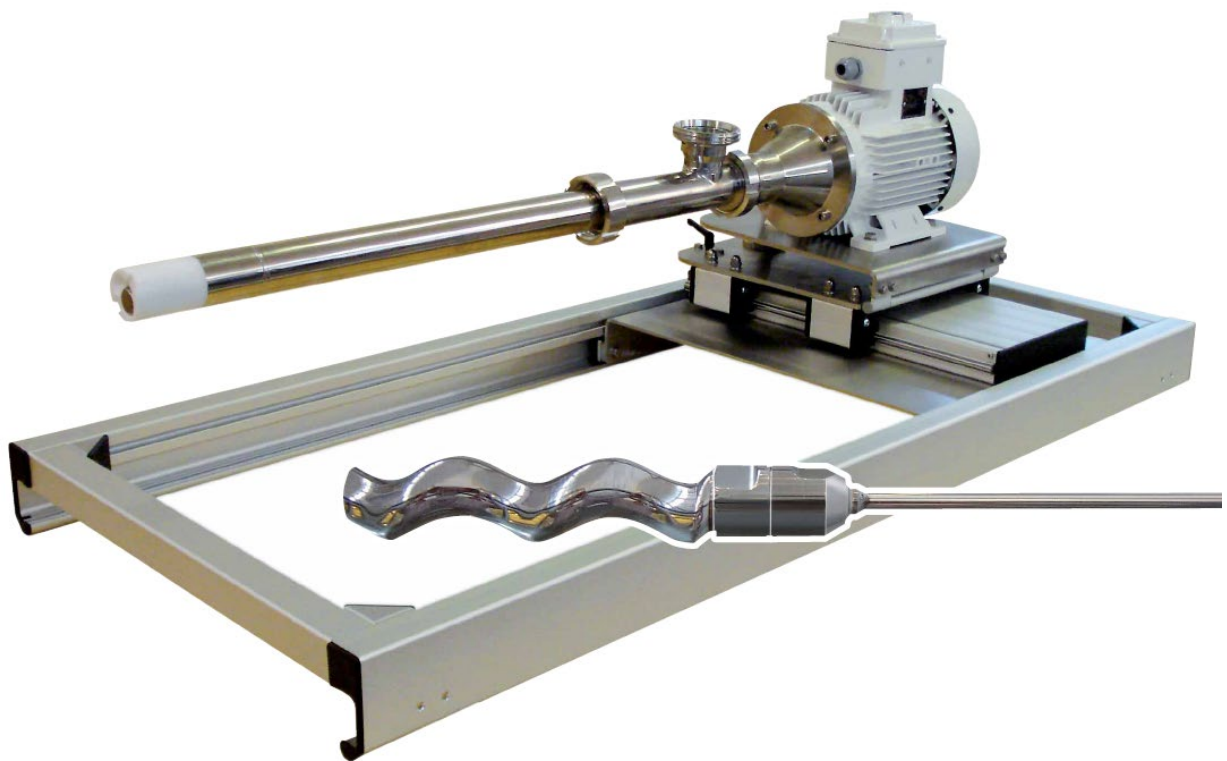




Instruction and Operation Manual

FLB
Eccentric Screw Pump

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 2 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	---

Instruction and Operation Manual for FLB Eccentric Screw Pump

This manual has been compiled with the utmost care.
However, ipp Pump Products GmbH assumes no liability for possible deficiencies of the information in this manual. It is the responsibility of the buyer/user of this pump to ensure this information is complete and up to date.

All technical information mentioned in this user manual remains property of ipp Pump Products GmbH and may only be used for the installation, operation and maintenance of this pump. The information may not be copied, duplicated or passed on to third parties without our written permission.

Copyright 2012 ipp Pump Products GmbH

Release Date: 06th July 2012

Doc. No. : **0180 – Stand 09/2012**

Content

1	How to consult and keep this documentation	5
2	Used symbols	6
3	Used tags.....	7
4	Terms and definitions	7
5	Intended use.....	9
6	Introduction.....	9
6.1	General Information	9
6.2	Warranty	10
6.3	Transport and receipt of the goods.....	10
6.4	How to identify the pump	10
7	Safety	11
7.1	General information	11
7.2	Staff.....	11
7.3	Precautions	11
7.4	Alternative use	11
8	General information.....	11
8.1	Pumping Principle.....	11
8.2	Scope of Supply.....	12
9	Main Components.....	14
10	Installation.....	15
10.1	General Information	15
10.2	Transport.....	15
10.3	Lifting	15
10.4	Safety.....	16
10.5	Foundation	16
10.6	Built-in Dimensions	17
10.7	Piping System	18
10.8	Alignment of the pump.....	19
10.9	Presetting of the direction of rotation	21
10.10	Electric connection.....	21
11	Commissioning	22
11.1	Disassembly of the pump	22
11.2	Dismantling of the stator	23
11.3	Dismantling of the rotor.....	25
11.4	Dismantling of the seal	25
11.5	Dismantling of the suction sleeve.	26

