

Slurry Mixer

Here you will find technical documentation for Landia mixers in the form of schematic drawing, service instructions and more.

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- Schematic drawing
- Principal measurements
- Technical data sheet
- Service instruction



POD

- Schematic drawing
- Technical data sheet
- Service instruction



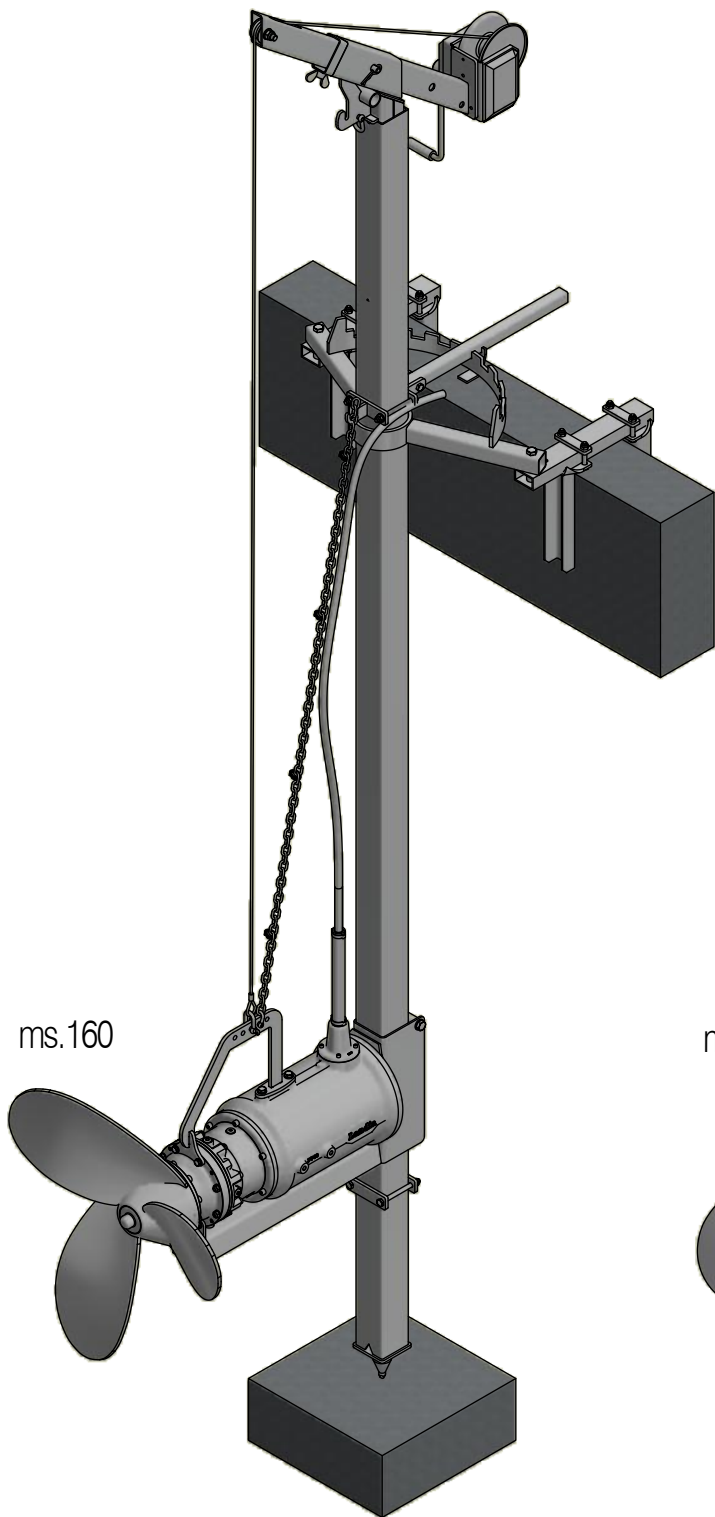
Conversion table

- Conversion table

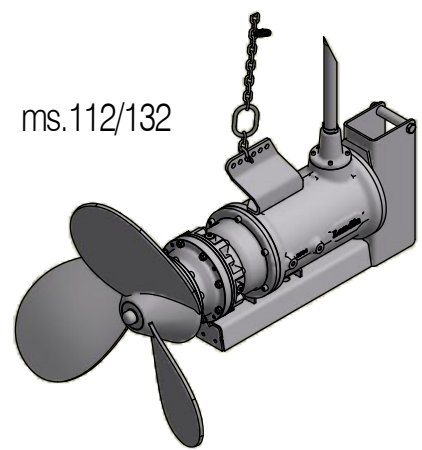
Elektric data

- Elektric data 400V-50 Hz IE1
- Elektric data 400V-50 Hz IE2
- Elektric data 400V-50 Hz IE3

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ms.160



ms.112/132

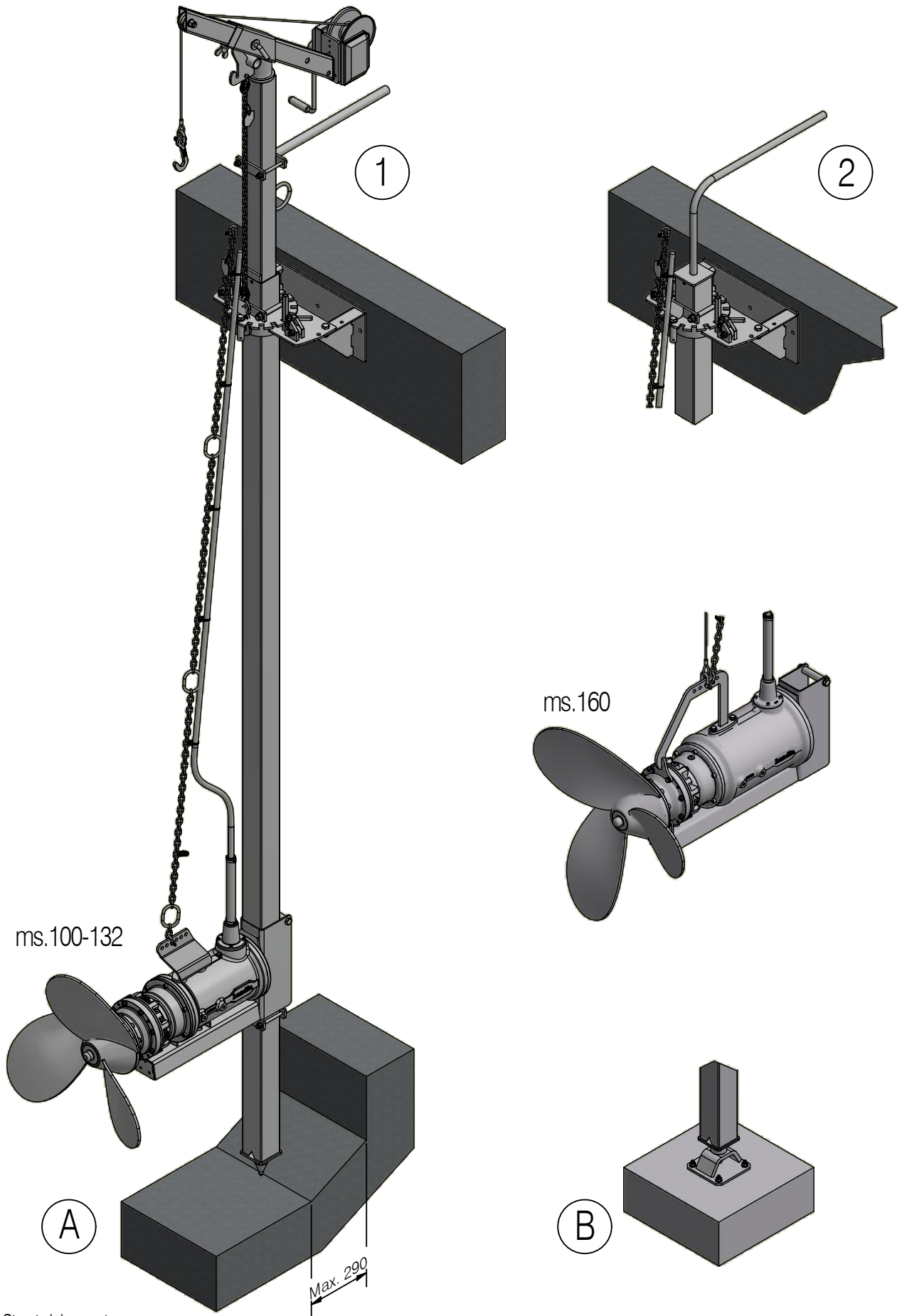
Styret dokument

Landia

POP 300 rpm / UPM / t.m.
Betonbefæstelse. Concrete fixing
Beton Befestigung. Fixation sur de beton

Scale:	Sign.:	Date:
1 : 20	MGU KSK	24-06-2016
Dwg.no.:		3740566
Revision date: 19-11-2020		

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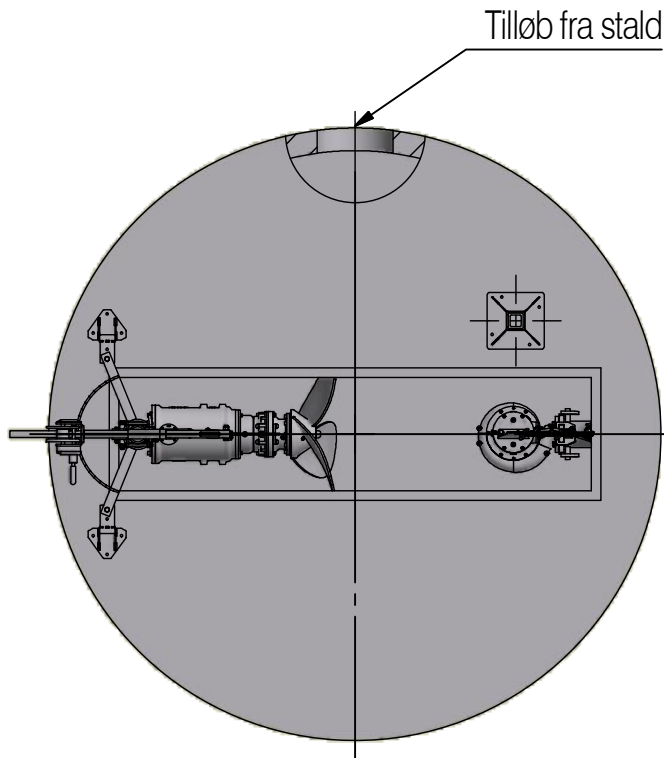
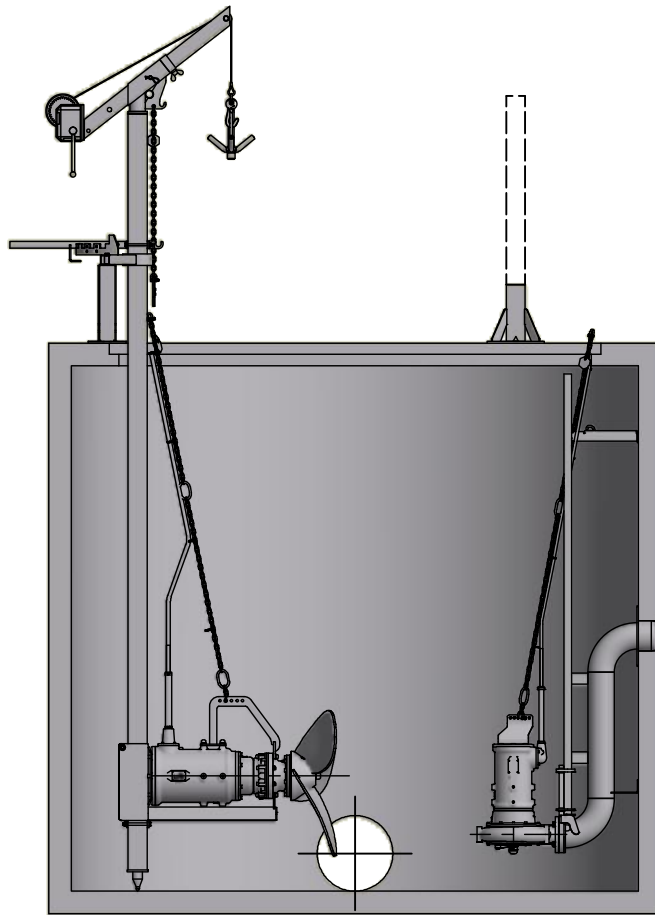
Styret dokument

Landia

POP 300 rpm / UPM / t.m.
Under dæk og for tank med banket
Fixing below cover and for berm edge

Scale:	Sign.:	Date:
1 : 20	ANL KSK	02-07-2019
Dwg.no.:	3740712	
Revision date: 19-11-2020		

