

Long shaft chopper pump

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

Please click on the links below "table of contents" to get the information needed.

Table of contents

MPG-I

[Schematic drawing](#)

[Principal measurements](#)

[Technical data sheet](#)

[Service instruction](#)



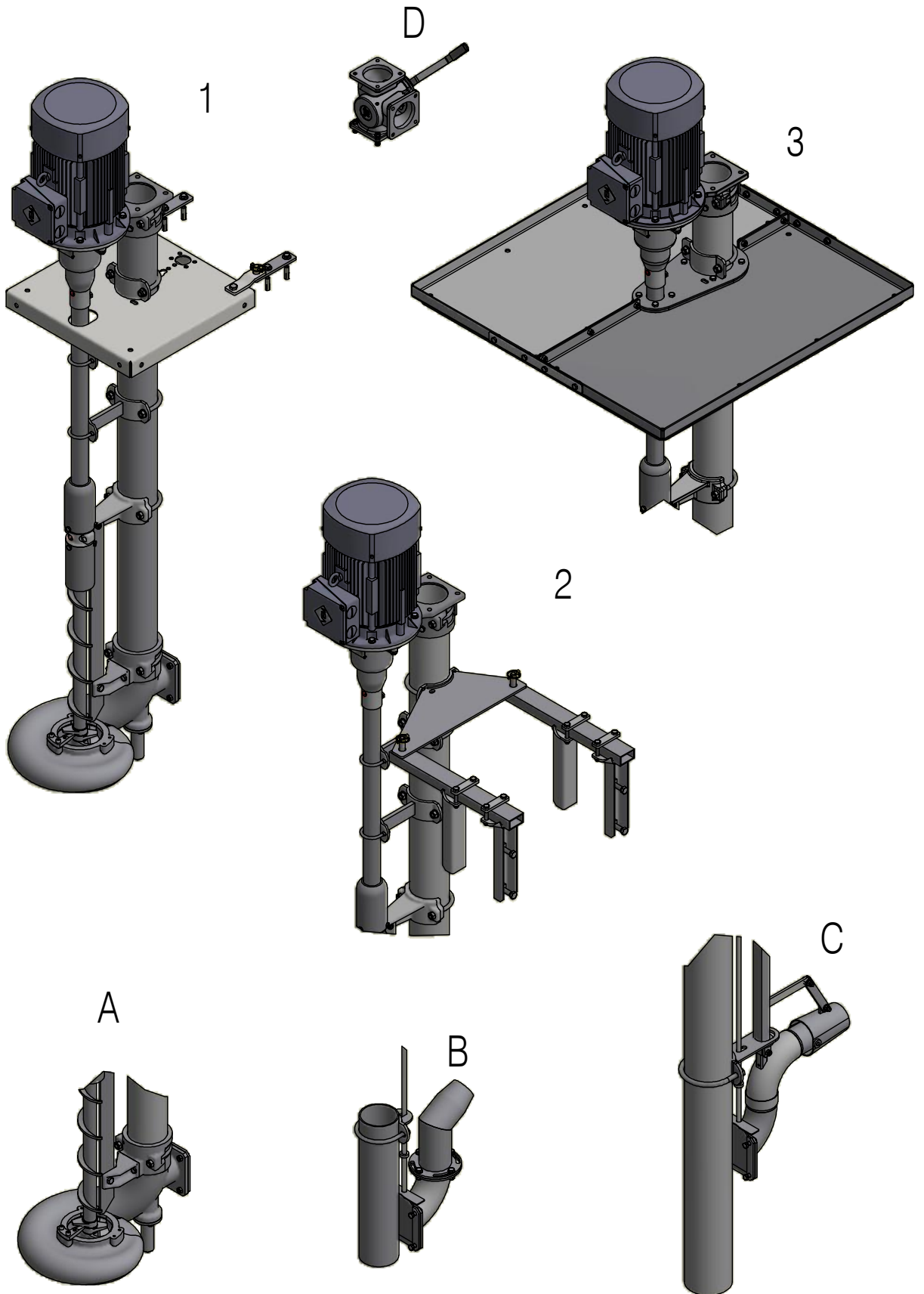
MPFR-I

[Schematic drawing](#)

[Service instruction](#)



COPYRIGHT - This drawing is the property of Landia AS and cannot be shown, copied, given to a third party or used in any other way without permission from Landia AS.



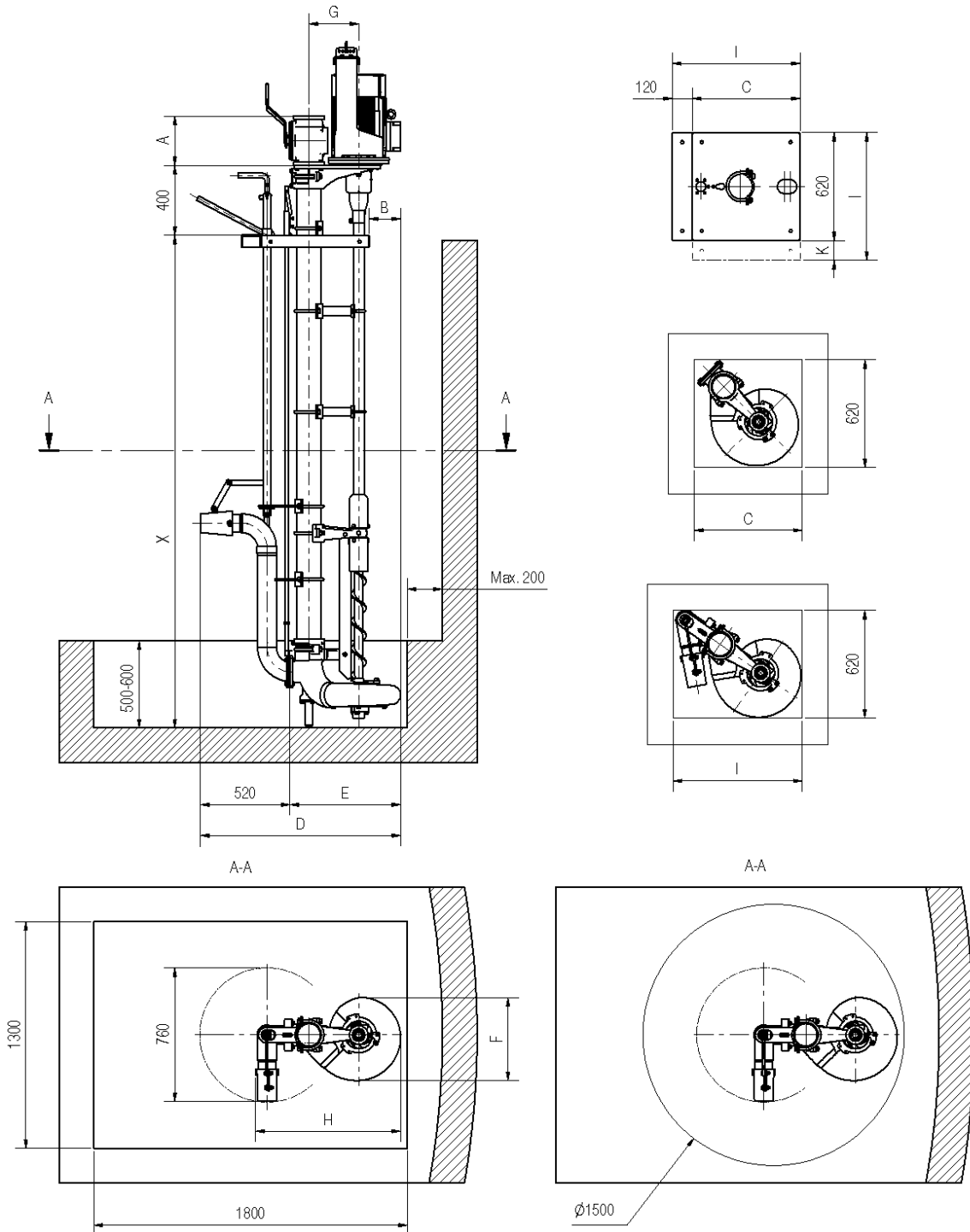
Styret dokument

Landia[®]

MPG-I
Principetegning - Schematic drawing
Prinzipskizze - Dessin de principe

Scale: 1 : 25	Sign.: HL KSK	Date: 27-06-2019
Dwg.no.:		3740668

MPG-I
Bundblanding – Bottom flushing equipment
Rührdüse – Équipement de recyclage



Type	X [m]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	K [mm]
4"	1,6 – 5,4	244	120	620	1050	530	420	225	730	740	-
5"	1,6 - 5,4	282	180	620	1155	635	480	285	835	740	-
6"	1,6 - 5,4	322	218	720	1330	810	600	355	1010	840/890	270

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

Long shaft chopper pump, MPG-I

APPLICATIONS

- Biogas plants, abattoirs, the paper industry, and the fish industry
- Suitable for pumping liquid with high dry-matter content
- Available with adjustable bottom flushing

PUMP RPM

1,500 rpm



The pump shown is incl. accessories

MATERIALS

Motor casing	Cast iron EN-GJL-250
Pump casing	Cast iron EN-GJL-250
Pump impeller	Cast iron EN-GJL-250
Bolts	Acidproof stainless steel A4
Knife system	Steel hardened to HRC 59-60
Extended knife system	Steel hardened to HRC 59-60 (Option)

SERVICE AND MAINTENANCE

Recommended service interval	Maximum 1000 operational hours/minimum once a year
Motor	Lifetime lubricated bearings

