

  
**RAINFOS**<sup>®</sup>  
SUBMERSIBLE PUMP

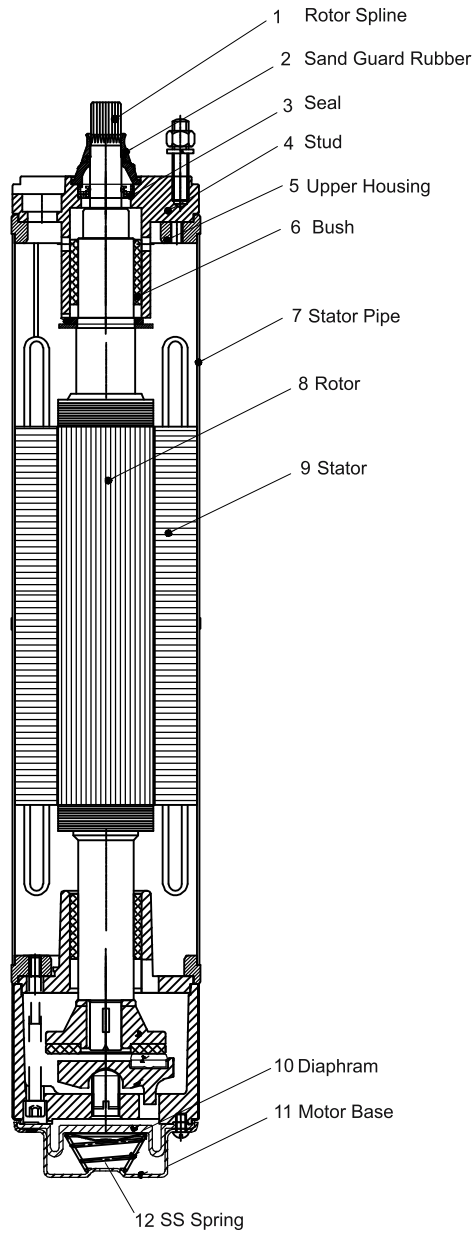


*Together we can do it  
together we have always done it”*

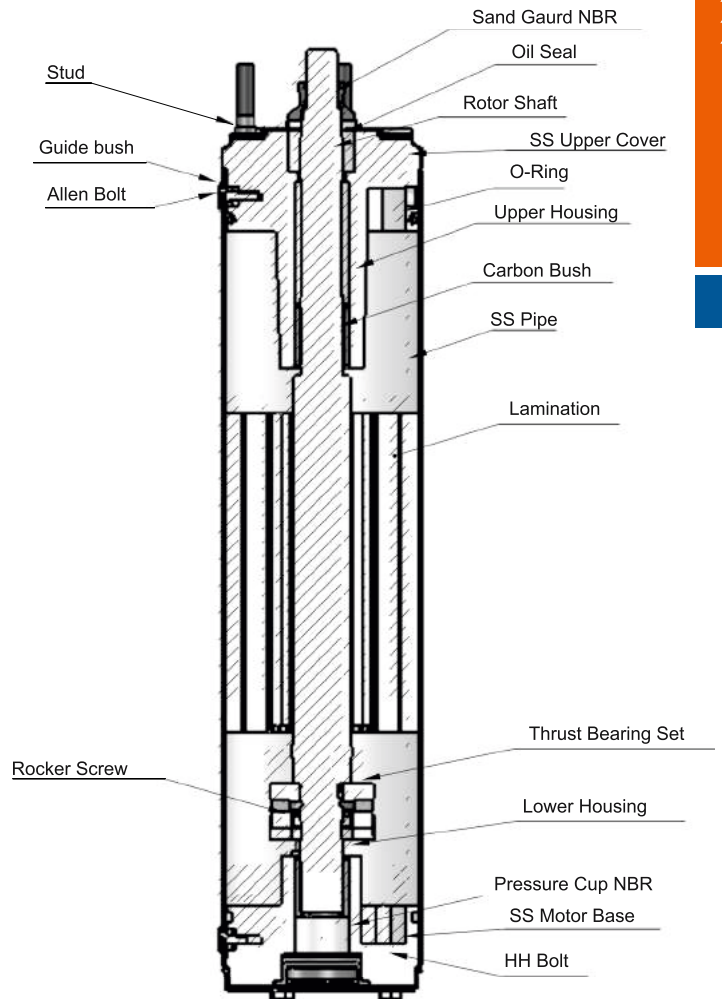
# SUBMERSIBLE PUMP SUBMERSIBLE PUMP



## CUT Drawing



OSF - 100  
2HP - 10.0HP



OSL - 100  
0.5HP - 1.5HP

### 3 Phase

### 1 Phase

Power	Power	Length	T.Length	Net. Weight	Power	Power
KW	HP	mm	mm	Kg.	KW	HP
1.5	2.0	580	618	22	1.5	2.0
2.2	3.0	600	638	24	2.2	3
3.7	5.0	792	830	30	4.0	5.5
4.0	5.5	792	830	30		
5.5	7.5	842	880	32		
7.5	10.0	892	930	34		

### 3 Phase

### 1 Phase

Power	Power	Power	Power
KW	HP	KW	HP
0.37	0.5	0.37	0.5
0.55	0.75	0.55	0.75
0.75	1.0	0.75	1.0
1.1	1.5	1.1	1.5

## General Information

### Application :

4" Rewindable motors are built for dependable operation in 4" diameter or Large water wells.

Water lubricated thrust and radial bearings enable a very less maintenance operation.

A preloaded special diaphragm ensures pressure compensation inside the Motor.

### Product advantages :

Cable material according to drinking water regulations.

Sand slinger and SiC mechanical seal for high performance in sand.

High efficiency electrical design for low operation cost.

All motors are pre filled and 100% tested.

Max. storage temperature - 15°C to +60°C

Approved tilting type thrust bearing (0.37KW to 5.5 KW)

### Technical Specification :

Standard 4" NEMA flanges with Studs (M8)

Protection IP 68

Start per hours max.20

Installation position : vertical

Motor lead in 3 m length

Standard voltage: 380-415V/50Hz,460V/60Hz Voltage

tolerance: +6%,-10% (Standard415+6%=440V,380V-10%=342V)

Frequency tolerance -  $\pm 2\%$  Speed-approx.2850 -2880 rpm at

50Hz.Star alternatives - Direct on line (DOL)

Single phase motors are capacitor start & run voltage 220-230V/50Hz

Allowable Voltage variations +6%,-10%, Frequency tolerance  $\pm 2\%$

Speed-approx.2850-2880rpm at 50Hz

Standard motor with poly wrapped copper winding wire for

Max Ambient temp. of 50°C with a min. cooling flow:

0.37 kw -5.5 kw  $v=0.2\text{m/s}$

OSF - 100 2HP - 7.5HP

OSL - 100 0.5HP - 1.5HP

### Optional :

Other voltage & Frequency 380 V / 220 V/ 60 Hz

In 60 Hz Speed - Approx. - 3450 Rpm

## Performance Data of 4" Standard Rewindable Motors / 50 Hz

PN		Thrust Load(N)	Volt (V)	Speed rpm	In (A)	EFF% at %load			Power Factor At % Load			N T (Nm)
H.P.	KW					50%	75%	100%	50%	75%	100%	
<b>0.5</b>	<b>0.37</b>	<b>1500</b>	220	2850	4.2	51	59	62	0.52	0.64	0.73	1.2
			230	2850	4.0	51	59	62	0.52	0.64	0.73	1.2
<b>0.75</b>	<b>0.55</b>	<b>1500</b>	220	2850	6.2	52	59	63	0.48	0.59	0.69	1.8
			230	2850	6.0	52	59	63	0.48	0.59	0.69	1.8
<b>1.0</b>	<b>0.75</b>	<b>1500</b>	220	2850	7.5	56	62	64	0.54	0.66	0.75	2.5
			230	2850	7.3	56	62	64	0.54	0.66	0.75	2.5
<b>1.5</b>	<b>1.1</b>	<b>1500</b>	220	2850	9.6	58	65	68	0.59	0.71	0.80	3.7
			230	2850	8.9	58	65	68	0.59	0.71	0.80	3.7
<b>2.0</b>	<b>1.5</b>	<b>3000</b>	220	2850	11.6	60	66	68	0.71	0.81	0.88	4.9
			230	2850	11.1	60	66	68	0.71	0.81	0.88	4.9
<b>3.0</b>	<b>2.2</b>	<b>4000</b>	220	2850	16.7	61	68	70	0.72	0.82	0.88	7.4
			230	2850	15.9	61	68	70	0.72	0.82	0.88	7.4
<b>5.5</b>	<b>4.0</b>	<b>4000</b>	220	2850	24.0	65	70	71	0.76	0.82	0.88	8.4
			230	2850	23.0	65	70	71	0.76	0.82	0.88	8.4