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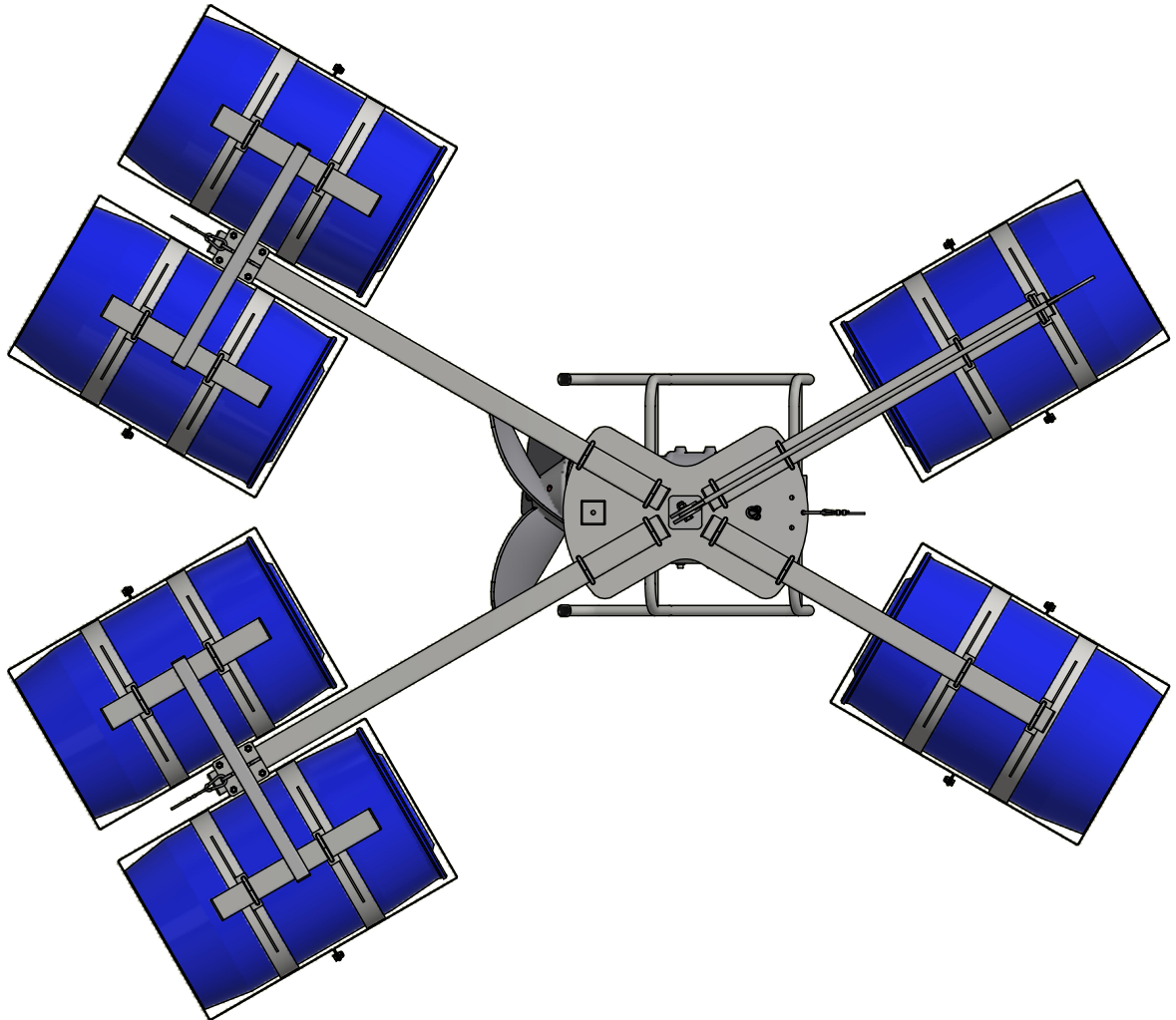
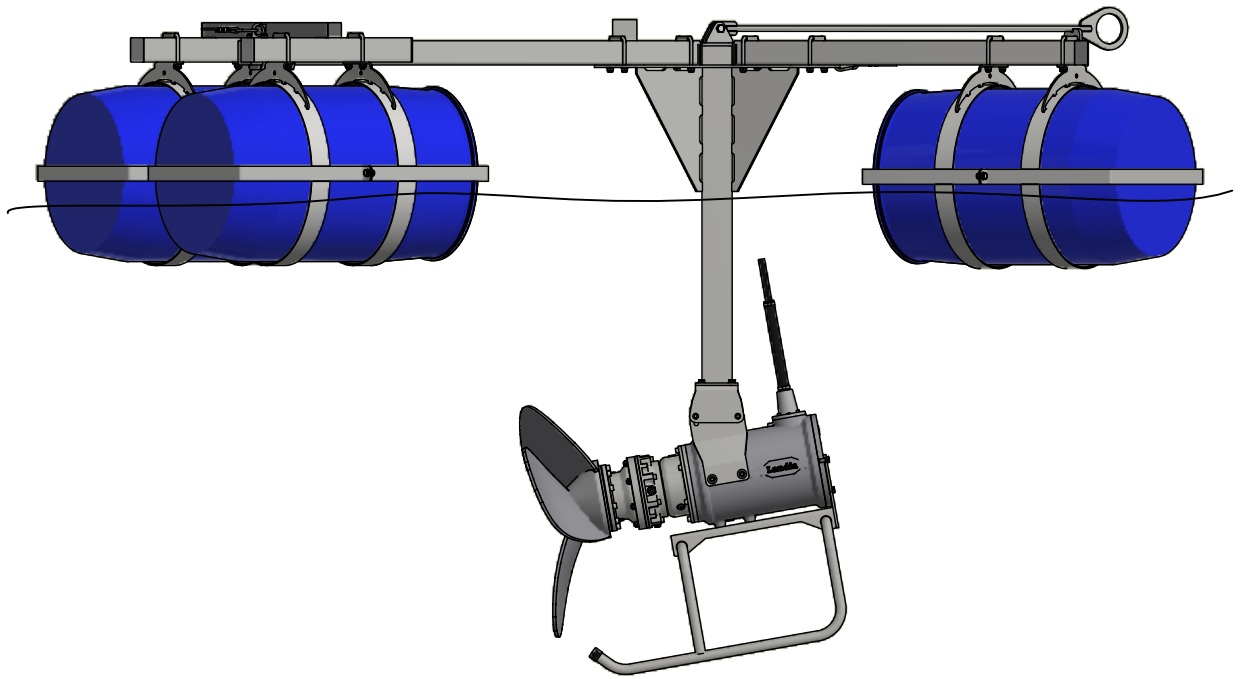


Styret dokument (intern)

Landia

Røreværk og pumpe i rund tank
Mixer and pump in cirkular tank
Principtegning - Schematic drawing

Scale:	Sign.:	Date:
1 : 40	HL KSK	09-07-2019
Dwg.no.:		3740754



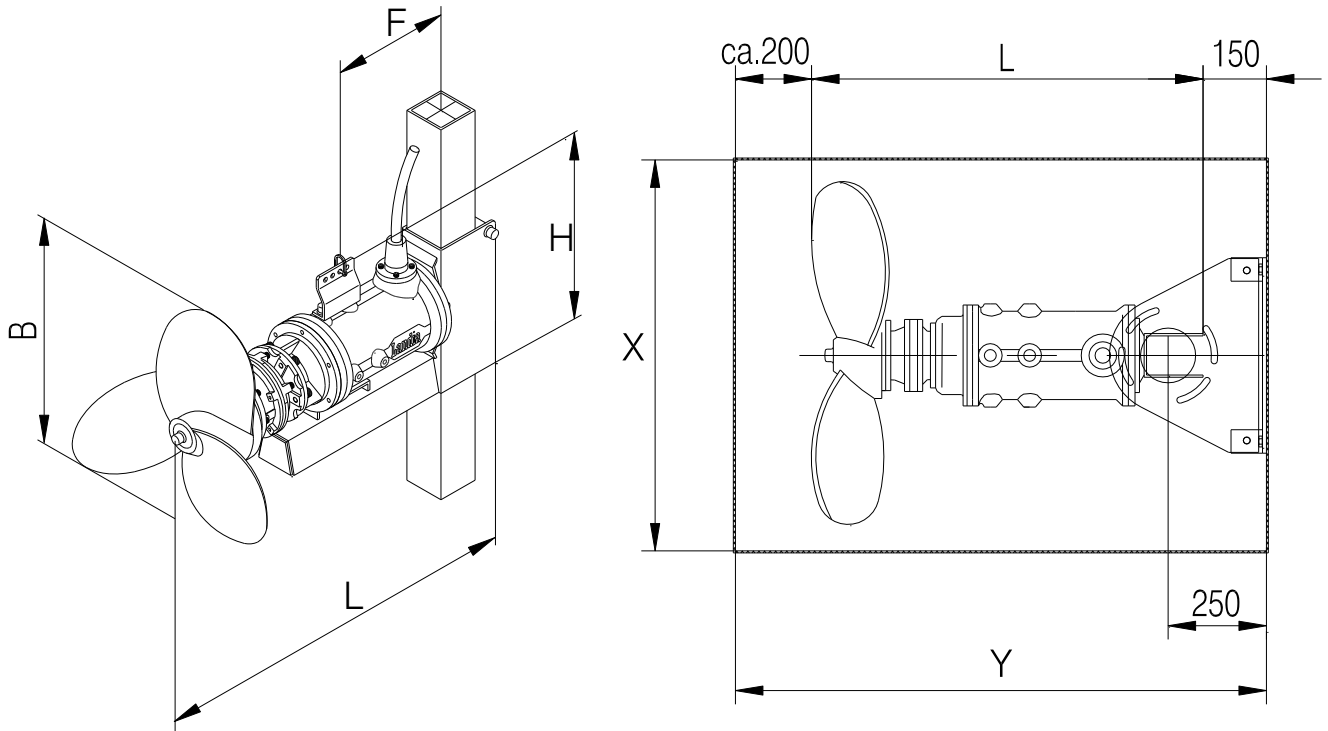
Styret dokument

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Landia

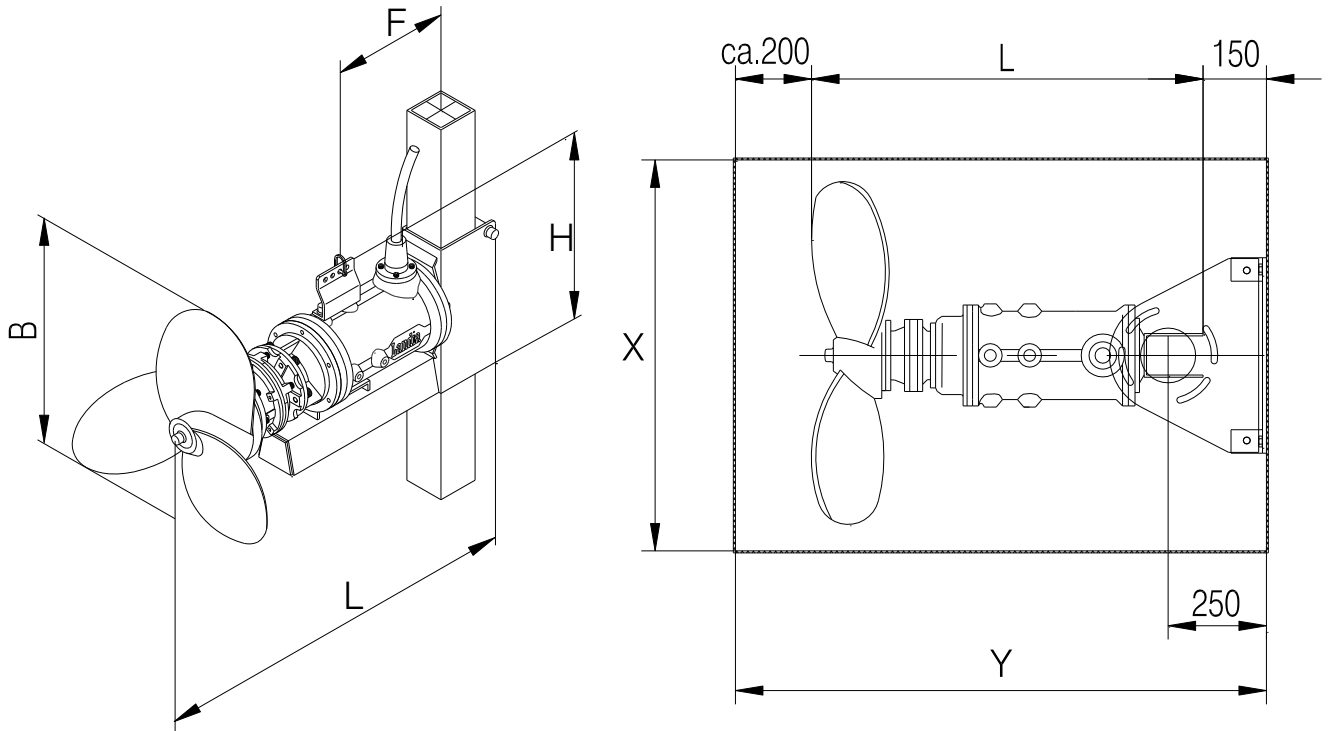
POP-I 300 rpm / UPM / t.m. ms.160
 m/flydeponton, w/Pontoon
 m/Ponton, a/flotteur

Scale:	Sign.:	Date:
1 : 25	HL KSK	13-08-2007
Dwg.no.:		3740777
Revision date: 01-07-2021		

