | Parallel Star | | | |
| 200 | 400 | 327 640 999 | 7 - 7 | 2,4 / 3,7 / 3,9 | PE2/PA | Parallel Star | 780 | 0,0305 | 0,0305 |
| 250 | 400 | 327 641 999 | 6 - 6 | 3,0 / 4,5 / 4,8 | PE2/PA | Parallel Star | 560 | 0,0265 | 0,0265 |

## INSULATION RESISTANCE (20 °C / 500 V DC)

| | | |
|---|---|---|
| New motor without drop cable | 400 > | MΩ |
| Used motor without drop cable | 20 > | MΩ |
| New motor with drop cable | 4 > | MΩ |
| Used motor with drop cable | 1 | MΩ |

## MOTOR REPAIR INSTRUCTION

- Pictured repair instructions WW / 316SS / 904L (model no. 10000006792)

# SUBMERSIBLE BOREHOLE PUMPS

Franklin Electric offers a wide array of submersible pumps with flows up to 540 m³/h and heads up to 700 m. They perfectly match the permanent magnet motors of the High Efficiency systems. The submersible pumps feature proven components, withstand the harshest environments and provide superior performance for numerous applications.

## OVERVIEW FEATURES SUBMERSIBLE BOREHOLE PUMPS

**Built-in check valve**

to protect the pump
against water hammer risk

**Aluminium oxide guide journal sleeve**

**Diffusers**

in Noryl

**Floating impellers**

in Polycarbonate



VS 4"



VS 6"-8"



VSI 8"-10"

**Stainless Steel impellers and diffusers**

VS 6"-8":
Radial / Semiaxial design
VSC: Semiaxial design

**Floating neck ring**

VS 6"-8": PPS or PTFE
VSI 8"-10": EPDM

**Casted Stainless Steel diffusers and impellers**

for high corrosion
and abrasion resistance

## PERFORMANCE TABLE

| pump diameter | pump model | motor | | pump at 50 Hz | |
|---|---|---|---|---|---|
| | | [kW] | [HP] | flow up to [m³/h] | head up to [m] |
| 4" | VS 1-2-3 | 0.37 - 3.0 | 0.5 - 4.0 | 4.2 | 259 |
| | VS 4-6 | 0.37 - 5.5 | 0.5 - 7.5 | 9 | 278 |
| | VS 7-8-10-15 | 0.75 - 7.5 | 1.0 - 10 | 24 | 277 |
| 6" | VS 14 | 4.0 - 30 | 5.5 - 40 | 18 | 684 |
| | VS 19 | 4.0 - 37 | 5.5 - 50 | 27 | 700 |
| | VS 30 | 3.7 - 55 | 5.0 - 75 | 40 | 690 |
| | VS 46 | 3.0 - 55 | 4.0 - 75 | 55 | 548 |
| | VS65 | 3.7 - 55 | 5.0 - 75 | 75 | 425 |

| pump diameter | pump model | motor | | pump at 50 Hz | |
|---|---|---|---|---|---|
| | | [kW] | [HP] | flow up to [m³/h] | head up to [m] |
| 8" | VS 14 | 4.0 - 30 | 5.5 - 40 | 18 | 684 |
| | VS 19 | 4.0 - 37 | 5.5 - 50 | 27 | 700 |
| | VS 30 | 3.7 - 55 | 5.0 - 75 | 40 | 690 |
| | VS 46 | 3.0 - 55 | 4.0 - 75 | 55 | 548 |
| | VS 65 | 3.7 - 55 | 5.0 - 75 | 75 | 425 |
| 8"/10" | VSI 134 | 9.3 - 150 | 12.5 - 200 | 133 | 398 |
| | VSI 184 | 13 - 300 | 17.5 - 400 | 180 | 600 |
| | VSI 260 | 15 - 350 | 20 - 470 | 260 | 459 |

# SUBMERSIBLE BOREHOLE PUMPS

## VS4 SUBMERSIBLE PUMP

STAINLESS STEEL 304 304SS / Noryl

### FEATURES & BENEFITS

- Compact, reliable and suited to operate in horizontal or vertical position
- Designed to operate efficiently with Franklin Electric submersible motors / NEMA Standard motor adapter
- Hydraulic design enhances overall efficiency thus reducing energy consumption and making the pumping systems more cost effective
- Built-in check valve to protect the pump against water hammer risk
- Floating impellers to grant a better performance and longer life for the pump against abrasion
- Suitable for chemically and mechanically non aggressive liquids

### OPTIONS

- Cooling shroud

### STANDARD SPECIFICATION

- Models: VS 1-2-3-4-6-7-8-10-15
- Flow: up to 24 $m^3/h$ (50 Hz)
- Head: up to 278 m (50 Hz)
- Outlet diameter:
  1" ¼ for VS 1-2-3-4,
  2" for VS 6-7-8-10-15
- Water temperature range: from 0 °C to 40 °C
- Maximum allowable amount of sand: 100 $g/m^3$, solid dimension max. 2 mm
- Rotation: counter clockwise when looking into the discharge
- Vertical or horizontal operation



## VS6 SUBMERSIBLE PUMP

STAINLESS STEEL 304 — STAINLESS STEEL 316 (OPTIONAL) — STAINLESS STEEL 904L (OPTIONAL)

### FEATURES & BENEFITS

- Stainless Steel impellers and diffusers for corrosion resistance
- Heavy duty Stainless Steel structure for improved stiffness / permanent alignment of components (increased run time / trouble-free operation).
- Floating neck ring in PPS (models 14-19-25) or PTFE (models 30-46-65) for higher resistance at temperature variations
- Reinforced version with double welded rings
- Compact, reliable and suited to operate in horizontal position
- Built-in check valve to protect the pump against water hummer risk
- Hydraulic design enhances overall efficiency thus reducing energy consumption and making the pumping systems more cost effective
- Built-in check valve to protect the pump against water hummer risk
- Heavy duty cast suction and discharge brackets
- Bushings in Aluminum Oxidde for higher mechanical performance
- Bearings in EPDM, with drinking water certification approvals

### STANDARD SPECIFICATION

- Models: VS 14-19-25-30-46-65
- Flow: up to 80 $m^3/h$ (50 Hz) / 100 $m^3/h$ (60 Hz)
- Head: up to 700 m (50 Hz / 60 Hz)
- Water temperature range:
  Min. -5° C
  Max. +90 °C (+60 °C for pumps with NBR parts)
- Maximum allowable amount of sand: 100 $g/m^3$
- Vertical or horizontal operation

### OPTIONS

- Higher-graded material: 316SS (N), 904L (R)
- Double cable guard
- Discharge heads:
  Rp2"/Rp3" VS 14/19
  Rp4" VS 25/30/46/65
- Motor adapter: 6x4 and 6x8 for I and N versions
- Pump with NBR rubber parts



# SUBMERSIBLE BOREHOLE PUMPS

## VS8 SUBMERSIBLE PUMP

STAINLESS STEEL 304 | *OPTIONAL* STAINLESS STEEL 316 | *OPTIONAL* STAINLESS STEEL 904L

### FEATURES & BENEFITS

- Designed to operate efficiently with Franklin Electric submersible motors / NEMA Standard motor adapter
- Built-in check valve and over size pump shaft
- Stainless Steel components for durability and robustmess, assuring longevity and trouble-free operation
- Stainless Steel impellers and diffusers for corrosion resistance
- Thick solid Stainless Steel shell to maintain alignment
- Heavy duty cast suction and discharge brackets
- Motor adapter and discharge head may be removed without disturbing the impeller / diffuser stack
- Many design technical features make this pump range very compact and extremely reliable to ensure applications in the most complex and severe conditions.
- Easy maintenance without the need of special tools
- Bushings is Aluminum Oxidde for higher mechanical performance
- Bearings in EPDM, with drinking water certification approvals

### STANDARD SPECIFICATION

- Models: VS 78-97
- Flow: up to 120 $m^3/h$ (50 Hz) / up to 160 $m^3/h$ (60 Hz)
- Head: up to 500 m (50 Hz) / 524 m (60 Hz)
- Water temperature range: Min. -5° C, Max. +90 °C (+60 °C for pumps with NBR parts)
- Maximum allowable amount of sand: 100 $g/m^3$
- Vertical or horizontal operation



### OPTIONS

- Higher-graded material: 316SS (N), 904L (R)
- Double cable guard
- Discharge head adapter: Rp4" or Rp6" for I and N version
- Pump with NBR rubber parts