## Performance Data of Three Phase Motors(380-415 Volts / 50Hz)

PN		Thrust Load(N)	Volt (V)	Speed rpm	In (A)	EFF% at %load			Power Factor At % Load			TN (Nm)
H.P.	KW					50%	75%	100%	50%	75%	100%	
<b>0.75</b>	<b>0.55</b>	<b>1500</b>	380	2820	1.9	49	57	64	0.42	0.52	0.7	1.9
			400	2830	2	49	57	64	0.42	0.52	0.64	1.9
			415	2850	2.1	48	56	63	0.41	0.57	0.6	1.9
<b>1.0</b>	<b>0.75</b>	<b>1500</b>	380	2820	2.2	64	70	73	0.5	0.63	0.75	2.5
			400	2830	2.3	64	70	73	0.5	0.63	0.72	2.5
			415	2850	2.4	63	68	73	0.41	0.62	0.65	2.5
<b>1.5</b>	<b>1.1</b>	<b>1500</b>	380	2820	3.3	63	69	73	0.47	0.59	0.76	3.8
			400	2830	3.4	63	69	73	0.47	0.59	0.72	3.7
			415	2850	3.2	62	68	73	0.41	0.58	0.65	3.7
<b>2.0</b>	<b>1.5</b>	<b>3000</b>	380	2820	3.9	69	72	73	0.59	0.72	0.81	5.0
			400	2830	4.0	66	71	73	0.53	0.66	0.76	5.0
			415	2850	4.1	63	69	72	0.48	0.61	0.72	4.9
<b>3.0</b>	<b>2.2</b>	<b>4000</b>	380	2820	5.8	72	75	75	0.58	0.72	0.81	7.6
			400	2830	5.9	69	73	75	0.51	0.64	0.75	7.5
			415	2850	6.3	66	71	73	0.45	0.59	0.69	7.5
<b>5.5</b>	<b>4.0</b>	<b>4000</b>	380	2820	9.8	63	67	70	0.73	0.79	0.83	19.0
			400	2830	9.5	61	65	68	0.70	0.75	0.82	19.0
			415	2850	9.2	59	63	66	0.69	0.74	0.81	18.8
<b>7.50</b>	<b>5.5</b>	<b>4000</b>	380	2820	14.8	70	73	74	0.75	0.79	0.84	24.6
			400	2830	14.5	68	71	72	0.74	0.78	0.84	24.5
			415	2850	14.0	66	69	71	0.72	0.77	0.83	24.4
<b>10.0</b>	<b>7.5</b>	<b>4000</b>	380	2820	18.3	75	76	74	0.70	0.80	0.80	25.0
			400	2830	17.7	73	76	75	0.65	0.76	0.78	24.8
			415	2850	17.7	71	75	75	0.61	0.73	0.78	24.7

Performance is typical not guaranteed

# RFM V4 MOTOR

## Performance Data of Single Phase Motors (230 / 220 V / 60 Hz)

PN		Thrust	Volt	Speed	Rated	Max. SF	EFF% at %load			Power Factor At % Load			Capacitor	Capacitor
H.P.	KW	Load(N)	(V)	rpm	Amp	(A)	50%	75%	100%	50%	75%	100%	Running	Starting
<b>0.50</b>	<b>0.37</b>	<b>1500</b>	220	3400	5.0	6.0	52	55	57	0.4	0.47	0.48	20	100 -120
<b>0.75</b>	<b>0.55</b>	<b>1500</b>	220	3400	6.0	7.5	55	58	60	0.46	0.48	0.50	25	100 -120
<b>1.00</b>	<b>0.75</b>	<b>1500</b>	220	3400	8.2	9.6	58	61	64	0.48	0.50	0.52	36	100 -120
<b>1.50</b>	<b>1.10</b>	<b>1500</b>	220	3400	10.3	13.5	59	62	66	0.59	0.61	0.63	50	120 -150
<b>2.00</b>	<b>1.50</b>	<b>3000</b>	220	3400	11.5	14.2	65	68	71	0.65	0.68	0.70	60	120 -150
<b>3.00</b>	<b>2.20</b>	<b>4000</b>	220	3400	14.5	18.0	67	71	75	0.73	0.77	0.80	80	120 -150
<b>5.50</b>	<b>4.00</b>	<b>4000</b>	220	3400	24.0	27.5	72	72	75	0.76	0.79	0.81	100	150 -180

Performance is typical not guaranteed

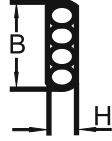
## Performance Data of Three Phase Motors (220V,380V,460V / 60 Hz)

PN		Thrust	Volt	Speed	Rated	Max. SF	EFF% at %load			Power Factor At % Load		
H.P.	KW	Load(N)	(V)	rpm	Amp.	(A)	50%	75%	100%	50%	75%	100%
<b>0.75</b>	<b>0.55</b>	<b>1500</b>	220	3420	3.6	4.3	49	57	64	0.35	0.43	0.54
			380	3420	1.9	2.4	48	55	62	0.31	0.38	0.48
			460	3420	2.1	2.6	49	54	64	0.33	0.41	0.51
<b>1.0</b>	<b>0.75</b>	<b>1500</b>	220	3420	4.0	5.5	64	70	73	0.42	0.53	0.61
			380	3420	2.5	3.6	62	68	71	0.33	0.42	0.49
			460	3420	2.2	2.8	64	70	70	0.42	0.53	0.61
<b>1.5</b>	<b>1.1</b>	<b>1500</b>	220	3420	5.5	7.3	62	69	73	0.40	0.5	0.61
			380	3420	3.4	4.8	61	68	72	0.34	0.43	0.7
			460	3420	3.2	4.0	63	69	72	0.38	0.48	0.59
<b>2.0</b>	<b>1.5</b>	<b>3000</b>	220	3420	8.0	9.6	56.5	67	70	0.39	0.49	0.58
			380	3420	4.2	5.8	63	73	76	0.38	0.49	0.57
			460	3420	3.8	4.4	68	73	73	0.46	0.58	0.68
<b>3.0</b>	<b>2.2</b>	<b>4000</b>	220	3420	10.4	12.0	69	73	77	0.37	0.55	0.54
			380	3420	5.6	7.2	67	73	77	0.33	0.49	0.49
			460	3420	5.6	5.8	71	71	75	0.45	0.67	0.66
<b>5.0</b>	<b>3.7</b>	<b>4000</b>	220	3420	16.3	19.5	73	77	76	0.62	0.67	0.76
			380	3420	9.1	11.0	73	77	76	0.50	0.62	0.70
			460	3420	9.5	9.8	73	77	78	0.48	0.59	0.67
<b>5.5</b>	<b>4.0</b>	<b>4000</b>	220	3420	19.4	23.0	70	76	77	0.50	0.64	0.73
			380	3420	11.3	13.0	70	76	77	0.50	0.60	0.66
			460	3420	11.0	11.5	70	76	75	0.50	0.63	0.68
<b>7.5</b>	<b>5.5</b>	<b>4000</b>	220	3420	22.0	27.5	71	75	78	0.53	0.66	0.75
			380	3420	11.3	16.0	71	75	78	0.48	0.59	0.67
			460	3420	13.0	13.4	71	75	76	0.50	0.62	0.70

Performance is typical not guaranteed

## 4" Rewindable Product Information and Service

## 4" Rewindable Motors Flate Cable Leads

DOL	P <sub>N</sub> (Kw)	θ (mm <sup>2</sup> )	B (mm) Approx.	H (mm) Approx.
	0.37-1.1	3x1.5	6.0 <sub>+0.3</sub>	12.28 <sub>+0.3</sub>
	1.5-4.0	3x2.5	7.3	15.3
	5.5-7.5	3x4.0	8.5	17.8

Insulation Resistance(20 <sup>0</sup> c/500V)	
New motor without drop cable	200>mohm
Used motor without drop cable	20>mohm
Used motor with drop cable	2>mohm