11.6	Cleaning	26
11.7	Assembly of the pump	27
12	Maintenance	29
13	Disassembly / Assembly	30
13.1	Order of spare parts	30
13.2	Precautions	30
13.3	Inspection of the spare parts	31
14	Decommissioning	31
14.1	Storage	31
14.2	Disposal	31
15	Technical Data	32
15.1	Cross-sectional drawing	32
15.2	Shaft seals	33
16	Trouble shooting	34
17	Index	36

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 5 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	---

1 How to consult and keep this documentation

These operating instructions have been established by IPP Pump Products GmbH and refer to the installation, safe utilisation and maintenance of the FLB eccentric screw pump. In this sense this documentation and the use and maintenance manuals supplied by the manufacturers of the single components is an integral part of the FLB eccentric screw pump.

The purpose of all the documentation mentioned above is to enable the users of the FLB eccentric screw pump to operate the pump safely and thus the documentation contains clear rules of use; this documentation must be read carefully and understood by the users.

Please note that the specifications mentioned in any operating and maintenance manuals referring to this pump, have been developed in order to assure the safety and healthiness of the users. For this reason you as well as the operating and maintenance staff have to carefully read and understand these instructions and have to be able to apply the indications / procedures.

The compliance with these indications renders possible the safe utilisation of the pump as well as the execution of appropriate interventions. As indicated above the declaration of conformity as well as all operating and technical maintenance instructions of the FLB eccentric screw pump have to accompany the pump in case of a resale of the pump. This documentation has to be kept carefully until the final demolition of the pump and must be made available to the personnel appointed to operate the pump.

It is good practice not to damage the manual and keep it properly, Do not tear pages, dirty them or get them greasy, never expose them to sources of heat and always maintain the proper layout. This documentation and annexes must be made available to the personnel authorized to operate the pump in such way that it can be consulted easily; to clear any doubts about its safe operation and / or the execution of use and maintenance procedures.

The content of the technical manual reflects the state of the art at the time of construction of the machine in question. The technical manuals cannot be considered inadequate, as a result of technological improvements of the FLB eccentric screw pump.

The technical documentation and relative annexes are completely confidential: IPP Pump Products GmbH reserves all rights related to this use and maintenance manual and with the object presented therein. The receiving party recognises these rights to IPP Pump Products GmbH in the person of its legal representative, Mr. Fredrik Jönsson, and undertakes, in the absence of an explicit written consent, no to make it accessible to others, either in whole or in part and, not to use it outside the purpose for which it was created. Any violators will be prosecuted according to law.



WARNING

For an appropriate safety management during the operation and maintenance of the FLB eccentric screw pump the complete technical documentation must accompany the pump, even in case of re-sale.



DANGER

The technical documentation contains information / procedures referring to the utilization and execution of a safe maintenance of the FLB eccentric screw pump. It must be kept near to the pump's

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 6 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	---

location, at a place which is easily accessible for the operating staff. The person responsible for the operation and maintenance has to be able to find the documentation and consult it at any time.



All technical documentations regarding the FLB eccentric screw pump have to be kept at an easily accessible place so that they can be consulted quickly. Furthermore the personnel responsible for the operation and maintenance have to be informed about the place where the documentation is kept.

2 Used symbols

Important information about the technical reliability and safe utilization are presented as follows in these operating instructions (these symbols can always be found at the beginning of the text to which they refer).



The DANGER symbol draws the attention to a procedure, practice or similar measure which – if not performed correctly – can result in injury. Do not proceed beyond a DANGER symbol until you have fully understood and satisfied the conditions specified.



The WARNING symbol draws the attention to an operating procedure, practice or other similar measure which is potentially dangerous and which bears the risk of serious injury if the instructions are not followed exactly.



The ATTENTION symbol draws the attention to an operation procedure, practice or similar measure which might damage or even completely destroy the product if it is not executed or followed correctly. Do not proceed beyond an ATTENTION symbol, unless you have read and complied with the conditions specified.

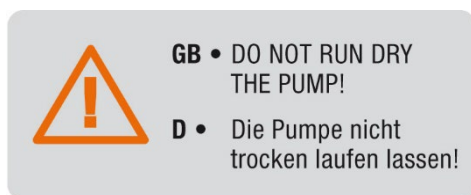


Refers to technical aspects for which the user of the equipment must pay particular attention.

3 Used tags

There are identification plates on the FLB eccentric screw pump for the different components of the unit. The identification plate at the left side of the pump shows the serial number of the FLB eccentric screw pump.

On the surface of the different components of the FLB eccentric screw pump there are warning tags which prohibit the dry running of the pump (tag A). If the FLB eccentric screw pump has been designed for liquids over 50°C there is a tag on the pump warning of hot surfaces (tag B).



