

Submersible motors for well diameters from 150 mm (6 inches), operating temperature 70/80 °C

Applications

The **oddesse** submersible motors of the series **po-moh** are designed to drive submersible pumps with operating temperatures of 70/80 °C. 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 98/37/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 280 kW
- Voltage: up to 1000 V
- Kind of currency: 3 ~
- Frequency : 50 and 60 Hz
- Degree of protection: IP 68
- Ambient temperature: up to 70/80 °C
- Switching frequency: max. 20 / h
- Nominal speed: 2850 1/min (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 power 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

oddesse Submersible motors 70/80 °C po-moh

Material of construction

Submersible motor po-moh6 / po-moh8

According to DIN

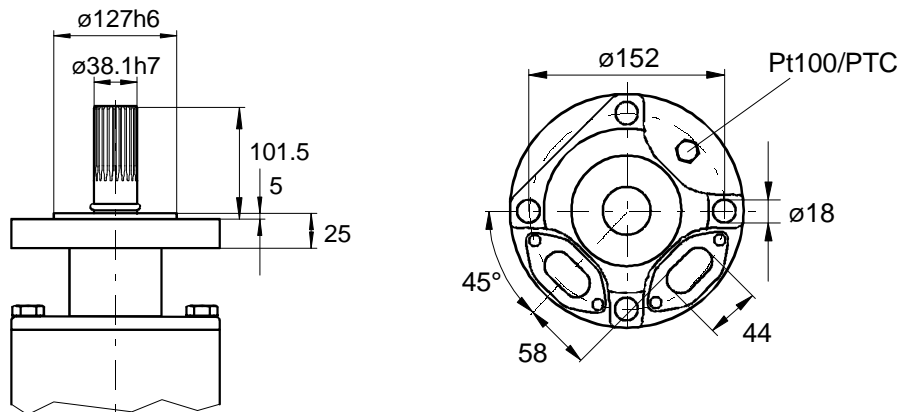
components	design			
	G version (GGG 40)	C version (AISI 304)	X version (AIS I316)	Y version (AISI 904L)
shaft	stainless steel / 1.4301		stainless steel / 1.4462	
motor flange	grey cast iron GGG40 / 0.7040	stainless steel / 1.4301	stainless steel / 1.4571	stainless steel / 1.4539
motor jacket	stainless steel / 1.4306		stainless steel / 1.4571	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	stainless steel / AISI 304L		stainless steel / AISI 316Ti	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

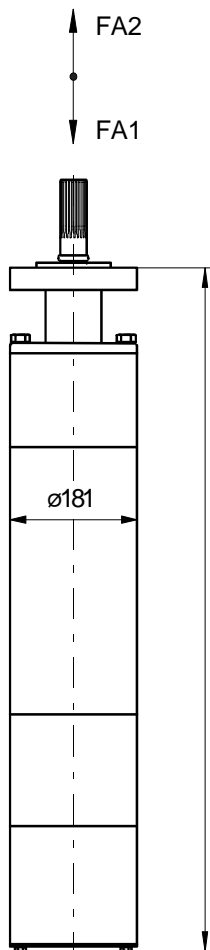


Pump connection acc. to NEMA-standards

po-moh8.5 • 50 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
7.5 *	10 *	892	35.1	89	196
11 *	15 *	942	37.1	97	214
15 *	20 *	982	38.7	103	227
18.5 *	25 *	1022	40.2	109	240
22 *	30 *	1117	44.0	124	273
30 *	40 *	1202	47.3	138	304
37 *	50 *	1282	50.5	151	333
45 *	60 *	1442	56.8	176	388
55 **	75 **	1542	60.7	192	423
63 **	85 **	1602	63.1	202	445
75 **	100 **	1652	65.0	210	463

* 80 °C / ** 70 °C



Main dimensions [mm]

po-moh8.5 • 60 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
8.5 *	11.5 *	942	37.1	97	214
13 *	17.5 *	982	38.7	103	227
17 *	23 *	1022	40.2	109	240
22 *	30 *	1117	44.0	124	273
26 *	35 *	1202	47.3	138	304
37 *	50 *	1282	50.5	151	333
45 **	60 **	1362	53.6	163	359
55 **	75 **	1442	56.8	176	388
63 **	85 **	1542	60.7	192	423
75 **	100 **	1602	63.1	202	445

* 80 °C / ** 70 °C

FA1 Downthrust capacity:

45 kN / 10000 lbs

FA2 Downthrust capacity:

1 kN / 220 lbs

Delivery voltages: 220 ... 1000 V (220 / 230 V up to 63 kW)