POP-I IE1


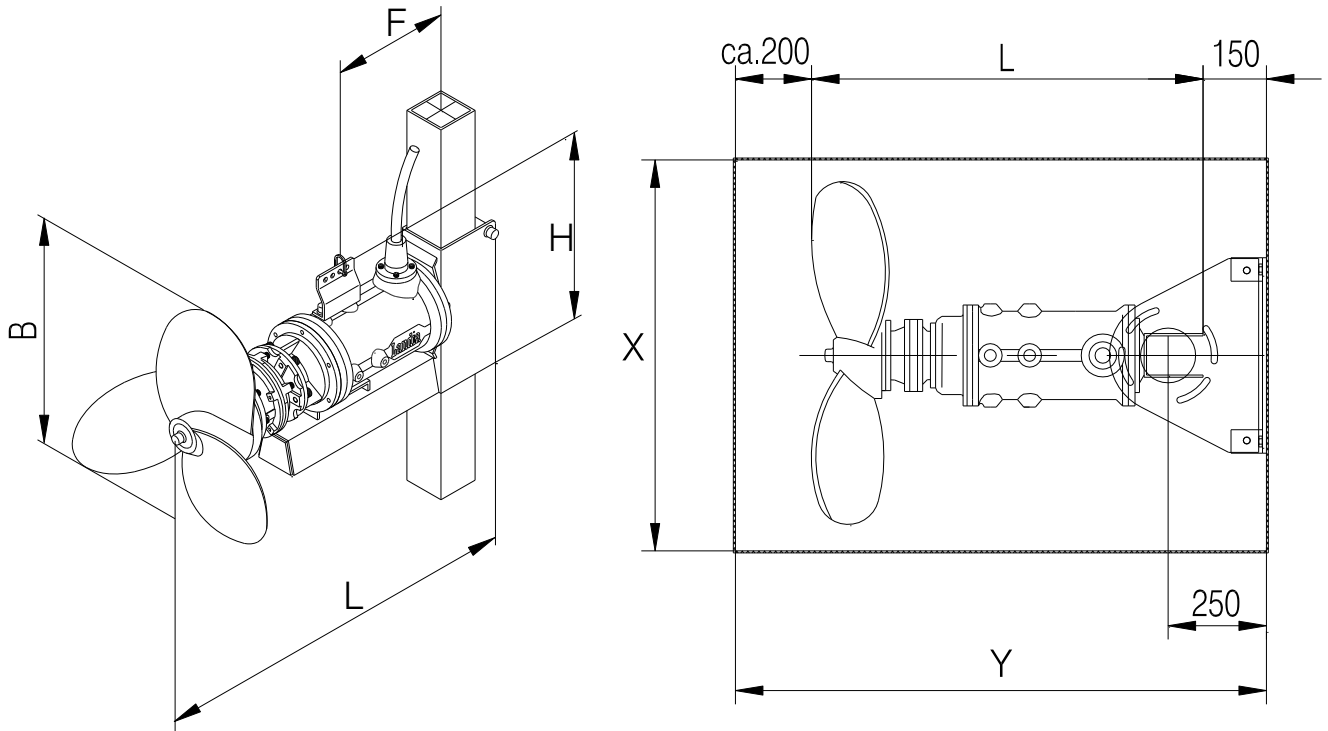
Varenr. Article no. Artikel Nr. Code no. (400V)	Effekt Power Leist. Puiss. [kW]	Serie Series Baureihe Série ms.	Prop.omdr. Prop.rpm. Prop.Drehzahl Hélice tours [rpm]	Prop.diam. Prop.diam. Prop.Durchm. Diam. hélice [mm]	H [mm]	B [mm]	L [mm]	F [mm]	Anbefalet mandehul Recommended man hole Empfohlenes Mannloch Trou d'homme recommandé X x Y [mm]
1118398	1,1	100	150	ø620	420	510	890	400	700 x 1250
1118301	1,5			ø730		585			750 x 1250
1118302	2,2	112		ø845	450	685	970	435	900 x 1350
1118303	3,0			ø900	735	980	430	950 x 1350	
1118304	4,0	132		ø930	590	770	1112	495	1000 x 1450
1118305	5,5			ø1030		835	1145	530	1050 x 1500
1118307	7,5	160	ø1080	690	905	1240	530	1150 x 1600	
1114398	1,1	80	300	ø365	380	310	765	330	450 x 1150
1114301	1,5			ø410		345	765	320	500 x 1150
1114302	2,2	90		ø450	385	375	765	345	550 x 1150
1114303	3,0	100		ø490	420	465	865	390	600 x 1250
1114304	4,0			ø575		470	885	380	650 x 1250
1114305	5,5	112		ø620	430	510	952	425	700 x 1300
1114307	7,5			ø660	590	555	1067	450	750 x 1400
1114311	11,0	132		ø770	590	650	1095	475	900 x 1450
1114315	15,0			ø840		690	1140	490	900 x 1500
1114318	18,5	160		ø880	675	730	1170	485	950 x 1550
1114324	22,0			ø770		650	710	1265	550
1114332	30,0	180		400	ø770	650	710	1265	550

Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques.

POP-I IE2


Varenr. Article no. Artikel Nr. Code no. (400V)	Effekt Power Leist. Puiss. [kW]	Serie Series Baureihe Série ms.	Prop.omdr. Prop.rpm. Prop.Drehzahl Hélice tours [rpm]	Prop.diam. Prop.diam. Prop.Durchm. Diam. hélice [mm]	H [mm]	B [mm]	L [mm]	F [mm]	Anbefalet mandehul Recommended man hole Empfohlenes Mannloch Trou d'homme recommandé X x Y [mm]
1136301	1,1/0,75	100	150	ø620	420	510	890	400	700 x 1250
1136303	3,0/1,1	112		ø730	450	585	940	350	750 x 1350
				ø845		685	965	370	900 x 1350
1136304	4,0/3,0	132		ø900	590	735	990	390	950 x 1350
				ø930		770	1110	495	1000 x 1400
1136307	7,5/4,0	160		ø1030	690	835	1200	530	1050 x 1600
			ø1150	980		1270	1200 x 1600		

Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques.

POP-I IE3


Varenr. Article no. Artikel Nr. Code no.	Effekt Power Leist. Puiss.	Serie Series Baureihe Série	Prop.omdr. Prop.rpm. Prop.Drehzahl Hélice tours	Prop.diam. Prop.diam. Prop.Durchm. Diam. hélice	H	B	L	F	Anbefalet mandehul Recommended man hole Empfohlenes Mannloch Trou d'homme recommandé
(400V)	[kW]	ms.	[rpm]	[mm]	[mm]	[mm]	[mm]	[mm]	X x Y [mm]
1166304	4,0	132	150	ø930	590	770	1110	495	1000 x 1400
1166307	7,5	160		ø1150	690	980	1270	530	1200 x 1600
1164301	1,5	100	300	ø410	420	345	855	335	500 x 1250
1164304	4,0	112		ø575	430	470	910	380	650 x 1250
1164307	7,5	132		ø660	590	555	1090	420	750 x 1450
1164311	11,0	160		ø770	675	650	1135	495	900 x 1500
1164318	18,5	180		ø880	650	730	1260	505	950 x 1600

Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques.

POP Slurry Mixer

The Landia POP 300/400 is a flexible and efficient mixer that is typically used for mixing slurry in reception tanks, storage tanks, lagoons, etc.

APPLICATION EXAMPLES

POP 300/400:

- Reception tanks
- Storage tanks
- Slurry lagoons

PROPELLER RPM

300 rpm – gear 1:4.5 or 1:5

400 rpm – gear 1:3.55



MATERIAL OF CONSTRUCTION POP 300/400 RPM

Motor housing and oil chamber	Cast iron EN-GJL-250
Propeller	Steel W1.0038/S235JR Domex 700 (optional) Stainless steel W1.4301/AISI304 (optional)
Gear	Cast iron EN-GJL-250
Output shaft gear	Shaft steel W1.6511/9840 (no contact with the liquid)
Bolts	A4
Exterior sealing system	3 oil sealing rings made of nitrile Wear bush made of stainless steel W1.4301/AISI304 (ceramic coating optional)
Interior sealing system	Mechanical shaft seal: silicon carbide/silicon carbide
Oil type	Liquid temperature 0–30 °C SP 100
Grease type	High temperature grease

SERVICE AND MAINTENANCE

Recommended service interval/oil change	Max. 2,000 operating hours/minimum once a year
Motor	Lifetime lubricated bearings
Gear	Periodic oil change Calculated service life >100,000 operating hours
Propeller	Periodic grease lubrication

SURFACE TREATMENT

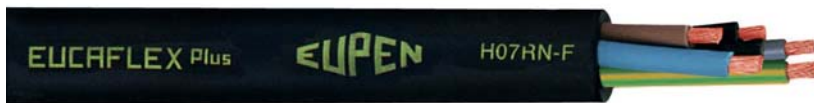
Machinery enamel: RAL 9005 (Jet Black)

Jet Black

ELECTRICAL CABLE

H07RN-F/S07RN-F EUCAFLEX^{Plus} Cable.

Resistant to oil and UV radiation.



Number of conductors:

H07RN-F 7G1.5 mm² (Not used in United Kingdom)

H07RN-F 7G2.5 mm² (Only United Kingdom. Motor ≤ 5,5 kW)

S07RN-F 7G4+3x1.5 mm²

S07RN-F 7G6+3x1.5 mm²

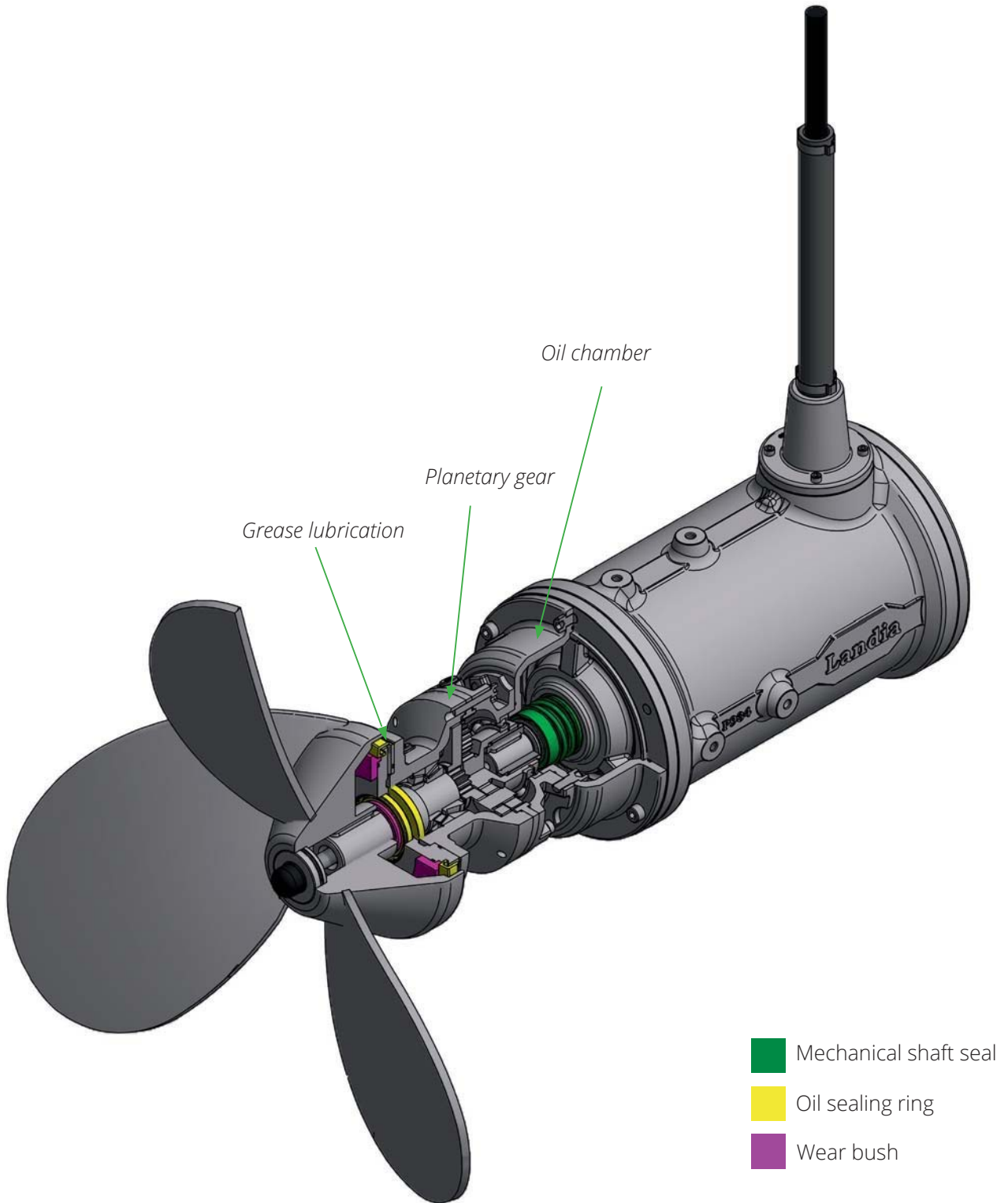
As standard supplied with 7 m of cable (extra length available upon request).

MONITORING FUNCTIONS

Bimetallic thermal sensors 120 °C

DESIGN POP 300/400 RPM

All Landia POP 300/400 mixers are delivered with a 1,500-rpm motor. A planetary gear box reduces the number of propeller revolutions to 300/400 and ensures a high propeller efficiency, resulting in powerful mixing.