A



B



NOTE

Please note that the markings / tags at the FLB rotary pump may not be changed or removed.



WARNING

It is not allowed to use any IPP Pump Products GmbH item without its identification plate. Should an item be without its identification plate the customer has to contact IPP Pump Products GmbH technical office so that the item can be identified and a new identification plate can be issued.

4 Terms and definitions

Dangerous areas: any area inside and / or in proximity of a machine in which the presence of an exposed person constitutes a risk for the safety and health of this person.

Exposed person: any person who finds himself either entirely or in part in a dangerous area.

Machine: Assembly of parts: according to definition in article 2 of the Directive 2006/42/EC of the European Parliament and the council of 17th May 2006.

Manufacturer: IPP Pump Products GmbH

Customer: Physical or legal person on whose behalf the machine is built, upon prior written acceptance of an order confirmation.

Copyright: 2012 IPP Pump Products GmbH

Date of release: 06th July 2012

Doc. number: 0180 – Date 09/2012



WARNING!

- All work on and with the pump must always be in accordance with all the prevailing standards regarding occupational health and safety as well as machine safety.
- Never let the pump run without pump cover or without being connected to the piping!
- When performing maintenance work to the pump, ensure that the drive of the pump is shut down and cannot be switched on unintentionally!
- Always wear protective gloves and safety goggles when performing maintenance work to the pump, if the pump conveys liquids which are a health hazard.
- Ensure that the pump is depressurized when it must be disassembled for maintenance purposes! Close any steam or heating water feeding pipes!
- If the pump is provided with a heating jacket and / or conveys hot liquids, let the pump cool down before starting maintenance work.
- When lifting a pump or a pump unit it is not allowed to stand under the hoisted load.
- Never insert your fingers into the pump case or into the connection ports. Even manually rotating of the shaft can cause injuries!
- Ensure that the drive motor cannot be started during works at the pump unit. Also ensure that the rotating parts are completely covered.
- If the pump has already been installed, ensure that the pump is shut down and make sure that the pump cannot be switched on unintentionally!
- Any works at the electric drive motor may only be carried out by qualified staff!



ATTENTION

- The pipe system must ALWAYS BE CLEANED respectively must always be FREE OF SOLIDS! The system must be adequately cleaned after each re-installation, after each work to the system and after each opening of the system!
- At risk of exceeding the maximum working pressure a safety device must be fitted to the pump, the drive or the system!
- A pump which is NOT equipped with a QUENCHED or FLUSHED shaft seal may NEVER be installed in a position where it possibly could run DRY!
- Ensure that the pump is never run dry!
- The pump may never run without adequate lubricants at the points of lubrication!
- Never operate a pump with a shut off discharge valve or blocked discharge line.
- The maximum values given for pressure, speed or temperature may never be exceeded!
- Ensure that the pump does not run dry when emptying it!

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 9 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	---

5 Intended use

The FLB excentric screw pump manufactured by IPP Pump Products GmbH has been designed and manufactured for the installation in industrial plants of third parties. Its purpose is to pump liquids which comply with the materials used in the construction of the pump.

For an appropriate installation all technical indications of these operating and maintenance instructions must be complied with.

The utilization of the FLB excentric screw pump is only permitted within the admissible ranges of pressure and temperature under consideration of chemical and corrosive influences. Any utilization exceeding the indicated operating ranges and specifications is being considered as improper use. Any damages resulting from this will void responsibility of the manufacturer and the user bears the full risk.

Please contact IPP Pump Products GmbH if the pump shall be used for any other application or at any other conditions than those which are part of the agreed specifications according to which the pump had been selected.



DANGER

Any improper use of the FLB excentric screw pump is forbidden without the written permission of IPP Pump Products GmbH.

6 Introduction

6.1 General Information

This manual provides important information regarding the correct way of installing, operating and servicing this pump.

This manual also provides information necessary to prevent the installer / operator from injury or discomfort during installation and operation of this pump and to ensure the correct use and reliable performance of this pump.

This manual represents the most recent information regarding the pump types mentioned in this manual at the time of going to print. However, ipp Pump Products GmbH reserves the right to modify the construction of the pump types mentioned, as well as the contents of this manual, without prior or afterward notification.



ATTENTION

Read this manual thoroughly before installing, operating or servicing this pump. Ensure that operators and maintenance staff are familiar with the symbols used.
Follow the instructions in this manual step by step.

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 10 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

6.2 Warranty

Warranty is strictly limited to the conditions specified by IPP Pump Products GmbH and will only be granted according to these conditions.

Warranty will only come into force provided that:

- The pump has been installed and put into operation strictly in accordance with the instructions given in this manual;
- Any maintenance and repair works have been executed according to the instructions given in this manual;
- Only original IPP Pump Products GmbH parts or parts provided by IPP Pump Products GmbH have been used for replacement;
- The pump has been used according to the agreed conditions only;
- The construction principle of the pump has not been changed by the buyer;
- The damages in question are not result of work carried out by persons not qualified or appointed.
- The damage has not been caused through force majeure.