## VSI 8-10 SUBMERSIBLE PUMP

STAINLESS STEEL 304 CF8 / 304SS | *OPTIONAL* STAINLESS STEEL 316 CF8M / 316SS | *OPTIONAL* STAINLESS STEEL DUPLEX

### FEATURES & BENEFITS

- SS Cast Submersible Pumps 8"-10"
- High efficiency and corrosion resistance
- Hydraulic effciency [%]: 83.5%
- Diffusers and impellers made of investment casting stainless steel
- Balanced impellers
- Spring loaded, robust design check valve with two bearing bushings and single piece disk
- Vesconite Hilube® top bearing bush (closed on top
- PTFE+Graphite up-thrust bearing
- Shrink fit coupling
- Drinking water approvals

### OPTIONS

- Different constructive metallurgies: CF8/304 (I version), CF8M/316 (N version), DUPLEX (R version)
- Different impeller diameters for 10" pump
- SD version with second cable guard

### STANDARD SPECIFICATION

- Range:
  8": VSI134: 75-175
  10": VSI184: 100-250, VSI254: 170-350
- Flow: 8": up to 133 $m^3/h$ (50 Hz)
  10": up to 260 $m^3/h$ (50 Hz)
- Head: 8": up to 398 m (50 Hz)
  10": up to 600 m (50 Hz)
- Maximum liquid temperature: 65 °C
- Maximum allowable amount of sand: 100 $g/m^3$
- Hydraulic connection (dimensions):
  VSI134: Rp or NPT 5", PN45
  VSI184: Rp or NPT 6" / Flanged D170 without counterflange, PN65
  VSI254: Rp or NPT 6" / Flanged D170 without counterflange, PN60



# VARIABLE SPEED DRIVES (VFD)

- Support of induction and permanent magnet motors
- Top class protection enclosure class
- Bluetooth Connectivity (VFD type DrivE-Tech MINI; up to 4 kW)
- Mobile App (with VFD type DrivE-Tech MINI)
- Franklin Electric Start-up Guide for easy set-up with tailored pre-settings






| | | DrivE-Tech MINI | DrivE-Tech MP | |
|---|---|---|---|---|
| **Suitable HES** | | 4" | 4" | |
| **Enclosure** | **Protection Degree** | IP66 | IP65 | |
| **Performance** | **Efficiency** | 97.5 % | 97.5 % | |
| **Solar Version** | | ✓ | ✓ | |
| **Power Supply** | **Input Voltage $U_{IN}$** | ≤ 2,2 kW: 90 - 265 V / 90 - 400 V DC<br>≥ 3,0 kW: 190 - 520 V AC | ≤ 2,2 kW: 90 - 265 V / 90 - 400 V DC<br>≥ 3,0 kW: 160 - 850 V DC | |
| | | 380 - 500V ; -10 % to +10 %<br>400 - 840 V DC | 380 - 500V ; -10 % to +10 %<br>400 - 840 V DC | |
| | **Input frequency $f_{IN}$** | 50 - 60 Hz (+/- 2 %) | 50 - 60 Hz (+/- 2 %) | |
| | **Starts per hour** | 20; with min. 3 min rest period | 20; with min. 3 min rest period | |
| **Motor connection** | **Output voltage** | 0 - $U_N$ | 0 - $U_N$ | |
| | **Output current** | $I_N$ at rated ambient temperature (40 °C)<br>Overload: IP66: 1,5 x $I_N$ (1min/10min)<br>IP21: 1,1 x $I_N$ | $I_N$ at rated ambient temperature (40 °C) | |
| | **Output frequency** | 0 -$f_N$ resolution 0,01 Hz | 0 -$f_N$ resolution 0,01 Hz | |
| **Control characteristics** | **Switching frequency** | 2 - 8 kHz, default setting: 4 kHz | 2 - 8 kHz, default setting: 4 kHz | |
| **Ambient conditions** | **Operation temperature** | -10 to 50 °C (> 40 °C with derating)<br>- 40°C optional for IP66 | -10 to 50 °C (> 40 °C with derating) | |
| | **Altitude** | Max. altitude at rated current: 3000 m (> 1000 m with derating) | Max. altitude at rated current: 3000 m (> 1000 m with derating) | |
| **EMC** | **Immunity & Emisions** | Complies with EN61800-3,<br>Category C2 - first and second environment | Complies with EN61800-3,<br>Category C2 - first and second environment | |
| **Communication** | **RS 485** | Standard: ModBus RTU | Standard: ModBus RTU | |
| | **Ethernet** | Standard: Modbus | Standard: Modbus | |
| | **Bluetooth** | SMART (4.0) for monitoring and programming | SMART (4.0) for monitoring and programming | |
| **I/O connections** | **Digital Input (DI)** | 4x | 4x | |
| | **Analog Input (AI)** | 4 x (2 x 4-20 mA / 2 x 0-10 V DC) | 4 x (2 x 4-20 mA / 2 x 0-10 V DC) | |
| | **Analog Output (AO)** | 1x | | |
| | **Digital Output (DO)** | 2 x | 2x | |
| | **Relay Output (RO)** | 2x (change-over contact) | 2x (change-over contact) | |
| **Kit** | **Included components** | motor mounting kit | motor mounting kit<br>4-20 mA (0-16 Bar) Pressure transducer - 002852211 | |
| **Options** | **Options** | 4-20 mA (0-16 Bar) Pressure transducer - 002851088<br>wall mounting kit - 002150AP0 | wall mounting kit<br>4.022 - 4.040 | wall mounting kit<br>4.055 - 5.150 |
| | | | 14211021 | 14211030 |





| | VFD 100 X | VFD 100 |
|---|---|---|
| **Suitable HES** | 6" | 6" / 8" / 10" |
| **Protection Degree** | IP66 | IP 00/21 (optional IP54) |
| **Efficiency** | 97.5 % | 97.5 % |
| **Solar Version** | ✓ | ✓ |
| **Input Voltage $U_{IN}$** | 380 - 500 V ; -10 % to +10 %<br>400 - 840 V DC - min starting voltage 440 V | 380 - 500 V ; -10 % to +10 %<br>400 - 840 V DC - min starting voltage 440 V |
| | 380 - 500 V ; -10 % to +10 %<br>400 - 840 V DC | |
| **Input frequency $f_{IN}$** | 47 - 65 Hz | 47 - 65 Hz<br>50 - 60 Hz (+/- 2%) |
| **Starts per hour** | 20; with min. 3 min rest period | 20; with min. 3 min rest period |
| **Output voltage** | 0 - $U_N$ | 0 - $U_N$ |
| **Output current** | $I_N$ at rated ambient temperature (40 °C)<br>Overload: 1,5 x $I_N$ (1 min / 10 min) | $I_N$ at rated ambient temperature (40 °C)<br>Overload: 1,1 x $I_N$ |
| **Output frequency** | 0 -$f_N$ resolution 0.01 Hz | 0 -$f_N$ resolution 0.01 Hz |
| **Switching frequency** | 2 - 8 kHz, default setting: 4 kHz<br>3,6 to 6 kHz; default setting: 4 kHz | 3,6 to 6 kHz; default setting: 4 kHz |
| **Operation temperature** | -10 °C to +50 °C (>40 °C with derating)<br>- 40°C optional for IP66 | -10 °C to +50 °C (>40 °C with derating) |
| **Altitude** | Max. altitude at rated current: 3000 m<br>(> 1000 m with derating) | Max. altitude at rated current: 3000 m<br>(> 1000 m with derating) |
| **Immunity & Emisions** | Complies with EN 61800-3, Category C2 - first and second environment | Complies with EN 61800-3, Category C2 - first and second environment |
| **RS 485** | Standard: ModBus RTU | Standard: ModBus RTU |
| **Ethernet** | Standard: Modbus | Standard: TCP / IP |
| **Bluetooth** | - | - |
| **Digital Input (DI)** | 6x | 6x |
| **Analog Input (AI)** | 2x | 2x |
| **Analog Output (AO)** | 1x | 1x |
| **Digital Output (DO)** | | |
| **Relay Output (RO)** | 2x (change-over contact) | 2x (change-over contact) |
| **Included components** | - | - |
| **Options** | Plug-in card 6x DI/DO (order no. 308 170 201)<br>Plug-in card PT100 (order no. 308 170 202)<br>Plug-in card 1x AI & 2x AO (order no. 308 170 206)<br>Plug-in card Profibus (order no. 308 170 203)<br>Replacement Battery VFD IP66 | Plug-in card 6x DI/DO (order no. 308 170 201)<br>Plug-in card PT100 (order no. 308 170 202)<br>Plug-in card 1x AI & 2x AO (order no. 308 170 206)<br>Plug-in card Profibus (order no. 308 170 203)<br>Replacement Battery (order no. 308 170 205) |