SURFACE TREATMENT

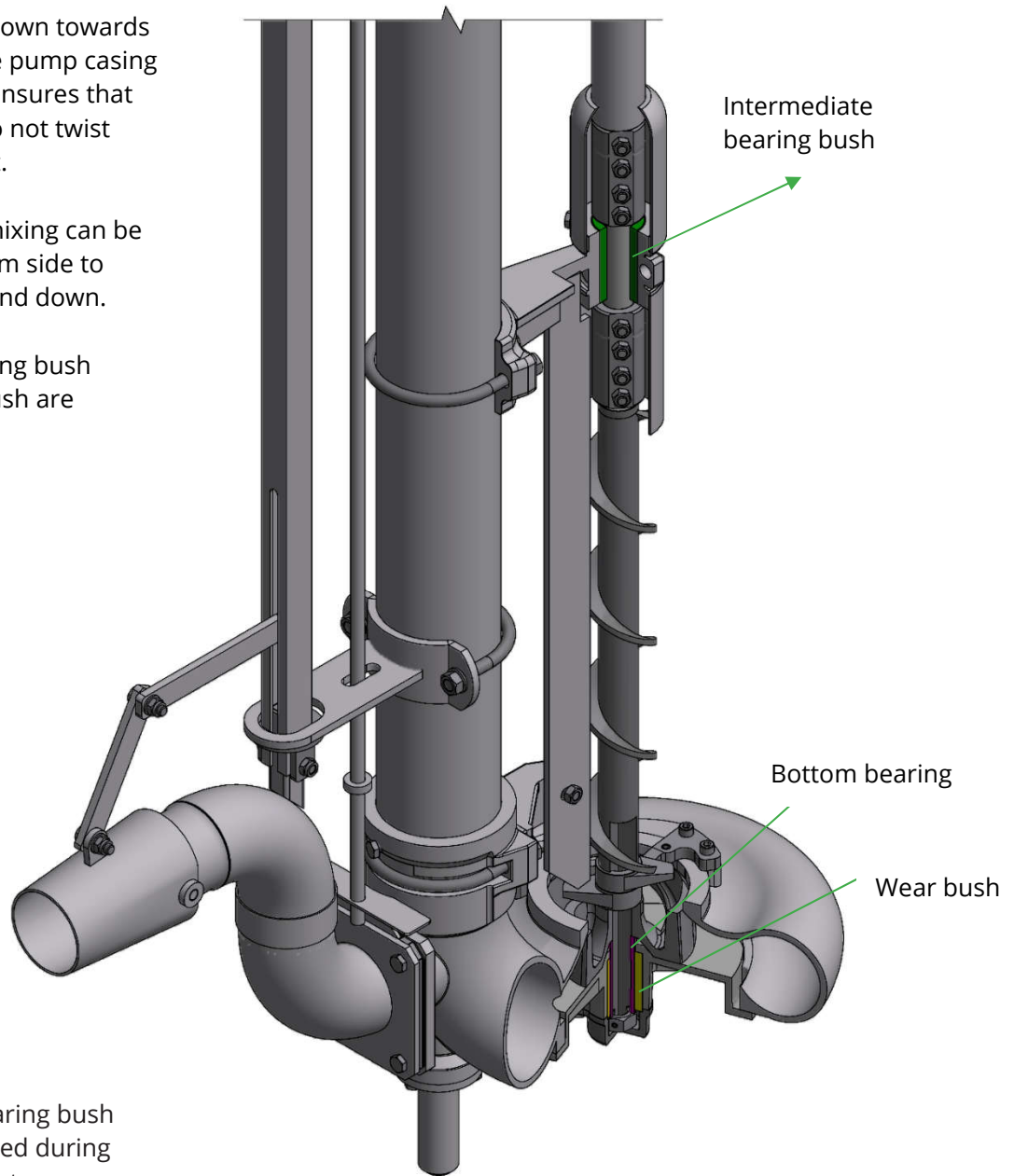
Machinery enamel: RAL 9005 (Jet black)	Jet black
Pump pipe and equipment	Hot dip galvanized

DESIGN

Very robust construction. Grooves in the pump casing ensures that dry matter is not caught in the pump. Rotating and fixed knives for shredding coarse particles and keeping the inlet opening clear.

Pipe dimension: 4" ø 114 mm, 5" ø 140 mm or 6" ø168 mm

- Auger pulls the liquid down towards the inlet opening in the pump casing and the scraping iron ensures that threads in the liquid do not twist around the auger shaft.
- The movable bottom mixing can be moved horizontally from side to side and vertically up and down.
- The intermediate bearing bush and bottom bearing bush are lubricated by the liquid



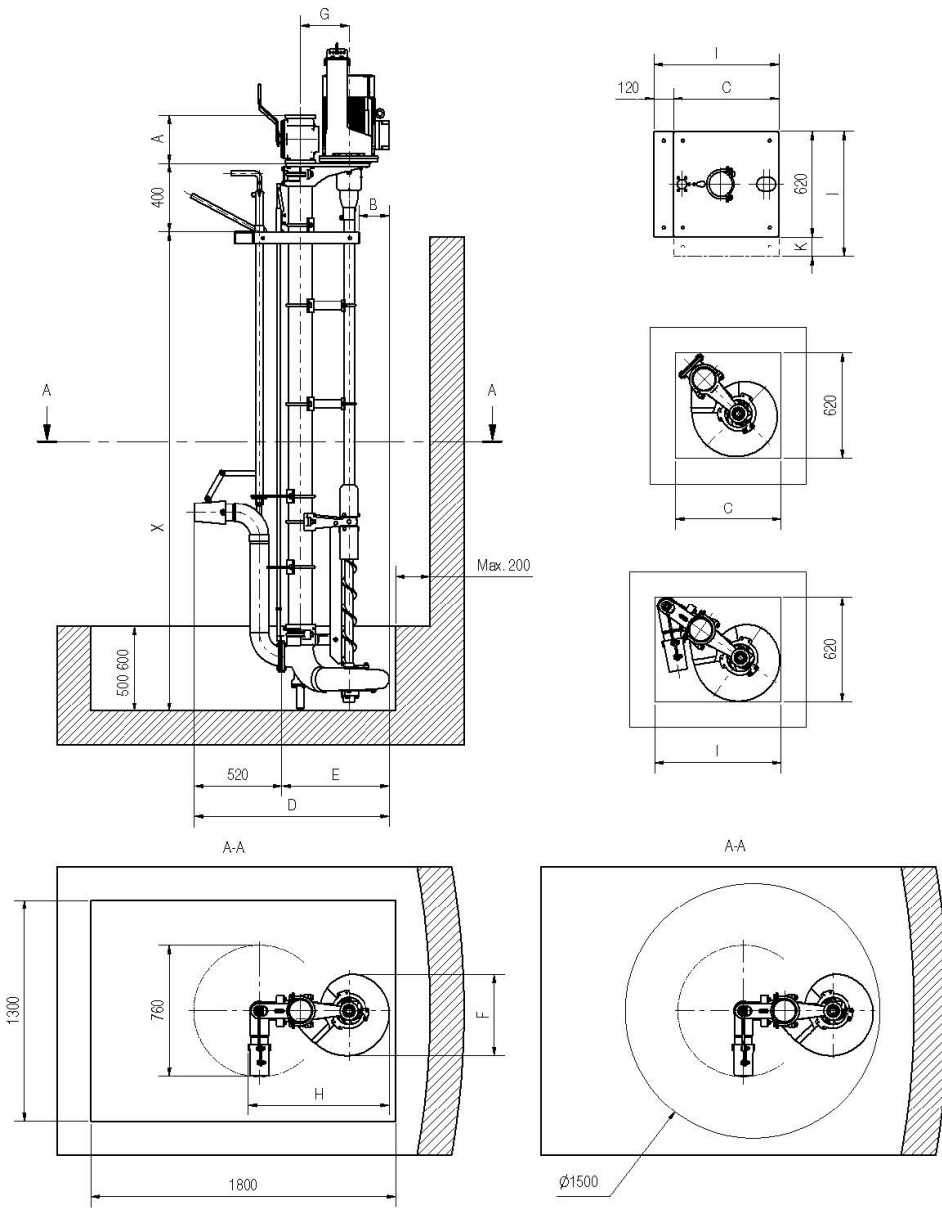
- If the intermediate bearing bush is not always submerged during operation, greasing system can be purchased

ELECTRICAL DATA MPG-I

Motor type	3-phase A motor
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]		[%]
MPG-I 4" 5.5 kW-1500 rpm	2014405	5.5	1460	10.5	Δ	91.4	0.84	89.6
MPG-I 4" 7.5 kW-1500 rpm	2014407	7.5	1460	14.5	Δ	135	0.84	90.7
MPG-I 4" 11.0 kW-1500 rpm	2014411	11.0	1470	21.0	Δ	214	0.85	91.4
MPG-I 4" 15.0 kW-1500 rpm	2014415	15.0	1470	28.0	Δ	283	0.85	92.1
MPG-I 5" 11.0 kW-1500 rpm	2014523	11.0	1470	21.0	Δ	214	0.85	91.4
MPG-I 5" 15.0 kW-1500 rpm	2014524	15.0	1470	28.0	Δ	283	0.85	92.1
MPG-I 5" 18.5 kW-1500 rpm	2014525	18.5	1470	33.0	Δ	257	0.88	92.6
MPG-I 6" 18.5 kW-1500 rpm	2014623	18.5	1470	33.0	Δ	257	0.88	92.6
MPG-I 6" 22.0 kW-1500 rpm	2014624	22.0	1470	40.0	Δ	320	0.87	93.0
MPG-I 6" 30.0 kW-1500 rpm	2014625	30.0	1475	52.0	Δ	447	0.89	93.6

OVERALL DIMENSIONS



Type	X [m]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	K [mm]
4"	1.6 – 5.4	244	120	620	1050	530	420	225	730	740	-
5"	1.6 – 5.4	282	180	620	1155	635	480	285	835	740	-
6"	1.6 – 5.4	322	218	720	1330	810	600	355	1010	840/890	270

We reserve the right to make technical alterations.