6.3 Transport and receipt of the goods

Please make sure that the pump has not been damaged during transport. If any damage has occurred, the transport company and IPP Pump Products GmbH must be notified of this immediately.



ATTENTION

In order to facilitate the transport on your premises and in order to protect the pump as good as possible, please leave the pump on the pallet or in the crate as long as possible until it has reached its final position.

6.4 How to identify the pump

The serial number and the model type of the pump can be seen on the identification plate. Please always indicate the relevant serial number and model on any correspondence and order for spare parts.

Manufacturer

FLB excentric screw pumps are manufactured by

IPP Pump Products GmbH
Feldmühlenweg 6 - 10
D- 49593 Bersenbrück
Phone +49 (0) 5439-80921-0
Fax. +49 (0) 5439-80921-20
info@pump-products.de
www.pump-products.de

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 11 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

7 Safety

7.1 General information

This manual provides the necessary information to prevent the installer / operator from injury or discomfort during installation and operation of this pump and to ensure the correct use and reliable performance of the pump.

- Read this manually thoroughly before installing, operating or servicing this pump.
- Make sure that operating and maintenance staffs are familiar with the contents of this manual and with the relevant instructions.
- Make sure that the operating and technical maintenance staffs are familiar with the symbols used
- Follow the instructions of this manual step by step
- This manual has to be stored at a place which is known and accessible to any user.

7.2 Staff

All personnel in charge of the installation, operation or maintenance of the pump must have received the necessary training and qualification.

7.3 Precautions

- When performing maintenance work to the pump ensure that the drive motor is shut down and cannot be switched on unintentionally!
- All work on and with the pump must always be in accordance with all the prevailing standards regarding occupational health and safety as well as machine safety!
- Always wear protective gloves and safety goggles if the pump conveys harmful liquids that may cause injuries!
- Make sure that the pump is depressurized if it has to be disassembled for overhaul!
- Let the pump cool down first if it is fitted with heating jacket and / or if it is conveying hot liquids.

7.4 Alternative use

Contact ipp Pump Products GmbH, if the pump should be used for another application or if it should be used under conditions which differ from the specification agreed to when choosing the pump.

8 General information

8.1 Pumping Principle

An eccentric screw pump is a rotary, self-priming positive displacement pump without valves. The operating principle is based on a single threaded rotating eccentric screw (rotor) in a double threaded encased stator. The centre of the rotor's circular cross section does two helicoid turns around the longitudinal axis of the rotor. The cross section of the stator however, only does one full turn on its length which means that the stator has the double pitch of the eccentric screw. Rotor and Stator touch each other at two points in the cross section so that – seen over the length – a suction chamber is built which is closed over two sealing lines and which moves helicoidally when the rotor is turning. The stator can be executed with or without pre-tensioning. Without pretension the pumped liquid must seal

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 12 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

the suction chamber and care for the lubrication, with pretension the pumped liquid only has to do the lubrication between rotor and stator. It is basically not allowed to run the pump dry.

The FLB–Eccentric screw pump is a hinge free pump. The rotor is driven by means of a torsion rod (also named “Flexi-shaft”). The very slim torsion rod cannot withstand buckling loads. Therefore the pumping through the FLB-eccentric screw pump is only possible into one direction, and thus only one direction of rotation. A free wheeling bearing avoids the accidental operation into the wrong direction.



8.2 Scope of Supply

8.2.1 Connections

The scope of supply comprises pump types with connections DN40 to DN50 resp. 1 ½“ to 2“.

8.2.2 Shaft Seals

The following options of shaft seals are available:

- Single Mechanical Seal silicon carbide / silicon carbide
- Single Mechanical Seal silicon carbide / silicon carbide with radial shaft seal for non-pressurized flush

8.2.3 Bearings

The following bearings are used:

- Free-wheel bearing with longevity lubricant filling
- Ball bearing with longevity lubricant filling

8.2.4 Points of lubrication:

- none
- Attention: On installation, lubricate o-rings!

