

---

## Submersible motors for well diameters from 150 mm (6 inches)

### Applications

The **oddesse** submersible motors of the series **po-mo** are designed to drive submersible pumps. They are also applicable for other submersible machines and offshore operation.

### Design

The **oddesse** submersible motor is a three-phase asynchronous motor with a short circuit rotor. It is designed as a wet-running motor with a watertight insulated winding. All motors are rewindable. The motor connection for 6- and 8-inch motors are according to NEMA-standard, 10- and 12-inch motors are according to international standards. The bearings are lubricated by the motor filling. It is a mixture of glycerine and water. Glycerine is biodegradable and secures the anti freeze protection up to -25 °C. If necessary, it can be changed with pure drinking water.

Axial down thrusts will be absorbed by the axial thrust bearing with individual tilting pads.

Motors are encapsulated by a high quality mechanical seal. A reliable balance system grant the pressure compensation between motor and its environment.

The motors are completed with pressure-water tide cable. They are inside earthed.

Construction complies with VDE-regulations and the motors are conform to the EC declaration of conformity as defined by machinery directive 2006/42/EEC.

Motors are usable in horizontal and diagonal position depending of the nominal power. **oddesse** motors are working electrical clock- and anticlockwise.

A high efficiency guarantees lowest operating costs.

For all the motors **oddesse** hold a detailed supply of control and monitoring equipment available.

### Operating data

- Nominal power: up to 400 kW
- Voltage: up to 1000 V
- Kind of currency: 3 ~
- Frequency : 50 Hz and 60 Hz
- Degree of protection: IP 68
- Ambient temperature: up to 30 °C (50 °C with XLPE/PA -wire, higher temperatures on request)
- Switching frequency: max. 20 / h (po-mo12 max. 10 / h)
- Nominal speed: 2850 1/min and 3460 1/min

### Special design (on request)

- higher temperatures
- other quality of pumped medium, for example sea water use
- chemically polluted liquids
- other materials
- suction jacket
- temperature monitoring with PTC / Pt100 including reporting device
- microprocessor controlled motor monitoring

### Frequency transformer operation

Every **oddesse** motor is usable for frequency transformer operations. Following items should be considered:

- the frequency transformer must be conform to the nominal currency of the submersible motor,
- the maximal working range from 30 Hz up to 60 Hz, corresponding speed from 1.740 up to 3.460 1/min,
- the using of a sine-wave generator protect against high voltage peaks
- the minimum rate of flow must be 10 % of the nominal rate of flow of the pump.

### Soft starter operation

Soft starters are very qualified to start a submersible motor. It grants:

- reducing of starting current
- avoidance of water hammer while starting causing switch off of the pump.

Subject to alterations

**Material of construction**

Submersible motor po-mo6.4, po-mo8.4, po-mo10.4, po-mo12.4

According to DIN

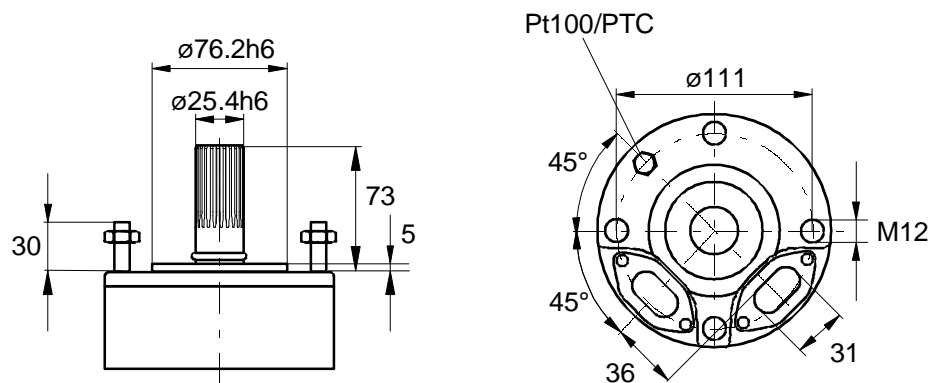
components	design			
	G-version (GGG 40)	C-version (AISI 304)	X-version (AISI 316)	Y-version (AISI 904L)
shaft	stainless steel / 1.4301		stainless steel / 1.4462	
motor flange	grey cast iron GGG40 / 0.7040	stainless steel / 1.4301	stainless steel / 1.4571	stainless steel / 1.4539
motor jacket	stainless steel / 1.4306		stainless steel / 1.4541	stainless steel / 1.4539
radial bearing	stainless steel / carbon			
thrust bearing	stainless steel / carbon			
screws, nuts and bolts	stainless steel A2 1.4301 / 1.4303		stainless steel A4 1.4401	stainless steel 1.4539
mechanical seal	carbon / ceramic		SiC / SiC	
	optional: SiC / SiC available for all motors			