Table of contents

Introduction	2
Application.....	2
Warning.....	2
Service/repair	2
Installation	3
Rating plate	3
Power connection.....	3
Capacity	5
Inspection.....	6

Introduction

MPG-I is a dry installed, long-shaft centrifugal pump.

The pumping takes place by means of a dry installed electric motor, driving the impeller via an intermediate shaft. The pump casing is submerged in the medium. A mixing device can be installed on the pump, and with the outlet pipe being blocked the pump can then mix the medium in the tank before it is pumped further on.

Application

Acc. to Landia's advice this dry installed pump should be applied for the pumping of e.g. fish silage, biomass, wastewater sludge or other mediums with coarse dry matter particles.

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 such as hoses, pipes and pipe branches, is installed correctly and fixed to the pump.
- The motor 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.
- After a period of about 2 months of operation the pump has lodged in the tank bottom. The checker plate cover should then be adjusted in order to ensure the resting position of the pump at the tank bottom. (This is mainly due to concrete quality fluctuations).
- The pH value must not be less than 4-5 (at pH below 5 st. steel material is recommended)

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 service yourself, we can offer a service agreement – call us and ask for further information.

Please note

The Landia A/S warranty will be void if spare parts that are not identical to those recommended are used when carrying out servicing/repairs. 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

The pump is to be installed in vertical position and must rest on the tank bottom. **The pump shaft must not and cannot be turned until the pump gets into this position.** The pump is raised by fixing a strap around the cast console holding the motor. 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 side of the pump, unless the pipe system can be emptied in another way. Besides, at fixing to the tank it must be ensured that the pump can be lifted in service situations.

Rating plate

TYPE Y2E2			IP 55	INS. CL F	S1
V. Δ / Y	Hz	kW	rpm	A. Δ / S	Cos φ
400 / 690	50		1500		
480 / 830	60		1800		

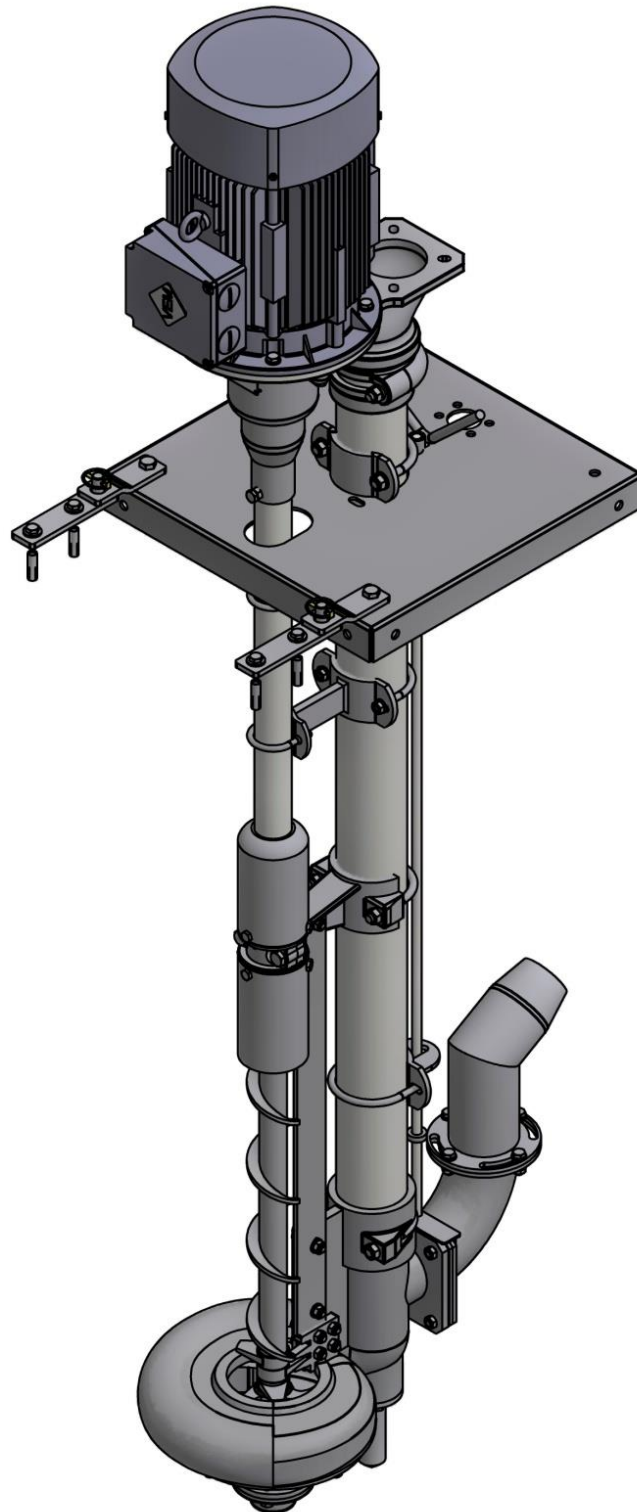
IP:	Cage class
Ins. Cl F:	Insulation class F
cos φ :	Power factor
Hz:	Mains frequency
kW:	Max. shaft power
V:	Mains voltage
A:	Nominal power consumption
rpm:	Motor revolutions per minute
S1:	Continuous working period

Power connection

Every pump 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 pump there is an electrical diagram. A protective motor switch and if necessary a Y-delta starter must be applied. Make sure that the electrical data correspond to those of the motor.

Only a certified electrician is allowed to connect the unit.

Mixing equipment and floor plate are optional



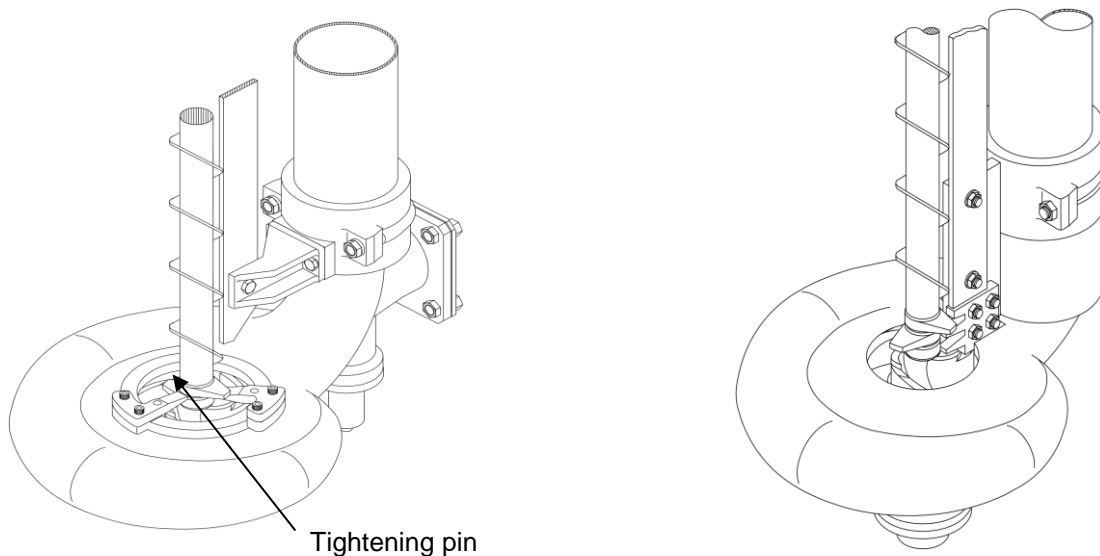
Capacity

The capacity of the pump will always depend on the consistency of the medium. Operation in star position might cause burning of the motor.

If the pump output falls or completely disappears, the cause might be foreign bodies in the pump, such as wire, rope or the like. The only way to remove it is to raise the pump.

To obtain the highest capacity possible with as low motor power as possible it is important that the diameters of the pump pipes are as large as possible. It is also important to avoid sharp curves. Large pipe dimensions are especially important with long pumping distances.

The pumps are equipped with open impellers, which are especially suitable for media where larger particles may be present, such as fish silage, biomass and the like. A knife system is mounted on the pump in the suction opening, which consists of 1-3 fixed and 2 rotating knives. The knives make sure to grind the medium so that the pumping can also take place effortlessly. A screw is mounted just above the suction opening, which prevents larger particles from blocking the suction opening.



Inspection

Regular inspection will ensure the pump a long service life at low costs.

Every 400 hours of operation or at least once a year, perhaps even more often, dependent on the operation conditions, the knife system should be checked. If the tightening pin of the fixed knife is lacking, the pin and the knife must be exchanged.

Every 1000 hours of operation the bearings, the bottom plate and the impeller should be checked for wear. This could influence the capacity and the repair costs, if any.

If parts or equipment are uninstalled, an adhesive substance (e.g. Loctite type 243) must be applied on all bolt joints prior to reinstallation. All bolts are tightened with a tightening torque acc. to the table 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

The coupling sleeve on the shaft (see spare parts list/exploded drawing) consists of 2 parts which fit in pairs. Consequently, it is important that the two parts are installed correctly – please note the turned trace.

Normally, it will be necessary to reset the pump shaft after the repair to make sure that the rotating knives at the pump inlet opening can pass the fixed knife/knives freely.