**Determine the age of motor by checking the name plate Sr. No.**

S. No. : 41711001	4	17	11	001
	4"Motor	Year of mfg. (e.g. 2017)	Month of mfg. (e.g Nov.)	Production Sr. No.

### Checking the motor fluid

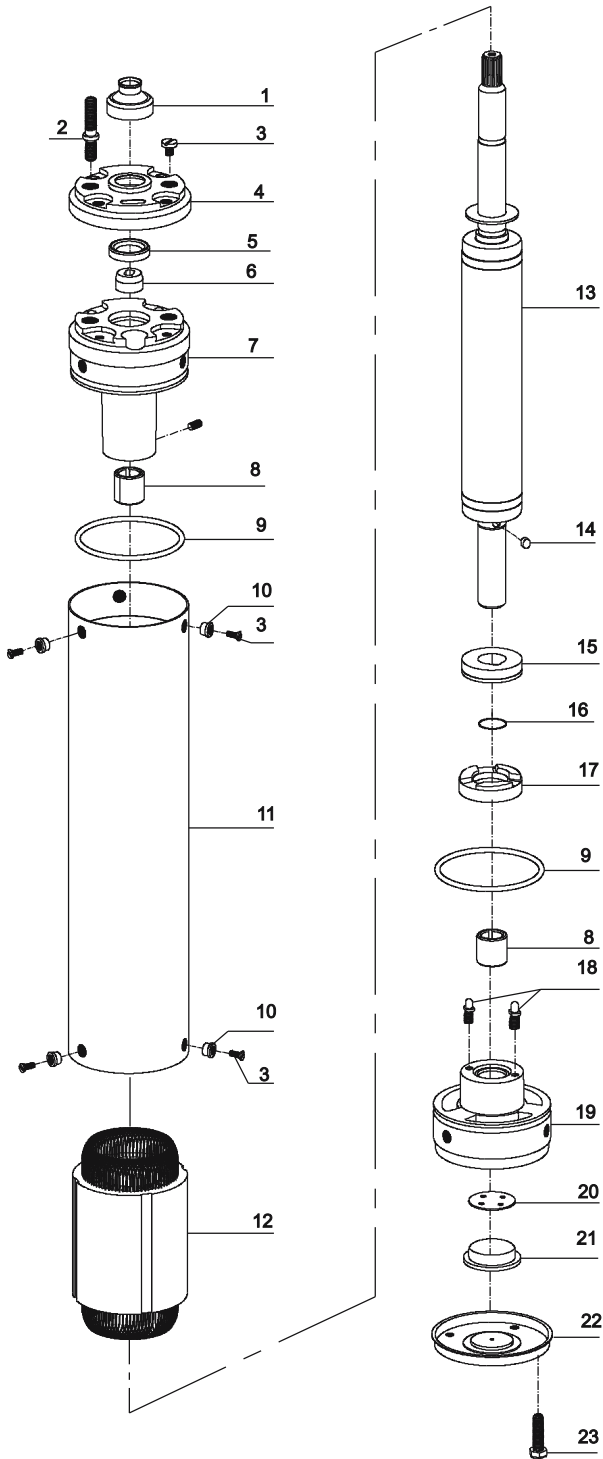


**Motor damage due to being insufficiently filled!**

- ⇒ Fill the motor with sufficient motor filled
- ⇒ Wear safety goggles and gloves when filling and draining the motor.

# RFM V4 MOTOR

## Exploded View & MOC OSL-100(0.5HP-1.5HP)



### Matreial Of Composition -OSL-100 (0.5 HP -1.5 HP)

Parts No.	Parts Name	Material
22	Motor Base	SS
21	Rubber Diaphram	NBR
20	Diapharam Botom Plate	SS
15	Thrust Base	CI
17	Thrust Paid	CI
18	Rocker Screw	SS
19	Lower Housing	CI
8	Bush	Carbon
10	Guide Bush	SS
13	Rotor	SS410+Lamination
7	Upper Housing	CI+SS
6	Cable Gromet	NBR
1	Sand Guard Rubber	NBR
4	Upper Housing Shell	SS
12	Wound Stator	Poly wire
11	Outer Shell	SS
23	Bolt	SS
14	Key	SS
5	Oil Seal	NBR
9	Rubber O-Ring	NBR
2	Stud	SS
	Washer	SS
16	Rubber O-Ring	NBR



## 6" ENCAPSULATED SUBMERSIBLE MOTORS

**Water cooled motors with encapsulated resin filled stator.**

**Coupling dimensions and flange according to NEMA standard.**

### General Features

- ▶ 5,5-60 HP / 3PH. 380-415 Volts / 50Hz
- ▶ High efficiency provides operation cost savings
- ▶ Motor casing and shaft made of AISI304L stainless steel (Optional AISI316L)
- ▶ High resistance coated cast iron upper and lower bracket (Optional AISI304L / AISI316L)
- ▶ Water lubricated Kingsbury type thrust bearings
- ▶ Protection IP68
- ▶ Sand slinger protection
- ▶ Pressure equalizing diaphragm
- ▶ Insulation class F
- ▶ Removable lead cable
- ▶ Starting method D.O.L. and star/delta

### Operating Limits

- ▶ Max. voltage fluctuation:  $\pm 10\%$
- ▶ Max. water temperature: 35°C with at least 0.16 m/s of water flow speed
- ▶ Max. motor startings per hour: 20
- ▶ Max. immersion depth: 350 m
- ▶ Standard mounting position: vertical and horizontal



**Slinger (sand guard)**

Slinger helps to prevent the sand inside the water of the well entering in mechanical seal and through mechanical seal to inside of the motor.



**High thrust capacity**

Heavy duty bearings provides the option to revolve both sides, has the capacity to carry high thrust load.



**Adjustment screw**

Standard shaft height can be precisely adjusted by the adjustment screw on the thrust bearing base.



**Up-Thrust ring**

Provides safe operation conditions for motor by absorbing Up-Thrust loads with it's machined surface and water channels on it.





**Practical cable connection**

Extremely simple and very practical power cable connection to the motor body.



**Water lubricated radial carbon bearings**

Radial carbon bearings, which have channels in its structure that makes it possible to get lubricated by water easily, provides precise bearing of rotor shaft at up and down.



**High quality mechanical sealing system**

High sand resistance and degree of IP68 protection. Although mechanical seal is optionally used by other companies, it is always used by Vansan as a standard, to prevent sand and other particles to get in motors to provide long bearing life.



**Pressure balancing checkvalve**

When the pressure increases, it throw water out of the motor. When the pressure drops, it filtrates the water inside well and gets it inside the motor by the help of this checkvalve to balance the pressure inside. That's why pressure differences inside motor never causes membrane under motor to blow up.



**RAIN**  
SUBMERSI

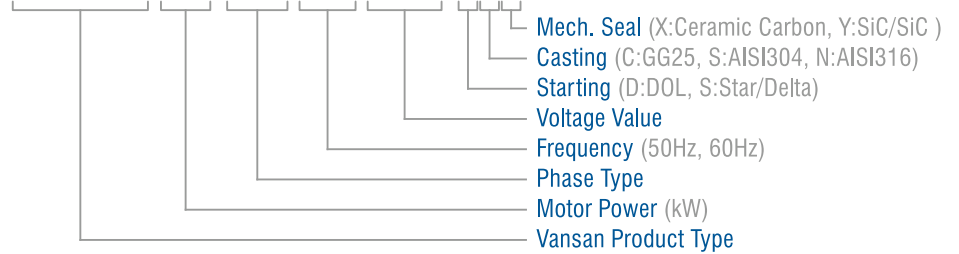
A close-up photograph of several circular, metallic components of a submersible pump, likely impellers or diffusers, arranged on a dark, wet surface. The components are covered in water droplets, creating a glistening effect. The lighting is dramatic, highlighting the textures and metallic sheen of the parts. One component in the foreground is partially cut off by the left edge of the frame. Another is in the upper left, and two others are in the middle and lower right.