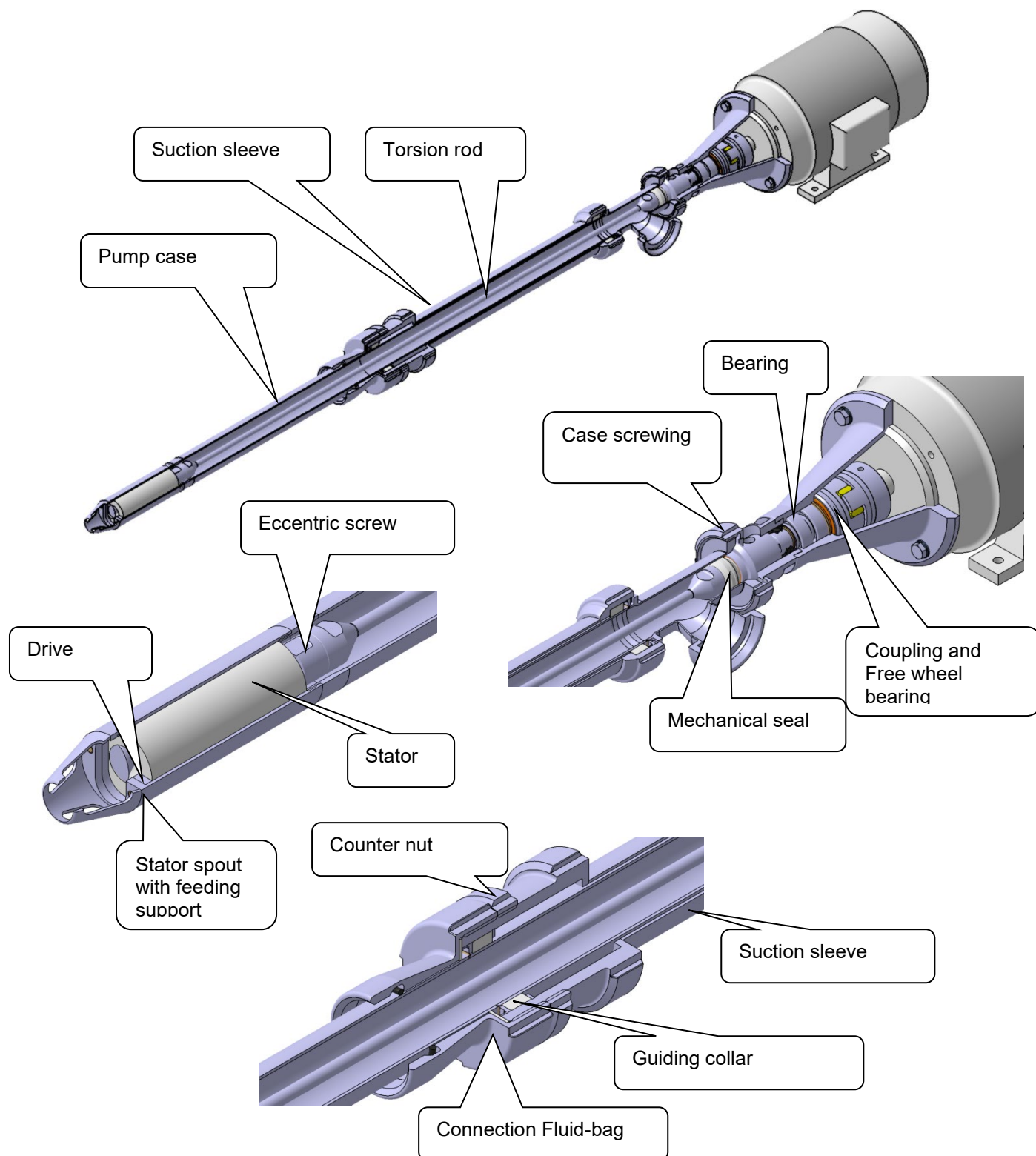
8.2.5 Models

Type	Revolution [L/rev.]	max. Differential pressure [bar]	max. speed [min ⁻¹]
FLB0080	0,0008	8	1500
FLB0174	0,00174	8	1500
FLB0346	0,00346	8	1500
FLB127	0,0127	8	1500
FLB290	0,029	8	1500
FLB367	0,0367	8	1500

The given data are maximum limits. Depending on the type product, resp. on the system where the pump is integrated the limits can vary.

9 Main Components

The pump with its main components:



10 Installation

10.1 General Information

The foundation must be solid, flat and even.

The area, in which the pump is placed, must be well vented. Too high temperature or air humidity, or a dusty atmosphere, may have negative effects on the performance of an electric motor.

The area around the pump-unit must be sufficient for the pump to be operated, cleaned or repaired.

To ensure an unobstructed air supply to an electric motor there must be a free space behind the fan cover, equal to 1/4 of its diameter. Exact data can be found in the manual of the electric motor.



DANGER

All work on and with the pump must always be in accordance with all the prevailing standards regarding occupational health and safety as well as machine safety.

10.2 Transport



ATTENTION

In order to facilitate the transport of the pump on your premises, and in order to protect it as good as possible, please leave the pump on the pallet or in the crate as long as possible until it has reached its final position.

10.3 Lifting

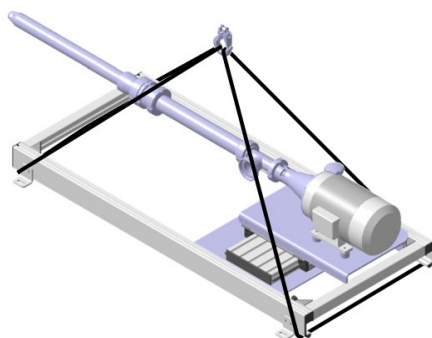
If an appropriate lifting device is available, this shall be used for lifting the pump / pump unit.



