



# SUBMERSIBLE MOTORS

## ENHANCED EFFICIENCY SYSTEM (EES)

0.55 kW - 150 kW

PRODUCT INFORMATION & SERVICE MANUAL



**SHAKTI**

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## ENHANCED EFFICIENCY SYSTEM (EES)

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Considering continuous product development the information/performance/specifications and illustrations disseminated in this catalogue are subject to change without notice.

## 4 INCH ENHANCED EFFICIENCY SYSTEM (EES)

### GENERAL DATA

Enhanced efficiency submersible motor in range of 0.55 – 5.5 kW, which saves up to 22% energy.

This motor is built for dependable operation in 4 Inch diameter or larger water wells. It is fitted with water lubricated radial and thrust bearings for a maintenance free operation. The motor is filled with a special fluid, providing frost protection down to -15°C storage temperature. A special diaphragm ensures pressure compensation inside the motor.

### Product advantages

- Integrated all in one solution.
- System payback < 2 years.
- Up to 22% improved motor efficiency constant high efficiency in wider operating range.
- Reduce steady state operating temperature.
- Increased power to weight ratio.
- Incorporated soft start and protection features.
  - Mobile app control
  - Speed control (increase lifetime protection)
  - Remote monitoring
  - IOT enabled
  - Over current Protection
  - Dry run Protection
  - No additional investment
- Reduced AMPS (Smaller drop lead cross size)
- Connectivity (RS 485, Bluetooth, GPRS connectivity)

### Technical specification

Power range	: 0.55 kW - 5.5 kW
Flange	: 4 Inch NEMA
Degree of protection	: IP68
Insulation Class	: F
Ambient temperature	: 30°C
Cooling flow	: 0.08 m/s
Starts/hr	: 20 Max
Voltage tolerance	: +6% / -10% UN

### System Content

- 4 Inch Synchronous Submersible Motor
- Variable Frequency Drive



## 4 INCH EES MOTORS

### PERFORMANCE DATA - 50Hz

SUBMERSIBLE MOTORS									
Material	Stainless Steel 304/316			Rating		0.5 kW - 5.5 kW			
Type	Encapsulated			Thrust Rating		6500 N			

### PERFORMANCE DATA 220V- 50 Hz\*

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> / I <sub>N</sub> [A]	η [%]	PF [%]	T <sub>N</sub> [Nm]	T <sub>A</sub> / T <sub>N</sub> * [Nm]
0.55	6500	220	3000	1.8	1	85.1	0.96	1.8	1
0.75	6500	220	3000	2.3	1	85.6	0.98	2.4	1
1.1	6500	220	3000	3.4	1	86.4	0.97	3.5	1
1.5	6500	220	3000	4.5	1	88.0	0.98	4.8	1
2.2	6500	220	3000	6.6	1	90.3	0.97	7.0	1
3.0	6500	220	3000	9.4	1	90.7	0.95	9.6	1
3.7	6500	220	3000	11.3	1	91.0	0.97	11.8	1
4.0	6500	220	3000	12.1	1	91.0	0.98	12.7	1
5.5	6500	220	3000	16.5	1	91.0	0.97	17.5	1

\* Input to the VFD

### PERFORMANCE DATA 380 V-50HZ\*

P <sub>N</sub> [kW]	Thrust F [N]	U <sub>N</sub> [V]	n [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> / I <sub>N</sub> [A]	η [%]	PF [%]	T <sub>N</sub> [Nm]	T <sub>A</sub> / T <sub>N</sub> * [Nm]
1.1	6500	380	3000	2.0	1	86.4	0.96	3.5	1
1.5	6500	380	3000	2.7	1	88.0	0.97	4.8	1
2.2	6500	380	3000	3.9	1	89.6	0.96	7.0	1
3.0	6500	380	3000	5.2	1	90.0	0.98	9.6	1
3.7	6500	380	3000	6.6	1	90.2	0.98	11.8	1
4.0	6500	380	3000	7.0	1	90.2	0.99	12.7	1
5.5	6500	380	3000	9.5	1	91.0	0.97	17.5	1

TOLERANCE APPLIED AS PER IEC 60034-1

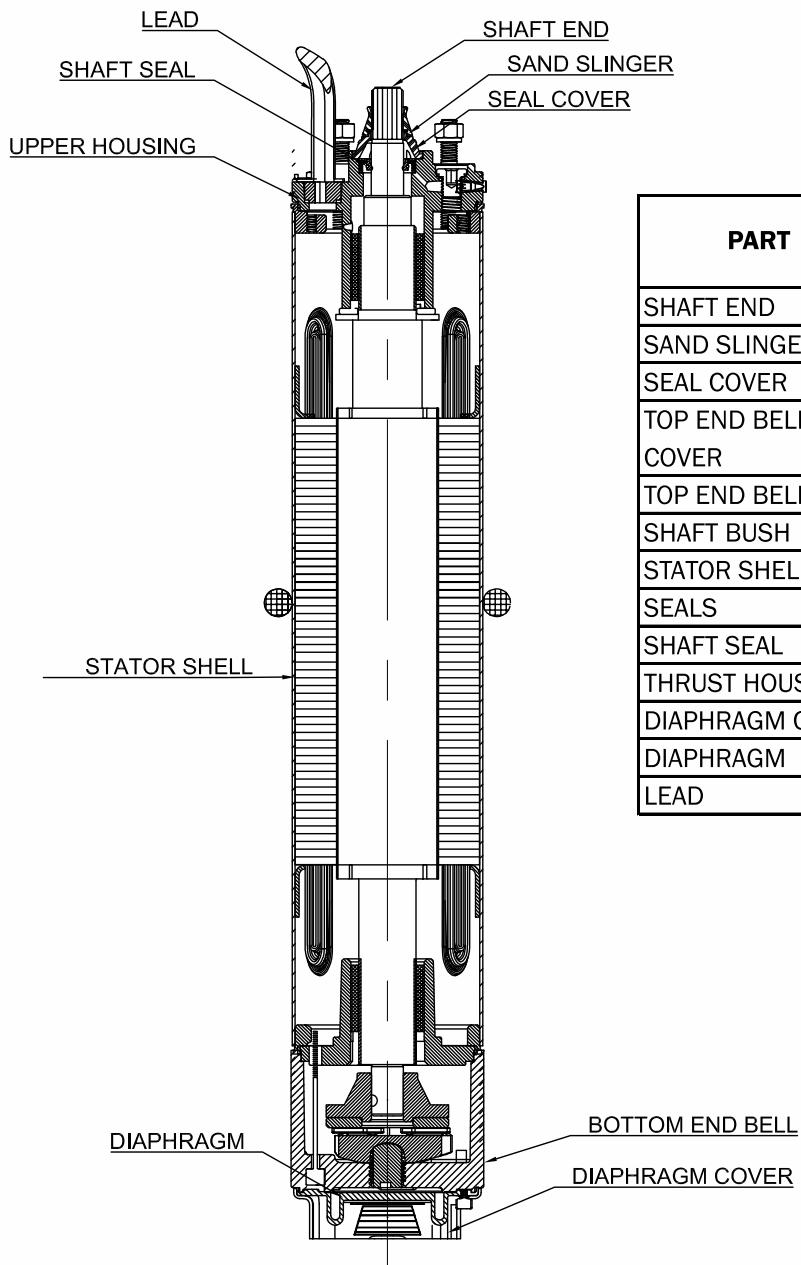
\* Input to the VFD

## 4 INCH EES MOTORS

### MATERIAL OF CONSTRUCTION

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	0.5 kW - 5.5 kW
Type	Encapsulated	Thrust Rating	6500 N