# VARIABLE FREQUENCY DRIVES (VFD)

## VFD for 4" HES

| Drive model no. | Drive type | IP | V AC $I_N$ [V] | V DC $I_N$ [V] | V OUT [V] | $I_N$ [A] | Dimensions W x H x D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|
| 002149112 | Drivte-Tech MINI 2.011 | 66 | 1 x 190 - 265 | - | 3 x 230 | 5 | 150x 130 x 211 | 2.8 |
| 002149152 | Drivte-Tech MINI 2.015 | 66 | 1 x 190 - 265 | - | 3 x 230 | 8 | 150x 130 x 211 | 2.8 |
| 314000162 | Drive-Tech MINI 4.011 | 66 | 3 x 190 - 520 | - | 3 x 380 - 460 | 4 | 150x 130 x 211 | 2.8 |
| 314000163 | Drive-Tech MINI 4.022 | 66 | 3 x 190 - 520 | - | 3 x 380 - 460 | 6 | 150x 130 x 211 | 2.8 |
| 314000164 | Drive-Tech MINI 4.040 | 66 | 3 x 190 - 520 | - | 3 x 380 - 460 | 10.5 | 150x 130 x 211 | 2.8 |
| 314000165 | Drive-Tech MINI Solar 2.005 MP | 66 | 1 x 190 - 265 | 90 - 400 | 3 x 230 | 3 | 150x 130 x 211 | 2.8 |
| 314000166 | Drive-Tech MINI Solar 2.011 MP | 66 | 1 x 190 - 265 | 90 - 400 | 3 x 230 | 5 | 150x 130 x 211 | 2.8 |
| 314000167 | Drive-Tech MINI Solar 2.015 MP | 66 | 1 x 190 - 265 | 90 - 400 | 3 x 230 | 8 | 150x 130 x 211 | 2.8 |
| 314000161 | Drive-Tech 3.030 MP | 65 | 3 x 190 - 520 | 160 - 850 | 3 x 190 - 520 | 14 | 260 x 180 x 260 | 8.2 |
| 314000108 | 100 16A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 16 | 144 x 419 x 214 | 10.0 |
| 314000109 | 100 X 16A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 16 | 233 x 368 x 214 | 14.9 |

## VFD for 6" HES

| Drive model no. | Drive type | IP | V AC $I_N$ [V] | V DC $I_N$ [V] | V OUT [V] | $I_N$ [A] | Dimensions W x H x D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|
| 314000108 | 100 16A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 16 | 144 x 419 x 214 | 10 |
| 314000101 | 100 23A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 23 | 144 x 419 x 214 | 10 |
| 314000199 | 100 31A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 31 | 144 x 419 x 214 | 10 |
| 314000102 | 100 38A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 38 | 195 x 557 x 229 | 20 |
| 314000131 | 100 46A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 46 | 195 x 557 x 229 | 20 |
| 314000103 | 100 61A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 61 | 195 x 557 x 229 | 20 |
| 314000104 | 100 87A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 87 | 237 x 660 x 259 | 37.5 |
| 314000132 | 100 105A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 105 | 237 x 660 x 259 | 37.5 |
| 314000109 | 100X 16A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 16 | 233 x 368 x 214 | 14.9 |
| 314000105 | 100X 23A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 23 | 233 x 368 x 214 | 14.9 |
| 314000200 | 100X 31A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 31 | 233 x 368 x 214 | 14.9 |
| 314000106 | 100X 38A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 38 | 350 x 500 x 236 | 31.5 |
| 314000159 | 100X 46A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 46 | 350 x 500 x 236 | 31.5 |
| 314000107 | 100X 61A | 66 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 61 | 350 x 500 x 236 | 31.5 |
| 314000120 | 100 87A IP54 | 54 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 87 | 237 x 660 x 259 | 37.5 |
| 314000201 | 100 105A IP54 | 54 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 105 | 237 x 660 x 259 | 37.5 |

## VFD for 8" HES

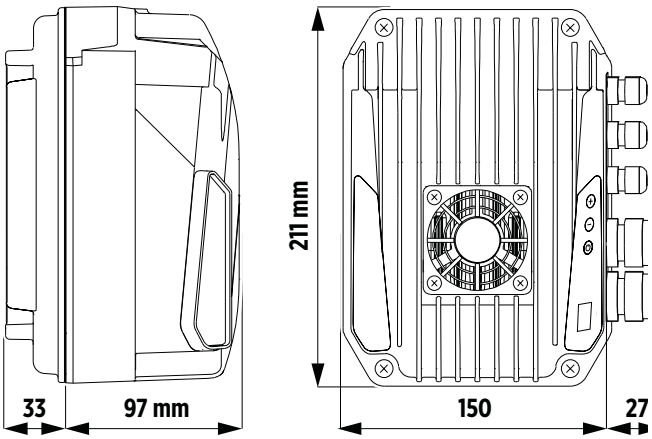
| Drive model no. | Drive type | IP | V AC $I_N$ [V] | V DC $I_N$ [V] | V OUT [V] | $I_N$ [A] | Dimensions W x H x D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|
| 314000116 | 100 140A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 140 | 290 x 966 x 343 | 66 |
| 314000117 | 100 205A | 21 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 205 | 290 x 966 x 343 | 66 |
| 314000118 | 100 310A | 00 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 310 | 480 x 971 x 365 | 104 |
| 314000113 | 100 140A IP54 | 54 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 140 | 290 x 966 x 343 | 66 |
| 314000114 | 100 205A IP54 | 54 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 205 | 290 x 966 x 343 | 66 |
| 314000115 | 100 310A IP54 | 54 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 310 | 480 x 1150 x 365 | 108 |

## VFD for 10" HES

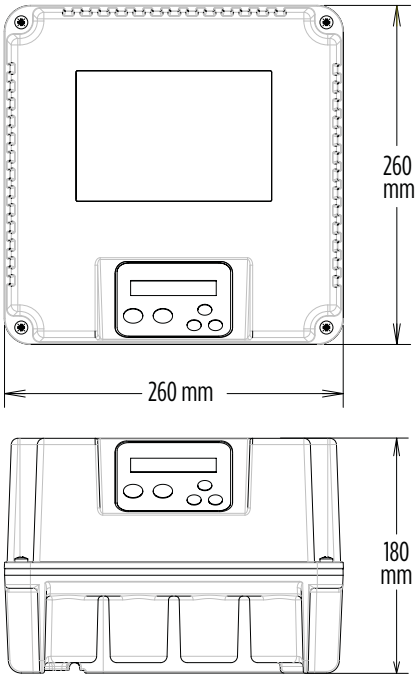
| Drive model no. | Drive type | IP | V AC $I_N$ [V] | V DC $I_N$ [V] | V OUT [V] | $I_N$ [A] | Dimensions W x H x D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|
| 314000202 | 100 385A | 00 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 385 | 480 x 840 x 365 | 104 |
| 314000203 | 100 460A | 00 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 460 | 508 x 980 x 525 | 205 |
| 314000204 | 100 520A | 00 | 3 x 380 - 500 | 400 - 850 | 3x 380 - 460 | 520 | 508 x 980 x 525 | 205 |

# VARIABLE FREQUENCY DRIVES (VFD)

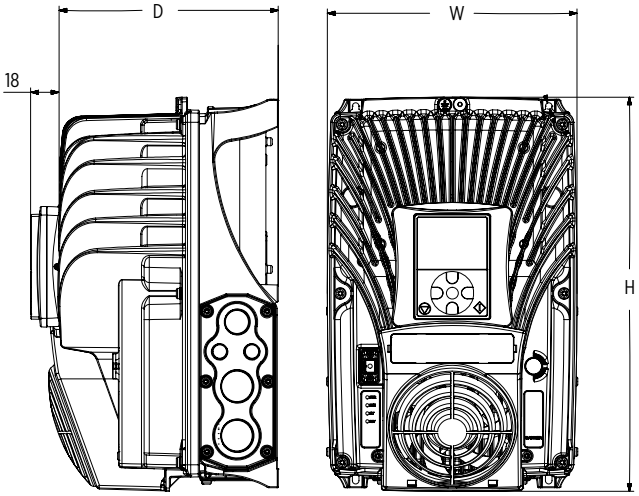
**VFD DrivE-Tech MINI**



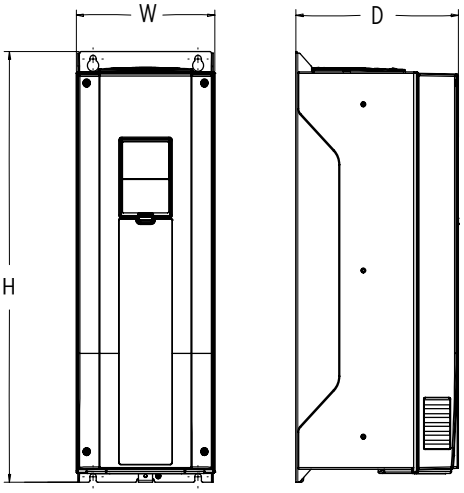

**VFD DrivE-Tech MP**




**VFD 100X**




**VFD 100**



# OUTPUT FILTER

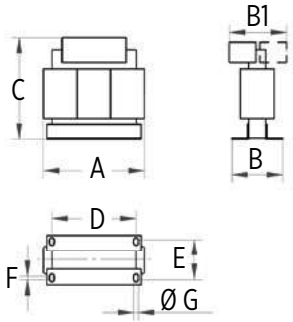
## DV/DT OUTPUT FILTER 400/500 V 4" HES

- Various filter available (4"/10": IP00, 6"/8": IP00/54)
- Optimized for submersible permanent magnet motor feeding
- Voltage: 380 - 500 V
- Frequency: 0 - 120 Hz
- Switching Frequency: 4 kHz
- Ambient Temperature: < 40 °C
- Special voltages on request
- dV/dt filter for lead lengths up to 120 m (for lead lengths >120 m please consult Franklin Electric)
- Sinus filter in IP00/54 for lead length >120 m and special applications on request

