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

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Material of construction

Submersible motor po-mo6.4, po-mo8.4, po-mo10.5, po-mo12.4

According to DIN

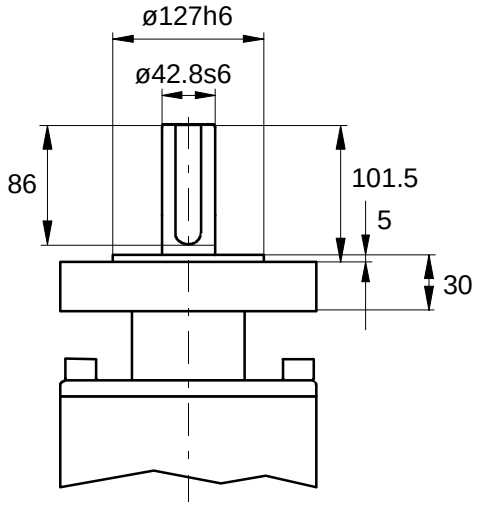
components	design			
	G-version (GGG 40)	**C-version (AISI 304)**	**X-version (AISI 316)**	**Y-version (AISI 904L)**
shaft	stainless steel / 1.4301		stainless steel / 1.4462	
motor flange	grey cast iron GGG40 / 0.7040	stainless steel / 1.4301	stainless steel / 1.4571	stainless steel / 1.4539
motor jacket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

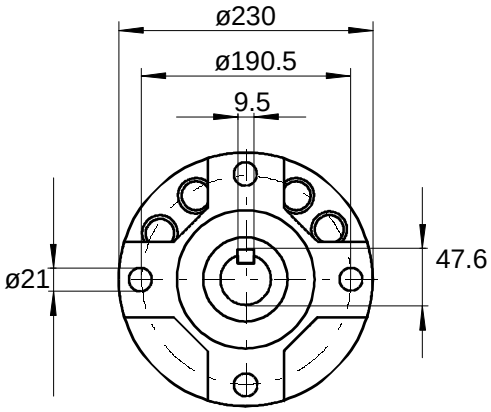
According to AISI

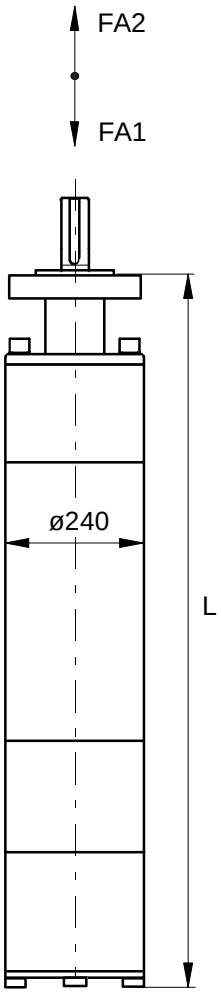
components	design			
	G-version (GGG40)	**C-version (AISI 304)**	**X-version (AISI 316)**	**Y-version (AISI 904L)**
shaft	stainless steel / AISI 304		duplex steel	
motor flange	grey cast iron A563-72	stainless steel / AISI 304	stainless steel / AISI 316Ti	stainless steel / AISI 904L
motor jacket	stainless 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







po-mo10.5 • 50 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
75	100	1553	61.1	312	688
90	125	1643	64.7	339	747
110	150	1773	69.8	378	833
130	175	1893	74.5	413	911
150	200	1973	77.7	437	964
170	230	2063	81.2	464	1023
190	260	2123	83.6	482	1063
220	300	2183	85.9	500	1103

po-mo10.5 • 60 Hz • 3 ~ • S.F. 1.0

Power P		Length l		Weight m	
kW	HP	mm	inch	kg	lbs
85	125	1553	61.1	312	688
110	150	1643	64.7	339	747
125	175	1773	69.8	378	833
150	200	1893	74.5	413	911
170	230	1973	77.7	437	964
190	260	2063	81.2	464	1023
220	300	2123	83.6	482	1063

Main dimensions [mm]

FA1 Downthrust capacity: 60 kN / 13500 lbs

FA2 Upthrust capacity: 1.4 kN / 330 lbs

Delivery voltages: 380 ... 1000 V

Subject to alterations

po-mo10.5 • 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	Round cable
kW	HP	A		2/4	3/4	4/4	2/4	3/4	4/4			1/min	mm²
75	100	145	4.8	81	85	88	69	81	85	0.8	2.4	2900	3 rd 1 × 25
90	125	175	4.8	82	86	88	69	82	85	0.8	2.4	2900	3 rd 1 × 35
110	150	215	4.9	89	88	87	82	85	86	0.9	2.6	2900	3 rd 1 × 50
130	175	250	5.1	81	85	88	69	82	86	0.8	2.5	2900	3 rd 1 × 50
150	200	290	5.0	83	86	88	70	83	85	0.9	2.5	2900	3 rd 1 × 70
170	230	325	4.9	83	86	88	70	83	86	1.0	2.6	2900	3 rd 1 × 95
190	260	365	5.1	83	86	88	70	83	86	0.9	2.6	2900	3 rd 1 × 95
220	300	425	5.1	83	86	88	70	83	86	1.0	2.6	2900	6 rd 1 × 70*

po-mo10.5 • 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	Round cable
kW	HP	A		2/4	3/4	4/4	2/4	3/4	4/4			1/min	mm²
85	115	175	4.8	81	85	88	69	82	85	0.8	2.4	3500	3 rd 1 × 35
110	150	225	4.9	82	86	88	70	83	85	0.9	2.6	3500	3 rd 1 × 50
125	170	255	5.1	82	86	88	69	82	86	0.8	2.5	3500	3 rd 1 × 70
150	200	310	5.0	81	85	88	70	83	85	0.9	2.5	3500	3 rd 1 × 95
170	230	345	4.9	83	86	88	70	83	86	1.0	2.6	3500	3 rd 1 × 95
190	260	385	5.1	83	86	88	70	83	86	0.9	2.6	3500	6 rd 1 × 50*
220	300	445	5.1	83	86	88	70	83	86	1.0	2.6	3500	6 rd 1 × 70*