### 4 INCH EES MOTOR



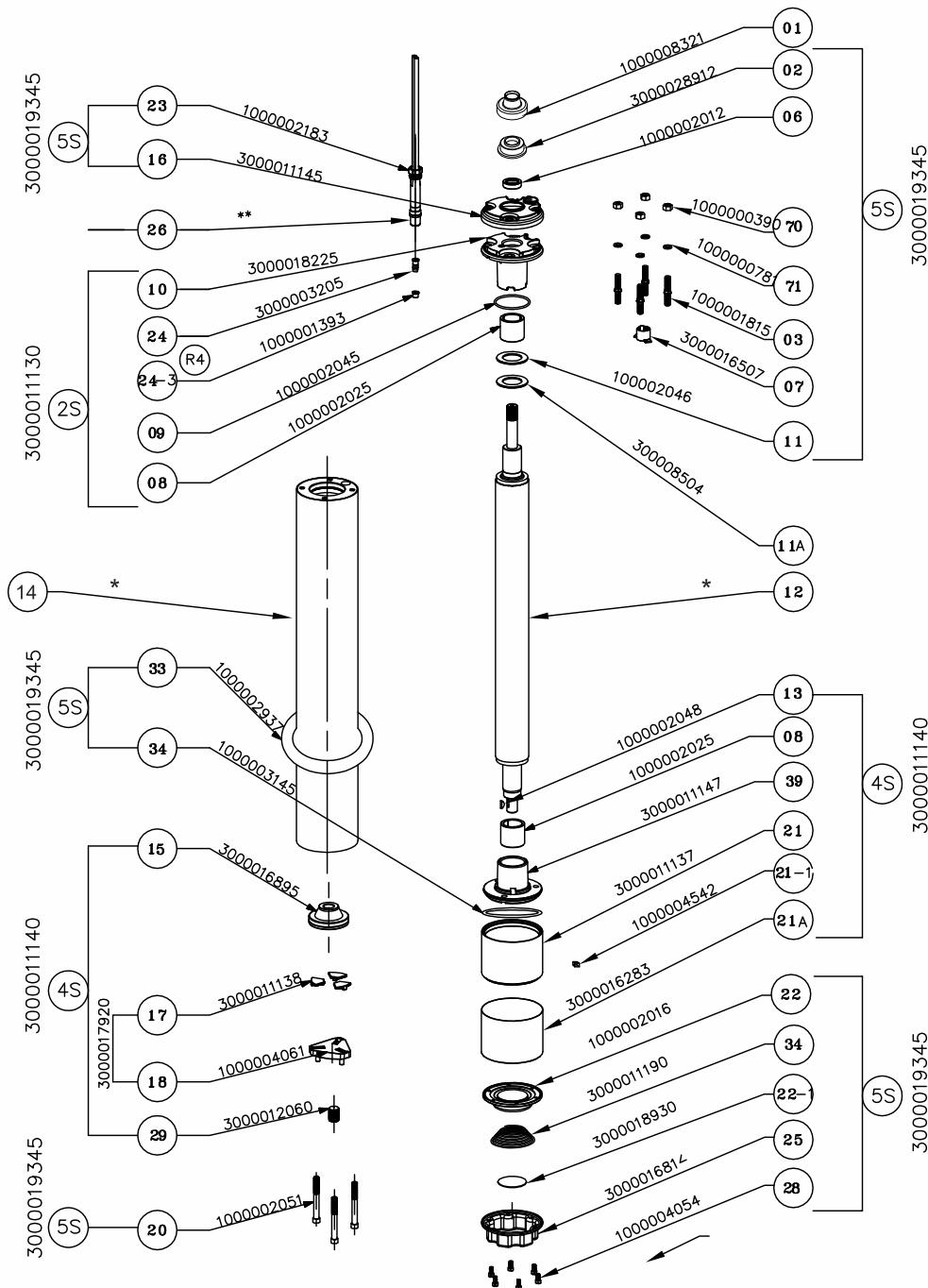
PART	MATERIAL	
	AISI SS 304	AISI SS 316
SHAFT END	DUPLEX	DUPLEX
SAND SLINGER	NBR	NBR
SEAL COVER	AISI SS 304	AISI SS 316
TOP END BELL COVER	AISI SS 304	AISI SS 316
TOP END BELL	AISI SS 304	AISI SS 316
SHAFT BUSH	NYLON 30% GLASS	NYLON 30% GLASS
STATOR SHELL	AISI SS 304	AISI SS 316
SEALS	NBR	NBR
SHAFT SEAL	EPDM + AISI SS 304	EPDM + AISI SS 304
THRUST HOUSING	AISI SS 304	AISI SS 316
DIAPHRAGM COVER	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM
LEAD	XLPE	XLPE

## **4 INCH EES MOTORS**

## **EXPLODED VIEW**

<b>SUBMERSIBLE MOTORS</b>			
<b>Material</b>	Stainless Steel 304/316	<b>Rating</b>	0.5 kW - 5.5 kW
<b>Type</b>	Encapsulated	<b>Thrust Rating</b>	6500 N