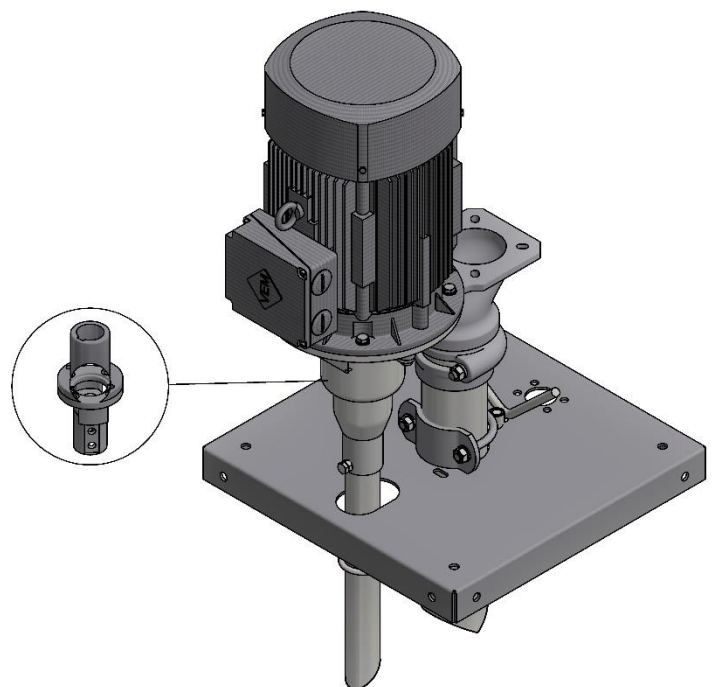
The set screw which is placed in the two-part coupling must be used for resetting while the pump rests on the tank bottom and while the two passing bolts in the flange on the pump shaft are loose. By turning the pump shaft you will be able to see when the knives are able to pass freely.

Retighten the bolts and the pump should be ready for use.

Motor greasing (if equipped with grease nipples)

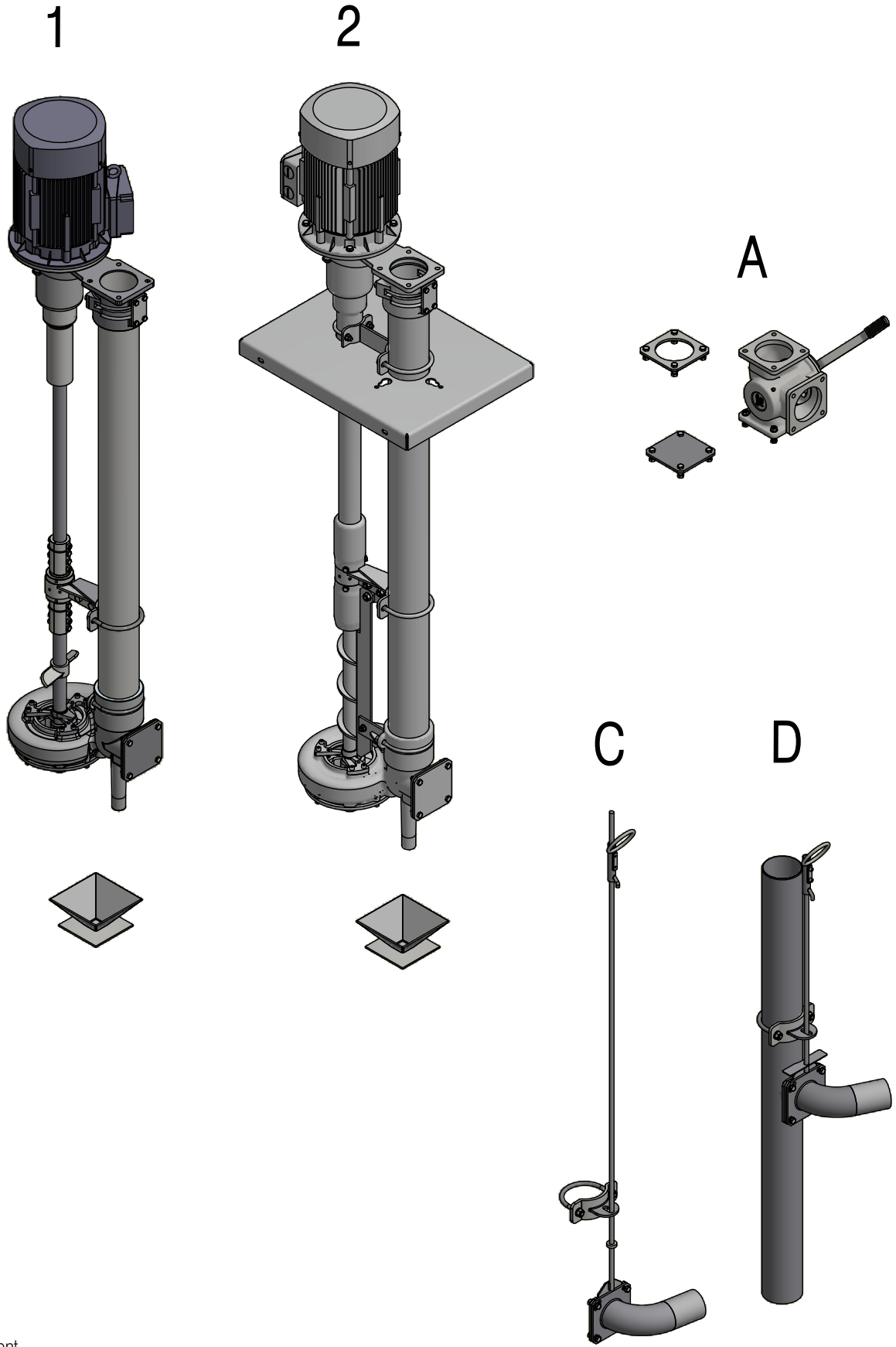
The 18.5, 22.5 and the 30.0 kW motors are greased through a grease nipple at the top and bottom bearing every 6500 hours of operation. Grease quantity: approx. 20 g.

The motor must be greased while in operation.
Ball bearing grease must be applied for greasing.



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

COPYRIGHT - This drawing is the property of Landia A/S and cannot be shown, copied, given to a third party or used in any other way without permission from Landia A/S.



Styret dokument

Landia[®]

MPFR-I
Principtegning - Schematic drawing
Prinzipskizze - Dessin de principe

Scale: 1 : 20	Sign.: CML KSK	Date: 05-05-2014
Dwg.no.:		3740913
Revision date: 21-03-2022		

Table of contents

Introduction	2
Application.....	2
Warning.....	2
Servicing/repairs	2
Installation	3
Rating plate	3
Power connection.....	3
Capacity	4
Inspection.....	5
Replacement of the motor.....	6
Replacement of two-part coupling flange.....	7
Replacement of intermediate bearing bush and intermediate shaft	9
Replacement of wear and bottom bearing bush, knives and impeller	11
Knife adjustment	14

Introduction

The type MPFR-I is a dry installed, long-shaft centrifugal pump, made of stainless steel. The pumping takes place by means of a dry-installed electric motor, driving the impeller via an intermediate shaft. The pump casing is submerged in the medium. The pump can be fitted with a mixing device and a shut-off outlet pipe so that the pump can mix the medium in the tank before it is pumped further on.

Application

This dry installed pump is to be applied for the pumping of fish silage. If the pump is to be applied for other purposes, please 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 such as hoses, pipes and pipe branches are installed correctly and fixed to the pump.
- The motor must be dry installed but can be placed outside without protection as the motor is splash proof. The motor must not 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.
- If formic acid or the like is added to the medium to keep it fresh, the dosing must take place after the medium has been filled into the tank, due to the corrosion risk.

Servicing/repairs

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 use parts specified by Landia A/S in the spare parts list.

If you do not wish to carry out servicing yourself, Landia A/S can provide a service plan – call for further details.

Please note

The Landia A/S warranty will be void if spare parts that are not identical to those recommended are used when carrying out servicing/repairs. Spare parts can be ordered from 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

Installation

Install the pump vertically and resting on the tank bottom. The pump shaft must not and cannot be turned until the pump is in this position. Lift the pump using a strap fastened around the cast console holding the motor. When installing the pump, ensure 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 side of the pump, unless the pipe system can be emptied in another way. Furthermore, when fixing the pump to the tank/reservoir ensure that the pump can be lifted for service.

Rating plate

					
TYPE Y2E2			IP 55	INS. CL F	S1
V. Δ / Y	Hz	kW	rpm	A. Δ / S	Cos φ
400 / 690	50		1500		
480 / 830	60		1800		

IP:	Cage class
Ins. Cl F:	Insulation class F
cos φ :	Power factor
Hz:	Mains frequency
kW:	Max. shaft power
V:	Mains voltage
A:	Nominal power consumption
rpm:	Motor revolutions per minute
S1:	Continuous working period

Power connection

Every pump is equipped with the above mentioned name plate with technical motor data. Ensure that the other electrical parts correspond to the motor data. For each pump there is an electrical diagram. A protective motor switch and if necessary a Y-delta starter must be applied. Operation in star position might cause burning of the motor. Make sure that the electrical data correspond to those of the motor.

If the motor is connected to a frequency converter, the thermistor in the motor must be connected and monitored.

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. If the pump output falls or completely disappears, the cause might be foreign bodies in the pump, such as wire, rope or the like. The only way to remove it is to raise the pump.

To obtain the highest capacity possible with as low motor power as possible it is important that the diameters of the pump pipes are as large as possible. It is also important to avoid sharp curves. Large pipe dimensions are especially important with long pumping distances.

The MPFR-pumps are equipped with open impellers especially suited for liquids with large particles, like e.g. fish silage. The pumps are also equipped with a knife system placed in the inlet port. The system consists of three fixed and two rotating knives which comminute the fish to ease the pumping.

Right above the inlet opening a rotating cutter is installed to prevent large fish from blocking the opening, see Fig. 1A. Alternatively, the MPFR-I pump is equipped with an auger shaft that pulls the medium down towards the intake opening and a scraping iron that prevents frays from entwining the shaft, see Fig. 1B.