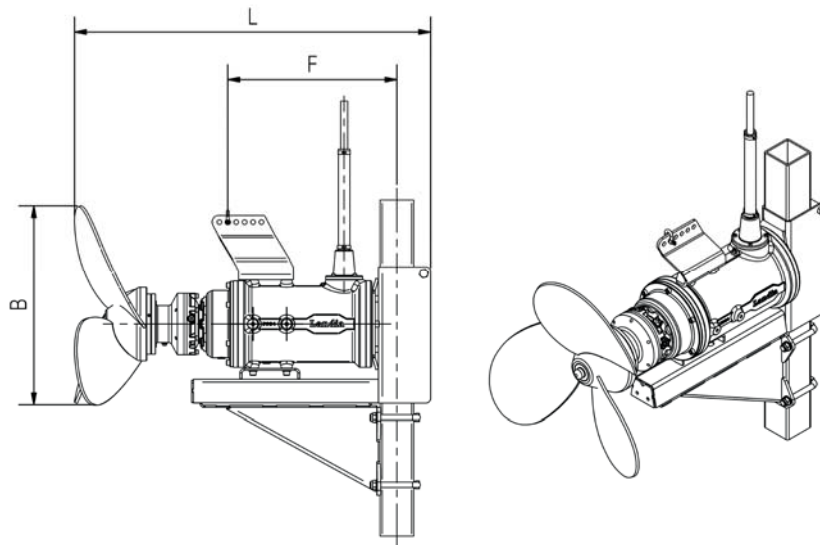
ELECTRICAL DATA

Motor type	3-phase AC motor
Nominal voltage	400 V
Minimum voltage allowed	360 V
Nominal frequency	50 Hz
Applicable for VFD operation	Yes
Ingress protection rating	IP 68
Insulation class	F

Model	Item number	Nominal power	Motor	Full load current (400 V)	Connection method	Start current (DOL)	cos phi	Efficiency
		[kW]	[rpm]	[A]	Y/Δ	[A]		[%]
POP 3.0 kW-300 rpm	1104303	3.0	1,430	6.7	Δ	43	0.79	82.4
POP 4.0 kW-300 rpm	1104304	4.0	1,435	8.8	Δ	61	0.78	84.1
POP 5.5 kW-300 rpm	1104305	5.5	1,440	11.0	Δ	68	0.87	84.6
POP 7.5 kW-300 rpm	1104307	7.5	1,455	15.0	Δ	90	0.83	86.2
POP 11.0 kW-300 rpm	1104311	11.0	1,455	21.5	Δ	146	0.84	87.9
POP 15.0 kW-300 rpm	1104315	15.0	1,465	29.0	Δ	212	0.84	88.7
POP 18.5 kW-300 rpm	1104318	18.5	1,460	35.0	Δ	238	0.85	89.3
POP 22.0 kW-400 rpm	1104324	22.0	1,465	43.0	Δ	280	0.82	90.1
POP 30.0 kW-400 rpm	1104332	30.0	1,465	57.0	Δ	399	0.84	90.7

For voltages others than 400 V/50 Hz please refer to the attached Appendix.

OVERALL DIMENSIONS



Model	Item number	Propeller diameter [mm]	B [mm]	F [mm]	L [mm]	Guide pipe [mm]	Weight [kg]
POP 3.0 kW-300 rpm	1104303	ø490	465	390	865	80 × 80	95
POP 4.0 kW-300 rpm	1104304	ø575	470	380	885	80 × 80	99
POP 5.5 kW-300 rpm	1104305	ø620	510	425	952	80 × 80	112
POP 7.5 kW-300 rpm	1104307	ø660	555	450	1,067	100 × 100	152
POP 11.0 kW-300 rpm	1104311	ø770	650	475	1,095	100 × 100	194
POP 15.0 kW-300 rpm	1104315	ø840	690	490	1,140	100 × 100	235
POP 18.5 kW-300 rpm	1104318	ø880	730	485	1,170	100 × 100	242
POP 22.0 kW-400 rpm	1104324	ø770	710	550	1,265	100 × 100*	281
POP 30.0 kW-400 rpm	1104332	ø770	710	550	1,265	100 × 100*	297

We reserve the right to make technical changes.

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Introduction

POP is a horizontal submersible mixer.

In operating position, the mixer is locked by a conical stop console/stop bracket which is fixed to the guide pipe in order to ensure stability.

The mixing is performed by means of an electric motor which is connected to the propeller via a planetary gear. The oil filled coupling oil chamber between the motor and gear is in open connection with the gear so the oil cools and greases the gear and the mechanical shaft seal between oil chamber and motor. The propeller is installed on the output shaft of the gear.

The front sealing system consists of three sealing rings with a grease filled chamber in between.

The following pages describe connection and maintenance of mixers type POP.

Application

The mixer is to be used for flow creation, mixing and homogenisation of liquids with high or low dry matter content such as wastewater, sludge, paper pulp, chemical liquids and slurry.

The mixer can be installed in rectangular and circular tanks and must only be operated when completely submerged below liquid level. If more than one mixer is installed in the tank, the horizontal setting between the mixers must not differ by more than a maximum of 5 ° from each other.

If another application is requested, please consult Landia beforehand.

Warning

Please note the following:

- Only a certified electrician is allowed to connect the unit.
- Prior to installation and commissioning, ensure that the equipment is installed correctly and fixed to the mixer and that the equipment in the tank is securely fixed.
- Prior to the first start of the mixer, the propeller shaft must be rotated manually. This also applies if the mixer has not been in operation for a long period.
- The electrical cable must always be tightened (possibly by means of a chain) to prevent the cable from getting into contact with the propeller. If the mixer has no chain, the cable must be protected from damage in another way, e.g. by means of a cable mesh.
- Ensure that the propeller cannot come in physical contact with the tank.
- Always ensure that the mixer is completely submerged below liquid level during operation.
- Prior to hoisting the mixer for service/repair, always ensure that the electrical connection of the mixer is switched off or locked. Prior to service/repair the mixer must be cleaned thoroughly.
- When the mixer is hoisted or lowered, its cable and chain must always be placed outside the work area.
- For service/repair of mixers installed in tanks with potential explosive areas or toxic stream, please refer to the national safety regulations, among others regarding the toxic hydrogen sulphide.

Note before commissioning

If the machine has been installed in an empty tank for more than 1 month - and with a possible risk that the machine has been exposed to high temperatures or direct sun – the grease in the propeller hub and oil level in the oil chamber must be checked/refilled. If the machine has been in storage for more than 3 months, the shaft must be rotated manually before start-up to ensure lubrication of the sealing system.

Service/repair

To maintain a high operation safety and a long service life without unnecessary and expensive repair, it is important to execute regular and preventive service right from the start.

Inspection should be made according to the intervals stated in the manual. Always follow the instructions carefully and only apply the parts specified by Landia in the spare parts list.

If you do not wish to execute the service yourself, Landia will be pleased to arrange a service agreement. Please call us for more information.

Service instruction POP 300 rpm

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Please note

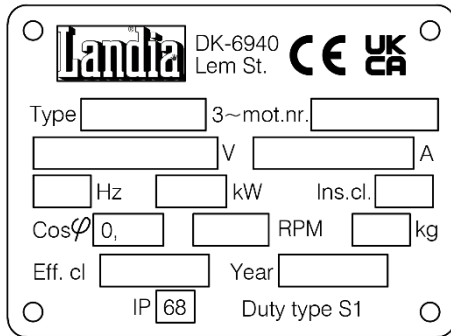
If spare parts not identical to the recommended are used at service/repair, the guarantee from Landia will be voided. Spare parts can be ordered at Landia or at your local distributor.

For major repairs, please contact:

Head Office:
LANDIA A/S
Industrivej 2
DK-6940 Lem St.
Tel.: +45 97 341244
info@landia.dk
www.landia.dk

UK subsidiary:
Landia (UK) Ltd.
Waymills Industrial Estate,
Whitchurch,
Shropshire SY13 1TT
Tel: + 44 01948 661 200
info@landia.co.uk
www.landia.co.uk

Rating plate

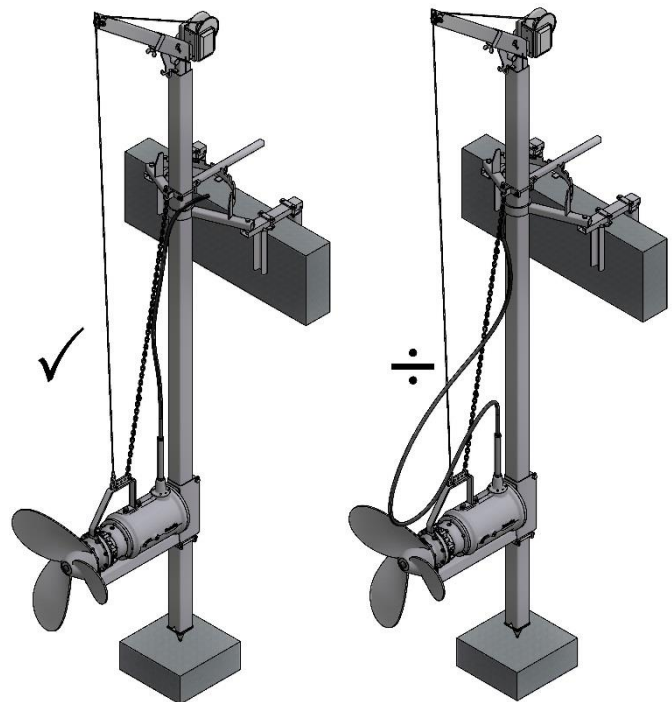


Type:	Unit type
3~mot.nr.:	Serial no.
V:	Connection voltage, star/delta
A:	Nominal power consumption at full load
Hz:	Net frequency
kW:	Max. shaft power
Ins.cl.:	Insulation class
Cos φ:	Power factor
RPM:	Motor revolutions per minute
Kg:	Weight of unit
Eff. cl.:	Efficiency class
Year:	Year of manufacture
IP:	Cage class
Duty type S1	Continuous working period

The rating plate indicates the electrical data of the motor, the year of construction and the serial/production number (3~Mot.nr.). For all requests regarding maintenance of a specific unit, the serial number must be given.

Please note

It is important that the electrical cable is tightened to prevent the cable from getting into contact with the propeller. If the mixers have no chain, the cable must be protected from damage in another way.



Power connection

All mixers are equipped with a rating plate with technical motor data. Ensure that the other electrical parts correspond to the motor data. An electrical diagram is provided for all mixers. A protective motor switch must be used when connecting the mixer to the electricity network.

Softstarter and frequency converter

Improper motor connection and incorrectly connected/used softstarter or frequency converter can lead to faults in the machine's electric motor. Faults as a result are not covered by the machine's right of complaint.

Only a certified electrician is allowed to connect the unit.

Operation

Thermal sensors are a standard equipment on Landia mixers.

The mixers often operate under extremely difficult conditions, so it is important that the thermal sensors are connected. Burning of the motor due to overheating can thus be prevented. If the safety function has been activated, the mixer must not be restarted until the cause of the disconnection has been rectified.

The cause can be e.g. reduced mains voltage, propeller blockage or an overheated motor.

The cooling period for overheated motors can be up to one hour.

The mixer must never operate above liquid level.

Capacity

The capacity of the mixer will always depend on the consistency of the liquid. The operator will soon discover in which position the propeller works efficiently. This will often depend on the tank design.

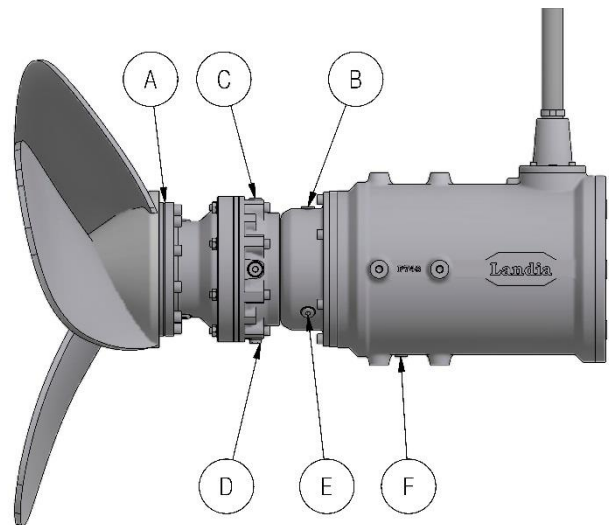
Inspection and maintenance

Regular inspection will ensure that the mixer has a long service life at low costs. The oil must be changed every 6 months/2000 hours of operation. However, minimum once a year, depending on the operating conditions, the oil quantity and motor casing should be checked.

Oil control

The oil is checked by removing the upper oil plug pos. B, on the oil chamber. The oil must be clean and the oil level must reach the oil plug. Oil type: see spare parts list. If the oil is dirty, it must be replaced by new oil.

- A. Stop screw
- B. Upper oil plug, oil chamber
- C. Upper oil plug, gear
- D. Lower oil plug, gear
- E. Lower oil plug, oil chamber
- F. Inspection screw



The oil is drained off by removing the plugs pos. D and pos. E. If the oil is dirty, the seals and wear bushes must be checked. During the filling of oil through oil plug pos. C, oil plug pos. B must be removed to enable venting of the gear.

Lubricant grease is added for lubrication of the front shaft seal (see spare parts list). The grease is added by removing the stop screw, pos. A, located right behind the propeller hub. Supplied lubrication pipes are screwed on the thread, pos. A, after which filling can take place.

If the sealing flange has been removed, more lubricant grease must be added. The hub must be filled with lubricant grease prior to reinstallation of the propeller. If the oil is dirty, the motor casing must be checked.