## **4 INCH EES MOTOR**



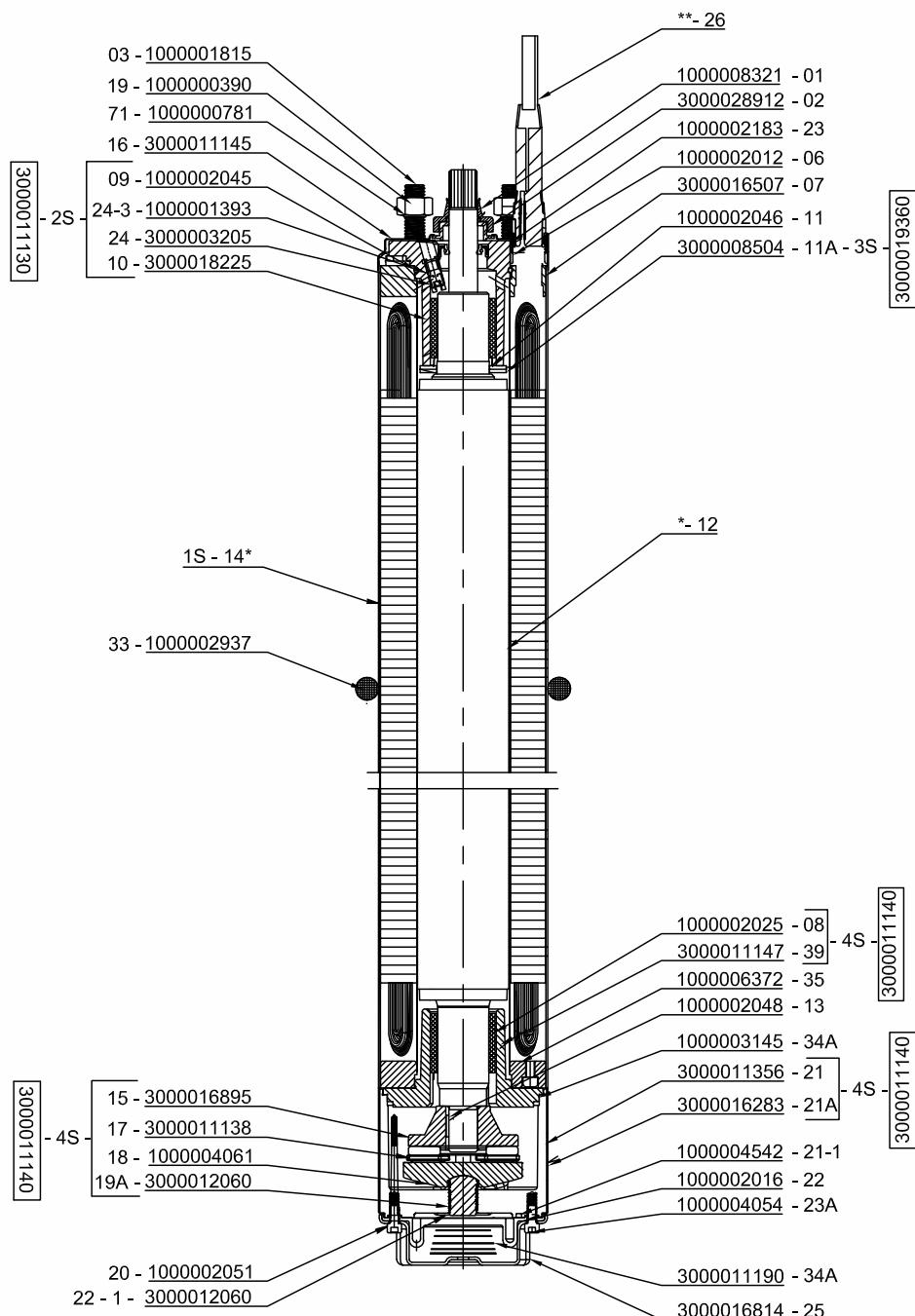
NOTE: - \* INDICATES AS PER (HP)  
\*\* AS PER REQUIREMENT

## 4 INCH EES MOTORS

### SECTIONAL VIEW

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	0.5 kW - 5.5 kW
Type	Encapsulated	Thrust Rating	6500 N

### 4 INCH EES MOTOR



NOTE:-\* INDICATES AS PER (HP)

\*\* AS PER REQUIREMENT

## 4 INCH EES MOTORS

### PART LIST

<b>SUBMERSIBLE MOTORS</b>			
<b>Material</b>	Stainless Steel 304/316	<b>Rating</b>	0.5 kW - 5.5 kW
<b>Type</b>	Encapsulated	<b>Thrust Rating</b>	6500 N

### 4 INCH EES MOTOR

GROUP	POS	MATERIAL CODE	PART DESCRIPTION	QTY	MATERIAL
	1	1000002031	SAND SLINGER	1	NBR
	2	3000017280	SAND WASHER	1	SS AISI-304
	5	1000002034	SEAL COVER	1	PPS
	6	1000002012	OIL SEAL	1	EPDM+ SS AISI 304
	19	1000000390	NUT	4	SS AISI-304
	71	1000000781	SPRING WASHER	4	SS AISI-304
	3	1000001815	STUD	4	SS AISI-304
	7	3000016507	CONNECTOR BOSS	1	NICKEL COATED
	11	1000002046	UP THRUST WASHER	1	PVC
	36	3000022711	TOP GASKET	1	PU FOAM
3S 3000019360	11A	3000008504	SS WASHER	1	SS AISI-304
	12	*	ROTOR SUB ASSLY	1	N/A
4S 3000011140	21-1	1000004542	MAGNET	1	MAGNET
	8	1000002025	BUSH CARBON	1	RESIN IMPREGNATED CARBON
	39	3000011147	BOTTOM END BELL	1	CI FG-260
	21	3000011136	THRUST HOUSING	1	CI FG-260
	21A	3000016283	THRUST HOUSING PIPE	1	SS AISI-304
	34	3000011190	DIAPHRAGM SPRING	1	SS
	13	1000002048	WOODRUFF KEY	1	EN8
	22	1000002016	DIAPHRAGM	1	EPDM
	22-1	3000018930	DIAPHRAGM INSERT	1	SS AISI-304
	25	3000016814	DIAPHRAGM COVER	1	SS AISI-304
	23A	1000004054	ALLEN BOLT M5X12 MM	6	SS AISI-304
	23	1000002183	CONNECTOR LUG	1	SS AISI-304
	16	3000011145	TOP END BELL COVER	1	SS AISI-304
	26	**	CABLE	1	RUBBER
	10	3000018225	TOP END BELL	1	CI FG-260
2S 3000011130	24	3000003205	PRESSURE RELIEF VALVE ASSLY	1	N/A
	24-3	1000001393	FILTER	1	PP
	9	1000002045	O-RING	1	NBR
	8	1000002025	BUSH CARBON	1	CARBON
	14	*	STATOR SUB ASSLY	1	N/A
	35	1000006372	SS BALL DIA 8 MM	1	SS
	33	1000002937	RUBBER RING ID 90	1	RUBBER
	34A	1000003145	GASKET PREM	1	OIL PAPER
	15	3000016895	THRUST DISC ASSLY	1	CI FG-260
4S 3000011140	17	3000011138	SEGMENT	3	SS AISI-420
	18	1000004061	LEVELING DISK	1	SS AISI 410
	19A	3000012060	ADJUSTING STUD	1	SS AISI-410
	20	1000002051	ALLEN BOLT M8X70MM	3	SS AISI-304

NOTE:- \* INDICATES AS PER (HP)

\*\* AS PER REQUIREMENT

## 6 INCH ENHANCED EFFICIENCY SYSTEM (EES)

### GENERAL DATA

Enhanced efficiency submersible system in range of 4.0 kW – 37.0 kW which saves up to 30% energy.

This motor is built for dependable operation in 6 Inch diameter or larger water wells. It is fitted with water lubricated radial and thrust bearings for maintenance free operations. The motor is filled with a special fluid, providing frost protection down to -15°C storage temperature. A special diaphragm ensures pressure compensation inside the motor.

### Product advantages

- Integrated all in one solution.
- System payback < 2 years.
- Up to 15% improved motor efficiency constant high efficiency in wider operating range.
- Reduce steady state operating temperature.
- Increased power to weight ratio.
- Incorporated soft start and protection features.
  - Mobile app control
  - Speed control (increase lifetime protection)
  - Remote monitoring
  - IOT enabled
  - Over current Protection
  - Dry run Protection
  - No additional investment
- Reduced AMPS (Smaller drop lead cross size)
- Connectivity (RS 485, Bluetooth, GPRS connectivity)

### Technical specification

Power range	: 4.0 kW - 37.0 kW
Flange	: 6 Inch NEMA
Degree of protection	: IP68
Insulation Class	: F
Ambient temperature	: 30°C
Cooling flow	: 0.2 m/s
Starts/hr	: 20 max
Voltage tolerance	: +6% / -10% UN

### System Content

- 6 Inch Synchronous Submersible Motor
- Variable Frequency Drive



## 6 INCH EES MOTORS

### PERFORMANCE DATA - 50Hz

SUBMERSIBLE MOTORS								
Material	Stainless Steel 304/316			Rating		4.0 kW - 37.0 kW		
Type	Encapsulated			Thrust Rating		15500 N		