DANGER

It is not allowed to stand under suspended loads!

If the pump is assembled with a motor on a base plate the hoisting slings for lifting the pump unit are fixed as follows:



		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 16 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

10.4 Safety



DANGER

Never insert fingers into the rotor case or into the connection ports. Even rotating the shaft by hand can cause injury!



ATTENTION

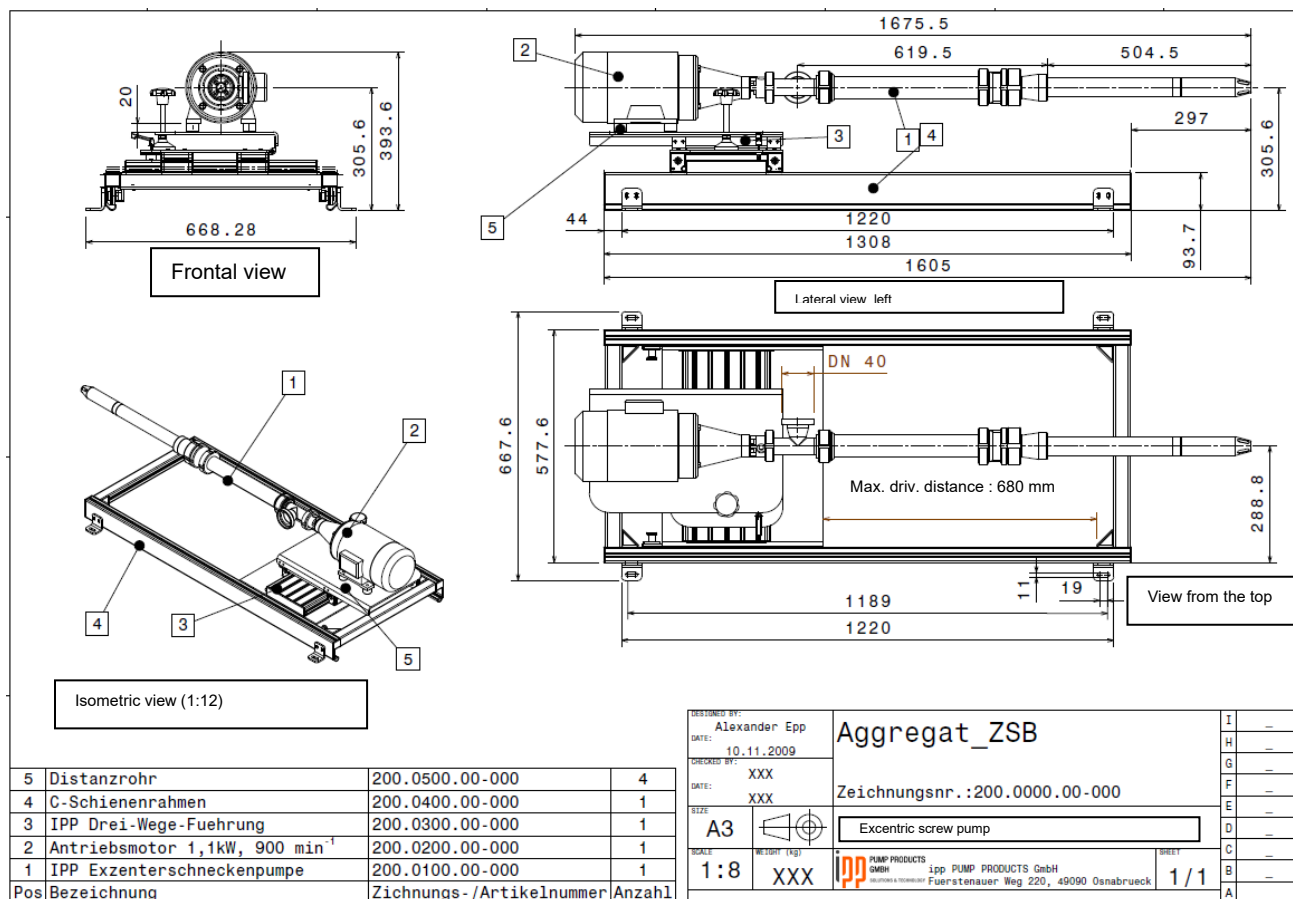
If the risk exists of exceeding the maximum working pressure a safety device must be fitted to the pump, the drive or the system!

10.5 Foundation

- The foundation must be solid, flat and level.
- When planning and executing the foundation take into consideration the need of space for drainage, maintenance, installation and repair.
- The base plate of the pump unit must be supported over the complete length and rest on the foundation. The foundation may not bend!

10.6 Built-in Dimensions

The correct built-in dimensions of the pump unit can be found in the sketch supplied separately with the pump and which is available at ipp Pump Products GmbH.