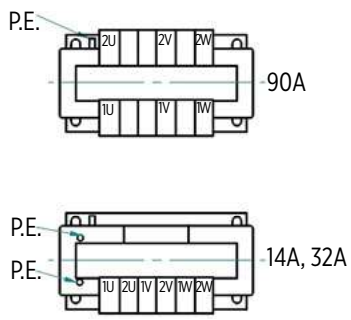


| Protection Class IP00* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order no. | $I_N$ [A] | Dimensions [mm] | | | | | | | weight [kg] |
| | | | A | B (B1) | C | D | E | F | G | |
| 308 062 001 | 002 352 414 | 14 | 120 | 67 | 115 | 100 | 60 | 5 | 5.5 | 2.7 |
| 308 063 001 | | | | | | | | | | |
| 308 064 001 | | | | | | | | | | |

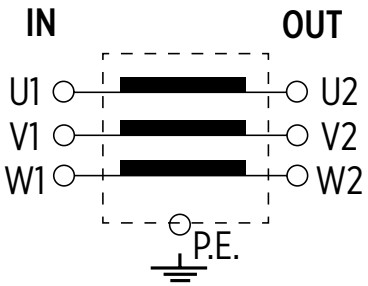
**IP00 dv/dt filter outlines**




**IP00 dv/dt filter wiring**

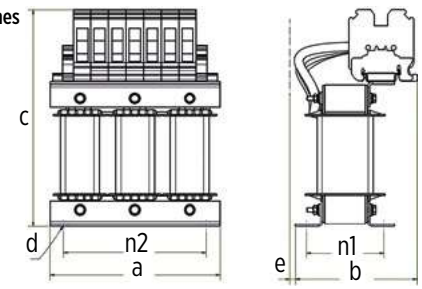



**filter connection plan**

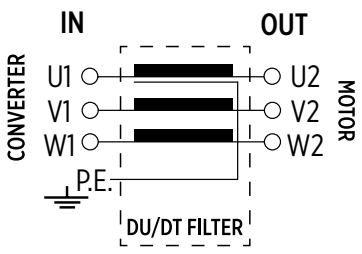



| Protection Class IP00* | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | $I_N$ [A] | Dimensions [mm] | | | | | | | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | a | b | c | n1 | n2 | d | e | | [mm²] | [mm²] | [Nm] | [Nm] |
| 314 005 101 | 23 | 125 | 92 | 161 | 55 | 100 | 5 | 15 | 2.5 | 1.5 - 16 | 1.5 - 16 | 2.5 - 3.0 | 2.5 - 3.0 |

**IP00 dv/dt filter outlines**




**dv/dt filter connection plan**



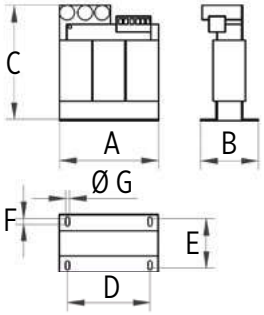

* For IP54 rating the recommended enclosure size is 10 liter.

# OUTPUT FILTER

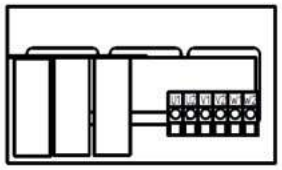
## SINUS OUTPUT FILTER 400/500 V 4" HES

| Protection Class IP00* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Filter order number | $I_N$ [A] | Dimensions [mm] | | | | | | | weight [kg] |
| | | A | B (B1) | C | D | E | F | G | |
| 002 347 013 | 14 | 180 | 105 | 210 | 150 | 90 | 10 | 6.5 | 10 |
| 002 347 011 | 32 | 240 | 115 | 280 | 200 | 95 | 10 | 9.5 | 17.5 |

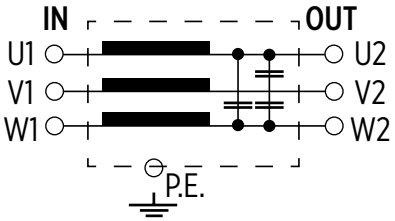
**IP00 Sinus filter outlines**




**IP00 Sinus filter wiring**



**Sinus filter connection plan**




*For IP54 rating the recommended enclosure size is 20 liter.

# OUTPUT FILTER

## DV/DT OUTPUT FILTER 380/500 V 6" HES

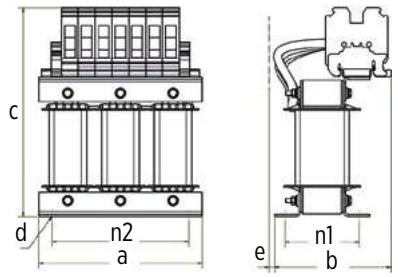


| Output Filter dV/dt High Efficiency System 380 / 500 V - protection class IP00 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | e | | [mm²] | [mm²] | [Nm] | [Nm] |
| 308 080 016<br>308 080 023 | 314 005 101 | 24 | 125 | 92 | 161 | 55 | 100 | 5 | 15 | 2,5 | 1.5 - 16 | 1.5 - 16 | 2.5 - 3.0 | 2.5 - 3.0 |
| 308 080 031<br>308 080 038 | 314 005 102 | 38 | 155 | 96 | 197 | 56 | 130 | 8 | 20 | 4 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 084 046<br>308 084 061 | 314 005 103 | 62 | 155 | 105 | 197 | 65 | 130 | 8 | 25 | 5 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 086 087 | 314 005 104 | 88 | 190 | 116 | 238 | 67 | 170 | 8 | 30 | 8 | 25 - 50 | M10 | 6 - 8 | 46 - 50 |
| 308 086 010 | 314 005 137 | 105 | 240 | 139 | 335 | 75 | 185 | 10 | - | 14 | 150 | M10 | 25 - 30 | 46 - 50 |

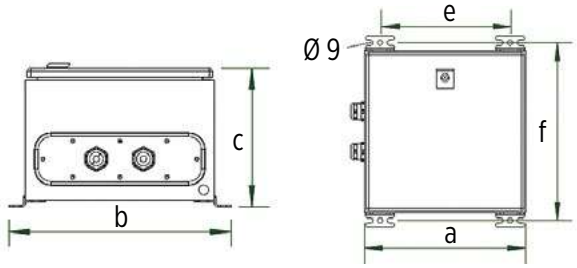
| Output Filter dV/dt High Efficiency System 380 / 500 V Model Data - Protection Class IP54 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | cable Ø [mm] | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | e | f | | | [mm²] | [mm²] | [Nm] | [Nm] |
| 308 080 216<br>308 080 223 | 314 005 110 | 24 | 325 | 354 | 227 | 242 | 330 | 2x23-33.5 | 10 | 1.5 - 16 | 1.5 - 16 | 2.5 - 3.0 | 2.5 - 3.0 |
| 308 084 231<br>308 084 238 | 314 005 111 | 38 | 325 | 354 | 227 | 242 | 330 | 2x23-33.5 | 12 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 084 246<br>308 086 261 | 314 005 112 | 62 | 325 | 354 | 227 | 242 | 330 | 2x29-40.0 | 18 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 086 287 | 314 005 118 | 88 | 405 | 654 | 227 | 242 | 330 | 2x35-46.0 | 37 | 35 | 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 086 210 | 314 005 124* | 105 | 550 | 560 | 550 | 137-289 | 520 | 6x23-35.5 | 52 | 95 | M10 | 15 - 20 | 46 - 50 |