The motor casing is checked in the following way: Remove the inspection screw, pos. F, under the motor. If there is any leakage of oil or liquids, it can be seen.

Inspection of the seal in the oil chamber is necessary if there is any leakage. In case of doubt, Landia can be contacted. If it is necessary to dry out the windings of the motor, place the motor in heated conditions with the overhead screw, pos. F, and cable entry removed.

Equipment

The equipment should be checked for wear and corrosion damage. The winch must be lubricated and the brake and lock must be checked. Screws must be re-tightened. If the screws are loose before re-tightening, they must be removed and an adhesive substance (such as Loctite) must be applied before reassembly.

Installation/disassembly

Major repairs should be carried out at a special workshop.

Below are some general conditions regarding installation/dismantling of Landia mixers type POP.

The parts list drawing illustrates the construction of the unit. Not all parts can/should be dismantled, e.g. the rotor should not be pressed off the shaft.

Furthermore, the mechanical shaft seals should be handled with care as they are not shock resistant. Prior to reinstallation, all sealing surfaces must be cleaned and all O-rings must be inspected and replaced if necessary. Adhesive substance (e.g. Loctite) must be applied on all bolt joints. All bolts must be tightened with a torque wrench according to the table below.

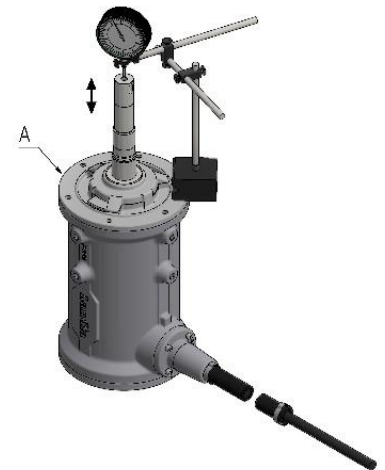
Bolt sizes	Quality 10.9 – 12.9 Steel	Quality A4- 80 Acidproof
M6	14 Nm	10 Nm
M8	34 Nm	24 Nm
M10	67 Nm	48 Nm
M12	115 Nm	82 Nm
M16	160 Nm	137 Nm

Note:

After installation of the bearing flange, the axial tolerance must be checked according to the table below.

Motor series	Acceptable Tolerance
ms100	0.9 ± 0.05 mm
ms112	1.0 ± 0.05 mm
ms132	1.0 ± 0.05 mm
ms160	1.1 ± 0.05 mm
ms180	1.5 ± 0.05 mm

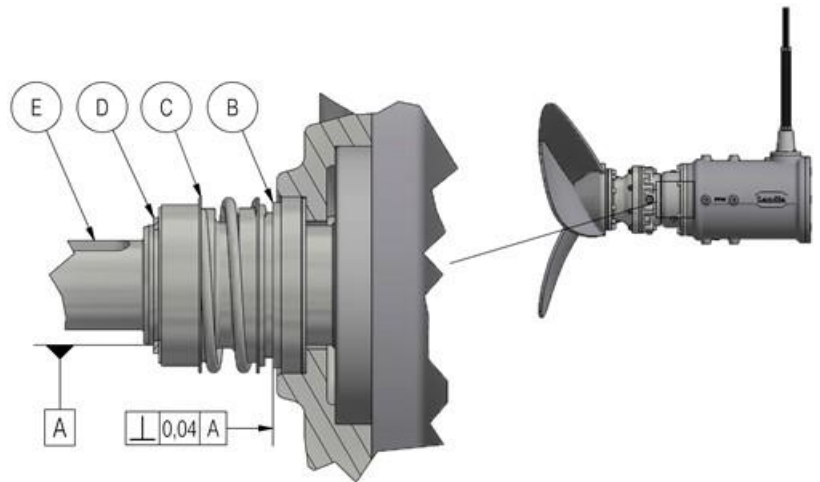
A. Bearing flange



Installation of mechanical shaft seals

When installing the mechanical shaft seals, please note that these are precision products and they should be treated as such. The sliding surfaces are protected during installation.

- B. Stationary sealing part
- C. Rotary sealing part
- D. Locking ring
- E. Shaft



Push the stationary sealing part, pos. B, into place. Be careful not to damage the slide surface. Use soap water for the installation. Lubricate with a thin mineral oil on the slide face of the stationary sealing part. When the stationary part is installed and straightened with a dial gauge, wipe it with degreaser.

Put the rotating sealing part, pos. C, over the shaft. To ease the installation, put soap water on the inner side of the rubber bellows and on the shaft. A mounting arbour should be used. Put the locking ring, pos. D, on the shaft and pull the seal together until the locking ring is installed in the locking ring groove. Check the seal by turning the motor shaft.

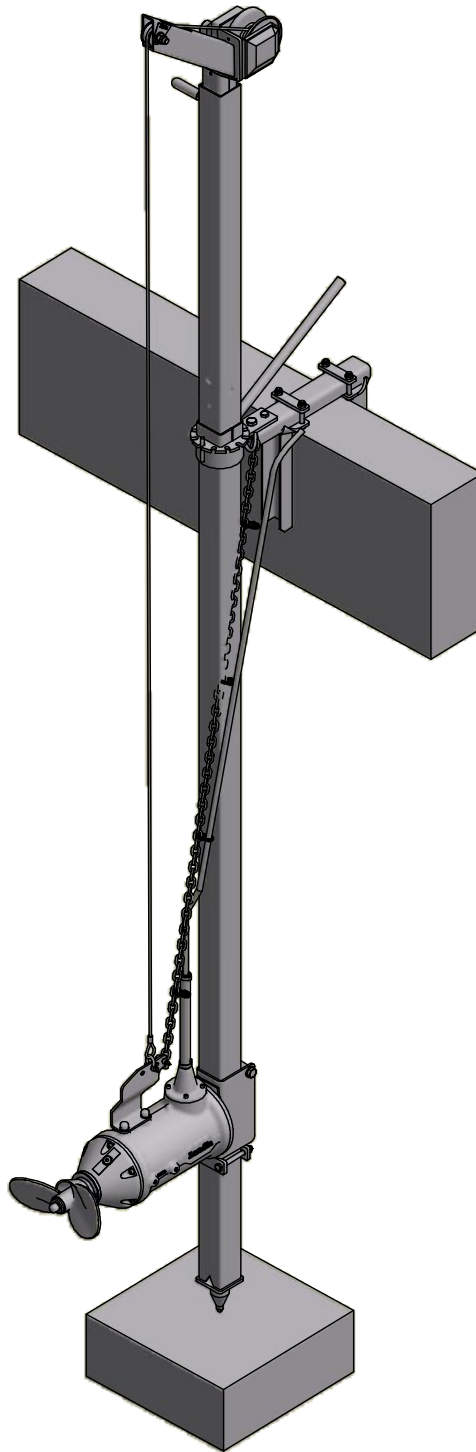
When installing the mechanical shaft seals, please note that these are precision products and they should be treated as such. The slide surface must be protected during installation. Do not use silicone, PTFE lubricants or oil as these products will prevent the rubber bellow from sticking to the shaft. Use soap water.

The mixer is tested for leaks by submersion into a water tub where the motor casing is exposed to an excess pressure. The excess pressure must be approximately 1 bar. Leakages (air bubbles) must not occur. Oil is filled in the oil chamber. The mixer must be in a horizontal position during filling. Oil quantity: See spare parts list.



Repair of surface coating, if any, may be necessary prior to operation start. See instruction for maintenance of surface coating.

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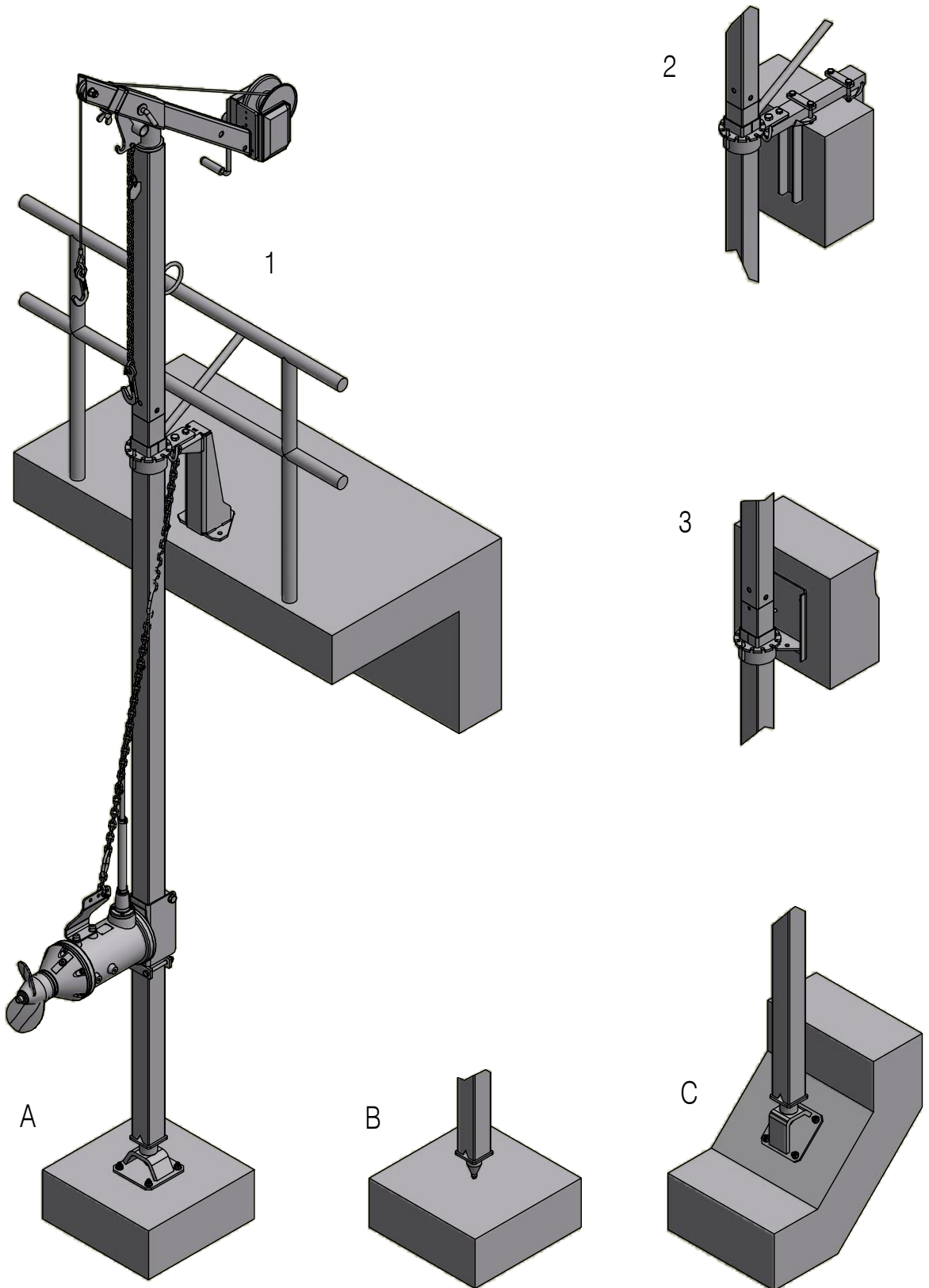
Styret dokument

Landia[®]

POD ms.80-132
Betonbefæstelse. Concrete fixing
Beton befestigung. Fixation sur de beton

Scale:	Sign.:	Date:
1 : 20	HL LEN	29-06-2016
Dwg.no.:		3740593

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Styret dokument

Landia

POD ms.100-132
Betonbefæstelser, Concrete fixings
Beton Befestigung, Fixation sur beton

