

AirJet / Propeller aerator

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

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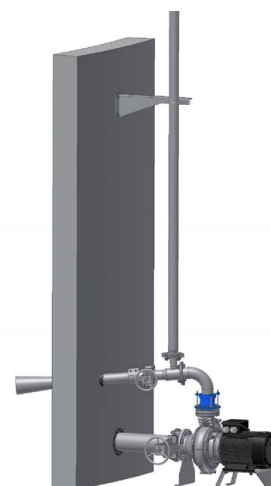
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Oil-/Conversion table

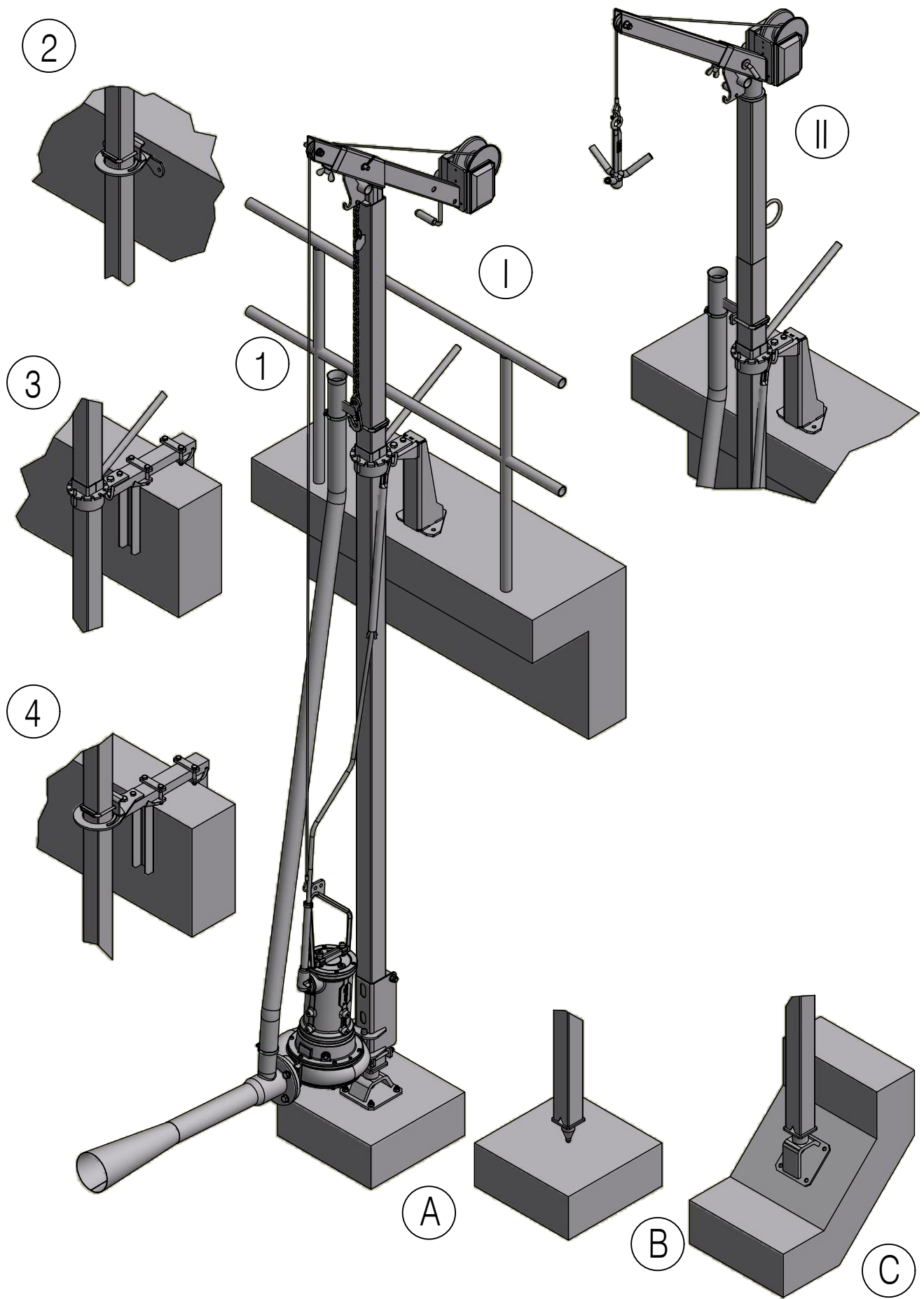
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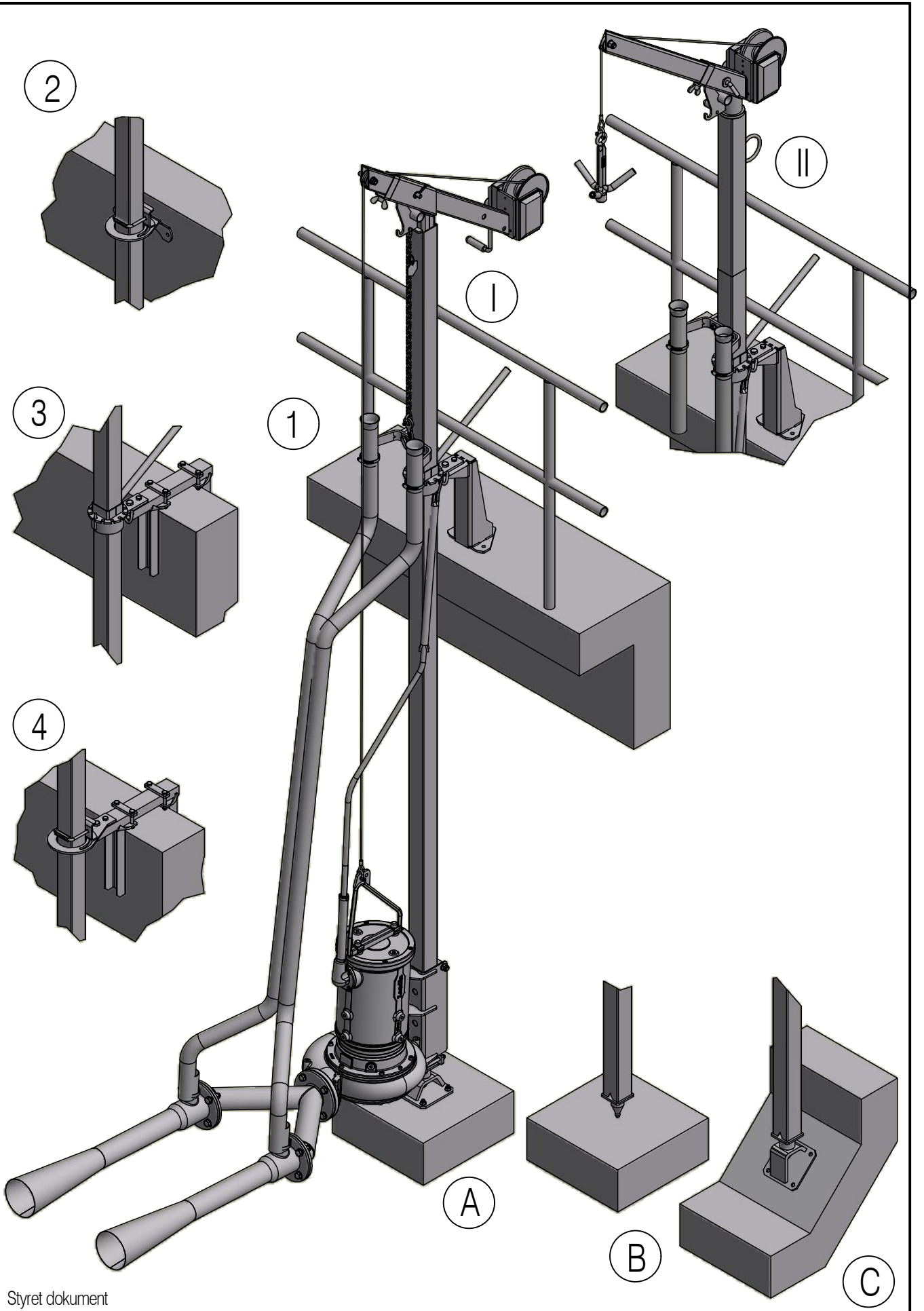
Styret dokument

Landia

DG-I lodret / vertical / verticale
1 ejektor, 1 ejector
1 Ejektore, 1 éjecteur

Scale: 1 : 20	Sign.: LBO KSK	Date: 03-10-2017
Dwg.no.:		3740574
Revision date: 25-07-2018		

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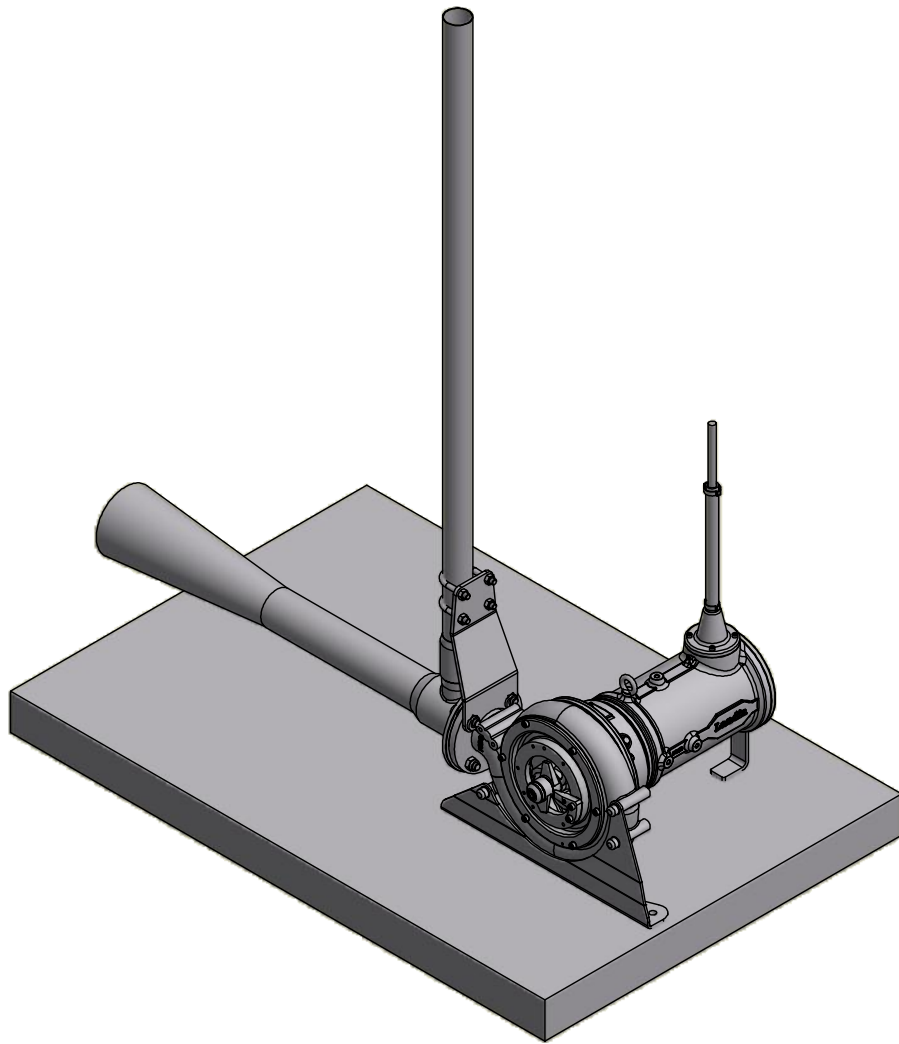
Styret dokument

Landia

DG-I lodret / vertical / verticale
2 ejektorer, 2 ejectors
2 Ejektoren, 2 éjecteurs

Scale: 1 : 20	Sign.: LBO KSK	Date: 11-07-2018
Dwg.no.:		3740575
Revision date: 25-07-2018		

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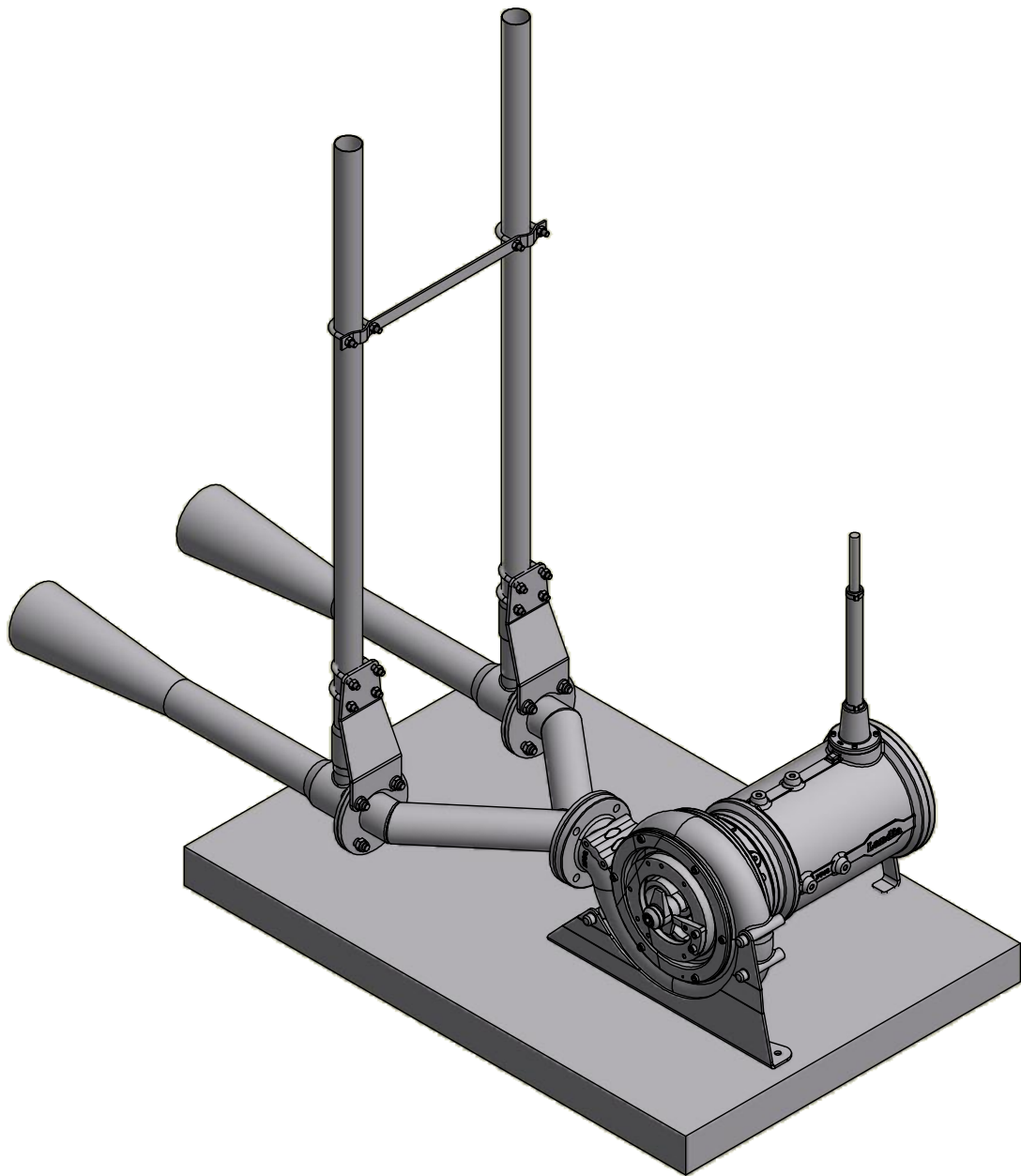
Styret dokument

Landia

DG-I vandret, horizontal
Horizontal, horizontale
1 ejektor, ejector, Ejector, éjecteur

Scale: 1 : 15	Sign.: LBO KSK	Date: 04-10-2017
Dwg.no.:		3740576
Revision date: 12-07-2018		

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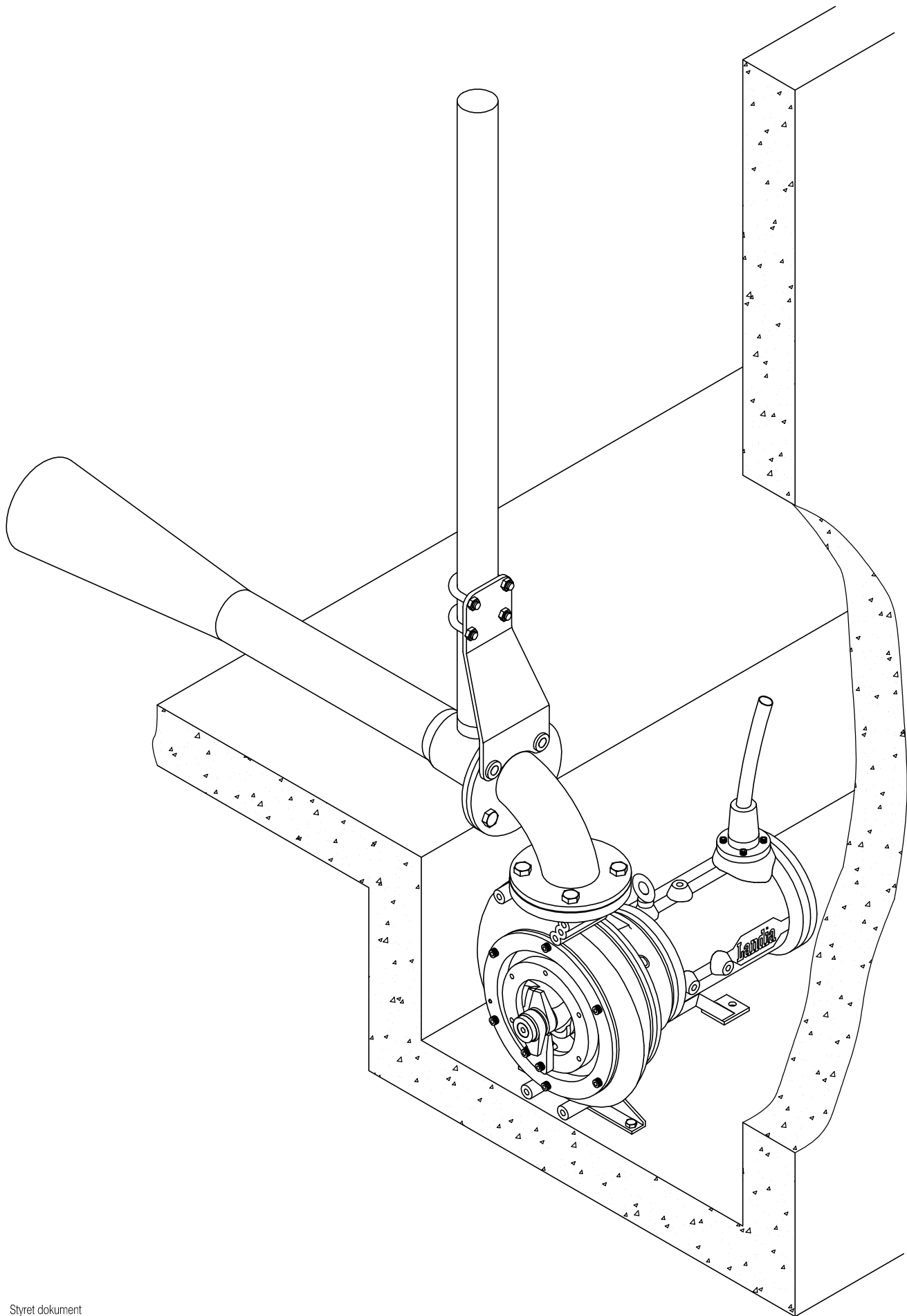


Styret dokument

Landia

DG-I vandret, horizontal
Horizontal, horizontale
2 ejektorer, ejectors, Ejektorer, éjecteurs

Scale:	Sign.:	Date:
1 : 15	LBO KSK	04-10-2017
Dwg.no.:		3740577
Revision date: 12-07-2018		



Styret dokument

Landia

DG-I vandret
med 1 ejektor
Principtegning

Scale:
1:10

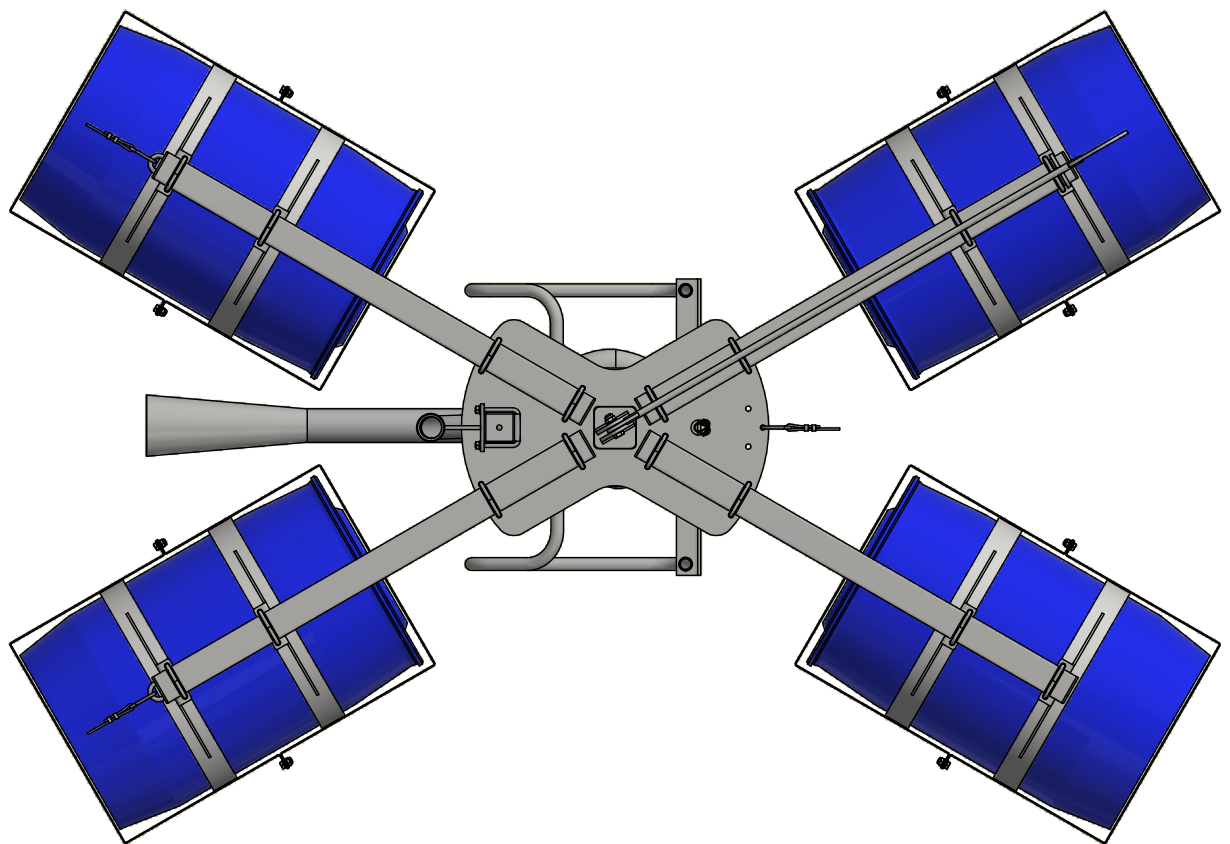
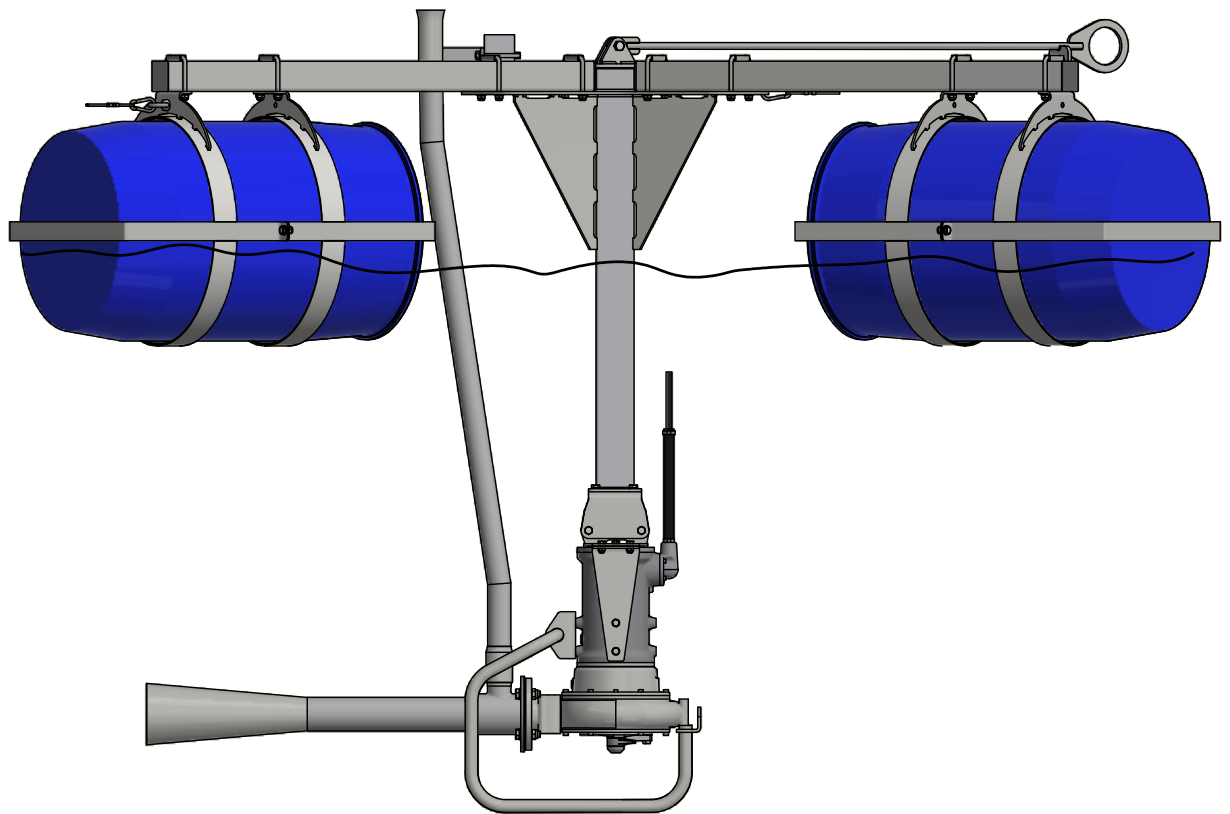
Sign.:
MLP | TM

Date:
03.04.1998

Dwg.no.:

3740581

Revision date: 20.09.1999



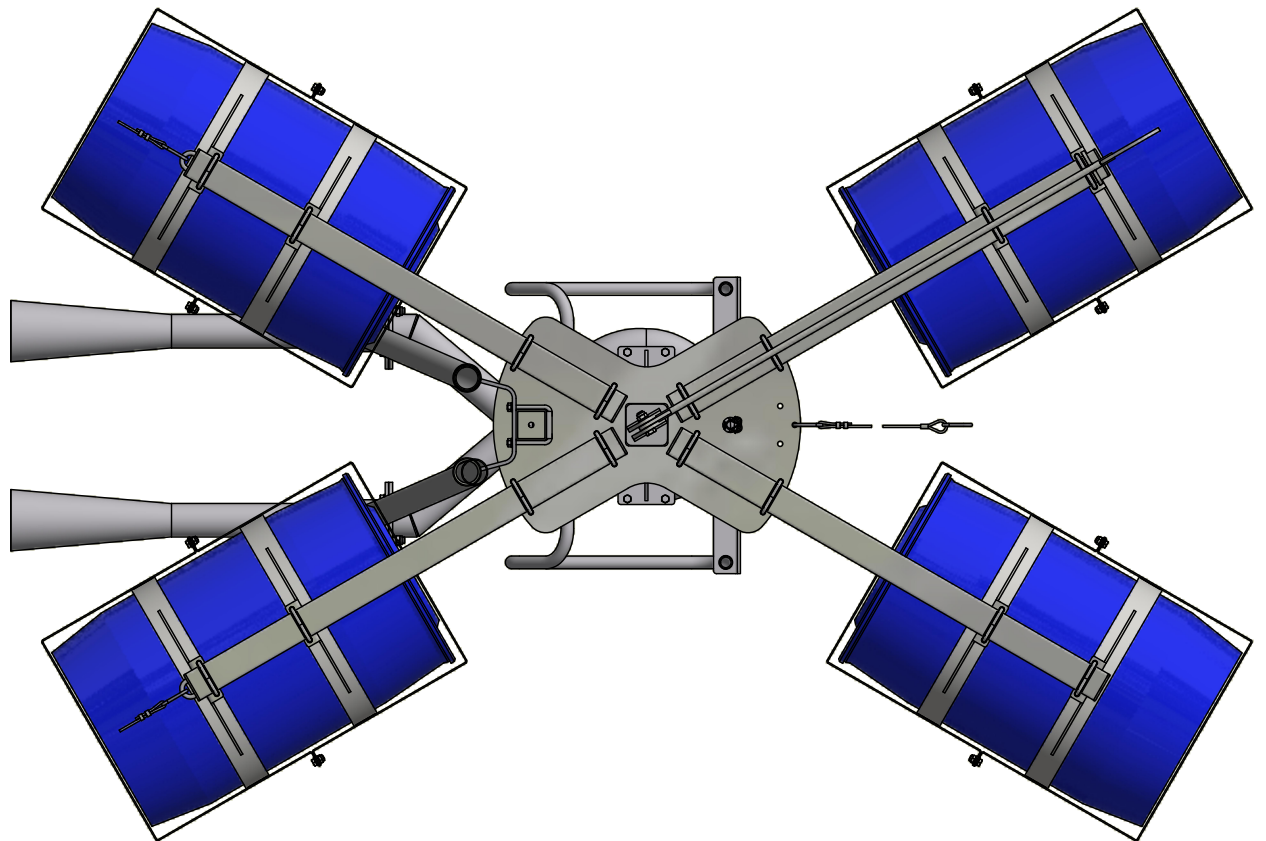
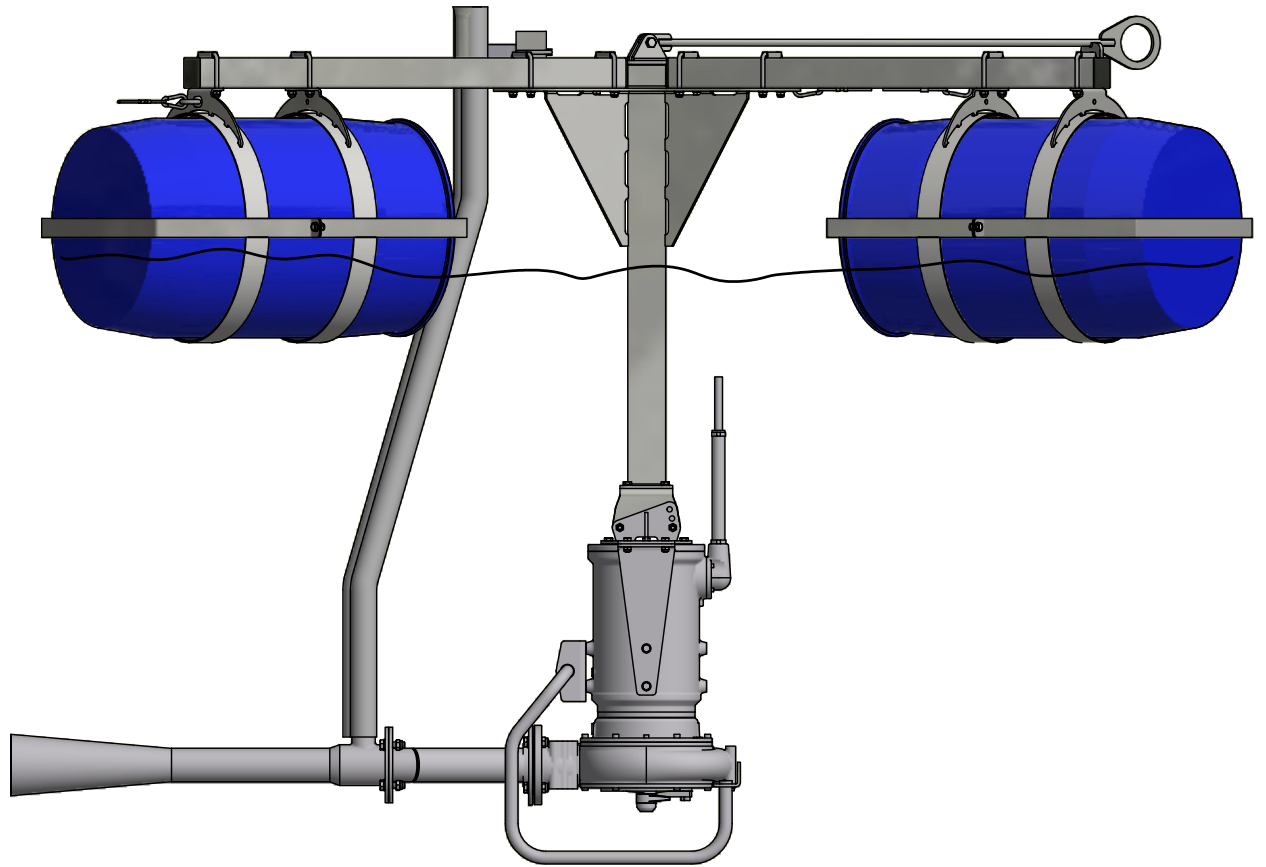
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Landia

DG-I, 1 ejektor, ejector
 Ejektor, éjecteur
 Ponton, pontoon, flotteur

Scale: 1 : 20	Sign.: LBO KSK	Date: 09-10-2017
Dwg.no.:		3740774
Revision date: 01-07-2021		



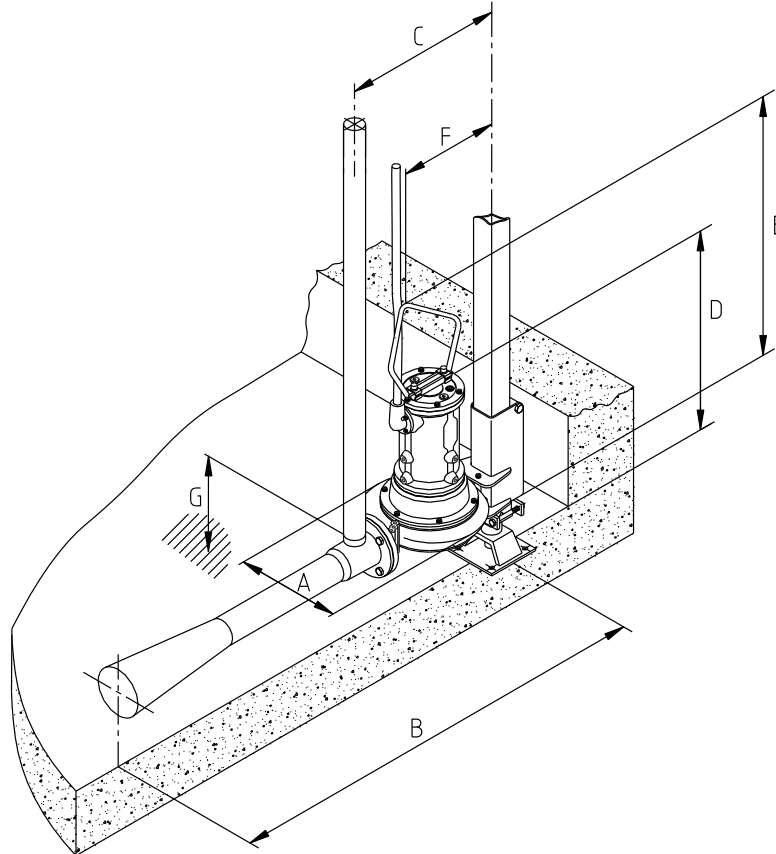
Styret dokument

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Landia[®]

DG-I, 2 ejektorer, ejectors
 Ejektorer, éjecteurs
 Ponton, pontoon, flotteur

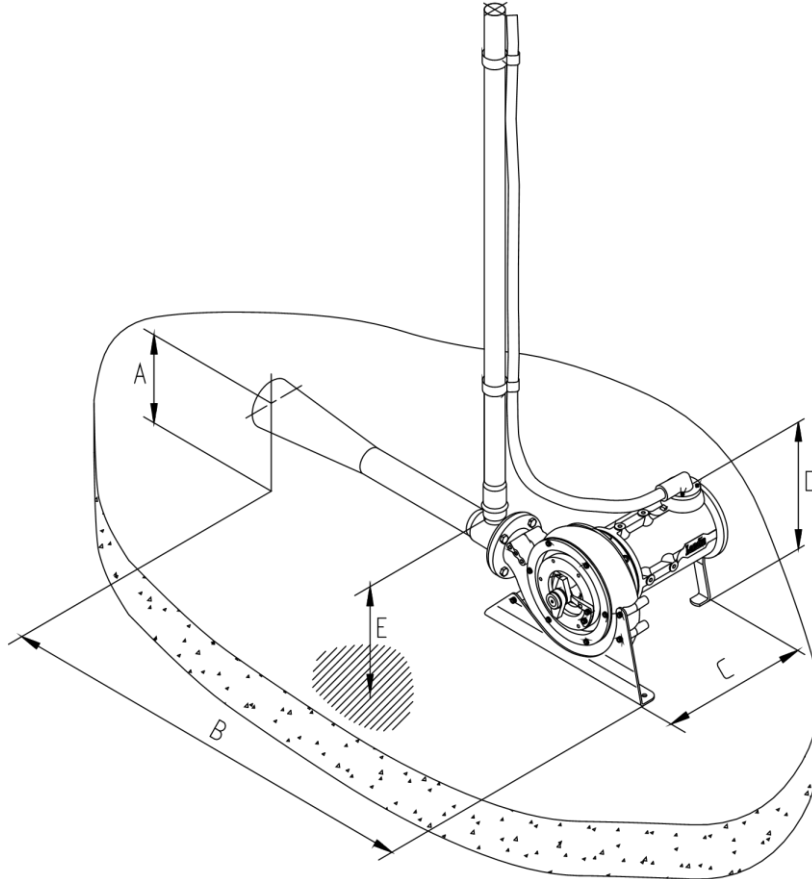
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Dwg.no.:		3740778
Revision date: 01-07-2021		

DG-I
Lodret med 1 ejektor - Vertically with 1 ejector
Vertikal mit 1 Ejektor - Verticalement avec 1 éjecteur


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]		
2314813	3.0	80	100	369	1499	560	655	851	300	310		
2314814	4.0								295			
2314815	5.5								290			
2314917	7.5	105	132	457	1600	630	762	957	355	320		
2314911	11.0								350			
2314915	15.0		160						807		1002	345
2314918	18.5											

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
2346814	4.0	80	112	369	1499	560	690	885	290	310
2346917	7.5	105	132	457	1600	630	762	957	355	320
2346911	11.0		160							

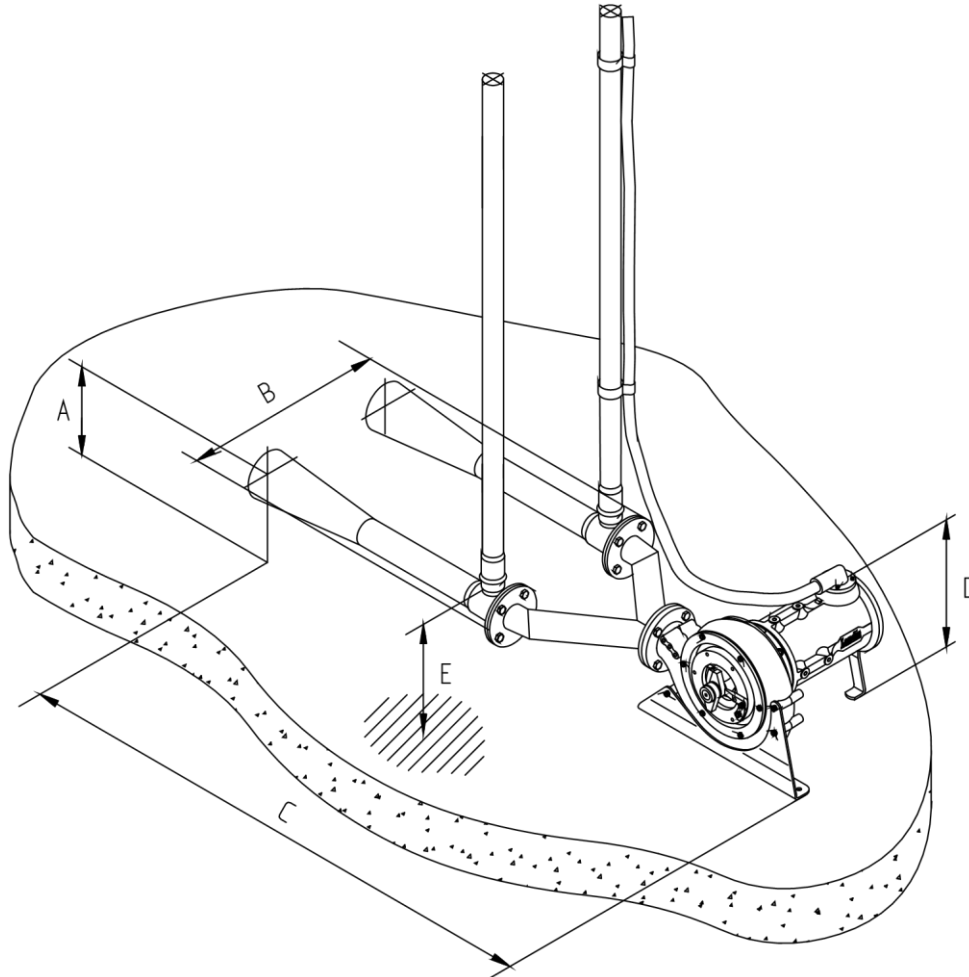
Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques

DG-I
Vandret med 1 ejektor - Horizontally with 1 ejector
Horizontal mit 1 Ejektor - Horizontalement avec 1 éjecteur


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
2314813	3.0	80	100	221	1523	507	332	300
2314814	4.0					542	339	
2314815	5.5					610	411	
2314917	7.5	105	132	272	1614	610	411	354
2314911	11.0		655			438		
2314915	15.0		160			655	438	
2314918	18.5		160			655	438	

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
2346814	4.0	80	112	221	1523	542	339	300
2346917	7.5	105	132	272	1614	610	411	354
2346911	11.0		160			655	438	

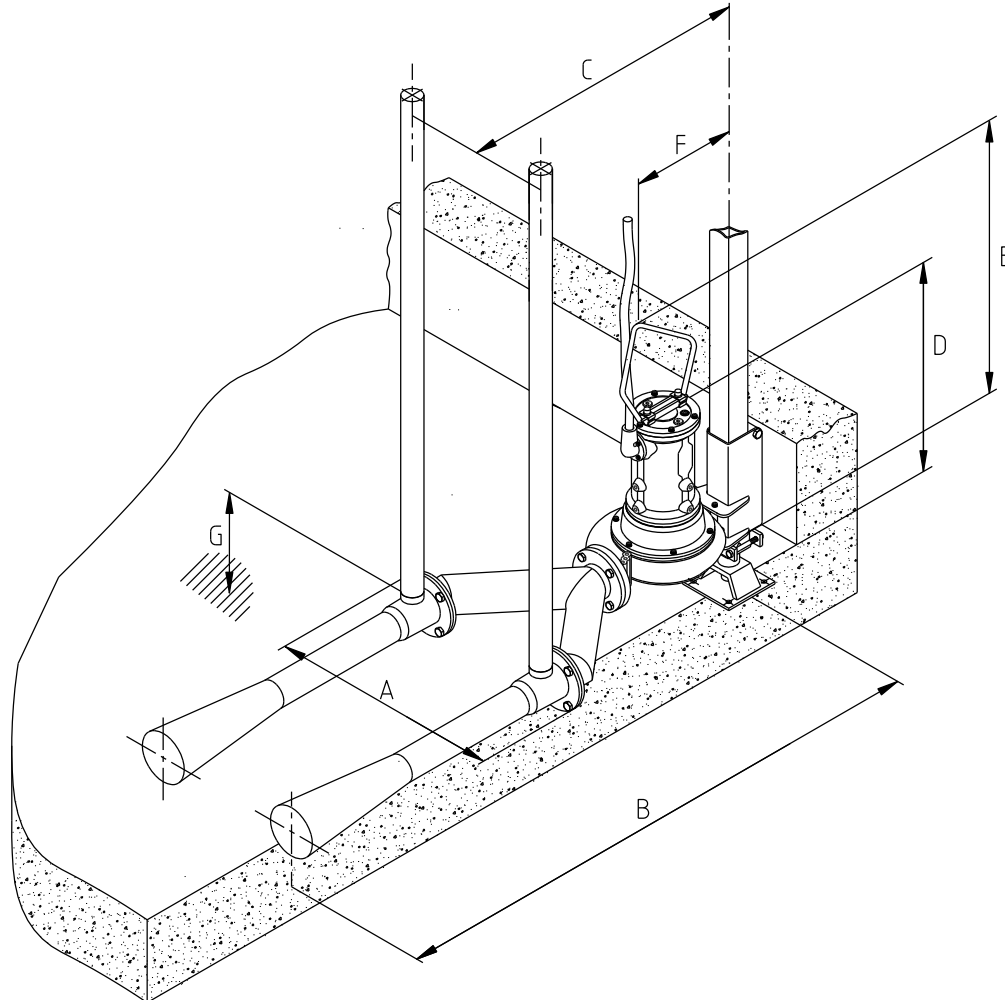
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 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques

DG-I
Vandret med 2 ejektorer - Horizontally with 2 ejectors
Horizontal mit 2 Ejektoren - Horizontalement avec 2 éjecteurs


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
2314917	7.5	105	132	272	700	2014	411	354
2314911	11.0							
2314915	15.0		160				438	
2314918	18.5							

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
2346917	7.5	105	132	272	700	2014	411	354
2346911	11.0		160				438	

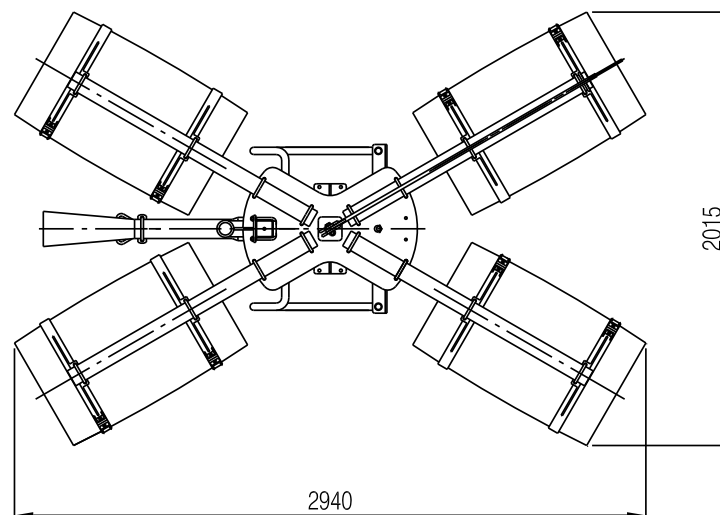
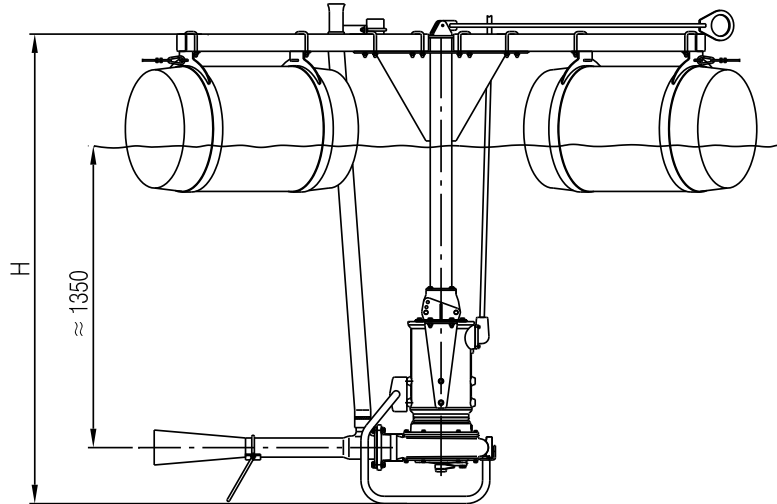
Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques

DG-I
Lodret med 2 ejektorer - Vertically with 2 ejectors
Vertikal mit 2 Ejektoren - Verticalement avec 2 éjecteurs


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
2314917	7.5	105	132	700	2000	990	762	957	430	320
2314911	11.0								420	
2314915	15.0		160				807	1002	410	
2314918	18.5									

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
2346917	7.5	105	132	700	2000	990	762	957	430	320
2346911	15.0		160				807	1002	410	

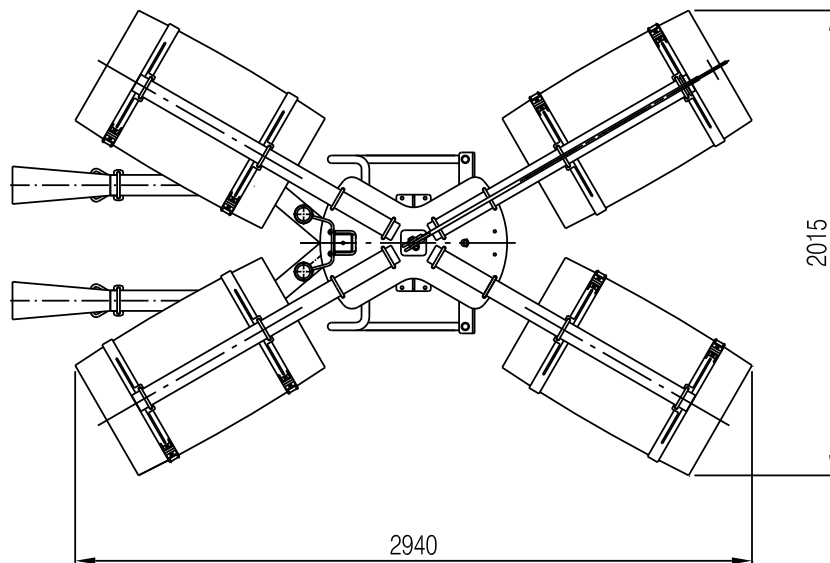
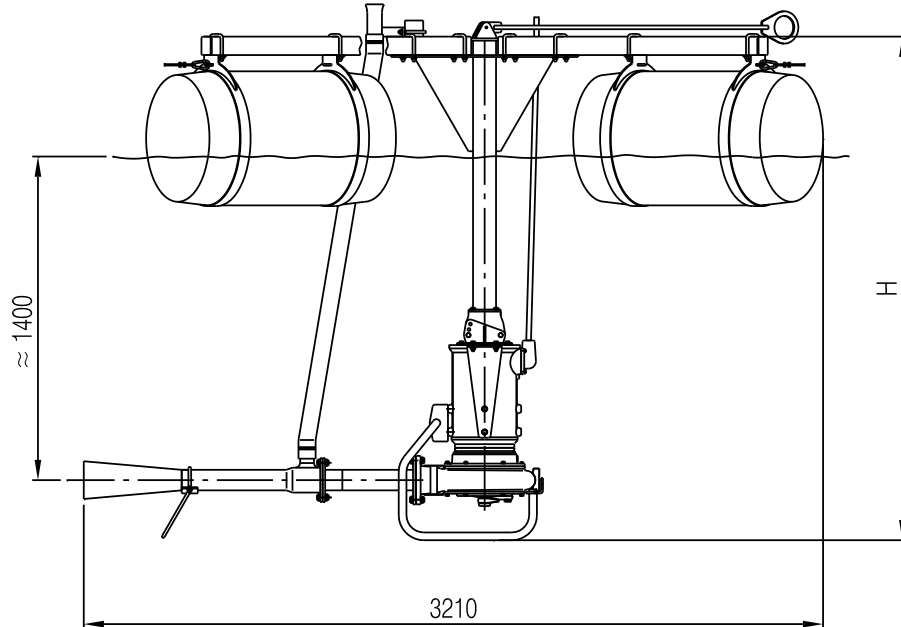
Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.
 Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques

DG-I
Lodret med 1 ejektor og flydeponton - Vertically with 1 ejector and pontoon
Vertikal mit 1 Ejektor und Ponton - Verticalement avec 1 éjecteur et flotteur


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	H [mm]
2314813	3.0	80	100	2070
2314814	4.0			
2314815	5.5		112	2095
2314917	7.5	105	132	2180
2314911	11.0			
2314915	15.0		160	2205
2314918	18.5			

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	H [mm]
2346814	4.0	80	112	2095
2346917	7.5	105	132	2180
2346911	11.0		160	2205

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

DG-I
Lodret med 2 ejektorer og flydeponton - Vertically with 2 ejectors and pontoon
Vertikal mit 2 Ejektorn und Ponton - Verticalement avec 2 éjecteurs et flotteur


DG-I IE1	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	H [mm]
2314917	7.5	105	132	2180
2314911	11.0			
2314915	15.0		160	2205
2314918	18.5			

DG-I IE3	Effekt Power Leist. Puiss. [kW]	Type Typ	Serie Series Baureihe Série	H [mm]
2346917	7.5	105	132	2180
2346911	11.0		160	2205

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

DG-I

The DG-I pump is a highly efficient chopper pump that is designed to pump heavily contaminated liquids as well as liquids with a high dry matter content.

All DG-I pumps are equipped with a knife system at the inlet to the pump, which ensures problem-free operation under conditions where many other pumps have problems with clogging.

APPLICATION EXAMPLES

- Sewage treatment plants
- Pump stations
- Biogas plants
- Food industry
- Pumping abrasive liquids or liquids with high viscosity



PUMP RPM

- 1,500 rpm
- 3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	Cast iron EN-GJL-250
Pump housing	Cast iron EN-GJL-250
Pump impeller	Cast iron EN-GJL-250 Cast iron EN-GJS-700-2 (optional) W1.4408/AISI316 (optional) not available for DG-I 105
Pump Shaft	W1.6582/AISI4340
Bolts	A4
Sealing system	Mechanical shaft seal: silicon carbide/silicon carbide
Knife system	Hardened steel W1.0038/S235JR W1.4404/AISI316 (optional) not available for DG-I 105
Extended knife system	Hardened steel W1.0038/S235JR (optional) W1.4404/AISI316 (optional) not available for DG-I 105
Oil type	15W-40 Vario HDX (with moisture detection)

SERVICE AND MAINTAINANCE

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

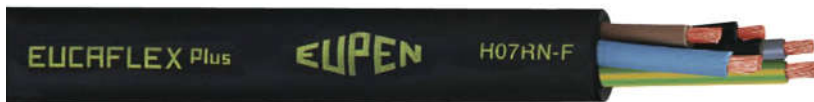
SURFACE TREATMENT

Machinery enamel: RAL 9005 (Jet Black)	Jet Black
2-component coating: RAL 7005 (Mouse Grey) (optional)	Mouse Grey

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

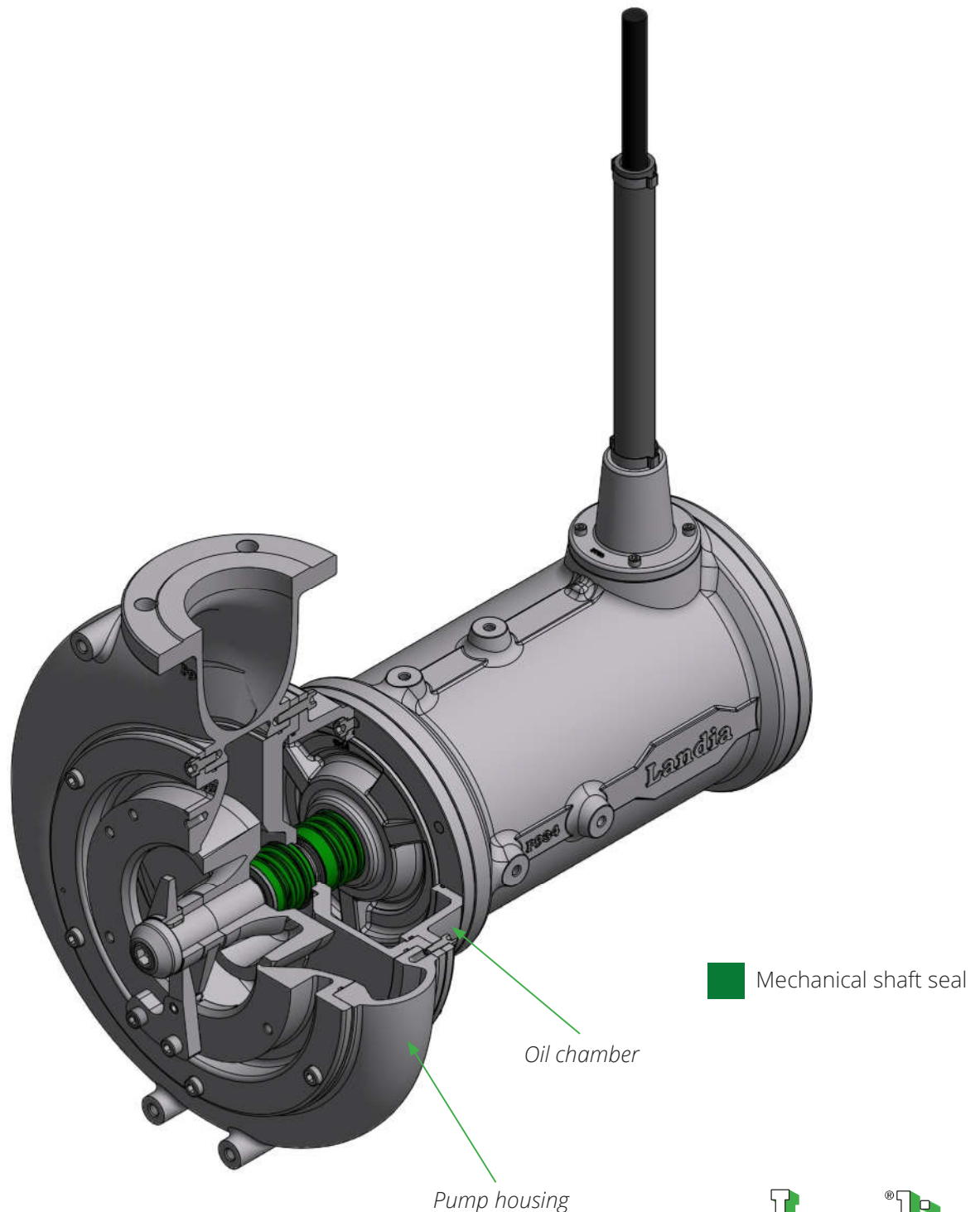
Bimetal thermal sensors 120 °C

Moisture detection system (optional)

DESIGN

The open pump impeller design means that the chopper pump can pump liquids with a high viscosity. For liquids containing abrasive particles, such as sand, Landia has developed special materials so that the pump's life span is extended significantly in comparison to a standard pump. A large part of the DG-I programme can be supplied in acid-proof steel for aggressive liquids with a low or high pH.