**RAINFOS**<sup>®</sup>  
SUBMERSIBLE PUMP

**FOS**<sup>®</sup>  
BLE PUMP

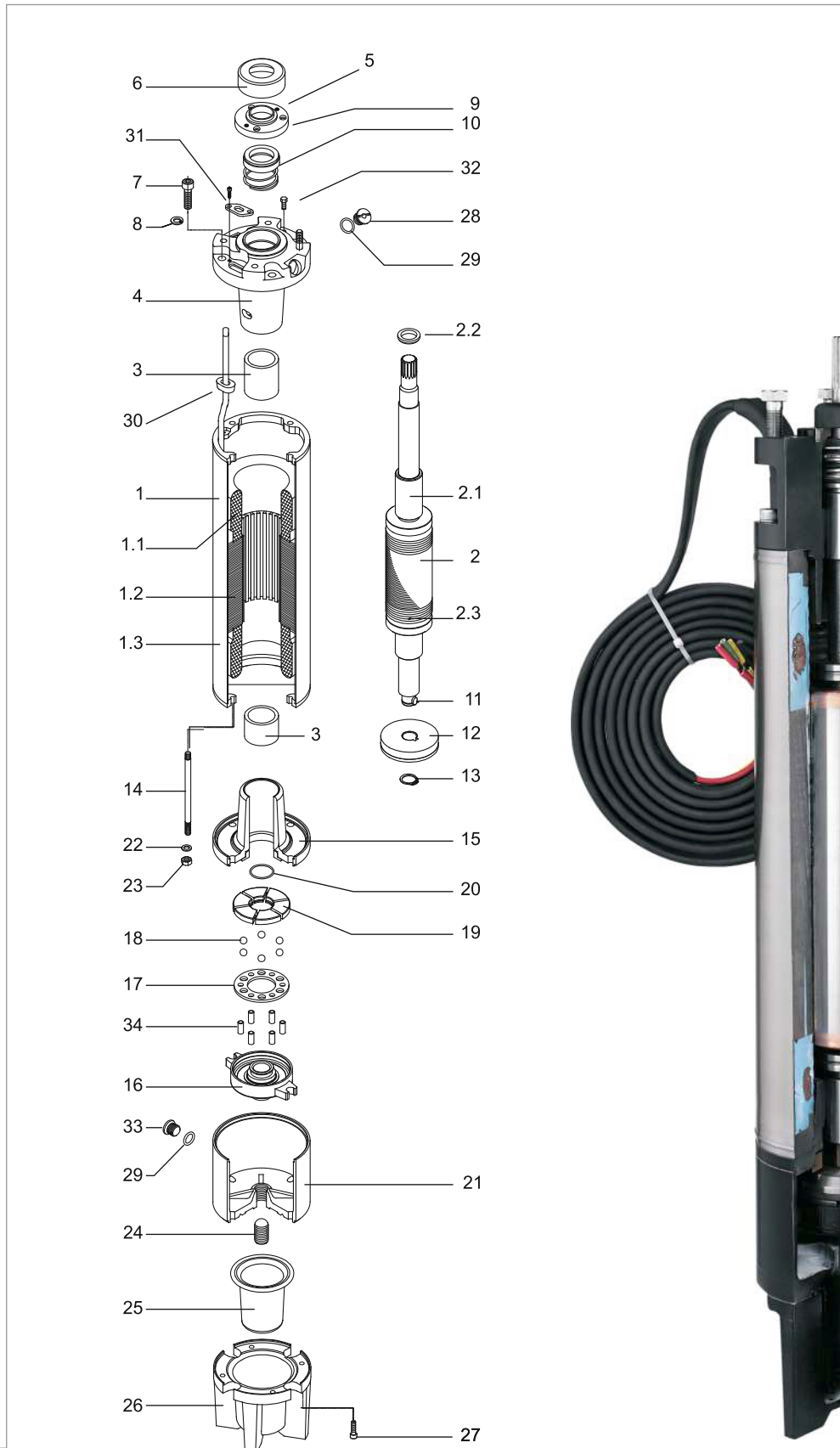
## Product Code System

### VSM1.06/4.0-3PH.F50.V380-DCX



## Part List

No	Part Name	Material
1	Stator	-
1.1	Winding wire	Copper
1.2	Stator package	M700-50A / Magnetic Seal
1.3	Stator shell	AISI 304
2	Rotor	-
2.1	Shaft sleeve	Coated CrNi
2.2	Balance ring	St 37
2.3	Copper ring	Cu
3	Radial bearing	Carbon
4	Upper bearing body	GG20-22
5	Bushing	Bronze
6	Slinger (sand guard)	NBR_EPDM
7	Hexagon socket cap screws	Inox
8	Copper ring	Cu
9	Cover seal	AISI 420
10	Mechanical seal	Ceramic Carbon
11	Axial thrust bearing key	AISI 420
12	Axial thrust bearing	Carbon With Antimony
13	Retaining ring	St 37
14	Tie rod	Inox
16	Thrust bearing support	GG20-22
17	Ball holder	St 37 (Coated Cr+3)
18	Thrust bearing ball	Inox
19	Tilting pads	AISI 420
20	O-ring	NBR 70
21	Thrust bearing body	GG20
23	Nut	Inox
24	Screw (thrust bearing base)	Inox
25	Membrane	NBR-EPDM
26	Membrane body	GG22
27	Hexagon socket cap screws	Inox
28	Check-valve	Bronze
29	O-ring	NBR 70
30	Cable seal	NBR
31	Seal cover	AISI 304
32	Nut	Inox
33	Plush (r 3/8")	Bronze
34	Ball holder pins	Inox



Type	Power		Axial Load kN	Voltage V	n <sub>N</sub> rpm	I <sub>N</sub> A	I <sub>A</sub> A	Efficiency (%load)			Cos (% load)			Length mm	Weight kg
	HP	KW						50	75	100	50	75	100		
RSM 3S 6/5.5	5,5	4	20	380	2770	10,2	39,4	67	71	71	63	71	84	594	38
				400	2785	9,8	37,8	68	72	72	59	67	82		
				415	2795	9,5	36,9	68	72	72	58	66	81		
RSM 3S 6/7.5	7,5	5,5	20	380	2780	13,3	52,7	70	73	75	63	71	84	623	42
				400	2795	12,8	50,6	71	74	76	59	67	82		
				415	2805	12,3	48,7	72	75	77	58	66	81		
RSM 3S 6/10	10	7,5	20	380	2790	17,2	66,4	77	79	79	63	71	84	703	48
				400	2805	16,5	63,8	79	80	80	59	67	82		
				415	2815	16,1	62,2	79	80	80	58	66	81		
RSM 3S 6/12.5	12,5	9,3	20	380	2850	20,8	80,3	80	81	81	63	71	84	743	53
				400	2855	20,2	78,1	80	81	81	59	67	82		
				415	2865	19,5	75,3	81	82	82	58	66	81		
RSM 3S 6/15	15	11	20	380	2810	23,7	91,6	81	82	82	67	75	86	796	58
				400	2825	22,8	88,0	82	83	83	63	71	84		
				415	2835	22,2	85,9	82	83	83	61	69	83		
RSM 3S 6/17.5	17,5	13	20	380	2820	28,7	110,9	80	81	81	65	73	85	856	63
				400	2835	27,6	106,6	81	82	82	61	69	83		
				415	2845	26,6	102,7	82	83	83	59	67	82		
RSM 3S 6/20	20	15	20	380	2850	33,1	127,9	80	81	81	65	73	85	918	70
				400	2855	32,2	124,5	80	81	81	61	69	83		
				415	2865	31,0	120,0	81	82	82	59	67	82		
RSM 3S 6/25	25	18,5	20	380	2850	41,8	161,6	80	81	81	61	69	83	951	74
				400	2865	40,2	155,4	81	82	82	58	66	81		
				415	2875	38,8	149,8	82	83	83	57	65	80		
RSM 3S 6/30	30	22	20	380	2860	48,5	187,6	81	82	82	63	71	84	1051	85
				400	2875	46,7	180,3	82	83	83	59	67	82		
				415	2885	45,0	173,9	83	84	84	58	66	81		
RSM 3S 6/35	35	26,5	26,5	380	2870	56,4	217,9	83	84	84	65	73	85	1166	96
				400	2885	54,9	212,0	83	84	84	61	69	83		
				415	2895	52,9	204,4	84	85	85	59	67	82		
RSM 3S 6/40	40	30	26,5	380	2880	64,6	249,7	82	83	83	65	73	85	1196	101
				400	2895	62,1	240,0	83	84	84	61	69	83		
				415	2905	59,9	231,4	84	85	85	59	67	82		
RSM 3S 6/50	50	37	26,5	380	2890	79,7	315,6	80	81	83	65	73	85	1296	108
				400	2905	76,7	303,3	81	82	84	61	69	83		
				415	2915	74,7	288,8	83	84	84	59	67	82		
RSM 3S 6/60	60	45	26,5	380	2890	96,9	374,7	82	81	83	65	73	85	1296	108
				400	2905	93,2	360,2	81	82	84	61	69	83		
				415	2915	87,7	339,0	83	84	84	59	67	85		