Subject to alterations

oddesse Submersible motors 70/80 °C po-moh

po-moh8.5 • 400 V, 50 Hz • 3 ~ • S.F. 1.0 • Direct starting

P _n		I _n	I _a /I _n	η			cos φ			M _a /M _n	M _k /M _n	n	Flat cable
kW	HP	A		2/4	3/4	4/4	2/4	3/4	4/4			1/min	mm ²
7.5	10	18	4.1	74	75	76	66	75	80	1.3	2.4	2850	1 fl 4 x 4
11	15	26	4.1	75	76	77	66	76	81	1.3	2.5	2850	1 fl 4 x 6
15	20	33	4.3	77	78	80	68	77	82	1.4	2.6	2850	1 fl 4 x 10
18.5	25	41	4.5	77	78	80	69	78	83	1.5	2.6	2850	1 fl 4 x 10
22	30	48	4.5	78	79	81	69	78	83	1.5	2.7	2850	1 fl 4 x 16
30	40	63	4.7	80	81	82	70	80	85	1.6	2.9	2850	1 fl 4 x 25
37	50	77	4.7	81	82	83	70	79	84	1.6	2.7	2850	2 fl 4 x 10
45	60	94	4.5	81	82	83	69	79	84	1.5	2.7	2850	2 fl 4 x 16
55	75	115	4.3	80	81	83	70	79	84	1.4	2.6	2850	2 fl 4 x 10
63	85	132	4.3	79	80	82	70	80	85	1.4	2.4	2850	2 fl 4 x 16
75	100	155	4.1	80	81	83	71	81	85	1.3	2.2	2850	2 fl 4 x 16

po-moh8.5 • 380 V, 60 Hz • 3 ~ • S.F. 1.0 • Direct starting

P _n		I _n	I _a /I _n	η			cos φ			M _a /M _n	M _k /M _n	n	Flat cable
kW	HP	A		2/4	3/4	4/4	2/4	3/4	4/4			1/min	mm ²
8.5	11.5	22	4.2	74	75	76	64	72	77	1.2	2.2	3440	1 fl 4 x 4
13	17.5	32	4.2	75	76	77	66	75	80	1.2	2.4	3440	1 fl 4 x 6
17	23	41	4.4	77	77	79	67	76	81	1.3	2.4	3440	1 fl 4 x 10
22	30	51	4.4	77	78	80	68	78	83	1.3	2.5	3440	1 fl 4 x 16
26	35	61	4.7	78	79	81	66	76	81	1.4	2.6	3440	1 fl 4 x 25
37	50	89	4.2	77	77	79	66	76	81	1.2	2.6	3440	2 fl 4 x 16
45	60	99	4.9	81	82	83	69	79	84	1.5	2.7	3440	2 fl 4 x 16
55	75	123	5.1	81	82	83	69	78	83	1.7	2.9	3440	2 fl 4 x 16
63	85	139	5.1	80	81	83	70	79	84	1.7	2.7	3440	2 fl 4 x 16
75	100	165	4.9	80	81	83	70	79	84	1.5	2.7	3440	2 fl 4 x 25

P_n	Rated output	cos φ	Power factor
I_n	Rated current	M_a/M_n	Starting torque / rated torque
I_a/I_n	Starting current / rated current	M_k/M_n	Breakdown torque / rated torque
η	Efficiency	n	Rated speed

- Connection 8" 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_a/I_n×0.33, M_a/M_n×0.33
- Horizontal use up to 37 kW
- Switch frequency max. 20/h
- Ambient temperature up to 45 kW: max. 80 °C, above 45 kW: 70 °C
- Cooling flow up to 45 kW: min. 1 m/s, above 45 kW: min. 1.5 m/s

Special design on request

Subject to alterations

po-moh8.5 • 50 Hz • 3 ~ • S.F. 1.0 • Direct starting

P _n		220 V		230 V		380 V		415 V	
		In	Flat cable	In	Flat cable	In	Flat cable	In	Flat cable
kW	HP	A	mm ²	A	mm ²	A	mm ²	A	mm ²
7.5	10	33	1 fl 4 x 10	31	1 fl 4 x 10	19	1 fl 4 x 4	17	1 fl 4 x 4
11	15	47	1 fl 4 x 16	44	1 fl 4 x 16	27	1 fl 4 x 6	25	1 fl 4 x 6
15	20	60	1 fl 4 x 25	58	1 fl 4 x 25	35	1 fl 4 x 10	32	1 fl 4 x 10
18.5	25	74	2 fl 4 x 10	70	2 fl 4 x 10	43	1 fl 4 x 16	39	1 fl 4 x 16
22	30	87	2 fl 4 x 16	83	2 fl 4 x 16	50	1 fl 4 x 16	46	1 fl 4 x 16
30	40	114	2 fl 4 x 25	109	2 fl 4 x 25	66	1 fl 4 x 25	60	1 fl 4 x 25
37	50			134	2 fl 4 x 25	81	2 fl 4 x 16	75	2 fl 4 x 16
45	60					99	2 fl 4 x 16	91	2 fl 4 x 16
55	75					121	2 fl 4 x 16	111	2 fl 4 x 16
63	85					139	2 fl 4 x 16	127	2 fl 4 x 16
75	100					163	2 fl 4 x 25	149	2 fl 4 x 25