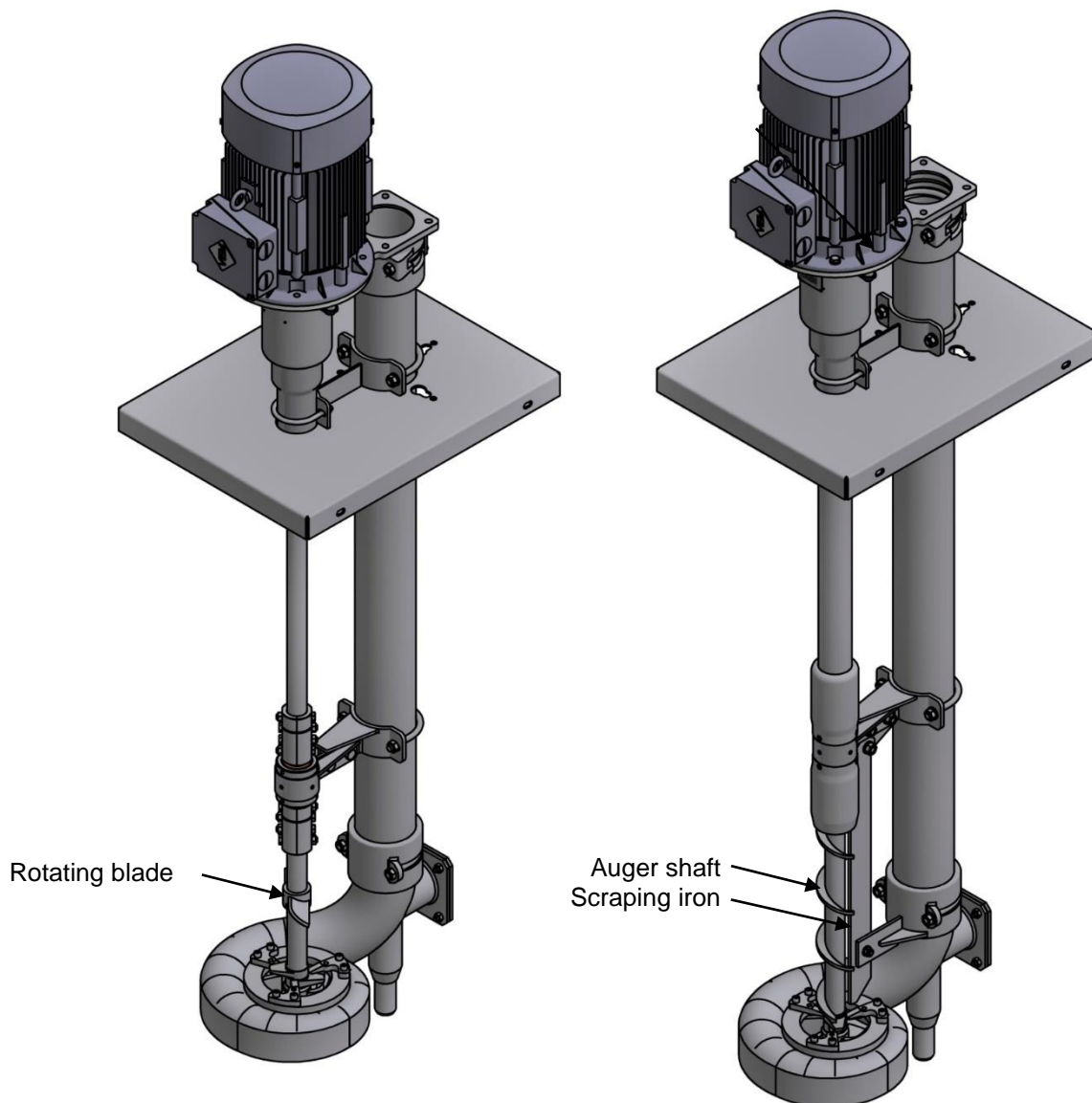


Fig. 1A

Fig. 1B

Inspection

Regular inspection will ensure the pump a long service life at low costs. Every 400 hours of operation or at least once a year, perhaps even more often, dependent on the operation conditions, the knife system should be checked. Every 1000 hours of operation the bearings, the bottom plate and the impeller should be checked for wear. This could influence the capacity and the repair costs, if any.

If the tightening pin, Fig. 2, of the fixed knife is lacking, the pin and the knife must be exchanged.

A. Tightening pin

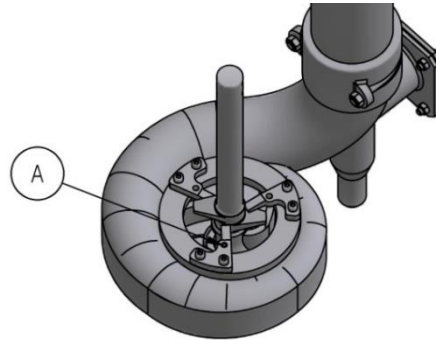



Fig. 2

If parts or equipment are uninstalled, an adhesive substance (e.g. Loctite type 243) must be applied on all bolt joints prior to reinstallation. All bolts are tightened with a tightening torque acc. to the table below.

Bolt dimension	Bolt quality A4-80 
M6	10 Nm
M8	24 Nm
M10	48 Nm
M12	82 Nm
M16	137 Nm

Greasing of motor bearings (if equipped with grease nipples)

The MPFR-I-pump is greased through grease nipples at the motor's top and bottom ball valves every 6500 hours of operation. Grease quantity: approx. 20 g. The motor must be greased while in operation. Ball bearing grease must be applied for greasing.

Warning – do not remove

Fig. 3 below shows the parts of the pump that should not be removed. If the parts are loosened, the pump must be readjusted in a vertical position in a special alignment tower.

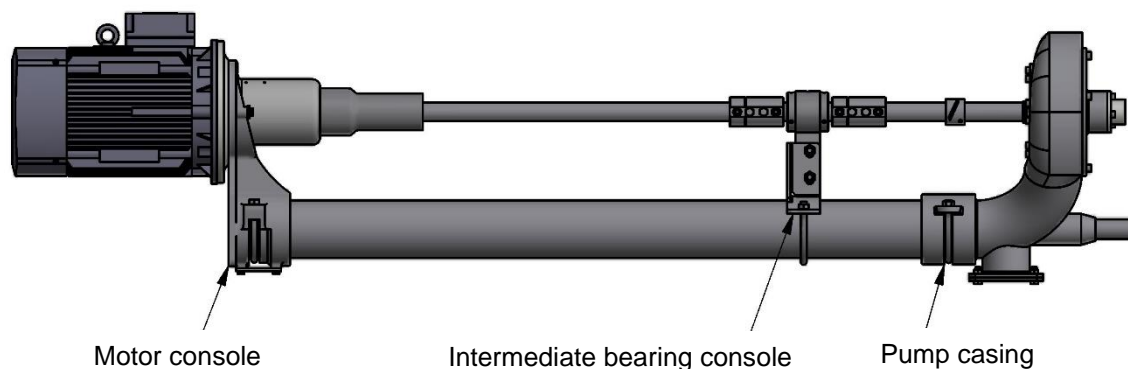


Fig. 3

Landia A/S recommends that the pump should be positioned underneath during repairs, as shown in Fig. 3.

Replacement of the motor

Remove the screws from the top shield and move the shield onto the protection pipe. Remove the screws, no. 2 in Fig. 4. Carefully suspend the motor, no. 5, in the lifting ring, no. 1, then remove the screws, no. 6. The motor can now be lifted away from the pump.

The new motor's coupling flange should be machined while installed on the motor. If you are unable to do this yourself, Landia can deliver a motor with machined coupling flange.

Place the new motor on the intermediate plate, no. 7, and tighten the screws, no. 6. Fit the two-part coupling, no. 9, to the motor's coupling flange, no. 8, using screws and nuts, no. 2. The two-part coupling and the motor's coupling flange should converge and the shaft, no. 10, should not touch.

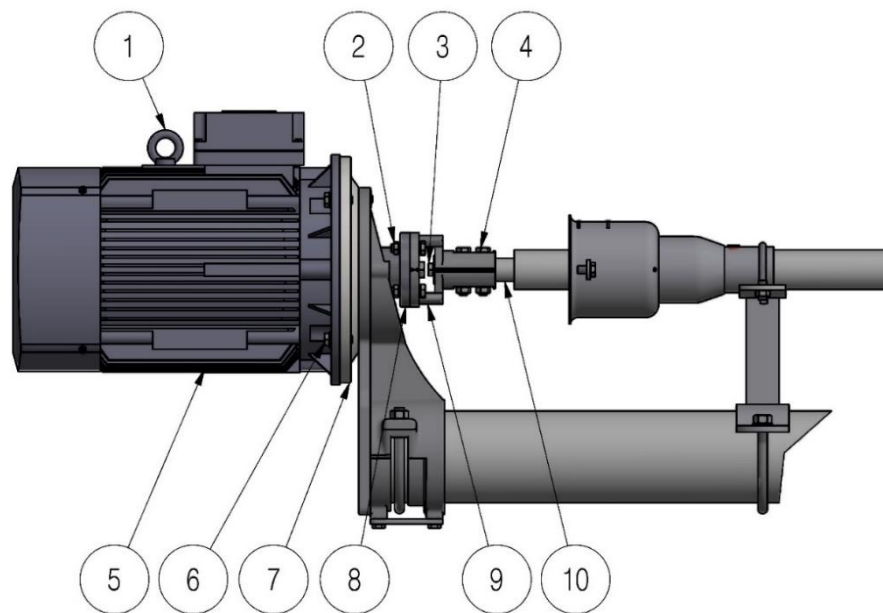


Fig. 4

1. Lifting ring
2. Screws and nuts between the motor's coupling flange and the two-part coupling flange
3. Expansion screw – **do not loosen**
4. Screws and nuts between the two-part coupling flange and the shaft – **do not loosen**
5. Motor
6. Screw
7. Intermediate plate
8. Motor's coupling flange
9. Two-part coupling flange
10. Shaft

Before fitting the shields, it is necessary to adjust the auger shaft so that the rotating knives can freely pass the fixed knife. See page 14

Replacement of two-part coupling flange

Dismantle the top and bottom shields, nos. 5/6 in Fig. 5, and push them down onto the top shaft, no. 4, allowing the two-part coupling flange, no. 2, to be removed. Thoroughly clean the motor's coupling flange, no. 1, and top shaft, no. 4, removing any impurities.