### PERFORMANCE DATA 400V- 50 HZ\*

P <sub>N</sub> [kW]	Thrust F [kN]	n [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> /I <sub>N</sub> * [A]	η [%]	PF [%]	T <sub>N</sub> [Nm]	T <sub>A</sub> /T <sub>N</sub> * [Nm]
4.0	15.5	3000 / 3600	7.0	1	88.0	0.95	12.9	1
5.5	15.5	3000 / 3600	10.0	1	89.0	0.95	17.5	1
7.5	15.5	3000 / 3600	13.0	1	89.5	0.95	23.8	1
9.3	15.5	3000 / 3600	17.0	1	91.5	0.97	29.6	1
11.0	15.5	3000 / 3600	19.0	1	92.0	0.97	35.0	1
13.0	15.5	3000 / 3600	22.0	1	92.5	0.97	41.5	1
15.0	15.5	3000 / 3600	25.0	1	92.5	0.96	46.1	1
18.5	15.5	3000 / 3600	31.0	1	92.0	0.96	59.0	1
22.0	15.5	3000 / 3600	37.0	1	93.0	0.96	70.0	1
26.0	15.5	3000 / 3600	43.0	1	92.5	0.97	82.6	1
30.0	15.5	3000 / 3600	51.0	1	91.5	0.97	95.5	1
37.0	15.5	3000 / 3600	65.0	1	90.0	0.97	117.8	1

Tolerance applied as per IEC 60034-1

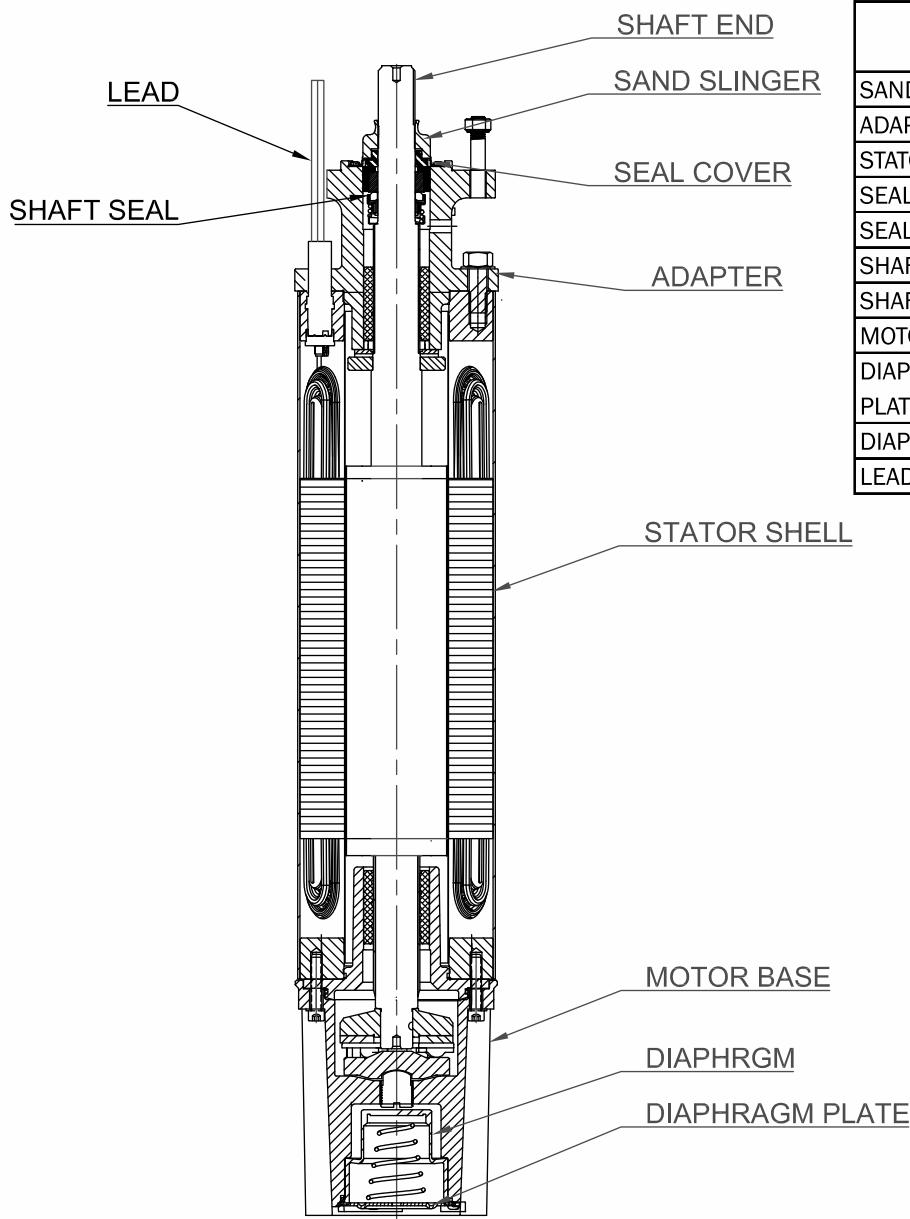
\* Input to the VFD

## 6 INCH EES MOTORS

### MATERIAL OF CONSTRUCTION

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	4.0 kW - 37.0 kW
Type	Encapsulated	Thrust Rating	15500 N