Pos.	Description	Part No.	Quantity
1	Eccentric screw pump	200.0100.00-000	1
2	Driving motor 1,1 kW, 900 rpm	200.0200.00-000	1
3	IPP three-way guide	200.0300.00-000	1
4	C-shaped rail frame	200.0400.00-000	1
5	Spacer tube	200.0500.00-000	4

10.7 Piping System

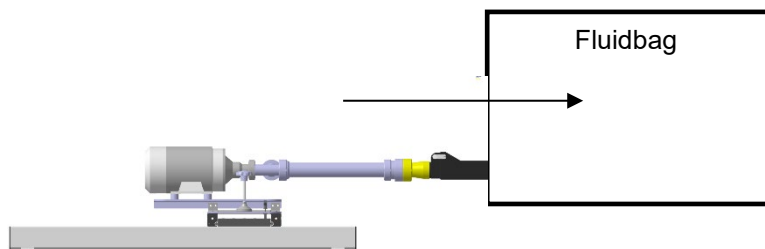
The piping must meet the following requirements:

10.7.1 General

- Ensure the piping is sufficiently supported, especially besides the inlet and outlet ports. The piping should be fully supported independently from the pump.
- The connections must be fitted square to the pump
- The lines must be fitted and connected stress-free
- Piping which is fitted obliquely, insufficiently supported or exerting force to the pump may cause serious damage to the pump! Please also consider thermoelectric voltage which may cause impermissible power and moments at the pump.
- Ensure that the piping and connections don't show any leakage.

10.7.2 Inlet piping

The FLB Eccentric Screw pump is designed only for the operation with a „fluid-bag“. The pump may only be started after inserting it completely into the fluid-bag filled with liquid, and after having screwed sealed it.

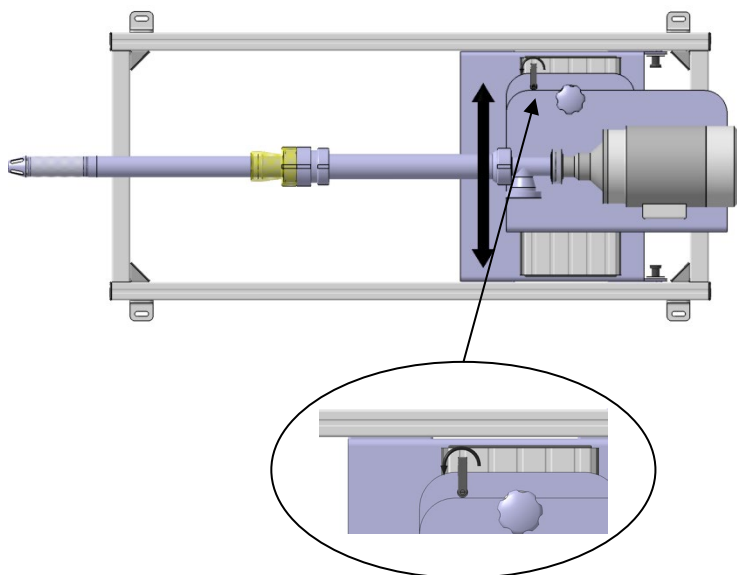


10.8 Alignment of the pump

The pump is fixed on a mobile support which is movable and can be fixed on 3 axes. In order to be able to insert the pump exactly horizontally into the fluid-bag the pump can be aligned in height and laterally.

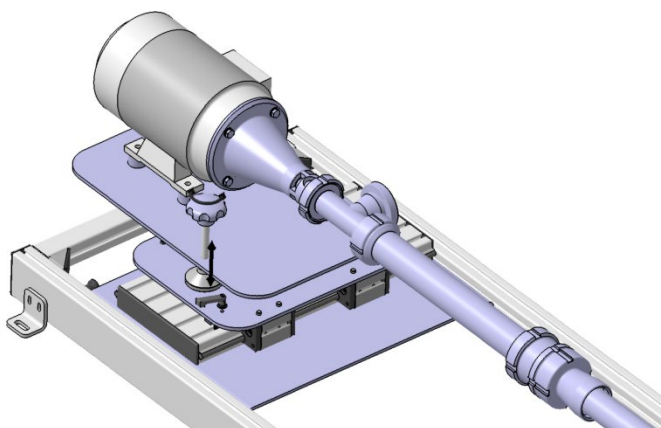
10.8.1 Y-Axis

The lateral position can be aligned to the fluid-bag by pushing the top sledge. After the alignment the sledge must be fixed by means of the locking device.