*Floor mount

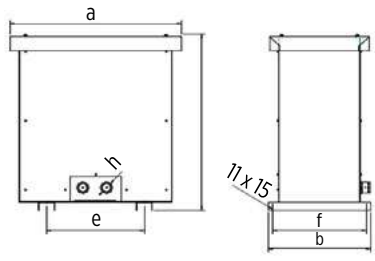
**IP00 dV/dt filter outlines**



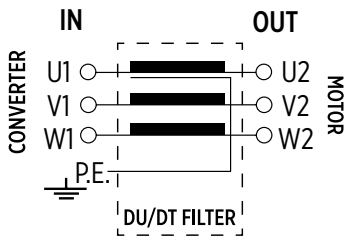

**IP54 filter outlines wall mount**




**IP54 filter outlines floor mount**




**connection plan**



# OUTPUT FILTER

## SINUS OUTPUT FILTER 380/500 V 6" HES

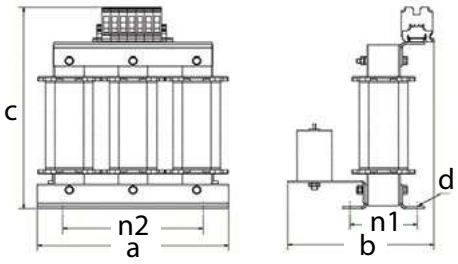


| Output Filter Sinus High Efficiency System 380/500V Model Data - Protection Class IP00 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | | [mm²] | [mm²] | [Nm] | [Nm] |
| 308 080 116 | 314 005 105 | 16 | 240 | 188 | 285 | 75 | 185 | 10 | 18 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 080 123<br>308 084 131 | 314 005 106 | 31 | 240 | 208 | 285 | 95 | 185 | 10 | 27 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 084 138<br>308 086 146 | 314 005 107 | 46 | 300 | 222 | 351 | 131 | 250 | 10 | 34 | 25 - 50 | 25 - 50 | 6 - 8 | 23 - 25 |
| 308 086 161 | 314 005 108 | 72 | 360 | 276 | 410 | 127 | 264 | 10 | 56 | 25 - 50 | 25 - 50 | 6 - 8 | 23 - 25 |
| 308 086 187<br>308 086 110 | 314 005 109 | 105 | 360 | 276 | 413 | 127 | 264 | 10 | 57 | 35 - 95 | M10 | 15 - 20 | 46 - 50 |

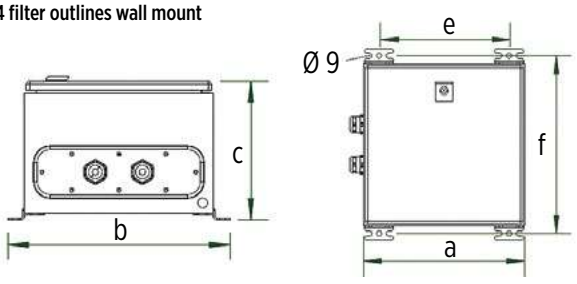
| Output Filter Sinus High Efficiency System 380/500V Model Data - Protection Class IP54 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | cable Ø [mm] | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | e | f | | | [mm²] | [mm²] | [Nm] | [Nm] |
| 308 080 316 | 314 005 117 | 16 | 600 | 435 | 230 | 542 | 410 | 2x23-33.5 | 49 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 080 323 | 314 005 113* | 23 | 550 | 560 | 550 | 185 | 520 | 2x23-33.5 | 56 | 1.5 - 35 | 1.5 - 35 | 3.2 - 3.7 | 3.2 - 3.7 |
| 308 084 331<br>308 084 338 | 314 005 115* | 38 | 770 | 610 | 620 | 450 | 570 | 2x23-33.5 | 65 | 10 | 10 | 1.5 - 1.8 | 1.5 - 1.8 |
| 308 084 346 | 314 005 116* | 46 | 770 | 610 | 620 | 450 | 570 | 2x23-35.5 | 76 | 10 | 10 | 1.5 - 1.8 | 1.5 - 1.8 |
| 308 086 361 | 314 005 116* | 72 | 770 | 610 | 620 | 450 | 570 | 2x35-46 | 112 | 25 - 50 | 25 - 50 | 6 - 8 | 23 - 25 |
| 308 086 387<br>308 086 310 | 314 005 138* | 105 | 770 | 610 | 620 | 357-509 | 570 | 6x23-35.5 | 167 | 95 | M10 | 15-20 | 46-50 |

*Floor mount

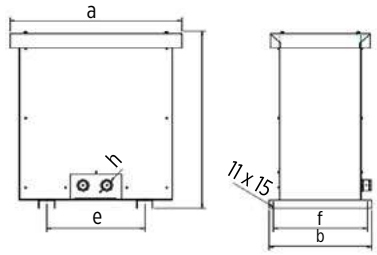
**IP00 Sinus filter outlines**



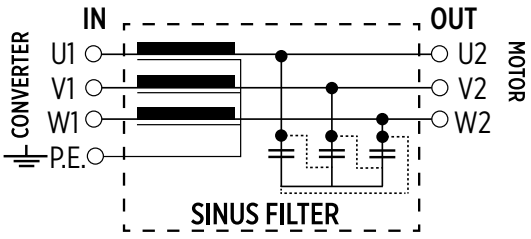

**IP54 filter outlines wall mount**




**IP54 filter outlines wall mount**




**Sinus filter connection plan**



# OUTPUT FILTER

## DV/DT OUTPUT FILTER 400/500 V 8" HES

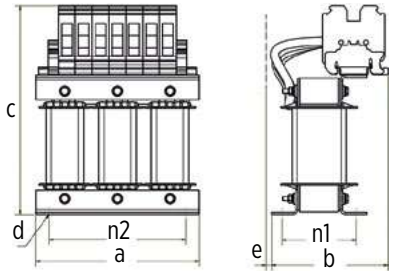


| 400/500V dV/dt output filter High Efficiency System - protection class IP00* | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | e | | [mm²] | | [Nm] | |
| 308 014 001 | 314 005 130 | 140 | 240 | 139 | 335 | 75 | 185 | 10 | 35 | 18 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 016 001 | 314 005 119 | 205 | 240 | 149 | 335 | 85 | 185 | 10 | 40 | 20 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 018 001 | 314 005 120 | 310 | 300 | 168 | 256 | 107 | 224 | 10 | - | 35 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |

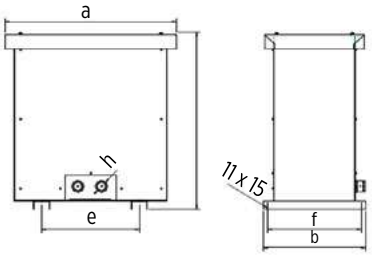
| 400/500V dV/dt output filter High Efficiency System - protection class IP54* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | cable Ø [mm] | weight | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | e | f | | [kg] | [mm²] | | [Nm] | |
| 308 014 201 | 314 005 124* | 140 | 550 | 560 | 550 | 185 | 520 | 6x23 - 35.5 | 48 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 016 201 | 314 005 125* | 205 | 550 | 560 | 550 | 185 | 520 | 6x23 - 35.5 | 53 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 018 201 | 314 005 126* | 310 | 550 | 560 | 550 | 185 | 520 | 6x23 - 35.5 | 70 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |

*Floor mount

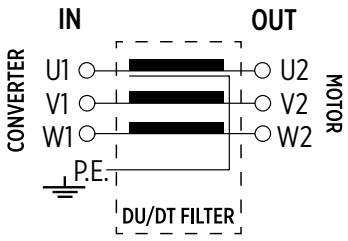
**IP00 dV/dt filter outlines**




**IP54 filter outlines floor mount**




**dV/dt filter connection plan**



# OUTPUT FILTER

## SINUS OUTPUT FILTER 400/500 V 8" HES

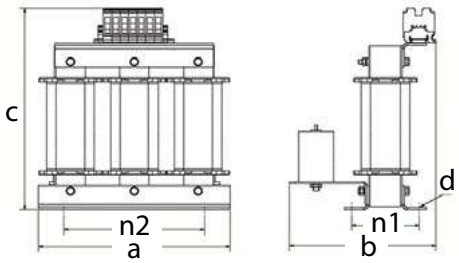


| 400/500V Sinus output filter High Efficiency System - protection class IP00* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | | [mm²] | | [Nm] | |
| 308 014 101 | 314 005 121 | 140 | 360 | 311 | 440 | 157 | 264 | 10 | 75 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 016 101 | 314 005 122 | 205 | 420 | 335 | 510 | 173 | 316 | 13 | 105 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |
| 308 018 101 | 314 005 171 | 261 | 420 | 335 | 460 | 173 | 316 | 13 | 107 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |

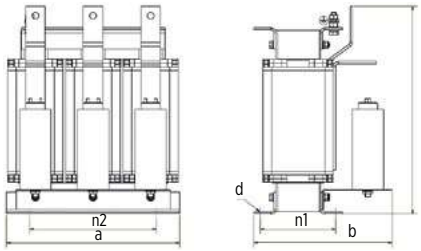
| 400/500V Sinus Filter Model Data - Protection Class IP54* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | cable Ø [mm] | weight [kg] | terminal | | clamping torque | |
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | e | f | | | [mm²] | | [Nm] | |
| 308 014 301 | 314 005 127* | 140 | 770 | 610 | 620 | 450 | 570 | 6x23 - 33.5 | 140 | 50 - 150 | M10 | 25 - 30 | 46 - 50 |
| 308 016 301 | 314 005 128* | 205 | 1150 | 920 | 890 | 550 | 880 | 6x23 - 33.5 | 250 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |
| 308 018 301 | 314 005 170* | 261 | 1150 | 920 | 890 | 550 | 880 | 6x23 - 33.5 | 429 | 70 - 240 | M10 | 25 - 30 | 46 - 50 |

*Floor mount

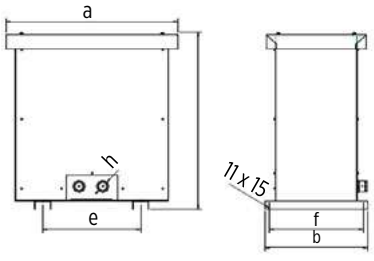
**IP00 Sinus filter outlines 314 005 121/122**



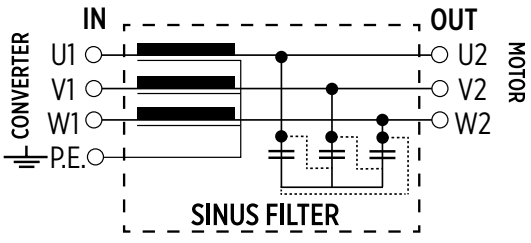

**IP00 filter outlines 314 005 123**




**IP54 Sinus filter outlines floor mount**




**Sinus filter connection plan**



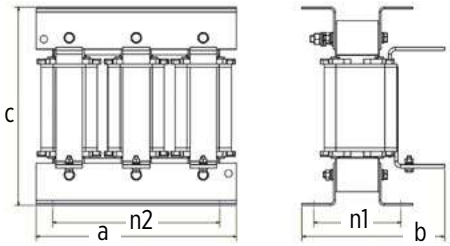
# OUTPUT FILTER

## DV/DT OUTPUT FILTER IP00 10" HES

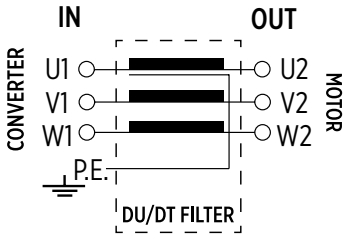


| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | weight [kg] | terminal | | clamping torque | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | | [mm²] | | [Nm] | |
| 308 028 001 | 314 005 166 | 460 | 300 | 224 | 296 | 143 | 250 | 11x22 | 40 | 40x10 / M 12 | M 10 | 65 - 80 | 46 - 50 |
| 308 029 001 | 314 005 167 | 650 | 300 | 260 | 347 | 143 | 250 | 11x22 | 50 | 40x10 / M 12 | M 12 | 65 - 80 | 79 - 85 |

**IP00 dV/dt filter outlines**




**dV/dt filter connection plan**

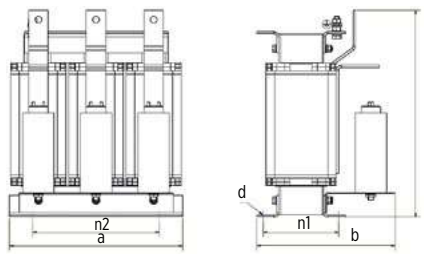



## 10" SINUS OUTPUT FILTER IP00

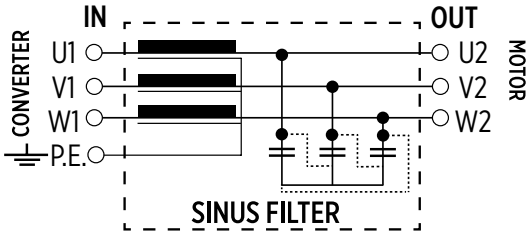


| System model no. | Filter order code | $I_N$ [A] | Dimensions [mm] | | | | | | weight [kg] | terminal | | clamping torque | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | main | PE | main | PE |
| | | | a | b | c | n1 | n2 | d | | [mm²] | | [Nm] | |
| 308 028 101 | 314 005 168 | 460 | 480 | 460 | 523 | 212 | 356 | 13 x 20 | 190 | 40 x 10 / M 12 | M 12 | 65 - 80 | 79 - 85 |
| 308 029 101 | 314 005 169 | 590 | 480 | 490 | 523 | 212 | 356 | 13 x 20 | 225 | 50 x 10 / M 12 | M 12 | 65 - 80 | 79 - 85 |

**IP00 filter outlines mount**




**Sinus filter connection plan**



# ACCESSORIES

## CORROSION PROTECTION 4" MOTORS

| Description | Model no. | |
|---|---|---|
| ■ For use in more aggressive media<br>■ Mounting on the bottom of the motors<br>■ Material: GG 25<br><br>System of operation: Wells with extremely high levels of chlorides and other elements combined with high temperatures will attack almost any type of metal, including stainless steel. When in contact with a more noble metal, the less noble metal becomes the anode of a galvanic cell. Oxidation occurs at the anode. It slowly dissolves (sacrificial anode), leaving the more noble metal unaffected. The result is a longer service life of the motor/pump unit in more aggressive media. |  <br>4000 N: 308 250 914<br>6500 N: 308 250 913 |  <br>4000N<br>  <br>6500N |

## DC DISCONNECT

| Description | Model no. | [A] | [V DC] | |
|---|---|---|---|---|
| To disconnect the drive even under load safely from the solar generator, Franklin Electric offers suitable DC disconnect switches for different power ratings. | 308 170 313 | 0 - 11 A | 800 |  |
| | 308 170 325 | 12 - 22 A | 800 | |

## DOUBLE PLUG LEAD 4" MOTOR DESIGN

- Connected between termination kit and 4" motor, required for use of lead termination kit.
- Max. current: 18 Ampere in air at max. 50 °C ambient temperature, 23 Ampere submersed in water at max. 30 °C ambient temperature
- Max. voltage: 750 V AC

| Model no. | Material | Description | |
|---|---|---|---|
| 308 130 041 | 304SS | 3x1.5 / 1G 1.5 mm² 1.50 m - w/o strain relief |  |
| 308 130 051 | 316SS | | |
| 308 130 042 | 304SS | 3x1.5 / 1G 1.5 mm² 2.50 m - w/o strain relief | |
| 308 130 052 | 316SS | | |
| 308 130 031 | 304SS | 3x1.5 / 1G 1.5 mm² 1.50 m - with strain relief(Brass) | |
| - | 316SS | | |
| 308 130 032 | 304SS | 3x1.5 / 1G 1.5 mm² 2.50 m - with strain relief(Brass) | |
| - | 316SS | | |

## LEAD TERMINATION KIT 4"

| Description | Material description | Model no. | |
|---|---|---|---|
| This proven, robust solution makes it possible to establish a detachable connection to the drop cable or to reuse it when the pump is used temporarily (frequent change of location, motor replacement, etc.). Especially under field conditions, this flexible and safe solution offers great advantages over conventional fixed connections.<br>(Attention: Resin and hardener have a limited durability).<br><br>■ Max. Current: 18 Amp. in air (Max. ambient temperature: 50 °C)<br>■ Max. Current: 23 Amp. immersed in water (Max. ambient temperature: 30 °C)<br>■ Max. Voltage: 750 V AC | Standard 304SS (Cable plug - Brass) | 308 090 901 |  |
| | 316SS (Cable plug - 1.4404) | 308 090 911 | |
| | Strain Relief 304SS (Strain relief - Brass) | 308 090 902 | |