### 6 INCH EES MOTOR



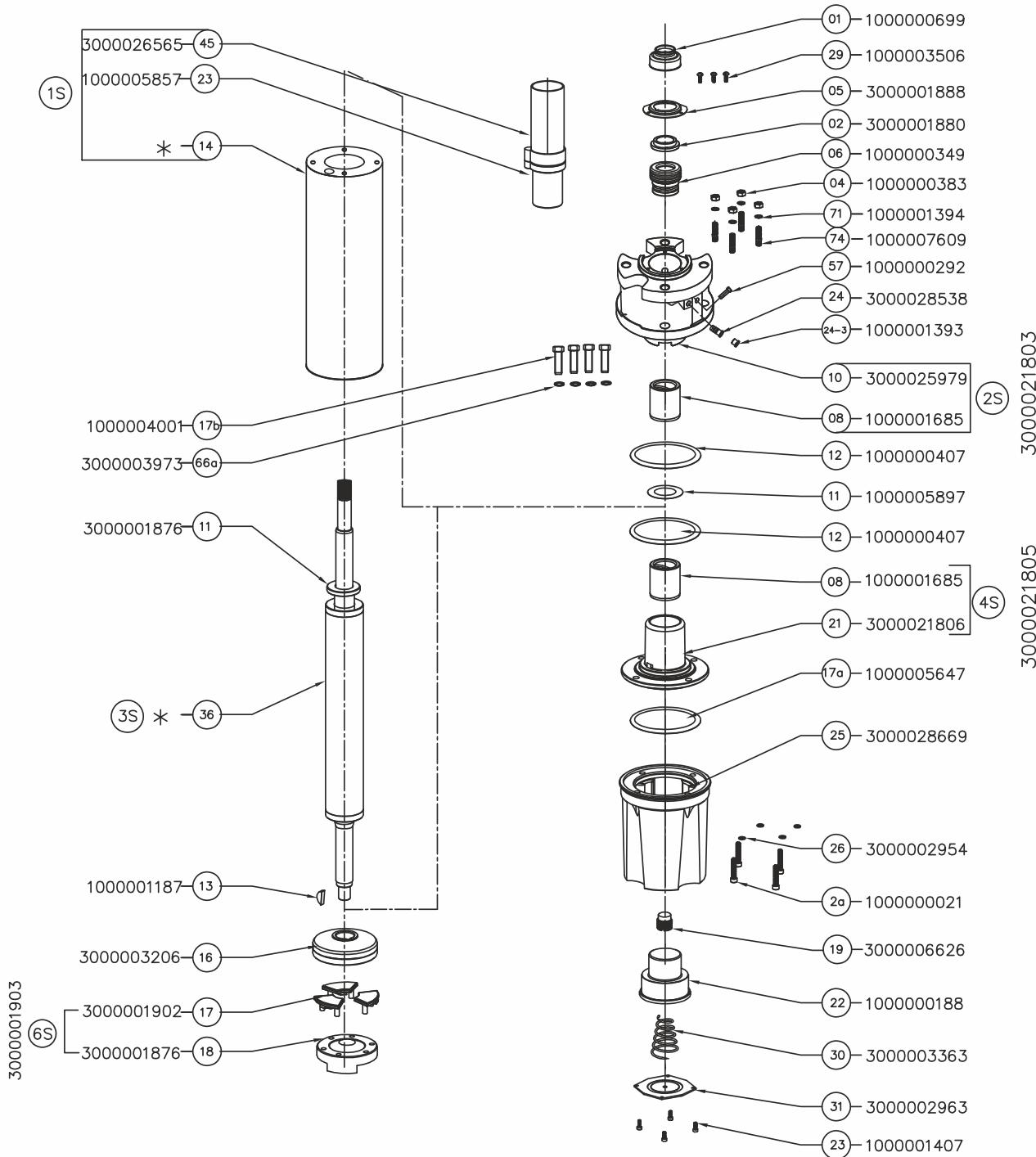
PART	MATERIAL	
	AISI SS 304	AISI SS 316
SAND SLINGER	NBR	NBR
ADAPTER	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 316
SEAL COVER	AISI SS 304	AISI SS 316
SEALS	NBR	NBR
SHAFT END	DUPLEX	DUPLEX
SHAFT SEAL	SIC	SIC
MOTOR BASE	AISI SS 304	AISI SS 316
DIAPHRAGM PLATE	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM
LEAD	XLPE	XLPE

## 6 INCH EES MOTORS

### EXPLODED VIEW

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	4.0 kW - 37.0 kW
Type	Encapsulated	Thrust Rating	15500 N

### 6 INCH EES MOTOR

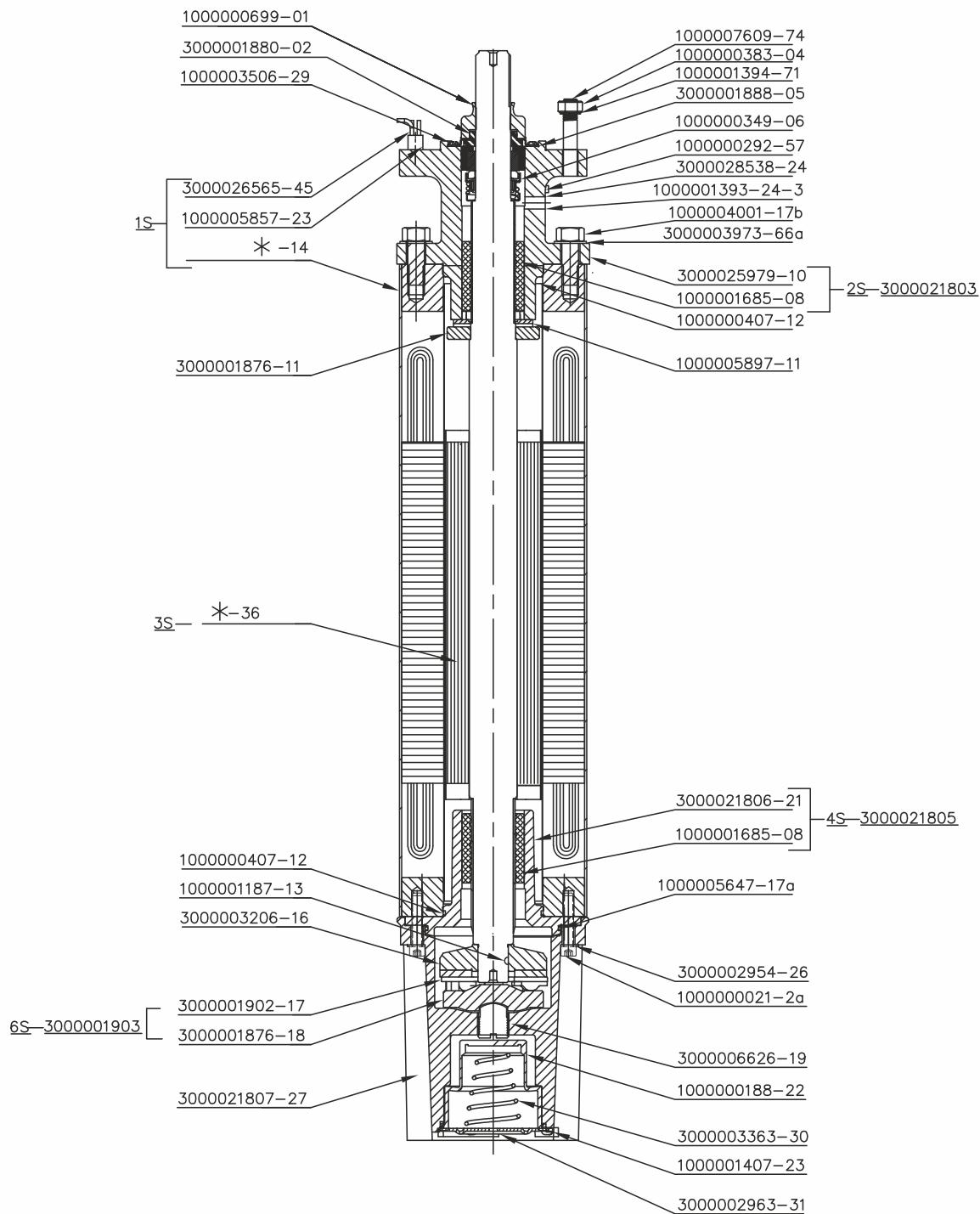


## 6 INCH EES MOTORS

### SECTIONAL VIEW

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	4.0 kW - 37.0 kW
Type	Encapsulated	Thrust Rating	15500 N

### 6 INCH EES MOTOR



## 6 INCH EES MOTORS

### PART LIST

<b>SUBMERSIBLE MOTORS</b>			
<b>Material</b>	Stainless Steel 304/316	<b>Rating</b>	4.0 kW - 37.0 kW
<b>Type</b>	Encapsulated	<b>Thrust Rating</b>	15500 N