All chopper pumps are equipped with a knife system at the inlet to the pump, which ensures problem-free operation under conditions where many other pumps have problems with clogging.



ELECTRICAL DATA

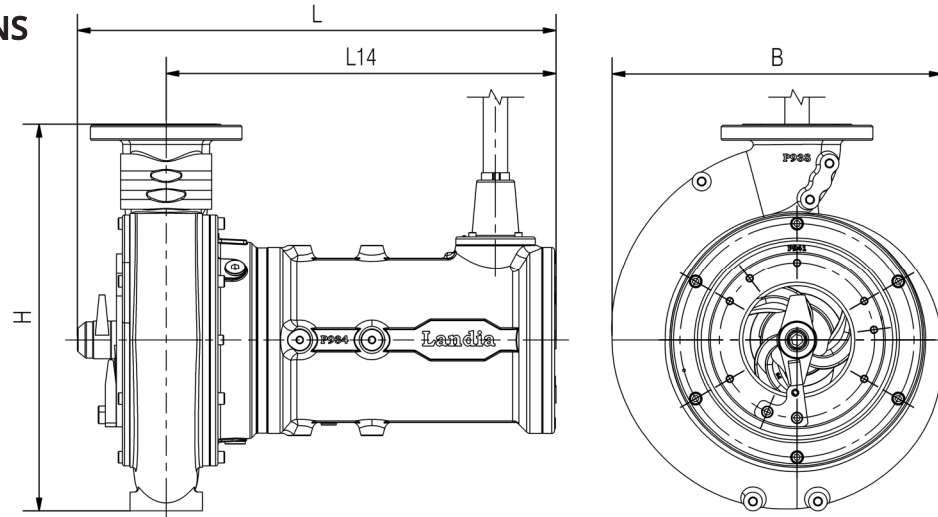
Motor type	3-phase AC motor
Nominal voltage	400 V
Minimum voltage allowed	360 V
Nominal frequency	50 Hz
Applicable for VFD operation	Yes
Ingress protection rating	IP 68
Insulation class	F
ATEX classification	II 2 G Ex db h IIB T4 Gb (Option, only available for specific models)

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]		[%]
Medium pressure								
DG-I 50 0.55 kW-1,500 rpm	2314196	0.55	1,400	1.6	Y	7	0.69	71.9
DG-I 50 0.75 kW-1,500 rpm	2314197	0.75	1,400	2.1	Y	10	0.70	73.6
DG-I 65 1.1 kW-1,500 rpm	2314718	1.1	1,410	2.6	Y	14	0.79	76.7
DG-I 65 1.5 kW-1,500 rpm	2314711	1.5	1,400	3.4	Y	19	0.81	78.6
DG-I 65 2.2 kW-1,500 rpm	2314712	2.2	1,410	5.0	Y	30	0.80	80.2
DG-I 80 3.0 kW-1,500 rpm	2314813	3.0	1,430	6.7	Δ	43	0.79	82.4
DG-I 80 4.0 kW-1,500 rpm	2314814	4.0	1,435	8.8	Δ	61	0.78	84.1
DG-I 80 5.5 kW-1,500 rpm	2314815	5.5	1,440	11.0	Δ	68	0.87	84.6
DG-I 105 7.5 kW-1,500 rpm	2314917	7.5	1,455	15.0	Δ	90	0.83	86.2
DG-I 105 11.0 kW-1,500 rpm	2314911	11.0	1,455	21.5	Δ	146	0.84	87.9
DG-I 105 15.0 kW-1,500 rpm	2314915	15.0	1,465	29.0	Δ	212	0.84	88.7
DG-I 105 18.5 kW-1,500 rpm	2314918	18.5	1,460	35.0	Δ	238	0.85	89.3
DG-I 150 18.5 kW-1,500 rpm	2314618	18.5	1,460	35.0	Δ	238	0.85	89.3
DG-I 150 22.0 kW-1,500 rpm	2314622	22.0	1,465	43.0	Δ	280	0.82	90.1
DG-I 150 30.0 kW-1,500 rpm	2314630	30.0	1,465	57.0	Δ	399	0.84	90.7
High pressure								
DG-I 50 2.2 kW-3,000 rpm	2312102	2.2	2,850	4.6	Y	34	0.85	82.1
DG-I 50 3.0 kW-3,000 rpm	2312103	3.0	2,865	6.2	Δ	42	0.85	82.8
DG-I 50 4.0 kW-3,000 rpm	2312104	4.0	2,900	8.4	Δ	59	0.81	84.9
DG-I 50 5.5 kW-3,000 rpm	2312105	5.5	2,860	11.0	Δ	61	0.86	84.7
DG-I 65 7.5 kW-3,000 rpm	2312717	7.5	2,890	15.0	Δ	99	0.85	86.1
DG-I 65 11.0 kW-3,000 rpm	2312711	11.0	2,905	20.5	Δ	143	0.88	87.6
DG-I 65 15.0 kW-3,000 rpm	2312715	15.0	2,940	27.5	Δ	195	0.89	88.7
DG-I 65 18.5 kW-3,000 rpm	2312718	18.5	2,925	33.0	Δ	238	0.90	89.9
DG-I 80 15.0 kW-3,000 rpm	2312815	15.0	2,940	27.5	Δ	195	0.89	88.7
DG-I 80 18.5 kW-3,000 rpm	2312818	18.5	2,925	33.0	Δ	238	0.90	89.9
DG-I 80 22.0 kW-3,000 rpm	2312822	22.0	2,935	39.0	Δ	265	0.90	90.5
DG-I 80 30.0 kW-3,000 rpm	2312830	30.0	2,940	52.5	Δ	383	0.91	90.6

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

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OVERALL DIMENSIONS

Model	Item number	B [mm]	H [mm]	L [mm]	L14 [mm]	Weight [kg]
Medium pressure						
DG-I 50 0.55 kW-1,500 rpm	2314196	250	290	360	290	25
DG-I 50 0.75 kW-1,500 rpm	2314197	250	290	360	290	25
DG-I 65 1.1 kW-1,500 rpm	2314718	320	371	445	361	45
DG-I 65 1.5 kW-1,500 rpm	2314711	320	371	445	361	50
DG-I 65 2.2 kW-1,500 rpm	2314712	320	371	450	366	55
DG-I 80 3.0 kW-1,500 rpm	2314813	370	432	550	445	80
DG-I 80 4.0 kW-1,500 rpm	2314814	370	432	550	445	85
DG-I 80 5.5 kW-1,500 rpm	2314815	370	432	580	480	100
DG-I 105 7.5 kW-1,500 rpm	2314917	460	534	665	540	150
DG-I 105 11.0 kW-1,500 rpm	2314911	460	534	665	540	160
DG-I 105 15.0 kW-1,500 rpm	2314915	460	534	710	585	200
DG-I 105 18.5 kW-1,500 rpm	2314918	460	534	710	585	210
DG-I 150 18.5 kW-1,500 rpm	2314618	580	736	715.5	585.5	265
DG-I 150 22.0 kW-1,500 rpm	2314622	580	736	845	715	325
DG-I 150 30.0 kW-1,500 rpm	2314630	580	736	845	715	350
High pressure						
DG-I 50 2.2 kW-3,000 rpm	2312102	250	290	435	365	40
DG-I 50 3.0 kW-3,000 rpm	2312103	250	290	440	370	43
DG-I 50 4.0 kW-3,000 rpm	2312104	250	290	505	430	55
DG-I 50 5.5 kW-3,000 rpm	2312105	250	290	505	430	60
DG-I 65 7.5 kW-3,000 rpm	2312717	320	371	555	470	80
DG-I 65 11.0 kW-3,000 rpm	2312711	320	371	620	535	105
DG-I 65 15.0 kW-3,000 rpm	2312715	320	371	660	580	140
DG-I 65 18.5 kW-3,000 rpm	2312718	320	371	660	580	155
DG-I 80 15.0 kW-3,000 rpm	2312815	370	432	689	587	175
DG-I 80 18.5 kW-3,000 rpm	2312818	370	432	689	587	185
DG-I 80 22.0 kW-3,000 rpm	2312822	390	432	805	703	254
DG-I 80 30.0 kW-3,000 rpm	2312830	390	432	805	703	276

We reserve the right to make technical changes.

DGR-I

The DGR-I pump is a highly efficient chopper pump made entirely of acid-proof steel. It is ideal for aggressive liquids with low or high pH values, as well as liquids with a high dry matter content.

All DGR-I pumps are equipped with a knife system at the inlet to the pump, which ensures problem-free operation under conditions where many other pumps have problems with clogging.



APPLICATION EXAMPLES

- ▶ Chemical industry
- ▶ Paper industry
- ▶ Food industry
- ▶ Biogas plants
- ▶ Pumping abrasive or aggressive liquids

PUMP RPM

1,500 rpm

3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	W1.4404/AISI316
Pump housing	W1.4408/AISI316
Pump impeller	W1.4408/AISI316
Pump shaft	W1.4404/AISI316
Bolts	A4
Sealing system	Mechanical shaft seals: silicon carbide/silicon carbide
Knife system	W1.4404/AISI316
Extended knife system	W1.4404/AISI316 (optional)
Oil type	15W-40 Vario HDX (with moisture detection)

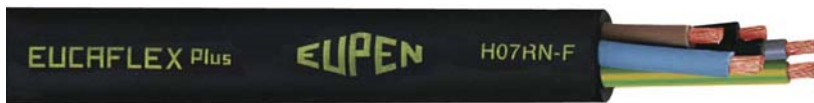
SERVICE AND MAINTENANCE

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

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

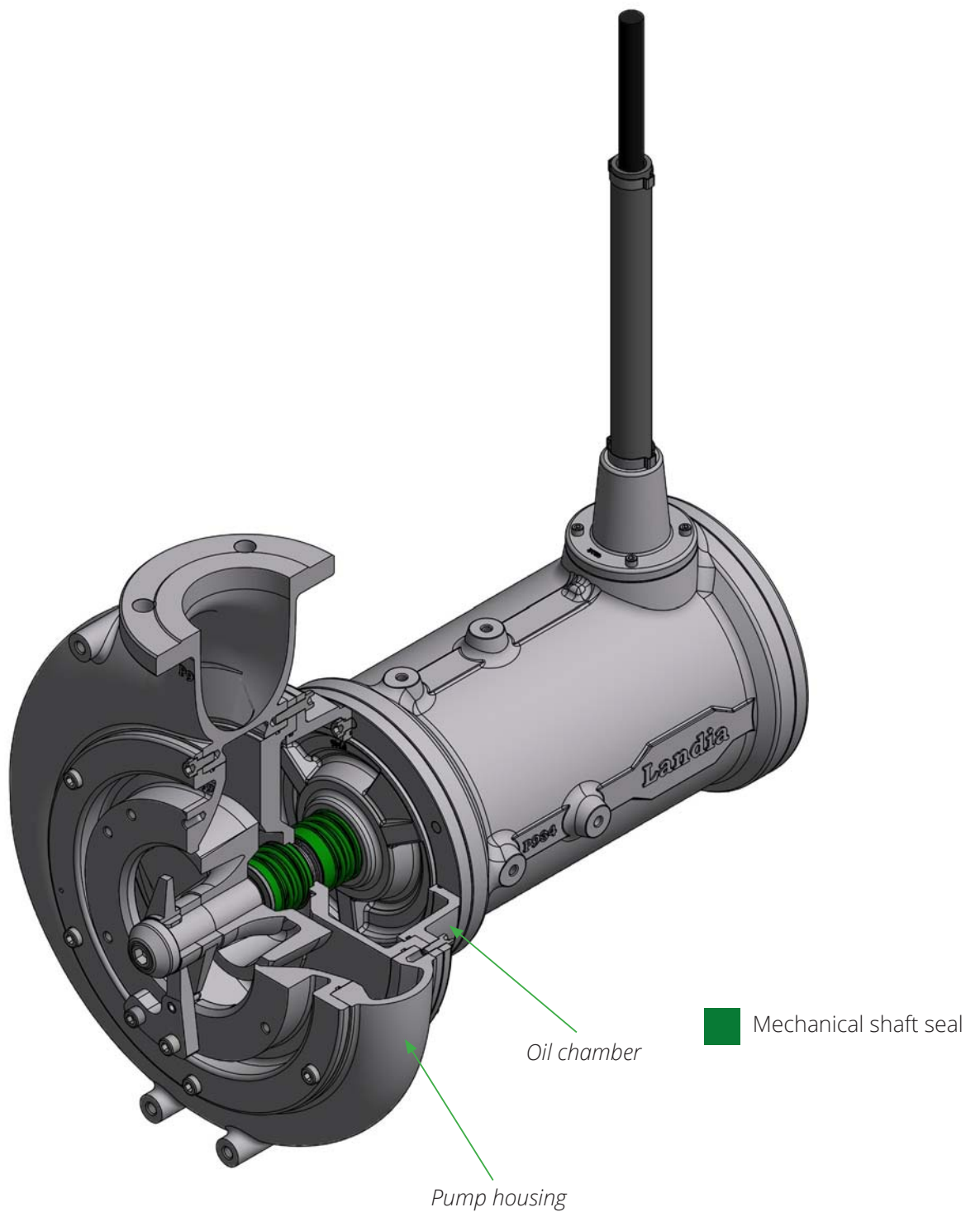
Bimetal thermal sensors 120 °C

Moisture detection system (optional)

DESIGN

The chopper pump's design, with an open pump impeller, means that the pump can pump liquids with a high viscosity. For liquids containing abrasive particles, such as sand, Landia has developed special materials so that the pump's lifespan is extended significantly in comparison to a standard pump.

All chopper pumps are equipped with a knife system at the inlet to the pump, which ensures problem-free operation under conditions where many other pumps have problems with clogging.



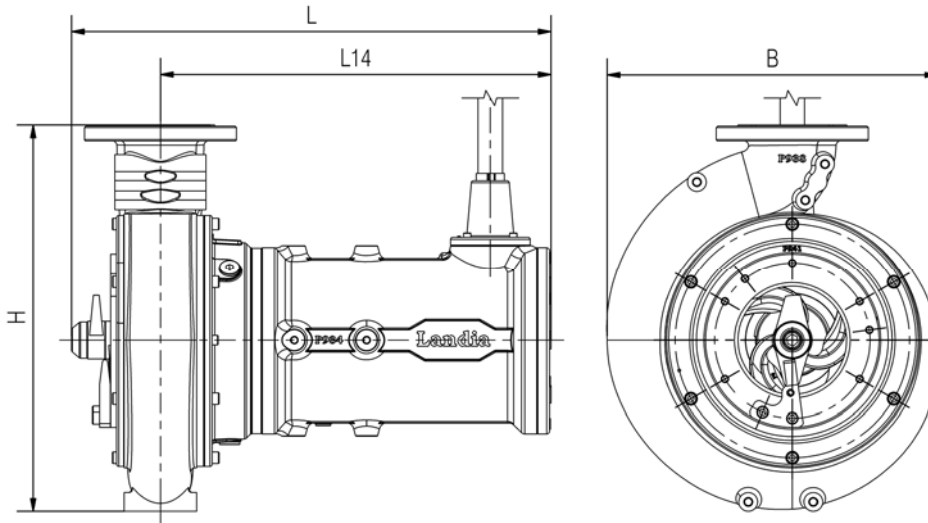
ELECTRICAL DATA

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
ATEX classification	Not possible

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]		[%]
Medium pressure								
DGR-I 65 2.2/1.1 kW-1,500 rpm IE2	2334212	2.2	1,455	4.8	Y	45	0.77	84.3
DGR-I 80 3.0 kW-1,500 rpm	2314213	3.0	1,430	6.7	Δ	43	0.79	82.4
DGR-I 80 4.0 kW-1,500 rpm	2314214	4.0	1,435	8.8	Δ	61	0.78	84.1
DGR-I 105 7.5 kW-1,500 rpm	2314217	7.5	1,455	15.0	Δ	90	0.83	86.2
DGR-I 105 11.0 kW-1,500 rpm	2314211	11	1,455	21.5	Δ	146	0.84	87.9
DGR-I 105 15.0 kW-1,500 rpm	2314215	15.0	1,465	29.0	Δ	212	0.84	88.7
DGR-I 105 18.5 kW-1,500 rpm	2314218	18.5	1,460	35.0	Δ	238	0.85	89.3
DGR-I 105 22.0 kW-1,500 rpm	2314222	22.0	1,465	43.0	Δ	280	0.82	90.1
DGR-I 105 30.0 kW-1,500 rpm	2314230	30.0	1,465	57.0	Δ	399	0.84	90.7
High pressure								
DGR-I 65 11.0 kW-3,000 rpm	2312211	11.0	2,905	20.5	Δ	143	0.88	87.6
DGR-I 65 15.0 kW-3,000 rpm	2312215	15.0	2,940	27.5	Δ	195	0.89	88.7
DGR-I 65 18.5 kW-3,000 rpm	2312218	18.5	2,925	33.0	Δ	238	0.90	89.9
DGR-I 80 22.0 kW-3,000 rpm	2312222	22.0	2,935	39.0	Δ	265	0.90	90.5
DGR-I 80 30.0 kW-3,000 rpm	2312230	30.0	2,940	52.5	Δ	383	0.91	90.6

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

OVERALL DIMENSIONS



Model	Item number	B [mm]	H [mm]	L [mm]	L14 [mm]	Weight [kg]
Medium pressure						
DGR-I 65 2.2/1.1 kW-1,500 rpm IE2	2334212	320	371	520	437	80
DGR-I 80 3.0 kW-1,500 rpm	2314213	370	432	550	445	96
DGR-I 80 4.0 kW-1,500 rpm	2314214	370	432	550	445	100
DGR-I 105 7.5 kW-1,500 rpm	2314217	460	534	665	540	150
DGR-I 105 11.0 kW-1,500 rpm	2314211	460	534	665	540	160
DGR-I 105 15.0 kW-1,500 rpm	2314215	460	534	712	585	200
DGR-I 105 18.5 kW-1,500 rpm	2314218	460	534	710	585	210
DGR-I 105 22.0 kW-1,500 rpm	2314222	460	534	809	687	270
DGR-I 105 30.0 kW-1,500 rpm	2314230	460	534	809	687	295
High pressure						
DGR-I 65 11.0 kW-3,000 rpm	2312211	320	371	620	535	105
DGR-I 65 15.0 kW-3,000 rpm	2312215	320	371	660	580	140
DGR-I 65 18.5 kW-3,000 rpm	2312218	320	371	660	580	155
DGR-I 80 22.0 kW-3,000 rpm	2312222	390	432	805	703	254
DGR-I 80 30.0 kW-3,000 rpm	2312230	390	432	805	703	276

We reserve the right to make technical changes.

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Introduction

DG-I is a submersible pump.

It can be expanded with the help of different equipment, so it can solve many different pumping needs. The pumping takes place by means of a submersible electric motor; a pump casing with an impeller is installed on the motor. The oil filled oil chamber between motor and impeller provides cooling and lubrication of the mechanical seals. The sealing system consists of two mechanical seals. The exterior seal separates the medium from the oil chamber, the interior seal separates the oil from the motor casing.

The following pages describe the connection and maintenance of submersible pump type DG-I.

Application

The submersible pump is to be applied for pumping of liquids with a high or a low dry matter content, like e.g. thick manure and highly polluted wastewater. The submersible pump is only to be applied fully submerged in tanks at e.g. effluent treatment plants, in industry and in agriculture.

If the pump is to be applied for other purposes, contact Landia A/S for advice.

Warning

Please note the following points:

- 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 pump, as well as ensure that the equipment in the tank is fixed safely.
- Prior to the first start of the pump, the pump shaft must be rotated manually. This also applies if the pump has not been in operation for a longer period.
- The electrical cable is always to be tightened by means of the chain to prevent the cable from getting into contact with the knife system of the pump. If the pump is not supplied with a chain, the cable is to be protected against damage in another way, e.g. by means of a cable mesh.
- It is always to be ensured that the pump is fully below liquid level during operation.
- Prior to hoisting the pump at service/repair it is always to be ensured that the electrical connection of the submersible pump is switched off or locked. Prior to service/repair the submersible pump should be cleaned thoroughly.
- When the pump is hoisted or lowered, its cable and chain are always to be placed outside the work area.
- For service/repair of pumps installed in well/tank with explosion danger/toxic gases we refer to the national safety directions as far as safety is concerned, e.g. concerning the toxic hydrogen sulfide.

Service/repair

To maintain a high operating safety and a long service life without unnecessary and expensive repair it is important from the beginning to execute regular and preventive service. Maintenance should be executed according to the intervals stated in the manual. Always follow the instruction carefully and only apply the parts described by Landia A/S in the spare parts list.

Please note

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

For major repairs at a special workshop 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

Landia A/S is represented by local distributors worldwide, please call for further information.

Rating plate

		DK-6940	CE	UK
Lem St.				
Type		3~mot.nr.		
	V		A	
	Hz		kW	Ins.cl.
Cos φ	0,		RPM	kg
Eff. cl.		Year		
	IP 68		Duty type S1	

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.

Please note

It is important that the electrical cable is tightened to prevent the cable from getting into contact with the knife system of the pump. The cable can be ensured against damage by means of a cable mesh or a chain.



Power connection

Every submersible pump is equipped with the abovementioned rating plate. It must be ensured that the other electrical parts correspond to the motor data. For each pump there is an electrical diagram. A protective motor switch must be applied when connecting the pump to the mains.

Only a certified electrician is allowed to connect the unit.

Operation

Submersible pumps have thermal sensors as standard equipment.

Often the pump is exposed to extremely difficult operation conditions. Therefore, it is important to connect the thermal control. Burning of the motor due to overheating can thus be avoided. If the safety function has been activated the pump must not be re-started until the cause of the disconnection has been found. Among other things the disconnection can be caused by reduced mains voltage, a pump blockage or an overheated motor. The cooling period can be up to 1 hour.

The submersible pump must not operate above liquid level.

Capacity

The capacity of the pump will always depend on the consistency of the medium.

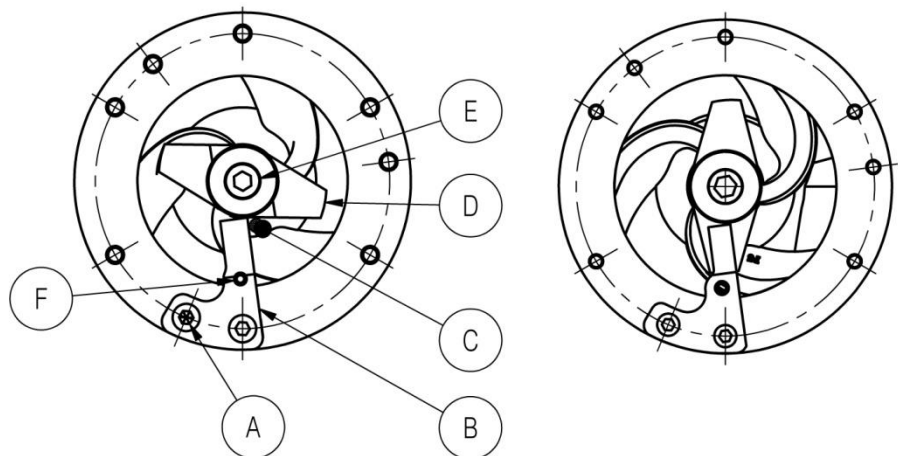
To obtain the highest capacity possible with as low motor power as possible it is important that the diameters of the pump pipes are large enough and that sharp bends are avoided as far as possible. Large pipe dimensions are especially important in connection with long distances.

The sub pumps are equipped with open impellers especially suited for liquids with large particles, e.g. raw waste water, manure and industry applications. Furthermore, the sub pumps are equipped with a knife system placed in the inlet port. This system consists of one fixed and two rotating knives. The knives comminute large impurities in the medium in order to ease the pumping. They are ideal for comminuting e.g. straw, shreds, paper, fish etc.

The capacity of the pump will be impaired if the edge of the guide groove on the front and back plate is worn round or there are deep joints in the guide grooves. You can minimize the wear on the front and back plate by changing the impeller before the edges on the back of the impeller become too round. If the edges of the impeller become too round, it is easier to settle stones and the like. In the clamp between the impeller and the back plate, which then drive with the impeller around, the wear will increase. In case of doubt, contact Landia A/S for advice.

The fixed knife is equipped with a shear bolt which will be destroyed in case a metal object, a stone etc. blocks the knives. In this way damage of the pump can be avoided.