# ACCESSORIES

## Lead Splicing Kit up to 95 MM²



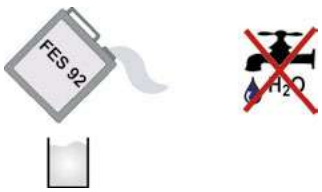
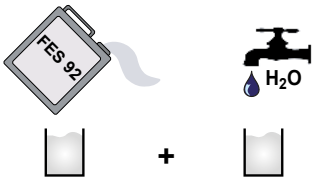
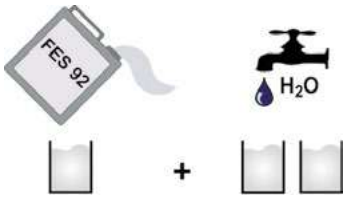
- Connection kit for cable extensions with cable connection sleeves for cable cross-sections up to 95 mm².
- Suitable for all common cable materials
- Long service life
- High electrical insulation values and mechanical strength
- Quick and easy assembly
- Components: Transparent plastic shell, ready-to-mix casting resin, insulating tape, installation instructions

| Tech. Description | Mod. Nb. | Description | for cross-sections up to [mm²] | L [mm] | Ø [mm] | H [mm] | Max. cable Ø [mm] |
|---|---|---|---|---|---|---|---|
| • 4 wire<br>• up to 95mm²<br>• up to 1,2kV | 308 090 930 | Splicing Kit 10 | 1.5 - 10 | 190 | 36 | 50 | 26 |
| | 308 090 931 | Splicing Kit 25 | 10 - 25 | 260 | 47 | 63 | 34 |
| | 308 090 932 | Splicing Kit 50 | 25 - 50 | 360 | 55 | 75 | 43 |
| | 308 090 933 | Splicing Kit 95 | 50 - 95 | 400 | 70 | 95 | 48 |

## MOTOR FILLING KIT

| Description | Model no. | |
|---|---|---|
| This kit contains all necessary tools to check and replenish Franklin Electric submersible motors with filling liquid (fill solution/concentrate must be ordered separately). | 308 726 103 |  |

## MOTOR FILLING LIQUID

| Description | FES92 | FES91 | FES93 |
|---|---|---|---|
| 5 l motor filling liquid FES92<br>model no. 308 353 941<br>  |  |  |  |

| motor type | required motor filling |
|---|---|
| 4" encapsulated motor Standard / PM motor | FES93 |
| 6" encapsulated Standard / PM motor | FES91 |
| 6" encapsulated High Temp motor | FES92 |

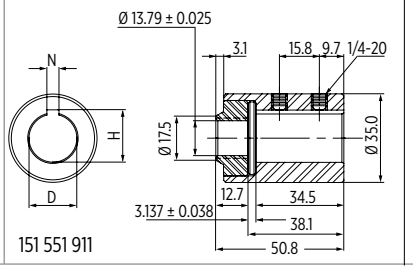
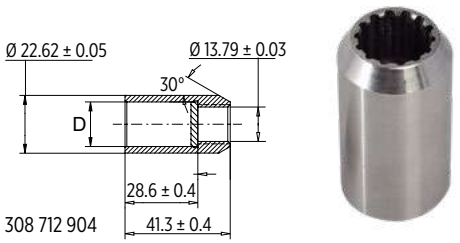
| motor type | required motor filling |
|---|---|
| 8" encapsulated Standard motor | FES91 |
| 8" encapsulated High Temp 75 motor | FES92 |
| 6"/8"/10"/12" rewindable Standard / PM motor | FES93 |

# ACCESSORIES

## MOTOR/PUMP COUPLINGS

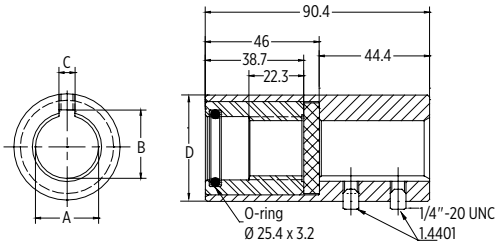
- Motor-pump couplings for matching Franklin Electric motors to a variety of pump shafts.
- Couplings are designed to transmit the pump thrust to the motor in order to provide maximum benefits from the Franklin internal thrust bearing construction.
- Hardened Stainless steel spacer discs in the 4" and 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

| Description | Dimensions |
|---|---|
| ■ 4" motor/pump coupling<br>■ NEMA Standard measuring on motor shaft<br>■ separate washer between motor and pump shafts<br>■ Material: 304SS / 316SS |  <br>151 551 911<br>  <br>308 712 904<br> |

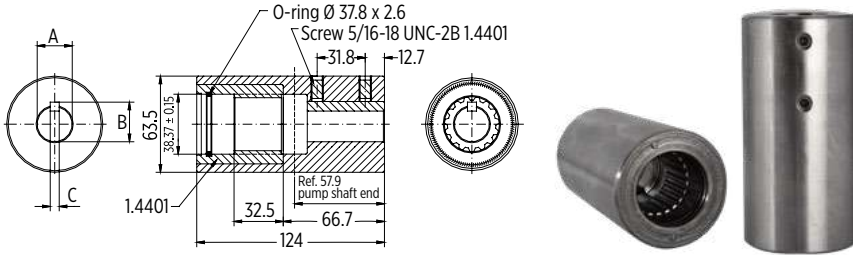
| Model no. | Coupling Material DIN (AISI) | Dimension D [mm] Max. / Min. | Dimension N [mm] Max. / Min. | Dimension H [mm] Max. / Min. |
|---|---|---|---|---|
| 151 551 911 | 304SS | 19.075 / 19.063 | 4.838 / 4.788 | 20.70 / 20.53 |
| 308 712 904 | 316SS | 17.50 / 17.48 | | |

### 6" Motor/pump couplings

| Description | Dimensions |
|---|---|
| ■ 6" motor/pump coupling<br>■ NEMA Standard measuring on motor shaft<br>■ separate washer between motor and pump shafts<br>■ Material: 304SS / 316SS |  <br>  <br>  |

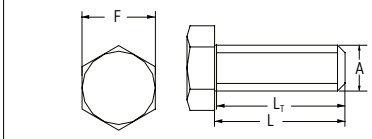
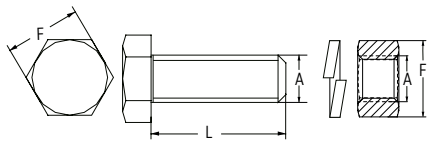
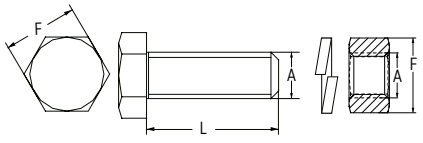
| Model no. | Coupling Material DIN (AISI) | Dimension A [mm] Max. / Min. | Dimension B [mm] Max. / Min. | Dimension C [mm] Max. / Min. | Dimension D [mm] |
|---|---|---|---|---|---|
| 151 935 902 | 1.4005 (304SS) | 19,075 / 19,063 | 20,70 / 20,52 | 4,84 / 4,79 | 43,0 |
| 151 935 922 | 1.4401 (316SS) | | | | |
| 151 935 910 | 1.4005 (304SS) | 20,025 / 20,013 | 22,76 / 22,60 | 6,05 / 6,00 | 43,0 |
| 151 935 927 | 1.4401 (316SS) | | | | |
| 151 935 908 | 1.4005 (304SS) | 22,025 / 22,013 | 25,53 / 25,32 | 8,03 / 7,98 | 43,0 |
| 151 935 928 | 1.4401 (316SS) | | | | |
| 151 935 901 | 1.4005 (304SS) | 22,250 / 22,238 | 24,54 / 24,36 | 6,43 / 6,38 | 43,0 |
| 151 935 921 | 1.4401 (316SS) | | | | |
| 151 935 906 | 1.4005 (304SS) | 25,025 / 25,013 | 28,70 / 28,30 | 8,03 / 7,98 | 43,0 |
| 151 935 926 | 1.4401 (316SS) | | | | |
| 151 935 909 | 1.4005 (304SS) | 25,425 / 25,413 | 27,74 / 27,56 | 6,43 / 6,38 | 43,0 |
| 151 935 929 | 1.4401 (316SS) | | | | |

## 8" Motor/pump couplings

| Description | Dimensions |
|---|---|
| ■ Material: 304SS / 316SS<br>■ NEMA standard measuring on motor shaft<br>■ Separation washer between motor and pump shaft |  |

| Model no. | Coupling Material DIN (AISI) | Dimension A [mm] Max. / Min. | Dimension B [mm] Max. / Min. | Dimension C [mm] Max. / Min. |
|---|---|---|---|---|
| 156 563 901 | 1.4005 (304SS) | 25.425 / 25.413 | 28.27 / 28.17 | 6.38 / 6.32 |
| 156 563 921 | 1.4404 (316SS) | | | |
| 156 563 902 | 1.4005 (304SS) | 30.188 / 30.175 | 33.73 / 33.63 | 7.96 / 7.91 |
| 156 563 922 | 1.4404 (316SS) | | | |
| 156 563 903 | 1.4005 (304SS) | 31.775 / 31.763 | 35.36 / 35.26 | 7.96 / 7.91 |
| 156 563 923 | 1.4404 (316SS) | 38.125 / 38.113 | | |
| 156 563 904 | 1.4005 (304SS) | 38.125 / 38.113 | 42.37 / 42.27 | 9.55 / 9.50 |
| 156 563 924 | 1.4404 (316SS) | 38.125 / 38.113 | | |
| 156 563 905 | 1.4005 (304SS) | 19.085 / 19.063 | 20.70 / 20.52 | 4.84 / 4.79 |
| 156 563 906 | 1.4005 (304SS) | 30.188 / 30.175 | 33.02 / 32.92 | 6.38 / 6.32 |
| 156 563 926 | 1.4404 (316SS) | 30.188 / 30.175 | 33.02 / 32.92 | 6.38 / 6.32 |
| 156 563 907 | 1.4005 (304SS) | 22.250 / 22.238 | 24.54 / 24.36 | 6.43 / 6.38 |
| 156 563 908 | 1.4005 (304SS) | 22.024 / 22.011 | 25.53 / 25.32 | 8.03 / 7.98 |
| 156 563 931 | 1.4404 (316SS) | | | |
| 156 563 929 | 1.4404 (316SS) | 42.888 / 42.850 | 47.12 / 47.04 | 9.55 / 9.50 |