### 6 INCH EES MOTOR

<b>POS.</b>	<b>MATERIAL CODE</b>	<b>PART DESCRIPTION</b>	<b>QTY</b>	<b>MATERIAL</b>
4	1000000383	NUT(M12)	4	SS AISI-304
71	1000001394	SPRINGN WASHER	4	SS AISI-304
74	1000007609	STUD M12	4	SS AISI-304
1	1000000699	SAND SLINGER	1	NBR
29	1000003506	SLOTTED THREADCUT SCREW	3	SS AISI-304
5	3000001888	DUST COVER	1	SS AISI-304
2	3000001880	DUST COVER BUSH	1	LTB-2
6	1000000349	MECH SEAL	1	N/A
57	1000000292	HH BOLT M8X12(SS 304)	1	SS AISI-304
12	1000000407	O-RING ID 69X2.5	2	EPDM
11	1000005897	UP THRUST WASHER	1	PP
24-3	1000001393	FILTER ASSY	2	PP
24	3000028538	PRESSURE RELIEF VALVE ASSLY.	1	N/A
10	3000025979	UPPER HOUSING	1	SS AISI-304
8	1000001685	BUSH CARBON	1	REGIN IMPREGNATED CARBON
8	1000001685	BUSH CARBON	1	REGIN IMPRE-GNATED CARBON
21	3000021806	END BELL LOWER	1	CI FG-260
17a	1000005647	O-RING	1	EPDM
26	3000002954	COPPER WASHER	4	COPPER
2a	1000000021	ALLEN BOLT M8X40	4	SS AISI-304
22	1000000188	DIAPHRAGM	1	EPDM
30	3000003363	DIAPHRAGM SPRING	1	SS
23	1000001407	ALLEN BOLT M4X10	4	SS AISI-304
31	3000002963	MOTOR BASE COVER	1	SS AISI-304
25	3000028669	MOTOR BASE	1	SS AISI-304
17b	1000004001	HEX BOLT M12x35	4	SS AISI-304
66 a	3000003973	PLANE WASHER	4	SS AISI-304
11	3000001876	UP THRUST PLATE	1	CI FG - 260
32	*	STATOR SUB ASSLY	1	N/A
23	1000005857	CONNECTOR LUG	1	BRASS
45	3000026565	CONNECTOR FEMALE ASSY	1	N/A
36	*	ROTOR SUB ASSLY	1	N/A
16	3000003206	REVOLVING PLATE	1	CI FG-260
17	3000001902	THRUST BRG. SEGMENT	3	AISI SS 420
18	3000001876	THRUST BER PLATE	1	CI FG - 260
19	3000006626	ADJUSTING STUD	1	DUPLEX
13	1000001187	WOODRUFF KEY	1	EN8

## 8 INCH ENHANCED EFFICIENCY SYSTEM (EES)

### GENERAL DATA

Enhanced efficiency submersible system in range of 45 Kw to 150 Kw which saves up to 20% energy.

This motor is built for dependable operation in 8 INCH diameter or larger water wells. It is fitted with water lubricated radial and thrust bearings for maintenance free operations. The motor is filled with a special fluid, providing frost protection down to -15°C storage temperature. A special diaphragm ensures pressure compensation inside the motor.

### Product advantages

- Integrated all in one solution.
- System payback < 2 years.
- Up to 9% improved motor efficiency constant high efficiency in wider operating range.
- Reduce steady state operating temperature.
- Increased power to weight ratio.
- Incorporated soft start and protection features.
  - Mobile app control
  - Speed control (increase lifetime protection)
  - Remote monitoring
  - IOT enabled
  - Over current Protection
  - Dry run Protection
  - No additional investment
- Reduced AMPS (Smaller drop lead cross size)
- Connectivity (RS 485, Bluetooth, GPRS connectivity)

### Technical specification

Power range	: 45.0 kW - 150 kW
Flange	: 8 Inch NEMA
Degree of protection	: IP68
Insulation Class	: F
Ambient temperature	: 30°C
Cooling flow	: 0.5 m/s
Starts/hr	: 10 max
Voltage tolerance	: +6% / -10% UN

### System Content

- 8 Inch Synchronous Submersible Motor
- Variable Frequency Drive



## 8 INCH EES MOTORS

### PERFORMANCE DATA - 50Hz

SUBMERSIBLE MOTORS									
Material	Stainless Steel 304/316			Rating		45 kW - 150 kW			
Type	Encapsulated			Thrust Rating		45000 N			

### PERFORMANCE DATA 400V- 50 Hz\*

P [kW]	Thrust F [kN]	U <sub>N</sub> [V]	n [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> / I <sub>N</sub> * [A]	η [%]	PF[%]	T <sub>N</sub> [Nm]	T <sub>A</sub> / T <sub>N</sub> * [Nm]
45	45	400	3000	72	1	93.3	0.97	143	1
55	45	400	3000	89	1	93.3	0.97	175	1
67	45	400	3000	109	1	93	0.97	213	1
75	45	400	3000	123	1	92.5	0.97	239	1
83	45	400	3000	136	1	93.3	0.96	264	1
93	45	400	3000	155	1	93.0	0.96	296	1
100	45	400	3000	168	1	94.0	0.96	319	1
110	45	400	3000	182	1	94.2	0.96	350	1
130	45	400	3000	215	1	94.0	0.96	413	1
150	45	400	3000	250	1	93.4	0.96	477	1

\* Input to the VFD

### PERFORMANCE DATA 500V- 50 Hz\*

P [kW]	Thrust F [kN]	U <sub>N</sub> [V]	n [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>A</sub> / I <sub>N</sub> * [A]	η [%]	PF[%]	T <sub>N</sub> [Nm]	T <sub>A</sub> / T <sub>N</sub> * [Nm]
45	45	500	3000	58	1	93.2	0.96	143	1
55	45	500	3000	72	1	93.2	0.96	175	1
67	45	500	3000	89	1	93	0.96	213	1
75	45	500	3000	100	1	93.5	0.95	239	1
83	45	500	3000	111	1	93.3	0.95	264	1
93	45	500	3000	125	1	93.2	0.95	296	1
100	45	500	3000	135	1	93.9	0.97	319	1
110	45	500	3000	145	1	93.8	0.97	350	1
130	45	500	3000	172	1	93.7	0.97	413	1
150	45	500	3000	200	1	93.2	0.97	477	1