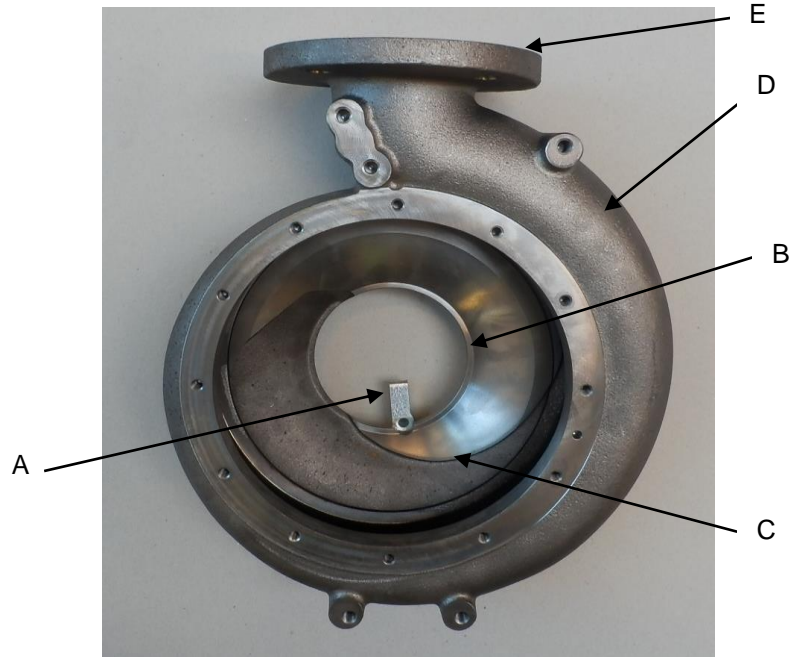
- A. Shear bolt
- B. Fixed knife
- C. Metal object
- D. Rotating knife
- E. Bolt
- F. Tightening pin



Fitting the front plate

- A. Knife with tightening pin
- B. Front plate
- C. Guide trace
- D. Pump casing
- E. Outlet

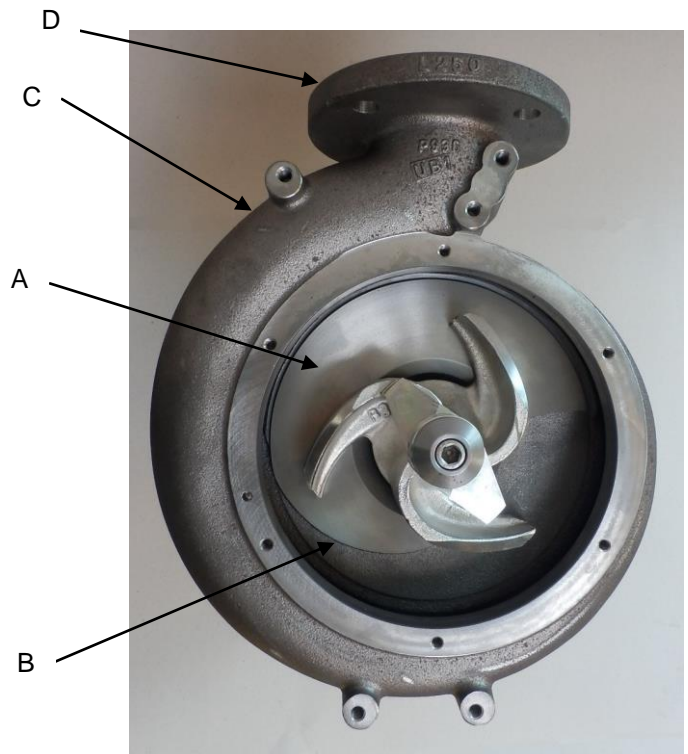
The front plate for the pump casing is designed with a guide trace. The guide trace must always be placed in the same direction as the outlet, regardless of how the outlet of the pump is turned.



Fitting the back plate

- A. Back plate
- B. Guide trace
- C. Pump casing
- D. Outlet

The back plate for the pump casing is designed with a guide trace. The guide trace must always be placed in the same direction as the outlet, regardless of how the outlet of the pump is turned.



Inspection

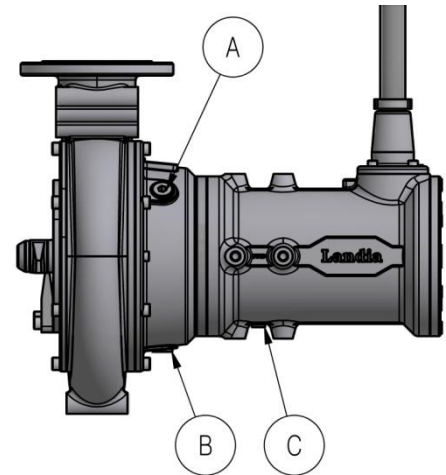
Regular inspection will ensure the submersible pump a long life at low costs. After every 2000 hours of operation, or more often depending on the operation conditions, the knife system, the impeller, the oil quantity and the motor casing of the pump should be checked. The oil must be changed at least once a year.

If the tightening pin of the fixed knife is lacking, the pin and the knife must be exchanged. If the knife system, the front plate or the impellers are worn, they should be replaced.

Oil control

The oil is checked by removing the upper oil plug pos. A on the oil chamber between motor and pump casing. The oil has to be clean. If the oil is dirty, it must be changed.

- A. Upper oil plug
- B. Lower oil plug
- C. Inspection plug



The oil is drained off by removing the plugs pos. A and pos. B. If the oil is dirty, the outer seal must be checked.

Oil is filled at oil plug pos. A.

The motor casing must be checked in the following way: Remove the inspection plug pos. C beneath the motor. A small seepage of oil is normal. The oil quantity is checked by drainage pos. C.

In case of abnormal leak, it is necessary to check the inner seal in the oil chamber. If it is necessary to dry up the motor windings, contact a special workshop.

In general the shear bolt (see spare parts list) must be checked at oil change/service. In case the bolt is damaged, the fixed knife must be loosened and a new shear bolt installed. The new shear bolt must have the same dimension and must be made of the same material as the replaced one. The bolt must be tightened with a tightening torque acc. to the table below. **Do not apply Loctite.**

Pump type	Shear bolts Allen screw CH Quality A4-80	Tightening torque
50	M6x20	7 Nm
65	M8x25	10 Nm
80	M8x25	24 Nm
105 / 150	M10x30	25 Nm

Equipment





The equipment should be checked for wear and corrosion. The winch is to be grease lubricated. Check brake and lock. Retighten screws. If the screws are loose remove them and lubricate with an adhesive substance (e.g. Loctite) prior to reinstallation.

Disassembling/assembling

A major repair should take place at a special workshop.

Below please find some general conditions regarding disassembling/assembling of the pump, type DG-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.

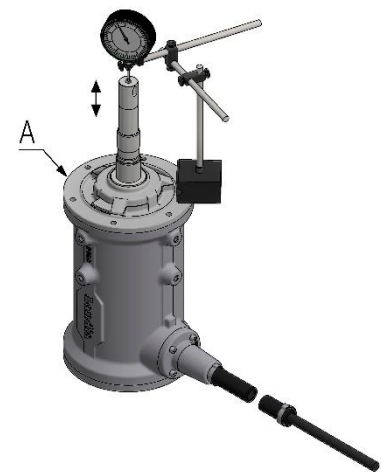
When disassembling the unit, handle the mechanical seals with care as they are not shock resistant. Prior to reinstallation, all sealing surfaces must be cleaned; all O-rings must be checked and changed, if necessary. Adhesive substance (e.g. Loctite) must be applied on all bolt joints. All bolts are tightened with a tightening torque acc. to the table below.

Bolt sizes	Quality 10.9 – 12.9 Steel  	Quality A4-80 Stainless Steel  
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

After the bearing flange has been installed, the axial space must be checked acc. to the table below.

Type	Rpm	Pump casing	Motor casing	Acceptable margin
DG-I DGER-I DG-GI	1500	50	ms71	0.25 ± 0.05 mm
		65	ms80-90	0.50 ± 0.05 mm
		80	ms100-112	0.50 ± 0.05 mm
		105	ms132-160	0.80 ± 0.05 mm
		150	ms160	0.80 ± 0.05 mm
		150	ms180	1.30 ± 0.05 mm
	3000	50	ms80-100	0.50 ± 0.05 mm
		65	ms112-160	0.80 ± 0.05 mm
		80	ms160	0.80 ± 0.05 mm
		80	ms180	1.30 ± 0.05 mm
DGR-I	1500	80	ms100	0.90 ± 0.05 mm
		105	ms132-160	1.20 ± 0.05 mm
		105	ms180	1.80 ± 0.05 mm
		150	ms180	1.80 ± 0.05 mm
	3000	65	ms132-160	1.20 ± 0.05 mm
		80	ms180	1.80 ± 0.05 mm

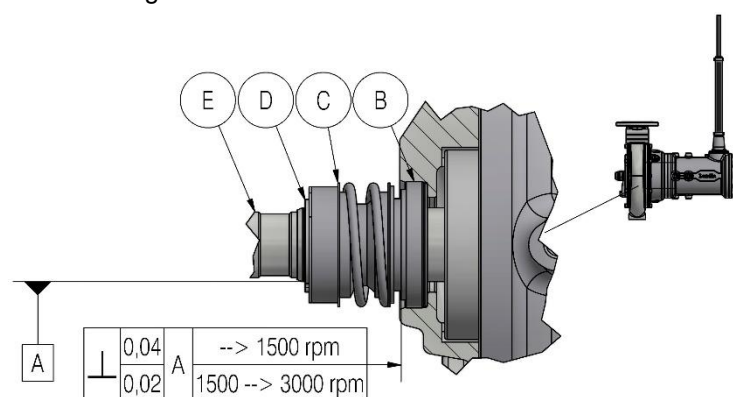
A. Bearing flange



Installation of mechanical shaft seals

When installing 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 has been installed and adjusted with a dial gauge, clean it with a degreasing agent.

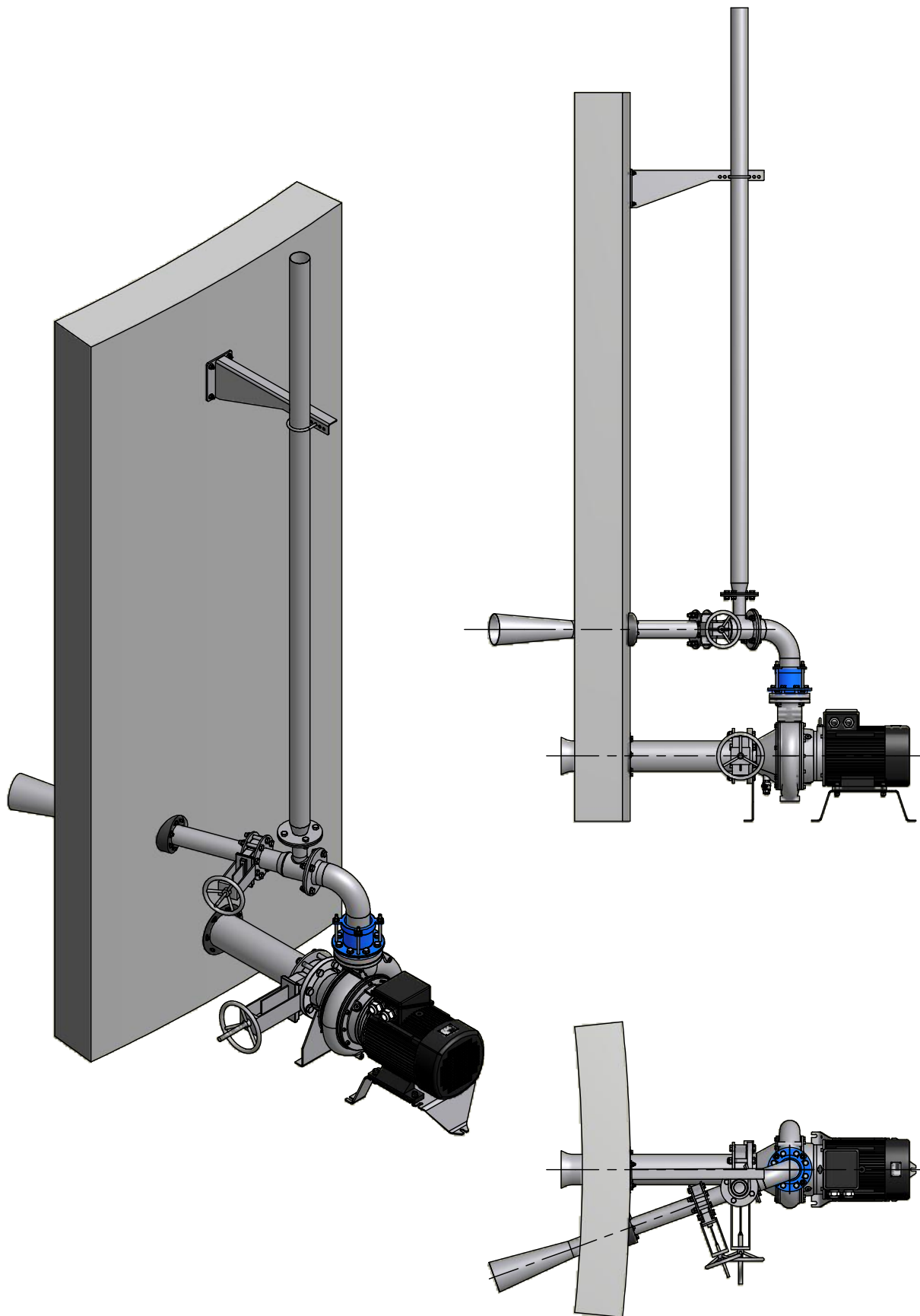
Slide/run the rotating sealing part (pos. C) over the shaft. To ease the installation put soap water on the interior side of the rubber bellows as well as on the shaft. Do not apply silicone, PTFE lubricants or oil as they will prevent the rubber bellows from sticking to the shaft. Installation arbor 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. Check the seal by turning the motor shaft.

Test the pump 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 pump must be in a horizontal position. Oil quantity: see spare parts list.

Repair of the surface coating is necessary prior to operation start. See instruction for maintenance of surface coating.



We reserve the right to technical alterations. Translated from Danish.

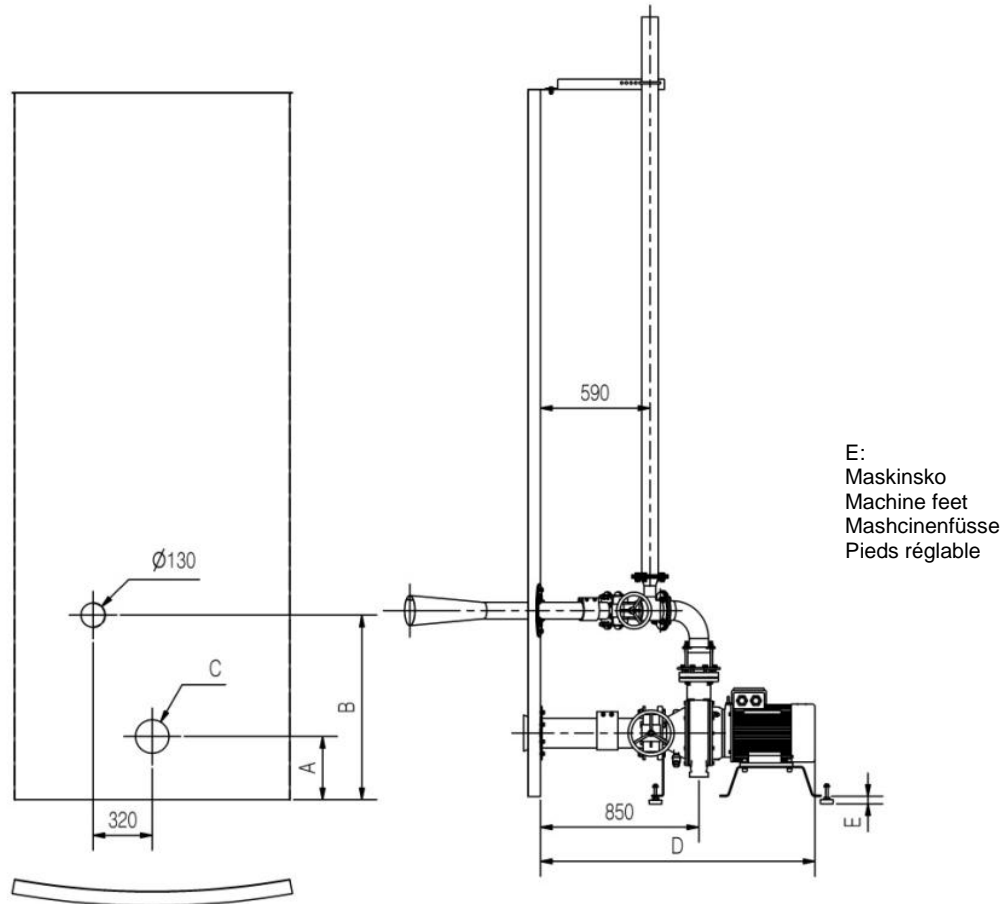


Styret dokument

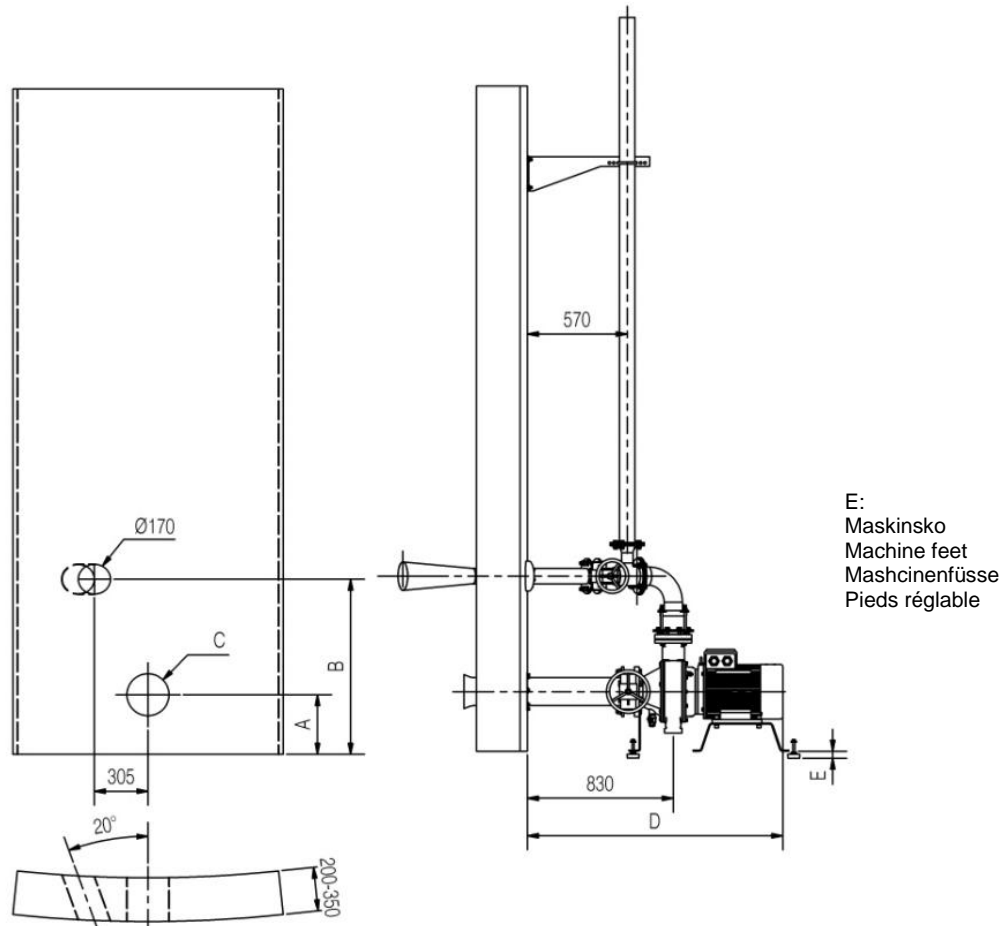
Landia

MPTK-I/MPTKR-I 80/105 AirJet
 Principegning - Schematic drawing
 Prinzipskizze - Dessin de principe

Scale: 1 : 30	Sign.: HL KSK	Date: 17-10-2013
Dwg.no.:		3740844
Rev. date: 01-05-2014		

MPTK-I 80/105 AirJet
Ståltank - Steel Tank – Stahlbehälter - Bassin en acier


Varenr./ Article no./ Artikel Nr./ Code no.	Type/ Typ	Effekt/ Power/ Leist./ Puiss.	Dimensioner - Dimensions - Dimensionen - Dimensions [mm]				Justerbar Adjustable Justierbar Réglable
			A	B	C	D	
(400V)		[kW]					E
2514803 2514203	MPTK-I 80 MPTKR-I 80	3,0	280	880	Ø180	1325	30 - 77
2514804 2514204	MPTK-I 80 MPTKR-I 80	4,0	280	880	Ø180	1360	30 - 77
2514805 2514205	MPTK-I 80 MPTKR-I 80	5,5	280	880	Ø180	1400	30 - 77
2514907 2514207	MPTK-I 105 MPTKR-I 105	7,5	340	1000	Ø180	1415	35 - 85
2514911 2514211	MPTK-I 105 MPTKR-I 105	11,0	340	1000	Ø180	1465	35 - 85
2514915 2514215	MPTK-I 105 MPTKR-I 105	15,0	340	1000	Ø240	1475	35 - 85
2514918 2514218	MPTK-I 105 MPTKR-I 105	18,5	340	1000	Ø240	1475	35 - 85

MPTK-I 80/105 AirJet
Betontank – Concrete Tank - Betonbehälter - Bassin en béton


Varenr./ Article no./ Artikel Nr./ Code no. (400V)	Type/ Typ	Effekt/ Power/ Leist./ Puiss. [kW]	Dimensioner - Dimensions - Dimensionen - Dimensions [mm]				Justerbar Adjustable Justierbar Réglable E
			A	B	C	D	
2514803 2514203	MPTK-I 80 MPTKR-I 80	3,0	280	880	Ø240	1305	30 - 77
2514804 2514204	MPTK-I 80 MPTKR-I 80	4,0	280	880	Ø240	1340	30 - 77
2514805 2514205	MPTK-I 80 MPTKR-I 80	5,5	280	880	Ø240	1380	30 - 77
2514907 2514207	MPTK-I 105 MPTKR-I 105	7,5	340	1000	Ø240	1395	35 - 85
2514911 2514211	MPTK-I 105 MPTKR-I 105	11,0	340	1000	Ø240	1445	35 - 85
2514915 2514215	MPTK-I 105 MPTKR-I 105	15,0	340	1000	Ø260	1455	35 - 85
2514918 2514218	MPTK-I 105 MPTKR-I 105	18,5	340	1000	Ø260	1455	35 - 85

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

MPTK-I/MPTK-I Ex

The MPTK-I pump is a highly efficient chopper pump designed for pumping heavily contaminated liquids as well as liquids with a high dry matter content, e.g. dewatered sludge.

All MPTK-I pumps are equipped with a knife system at the inlet to the pump, which ensures problem-free operations under conditions where many other pumps have problems with clogging.

APPLICATION EXAMPLES

- Sewage treatment plants
- Pumping stations
- Biogas plants
- Food industry
- Pumping abrasive liquids or liquids with high viscosity



PUMP RPM

- 1,500 rpm
- 3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	Cast iron EN-GJL-250
Pump housing	Cast iron EN-GJL-250
Pump impeller	Cast iron EN-GJL-250 Cast iron EN-GJS-700-2 (optional) W1.4408/AISI316 (optional) not available for MPTK-I 105
Pump Shaft	W1.6582/AISI4340
Bolts	A4
Sealing system	Mechanical shaft seals: silicon carbide/silicon carbide
Knife system	Hardened steel W1.0038/S235JR (*) W1.4404/AISI316 (optional) not available for MPTK-I 105
Extended knife system	Hardened steel W1.0038 (optional) W1.4404/AISI316 (optional) not available for MPTK-I 105
Oil type	15W-40 Vario HDX (with moisture detection)

(*) On the MPTK-I, the knife system is optional. The MPTK-I Ex includes the knife system

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
2-component coating: RAL 7005 (Mouse Grey) (optional)	Mouse Grey

MONITORING FUNCTIONS

Thermistor 140 °C

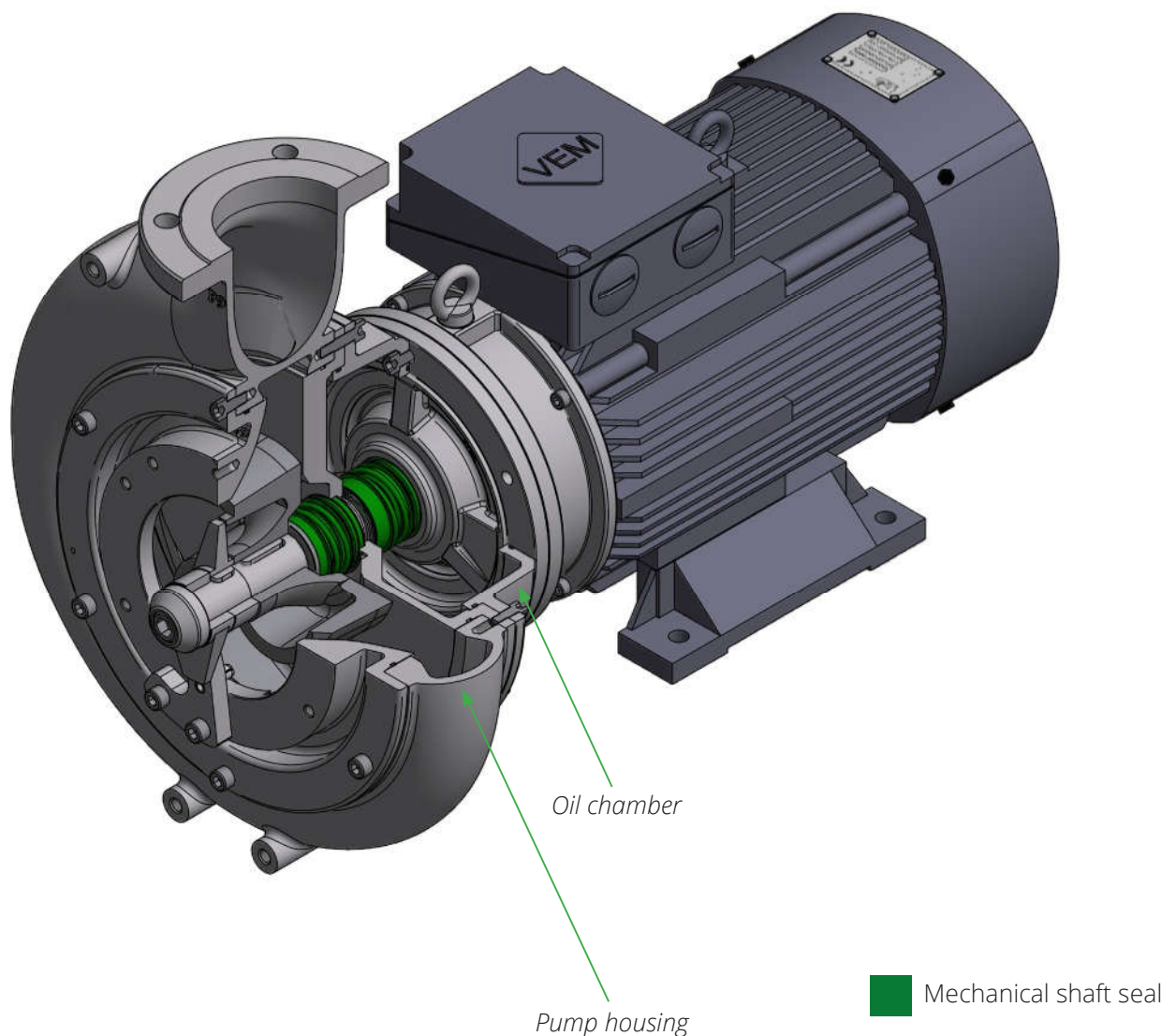
Moisture detection system (optional)

DESIGN

The open pump impeller design means that the chopper pump can pump liquids with a high viscosity. For liquids containing abrasive particles, such as sand, Landia has developed special materials so that the pump's life span is extended significantly in comparison to a standard pump.

A large part of the MPTK-I programme can be supplied in acid-proof steel for aggressive liquids with a high or low pH.

MPTK-I pumps can be equipped with a knife system at the inlet to the pump, which ensures problem-free operation under conditions where many other pumps have problems with clogging.