According to AISI

components	design			
	G-version (GGG40)	C-version (AISI 304)	X-version (AISI 316)	Y-version (AISI 904L)
shaft	stainless steel / AISI 304		duplex steel	
motor flange	grey cast iron A563-72	stainless steel / AISI 304	stainless steel / AISI 316Ti	stainless steel / AISI 904L
motor jacket for	stainless steel / AISI 304L		stainless steel / AISI 321	stainless steel / AISI 904L
radial bearing	stainless steel / carbon			
thrust bearing	stainless steel / carbon			
screws, nuts and bolts	stainless steel A2 AISI 304 / 305		stainless steel A4 AISI 316	stainless steel A4 AISI 904L
mechanical seal	carbon / ceramic		SiC / SiC	
	optional: SiC / SiC available for all motors			

**oddesse** reserve the right to employ construction materials following German (DIN) standard

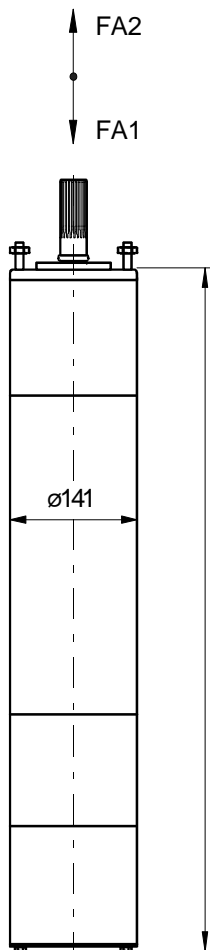
Subject to alterations



Pump connection acc. to NEMA-standards

### po-mo6.4 • 50 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
4	5.5	654	25.7	40	88
5.5	7.5	697	27.4	44	97
7.5	10	729	28.7	48	106
9.2	12.5	769	30.3	52	115
11	15	854	33.6	60	132
13	17.5	889	35	64	141
15	20	939	37	69	152
18.5	25	1004	39.5	76	168
22	30	1079	42.5	83	183
26	35	1149	45.2	89	196
30	40	1259	49.6	97	214
34	45	1309	51.5	101	223
37	50	1389	54.7	106	234
45	60	1609	63.3	122	269



Main dimensions [mm]

### po-mo6.4 • 60 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
4.6	6.3	654	25.4	40	88
6.3	8.5	697	27.1	44	97
8.5	11.5	729	28.4	48	106
11	15	769	30	52	115
13	17.5	854	33.3	60	132
15	20	889	34.7	64	141
17	23	939	36.7	69	152
20	27	1004	39.2	76	168
25	34	1079	42.2	83	183
30	40	1149	44.9	89	196
34	46	1259	49.3	97	214
37	50	1309	51.2	101	223
45	60	1389	54.4	106	234