Scale: 1 : 20	Sign.: LBO KSK	Date: 14-09-2017
Dwg.no.:		3740950

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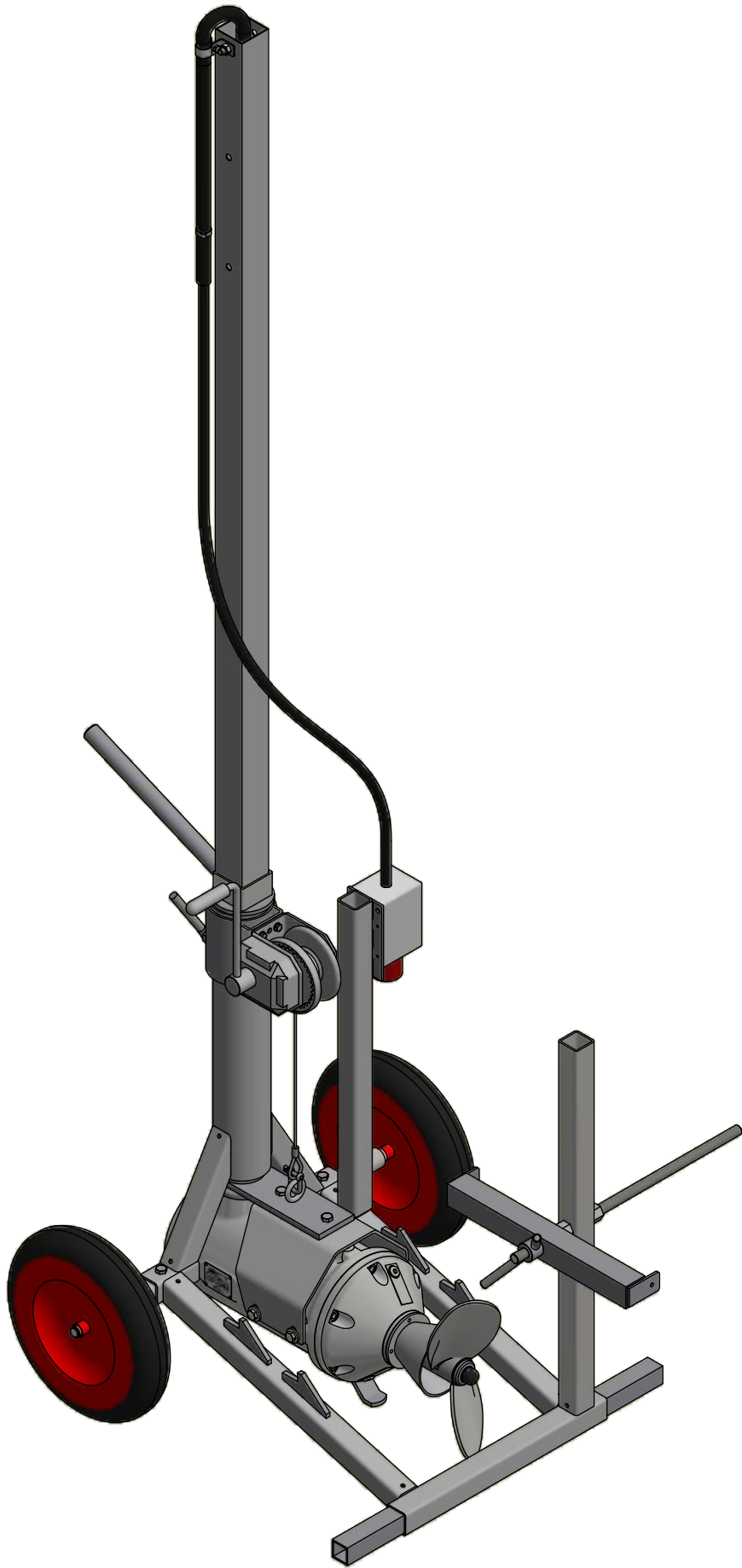


Landia[®]

POD ms.90 opstilling på vogn
POD ms90 on trolley
Principtegning / Schematic drawing

Scale:	Sign.:	Date:
1 : 10	VFO KSK	26-06-2020
Dwg.no.:		3740981

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Landia[®]

POD ms.112 / ms.132 opstilling på vogn
POD ms112/ms132 on trolley
Principtegning / Schematic drawing

Scale:	Sign.:	Date:
1 : 12	VFO KSK	18-06-2020
Dwg.no.:	3740423	

Slurry mixer POD

Landia's slurry mixer POD is a compact and flexible submersible mixer suited for smaller tanks and channels where the level of liquid is fairly low.

APPLICATION EXAMPLES

- ▶ The propeller is constructed in a way that makes it very useful; for instance, in a channel with a low level of liquid.
- ▶ The low weight makes it easy to move to the mixer around and use it in several places.
- ▶ The mixer can be installed on a trailer to be moved around.

IN SHORT

Motor sizes from 2.2 to 11.0 kW
 Double mechanical sealing
 Compact with a low weight



PROPELLER RPM

1,500 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	Cast iron EN-GJL-250
Propeller and Protection collar	W1.0038/A 570 Gr. 36 Stainless steel W1.4301/AISI 304 (optional)
Shaft	W1.6582/AISI4340
Bolts	A4
Sealing set	Mechanical shaft seals: silicon carbide/silicon carbide
Oil type	15W-40

SERVICE AND MAINTENANCE

Recommended service interval/oil change	Maximum 2,000 operating hours/minimum once a year
Motor	Lifetime lubricated bearings
Oil chamber	Periodic oil change

SURFACE TREATMENT

Machinery enamel: RAL 9005 (Jet Black)

Jet Black

ELECTRICAL CABLE

H07RN-F/S07RN-F EUCAFLEX^{Plus} Cable.

Resistant to oil and UV radiation.



Number of conductors:

H07RN-F 7G1.5 mm² (Not used in United Kingdom)

H07RN-F 7G2,5 mm² (Only United Kingdom. Motor ≤ 5,5 kW)

S07RN-F 7G4+3x1.5 mm²

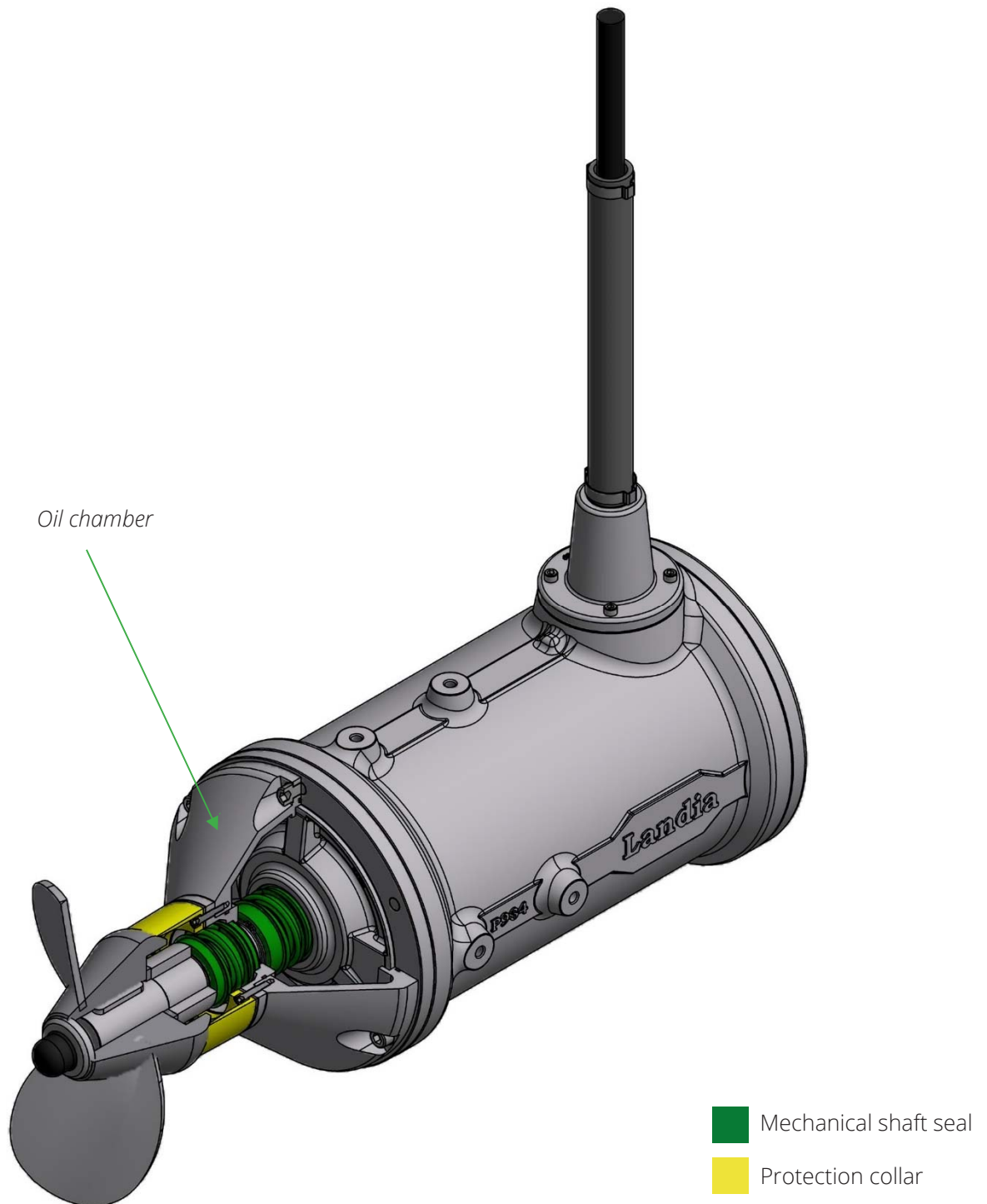
As standard supplied with 7 m of cable (extra length available upon request).

MONITORING FUNCTIONS

Bimetal thermal sensors 120 °C

DESIGN

The Landia POD is a compact, direct drive mixer. The propeller speed is the same as the motor speed. It has a self-cleaning propeller and a sealing system consisting of two mechanical shaft seals.



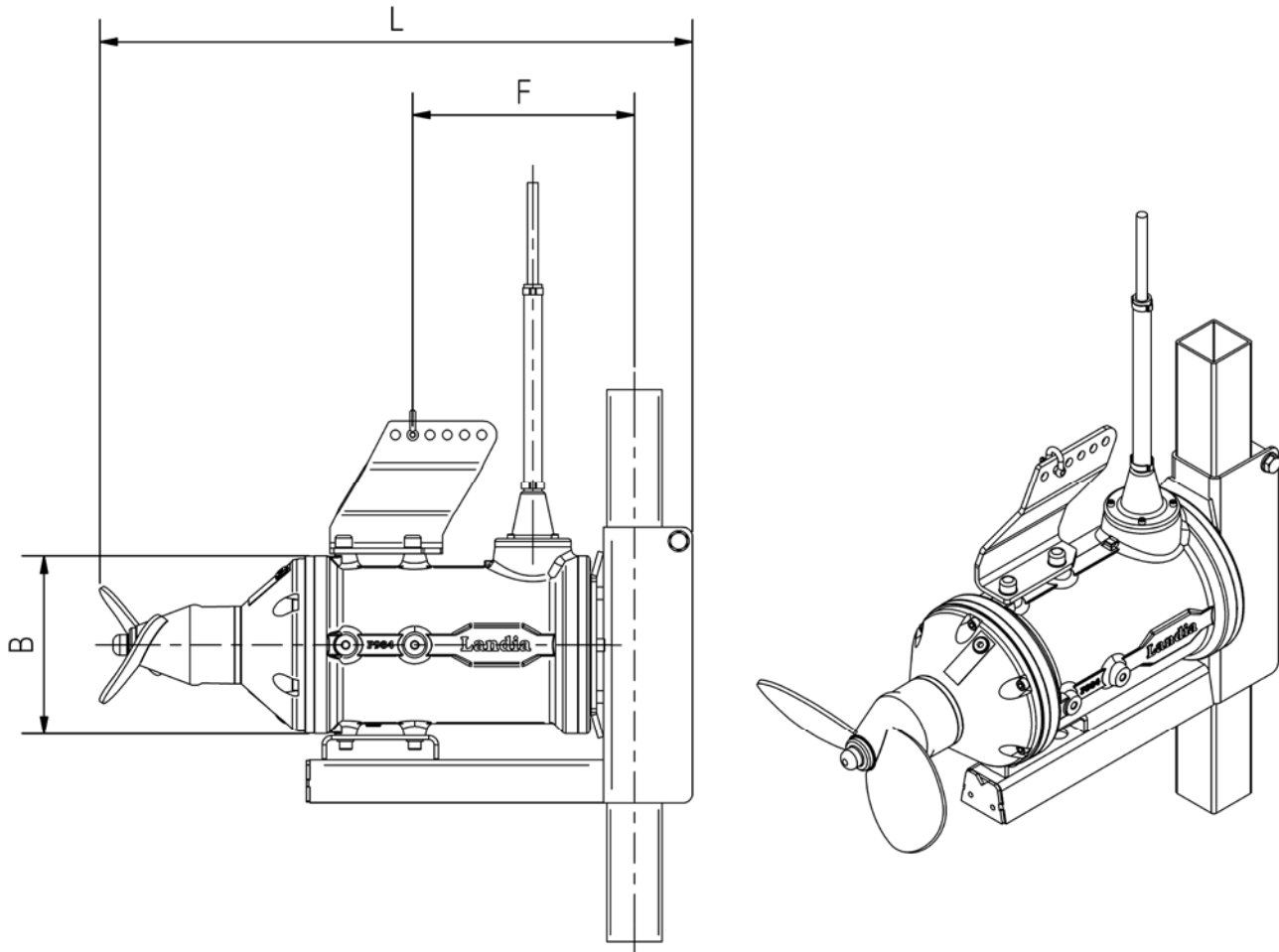
ELECTRICAL DATA

Motor type	3-phase AC motor
Nominal voltage	400 V
Minimum voltage allowed	360 V
Nominal frequency	50 Hz
Applicable for VFD operation	Yes
Ingress protection rating	IP 68
Insulation class	F

Model	Item number	Nominal power	Motor	Full load current (400 V)	Connection method	Start current (DOL)	cos phi	Efficiency
		[kW]	[rpm]	[A]	Y/Δ	[A]		[%]
POD 2.2 kW-1,500 rpm	1204302	2.2	1410	5.0	Y	30	0.80	80.2
POD 4.0 kW-1,500 rpm	1204304	4.0	1435	8.8	Δ	61	0.78	84.1
POD 5.5 kW-1.500 rpm	1204305	5.5	1440	11.0	Δ	68	0.87	84.6
POD 7.5 kW-1,500 rpm	1204307	7.5	1455	15.0	Δ	90	0.83	86.2
POD 11.0 kW-1,500 rpm	1204311	11.0	1455	21.5	Δ	146	0.84	87.9

For voltages others than 400 V/50 Hz please refer to the attached Appendix.