Install the new two-part coupling flange, no. 2, and tighten all the bolts. The flanges on the two-part coupling flange, no. 2, and the motor's coupling flange, no. 1, must be aligned to prevent any oscillation.

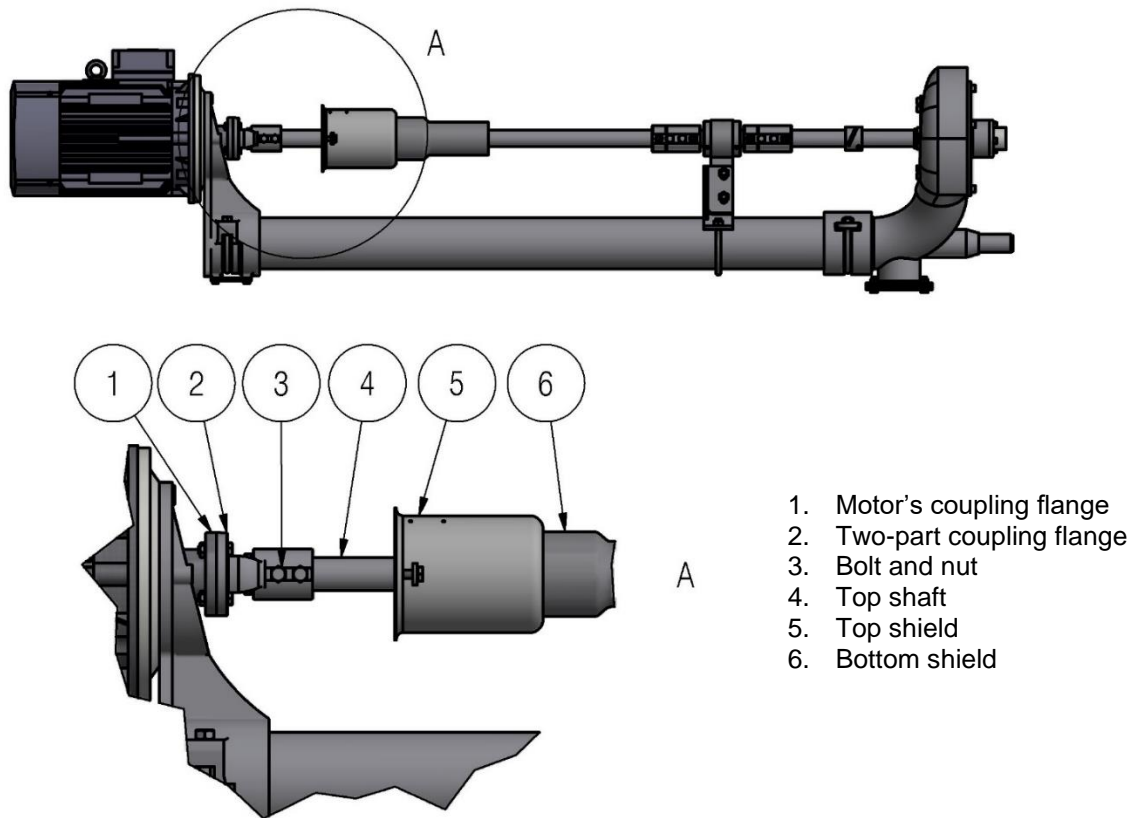


Fig. 5

The shaft must be realigned after replacement. The number of intermediate bearings depends on the length of the pump. For pumps with two or more intermediate bearings, the realignment should be performed at the top intermediate bearing. Pumps less than 2 metres in length only have one intermediate bearing (as shown in Fig. 6).

Before removing the coupling sleeve, no. 1 in Fig. 6, it is important to note the position of the coupling sleeve and shaft so that the coupling sleeve is replaced in the same way.

After removing the coupling sleeve, carefully clean the coupling sleeve and shaft, removing any impurities.

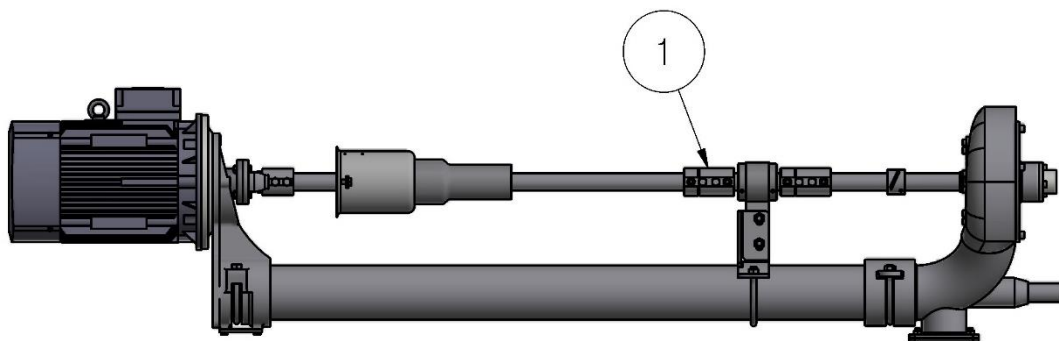


Fig. 6

When the coupling sleeve, no. 1 in Fig. 6, is removed, the shaft on the side of the motor will hang down slightly in relation to the intermediate shaft at the intermediate bearing console, as shown in Fig. 7

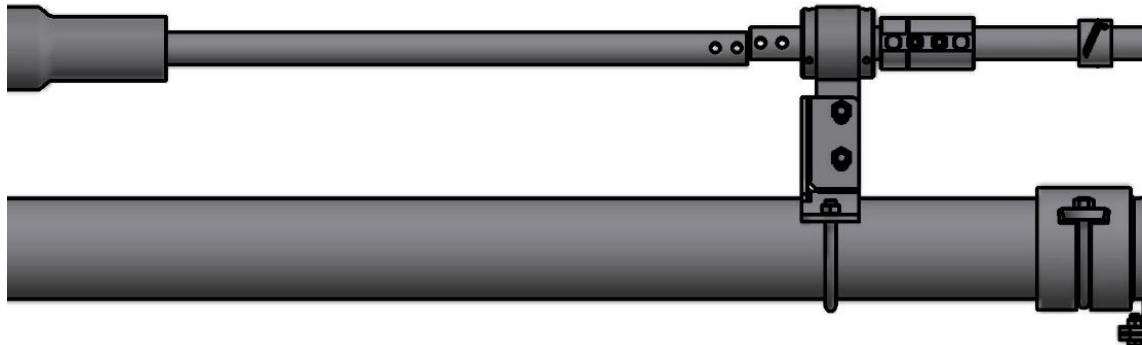


Fig. 7

Rotate the shaft, no. 2 in Fig. 8, by hand at the two-part coupling flange, no. 1, to check that the shaft is fitted correctly. The shaft should rotate about its centre axis and should not oscillate at the intermediate bearing. If it oscillates, the following adjustment should be performed:

Loosen both bolts, no. 9. Rotate the shaft by hand at the two-part coupling flange until you find the point where you feel the shaft fall into place and come into balance. Retighten the bolts. Keep making this adjustment until the shaft rotates about its own centre axis at the intermediate bearing console.

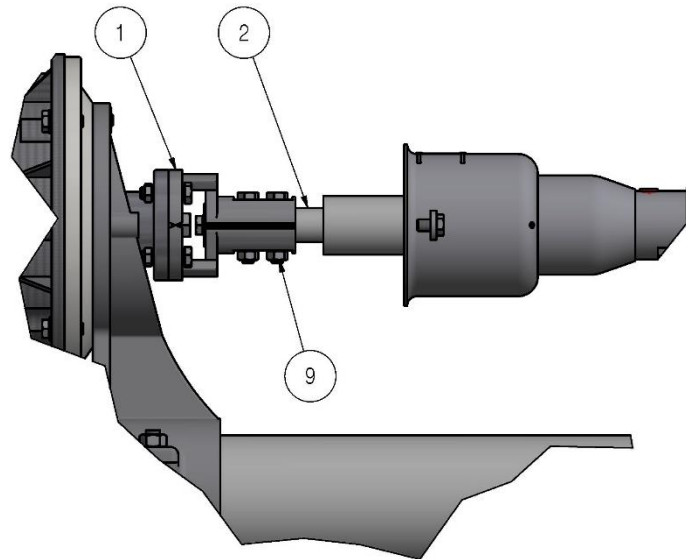


Fig. 8

Before reinstalling, it is necessary to adjust the auger shaft so that the rotating knives can freely pass the fixed knife, see page 14.

Replacement of intermediate bearing bush and intermediate shaft

The number of intermediate bearings depends on the length of the pump. The procedure for replacing the intermediate bearing bush is the same for all intermediate bearings. Pumps less than 2 metres in length only have one intermediate bearing console.

Do not remove the intermediate bearing console from the pump pipe. Remove the two coupling sleeves, no. 1 in Fig. 9. **Note that a coupling sleeve (split) is comprised of two mating halves that cannot be combined with other halves of the same type.**

Remove the four bolts in the bottom plate. If the pump has a rotating blade, loosen this so that it is resting loosely on the bottom shaft. The shaft with knives, impeller and bottom plate can then be removed through the pump casing.