## MOTOR SPECIFICATIONS

Motor Power : 5,5-60 HP  
 Outside Diameter : 142 mm  
 Flange Standard : 6" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel



Type	Power		Axial Load kN	Voltage V	$\eta_N$ rpm	$I_N$ A	$I_A$ A	Efficiency (%load)			Cos (% load)			Length mm	Weight kg
	HP	kW						50	75	100	50	75	100		
RSM 3S 6/5.5	5,5	4	20	220	3510	19,2	102	69	74	76	51	63	72	594	38
				380	3540	11,4	61	65	71	76	50	62	70		
				460	3530	8,8	47	69	75	77	55	66	74		
RSM 3S 6/7.5	7,5	5,5	20	220	3480	23,8	126	73	77	77	60	72	79	623	42
				380	3490	13,6	72	75	77	77	63	74	80		
				460	3490	11,7	62	73	76	75	64	75	79		
RSM 3S 6/10	10	7,5	20	220	3480	32,8	174	74	78	78	57	70	77	703	48
				380	3490	18,3	97	75	78	78	63	74	80		
				460	3480	15,1	80	74	77	77	66	76	81		
RSM 3S 6/12.5	12,5	9,3	20	220	3480	40,7	216	74	78	78	58	70	77	743	53
				380	3480	22,4	119	76	79	79	63	74	80		
				460	3470	18,3	97	77	79	79	66	77	81		
RSM 3S 6/15	15	11	20	220	3480	46,3	245	76	79	80	59	71	78	796	58
				380	3500	26,5	140	76	80	80	61	73	79		
				460	3490	21,3	113	77	80	79	67	76	82		
RSM 3S 6/17.5	17,5	13	20	220	3490	56,9	302	75	79	80	54	67	75	856	63
				380	3510	31,7	168	76	80	81	58	70	77		
				460	3500	25,2	134	77	80	80	64	75	81		
RSM 3S 6/20	20	15	20	220	3490	60,1	318	79	82	82	62	73	80	918	70
				380	3500	34,4	182	80	82	82	65	76	81		
				460	3500	28,4	150	79	81	81	67	77	82		
RSM 3S 6/25	25	18,5	20	220	3480	77,9	413	76	80	81	58	70	77	951	74
				380	3500	46,3	245	75	79	80	57	69	76		
				460	3490	35,9	190	79	81	81	64	75	80		
RSM 3S 6/30	30	22	20	220	3500	91,6	495	81	83	83	64	73	76	1051	85
				380	3520	52,4	283	81	83	83	66	74	77		
				460	3510	41,1	222	82	83	83	71	78	81		
RSM 3S 6/35	35	26,5	26,5	220	3500	10,5	597	82	84	84	62	71	75	1166	96
				380	3510	60,0	324	82	84	84	61	73	80		
				460	3510	48,9	264	82	83	83	63	75	82		
RSM 3S 6/40	40	30	26,5	220	3500	124,8	674	77	81	82	57	70	77	1196	101
				380	3520	68,7	371	78	82	83	61	73	80		
				460	3510	56,1	303	80	83	83	63	74	81		
RSM 3S 6/50	50	37	26,5	220	3500	155,9	842	76	80	81	58	70	77	1296	108
				380	3520	90,2	487	76	80	81	58	70	77		
				460	3510	69,2	374	81	83	84	62	74	80		
RSM 3S 6/60	60	45	26,5	220	3500	189,5	1023	75	79	80	58	71	78	1296	108
				380	3520	109,7	592	75	79	80	58	71	78		
				460	3510	84,1	454	80	82	83	62	75	81		

## MOTOR SPECIFICATIONS

Motor Power : 5,5-60 HP  
 Outside Diameter : 142 mm  
 Flange Standard : 6" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel

Type	Power		Axial Load kN	Voltage V	n <sub>N</sub> rpm	l <sub>N</sub> A	l <sub>A</sub> A	Efficiency (%load)			Cos (% load)			Length mm	Weight kg
	HP	kW						50	75	100	50	75	100		
RSM 3S 8/40	40	30	45	380	2880	63,2	239	82	83	83	73	78	87	948	125
				400	2895	60,7	229	83	84	84	67	74	85		
				415	2905	59,2	223	83	84	84	65	73	84		
RSM 3S 8/50	50	37	45	380	2890	76,1	287	84	85	85	73	78	87	1008	134
				400	2905	73,1	276	85	86	86	67	74	85		
				415	2915	72,2	269	85	86	86	65	73	84		
RSM 3S 8/60	60	45	45	380	2890	92,6	349	84	85	85	73	78	87	1093	148
				400	2905	89,0	336	85	86	86	67	74	85		
				415	2915	86,8	327	85	86	86	65	73	84		
RSM 3S 8/70	70	52	45	380	2890	105,7	399	84	85	85	75	81	88	1178	166
				400	2905	101,6	383	85	86	86	70	76	86		
				415	2915	99,1	374	85	86	86	67	74	85		
RSM 3S 8/75	75	55	45	380	2890	113,2	427	83	84	84	75	81	88	1178	166
				400	2905	110,0	415	83	84	84	70	76	86		
				415	2915	106,0	400	84	85	85	67	74	85		
RSM 3S 8/80	80	60	45	380	2890	122,0	460	85	86	86	73	78	87	1233	181
				400	2905	118,6	447	85	86	86	67	74	85		
				415	2915	115,7	436	85	86	86	65	73	84		
RSM 3S 8/90	90	67	45	380	2890	137,8	520	84	85	85	73	78	87	1258	186
				400	2905	132,4	499	85	86	86	67	74	85		
				415	2915	129,2	487	85	86	86	65	73	84		
RSM 3S 8/100	100	75	45	380	2890	154,3	582	83	84	84	75	81	88	1283	191
				400	2905	148,3	559	84	85	85	70	76	86		
				415	2915	144,6	545	84	85	85	67	74	85		
RSM 3S 8/110	110	81	55	380	2895	166,6	629	84	85	85	73	78	87	1363	201
				400	2900	160,1	604	85	86	86	67	74	85		
				415	2905	156,2	589	85	86	86	65	73	84		
RSM 3S 8/125	125	92	55	380	2860	189,2	714	84	85	85	73	78	87	1428	208
				400	2875	181,9	686	85	86	86	67	74	85		
				415	2890	177,4	669	85	86	86	65	73	84		
RSM 3S 8/150	150	110	55	380	2940	223,7	844	84	85	85	72	78	88	1574	229
				400	2950	212,5	802	85	86	86	67	74	87		
				415	2955	204,8	773	85	86	86	65	73	87		

## MOTOR SPECIFICATIONS

Motor Power : 40-150 HP  
 Outside Diameter : 192 mm  
 Flange Standard : 8" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel

Type	Power		Axial Load kN	Voltage V	$n_N$ rpm	$I_N$ A	$I_A$ A	Efficiency (%load)			Cos (% load)			Length mm	Weight kg
	HP	kW						50	75	100	50	75	100		
RSM 3S 8/40	40	30	45	220	3480	115,1	612	81	84	84	77	78	82	948	125
				380	3490	66,3	352	82	84	84	77	78	82		
				460	3480	54,1	288	81	83	83	79	81	84		
RSM 3S 8/50	50	37	45	220	3490	139,5	742	82	85	85	77	78	82	1008	134
				380	3500	80,7	430	82	85	85	77	78	82		
				460	3480	65,9	351	83	84	84	79	81	84		
RSM 3S 8/60	60	45	45	220	3480	167,6	892	83	85	85	70	78	83	1093	148
				380	3490	97,0	516	83	85	85	70	78	83		
				460	3490	79,2	421	84	85	85	74	81	84		
RSM 3S 8/70	70	52	45	220	3490	189,1	1000	84	86	86	72	80	84	1178	166
				380	3500	109,5	583	84	86	86	72	80	84		
				460	3495	90,4	481	84	85	85	76	83	85		
RSM 3S 8/75	75	55	45	220	3490	200,0	1064	84	86	86	68	77	84	1178	166
				380	3500	115,8	616	84	86	86	68	77	84		
				460	3500	95,7	509	85	86	86	74	81	84		
RSM 3S 8/80	80	60	45	220	3490	215,7	1148	85	87	87	74	81	84	1233	181
				380	3500	124,9	664	85	87	87	74	81	84		
				460	3500	103,1	549	85	86	86	77	83	85		
RSM 3S 8/90	90	67	45	220	3500	252,7	1344	84	86	86	70	79	81	1258	186
				380	3510	146,3	778	84	86	86	70	79	81		
				460	3500	116,5	620	85	86	86	74	82	84		
RSM 3S 8/100	100	75	45	220	3490	266,5	1418	85	87	87	74	82	85	1283	191
				380	3500	154,3	821	85	87	87	74	82	85		
				460	3500	127,4	678	85	87	87	74	82	85		
RSM 3S 8/110	110	81	55	380	3500	166,6	886	85	87	87	72	80	85	1363	201
				460	3500	137,6	732	86	87	87	77	83	85		
				380	3500	191,5	1019	86	87	87	74	80	84		
RSM 3S 8/125	125	92	55	460	3500	158,2	842	86	87	87	73	80	84	1428	208
				380	3490	231,6	1232	86	86	86	74	80	84		
				460	3490	191,3	1018	86	86	86	73	80	84		