## MOTOR/PUMP CONNECTION SCREWS

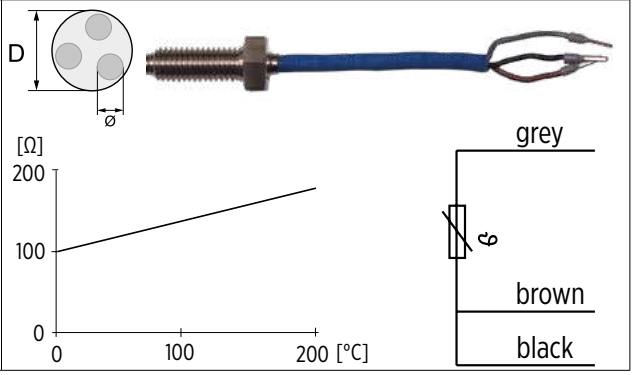
| | Motor type | Material | L / $L_T$ [mm] | Thread type [mm] | F [mm] | Model no. |
|---|---|---|---|---|---|---|
|  | 6" CT | 316SS | 38.1 | 1/2-20UNF | 19 | 308 659 318 |
|  | 8" REW | 316SS | 70 | M16 | 24 | 308 659 327 |
|  | 10" REW | 316SS | 80 | M20 | 30 | 308 659 319 |

# ACCESSORIES

## PT 100 SENSOR FOR 6" ENCAPSULATED PM MOTORS

The PT100 is a precision platinum wire resistor that is specified occasionally as a temperature input for process control equipment.
Including complete instructions for easy field installation

- A jacketed control lead must be run from the PT100 lead to the above-ground equipment. The above-ground equipment is not available from Franklin Electric and is typically part of a custom panel or data acquisition system.
- To install the PT100 sensor bolt, remove the top end bell bolt that is opposite of the lead and replace it with the PT100 screw. Tighten the sensor bolt to the torque values with 54- 61 Nm.

| Kit no. | motor types | screw material | wire insulation | Ø [mm²] | D [mm] | lead length [m] | |
|---|---|---|---|---|---|---|---|
| 305 327 903 | 6" all ratings | 1.4571 | rubber | 3x0.5 | 6.4 | 10 |   |

## PT 100 SENSOR 6" CT PM - TRIP SETTINGS

| 6" CT PM Motor rating [kW] | Ambient [°C] | Cooling flow past the motor [m/s] | Max. trip temperature / resistance setting (for standard lead length) |
|---|---|---|---|
| 11 | 30 | 0,2 | 47 °C / 121,3 Ω |
| 22 | 30 | 0,2 | |
| 45 | 30 | 0,5 | |

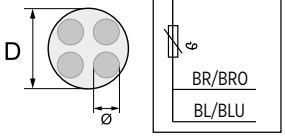
Youtube tutorial PT100 installation encapsulated motors: ➡️ https://youtu.be/S7y7h7kEYMo

## PT 100 SENSOR FOR 8"/10" REWINDABLE PM MOTORS

- Continuous monitoring of the temperature of the filling liquid
- Can be retrofitted at rewindable 8"and 10" pm rewindable motors; fitted into the upper end bell flange
- The PT100 is a conductor with a resistance proportional to the temperature.
- Including complete instructions for easy field installation

| Ø [mm²] | D [mm] | lead length [m] | Kit no. 8" / 10" | |
|---|---|---|---|---|
| | | | WW/316SS | 904L |
| 4x0.5 | 8 | 10 | 308 016 401 | 308 016 422 |
| 4x0.5 | 8 | 20 | 308 016 402 | - |
| 4x0.5 | 8 | 30 | 308 016 403 | - |
| 4x0.5 | 8 | 50 | 308 016 405 | 308 016 426 |









Trip points: 8" REW PM Motor: 55 °C
Trip points: 10" REW PM Motor: 65 °C

Youtube tutorial PT100 installation rewindable motors: ➡ https://youtu.be/KIT6UrgmJac

## COOLING SLEEVE FOR SUBMERSIBLE PUMPS

A minimum cooling speed along the motor must always be ensured.
If this is not guaranteed due to too large well diameter and/or too low a flow rate, or even undefined water intake (e.g. from above), a cooling sleeve must be installed.
Brackets for horizontal installation and strainer baskets as suction protection are optionally available.

■ see pages 206 - 210



# ACCESSORIES

## PRESSURE TRANSDUCER 0 - 25 BAR

| Description | | range [Bar] | Signal [mA] | Model no. | Sensor with cable | Sensor without cable |
|---|---|---|---|---|---|---|
| ■ 0 - 25 Bar<br>■ Connection: G1/4"<br>■ Material A304 | Pressure sensor without cable | 0-10 | 4-20 | 002851075 |  |  |
| | Pressure sensor without cable | 0-16 | | 002851080 | | |
| | Pressure sensor without cable | 0-25 | | 002851085 | | |
| | Pressure sensor with 2m cable | 0-6 | | 002851076 | | |
| | Pressure sensor with 2m cable | 0-10 | | 002851081 | | |
| | Pressure sensor with 2m cable | 0-16 | | 002851088 | | |

## FLOW PADDLE SWITCH

| Description | Model no. | |
|---|---|---|
| ■ 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.<br>■ For Flow rates above 4 $m^3/h$<br>■ Connection: G1" | 226 019 101 |  |

## INLINE FLOW SWITCH

| Description | Model no. | |
|---|---|---|
| ■ The Inline Flow Switch operates magnetically.<br>■ The piston within the switch body should be a free fit and spring back to its off position as soon as flow stops.<br>■ For flow rates up to 4 $m^3/h$<br>■ Connection: G1" | 226 014 101 |  |

## LEVEL SWITCH

| Description | Model no. | |
|---|---|---|
| A level switch is a device used to detect the level of liquid within a tank. | 308 170 209 |  |

## WALL MOUNTING KIT DRIVETECH VFD

| DrivE-Tech mini | Model no. | |
|---|---|---|
| **Description**<br>■ Cable with plug 230V<br>■ Screws and connectors<br>■ Wall mounting plate | 002150AP0 |  |

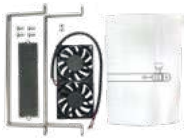
| DrivE-Tech Compact | Model no. | |
|---|---|---|
| **Description**<br>■ Screws and connectors<br>■ Wall mounting plate | 002150WK0 |  |

| DrivE-Tech MP > 2.015 - 2.030 | Model no. | |
|---|---|---|
| **Description**<br>■ Fan with protective grid<br>■ Screws<br>■ Wall mounting plate | 14211010 |  |

# ACCESSORIES

## WALL MOUNTING KIT DRIVETECH VFD

| DrivE-Tech MP > 4.022 - 4.040 | Model no. | |
|---|---|---|
| **Description**<br>■ Fan with protective grid<br>■ Screws<br>■ Wall mounting plate | 14211021 |  |

| DrivE-Tech MP > 4.055 - 4.150 | Model no. | |
|---|---|---|
| **Description**<br>■ Fan 2x<br>■ Screws<br>■ Wall mounting frames<br>■ cover plate | 14211030 |  |

## DRIVE-TECH PLUG-IN OUTPUT FILTER CARD

| Description | Model no. | |
|---|---|---|
| ■ DTC plug-In dV/dt filter card | 002150FC0 |  |

## CATALOG REVISION CHANGE NOTES

| Nr. | Changes Rev.36 to Rev.37 | Page |
|---|---|---|
| 1 | new VSI 8"/10" submersible pumps added, VSC 8"/10" submersible pumps removed | 290 |
| 2 | update assignment cooling jackets in accessories | 206 - 210 |
| 3 | Dimensions/packing with weights SubStart/SubTronic control boxes update | 188/190/192/194 |
| 4 | | |
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| 17 | | |

## NOTES



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