**FA1** Downthrust capacity (up to 15 kW):

15 kN / 3300 lbs

**FA1** Downthrust capacity (above 15 kW):

23 kN / 5100 lbs

**FA2** Upthrust capacity:

0.5 kN / 110 lbs

Subject to alterations

### po-mo6.4 • 400 V, 50 Hz • 3 ~ • S.F. 1.0 • Direct starting

P <sub>n</sub>		I <sub>n</sub> A	I <sub>a</sub> /I <sub>n</sub>	η			cos φ			M <sub>a</sub> /M <sub>n</sub>	M <sub>k</sub> /M <sub>n</sub>	n 1/min	Flat cable mm <sup>2</sup>
kW	HP			2/4	3/4	4/4	2/4	3/4	4/4				
4	5.5	10	5.4	72	76	77	64	74	79	1.5	2.6	2850	1 fl 4 × 2.5
5.5	7.5	12	5.7	75	79	80	67	77	83	1.6	2.9	2850	1 fl 4 × 2.5
7.5	10	17	5.6	76	80	82	64	74	79	1.7	2.7	2850	1 fl 4 × 2.5
9.2	12.5	21	5.6	76	81	82	65	75	80	1.6	2.8	2850	1 fl 4 × 2.5
11	15	24	6.3	77	82	83	66	76	82	1.8	3.4	2850	1 fl 4 × 2.5
13	17.5	29	6.0	77	82	83	64	74	80	1.7	3.0	2850	1 fl 4 × 2.5
15	20	32	5.9	77	82	83	66	76	82	1.8	2.9	2850	1 fl 4 × 2.5
18.5	25	40	5.8	77	82	83	65	76	81	1.8	2.9	2850	1 fl 4 × 4
22	30	48	5.9	78	83	84	65	75	80	1.8	3.1	2850	1 fl 4 × 6
26	35	57	6.0	77	82	83	65	75	80	2.1	2.7	2830	1 fl 4 × 6
30	40	64	5.6	77	82	83	67	78	83	2.2	2.6	2830	1 fl 4 × 6
34	45	71	5.4	78	83	84	67	78	83	2.2	2.6	2830	2 fl 4 × 4*
37	50	78	5.4	78	83	84	67	78	83	1.5	2.5	2830	2 fl 4 × 4**
45	60	95	5.4	76	81	82	68	78	84	2.3	3.2	2820	2 fl 4 × 6**

### po-mo6.4 • 380 V, 60 Hz • 3 ~ • S.F. 1.0 • Direct starting

P <sub>n</sub>		I <sub>n</sub> A	I <sub>a</sub> /I <sub>n</sub>	η			cos φ			M <sub>a</sub> /M <sub>n</sub>	M <sub>k</sub> /M <sub>n</sub>	n 1/min	Flat cable mm <sup>2</sup>
kW	HP			2/4	3/4	4/4	2/4	3/4	4/4				
4.6	6.3	12	6.0	71	75	76	68	78	80	1.5	3.3	3440	1 fl 4 × 2.5
6.3	8.5	16	6.3	76	80	81	68	78	80	1.5	3.3	3440	1 fl 4 × 2.5
8.5	11.5	21	6.1	77	81	83	70	80	82	1.7	3.2	3440	1 fl 4 × 2.5
11	15	26	6.1	77	82	83	71	81	84	1.6	3.3	3440	1 fl 4 × 2.5
13	17.5	29	6.2	78	83	84	71	81	84	1.6	3.5	3440	1 fl 4 × 2.5
15	20	34	6.2	78	82	83	71	81	84	1.7	3.2	3440	1 fl 4 × 2.5
17	23	38	6.0	78	83	84	72	82	85	1.6	3.3	3440	1 fl 4 × 4
20	27	44	5.9	78	83	84	72	82	85	1.7	3.2	3440	1 fl 4 × 4
25	34	57	5.9	80	84	86	70	80	82	1.6	3.5	3440	1 fl 4 × 6
30	40	65	6.0	78	83	84	71	81	84	1.7	3.2	3440	1 fl 4 × 6
34	46	71	5.8	79	83	85	71	81	84	1.7	3.2	3440	2 fl 4 × 4*
37	50	81	5.8	80	84	86	71	81	84	1.7	3.1	3430	2 fl 4 × 4*
45	60	100	5.9	78	83	84	71	81	84	1.6	3.5	3430	2 fl 4 × 6**

**P<sub>n</sub>** Rated output

**I<sub>n</sub>** Rated current

**I<sub>a</sub>/I<sub>n</sub>** Starting current / rated current

**η** Efficiency

**cos φ** Power factor

**M<sub>a</sub>/M<sub>n</sub>** Starting torque / rated torque

**M<sub>k</sub>/M<sub>n</sub>** Breakdown torque / rated torque

**n** Rated speed

- Connection 6" NEMA
  - Cable length 4 m
  - Degree of protection IP68 (EN60034)
  - Tolerances DIN VDE 0530 / IEC 34
  - Voltage tolerances +6 % / -10 % (DIN IEC 38)
  - Star-delta-version I<sub>a</sub>/I<sub>n</sub>×0.33, M<sub>a</sub>/M<sub>n</sub>×0.33
  - Horizontal use up to 34 kW
  - Switch frequency max. 20/h
  - Ambient temperature max. 30 °C (50 °C with XLPE/PA-wire)
  - Cooling flow 0 m/s (3.7 - 11 kW), min. 0.2 m/s (13 - 15 kW), min. 0.5 m/s (18.5 - 45 kW)
- \* optional: 1 fl 3 × 10 mm<sup>2</sup>  
 \*\* optional: 3 rd 1 × 16 mm<sup>2</sup>