## MOTOR SPECIFICATIONS

Motor Power : 40-150 HP  
 Outside Diameter : 192 mm  
 Flange Standard : 8" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel

Type	Power		Axial Load kN	Voltage V	n <sub>N</sub> rpm	I <sub>N</sub> A	I <sub>A</sub> A	Efficiency (%load)			Cos φ (% load)			Length mm	Weight kg
	HP	kW						50	75	100	50	75	100		
RSM 3S 10/110	110	81	75	380	2890	164,7	615	84	84	85	76	81	88	1282	188
				400	2905	158,3	590	85	85	86	72	77	86		
				415	2915	152,6	569	86	86	87	69	75	85		
RSM 3S 10/125	125	92	75	380	2900	184,9	690	85	85	86	76	81	88	1342	201
				400	2915	179,8	671	85	85	86	72	77	86		
				415	2925	175,3	654	85	85	86	69	75	85		
RSM 3S 10/150	150	110	75	380	2900	223,6	835	85	85	86	74	80	87	1422	249
				400	2915	217,5	811	85	85	86	69	75	85		
				415	2925	212,1	791	85	85	86	66	73	84		
RSM 3S 10/175	175	129	75	380	2920	256,3	957	86	86	87	76	81	88	1522	249
				400	2935	246,3	919	87	87	88	72	77	86		
				415	2945	240,2	896	87	87	88	69	75	85		
RSM 3S 10/200	200	147	75	380	2910	292,1	1090	86	86	87	76	81	88	1652	272
				400	2925	283,9	1059	86	86	87	72	77	86		
				415	2935	273,7	1020	87	87	88	69	75	85		
RSM 3S 10/225	225	166	75	380	2900	333,7	1245	85	85	86	76	81	88	1732	279
				400	2915	320,6	1196	86	86	87	72	77	86		
				415	2925	312,7	1165	86	86	87	69	75	85		
RSM 3S 10/250	250	185	75	380	2905	371,8	1388	85	85	86	76	81	88	1732	287
				400	2915	361,5	1348	85	85	86	72	77	86		
				415	2925	348,4	1299	86	86	87	69	75	85		
RSM 3S 10/300	300	220	75	380	2905	442,2	1651	85	85	86	76	81	88	1922	302
				400	2915	429,9	1604	85	85	86	72	77	86		
				415	2925	414,4	1546	86	86	87	69	75	85		

## MOTOR SPECIFICATIONS

Motor Power : 110-300 HP  
 Outside Diameter : 232 mm  
 Flange Standard : 8" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel

Type	Power		Axial Load kN	Voltage V	$n_N$ rpm	$l_N$ A	$l_A$ A	Efficiency (%load)			Cos (% load)			Length mm	Weight kg
	HP	kW						50	75	100	50	75	100		
RSM 3S 10/110	110	81	75	380	3500	170,5	904	85	85	85	80	83	85	1282	188
				460	3510	137,6	729	85	85	85	82	85	87		
RSM 3S 10/125	125	92	75	380	3510	193,7	1.027	85	85	85	80	83	85	1342	201
				460	3520	156,3	829	85	85	85	82	85	87		
RSM 3S 10/150	150	110	75	380	3515	234,3	1242	85	86	85	79	82	84	1422	249
				460	3520	189,1	1002	85	86	85	81	84	86		
RSM 3S 10/175	175	129	75	380	3520	268,4	1423	86	87	86	80	83	85	1522	249
				460	3530	216,7	1148	86	87	86	82	85	87		
RSM 3S 10/200	200	147	75	380	3515	305,9	1621	86	86	86	80	83	85	1652	272
				460	3520	246,9	1308	86	86	86	82	85	87		
RSM 3S 10/225	225	166	75	380	3505	345,4	1831	86	86	86	80	83	85	1732	279
				460	3510	278,8	1478	86	86	86	82	85	87		
RSM 3S 10/250	250	185	75	380	3505	385,0	2040	86	86	86	80	83	85	1732	287
				460	3510	310,7	1647	86	86	86	82	85	87		
RSM 3S 10/300	300	220	75	380	3505	457,8	2426	86	86	86	80	83	85	1922	302
				460	3510	369,5	1958	86	86	86	82	85	87		

## MOTOR SPECIFICATIONS

Motor Power : 110-300 HP  
 Outside Diameter : 232 mm  
 Flange Standard : 8" NEMA  
 Winding Wire : PE2-PA

Working Position : Vertical & Horizontal  
 Ambient Water Temp. : Max 50°C (70°C opt.) :  
 Rotation Direction : CW & CCW  
 Motor Shaft : Stainless steel

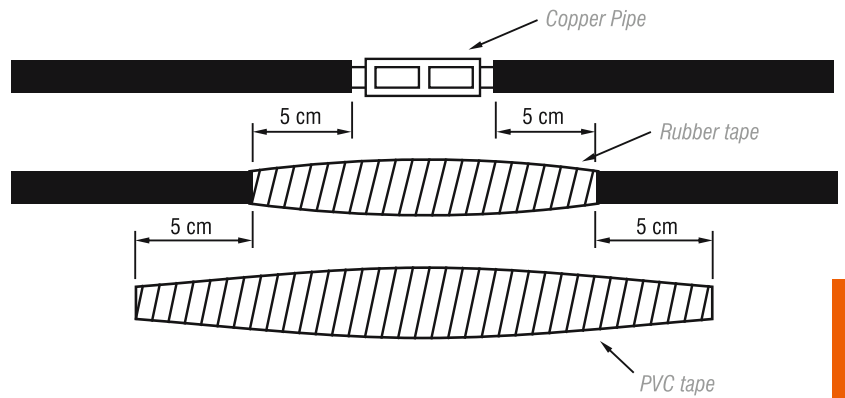
**CABLE SELECTION TABLE (DOL)**

HP	Cable Sizes										
	3x1,5	3x2,5	3x4	3x6	3x10	3x16	3x25	3x35	3x50	3x70	3x95
5,5	65	108	172	258	431	689	1.077	1.507	2.153	3.014	4.091
7,5	48	80	129	193	322	515	805	1.127	1.610	2.254	3.059
10	38	64	102	153	256	409	639	894	1.278	1.789	2.428
12,5		52	83	125	209	334	522	730	1.043	1.461	1.982
15		45	72	109	181	289	452	633	904	1.266	1.718
17,5			61	92	153	245	383	536	765	1.071	1.454
20			52	79	131	210	327	458	655	917	1.244
25					106	170	266	372	531	744	1.009
30					90	145	226	316	452	633	859
35					76	122	190	266	380	532	722
40					67	107	168	235	336	470	638
50						89	139	195	279	390	529
60							115	160	229	321	434
70								139	198	278	377
75								131	187	262	356
80								120	172	241	326
90									154	215	292
100									132	192	261
110									127	178	242
125										157	213
150											182
175											155
200											
210											
225											
250											