If the pump is installed with three fixed knives, the knives must be removed before the shaft can be pulled out through the pump casing.

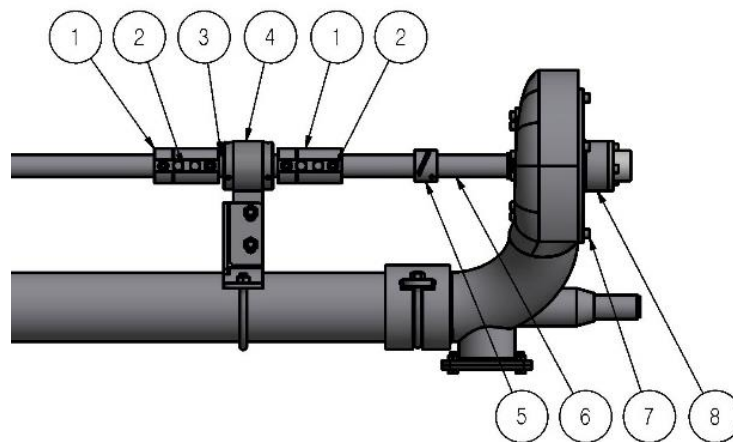


Fig. 9

1. Coupling sleeve
2. Bolt and nut
3. Intermediate shaft
4. Intermediate bearing console (do not remove)
5. Rotating blade
6. Pump shaft
7. Bolts
8. Bottom plate

Pull the intermediate shaft out of the intermediate bearing console. See Fig. 10. Loosen the stop screw in the intermediate bearing console and tap the intermediate bearing bush out of the console using a hammer. Clean the console where the new intermediate bearing bush is to be installed.

Carefully tap the new intermediate bearing bush into the console until the end surface of the bush is level with that of the console. It is very important that the intermediate bearing bush is tapped carefully and right into the intermediate bearing console. Otherwise the intermediate bearing bush might break. If convenient, use a plate to tap on to avoid tapping directly on the intermediate bearing bush. Tighten the stop screw in the intermediate bearing console.

For the intermediate bearings where grease lubrication has been incorporated, it is necessary to drill a hole through the intermediate bearing bush. This is done by drilling ($\varnothing 5$ mm drill) through the hole where the grease lubrication was incorporated in the intermediate bearing console. Remove any burrs from the drilled hole and clean the intermediate bearing bush.

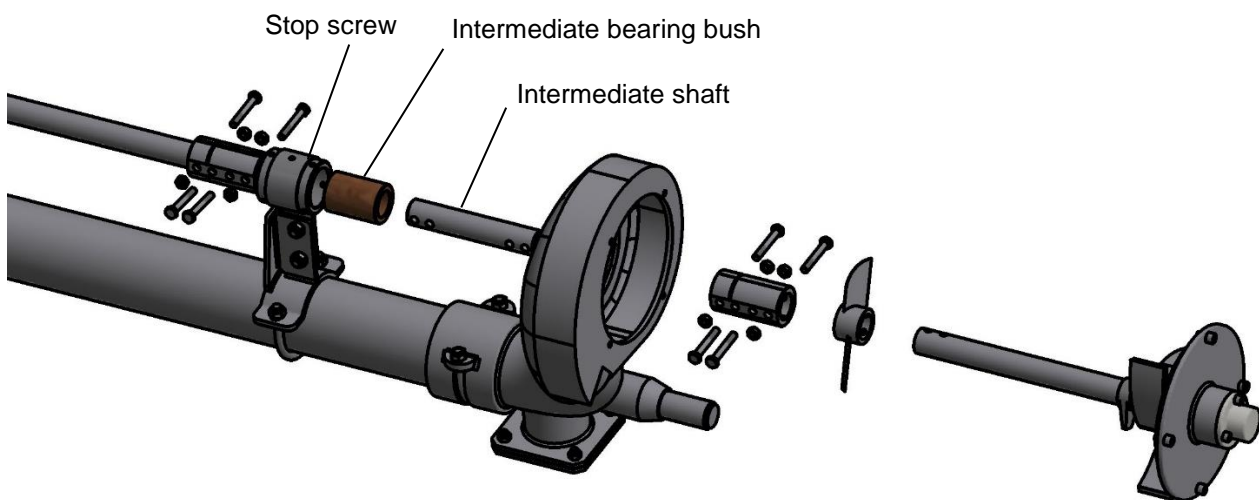


Fig. 10

Place the intermediate shaft in the intermediate bearing bush and push it up towards the upper shaft. Install the shaft with rotating knives, impeller and bottom plate on the pump casing. If the fixed knives have been removed, an adhesive substance (e.g. Loctite type 243) must be applied to the bolts when reinstalling on the pump casing.

Install the two coupling sleeves. Make sure that you position the coupling sleeves' halves correctly so that the groove is positioned as shown in Fig. 11.

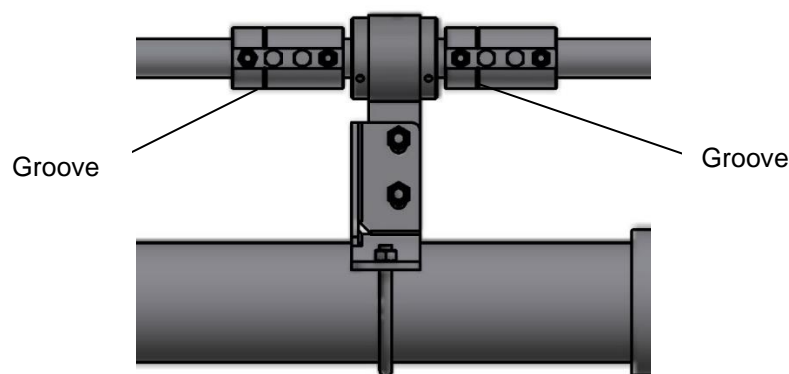


Fig. 11

After replacing the intermediate bearing bush and intermediate bearing shaft, it is necessary to adjust the height of the pump shaft so that the rotating knives can freely pass the fixed knife, see page 14.

Replacement of wear and bottom bearing bush, knives and impeller

The replacement is made through the bottom plate. Remove the bottom cover, loosen the stop screw in the nut and unscrew the nut from the shaft. Remove the bottom plate, including the bottom bearing bush. Remove the wear bush from the shaft and clean the shaft where the new wear bush is to be installed. See Fig. 12.

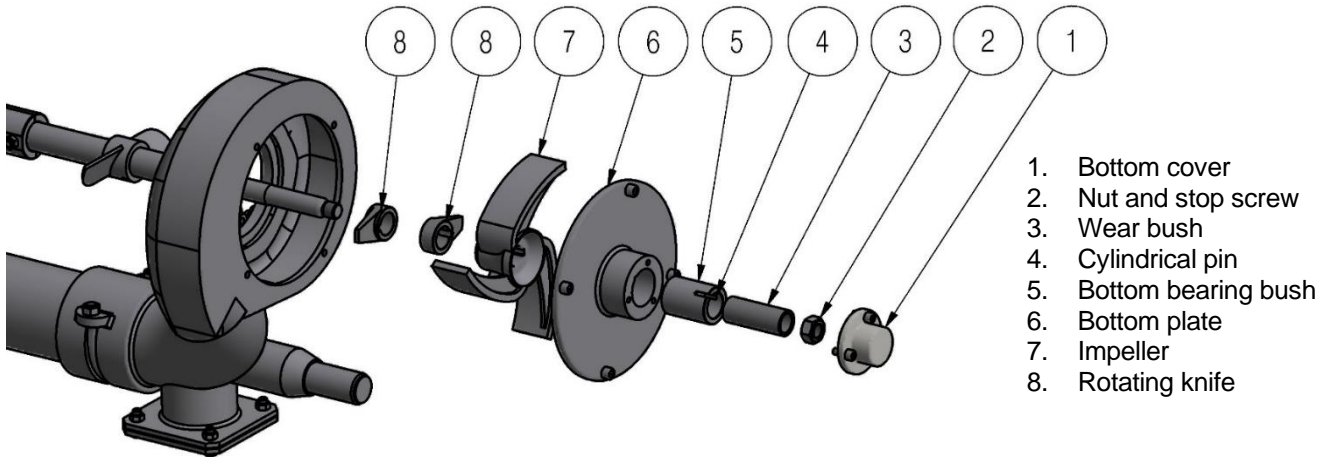


Fig. 12

If the wear bush is stuck on the shaft, a guide drift and a hammer can be used to hit the impeller, enabling removal of the wear bush, see Fig. 13. Reinstall the impeller.

Place the guide drift on any blade of the impeller and hit with a hammer.

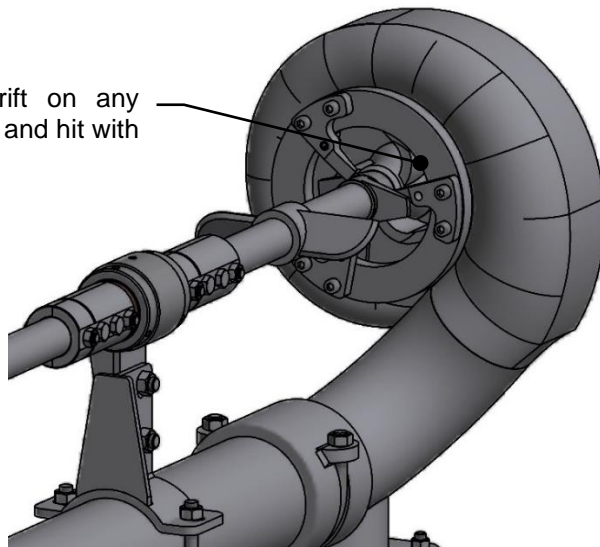


Fig. 13

Uninstall the rotating knives and clean the shaft before installation of the new knives, impeller and wear bush. Install the rotating knives on the shaft by means of the feather keys. It is important to position the rotating knives correctly. An arrow on the shaft shows the flow direction and the flat surface of the knives must face in the same direction. See Fig. 14. Install the impeller on the shaft by means of the feather key.