P _n		500 V		660 V		690 V	
		In	Flat cable	In	Flat cable	In	Flat cable
kW	HP	A	mm ²	A	mm ²	A	mm ²
7.5	10	14	1 fl 4 x 4	11	1 fl 4 x 4	10	1 fl 4 x 4
11	15	20	1 fl 4 x 4	16	1 fl 4 x 4	15	1 fl 4 x 4
15	20	27	1 fl 4 x 6	20	1 fl 4 x 4	19	1 fl 4 x 4
18.5	25	32	1 fl 4 x 10	25	1 fl 4 x 6	23	1 fl 4 x 6
22	30	38	1 fl 4 x 10	29	1 fl 4 x 6	28	1 fl 4 x 6
30	40	50	1 fl 4 x 16	38	1 fl 4 x 10	36	1 fl 4 x 10
37	50	62	1 fl 4 x 25	47	1 fl 4 x 16	45	1 fl 4 x 16
45	60	75	2 fl 4 x 10	57	1 fl 4 x 25	54	1 fl 4 x 25
55	75	92	1 fl 4 x 25	70	1 fl 4 x 16	66	1 fl 4 x 16
63	85	105	2 fl 4 x 10	80	1 fl 4 x 25	76	1 fl 4 x 25
75	100	124	2 fl 4 x 16	94	1 fl 4 x 25	90	1 fl 4 x 25

P_n Rated output
I_n Rated current

Subject to alterations

oddesse Submersible motors 70/80 °C po-moh

po-mo8.5 • 60 Hz • 3 ~ • S.F. 1.0 • Direct starting

P _n		220 V		230 V		400 V		415 V	
		I _n	Flat cable	I _n	Flat cable	I _n	Flat cable	I _n	Flat cable
kW	HP	A	mm ²	A	mm ²	A	mm ²	A	mm ²
8.5	11.5	38	1 fl 4 x 10	37	1 fl 4 x 10	21	1 fl 4 x 4	20	1 fl 4 x 4
13	17.5	56	1 fl 4 x 25	53	1 fl 4 x 25	31	1 fl 4 x 10	30	1 fl 4 x 10
17	23	70	2 fl 4 x 16	67	1 fl 4 x 25	39	1 fl 4 x 10	37	1 fl 4 x 10
22	30	88	2 fl 4 x 16	84	2 fl 4 x 16	48	1 fl 4 x 16	47	1 fl 4 x 16
26	35	105	2 fl 4 x 25	100	2 fl 4 x 16	58	1 fl 4 x 25	56	1 fl 4 x 25
37	50	153	2 fl 4 x 25**	146	2 fl 4 x 25**	84	2 fl 4 x 16	81	2 fl 4 x 16
45	60	172	2 fl 4 x 25**	164	2 fl 4 x 25**	94	2 fl 4 x 16	91	2 fl 4 x 16
55	75					116	2 fl 4 x 16	112	2 fl 4 x 16
63	85					132	2 fl 4 x 16	127	2 fl 4 x 16
75	100		** max. 70 °C		** max. 70 °C	157	2 fl 4 x 25	151	2 fl 4 x 25

P _n		440 V		460 V	
		I _n	Flat cable	I _n	Flat cable
kW	HP	A	mm ²	A	mm ²
8.5	11.5	19	1 fl 4 x 4	18	1 fl 4 x 4
13	17.5	28	1 fl 4 x 10	27	1 fl 4 x 6
17	23	35	1 fl 4 x 10	34	1 fl 4 x 10
22	30	44	1 fl 4 x 16	42	1 fl 4 x 16
26	35	52	1 fl 4 x 25	50	1 fl 4 x 16
37	50	76	2 fl 4 x 16	73	1 fl 4 x 25
45	60	86	2 fl 4 x 16	82	2 fl 4 x 16
55	75	106	2 fl 4 x 16	101	2 fl 4 x 16
63	85	120	2 fl 4 x 16	115	2 fl 4 x 16
75	100	143	2 fl 4 x 16	137	2 fl 4 x 16

P_n Rated output
I_n Rated current

Subject to alterations