Special design on request

Subject to alterations

### po-mo6.4 • 50 Hz • 3 ~ • S.F. 1.0 • Direct starting

P <sub>n</sub>		220 V		230 V		380 V		415 V	
		I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable
kW	HP	A	mm <sup>2</sup>	A	mm <sup>2</sup>	A	mm <sup>2</sup>	A	mm <sup>2</sup>
4	5.5	18	1 fl 4 × 2.5	17.5	1 fl 4 × 2.5	10.5	1 fl 4 × 2.5	9.5	1 fl 4 × 2.5
5.5	7.5	22	1 fl 4 × 2.5	21	1 fl 4 × 2.5	13	1 fl 4 × 2.5	12	1 fl 4 × 2.5
7.5	10	31	1 fl 4 × 2.5	29	1 fl 4 × 2.5	18	1 fl 4 × 2.5	16	1 fl 4 × 2.5
9.2	12.5	37	1 fl 4 × 4	36	1 fl 4 × 4	22	1 fl 4 × 2.5	20	1 fl 4 × 2.5
11	15	43	1 fl 4 × 4	41	1 fl 4 × 4	25	1 fl 4 × 2.5	23	1 fl 4 × 2.5
13	17.5	53	1 fl 4 × 6	50	1 fl 4 × 6	30	1 fl 4 × 2.5	28	1 fl 4 × 2.5
15	20	59	1 fl 4 × 6	56	1 fl 4 × 6	34	1 fl 4 × 2.5	31	1 fl 4 × 2.5
18.5	25	74	2 fl 4 × 4*	70	2 fl 4 × 4*	43	1 fl 4 × 4	39	1 fl 4 × 4
22	30	88	2 fl 4 × 6*	83	2 fl 4 × 6*	51	1 fl 4 × 6	46	1 fl 4 × 4
26	35	105	2 fl 4 × 6**	99	2 fl 4 × 6**	60	1 fl 4 × 6	55	1 fl 4 × 6
30	40	116	2 fl 4 × 6**	110	2 fl 4 × 6**	67	1 fl 4 × 6	61	1 fl 4 × 6
34	46	(130)	***	(123)	***	75	2 fl 4 × 4*	69	2 fl 4 × 4*
37	50	(142)	***	(135)	***	82	2 fl 4 × 4*	75	2 fl 4 × 4*
45	60					101	2 fl 4 × 6	93	2 fl 4 × 6

P <sub>n</sub>		500 V		660 V		690 V	
		I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable
kW	HP	A	mm <sup>2</sup>	A	mm <sup>2</sup>	A	mm <sup>2</sup>
4	5.5	8	1 fl 4 × 2.5	6	1 fl 4 × 2.5	6	1 fl 4 × 2.5
5.5	7.5	10	1 fl 4 × 2.5	8	1 fl 4 × 2.5	7	1 fl 4 × 2.5
7.5	10	14	1 fl 4 × 2.5	10	1 fl 4 × 2.5	10	1 fl 4 × 2.5
9.2	12.5	16	1 fl 4 × 2.5	13	1 fl 4 × 2.5	12	1 fl 4 × 2.5
11	15	19	1 fl 4 × 2.5	15	1 fl 4 × 2.5	14	1 fl 4 × 2.5
13	17.5	23	1 fl 4 × 2.5	18	1 fl 4 × 2.5	17	1 fl 4 × 2.5
15	20	26	1 fl 4 × 2.5	20	1 fl 4 × 2.5	19	1 fl 4 × 2.5
18.5	25	32	1 fl 4 × 2.5	25	1 fl 4 × 2.5	23	1 fl 4 × 2.5
22	30	38	1 fl 4 × 4	29	1 fl 4 × 2.5	28	1 fl 4 × 2.5
26	35	46	1 fl 4 × 4	35	1 fl 4 × 2.5	33	1 fl 4 × 2.5
30	40	51	1 fl 4 × 6	39	1 fl 4 × 4	37	1 fl 4 × 4
34	46	57	1 fl 4 × 6	43	1 fl 4 × 4	41	1 fl 4 × 4
37	50	62	1 fl 4 × 6	47	1 fl 4 × 4	45	1 fl 4 × 4
45	60	77	2 fl 4 × 4*	58	1 fl 4 × 6	56	1 fl 4 × 6