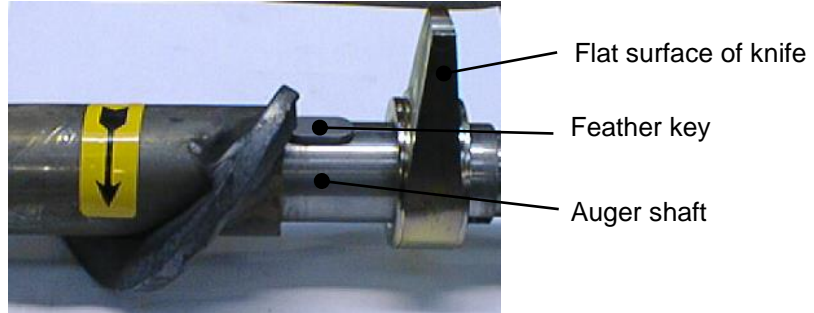


Fig. 14

Install the wear bush on the shaft. Note that the groove must face the impeller so that it fits over the impeller's feather key, see Fig. 15.

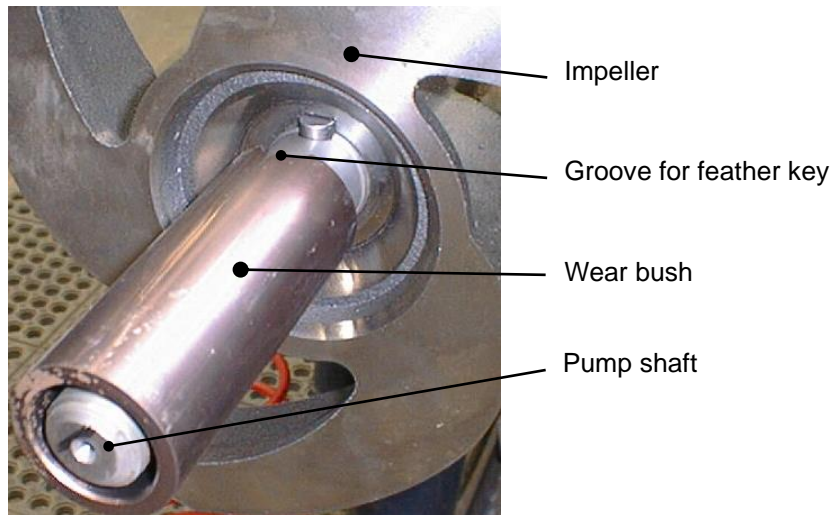


Fig. 15

Remove the bottom bearing bush and the cylindrical pin and clean the bottom plate. In case the bottom bearing bush is stuck, a guide drift and a hammer can be used to remove it as illustrated in Fig. 16.

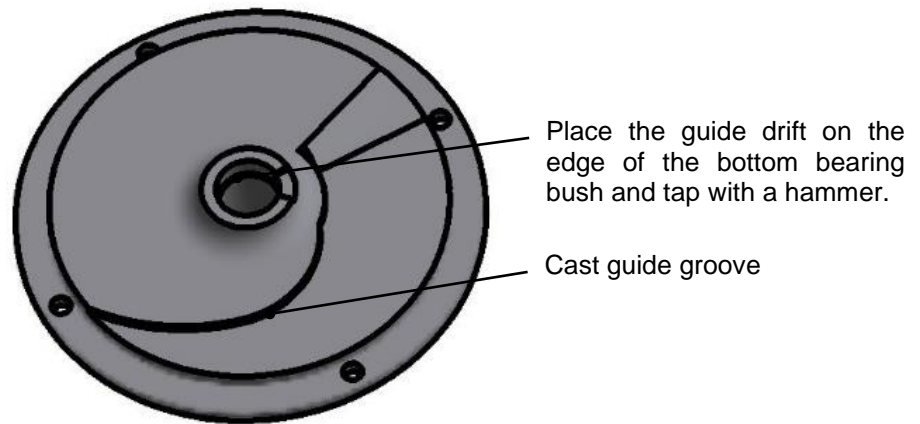


Fig. 16

Note: The bottom plate must be installed so the cast guide groove is opposite facing to the pump pipe. See Fig. 16.

Prior to installation of the bottom plate, it must be secured that there is a cylindrical pin between the bottom bearing bush and the bottom plate. See Fig. 17.

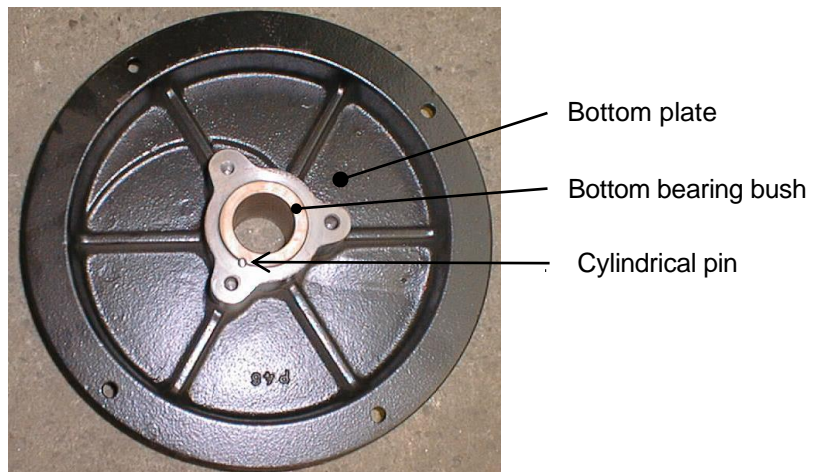


Fig. 17

Thoroughly grease the bottom bearing and wear bush and then install them as per Fig. 12. Tighten the nut on the pump shaft, tighten the stop screw onto the nut, fill the bottom cover with grease and install it.

After replacing knives and impeller, it is necessary to adjust the height of the pump shaft so that the rotating knives can freely pass the fixed knife, see page 14.

Knife adjustment

After replacing parts, it is necessary to adjust the height of the pump shaft so that the rotating knives can freely pass the fixed knife.

Loosen the coupling sleeve bolts, no. 1 in Fig. 18. Adjust the knives by pulling the auger shaft as close to the motor as possible without the rotating knives and fixed knife touching each other when the shaft rotates.

Tighten all the coupling sleeve bolts. The pump can now be installed in the tank.

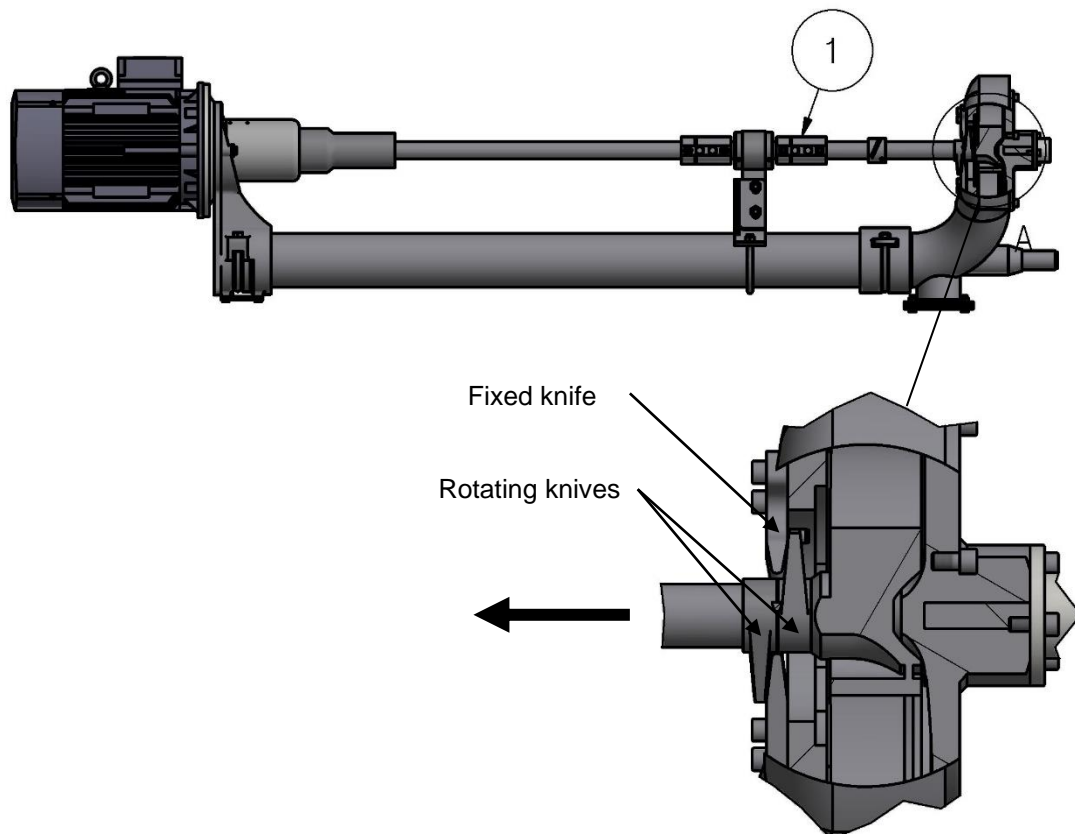


Fig. 18

Warning

If the power cable has been disconnected, the pump's direction of rotation must be checked after reconnection. The direction of rotation is indicated by an arrow on the motor.