**CABLE SELECTION TABLE (Wye - Delta)**

HP	Cable Sizes										
	3x1,5	3x2,5	3x4	3x6	3x10	3x16	3x25	3x35	3x50	3x70	3x95
5,5	97	161	258	388	646	1.033	1.615	2.261	3.230	4.521	6.136
7,5	72	121	193	290	483	773	1.207	1.690	2.415	3.381	4.588
10	57	96	153	230	383	613	958	1.342	1.916	2.683	3.641
12,5	47	78	125	188	313	501	783	1.096	1.565	2.191	2.974
15	41	68	109	163	271	434	678	949	1.356	1.899	2.577
17,5	34	57	92	138	230	367	574	803	1.148	1.607	2.181
20	29	49	79	118	196	314	491	688	982	1.375	1.867
25		40	64	96	159	255	398	558	797	1.115	1.514
30			54	81	136	217	339	475	678	949	1.288
35			46	68	114	182	285	399	570	798	1.083
40				60	101	161	252	352	503	705	956
50					84	134	209	293	418	585	794
60					69	110	172	241	344	481	653
70					59	95	149	208	297	416	565
75						90	141	197	281	394	534
80						82	129	180	258	361	490
90						74	115	162	231	323	439
100							103	144	206	289	392
110							95	134	191	267	363
125								118	168	235	319
150								101	144	201	273
175									123	172	233
200										152	207
210										145	196
225										136	184
250											164

## Other Features



### Power Cable Connection

Connection of the power cable that will be used along the well and until the control panel with the power cable on the motor must be done very carefully and by the professionals only. Unless the insulation after the connection is well done, short circuit might happen when the connection area is in the water.

Insulation of each cable should be stripped only as far as necessary to provide room for a stake type connector. Each individual joint should be taped with pvc tape, using two layers by wrapping tightly for eliminating airspaces as much as possible.

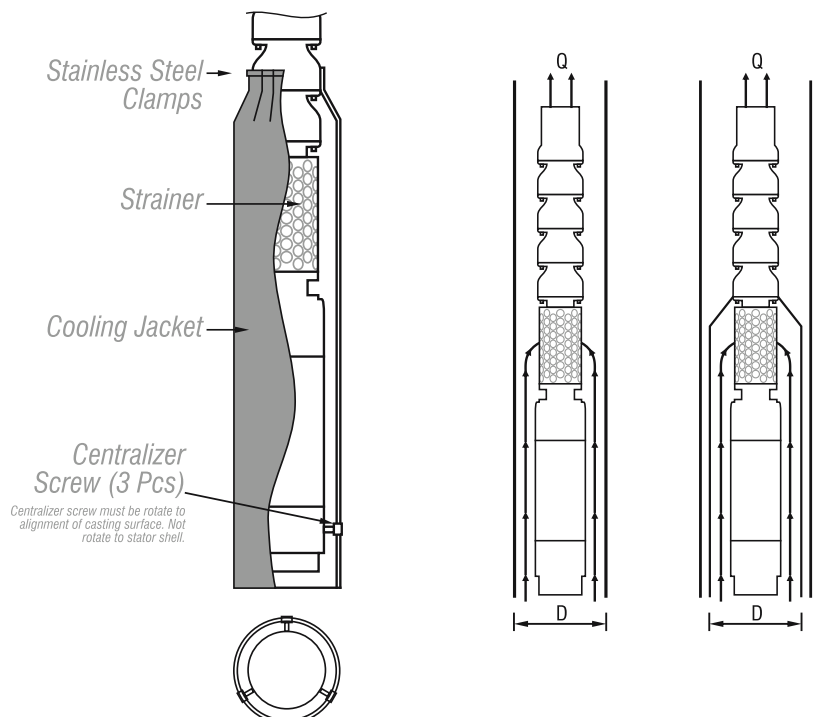
Total thickness of tape should be no less than the thickness of the cable insulation in order to prevent the smashing of the cables when the pump is lowered in the well.

### Use Cooling Jacket

Cooling of submersible motors is provided with the flow of the water around it. That's why water flow around motors has vital importance during submersible pump installation. This flow rate depends on diameter and power of motor.

Most important factor of submersible motors' long service life is that the motor has to be cooled well. Required flow velocity around the motor is given in the table below for motors being cooled well enough.

If the motor will be installed in an open body of water (i.e pool) or diameter of the well is much bigger than the diameter of the motor, Flow Inducer Sleeve must be used to provide the flow velocities that are given in the table below, around the motor.



## Insulation Resistance Test

All Vansan motors are applied insulation test under 3.000 V before shipment. Motors which have at least 2.000 megaohm test result are shipped. Insulation test results should be controlled before the installation and after connecting power cables as it is explained below. Meger tester's one probe should be touched to motor body and other probe should be touched to tip of each power cable to measure the insulation of each phase. If there is any short circuit in a phase, insulation value is 0 megaohm.

Under the normal operating conditions, a motor inside the well should have 2 megaohm insulation resistance. When the insulation resistance drops under 0.5 megaohm, there might be a insulation problem in winding. Test voltage should be at least 500 V DC.

After extending power cables with a joint, same test procedures should be also applied for insulation control while power cables are inside water. If insulation test result for any winding is lower than 100 megaohm, cable joint should be done again.



## Use Frequency Converter and Soft Starter

These points listed below should be taken into consideration while operating submersible motors with frequency converter and soft starter.

- ▶ Needed precautions should have been taken to protect your frequency converter from voltage fluctuations.
- ▶ Flow rate around motor must be at least 0,15 m/s. If flow rate is not enough, flow inducer sleeve must be used to provide the needed flow rate.
- ▶ In systems which are operated by frequency converter and soft starter, motor selection should be done as choosing next higher motor rate for pumps will provide long service life for motors.
- ▶ Motors should be operated between 30-50 Hz with frequency converters. As the protective water layer can't be formed on thrust bearing at the lower frequencies, motor would get damaged.
- ▶ Dual slope frequency converters should be used while using soft starter too.



## Voltage Drop and Cable Power Loss

To determine the cable section it should be considered that the voltage drop must not exceed 3%. The formulas used for voltage drop calculation are given below.

Direct starter (1 cable)	▶	$U_v = \frac{3,1 \times L \times I \times \cos\phi}{q \times U}$	$q = \frac{3,1 \times L \times I \times \cos\phi}{U_v \% \times U}$
Direct starter (2 cables in parallel)	▶	$U_v = \frac{1,55 \times L \times I \times \cos\phi}{q \times U}$	$q = \frac{1,55 \times L \times I \times \cos\phi}{U_v \% \times U}$
Star-delta starter	▶	$U_v = \frac{2,1 \times L \times I \times \cos\phi}{q \times U}$	$q = \frac{2,1 \times L \times I \times \cos\phi}{U_v \% \times U}$

L : Cable length (m)  
 I : Current at nominal voltage (A)  
 q : Conductor section (mm<sup>2</sup>)  
 cosφ : Power factor  
 P<sub>v</sub> : Power loss (%)  
 U<sub>v</sub> : Voltage drop (%)  
 U : Nominal voltage (V)

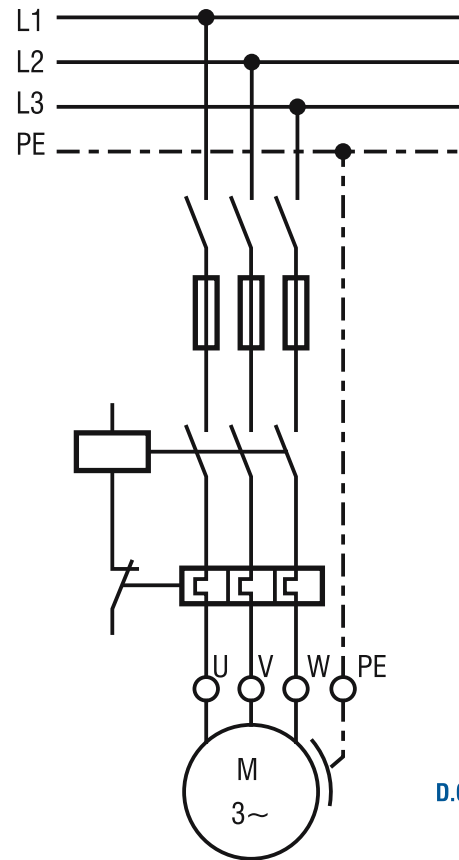
The power loss along the feeling cable has to be calculated adjacent to:

$$P_v = \frac{U_v}{\cos^2\phi}$$

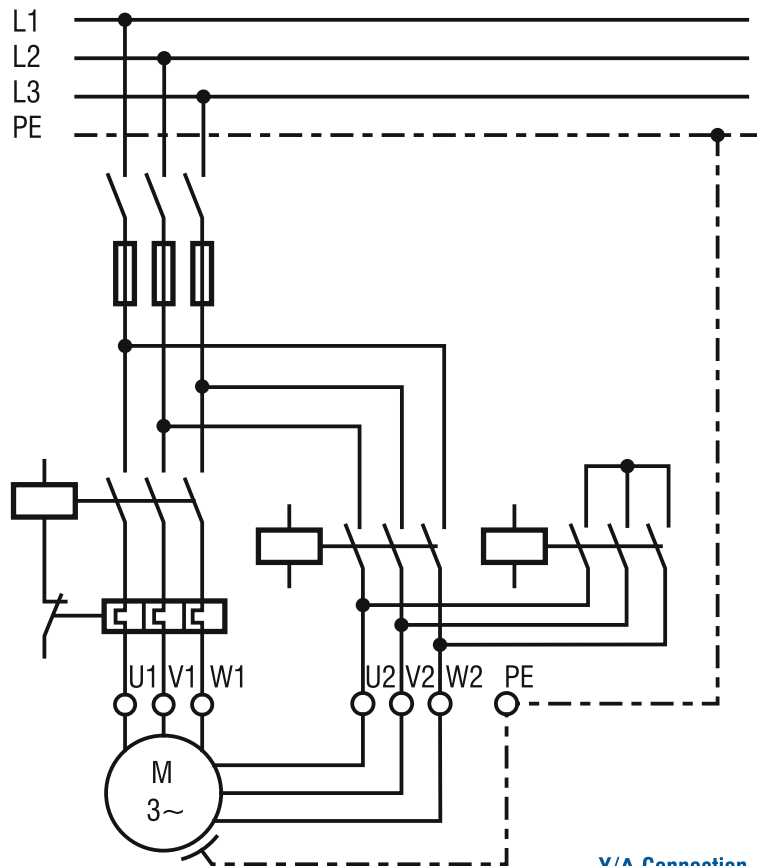


## Other Features

### Energy Connection Schema



D.O.L Connection



Y/Δ Connection

# Trouble Shooting

## Motor Does Not Start

Possible Cause	Remedy
<b>No power or incorrect voltage</b>	Check voltage at lines. Contact power company if voltage is incorrect
<b>Fuses blown or circuit breakers tripped</b>	Replace with proper fuse or reset circuit breakers
<b>Control box malfunction</b>	Repair or replace
<b>Defective wiring</b>	Correct faulty wiring or connections
<b>Bound pump</b>	Pull pump and correct problem. Run new installation until the water cleans
<b>Defective cable or motor</b>	Repair or replace

## Motor Starts Too Often

Possible Cause	Remedy
<b>Check valve stuck open</b>	Replace if defective
<b>Waterlogged tank</b>	Repair or replace
<b>Leak in system</b>	Replace damaged pipes or repair leaks

## Motor Runs Continuously

Possible Cause	Remedy
<b>Low water level in well</b>	Throttle pump outlet or reset pump to lower level. Do not lower if sand may clog pump
<b>Worn pump</b>	Pull pump and replace worn parts
<b>Loose coupling or broken motor shaft</b>	Replace worn or damaged parts
<b>Pump screen blocked</b>	Clean screen and reset pump depth
<b>Check valve stuck closed</b>	Replace if defective
<b>Control box malfunction</b>	Repair or replace

## Motor Runs But Overload Protector Trips

Possible Cause	Remedy
<b>Incorrect voltage</b>	Contact power company if voltage is incorrect
<b>Overheated protectors</b>	Shade box, provide ventilation or move box away from source
<b>Defective control box</b>	Repair or replace
<b>Defective motor or cable</b>	Repair or replace
<b>Worn pump or motor</b>	Replace pump and/or motor

# Certificate



## Certificate of Registration

This is to certify that

### RAINFOS SUBMERSIBLE PUMP

PROPERTY NO. B/27/64, THARADARA NAGAR, OPP. SKM HIGH SCHOOL  
KANODAR, TA- PALANPUR, KANODAR, BANASKANTHA, 385520,  
GUJARAT, INDIA.

has been independently assessed by QRO  
and is compliant with the requirements of:

**ISO 9001:2015**

### Quality Management System

For the Following Scope of Activities:

**RAINFOS SUBMERSIBLE PUMP**

Date of initial registration: XXXXXX

Certificate Expiry: XXXXXX

Date of the Certificate: XXXXXX

Recertification Due: XXXXXX

Certificate Number: Draft



Head of Certification

Validity of this certificate is subject to annual surveillance audits to be done successfully on or before 365 days from date of the audit.  
(In case if surveillance audit is not allowed to be conducted; this certificate shall be suspended / withdrawn).  
The Validity of this certificate can be verified at [www.qrocert.org](http://www.qrocert.org)

This certificate of registration remains the property of QRO Certification LLP and shall be returned immediately upon request.

India Office : QRO Certification LLP  
142, Ind Floor, Avtar Enclave, Near Paschim Vihar West Metro Station, Delhi-110063, (INDIA)  
Website : [www.qrocert.org](http://www.qrocert.org), E-mail : [info@qrocert.org](mailto:info@qrocert.org)



## CERTIFICATE OF COMPLIANCE

This is to Certify

of

### RAINFOS SUBMERSIBLE PUMP

PROPERTY NO. B/27/64, THARADARA NAGAR, OPP. SKM HIGH SCHOOL KANODAR,  
TA- PALANPUR, KANODAR, BANASKANTHA, 385520, GUJARAT , INDIA .

Manufacturer

PRODUCT: RAINFOS SUBMERSIBLE PUMP.

Complies with the Requirements applicable to it

The Certification body has performed an audit of the above product quality system covering the design, manufacture and final inspection of the certified product. The quality system has been assessed, approved and is subject to continuous surveillance according to Directive 2006/95/EC Low Voltage Directive & 2004/108/EC Electro Magnetic Directive.

This certificate is issued under the following conditions:

1. It applies only to the quality system maintained in the manufacture of above referenced models and it does not substitute the design or type-examination procedures, if requested.
2. The certificate remains valid until the manufacturing conditions or the quality systems are changed.
3. The certificate validity is conditioned by positive results or surveillance audits.

The CE Mark as Shown Above Can Be Used, Under the Responsibility of The Manufacturer, After Completion of An EC Declaration of Conformity and Compliance with All Relevant EC Directives. The Statement is Based on a Single Evaluation of One Sample of Above-Mentioned Product. It Does Not Imply an Assessment of The Whole Production.

We hereby declare that the technical file of product complied with the requirement of directives 2014/35/EU Low Voltage Directive & 2014/30/EU Electromagnetic Compatibility Directive.

Certificate Number : **DRAFT**.

Validity of this certificate can be verified at [www.ukmcert.org.uk/verify](http://www.ukmcert.org.uk/verify)

Date of Certification **14-02-2023**

1st Surveillance Audit Due **13-01-2024**

2nd Surveillance Audit Due **13-01-2025**

Certificate Expiry **14-02-2026**



Authority Signature:

This certificate is the property of UK Management Certification Limited and shall returned immediately on request.

7 Bell Yard, London, England, WC2A 2JR, United Kingdom  
Website :- [www.ukmcert.org.uk](http://www.ukmcert.org.uk), Email:- [info@ukmcert.org.uk](mailto:info@ukmcert.org.uk)  
Company No.:- 14285337

**RAINFOS**<sup>®</sup>  
SUBMERSIBLE PUMP

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# NOTES



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# ABOUT US

Rainfos was established at a 150 m workshop in 2016 by Mech. develops rapidly on the path of becoming a global trademark by bringing together its expert engineering, importance given on R&D activities and its customer-oriented working in policy with its approximately 65 employees working in 42 m open and 16.500 m closed area. Rainfos achieves to export its products 18 countries the world.



Rainfos offers wide range of pumps and for the water and other fluid solutions in local, agricultural and industrial areas, we produce submersible pumps and motors, vertical Multistage Inline Pumps, Centrifugal Pump, Double Suction Split Case Pumps, Special Design Pumps that are to offer Customized solutions to your needs.






**RAINFOS<sup>®</sup>**  
**SUBMERSIBLE PUMP**

 **Factory**

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 National Highway MH 8, Banas Kantha, Gujrat India - 385210



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