ELECTRICAL DATA MPTK-I

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 55
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]		[%]
Medium pressure								
MPTK-I 50 0.55 kW-1,500 rpm	2514196	0.55	1,400	1.6	Y	7	0.69	71.9
MPTK-I 50 0.75 kW-1,500 rpm	2514197	0.75	1,400	2.1	Y	10	0.70	73.6
MPTK-I 65 1.1 kW-1,500 rpm	2514798	1.1	1,410	2.6	Y	14	0.79	76.7
MPTK-I 65 1.5 kW-1,500 rpm	2514701	1.5	1,400	3.4	Y	19	0.81	78.6
MPTK-I 65 2.2 kW-1,500 rpm	2514702	2.2	1,410	5.0	Y	30	0.80	80.2
MPTK-I 80 3.0 kW-1,500 rpm	2514803	3.0	1,430	6.7	Δ	43	0.79	82.4
MPTK-I 80 4.0 kW-1,500 rpm	2514804	4.0	1,435	8.8	Δ	61	0.78	84.1
MPTK-I 80 5.5 kW-1,500 rpm	2514805	5.5	1,440	11.0	Δ	68	0.87	84.6
MPTK-I 105 7.5 kW-1,500 rpm	2514907	7.5	1,455	15.0	Δ	90	0.83	86.2
MPTK-I 105 11.0 kW-1,500 rpm	2514911	11.0	1,455	21.5	Δ	146	0.84	87.9
MPTK-I 105 15.0 kW-1,500 rpm	2514915	15.0	1,465	29.0	Δ	212	0.84	88.7
MPTK-I 105 18.5 kW-1,500 rpm	2514918	18.5	1,460	35.0	Δ	238	0.85	89.3
MPTK-I 105 22.0 kW-1,500 rpm	2514922	22.0	1,465	43.0	Δ	280	0.82	90.1
MPTK-I 150 18.5 kW-1,500 rpm	2514618	18.5	1,460	35.0	Δ	238	0.85	89.3
MPTK-I 150 22.0 kW-1,500 rpm	2514622	22.0	1,465	43.0	Δ	280	0.82	90.1
MPTK-I 150 30.0 kW-1,500 rpm	2514630	30.0	1,465	57.0	Δ	399	0.84	90.7
High pressure								
MPTK-I 50 2.2 kW-3,000 rpm	2512102	2.2	2,850	4.6	Y	34	0.85	82.1
MPTK-I 50 3.0 kW-3,000 rpm	2512103	3.0	2,865	6.2	Δ	42	0.85	82.8
MPTK-I 50 4.0 kW-3,000 rpm	2512104	4.0	2,900	8.4	Δ	59	0.81	84.9
MPTK-I 50 5.5 kW-3,000 rpm	2512105	5.5	2,860	11.0	Δ	61	0.86	84.7
MPTK-I 65 7.5 kW-3,000 rpm	2512707	7.5	2,890	15.0	Δ	99	0.85	86.1
MPTK-I 65 11.0 kW-3,000 rpm	2512711	11.0	2,905	20.5	Δ	143	0.88	87.6
MPTK-I 65 15.0 kW-3,000 rpm	2512715	15.0	2,940	27.5	Δ	195	0.89	88.7
MPTK-I 65 18.5 kW-3,000 rpm	2512718	18.5	2,925	33.0	Δ	238	0.90	89.9
MPTK-I 80 15.0 kW-3,000 rpm	2512815	15.0	2,940	27.5	Δ	195	0.89	88.7
MPTK-I 80 18.5 kW-3,000 rpm	2512818	18.5	2,925	33.0	Δ	238	0.90	89.9
MPTK-I 80 22.0 kW-3,000 rpm	2512822	22.0	2,935	39.0	Δ	265	0.90	90.5
MPTK-I 80 30.0 kW-3,000 rpm	2512830	30.0	2,940	52.5	Δ	383	0.91	90.6

Medium pressure								
MPTK-I 50 0.75 kW-1,500 rpm IE2	2534197	0.75	1,430	1.6	Y	11	0.81	79.6
MPTK-I 65 2.2/1.1 kW-1,500 rpm IE2	2534702	2.2	1,455	4.8	Y	45	0.77	84.3
MPTK-I 80 5.5/3.0 kW-1,500 rpm IE2	2534805	5.5	1,465	11.3	Δ	105	0.87	88.4
MPTK-I 105 11.0/7.5 kW-1,500 rpm IE2	2534911	11.0	1,470	22.5	Δ	176	0.78	90.3
MPTK-I 105 18.5/15.0 kW-1,500 rpm IE2	2534918	18.5	1,470	37.5	Δ	240	0.78	91.2
MPTK-I 105 22.0 kW-1,500 rpm IE2	2534922	22.0	1,475	42.0	Δ	307	0.83	91.6
MPTK-I 150 22.0 kW-1,500 rpm IE2	2534622	22.0	1,475	42.0	Δ	307	0.83	91.6
MPTK-I 150 30.0 kW-1,500 rpm IE2	2534630	30.0	1,480	58.5	Δ	423	0.8	92.3
High pressure								
MPTK-I 50 5.5/2.2 kW-3,000 rpm IE2	2532105	5.5	2,900	10.3	Δ	80	0.88	87.0
MPTK-I 65 11.0/7.5 kW-3,000 rpm IE2	2532711	11.0	2,955	20.5	Δ	160	0.86	91.1
MPTK-I 65 18.5/15.0 kW-3,000 rpm IE2	2532718	18.5	2,935	32.0	Δ	230	0.91	91.0
MPTK-I 80 18.5/15.0 kW-3,000 rpm IE2	2532818	18.5	2,935	32.0	Δ	230	0.91	91.0
MPTK-I 80 22.0 kW-3,000 rpm IE2	2532822	22.0	2,935	38.5	Δ	239	0.90	91.3
MPTK-I 80 30.0 kW-3,000 rpm IE2	2532830	30.0	2,945	52.0	Δ	359	0.91	92.0

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

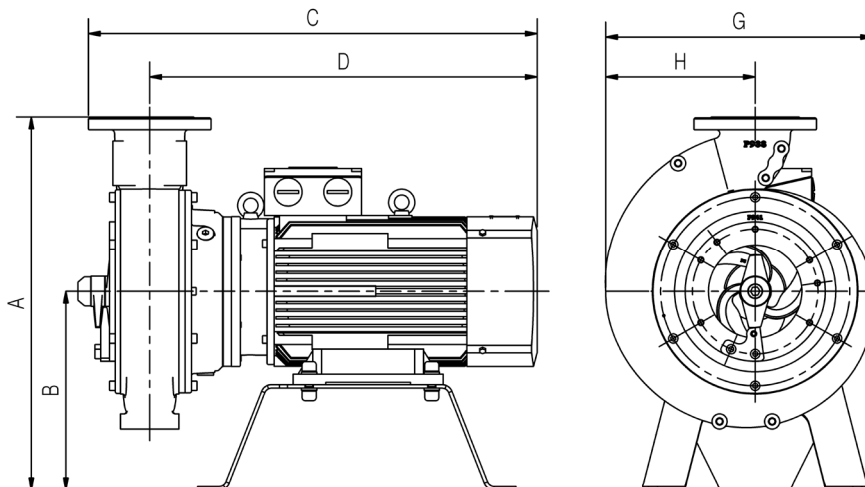
ELECTRICAL DATA MPTK-I EX

Motor type	3-phase AC motor II 3 G k T3
Nominal voltage	400 V
Minimum voltage allowed	360 V
Nominal frequency	50 Hz
Applicable for VFD operation	No
Ingress protection rating	IP 55
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]		[%]
Medium pressure								
MPTK-I 80 5.5 kW-1,500 rpm Ex	2514846	5.5	1,440	11.0	Δ	68	0.87	84.6
MPTK-I 105 15.0 kW-1,500 rpm Ex	2514948	15.0	1,465	29.0	Δ	212	0.84	88.7
MPTK-I 105 18.5 kW-1,500 rpm Ex	2514949	18.5	1,460	35.0	Δ	238	0.85	89.3
MPTK-I 150 30.0 kW-1,500 rpm Ex	2514642	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.

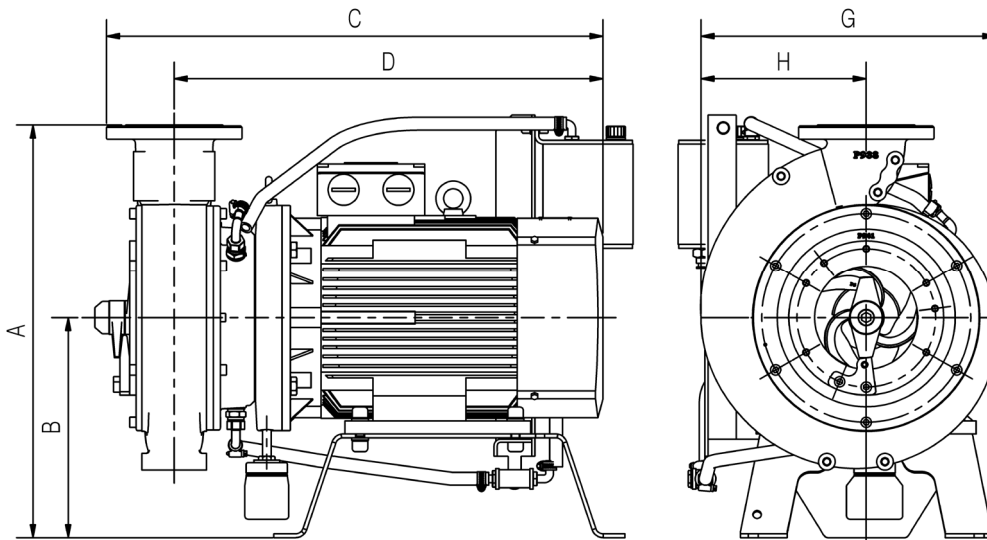
OVERALL DIMENSIONS MPTK-I



Model	Item number	A [mm]	B [mm]	C [mm]	D [mm]	G [mm]	H [mm]	Weight [kg]
Medium pressure								
MPTK-I 50 0.55 kW-1,500 rpm	2514196	295	135	360	305	250	135	25
MPTK-I 50 0.75 kW-1,500 rpm	2514197	295	135	360	305	250	135	25
MPTK-I 65 1.1 kW-1,500 rpm	2514798	455	250	455	375	320	175	45
MPTK-I 65 1.5 kW-1,500 rpm	2514701	455	250	480	400	320	175	50
MPTK-I 65 2.2 kW-1,500 rpm	2514702	455	250	490	410	320	175	55
MPTK-I 80 3.0 kW-1,500 rpm	2514803	522	280	570	475	370	205	80
MPTK-I 80 4.0 kW-1,500 rpm	2514804	522	280	605	510	370	205	85
MPTK-I 80 5.5 kW-1,500 rpm	2514805	522	280	635	540	370	205	100
MPTK-I 105 7.5 kW-1,500 rpm	2514907	640	340	670	565	460	250	140
MPTK-I 105 11.0 kW-1,500 rpm	2514911	640	340	720	615	460	250	160
MPTK-I 105 15.0 kW-1,500 rpm	2514915	640	340	730	625	460	250	200
MPTK-I 105 18.5 kW-1,500 rpm	2514918	640	340	730	625	460	250	210
MPTK-I 105 22.0 kW-1,500 rpm	2514922	640	340	795	690	460	250	310
MPTK-I 150 18.5 kW-1,500 rpm	2514618	822	380	775	630	580	320	270
MPTK-I 150 22.0 kW-1,500 rpm	2514622	822	380	870	725	580	320	330
MPTK-I 150 30.0 kW-1,500 rpm	2514630	822	380	870	725	580	320	360
High pressure								
MPTK-I 50 2.2 kW-3,000 rpm	2512102	410	250	450	395	250	135	36
MPTK-I 50 3.0 kW-3,000 rpm	2512103	410	250	465	410	250	135	41
MPTK-I 50 4.0 kW-3,000 rpm	2512104	440	280	510	455	250	135	53
MPTK-I 50 5.5 kW-3,000 rpm	2512105	410	250	545	490	250	135	61
MPTK-I 65 7.5 kW-3,000 rpm	2512707	485	280	605	525	320	175	80
MPTK-I 65 11.0 kW-3,000 rpm	2512711	545	340	650	570	320	175	105
MPTK-I 65 15.0 kW-3,000 rpm	2512715	545	340	655	575	320	175	140
MPTK-I 65 18.5 kW-3,000 rpm	2512718	545	340	695	615	320	175	155
MPTK-I 80 15.0 kW-3,000 rpm	2512815	622	380	681	586	370	205	188
MPTK-I 80 18.5 kW-3,000 rpm	2512818	622	380	719	624	370	205	205
MPTK-I 80 22.0 kW-3,000 rpm	2512822	622	380	759	664	370	205	258
MPTK-I 80 30.0 kW-3,000 rpm	2512830	622	380	805	710	370	205	305

Medium pressure								
MPTK-I 50 0.75 kW-1,500 rpm IE2	2534197	295	135	390	335	250	135	35
MPTK-I 65 2.2/1.1 kW-1,500 rpm IE2	2534702	455	250	546	466	320	175	80
MPTK-I 80 5.5/3.0 kW-1,500 rpm IE2	2534805	522	280	705	610	370	205	140
MPTK-I 105 11.0/7.5 kW-1,500 rpm IE2	2534911	640	340	769	664	460	250	190
MPTK-I 105 18.5/15.0 kW-1,500 rpm IE2	2534918	640	340	752	647	460	250	270
MPTK-I 105 22.0 kW-1,500 rpm IE2	2534922	640	340	797	692	460	250	325
MPTK-I 150 22.0 kW-1,500 rpm IE2	2534622	822	380	867	724	580	320	375
MPTK-I 150 30.0 kW-1,500 rpm IE2	2534630	822	380	937	794	580	320	435
High pressure								
MPTK-I 50 5.5/2.2 kW-3,000 rpm IE2	2532105	440	280	599	544	250	135	75
MPTK-I 65 11.0/7.5 kW-3,000 rpm IE2	2532711	545	340	656	576	320	175	165
MPTK-I 65 18.5/15.0 kW-3,000 rpm IE2	2532718	545	340	694	614	320	175	200
MPTK-I 80 18.5/15.0 kW-3,000 rpm IE2	2532818	622	380	722	627	370	205	215
MPTK-I 80 22.0 kW-3,000 rpm IE2	2532822	622	380	761	666	370	205	270
MPTK-I 80 30.0 kW-3,000 rpm IE2	2532830	622	380	806	711	370	205	305

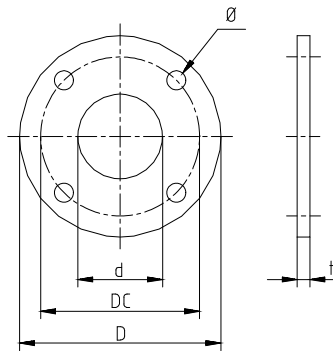
OVERALL DIMENSIONS MPTK-I EX



Model	Item number	A [mm]	B [mm]	C [mm]	D [mm]	G [mm]	H [mm]	Weight [kg]
Medium pressure								
MPTK-I 80 5.5 kW-1,500 rpm Ex	2514846	522	280	635	540	370	205	130
MPTK-I 105 15.0 kW-1,500 rpm Ex	2514948	640	340	730	625	460	250	220
MPTK-I 105 18.5 kW-1,500 rpm Ex	2514949	640	340	730	625	460	250	235
MPTK-I 150 30.0 kW-1,500 rpm Ex	2514642	822	380	870	725	580	320	360

We reserve the right to make technical changes.

OVERALL DIMENSIONS WELDING FLANGE



Model/ Pump series	Article no.	Material	MPTK 50 - 65 - 80 - 105 DIN 2573 PN 6 Dim. [mm] MPTK 150 2576 PN 10 Dim. [mm]				
			D	DC	d	\varnothing	t
MPTK-I 50	7713006	W1.0038/S235JR	$\varnothing 110$	90	$\varnothing 52$	4 x $\varnothing 10$	8
MPTK-I 65	7713052	W1.0038/S235JR	$\varnothing 160$	130	$\varnothing 69$	4 x $\varnothing 14$	8
MPTK-I 80	7713053	W1.0038/S235JR	$\varnothing 192$	150/160	$\varnothing 82$	4 x $\varnothing 18$	10
MPTK-I 105	7713054	W1.0038/S235JR	$\varnothing 212$	170/180	$\varnothing 107$	4 x $\varnothing 18$	10
MPTK-I 150	7713009	W1.0038/S235JR	$\varnothing 285$	240	$\varnothing 152$	4 x $\varnothing 22$	12

We reserve the right to make technical changes.

MPTKR-I/MPTKR-I Ex

The MPTKR-I pump is a highly efficient chopper pump made entirely of acid-proof steel. It is ideal for aggressive liquids with a low or high PH value, as well as liquids with a high dry matter content.

All MPTKR-I pumps can be equipped with a knife system at the inlet to the pump, which can ensure problem-free operations under conditions where many other pumps have problems with clogging.

APPLICATION EXAMPLES

- ▶ Chemical industry
- ▶ Paper industry
- ▶ Food industry
- ▶ Biogas plants
- ▶ Pumping abrasive or aggressive liquids



PUMP RPM

- 1,500 rpm
- 3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	Cast iron EN-GJL-250
Pump housing	W1.4408/AISI316
Pump impeller	W1.4408/AISI316
Pump Shaft	W.1.4404/AISI316
Bolts	A4
Sealing system	Mechanical shaft seals: silicon carbide/silicon carbide
Knife system	W1.4404/AISI316 (*)
Extended knife system	W1.4404/AISI316 (optional)
Oil type	15W-40 Vario HDX (with moisture detection)

(*) On the MPTKR-I, the knife system is optional. The MPTKR-I Ex includes the knife system.

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
2-component coating: RAL 7005 (Mouse Grey) (optional)	Mouse Grey

MONITORING FUNCTIONS

Thermistor 140 °C

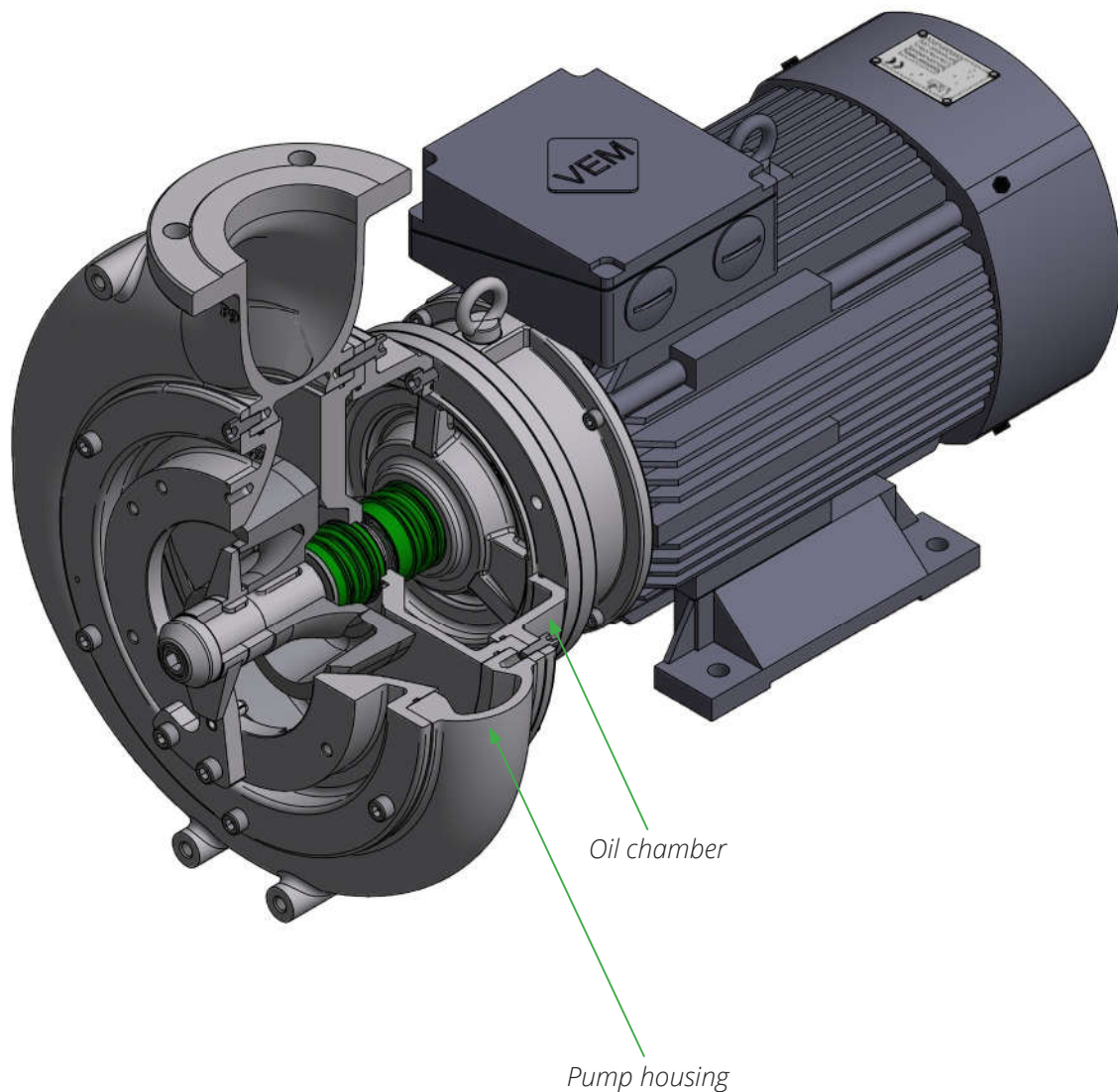
Moisture detection system (optional)

DESIGN

The open pump impeller design means that the chopper pump can pump liquids with a high viscosity. For liquids containing abrasive particles, such as sand, Landia has developed special materials so that the pump's life span is extended significantly in comparison to a standard pump.

A large part of the MPTKR-I programme can be supplied in acid-proof steel for aggressive liquids with a high or low pH.

The chopper pumps can be equipped with a knife system at the inlet to the pump, which ensure problem-free operations under conditions where many other pumps have problems with clogging.



 Mechanical shaft seal

ELECTRICAL DATA MPTKR-I

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 55
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]		[%]
Medium pressure								
MPTKR-I 65 1.1 kW-1,500 rpm	2514298	1.1	1,410	2.6	Y	14	0.79	76.7
MPTKR-I 65 1.5 kW-1,500 rpm	2514201	1.5	1,400	3.4	Y	19	0.81	78.6
MPTKR-I 65 2.2 kW-1,500 rpm	2514202	2.2	1,410	5.0	Y	30	0.80	80.2
MPTKR-I 80 3.0 kW-1,500 rpm	2514203	3.0	1,430	6.7	Δ	43	0.79	82.4
MPTKR-I 80 4.0 kW-1,500 rpm	2514204	4.0	1,435	8.8	Δ	61	0.78	84.1
MPTKR-I 80 5.5 kW-1,500 rpm	2514205	5.5	1,440	11.0	Δ	68	0.87	84.6
MPTKR-I 105 7.5 kW-1,500 rpm	2514207	7.5	1,455	15.0	Δ	90	0.83	86.2
MPTKR-I 105 11.0 kW-1,500 rpm	2514211	11.0	1,455	21.5	Δ	146	0.84	87.9
MPTKR-I 105 15.0 kW-1,500 rpm	2514215	15.0	1,465	29.0	Δ	212	0.84	88.7
MPTKR-I 105 18.5 kW-1,500 rpm	2514218	18.5	1,460	35.0	Δ	238	0.85	89.3
MPTKR-I 105 22.0 kW-1,500 rpm	2514222	22.0	1,465	43.0	Δ	280	0.82	90.1
MPTKR-I 105 30.0 kW-1,500 rpm	2514230	30.0	1,465	57.0	Δ	399	0.84	90.7
High pressure								
MPTKR-I 65 7.5 kW-3,000 rpm	2512207	7.5	2,890	15.0	Δ	99	0.85	86.1
MPTKR-I 65 11.0 kW-3,000 rpm	2512211	11.0	2,905	20.5	Δ	143	0.88	87.6
MPTKR-I 65 15.0 kW-3,000 rpm	2512212	15.0	2,940	27.5	Δ	195	0.89	88.7
MPTKR-I 65 18.5 kW-3,000 rpm	2512213	18.5	2,925	33.0	Δ	238	0.90	89.9
MPTKR-I 80 15.0 kW-3,000 rpm	2512215	15.0	2,940	27.5	Δ	195	0.89	88.7
MPTKR-I 80 18.5 kW-3,000 rpm	2512218	18.5	2,925	33.0	Δ	238	0.90	89.9
MPTKR-I 80 22.0 kW-3,000 rpm	2512222	22.0	2,935	39.0	Δ	265	0.90	90.5
MPTKR-I 80 30.0 kW-3,000 rpm	2512230	30.0	2,940	52.5	Δ	383	0.91	90.6
Medium pressure								
MPTKR-I 80 5.5/3.0 kW-1,500 rpm IE2	2534205	5.5	1465	11.3	Δ	105	0.87	88.4
MPTKR-I 105 11.0/7.5 kW-1,500 rpm IE2	2534211	11.0	1,470	22.5	Δ	190	0.78	90.3
MPTKR-I 105 18.5/15.0 kW-1,500 rpm IE2	2534218	18.5	1,470	37.5	Δ	270	0.78	91.2
MPTKR-I 105 22.0 kW-1,500 rpm IE2	2534222	22.0	1,475	42.0	Δ	325	0.83	91.6
High pressure								
MPTKR-I 80 18.5/15.0 kW-3,000 rpm IE2	2532218	18.5	2,935	32.0	Δ	230	0.91	91.0
MPTKR-I 80 22.0 kW-3,000 rpm IE2	2532222	22.0	2,935	38.5	Δ	239	0.90	91.3
MPTKR-I 80 30.0 kW-3,000 rpm IE2	2532230	30.0	2,945	52.0	Δ	359	0.91	92.0

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

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Prepared by: BNV/GB
Approved by: KSK/TM



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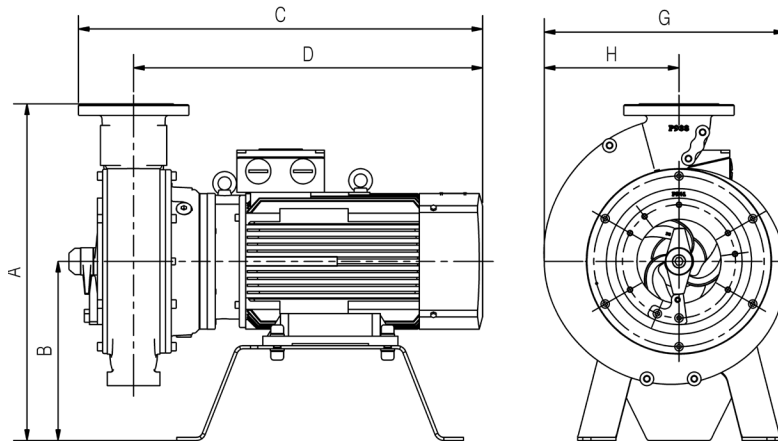
ELECTRICAL DATA MPTKR-I EX

Motor type	3-phase AC motor II 3 G k T3
Nominal voltage	400 V
Minimum voltage allowed	360 V
Nominal frequency	50 Hz
Applicable for VFD operation	No
Ingress protection rating	IP 55
Insulation class	F

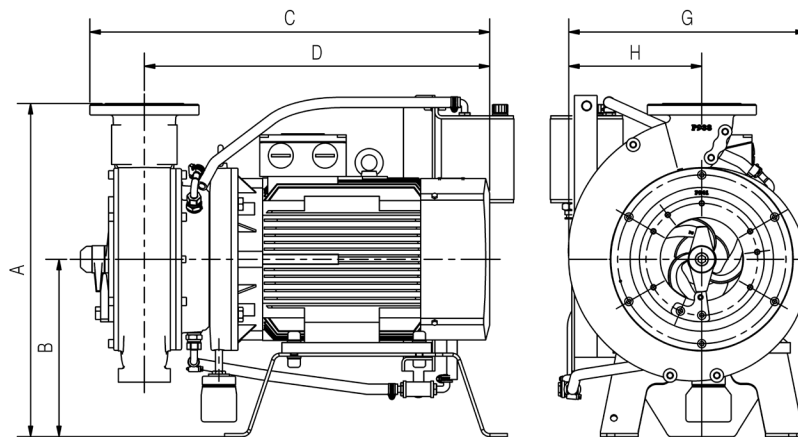
Model	Item number	Nominal power	Motor	Full load current (400 V)	Connection method	Start current (DOL)	cos phi	Efficiency
		[kW]	[rpm]	[A]	Y/Δ	[A]		[%]
Medium pressure								
MPTKR-I 105 18.5 kW-1,500 rpm Ex	2514249	18.5	1,460	35.0	Δ	238	0.85	89.3

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

OVERALL DIMENSIONS MPTKR-I

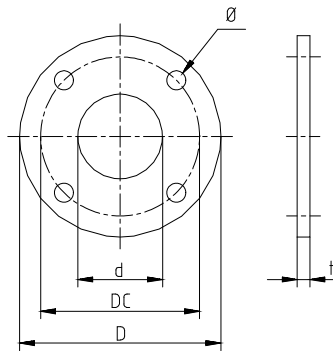


Model	Item number	A [mm]	B [mm]	C [mm]	D [mm]	G [mm]	H [mm]	Weight [kg]
Medium pressure								
MPTKR-I 65 1.1 kW-1,500 rpm	2514298	455	250	455	375	320	175	45
MPTKR-I 65 1.5 kW-1,500 rpm	2514201	455	250	480	400	320	175	50
MPTKR-I 65 2.2 kW-1,500 rpm	2514202	455	250	490	410	320	175	55
MPTKR-I 80 3.0 kW-1,500 rpm	2514203	522	280	570	475	370	205	80
MPTKR-I 80 4.0 kW-1,500 rpm	2514204	522	280	605	510	370	205	85
MPTKR-I 80 5.5 kW-1,500 rpm	2514205	522	280	635	540	370	205	100
MPTKR-I 105 7.5 kW-1,500 rpm	2514207	640	340	670	565	460	250	158
MPTKR-I 105 11.0 kW-1,500 rpm	2514211	640	340	720	615	460	250	178
MPTKR-I 105 15.0 kW-1,500 rpm	2514215	640	340	730	625	460	250	218
MPTKR-I 105 18.5 kW-1,500 rpm	2514218	640	340	730	625	460	250	228
MPTKR-I 105 22.0 kW-1,500 rpm	2514222	640	340	795	690	460	250	310
MPTKR-I 105 30.0 kW-1,500 rpm	2514230	640	340	795	690	460	250	330
High pressure								
MPTKR-I 65 7.5 kW-3,000 rpm	2512207	485	280	605	525	320	175	80
MPTKR-I 65 11.0 kW-3,000 rpm	2512211	545	340	650	570	320	175	105
MPTKR-I 65 15.0 kW-3,000 rpm	2512212	545	340	655	575	320	175	140
MPTKR-I 65 18.5 kW-3,000 rpm	2512213	545	340	695	615	320	175	155
MPTKR-I 80 15.0 kW-3,000 rpm	2512215	622	380	681	586	370	205	188
MPTKR-I 80 18.5 kW-3,000 rpm	2512218	622	380	719	624	370	205	205
MPTKR-I 80 22.0 kW-3,000 rpm	2512222	622	380	759	664	370	205	258
MPTKR-I 80 30.0 kW-3,000 rpm	2512230	622	380	805	710	370	205	305
Medium pressure IE2								
MPTKR-I 80 5.5/3.0 kW-1,500 rpm IE2	2534205	522	280	705	610	370	205	140
MPTKR-I 105 11.0/7.5 kW-1,500 rpm IE2	2534211	640	340	769	664	460	250	190
MPTKR-I 105 18.5/15.0 kW-1,500 rpm IE2	2534218	640	340	752	647	460	250	270
MPTKR-I 105 22.0 kW-1,500 rpm IE2	2534222	640	340	797	692	460	250	325
High pressure IE2								
MPTKR-I 80 18.5/15.0 kW-3,000 rpm IE2	2532218	622	380	722	627	370	205	215
MPTKR-I 80 22.0 kW-3,000 rpm IE2	2532222	622	380	761	666	370	205	270
MPTKR-I 80 30.0 kW-3,000 rpm IE2	2532230	622	380	806	711	370	205	315

OVERALL DIMENSIONS MPTKR-I EX

Model	Item number	A [mm]	B [mm]	C [mm]	D [mm]	G [mm]	H [mm]	Weight [kg]
Medium pressure								
MPTKR-I 105 18.5 kW-1,500 rpm Ex	2514249	640	340	730	625	460	250	235

We reserve the right to make technical changes.