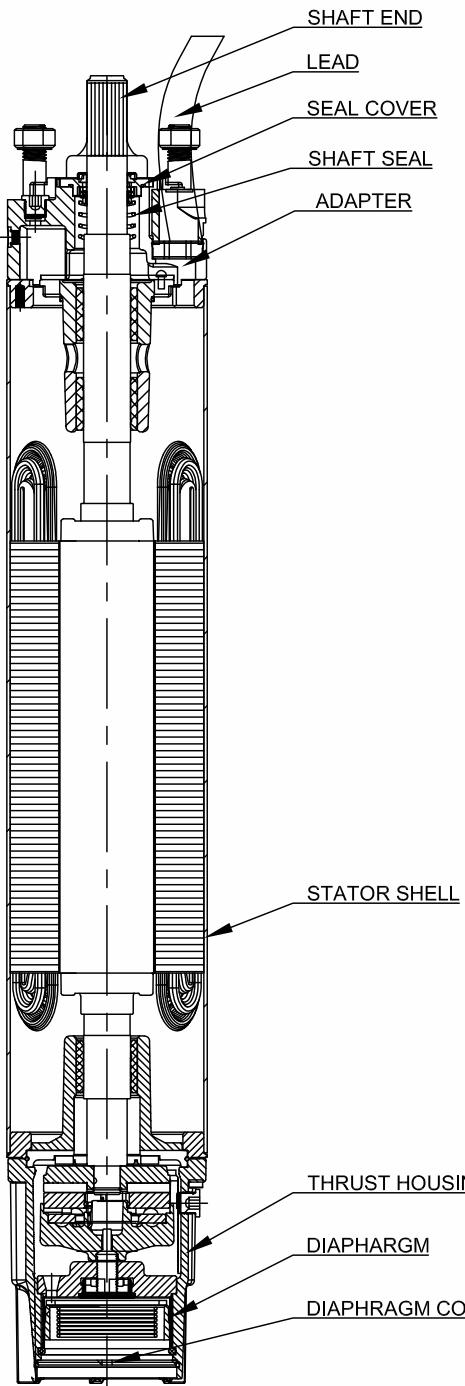
TOLERANCE APPLIED AS PER IEC 60034-1

## 8 INCH EES MOTORS

### MATERIAL OF CONSTRUCTION

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	45 kW - 150 kW
Type	Encapsulated	Thrust Rating	45000 N

### 8 INCH EES MOTOR

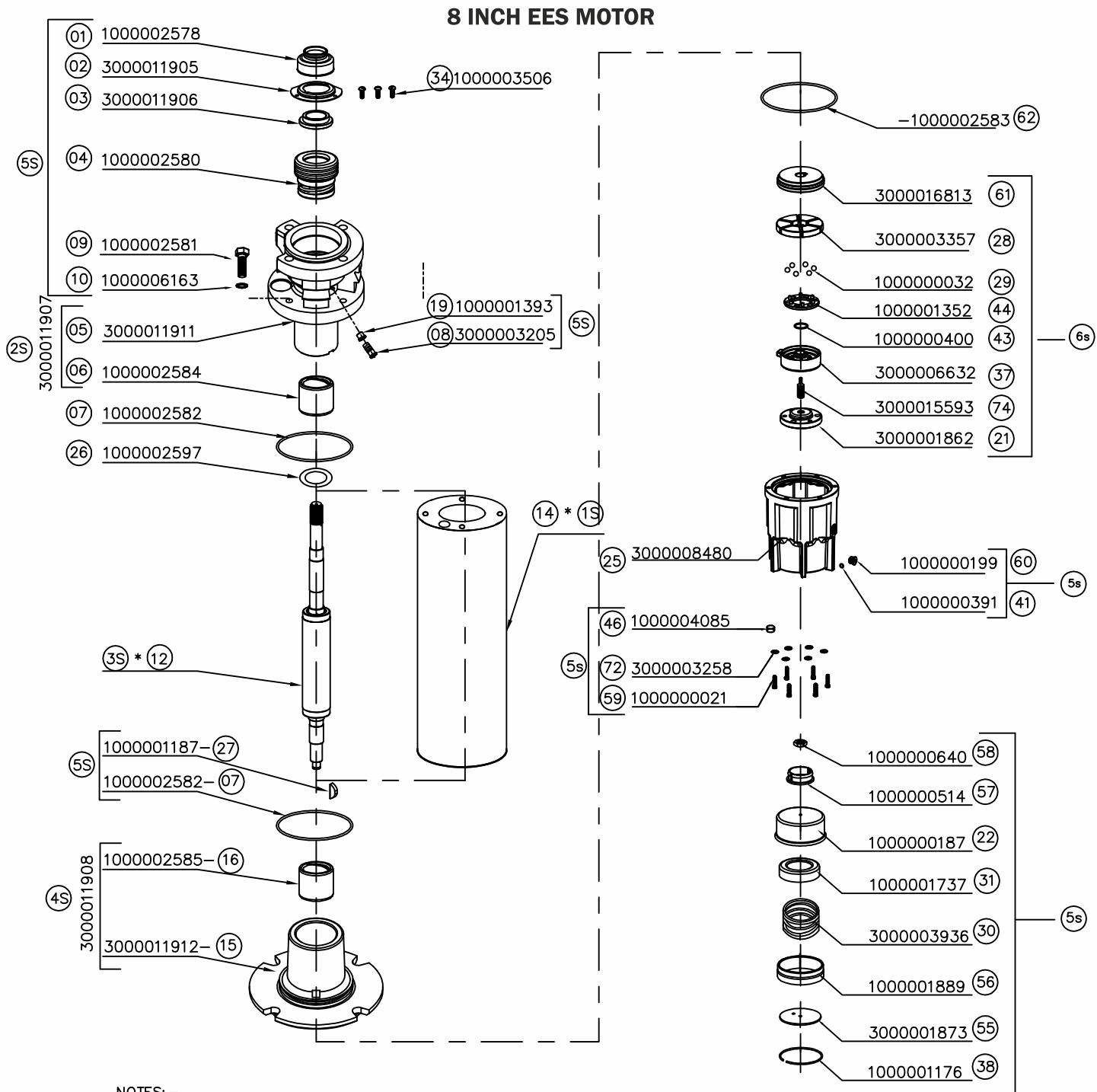


Part	Material		
	CI	AISI SS 304	AISI SS 316
Stator shell	AISI SS 304	AISI SS 304	AISI SS 316
Adapter	Cast Iron Powder Coated	AISI SS 304	AISI SS 316
Thrust Housing	Cast Iron Powder Coated	AISI SS 304	AISI SS 316
Seals	NBR	NBR	NBR
Seal Cover	AISI SS 304	AISI SS 304	AISI SS 316
Shaft Seal	SiC	SiC	SiC
Shaft end	Duplex	Duplex	Duplex
Diaphragm	EPDM	EPDM	EPDM
Diaphragm Cover	AISI SS 304	AISI SS 304	AISI SS 316
Lead	EPR	EPR	EPR

## 8 INCH EES MOTORS

### EXPLODED VIEW

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	45 kW - 150 kW
Type	Encapsulated	Thrust Rating	45000 N