OVERALL DIMENSIONS



Model	Item number	Propeller diameter [mm]	B [mm]	F [mm]	L [mm]	Guide pipe [mm]	Weight [kg]
POD 2.2 kW-1,500 rpm	1204302	Ø190	189	190	555	60x60	38
POD 4.0 kW-1,500 rpm	1204304	Ø230	213	240	690	80x80	62
POD 5.5 kW-1,500 rpm	1204305	Ø260	226	-	725	80x80	70
POD 7.5 kW-1,500 rpm	1204307	Ø250	264	295	830	80x80	112
POD 11.0 kW-1,500 rpm	1204311	Ø275	264	295	830	80x80	119

We reserve the right to make technical changes.

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Application areas

This type of mixer is applicable for flow creation, mixing and homogenization of liquids having a high or a low dry matter content, such as wastewater, sludge, paper pulp, chemical liquids and slurry.

The mixer can be applied in rectangular and circular tanks and it must only be operate completely submerged below liquid level.

Only after advice from Landia A/S can the mixer be applied for other purposes.

Warning

Please note the following points:

- Only a certified electrician is allowed to connect the unit.
- Check direction of rotation. See the arrow on the motor. It **must not** run against the direction of rotation.
- Before start-up and installation, check that the equipment is correctly installed and tightened onto the mixer and ensure that the equipment in the tank is securely fixed.
- The electrical cable must always be tightened by means of a chain so that the cable cannot come into contact with the propeller. If the mixer has no chain, the cable must be secured by other means in order to prevent it from being damaged, perhaps with the help of a cable mesh.
- Ensure that the propeller cannot come into contact with the tank.
- Always ensure that the mixer is completely below liquid level during operation.
- Before hoisting the mixer for service/repair, always ensure that the mixer's electrical connection is turned off or locked. Before service/repair, the mixer must be thoroughly cleaned.
- When the mixer is to be hoisted or lowered, it must be ensured that the cable and chain are always placed outside the working area.
- With regard to service/repair of mixers installed in a well/tank with explosion/toxic risk, please refer to the national security regulations, especially regarding toxic hydrogen sulphide.

Service/repair

In order to maintain a high level of safety during operation and in order to ensure a long service life without expensive repair, it is important that the mixer is examined regularly for preventive service right from the start. Inspection should be made in accordance with the intervals recommended in the service instructions. The instructions should be followed carefully and only the parts indicated by Landia A/S on the spare parts list on the back of this instruction must be applied.

If you do not want to maintain the unit by yourself, we can offer you a service arrangement - please call for further information.

Please note

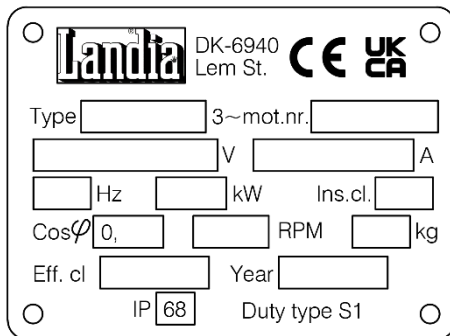
If spare parts not identical with those recommended are applied, the guarantee from Landia A/S is no longer valid. If you are not able to obtain the recommended parts, they can be ordered through Landia A/S.

Repair on a larger scale should be carried out at a special workshop; please see below.

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Industrivej 2
DK-6940 Lem St.
Tel.: +45 97 341244
info@landia.dk
www.landia.dk

UK subsidiary:
Landia (UK) Ltd.
Waymills Industrial Estate,
Whitchurch,
Shropshire SY13 1TT
Tel: + 44 01948 661 200
info@landia.co.uk
www.landia.co.uk

Rating plate



Type:	Unit type
3~mot.nr.:	Serial no.
V:	Connection voltage, star/delta
A:	Nominal power consumption at full load
Hz:	Net frequency
kW:	Max. shaft power
Ins.cl.:	Insulation class
Cos φ:	Power factor
RPM:	Motor revolutions per minute
Kg:	Weight of unit
Eff. cl.:	Efficiency class
Year:	Year of manufacture
IP:	Cage class
Duty type S1	Continuous working period

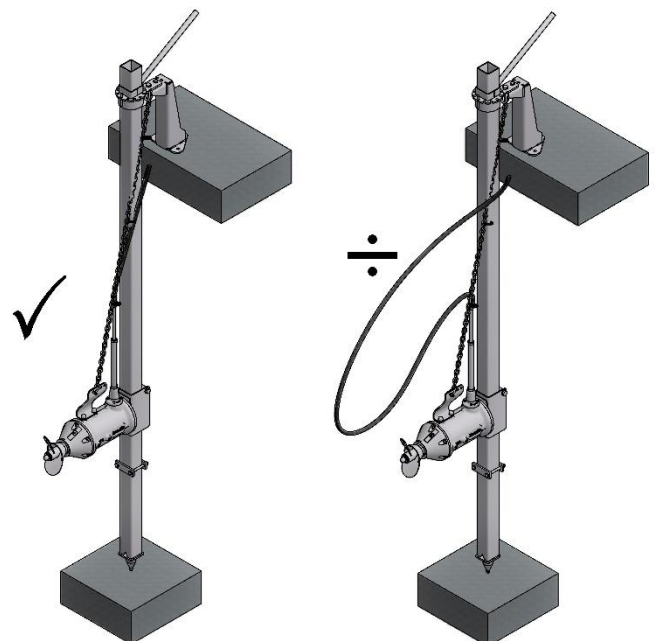
The rating plate states the motor's electrical data as well as the year of manufacture and the serial no. (3~Mot.nr.). With regard to maintenance of a specific unit please state serial no. when contacting Landia.

Installation

1. The tightening bracket or the operation platform is brought into position and fastened.
2. The guide pipe is shortened to 650 mm above the bearing console's rotatable ring.
3. The stop bracket must be installed onto the guide pipe so that the propeller cannot touch the bottom of the tank. The bracket's position depends on the required pitch on the mixer during operation.
4. The guide pipe and the bearing console are lifted into place and the bearing console is bolted to the tightening bracket or to the operation platform.
5. Place the guide pipe in an upright position and mark it under the bearing bracket's ring. Then the depth can be checked by means of the mark when the guide pipe is turned. After having drilled a few millimetres, position the crane arm with the winch and the upper guide holder on the guide pipe. The mixer can now be lifted into position and fixed to the guide pipe. Turn the guide pipe around its shaft, back and forth, lowering it until 15-20 mm have been reached.

Important

It is important that the electrical cable is tightened and secured so that the cable cannot come into contact with the propeller. If the unit has no chain, the cable should be secured by other means in order to prevent it from being damaged.



Power connection

All mixers are equipped with a rating plate with technical motor data. A starter and a safety unit for each mixer must be used. Check that the electrical data of the units correspond to those of the motor. The electrical panel and the safety unit must be equipped with relays for excess current and thermal protection. A connection diagram is delivered with each unit.

Only a certified electrician is allowed to connect the unit.

Operation

The mixers often have to operate under extremely difficult conditions. Therefore, important that there is overcurrent and temperature protection. In this way, burning of the engine due to excessive operating temperature can be avoided. If the safety function has been activated, the cause must be found and rectified before the mixer can be restarted. The cause of the fault might be a reduction in the mains voltage, a blockage or an overheated motor. The cooling period for overheated motors can be up to one hour.

The unit must not operate above liquid level

If a short circuit is discovered in the motor, a full inspection should be carried out, as described under "Checking of motor casing".

Performance

The performance of the mixer will always depend on the consistency of the liquid. The liquid must be sufficiently flowing so that the mixing can be effective. The operator will soon discover where and how to place the mixer to make it work efficiently. This will often depend on the shape of the tank.

Inspection and maintenance

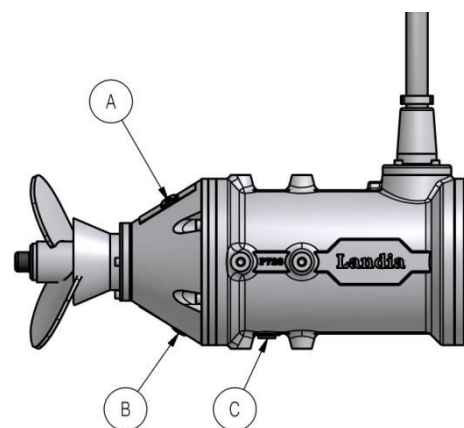
Regular inspection will ensure the mixer a long service life at low cost. The oil must be changed **every 2000 operation hours** or at least every 6 months. The oil level should be checked more frequently.

The oil must be changed at least once a year.

Oil control

Oil checks are carried out by removing the top oil plug (pos. A) on the oil chamber between the motor and the propeller. The oil must be clean and the oil level must reach the level of the oil plug. Oil type and quantity: see spare parts list. If the oil is dirty it must be changed

- A. Top oil plug
- B. Lower oil plug
- C. Inspection screw



The oil is drained off by dismantling the oil plugs, pos. B, underneath the motor. If the oil is dirty, the seals and the wear bush must be inspected. Oil type and quantity: see spare parts list.

If the oil is OK, it is not necessary to check the motor casing.

Checking of motor casing

Remove the inspection plug under the motor, pos. C. Usually there is a small leakage of oil. The oil quantity is controlled by drainage.

If it should prove necessary to dry up the motor coils, the motor should be placed in a heated room, and the inspection plug and the cable entry should be dismantled.

When you reassemble the cable entry, you must be aware that the O-rings are in place and that the surfaces are clean so that an effective sealing can be obtained.

Equipment

The equipment should be checked for wear and tear. The screws should be adjusted and the winch should be greased.

Disassembling/assembling the unit

Note a major repair should take place at a special workshop.

Below please find some general conditions regarding disassembling/assembling of Landia mixer type POD-I.

The drawing attached to the spare parts list shows the construction of the unit. Not all parts can/should be dismantled, e.g. do not press the rotor off the shaft.

When disassembling the unit, handle the mechanical seals with care as they are not shock resistant.

Prior to reinstallation, all sealing surfaces must be cleaned; all O-rings must be checked and changed, if necessary. Adhesive substance (e.g. Loctite) must be applied on all bolt joints. All bolts are tightened with a tightening torque acc. to the table below.

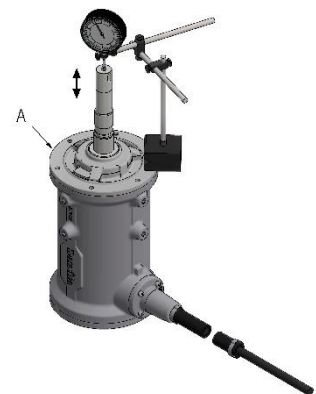
Bolt sizes	Quality 10.9 - 12.9 Steel	Quality A4-80 Acidproof
M6	14 Nm	10 Nm
M8	34 Nm	24 Nm
M10	67 Nm	48 Nm
M12	115 Nm	82 Nm
M16	160 Nm	137 Nm

Please note

After installing the bearing flange, control the axial clearance; as stated in the table below.

Motor series	Acceptable clearance
ms80	$0,7 \pm 0,05$ mm
ms90	$0,7 \pm 0,05$ mm
ms100	$0,9 \pm 0,05$ mm
ms112	$1,0 \pm 0,05$ mm
ms132	$1,0 \pm 0,05$ mm
ms160	$1,1 \pm 0,05$ mm

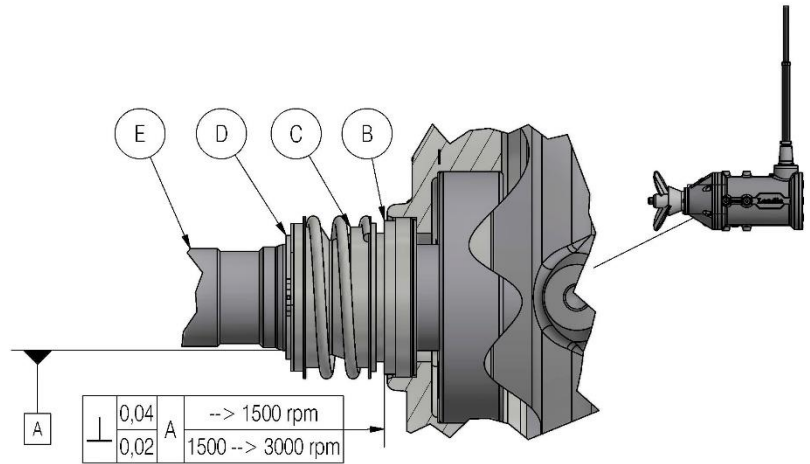
A. Bearing flange



Installation of mechanical shaft seals

When installing the mechanical shaft seals please be aware that these are precision products and that they should be treated as such. The slide faces must be protected during the installation.

- B: Stationary sealing part
- C: Rotating sealing part
- D: Locking ring
- E: Shaft



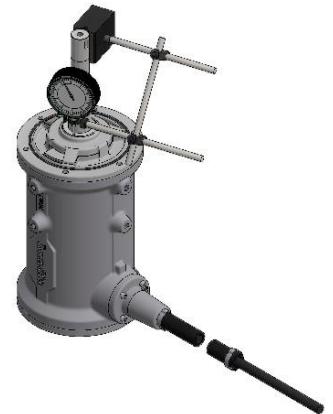
Push the stationary sealing part (pos. B) into place. Be careful not to damage the slide face during the installation. When the stationary part is mounted and straightened with a dial gauge, wipe it off with degreaser.