* open switching

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

- Cable length 7 m
- Degree of protection IP68 (DIN EN60034-5)
- Tolerances DIN VDE 0530 / IEC 34
- Voltage tolerances ± 10 % (DIN IEC 38)
- Star-delta-version $I_a/I_n \times 0.33$, $M_a/M_n \times 0.33$
- Switch frequency max. 10/h
- Ambient temperature max. 30 °C, cooling flow min. 0.5 m/s
- Horizontal use up to 130 kW
- Grounding according IEC 34-1

Special design on request

Subject to alterations

po-mo10.5 • 50 Hz • 3 ~ • S.F. 1.0 • Direct starting

Pn		380 V		415 V		500 V		525 V	
		In	Round cable	In	Round cable	In	Round cable	In	Round cable
kW	HP	A	mm²	A	mm²	A	mm²	A	mm²
75	100	153	3 rd 1 × 25	140	3 rd 1 × 25	116	3 rd 1 × 16	110	3 rd 1 × 16
90	125	184	3 rd 1 × 35	169	3 rd 1 × 35	140	3 rd 1 × 25	133	3 rd 1 × 25
110	150	226	3 rd 1 × 50	207	3 rd 1 × 50	172	3 rd 1 × 35	164	3 rd 1 × 25
130	175	263	3 rd 1 × 70	241	3 rd 1 × 50	200	3 rd 1 × 35	190	3 rd 1 × 35
150	200	305	3 rd 1 × 70	280	3 rd 1 × 70	232	3 rd 1 × 50	221	3 rd 1 × 50
170	230	342	3 rd 1 × 95	313	3 rd 1 × 70	260	3 rd 1 × 70	248	3 rd 1 × 50
190	260	384	6 rd 1 × 50*	352	3 rd 1 × 95	292	3 rd 1 × 70	278	3 rd 1 × 70
220	300	447	6 rd 1 × 70*	410	6 rd 1 × 50*	340	3 rd 1 × 95	324	3 rd 1 × 95

Pn		660 V		690 V		1000 V	
		In	Round cable	In	Round cable	In	Round cable
kW	HP	A	mm²	A	mm²	A	mm²
75	100	88	3 rd 1 × 10	84	3 rd 1 × 10	58	3 rd 1 × 10
90	125	106	3 rd 1 × 16	101	3 rd 1 × 16	70	3 rd 1 × 10
110	150	130	3 rd 1 × 25	125	3 rd 1 × 25	86	3 rd 1 × 10
130	175	152	3 rd 1 × 25	145	3 rd 1 × 25	100	3 rd 1 × 16
150	200	176	3 rd 1 × 35	168	3 rd 1 × 35	116	3 rd 1 × 16
170	230	197	3 rd 1 × 35	188	3 rd 1 × 35	130	3 rd 1 × 25
190	260	221	3 rd 1 × 50	212	3 rd 1 × 50	146	3 rd 1 × 25
220	300	258	3 rd 1 × 70	246	3 rd 1 × 50	170	3 rd 1 × 35

po-mo10.5 • 60 Hz • 3 ~ • S.F. 1.0 • Direct starting

Pn		400 V		415 V		440 V		460 V	
		In	Round cable	In	Round cable	In	Round cable	In	Round cable
kW	HP	A	mm²	A	mm²	A	mm²	A	mm²
85	115	166	3 rd 1 × 35	160	3 rd 1 × 25	151	3 rd 1 × 25	145	3 rd 1 × 25
110	150	214	3 rd 1 × 50	206	3 rd 1 × 50	194	3 rd 1 × 35	186	3 rd 1 × 35
125	170	242	3 rd 1 × 50	233	3 rd 1 × 50	220	3 rd 1 × 50	211	3 rd 1 × 50
150	200	295	3 rd 1 × 70	284	3 rd 1 × 70	268	3 rd 1 × 70	256	3 rd 1 × 70
170	230	328	3 rd 1 × 95	316	3 rd 1 × 95	298	3 rd 1 × 70	285	3 rd 1 × 70
190	260	366	3 rd 1 × 95	353	3 rd 1 × 95	333	3 rd 1 × 95	318	3 rd 1 × 95
220	300	423	6 rd 1 × 50*	407	6 rd 1 × 50*	384	6 rd 1 × 50*	368	3 rd 1 × 95

Pn		660 V		690 V		1000 V	
		In	Round cable	In	Round cable	In	Round cable
kW	HP	A	mm²	A	mm²	A	mm²
85	115	101	3 rd 1 × 16	96	3 rd 1 × 16	67	3 rd 1 × 10
110	150	130	3 rd 1 × 25	124	3 rd 1 × 25	86	3 rd 1 × 10
125	170	147	3 rd 1 × 25	140	3 rd 1 × 25	97	3 rd 1 × 16
150	200	178	3 rd 1 × 35	171	3 rd 1 × 35	118	3 rd 1 × 16
170	230	199	3 rd 1 × 35	190	3 rd 1 × 35	131	3 rd 1 × 25
190	260	222	3 rd 1 × 50	212	3 rd 1 × 50	146	3 rd 1 × 25
220	300	256	3 rd 1 × 70	245	3 rd 1 × 50	169	3 rd 1 × 35

* open switching

Subject to alterations