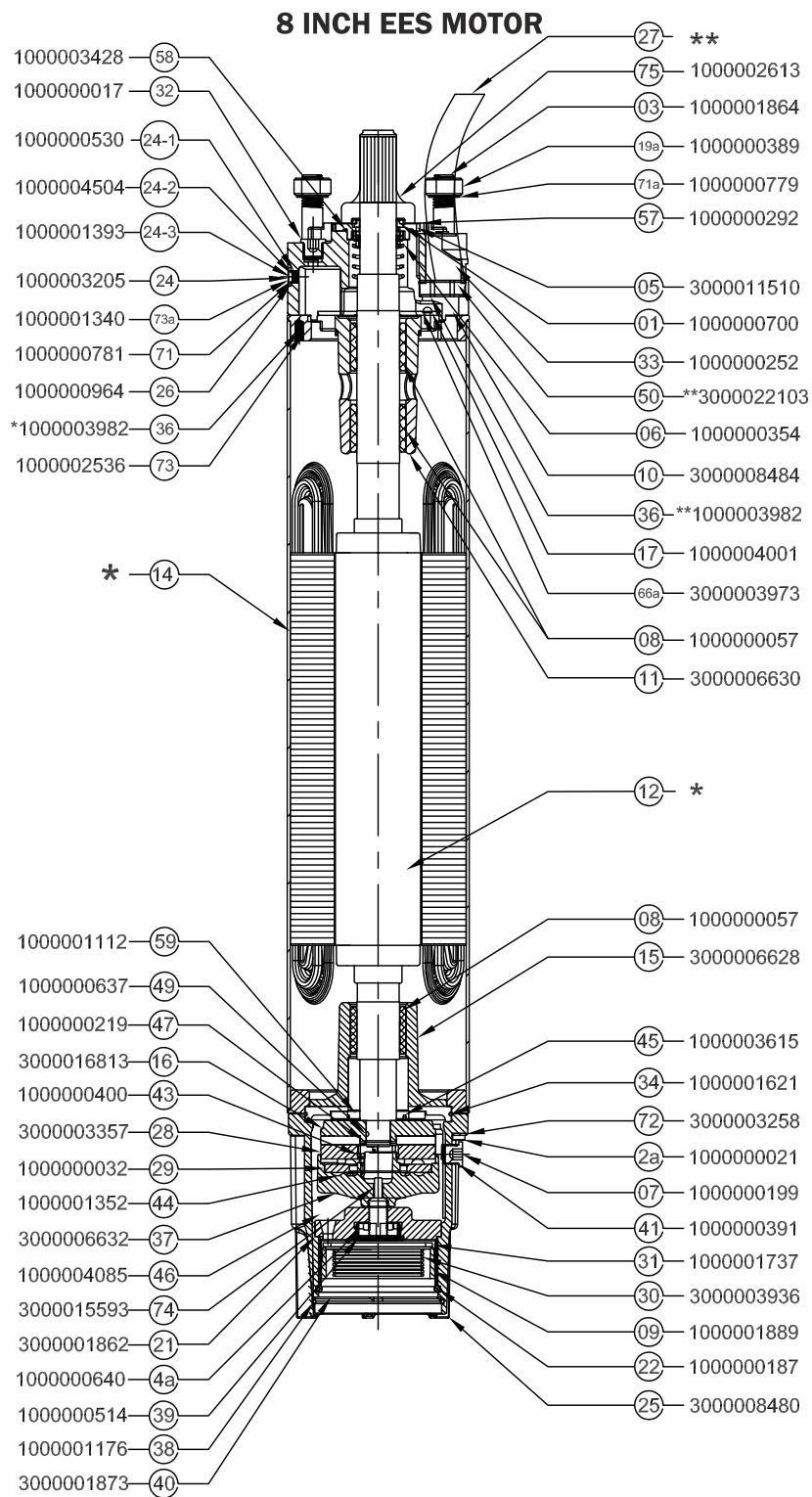
NOTES:-

\* INDICATE AS PER (HP)  
\*\* AS PER REQUIREMENT

## 8 INCH EES MOTORS

### SECTIONAL VIEW

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	45 kW - 150 kW
Type	Encapsulated	Thrust Rating	45000 N



## 8 INCH EES MOTORS

### PART LIST

SUBMERSIBLE MOTORS			
Material	Stainless Steel 304/316	Rating	45 kW - 150 kW
Type	Encapsulated	Thrust Rating	45000 N

### 8 INCH EES MOTOR

GROUP	POS	MATERIAL CODE	PART DESCRIPTION	QTY	MATERIAL
5S	1	1000002578	SAND SLINGER	1	NBR
	2	3000011905	DUST COVER	1	SS AISI-304
	3	3000011906	BUSH FOR DUST COVER	1	LTB-2
	4	1000002580	MECHANICAL SEAL	1	NA
	34	1000003506	SLOTTED THREAD CUT SCREW	3	SS AISI-304
	9	1000002581	HEX BOLT M12x55	4	SS AISI-304
	10	1000006163	LOCKWASHER M12	4	SS AISI-304
	19	1000001393	FILTER ASSY	2	PP
2S 3000011907	8	3000003205	PRESSURE RELIEF VALVE ASSY	2	NA
	5	3000011911	END BELL UPPER (PRE-200)	1	CI FG 260
5S	6	1000002584	BUSH CARBON	1	METAL IMPREGATED ANTIMONEY
	7	1000002582	O-RING	2	EPDM
3S	26	1000002597	UP THRUST WASHER	1	NYLON
	12	*	ROTOR SUB ASSY	1	NA
5S	27	1000001187	WOODRUFF KEY	1	EN8
4S 3000011908	15	3000011912	END BELL LOWER (PRE-200)	1	CI FG 260
	16	1000002585	BUSH CARBON	1	METAL IMPREGATED ANTIMONEY
1S	14	*	STATOR SUB ASSY	1	NA
	39	1000002592	CONNECTOR FEMALE ASSY	1	NA
	40	3000023447	CONNECTOR LUG	1	BRASS
5S	62	1000002583	O-RING	1	EPDM
	60	1000000199	DRAIN PLUG	1	BRASS
	41	1000000391	O-RING 10X2.1MM	1	NBR
6S 3000019486	61	3000016813	REVOLVING PLATE ASSLY	1	N/A
	28	3000003357	THRUST BER SEGMENT	6	SS AISI-420
	29	1000000032	BALL 15	6	SS AISI-304
	44	1000001352	THRUST BALL RETAINER	1	LTB-2
	43	1000000400	O-RING	1	NBR
	37	3000006632	BRG SEG .CARRIER	1	CI FG-260
	74	3000015593	GRUB SCREW	1	SS AISI-304
	21	3000001862	THRUST SUPPORT	1	CI FG-260
	25	3000008480	MOTOR BASE	1	CI FG-260
5S	46	1000004085	MAGNET	1	MAGNET
	72	3000003258	SS WASHER	6	SS AISI-304
	59	1000000021	ALLEN BOLT M8X40	6	SS AISI-304
6S	58	1000000640	SS LOCK NUT	1	SS AISI-420
5S 3000019455	57	1000000514	PROTECTION PLUG	1	PP/PLASTIC
	22	1000000187	DIAPHRAM	1	EPDM
	31	1000001737	SPRING BASE CUP	1	ABS
	56	1000001889	SUPPORTING RING	1	PP/PLASTIC
	30	3000003936	SPRING DIAPHRAM	1	SS AISI-304
	55	3000001873	COVER PLATE	1	SS AISI-304
	38	1000001176	WIRE CIRCLIP	1	SS AISI-304

## ENHANCED EFFICIENCY SYSTEM (EES)

### VARIABLE FREQUENCY DRIVE (VFD)

#### VFD Features:

- Support induction and permanent magnet motors
- Top class protection IP65 with aluminum die casting powder coated enclosure.
- Optimized for submersible permanent magnet motor feeding - first class performance

### VFD TECHNICAL SPECIFICATION

<b>Power supply</b>	Input voltage $U_N$	200 - 450 AC 200 - 720 DC
	Input Frequency Hz	45 - 65 Hz
	Start per hour	20 ; with minimum 3 min rest period
	Output voltage	0 - $U_N$
<b>Motor connection</b>	Output current	$I_N$
	Output frequency	0 - $F_N$
	Efficency	97.50%
<b>Control characteristics</b>	Switching frequency	3.2 kHz default
<b>Ambient conditions</b>	operation tempreature	-20°C to +70°C
	Storage tempreature	-40°C to +70°C
	Altitude	3000m (> 1000m with de-rating)
<b>Communication</b>	RS 485	Standard modbus
	GPRS	
	BLUETOOTH	





## NOTE



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