The rotating sealing part (pos. C) is put over the shaft. To ease the installation put soap water on the interior side of the rubber bellows as well as on the shaft. Do not apply silicone, PTFE lubricants or oil as they will prevent the rubber bellows from sticking to the shaft. Installation arbor should be used.

Put the locking ring (pos. D) on the shaft and press together the seal until the locking ring snaps into the locking ring trace. Control the seal by turning the motor shaft.

Test the mixer for leakage by submerging it and by putting the motor casing and the oil chamber under an overpressure. The overpressure is to be approx. 1 bar. Leakage (air bubbles) must not appear. Oil is filled in the oil chamber. During the filling the mixer must be in a horizontal position.

Oil quantity: see spare parts list.



Repair of surface coating, if any, is necessary prior to operation start. See instruction for maintenance of surface coating.

Konverteringsskema - Conversion table – Umrechnungstabelle - Tableau concernant**Olie - Oil - Öl**

CASTROL	Alpha SP 100	Alpha SP 220	Whitemore WOM 65	CRB Multi 15W-40	Hyspin HVI 15	Hyspin HVI 46D	Nevastane EP 100	Alphasyn GS 220
DIN-Norm / godkendelse	DIN 51502/DIN 51517 - CLP	DIN 51502/DIN 51517 - CLP	Ingen alternativer - No alternatives - Keine Alternativen - Pas d'alternative	Ingen alternativer - No alternatives - Keine Alternativen - Pas d'alternative	DIN 51502/ DIN 51524 - HVLP	DIN 51502-HVLP-D/ DIN 51524 - CLP	Ingen alternativer – No alternatives - Keine Alternativen - Pas d'alternative	DIN 51502/ DIN 51517 - CLP PG

Fedt - Grease - Fett - Graisse

BEL RAY	Bel Ray 50-2
CASTROL	Tribol GR 4747/220-2 HT
MOBIL	Mobilgrease FM 222
Q8	Rubens WB
SHELL	SHELL GADUS S3 V220C 2
TEXACO	Anderol 783-2
TOTAL	TOTAL NEVASTANE XMF 2

Smøremidler, som anvendes og anbefales af Landia A/S, er markeret med gråt i ovenstående skemaer. Konverteringsskemaerne angiver DIN-Norm / godkendelse på olietyper fra Castrol. DIN-Normen fra Castrol er vejledende og kan bruges til at finde en erstatningsolie hos Deres lokale olieleverandør. Hvis det ikke er muligt at finde en erstatningsolie, kan olien købes hos Landia A/S. Generelt bør blanding af forskellige fedttyper undgås enten ved udskiftning af al fedtet eller hyppig eftersmøring, så fedtet hurtigt udskiftes. Fedttyperne angivet ovenfor er blandbare.

Lubricants applied and recommended by Landia A/S are marked with grey in the above tables. The conversion schemes indicate the DIN Norms and the approved oil types from Castrol. The DIN Norm from Castrol is indicative and can be used to find a replacement oil from your local oil supplier. If it is not possible to find a replacement oil, the oil can be purchased from Landia A/S. Generally, mixing of different types of grease should be avoided either by replacing all the grease or frequent lubrication, so the grease is quickly replaced. The grease types mentioned above are mixable.

Das von Landia A/S empfohlene Schmiermittel, das verwendet werden muss ist in oben stehendem Schema mit grau markiert. Die Konvertierungsschemas zeigen die DIN-Normen und eine Übersicht der zugelassenen Öltypen von Castrol. Die DIN-Normen von Castrol sind indikativ und kann verwendet werden, um ein Ersatzöl von Ihrem lokalen Öllieferanten zu finden. Wenn es nicht möglich ist, ein Ersatzöl zu finden, kann das Öl von Landia A / S gekauft werden. Im Allgemeinen sollte Mischung von verschiedenen Schmiermitteln vermieden werden. Entweder das Fett wechseln oder häufig nachschmieren. Die oben genannte Fetttypen sind mischbar.

Les lubrifiants utilisés et recommandés par Landia A/S sont marqués d'un cri dans les tableaux ci-dessus. Les tableaux de conversion indiquent la norme DIN/approbation pour les types d'huile de Castrol. La norme DIN de Castrol est indicative et peut être utilisée pour trouver une huile de remplacement chez votre fournisseur d'huile local. S'il n'est pas possible de trouver une huile de remplacement, l'huile peut être acheté auprès de Landia. En général, il convient d'éviter de mélanger différents types de graisses en remplaçant toutes les graisses ou toutes les post-lubrifications fréquentes de manière à remplacer rapidement les graisses. Les types de graisse mentionnés ci-dessus sont miscibles.

Motordata for Landia motorer IE1
Side 1/1
3 x 400 Volt 50 Hz

Effekt kW	ms.	Poltal	RPM	Spænding trekant	Spænding stjerne	Strøm ved 3x400 V A	Strøm ved 3x690 A	Starts. direkte A	Cos phi %	Virk. grad fuld last %	Virk. grad 3/4 last %	Virk. grad 1/2 last %
1,5	80	2	2840	230	400	3,1	0	22	0,86	81,2	82,2	80,3
2,2	80	2	2850	230	400	4,6	0	34	0,85	82,1	83,4	81,9
3	90	2	2865	400	690	6,2	3,6	42	0,85	82,8	83,1	83,3
4	100	2	2900	400	690	8,4	4,9	59	0,81	84,9	85,5	84,4
5,5	100	2	2860	400	690	11	6,2	61	0,86	84,7	84,7	0
7,5	112	2	2890	400	690	15	8,6	99	0,85	86,1	86,1	84,1
11	132	2	2905	400	690	20,5	12	143	0,88	87,6	87,6	84,6
15	160	2	2940	400	690	27,5	16	195	0,89	88,7	88,7	85,8
18,5	160	2	2925	400	690	33	19,5	238	0,9	89,9	88,9	86,4
22	180	2	2935	400	690	39	22,5	265	0,9	90,5	90,5	86,7
30	180	2	2940	400	690	52,5	30,5	383	0,91	90,6	89,8	88,3
37		2	2940	400	690	65	37,50	455	0,9	91,5	90,5	89
45		2	2940	400	690	77,5	44,7	581	0,91	92	91,3	88,8
0,55	71	4	1400	230	400	1,6	0	7	0,69	71,9	70,7	64,1
0,75	71	4	1400	230	400	2,1	0	10	0,7	73,6	72,2	66,8
1,1	80	4	1410	230	400	2,6	0	14	0,79	76,7	76,8	73,6
1,5	80	4	1400	230	400	3,4	0	19	0,81	78,6	79,1	76,9
2,2	90	4	1410	230	400	5	0	30	0,8	80,2	80,7	79,5
3	100	4	1430	400	690	6,7	3,9	43	0,79	82,4	82,8	80,8
4	100	4	1435	400	690	8,8	5,1	61	0,78	84,1	85,1	83,6
5,5	112	4	1440	400	690	11	6,2	68	0,87	84,6	84,6	83,1
7,5	132	4	1455	400	690	15	8,8	90	0,83	86,2	85,2	83,8
11	131	4	1455	400	690	21,5	12,5	146	0,84	87,9	87,5	85,5
15	160	4	1465	400	690	29	17,00	212	0,84	88,7	88,3	85,8
18,5	160	4	1460	400	690	35	20,5	238	0,85	89,3	88,8	86,8
22	180	4	1465	400	690	43	25	280	0,82	90,1	90,1	88,6
30	180	4	1465	400	690	57	33	399	0,84	90,7	90,2	89,2
37		4	1470	400	690	68	39,2	476	0,86	91,2	90,2	89,2
45		4	1470	400	690	82,5	47,6	578	0,86	91,7	91,2	89,7
0,55	50	8	695	230	400	2	0	7	0,6	64,8	62,5	55,8
0,75	50	8	705	230	400	2,7	0	9	0,6	66,8	64,7	57,9
1,1	50	8	705	230	400	3,3	0	13	0,67	72,9	73,3	69,6
1,5	50	8	705	230	400	4,1	0	18	0,7	75,4	75,7	72,4
2,2	50	8	705	230	400	5,6	0	25	0,75	75,6	75,1	72,1
3	50	8	705	400	690	7,4	4,3	33	0,75	78	78	75
4	50	8	710	400	690	9,3	5	37	0,78	79,6	79,3	77,3
5,5	50	8	710	400	690	12,5	7,2	56	0,78	81,4	81	78
7,5	50	8	725	400	690	18	10,5	81	0,71	84,7	84,7	81,7
11	50	8	720	400	690	24	14	108	0,78	84,8	83,8	81,3

Motordata for Landia motorer IE2
Side 1/1
3 x 400 Volt 50 Hz

Effekt kW	ms.	Poltal	N rpm	Spænding trekant V	Spænding stjerne V	Strøm ved 3x400 V A	Strøm ved 3x690 A	Starts. direkte A	Cos phi ϕ	Virk. grad fuld last %	Virk. grad 3/4 last %	Virk. grad 1/2 last %
1,5	90	2	2910	230	400	2,9	0	34	0,87	81,3	85,5	82,9
2,2	90	2	2880	230	400	4,25	0	34	0,88	83,2	85,7	83,9
3	100	2	2930	400	690	6,55	3,8	56	0,76	84,6	86,2	83,5
4	100	2	2920	400	690	7,9	4,6	66	0,84	85,8	86,4	85,8
5,5	112	2	2900	400	690	10,3	5,9	80	0,88	87	88,7	88,8
7,5	132	2	2925	400	690	13,5	7,8	90	0,91	88,8	89,2	88,3
11	160	2	2950	400	690	19,5	11,3	150	0,9	90,3	90,3	89,1
15	160	2	2940	400	690	26	15,0	230	0,92	90,7	90,5	89,1
18,5	160	2	2935	400	690	32	18,5	230	0,91	91	91,4	91,4
22	180	2	2935	400	690	38,5	22,2	239	0,9	91,3	90,6	86,4
30	180	2	2945	400	690	52	30,0	359	0,91	92	91,3	90,5
37	180	2	2940	400	690	63	36,4	466	0,92	92,5	92,3	91,6
0,55	80	4	1430	230	400	1,25	0	8	0,8	79,4	79,6	78,7
0,75	80	4	1430	230	400	1,65	0	12	0,81	79,6	81,4	79,6
1,1	90	4	1435	230	400	2,4	0	16	0,8	81,4	82,3	80,4
1,5	100	4	1455	230	400	3,35	0	45	0,77	82,8	83,2	80,7
2,2	100	4	1455	230	400	4,8	0	45	0,77	84,3	85,2	81,7
3	112	4	1460	400	690	6,5	3,8	63	0,77	85,5	86,3	84,5
4	112	4	1460	400	690	7,6	4,4	63	0,86	87,6	88	86,9
5,5	132	4	1470	400	690	10,5	6,1	123	0,87	88,4	89,3	89
7,5	132	4	1470	400	690	14,5	8,4	123	0,82	89,9	90	88,5
11	160	4	1470	400	690	22,5	13,0	176	0,78	90,3	90,3	88,9
15	180	4	1475	400	690	28,5	16,5	307	0,83	91	90,4	89
18,5	180	4	1475	400	690	35,5	20,5	307	0,82	91,2	90,6	89,3
22	180	4	1475	400	690	42	24,2	307	0,83	91,6	91,4	89,9
0,55	80	6	950	230	400	1,5	0	6	0,69	76,5	76,1	72,6
0,75	90	6	955	230	400	1,95	0	10	0,71	75,9	78,3	75,1
1,1	100	6	955	230	400	2,75	0	15	0,71	78,1	82	79,3
1,5	112	6	955	400	690	3,55	0	50	0,75	81	80,5	79,6
2,2	112	6	955	400	690	5,2	0	50	0,74	82,8	82,5	80
3	112	6	955	400	690	7,1	4,1	50	0,73	83,3	83,1	80,5
4	132	6	965	400	690	8,5	4,9	43	0,79	85,5	85,5	83,8
5,5	160	6	970	400	690	12	6,9	91	0,76	87	86,4	85,8
7,5	160	6	970	400	690	15,5	8,9	91	0,79	87,5	87,6	85,9
11	180	6	975	400	690	21	12,1	177	0,84	89,2	87,9	86,3
15	180	6	975	400	690	28,5	16,5	177	0,84	89,7	88,8	86,7
18,5	180	6	980	400	690	35	20,2	231	0,85	90,4	88,8	86,5

Motordata for Landia motorer IE3

Side 1/1

3 x 400 Volt 50 Hz

Effekt	ms.	Poltal	N	Spænding trekant	Spænding stjerne	Strøm ved 3x400 V	Strøm ved 3x690	Starts. direkte	Cos phi	Virk. grad fuld last	Virk. grad 3/4 last	Virk. grad 1/2 last
kW			rpm	V	V	A	A	A	φ	%	%	%
1,5	100	4	1455	230	400	3,4	-	32,3	0,75	85,3	84	80,6
4	112	4	1465	400	690	7,9	4,6	74,3	0,82	88,6	88,9	87,4
7,5	132	4	1470	400	690	16	9,2	121,6	0,75	90,5	90,5	89,2
11	160	4	1465	400	690	21	12,1	147	0,82	91,4	91,4	91,5
18,5	180	4	1475	400	690	34,5	19,9	269,1	0,84	92,6	92,7	91,9
4	132	6	965	400	690	8,3	4,8	39,9	0,8	86,8	87	86
7,5	160	6	975	400	690	14,5	8,4	84,1	0,82	89,6	89,4	87,8