P<sub>n</sub> Rated output  
I<sub>n</sub> Rated current

\* optional: 1 fl 3 × 10 mm<sup>2</sup>  
\*\* optional: 3 rd 1 × 16 mm<sup>2</sup>  
\*\*\* optional: 2 fl 3 × 10 mm<sup>2</sup>

Subject to alterations

### po-mo6.4 • 60 Hz • 3 ~ • S.F. 1.0 • Direct starting

P <sub>n</sub>		220 V		230 V		400 V		415 V	
		I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable
kW	HP	A	mm <sup>2</sup>	A	mm <sup>2</sup>	A	mm <sup>2</sup>	A	mm <sup>2</sup>
4.6	6.3	20	1 fl 4 × 2.5	19	1 fl 4 × 2.5	11	1 fl 4 × 2.5	11	1 fl 4 × 2.5
6.3	8.5	28	1 fl 4 × 2.5	26	1 fl 4 × 2.5	15	1 fl 4 × 2.5	15	1 fl 4 × 2.5
8.5	11.5	36	1 fl 4 × 2.5	34	1 fl 4 × 2.5	20	1 fl 4 × 2.5	19	1 fl 4 × 2.5
11	15	45	1 fl 4 × 4	43	1 fl 4 × 4	25	1 fl 4 × 2.5	24	1 fl 4 × 2.5
13	17.5	51	1 fl 4 × 6	49	1 fl 4 × 6	28	1 fl 4 × 2.5	27	1 fl 4 × 2.5
15	20	59	1 fl 4 × 6	56	1 fl 4 × 6	32	1 fl 4 × 4	31	1 fl 4 × 2.5
17	23	65	1 fl 4 × 6	62	1 fl 4 × 6	36	1 fl 4 × 4	34	1 fl 4 × 4
20	27	76	2 fl 4 × 4*	73	2 fl 4 × 4*	42	1 fl 4 × 6	40	1 fl 4 × 4
25	34	99	2 fl 4 × 6**	94	2 fl 4 × 6**	54	1 fl 4 × 6	52	1 fl 4 × 6
30	40	113	2 fl 4 × 6**	108	2 fl 4 × 6**	62	2 fl 4 × 4	60	1 fl 4 × 6
34	46	(124)	***	(118)	***	68	2 fl 4 × 4	65	2 fl 4 × 4*
37	50	(140)	***	(133)	***	77	2 fl 4 × 4	74	2 fl 4 × 4*
45	60	(174)	***	(166)	***	95	2 fl 4 × 6	92	2 fl 4 × 6**

P <sub>n</sub>		440 V		460 V	
		I <sub>n</sub>	Flat cable	I <sub>n</sub>	Flat cable
kW	HP	A	mm <sup>2</sup>	A	mm <sup>2</sup>
4.6	6.3	10	1 fl 4 × 2.5	10	1 fl 4 × 2.5
6.3	8.5	14	1 fl 4 × 2.5	13	1 fl 4 × 2.5
8.5	11.5	18	1 fl 4 × 2.5	17	1 fl 4 × 2.5
11	15	22	1 fl 4 × 2.5	21	1 fl 4 × 2.5
13	17.5	25	1 fl 4 × 2.5	24	1 fl 4 × 2.5
15	20	29	1 fl 4 × 2.5	28	1 fl 4 × 2.5
17	23	32	1 fl 4 × 4	31	1 fl 4 × 4
20	27	38	1 fl 4 × 4	36	1 fl 4 × 4
25	34	49	1 fl 4 × 6	47	1 fl 4 × 6
30	40	56	1 fl 4 × 6	54	1 fl 4 × 6
34	46	62	1 fl 4 × 6	59	1 fl 4 × 6
37	50	70	2 fl 4 × 4*	67	1 fl 4 × 6
45	60	87	2 fl 4 × 6*	83	2 fl 4 × 4*

P<sub>n</sub> Rated output  
I<sub>n</sub> Rated current

\* optional: 1 fl 3 × 10 mm<sup>2</sup>  
\*\* optional: 3 rd 1 × 16 mm<sup>2</sup>  
\*\*\* optional: 2 fl 3 × 10 mm<sup>2</sup>

Subject to alterations