OVERALL DIMENSIONS WELDING FLANGE

Model/ Pump series	Article no.	Material	MPTK 50 - 65 - 80 - 105 DIN 2573 PN 6 Dim. [mm] MPTK 150 2576 PN 10 Dim. [mm]				
			D	DC	d	ø	t
MPTK-I 50	7115021	W1.4404/AISI316	ø110	90	ø52	4 x ø10	8
MPTK-I 65	7715004	W1.4404/AISI316	ø160	130	ø69	4 x ø14	8
MPTK-I 80	7715005	W1.4404/AISI316	ø192	150/160	ø82	4 x ø18	10
MPTK-I 105	7715006	W1.4404/AISI316	ø212	170/180	ø107	4 x ø18	10
MPTK-I 150	7715025	W1.4404/AISI316	ø285	240	ø152	8 x ø22	12

We reserve the right to make technical changes.

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Introduction

MPTK-I is a dry installed pump.

By means of different equipment a great number of different pumping requirements can be met. The pumping takes place by means of an electric motor; a pump casing with an impeller is installed on the motor. The oil filled oil chamber between motor and impeller provides cooling and lubrication of the mechanical seals. The sealing system consists of two mechanical seals. The exterior seal separates the medium from the oil chamber, the interior seal separates the oil from the motor casing.

Application

This dry installed pump is to be applied for pumping of liquids with a high or a low dry matter content, like e.g. thick manure and highly polluted wastewater. The pump is only to be applied dry installed in connection with application at e.g. effluent treatment plants, in industry and in agriculture. If the pump is to be applied for other purposes, contact Landia A/S for advice.

Important

Please note the following points:

- Only a certified electrician is allowed to connect the unit.
- Prior to installation and start-up ensure that the equipment, such as hoses, pipes and pipe branches, is installed correctly and fixed to the pump.
- Prior to the first start of the pump, the pump shaft must be rotated manually. This also applies if the pump has not been in operation for a longer period.
- The pump must be dry installed but can be placed outside without protection as the motor is splash proof. The motor is not to be wrapped in plastic film etc.
- Prior to service/repair of the pump it is always to be ensured that the electrical connection of the pump is switched off or locked.
- Prior to disassembling the pump, the sluice valve on the pressure and on the suction side must be completely closed.

Service/repair

To maintain a high operating safety and a long service life without unnecessary and expensive repair, it is important from the beginning to execute regular and preventive service. Maintenance should be executed according to the intervals stated in the manual. Always follow the instruction carefully and only apply the parts described by Landia A/S in the spare parts list.

If you do not want to execute the service yourself, we can offer you a service agreement - please call for further information.

Please note

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

For major repairs at a special workshop 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

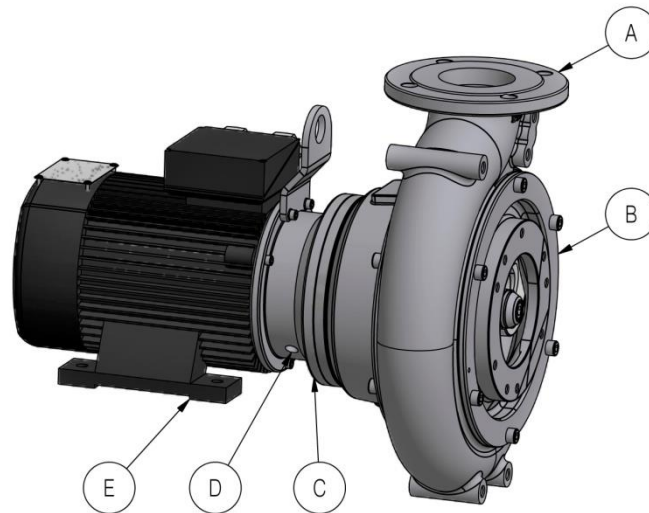
Landia A/S is represented by local distributors worldwide, please call for further information.

Installation

At installation, it must be ensured that the pump can be removed from the pipe system in case of breakdown, service etc. Therefore, block valves must be installed on the pressure and on the inlet side of the pump, unless the pipe system can be emptied in another way. Besides, it must be ensured at fixing to the concrete foundation that the pump can be lifted in service situations. By means of a motor support foot, the console of the pump is relieved, pos. E. At pump installations in piping systems compensators must be applied since vibrations and temperature fluctuations will influence the piping system.

At installation the drainage hole, pos. C, in the receiver and the condensate hole, pos. D, in the motor must turn downwards.

- A. Pressure side
- B. Suction side
- C. Draining hole
- D. Condensate hole
- E. Motor base



Rating plate

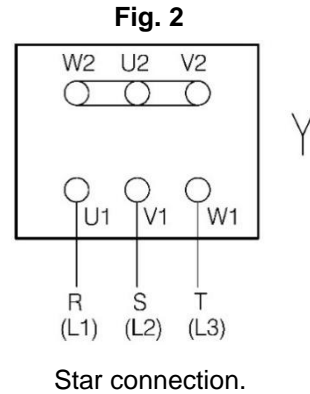
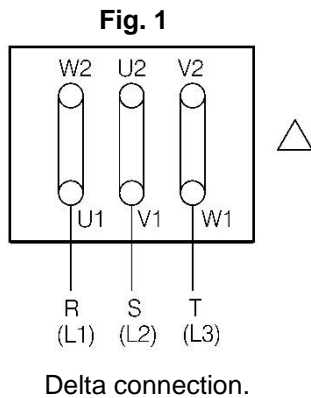
		VEM motors GmbH Thurm			
IM	IP	IF	3-Mot	kg	
50Hz	60Hz				
50 Hz	V	/	A
60 Hz	V	/	A

IP: Cage class
 F: Insulation class F
 3~mot.nr.: 3 phased motor
 IM: Building form
 cos φ: Power factor
 Kg: Weight of motor without pump
 kW: Max. shaft power
 V: Mains voltage
 A: Nominal power consumption
 min: Motor revolutions per minute
 kW,V,A and min⁻¹ for 50 Hz and 60 Hz respectively.
 The final two lines state the allowed voltage intervals with power consumption at 50 Hz and 60 Hz resp.

Power connection

Every pump is equipped with the above mentioned rating plate with technical motor data. The motor is connected according to Fig. 1 or 2. It must be ensured that the other electrical parts correspond to the motor data. For each pump there is an electrical diagram. A protective motor switch must be applied at connection of the pump to the mains.

Only a certified electrician is allowed to connect the unit.



Capacity

The capacity of the pump will always depend on the consistency of the medium.

To obtain the highest capacity possible with as low motor power as possible it is important that the diameters of the pump pipes are large enough and that sharp bends are avoided as far as possible. Large pipe dimensions are especially important in connection with long pumping distances. When installing in a pipe system where vibrations and temperature fluctuations affect the pipe system, compensators must be used.

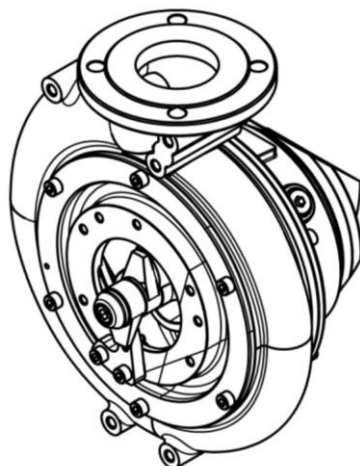
The pumps are equipped with open impellers especially suited for liquids with large particles, like e.g. raw wastewater, manure and industry applications.

For difficult mediums with e.g. a high dry matter content or large impurities which make up a risk for blocking, the pumps can be supplied with a knife system. The knife system which is placed in the inlet port consists of one (or three) fixed and two rotating knives. The knives comminute large impurities in the medium in order to ease the pumping. They are ideal for comminuting e.g. straw, shreds, paper, fish etc.

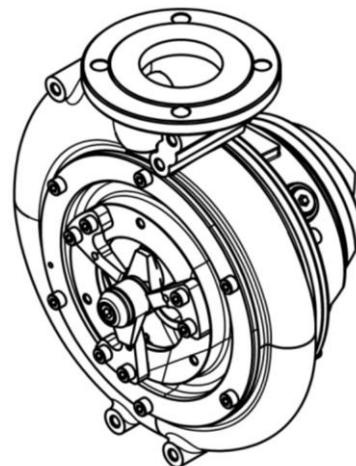
To minimize downtime on the pump due to metal objects in the medium, it may be recommended that a magnet be fitted to the feed system to the tank to which the pump is connected.

The pump capacity will be reduced if the edge of the guide traces on the front and back plates is worn round or if there are deep traces on the surface. You can minimize the wear on the front and rear plate by changing the impeller before the edges on the back of the impeller become too round. If the edges of the impeller become too round, it can be easier to settle stones in the clamp between the impeller and the back plate, which will turn the impeller round and the wear will increase. If you have any doubts or questions, please contact Landia for advice.

Pump casing w. knife system



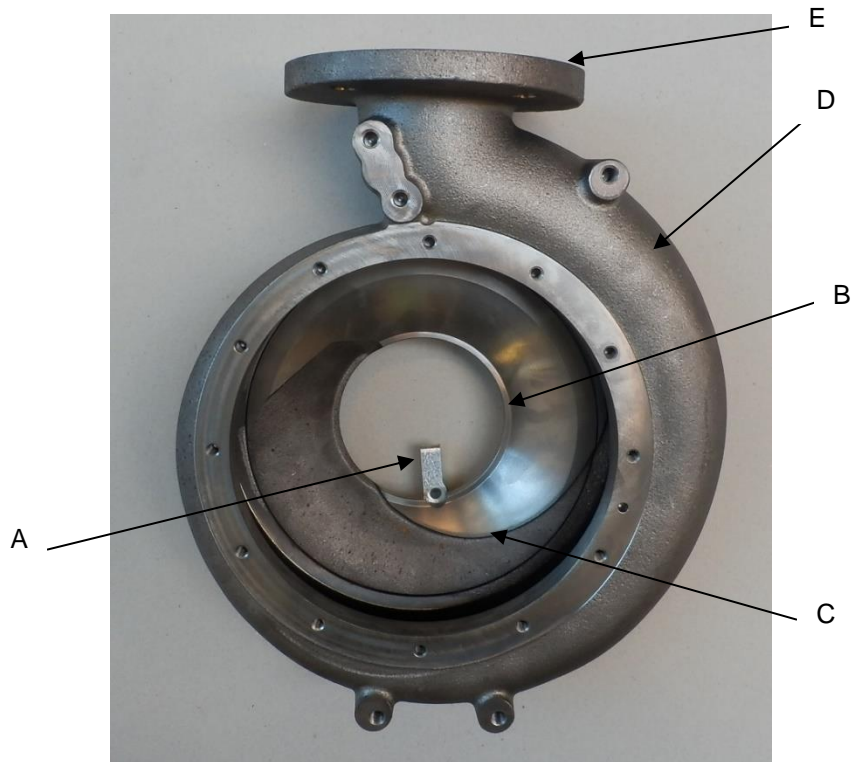
Pump casing w. extended knife system



Fitting the front plate

- A. Knife with tightening pin
- B. Front plate
- C. Guide trace
- D. Pump casing
- E. Outlet

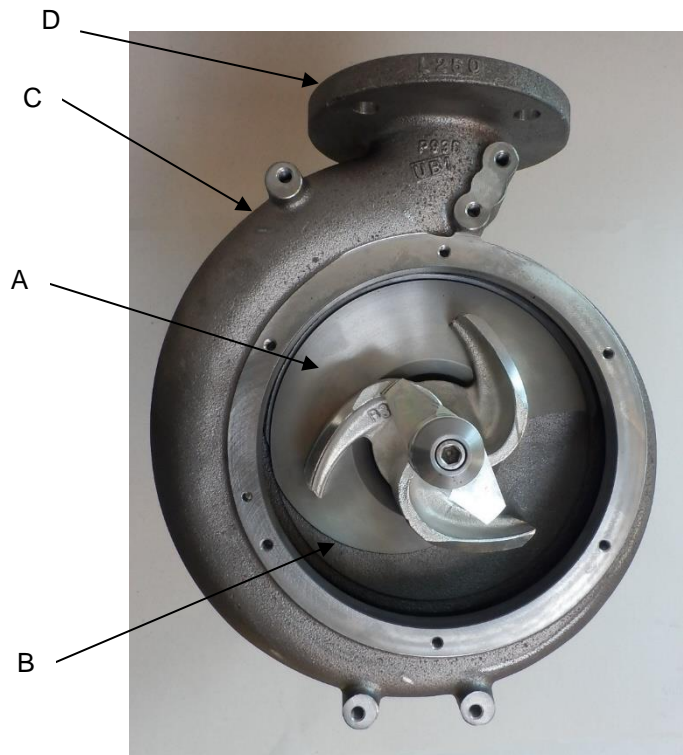
The front plate of the pump casing is designed with a guide trace. The guide trace has to be placed like shown on the above photo, regardless of how the outlet of the pump is turned.



Fitting the back plate

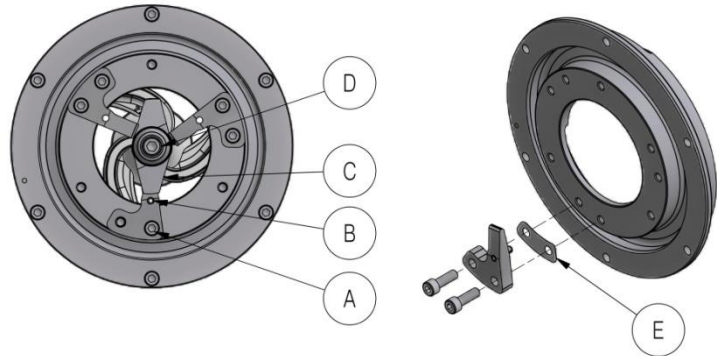
- A. Back plate
- B. Guide trace
- C. Pump casing
- D. Outlet

The back plate of the pump casing is designed with a guide trace. The guide trace has to be placed like shown on the above photo, regardless of how the outlet of the pump is turned.



Installation of knives

- A. Fixed knife
- B. Tightening pin
- C. Rotating knife
- D. Bolt
- E. Shim



If the tightening pin in the fixed knife is missing, the pin/knife must be replaced.

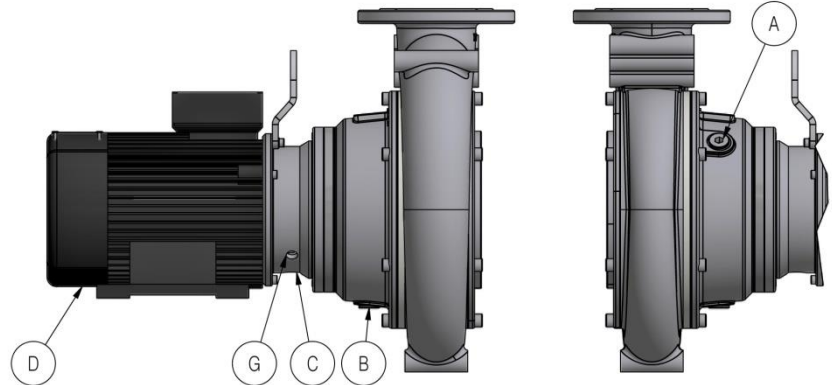
When the fixed and rotating knives are replaced, make sure that the shaft can rotate without the rotating knives touching the fixed knife/knives. If this is not the case, the fixed knife/knives must be adjusted with shims.

Inspection

Periodic inspections can ensure that the pump has a long life for modest costs. For every 6 months, possibly more often, depending on the operating conditions, the pump's impeller, oil supply, motor housing and any blade system should be checked. The oil must be changed at least once a year, or as described on the front of this manual for the recommended service interval for this particular unit.

If large amounts of oil / liquid leak out of the drain hole in the intermediate chamber, the mechanical shaft seals of the pump should be checked. When replacing the knife system, tighten the bolts with a torque wrench according to the diagram below.

- A. Top oil plug
- B. Lower oil plug
- C. Drainage hole
- D. Condensate hole
- E. Filter
- F. Pressure equalization
- G. Inspection hole



Oil control

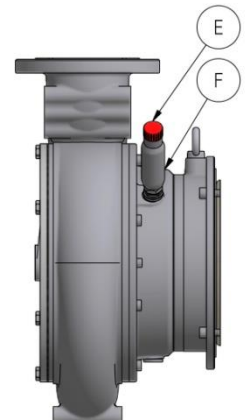
The oil is checked by uninstalling the upper oil plug pos. A. For pumps with pressure equalization, pos. F is uninstalled.

The oil has to be clean and the level must reach the level of the upper plug pos. A when the pump is in a horizontal position, standing on its feet. If the oil is dirty, it must be changed and the two mechanical seals must be checked and changed, if necessary. Oil type see part list.

The oil is drained off at oil plug pos. B and is filled at oil plug pos. A. For pumps with pressure equalization, oil is filled at pos. F.

If the pump is equipped with an oil collector, a plug is placed in drainage hole C. The oil in the collector is drained by removing the plug in drainage hole C. If the oil collector is full, the oil comes out of inspection hole G.

For pumps equipped with pressure equalization, the filter pos. F must be cleaned or replaced in connection with maintenance to avoid plugging.



Disassembling/assembling

A major repair should take place at a special workshop.

Below please find some general conditions regarding disassembling/ assembling of the pump. 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 re-assembly, 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 must be tightened with a tightening torque according to the diagram below:

Bolt sizes	Quality 10.9 - 12.9 Steel	Quality A4 kl. 80 St. steel
M5	-	4,5 Nm
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

After mounting the bearing flange, the axial clearance must be checked as indicated in the table below.

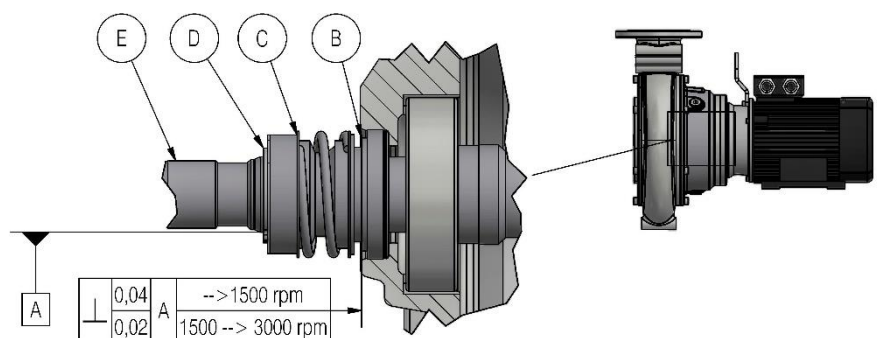
Pump size 1500 rpm	Acceptable clearance	Pump size 3000 rpm	Acceptable clearance
50	0.25 ± 0.05 mm	50	0.50 ± 0.05 mm
65	0.50 ± 0.05 mm	65	0.80 ± 0.05 mm
80	0.50 ± 0.05 mm	80	1.30 ± 0.05 mm
105	0.80 ± 0.05 mm		
150 and 105 22/30 kW	1.30 ± 0.05 mm		

Installation of mechanical seals

When installing the mechanical shaft seals, it is important to note 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. Rotary 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.



The rotating sealing part, pos. C, is

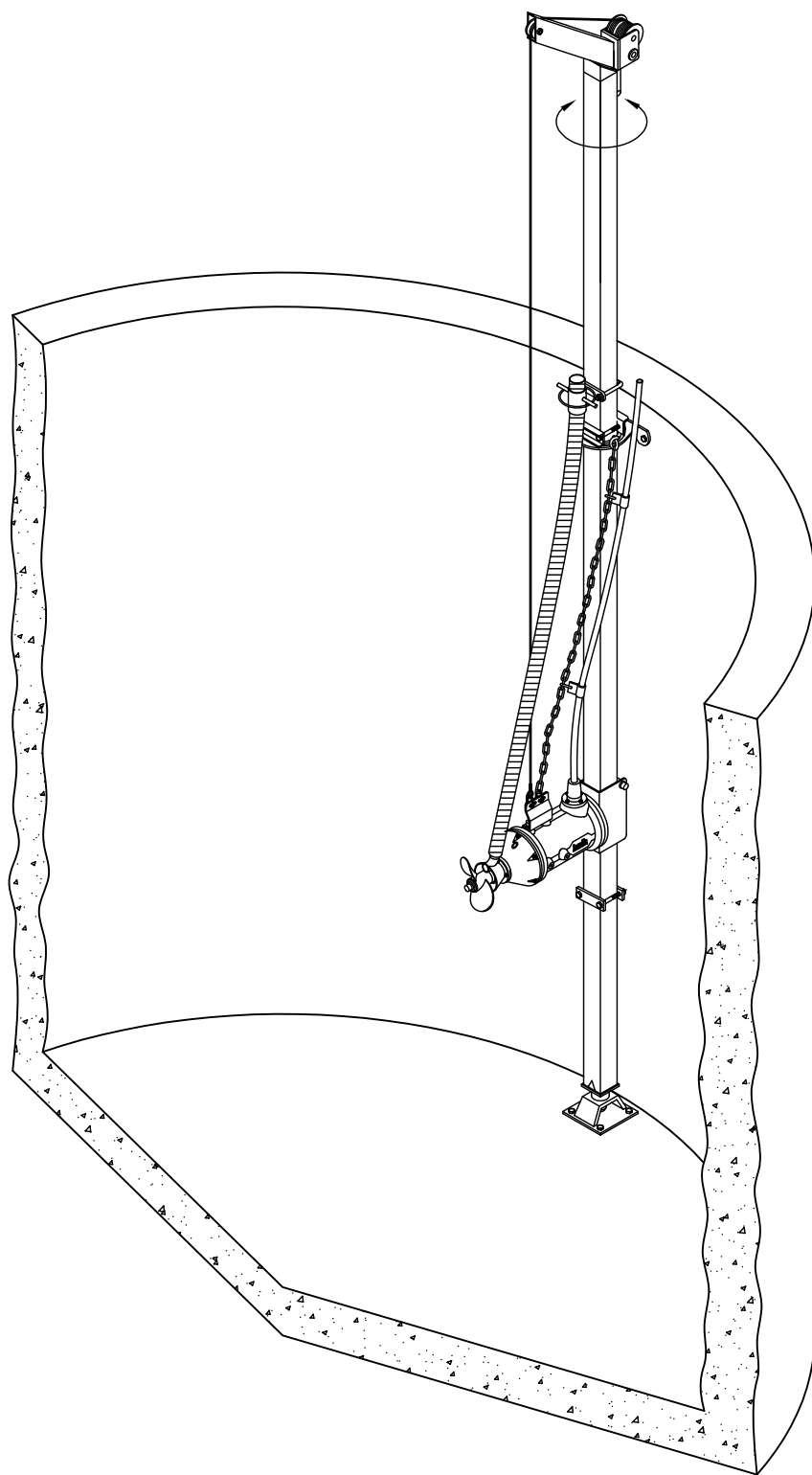
put over the shaft. To ease the installation put soap water on the interior side of the rubber bellows as well as on the shaft. Do not apply silicone, PTFE lubricants or oil as they will prevent the rubber bellows from sticking to the shaft. Installation arbor should be used.

Locking ring, pos. D, is placed on the shaft and the seal is pressed until the locking ring is mounted in the locking ring groove. Check the seal by turning the motor shaft.

Oil is filled in the oil chamber. During the filling, the pump must be in a horizontal position. Oil quantity: see spare parts list, otherwise the oil must reach the level of the upper oil plug.

Repair of the surface coating is necessary before the pump is put back into operation. See instruction for maintenance of surface coating.

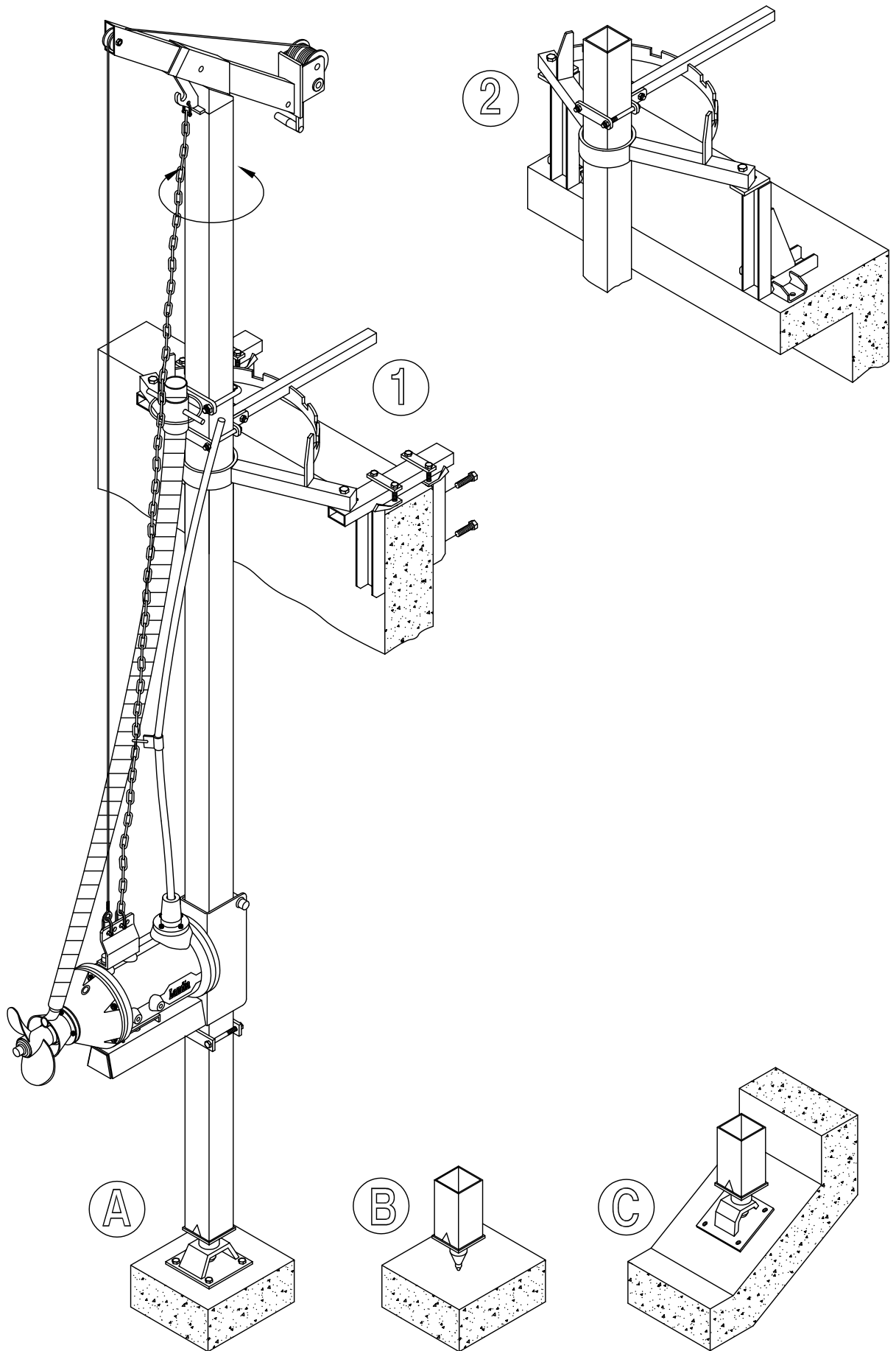
We reserve the right to technical alterations. Translated from Danish.



Landia

PODB-I opstilling
Principtegning

Scale: 1:30	Sign.: HL KT	Date: 11.04.2003
Dwg.no.:		3740739

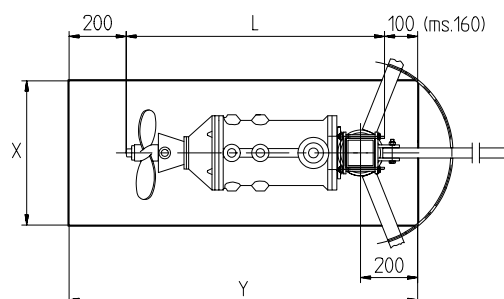
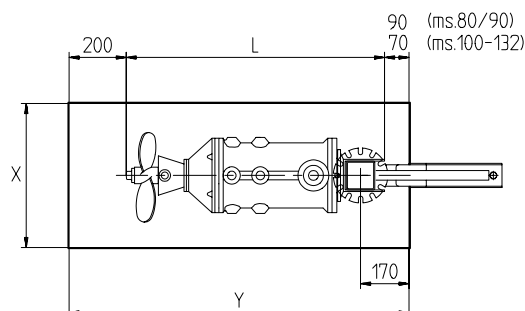
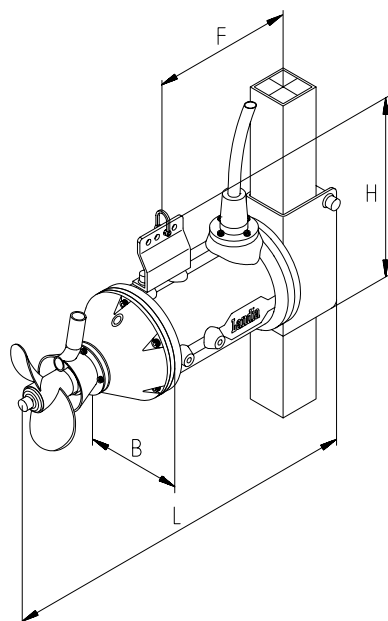


Landia

PODB-I
 Betondæk/kant-befæstelser
 ms. 160
 Principtegning

Scale: 1:20	Sign.: HL KT	Date: 10-06-2003
Dwg.no.:		3740746

**Røreværksbelüfter / Aerator / Rührwerk-Belüfter / Agitateur-aérateur
Type PODB-I**

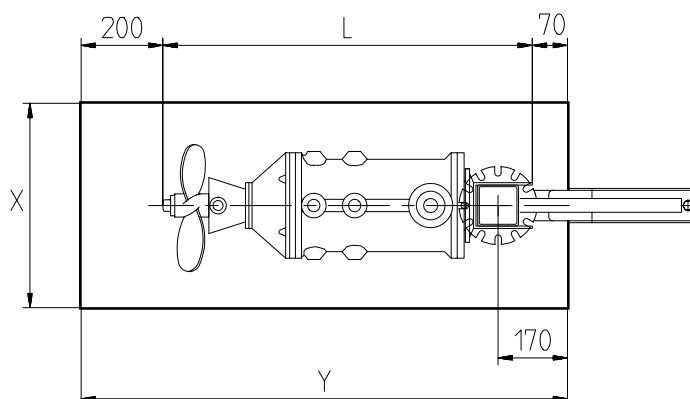
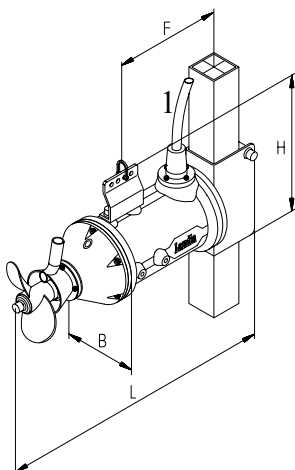


Varenr./ Article no./ Artikel Nr./ Code no.	Effekt/ Power/ Leist./ Puiss.	Serie/ Series/ Baureihe/ Série	Prop.omdr./ Prop.rpm./ Prop.Drehzahl/ Hélice tours/	Prop.nr./ Prop.no./ Prop.Nr./ Hélice no.	Prop.diam./ Prop.diam./ Prop.Durchm./ Diam.hélice/	H	B	L	F	Anbefalet mandehul Recommended man hole Empfohlenes Mannloch Trou d'homme recommandé x * y [mm]
(400V)	[kW]	ms.	[1/min]		[mm]	[mm]	[mm]	[mm]	[mm]	
1314398	1,1	80	1500	234/434	ø170	280	175	550		300*850
1314301	1,5	80	1500	238/438	ø190	280	175	550		300*850
1314302	2,2	90	1500	238/438	ø220	295	190	555	190	350*850
1314304	4,0	100	1500	204/404	ø245	320	215	690	240	350*950
1314305	5,5	112	1500	206/406	ø260	335	230	725		400*1000
1314307	7,5	132	1500	255/455	ø275	585	265	830	295	400*1100
1314311	11,0	132	1500	262/462	ø310	585	265	830	295	400*1100
1314315	15,0	160	1500	265/465	ø325	625	320	910	325	450*1200
1314318	18,5	160	1500	268/468	ø335	625	320	910	280	450*1200
1312301	1,5	80	3000	226/426	ø130	280	175	550	190	300*850
1312303	3,0	90	3000	232/432	ø160	295	190	555	190	350*850
1312304	4,0	100	3000	210/410	ø170	320	215	690		350*950
1312305	5,5	100	3000	205/405	ø190	320	215	690		350*950
1312307	7,5	112	3000	208/408	ø210	335	230	725		400*1000
1312311	11,0	132	3000	247/447	ø235	585	265	830	275	400*1150

Ret til tekniske ændringer forbeholdes - We reserve the right to make technical alterations.

Technische und maßliche Änderungen vorbehalten - Sous réserve de modifications techniques.

Røreværksbelufter, rustfri / Aerator, stainless steel /
Rührwerk-Belüfter, Edelstahl / Agitateur-aérateur, inox
Type POBDR-I



Varenr./ Article no./ Artikel Nr./ Code no.	Effekt/ Power/ Leist./ Puiss.	Serie/ Series/ Baureihe/ Série	Prop.omdr./ Prop.rpm./ Prop.Drehzahl/ Hélice tours	Prop.nr./ Prop.no./ Prop.Nr./ Hélice no.	Prop.diam./ Prop.diam./ Prop.Durchm./ Diam. hélice	H	B	L	F	Anbefalet mandehul Recommended man hole Empfohlenes Mannloch Trou d'homme recommandé x*y [mm]
(400V)	[kW]	ms.	[1/min]		[mm]	[mm]	[mm]	[mm]	[mm]	
1314203	3,0	100R	1500	404	ø245	320	215	690		350*1000
1314204	4,0	100R	1500	404	ø245	320	215	690	240	350*1000
1314207	7,5	132R	1500	455	ø275	585	265	830	290	400*1100
1314211	11,0	132R	1500	462	ø310	585	265	830	285	400*1100
1312204	4,0	100R	3000	410	ø170	320	215	690	240	350*1000
1312205	5,5	100R	3000	405	ø190	320	215	690	255	350*1000
1312211	11,0	132R	3000	447	ø235	585	265	830	275	400*1100

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

PODB-I

The Landia PODB-I is a self-priming propeller aereator. Air, and thus oxygen, is automatically sucked down through a tube and dissolved in the waste water with the help of a rapidly rotating propeller.

APPLICATION EXAMPLES

- Aeration of waste water or sludge
- Combined mixing and aeration
- Eliminates odours from the waste water
 - the waste water remains fresh
- Supplementary aeration at peak load
- Cleaning/washing of equalisation tanks



PROPELLER RPM

1,500 rpm

3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	Cast iron EN-GJL-250
Propeller	Stainless steel W1.4301/AISI304
Ejector nozzle	Stainless steel W1.4301/AISI304
Shaft	W1.6582/AISI4340
Bolts	A4
Sealing set	Mechanical shaft seals: silicon carbide/silicon carbide
Oil type	15W-40 Vario HDX (with moisture detection)

SERVICE AND MAINTENANCE

Recommended service interval/oil change	Maximum 2,500 operating hours/minimum once a year
Motor	Lifetime lubricated bearings
Oil chamber	Periodic oil change

SURFACE TREATMENT

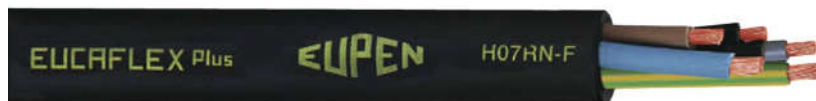
2-component coating: RAL 7005 (Mouse Grey)

Mouse Grey

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).

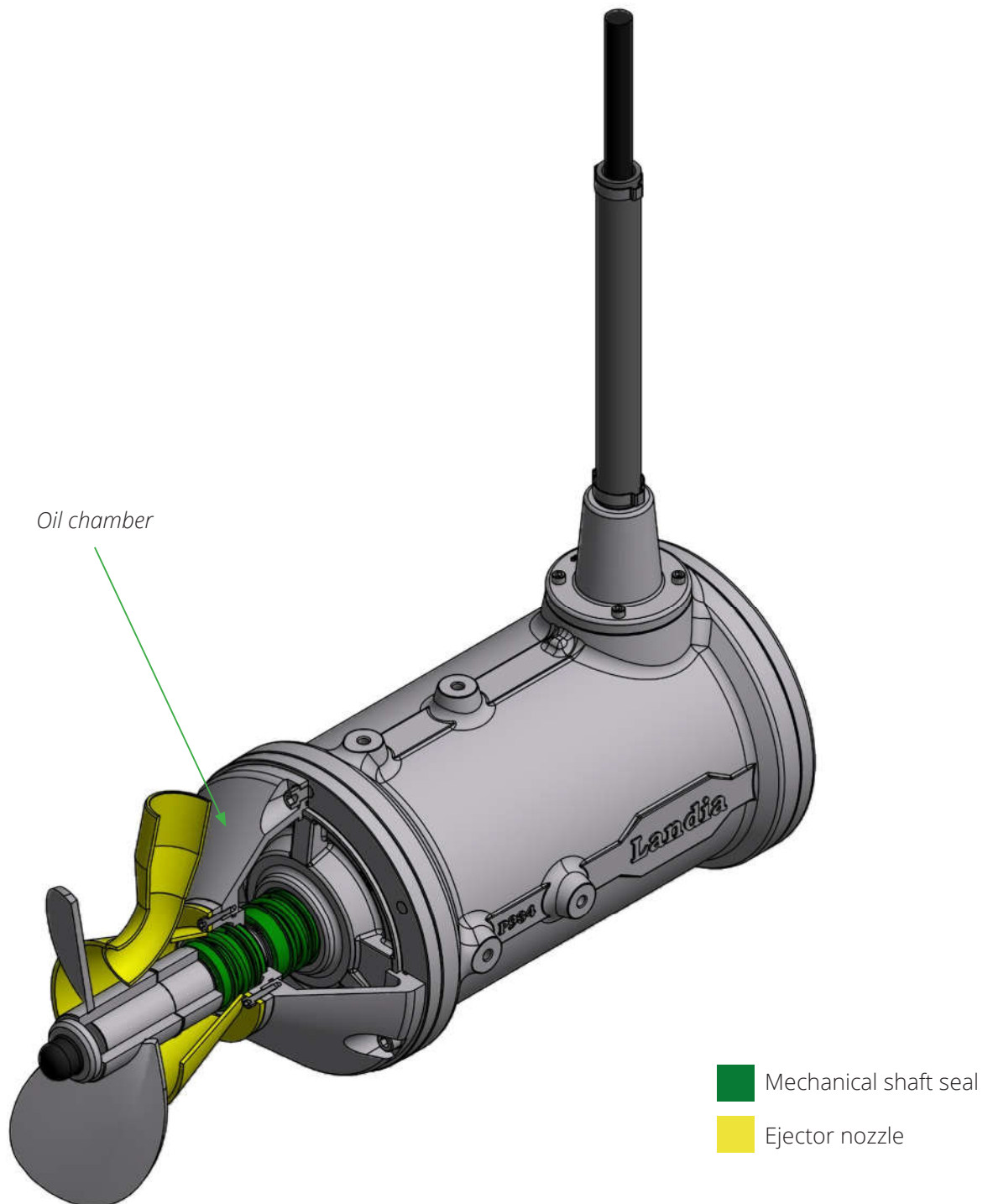
MONITORING FUNCTIONS

Bimetal thermal sensors 120 °C

Moisture detection system (optional)

DESIGN

The Landia PODB-I is a self-priming propeller aerator. Air, and thus oxygen, is automatically sucked down through a tube and dissolved in the waste water with the help of a rapidly rotating propeller. It has self-cleaning stainless propellers and a sealing system consisting of two mechanical shaft seals.



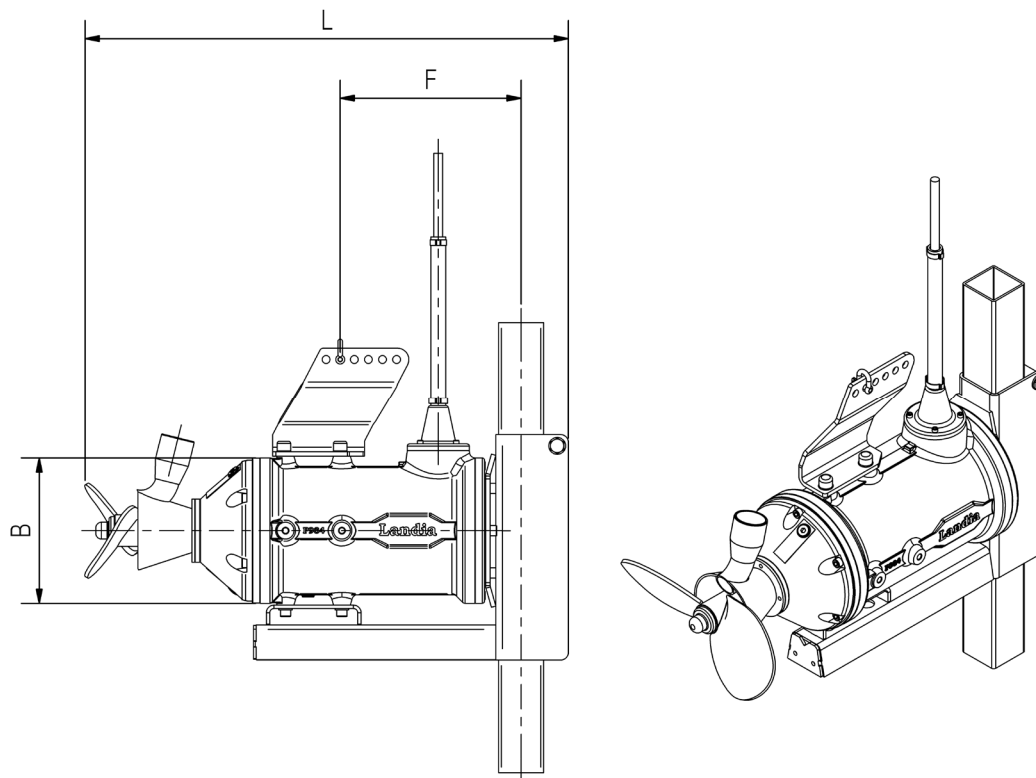
ELECTRICAL DATA

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
ATEX classification	II 2 G Ex db h IIB T4 Gb (Option, only available for specific models)

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]		[%]
PODB-I 1.1 kW-1,500 rpm	1314398	1.1	1,410	2.6	Y	14	0.79	76.7
PODB-I 1.5 kW-1,500 rpm	1314301	1.5	1,400	3.4	Y	19	0.81	78.6
PODB-I 2.2 kW-1,500 rpm	1314302	2.2	1,410	5.0	Y	30	0.80	80.2
PODB-I 4.0 kW-1,500 rpm	1314304	4.0	1,435	8.8	Δ	61	0.78	84.1
PODB-I 5.5 kW-1,500 rpm	1314305	5.5	1,440	11.0	Δ	68	0.87	84.6
PODB-I 7.5 kW-1,500 rpm	1314307	7.5	1,455	15.0	Δ	90	0.83	86.2
PODB-I 11.0 kW-1,500 rpm	1314311	11.0	1,455	21.5	Δ	146	0.84	87.9
PODB-I 15.0 kW-1,500 rpm	1314315	15.0	1,465	29.0	Δ	212	0.84	88.7
PODB-I 18.5 kW-1,500 rpm	1314318	18.5	1,460	35.0	Δ	238	0.85	89.3
PODB-I 1.5 kW-3,000 rpm	1312301	1.5	2,840	3.1	Y	22	0.86	81.2
PODB-I 3.0 kW-3,000 rpm	1312303	3.0	2,865	6.2	Δ	42	0.85	82.8
PODB-I 4.0 kW-3,000 rpm	1312304	4.0	2,900	8.4	Δ	59	0.81	84.9
PODB-I 5.5 kW-3,000 rpm	1312305	5.5	2,860	11.0	Δ	61	0.86	84.7
PODB-I 7.5 kW-3,000 rpm	1312307	7.5	2,890	15.0	Δ	99	0.85	86.1
PODB-I 11.0 kW-3,000 rpm	1312311	11.0	2,905	20.5	Δ	143	0.88	87.6

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]
PODB-I 1.1 kW-1,500 rpm	1314398	ø170	175	-	550	60x60	32
PODB-I 1.5 kW-1,500 rpm	1314301	ø190	175	-	550	60x60	34
PODB-I 2.2 kW-1,500 rpm	1314302	ø190	190	190	555	80x80	39
PODB-I 4.0 kW-1,500 rpm	1314304	ø245	215	240	690	80x80	62
PODB-I 5.5 kW-1,500 rpm	1314305	ø260	230	-	725	80x80	70
PODB-I 7.5 kW-1,500 rpm	1314307	ø275	265	295	830	80x80	114
PODB-I 11.0 kW-1,500 rpm	1314311	ø310	265	295	830	80x80	121
PODB-I 15.0 kW-1,500 rpm	1314315	ø325	320	325	910	100x100	145
PODB-I 18.5 kW-1,500 rpm	1314318	ø335	320	280	910	100x100	179
PODB-I 1.5 kW-3,000 rpm	1312301	ø130	175	190	550	60x60	31
PODB-I 3.0 kW-3,000 rpm	1312303	ø160	190	190	555	80x80	40
PODB-I 4.0 kW-3,000 rpm	1312304	ø170	215	-	690	80x80	55
PODB-I 5.5 kW-3,000 rpm	1312305	ø190	215	-	690	80x80	61
PODB-I 7.5 kW-3,000 rpm	1312307	ø210	230	-	725	80x80	77
PODB-I 11.0 kW-3,000 rpm	1312311	ø235	265	275	830	80x80	120

We reserve the right to make technical changes.

PODBR-I

The Landia PODB-I is a self-priming propeller aerator. Air, and thus oxygen, is automatically sucked down through a tube and dissolved in the waste water with the help of a rapidly rotating propeller.

APPLICATION EXAMPLES

- Aeration of waste water or sludge
- Combined mixing and aeration
- Eliminates odours from the waste water
 - the waste water remains fresh
- Supplementary aeration at peak load
- Cleaning/washing of equalisation tanks



PROPELLER RPM

1,500 rpm
3,000 rpm

MATERIAL OF CONSTRUCTION

Motor housing and oil chamber	W1.4404/AISI316
Propeller	Stainless steel W1.4301/AISI304
Ejector nozzle	Stainless steel W1.4301/AISI304
Shaft	W1.4404/AISI316
Bolts	Steel A4
Sealing set	Mechanical shaft seals: silicon carbide/silicon carbide
Oil type	15W-40 Vario HDX (with moisture detection)

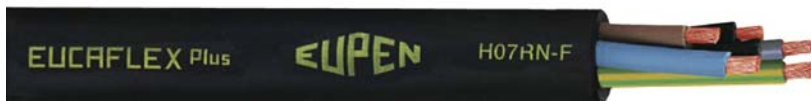
SERVICE AND MAINTENANCE

Recommended service interval/oil change	Maximum 2,500 operating hours/minimum once a year
Motor	Lifetime lubricated bearings
Oil chamber	Periodic oil change

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).

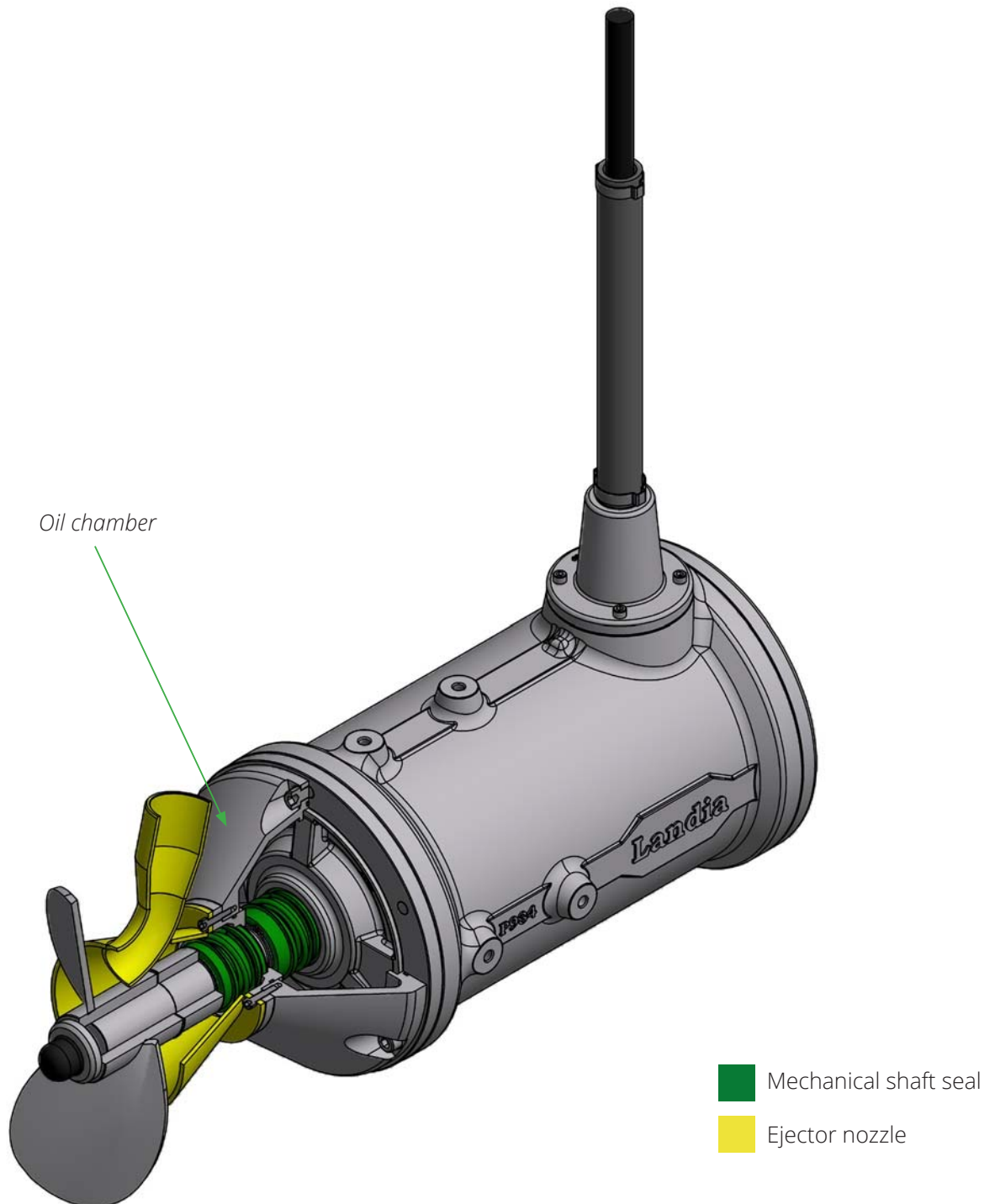
MONITORING FUNCTIONS

Bimetal thermal sensors 120 °C

Moisture detection system (optional)

DESIGN

The Landia PODBR-I is a self-priming propeller aerator. Air, and thus oxygen, is automatically sucked down through a tube and dissolved in the waste water with the help of a rapidly rotating propeller. It has self-cleaning stainless propellers and a sealing system consisting of two mechanical shaft seals.



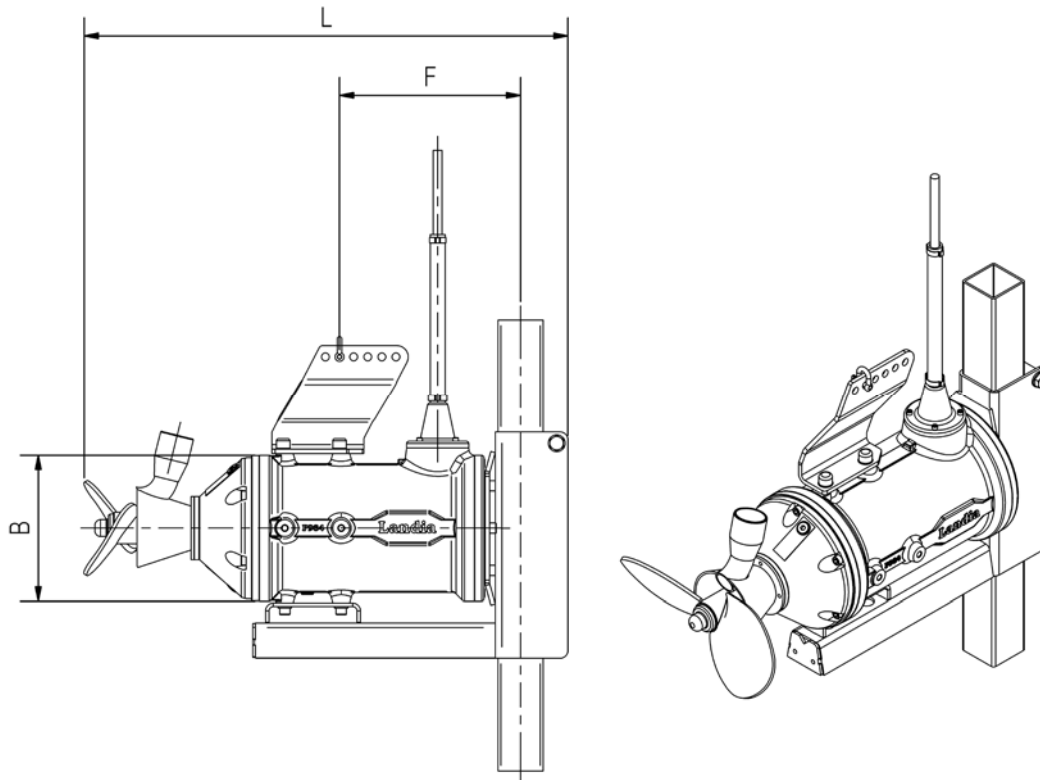
ELECTRICAL DATA

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
ATEX classification	Not possible

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]		[%]
PODBR-I 3.0 kW-1,500 rpm	1314203	3.0	1,430	6.7	Δ	43	0.79	82.4
PODBR-I 4.0 kW-1,500 rpm	1314204	4.0	1,435	8.8	Δ	61	0.78	84.1
PODBR-I 7.5 kW-1,500 rpm	1314207	7.5	1,455	15.0	Δ	90	0.83	86.2
PODBR-I 11.0 kW-1,500 rpm	1314211	11.0	1,455	21.5	Δ	146	0.84	87.9
PODBR-I 4.0 kW-3,000 rpm	1312204	4.0	2,900	8.4	Δ	59	0.81	84.9
PODBR-I 5.5 kW-3,000 rpm	1312205	5.5	2,860	11.0	Δ	61	0.86	84.7
PODBR-I 11.0 kW-3,000 rpm	1312211	11.0	2,905	20.5	Δ	143	0.88	87.6

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]
PODBR-I 3.0 kW-1,500 rpm	1314203	ø245	215	240	690	80x80	60
PODBR-I 4.0 kW-1,500 rpm	1314204	ø245	215	240	690	80x80	62
PODBR-I 7.5 kW-1,500 rpm	1314207	ø275	265	295	830	80x80	114
PODBR-I 11.0 kW-1,500 rpm	1314211	ø310	265	295	830	80x80	121
PODBR-I 4.0 kW-3,000 rpm	1312204	ø170	215	-	690	80x80	55
PODBR-I 5.5 kW-3,000 rpm	1312205	ø190	215	-	690	80x80	61
PODBR-I 11.0 kW-3,000 rpm	1312211	ø235	265	275	830	80x80	120

We reserve the right to make technical changes.

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Disassembling/assembling the unit.....	5

Introduction

PODB-I is a horizontal submersible mixer aerator. The unit is placed in the cross section of the liquid to obtain the required mixing/aeration. During operation the mixer aerator is locked by the guide pipe to obtain stability.

The mixing takes place by means of an electric motor; a propeller is installed on the motor shaft. By the vacuum created behind the propeller, air, chemicals etc. can be aspirated into the liquid by means of a hose. The oil filled oil chamber between motor and propeller provides cooling and lubrication of the mechanical seals. The sealing system consists of two mechanical seals. The exterior seal separates the medium from the oil chamber; the interior seal separates the oil from the motor casing.

The following pages describe the connection and the maintenance of mixer aerators type PODB-I.

Application

This mixer aerator is to be applied for mixing and aeration of wastewater, drinking water and other liquids, as well as for aspiration and mixing of chemicals in powder form.

The mixer aerator can be placed in oxidation and aeration tanks, fishponds, biological treatment plants, and powder dosing plants and is only to be applied fully submerged below liquid level.

If the mixer aerator is to be applied for other purposes, contact Landia A/S for advice.

Warning

Please note the following points:

- 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 aerator, as well as ensure that the equipment in the tank is fixed safely.
- Prior to the first start of the aerator, the propeller shaft must be rotated manually. This also applies if the aerator has not been in operation for a longer period.
- The electrical cable is always to be tightened by means of the chain to prevent the cable from getting into contact with the propeller. If the aerator is not supplied with a chain, the cable is to be protected against damage in another way, e.g. by means of a cable mesh.
- It must be ensured that the propeller cannot touch the tank.
- It is always to be ensured that the aerator is fully below liquid level during operation.
- Prior to hoisting the aerator at service/repair it is always to be ensured that the electrical connection of the aerator is switched off or locked. Prior to service/repair the aerator should be cleaned thoroughly.
- When the aerator is hoisted or lowered, its cable and chain are always to be placed outside the work area.
- For service/repair of aerators installed in well/tank with explosion danger/toxic gases we refer to the national safety directions as far as safety is concerned, e.g. concerning the toxic hydrogen sulphide.

Service/repair

To maintain a high operating safety and a long service life without unnecessary and expensive repair it is important from the beginning to execute regular and preventive service. Maintenance should be executed according to the intervals stated in the manual. Always follow the instructions carefully and only apply the parts described by Landia A/S in the spare parts list.

If you do not want to execute the service yourself, we can offer you a service agreement - please call for further information.

Please note

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

For major repairs at a special workshop please contact:

Head Office:	UK subsidiary:
LANDIA A/S	Landia (UK) Ltd.
Industrivej 2	Waymills Industrial Estate,
DK-6940 Lem St.	Whitchurch,
Tel.: +45 97 341244	Shropshire SY13 1TT
info@landia.dk	Tel: + 44 01948 661 200
www.landia.dk	info@landia.co.uk
	www.landia.co.uk

Landia A/S is represented by local distributors worldwide, please call for further information.

Rating plate

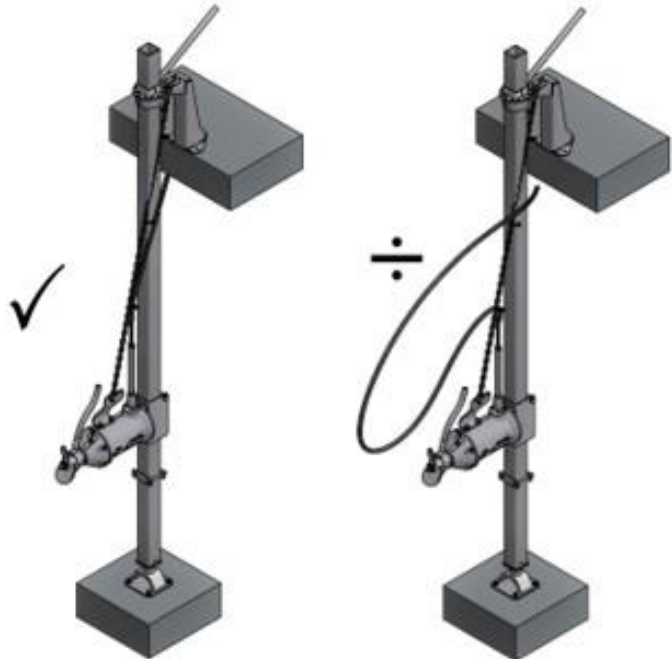
	DK-6940 Lem St.		
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	<input type="text"/> V		<input type="text"/> A
	<input type="text"/> Hz	<input type="text"/> kW	Ins.cl. <input type="text"/>
Cos φ	0, <input type="text"/>	<input type="text"/> RPM	<input type="text"/> kg
Eff. cl.	<input type="text"/>	Year	<input type="text"/>
	IP <input type="text"/>	Duty type	S1

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.

Please note

It is important that the electrical cable is tightened to prevent the cable from getting into contact with the propeller. The cable can be ensured against damage by means of a cable mesh or a chain.



Power connection

Every aerator is equipped with the above mentioned rating plate with technical motor data. It must be ensured that the other electrical parts correspond to the motor data. For each aerator there is an electrical diagram. A protective motor switch must be applied when connecting the aerator to the mains.

Only a certified electrician is allowed to connect the unit.

Operation

The mixer aerators have thermal sensors as standard equipment.

Often the mixer aerators are exposed to extremely difficult operation conditions. Therefore, it is important to connect the thermal control. Burning of the motor due to overheating can thus be avoided. If the safety function has been activated the aerator must not be re-started until the cause of the disconnection has been found.

Among other things the disconnection can be caused by reduced mains voltage, a propeller blockage or an overheated motor. The cooling period for overheated motors can be up to 1 hour.

The mixer aerator must not operate above liquid level.

Capacity

The capacity of the mixer aerator will always depend on the consistency of the medium as well as on the aerator's submersion depth. The size of the propeller is decisive for the working depth. The hose is never to be blocked as the aerator will then be overloaded. If the aerator is submerged to a deeper working depth than prescribed, the motor will be overloaded as well.

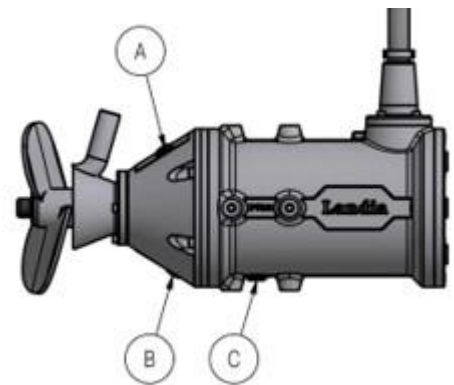
Inspection

Regular inspection will ensure the aerator a long service life at low costs. The oil must be changed every 4 months/2,500 hours of operation, however, min. once a year. Under difficult operation conditions, more often than every 4 months.

Oil control

The oil is checked by removing the upper oil plug pos. A. The oil has to be clean and the level has to reach the level of the plug hole. Oil type: 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 removing the plugs pos. A and pos. B. If the oil is dirty, the outer seal must be checked for wear and contamination. Oil is filled at oil plug pos. A.

The inner seal must be checked in the following way:

Remove the inspection plug pos. C beneath the motor. A small seepage of oil is normal. The oil quantity is checked by drainage pos. C.

In case of abnormal seepage, it is necessary to check the inner seal. If it is necessary to dry up the motor windings, contact a special workshop.

Equipment

The equipment should be checked for wear and corrosion. The winch is to be grease lubricated. Control brake and lock. Retighten screws. If the screws are loose, remove them and lubricate with an adhesive substance (e.g. Loctite) prior to reinstallation.

Disassembling/assembling the unit

A major repair should take place at a special workshop.

Below please find some general conditions regarding disassembling/assembling of Landia aerator type PODB-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.

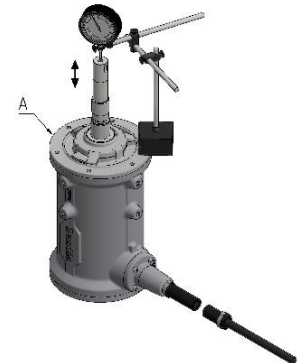
Bolt size	Quality 10.9 – 12.9 Steel	Quality A4-80 Acidproof
M6	14 Nm	10 Nm
M8	34 Nm	24 Nm
M10	67 Nm	48 Nm
M12	115 Nm	82 Nm
M16	160 Nm	137 Nm

Please note

After installing the bearing flange, the axial space must be checked as stated in the table below:

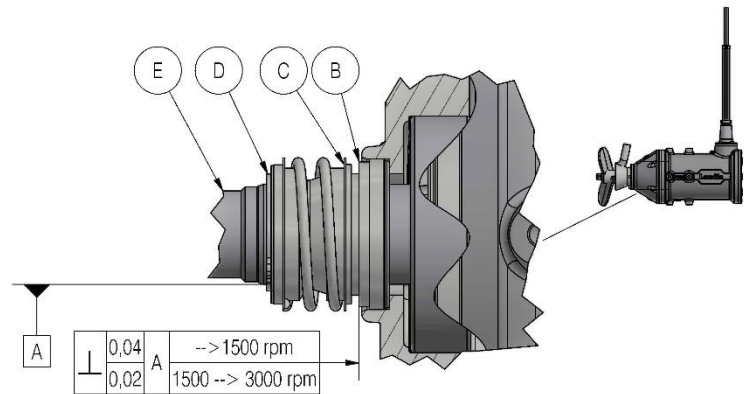
Motor series	Acceptable margin
ms80	$0,7 \pm 0,05$ mm
ms90	$0,7 \pm 0,05$ mm
ms100	$0,9 \pm 0,05$ mm
ms112	$1,0 \pm 0,05$ mm
ms132	$1,0 \pm 0,05$ mm
ms160	$1,1 \pm 0,05$ mm

A. Bearing flange


Installation of mechanical shaft seals

When installing mechanical shaft seals please be aware that these are precision products and 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 installed 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 aerator 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 aerator must be in a horizontal position.

Oil quantity: see spare parts list.

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

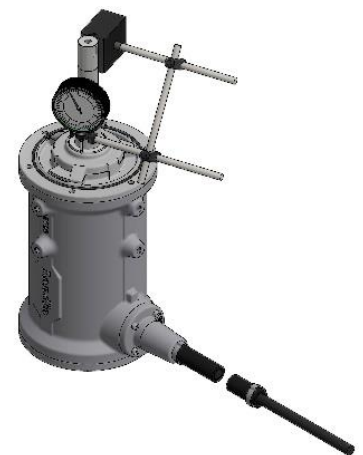


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Disassembling/ assembling the unit.....	5

Introduction

PODBR-I is a horizontal submersible mixer aerator. All surfaces which are in contact with the medium are made of stainless steel.

The unit is placed in the cross section of the liquid to obtain the required mixing/aeration. During operation, the mixer aerator is locked by the guide pipe to obtain stability. The mixing takes place by means of an electric motor; a propeller is installed on the motor shaft. By the vacuum created behind the propeller, air, chemicals etc. can be aspirated into the liquid by means of a hose.

The oil filled oil chamber between motor and propeller provides cooling and lubrication of the mechanical seals. The sealing system consists of two mechanical seals. The exterior seal separates the medium from the oil chamber; the interior seal separates the oil from the motor casing.

The following pages describe the connection and the maintenance of mixer aerators type PODBR-I.

Application

This mixer aerator is to be applied for mixing and aeration of wastewater, drinking water and other liquids, as well as for aspiration and mixing of pulverulent chemicals.

The mixer aerator can be placed in oxidation and aeration tanks, fishponds, biological treatment plants, and powder dosing plants, and is only to be applied fully submerged below liquid level.

If the mixer aerator is to be applied for other purposes, contact Landia A/S for advice.

Warning

Please note the following points:

- 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 aerator, as well as ensure that the equipment in the tank is fixed safely.
- Prior to the first start of the aerator, the propeller shaft must be rotated manually. This also applies if the aerator has not been in operation for a longer period.
- The electrical cable is always to be tightened by means of the chain to prevent the cable from getting into contact with the propeller. If the aerator is not supplied with a chain, the cable is to be protected against damage in another way, e.g. by means of a cable mesh.
- It must be ensured that the propeller cannot touch the tank.
- It is always to be ensured that the aerator is fully below liquid level during operation.
- Prior to hoisting the aerator at service/repair it is always to be ensured that the electrical connection of the aerator is switched off or locked. Prior to service/repair the aerator should be cleaned thoroughly.
- When the aerator is hoisted or lowered, its cable and chain are always to be placed outside the work area.
- For service/repair of aerators installed in well/tank with explosion danger/toxic gases we refer to the national safety directions as far as safety is concerned, e.g. concerning the toxic hydrogen sulphide.

Service/repair

To maintain a high operating safety and a long service life without unnecessary and expensive repair it is important from the beginning to execute regular and preventive service. Maintenance should be executed according to the intervals stated in the manual. Always follow the instruction carefully and only apply the parts described by Landia A/S in the spare parts list.

If you do not want to execute the service yourself, we can offer you a service agreement - please call for further information.

Please note

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

For major repairs at a special workshop please contact:

Head Office:	UK subsidiary:
LANDIA A/S	Landia (UK) Ltd.
Industrivej 2	Waymills Industrial Estate,
DK-6940 Lem St.	Whitchurch,
Tel.: +45 97 341244	Shropshire SY13 1TT
info@landia.dk	Tel: + 44 01948 661 200
www.landia.dk	info@landia.co.uk
	www.landia.co.uk

Landia A/S is represented by local distributors worldwide, please call for further information.

Rating plate

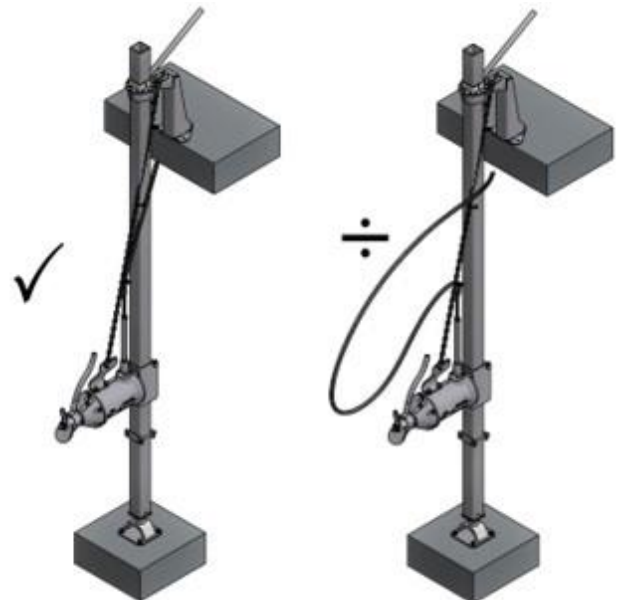
	DK-6940 Lem St.		
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	<input type="text"/>	kW	<input type="text"/>
	<input type="text"/>	Ins.cl.	<input type="text"/>
Cos φ	0, <input type="text"/>	RPM	<input type="text"/>
	<input type="text"/>	kg	<input type="text"/>
Eff. cl	<input type="text"/>	Year	<input type="text"/>
	IP <input type="text"/>	Duty type	S1

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.

Please note

It is important that the electrical cable is tightened to prevent the cable from getting into contact with the propeller. The cable can be ensured against damage by means of a cable mesh or a chain.



Power connection

Every aerator is equipped with the above mentioned rating plate with technical data. It must be ensured that the other electrical parts correspond to the motor data. For each aerator there is an electrical diagram. A protective motor switch must be applied when connecting the aerator to the mains.

Only a certified electrician is allowed to connect the unit.

Operation

The mixer aerators have thermal sensors as standard equipment.

Often the mixer aerators are exposed to extremely difficult operation conditions. Therefore, it is important to connect the thermal control. Burning of the motor due to overheating can thus be avoided. If the safety function has been activated the aerator must not be re-started until the cause of the disconnection has been found. Among other things the disconnection can be caused by reduced mains voltage, a propeller blockage or an overheated motor. The cooling period for overheated motors can be up to 1 hour.

The mixer aerator must not operate above liquid level.

Capacity

The capacity of the mixer aerator will always depend on the consistency of the medium as well as on the aerator's submersion depth. The size of the propeller is decisive for the working depth. The hose is never to be blocked as the aerator will then be overloaded. If the aerator is submerged to a deeper working depth than prescribed, the motor will be overloaded as well.

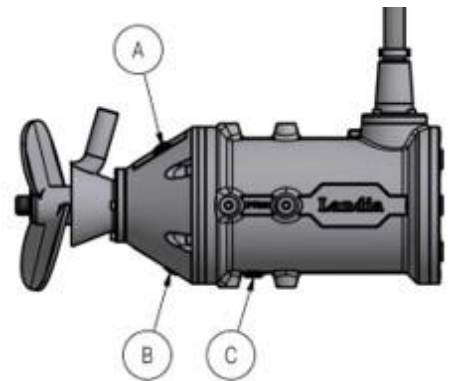
Inspection

Regular inspection will ensure the aerator a long service life at low costs. The oil must be changed every 4 months/2,500 hours of operation, however, min. once a year. Under difficult operation conditions, more often than every 4 months.

Oil control

The oil is checked by removing the upper oil plug pos. A. The oil has to be clean and the level has to reach the level of the plug hole. Oil type: 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 removing the plugs pos. A and pos. B. If the oil is dirty the outer seal must be checked for wear and contamination. Oil is filled at oil plug A.

The inner seal must be checked in the following way:

Remove the inspection plug pos. C beneath the motor. A small leak of oil is normal. The oil quantity is checked by drainage pos. C.

In case of abnormal leakage, it is necessary to check the inner seal. If it is necessary to dry up the motor windings, contact a special workshop.

Equipment

The equipment should be checked for wear and corrosion. The winch is to be grease lubricated. Check brake and lock. Retighten screws. If the screws are loose, remove them and lubricate with an adhesive substance (e.g. Loctite) prior to reinstallation.

Disassembling/ assembling the unit

A major repair should take place at a special workshop.

Below please find some general conditions regarding disassembling/ assembling of Landia aerator type PODBR-I. The drawing attached to the spare parts list shows the construction of the unit. Not all parts can/should be removed, 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.

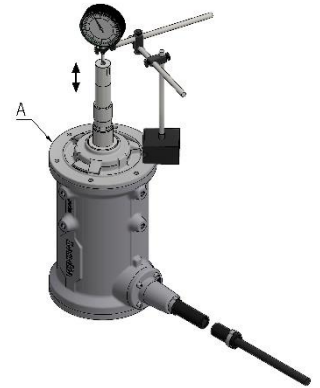
Bolt size	Quality 10.9 – 12.9 Steel	Quality A4-80 Acidproof
M6	14 Nm	10 Nm
M8	34 Nm	24 Nm
M10	67 Nm	48 Nm
M12	115 Nm	82 Nm
M16	160 Nm	137 Nm

Note

After installing the bearing flange check the axial space as stated below.

Motor series	Acceptable margin
ms100	0,9 ± 0,05 mm
ms132	1,0 ± 0,05 mm

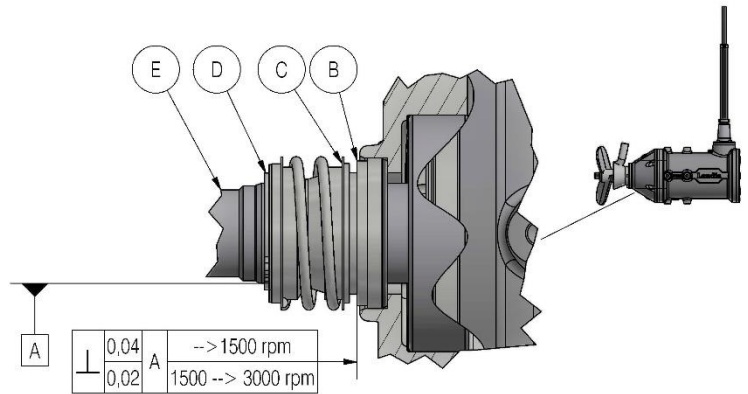
A. Bearing flange



Installation of mechanical shaft seals

When installing 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



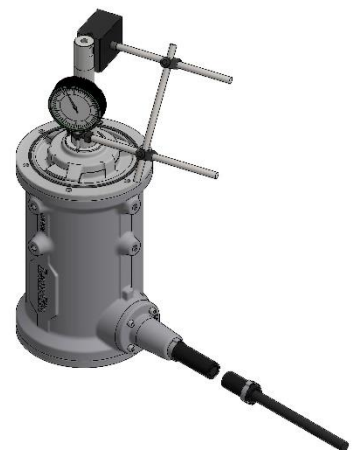
Push the stationary sealing part, pos. B, into place. Be careful not to damage the slide face during the installation. When the stationary part is mounted and straightened with a dial gauge, wipe it off with degreaser.

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. Check the seal by turning the motor shaft.

Test the aerator 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 aerator must be in a horizontal position.

Oil quantity: see spare parts list.



Oliemængdeskema - pumper

DG-I

Type	Pumpehus	Motorserie	Rpm.	CRB Multi 15W-40 (9380001)	Hyspin HVI 15 (9380011)	Tætnings- overvågning Hyspin HVI 46D (9380009)	Frekvens- omformer CRB Multi 15W-40 (9380001)	Levnedsmid- delindustrien Whitemore WOM 65 (9380015)
DG-I	50	71	1500	0,7 l	-		0,7 l	
	65	80/90		1,5 l			1,5 l	
DG-I	65	100		1,5 l			1,5 l	
DGR-I	80	100/112		2,4 l			2,4 l	
DGER-I	105	132/160/180		3,8 l			3,8 l	
DG-I	150	160		3,8 l			3,8 l	
		180	6,5 l	6,5 l				
DG-I	50	80/90/100	3000	-		0,8 l		
	65	112				1,1 l		
DG-I	65	132/160				1,7 l		
DGR-I	80	160				2,4 l		
	80	180				4,0 l		

MPTK-I

Type	Pumpehus	Effekt [kW]	Rpm.	CRB Multi 15W-40 (9380001)	Hyspin HVI 15 (9380011)	Tætnings- overvågning Hyspin HVI 46D (9380009)	Frekvens- omformer CRB Multi 15W-40 (9380001)	Levnedsmid- delindustrien Whitemore WOM 65 (9380015)
MPTK-I	50	-	1500	0,6 l	-		0,6 l	
MPTK-I	65			1,3 l			1,3 l	
MPTKR-I	65			1,3 l			1,3 l	
MPTK-I	80			2,3 l			2,3 l	
MPTKR-I				2,3 l			2,3 l	
MPTK-GI	80			2,3 l			2,3 l	
MPTK-I Ex.				3,4 l			3,4 l	
MPTK-I	105			3,4 l			3,4 l	
MPTKR-I				3,4 l			3,4 l	
MPTK-GI				3,4 l			3,4 l	
MPTKR-GI	105	3,4 l	3,4 l					
MPTK-I Ex.		5,8 l	5,8 l					
MPTKR-I Ex.		5,8 l	5,8 l					
MPTK-I	150	18,5	4,0 l	4,0 l				
MPTK-GI		22,0/30,0	5,5 l	5,5 l				
MPTK-I Ex.		-	8,5 l	8,5 l				
MPTK-I	50	-	3000	-		0,7 l		
MPTK-I	65					1,3 l		1,3 l
MPTKR-I	65					1,3 l		1,3 l
MPTK-I	80					15,0/18,5		2,2 l
MPTKR-I	80	22,0/30,0	4,2 l	4,2 l				

Oil Amount Table - Mixers

POP-I

Type	Motor series	Gear	Medium temp.	Medium temp.	Seal Control	Grease	Food Industry	
			0-30°	30-60°			Nevastane EP 100 (9380024)	Nevastane SFG 2 (9380025)
POP-I	80/90	EM 1010	Alpha SP 100 (9380008)	Alpha SP 220 (9380002)	Alphasyn GS 220 (9380005)	Bel Ray 50-2 (9380012)	0.9 l	0.3 kg
	100/112	EM 1010	0.9 l				1.1 l	0.5 kg
	132	EM 1010	1.1 l				1.8 l	
	132/160	EM 1020	1.8 l				3.0 l	1.0 kg
	180	EM 1045	3.0 l				4.0 l	
POPR-I	100	EM 1010	4.0 l				2.8 l	0.5 kg
	132	EM 1010	2.8 l				3.0 l	
	132/160	EM 1020	3.0 l				6.0 l	1.0 kg
	180	EM 1045	6.0 l				6.0 l	
POPTR-I POPTR-I Ex	-	EM 1010	5.3 l				0.5 kg	0.5 kg
	-	EM 1020	9.3 l				1.0 kg	1.0 kg

POPL-I

Type	Motor series	Gear	Alpha SP 220 (9380002)	Alphasyn GS 220 (9380005)	Bel Ray 50-2 (9380012)	Seal Control	Grease
POPL-I	90	ED 2030	2.3 l		0.5 kg		
	100/112	ED 2030	3.0 l				
	112/132	ED 2045	4.0 l				

POD-I

Type	Motor series	Rpm.	CRB Multi 15W-40 (9380001)	Hyspin HVI 15 (9380011)	CRB Multi 15W-40 (9380001)	Hyspin HVI 46D (9380009)	Whitemore WOM 65 (9380015)	Frequency Converter	Seal Control	Food Industry
POD-I PODB-I	80/90	750/1000/1500	0.5 l		-	0.5 l				
	100/112		0.9 l			0.9 l				
	132/160		1.6 l			1.6 l				
PODR-I PODBR-I	100	3000	0.5 l		0.5 l					
	132/160		1.2 l		1.2 l					
PODB-I	80/90	3000	-		0.5 l					
	100/112		-		0.9 l					
	132/160		-		1.6 l					
PODBR-I	100	750	-		0.5 l					
	132/160		-		1.2 l					
PODTR-I	-	750	3.5 l		-	3.5 l				

AXD-I / AXP-I

				Frequency Converter	Medium temp. 0-30°	Medium temp. 30-60°	Seal Control		Grease
Type	Motor series	Gear	CRB Multi 15W-40 (9380001)		Alpha SP 100 (9380008)	Alpha SP 220 (9380002)	Hyspin HVI 46D (9380009)	Alphasyn GS 220 (9380005)	Bel Ray 50-2 (9380012)
AXD-I 300	100/112	-	0.9 l		-		0.9 l		-
	132		1.7 l				1.7 l		
AXP-I 500 AXP-I 800	90	EM 1010	-		0.9 l		-	0.9 l	0.3 kg
	100/112				1.1 l			1.1 l	0.5 kg
	132				1.8 l			1.8 l	
	132/160	EM 1020			3.0 l			3.0 l	1.0 kg

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 Fedttyper 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