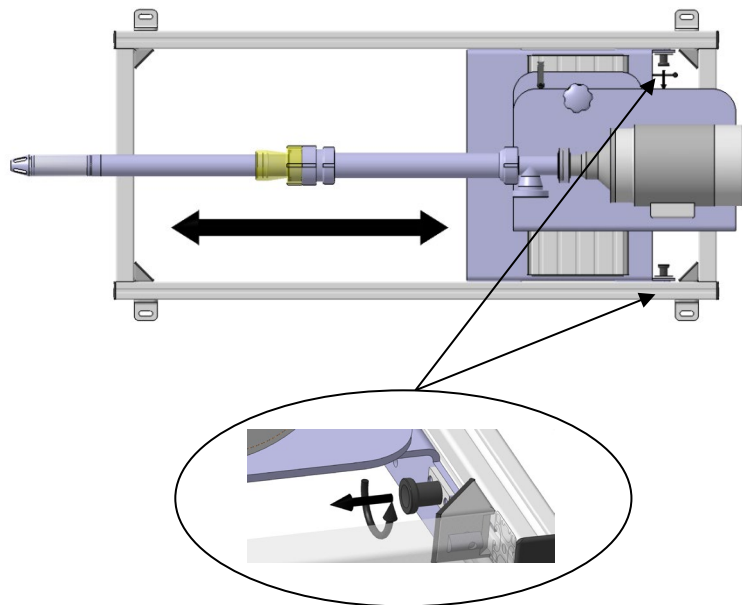
10.8.2 Z-Axis

The vertical position can be adjusted exactly by turning the spindle. The range of adjustment is limited to app. 50 mm. The approximate height of the movable support from the foundation must be pre-adjusted roughly.



10.8.3 X-Axis

After alignment of the first two axes the pump can now be inserted into the fluid-bag. Therefore the lower sledge is released and inserted.



10.8.4 Connection of piping / Outlet



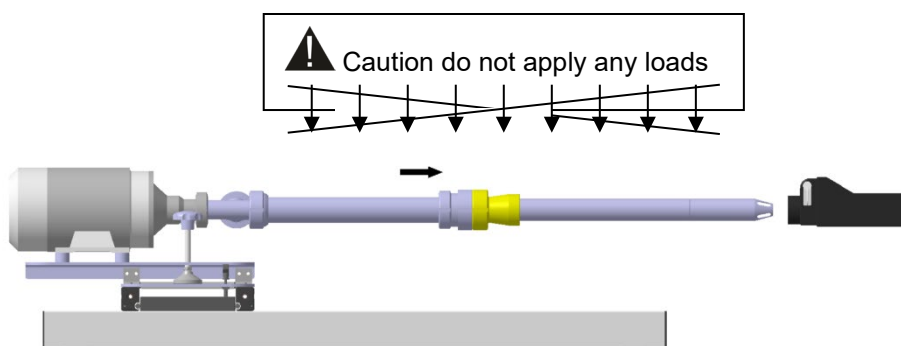
DANGER

Ensure that the engine CANNOT be started and that the rotating parts are not completely covered when work is performed to the pump unit.



ATTENTION

The connecting pipe must be supported in order to avoid important powers which could provoke the bending of the pump. Otherwise there is the risk of severe damages to the pump.



10.9 Presetting of the direction of rotation



ATTENTION

Never let the pump run without pump case or without connected pipes!

Before connecting the drive the correct direction of rotation for the driving shaft must be determined. The pump can only pump into one direction. A freewheel bearing prevents from unintended operation into the wrong direction.

10.10 Electric connection

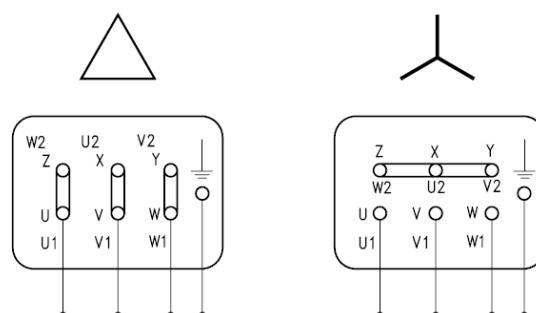
The following important points must be considered when an electric drive is used:



DANGER

An electric drive may only be connected by a qualified electrician!

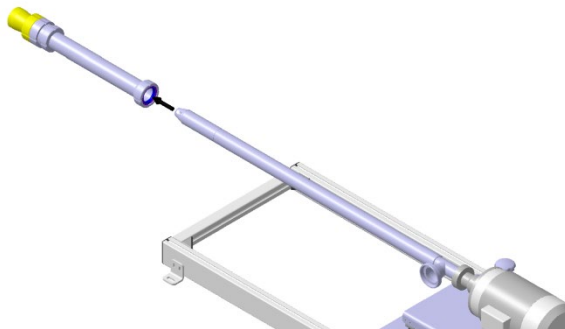
- The electric connection is done after connection of the hydraulic parts; the control system of the motor must correspond to the existing applicable laws and technical regulations. In particular build in a hand-operated electric switch with enough power for current interruption, furthermore build in an overload protection and over-current protection (e.g. automatic switches, fuse wires etc); if necessary build in a device which prevents spontaneous re-starting.
- Check that voltage, mains frequency and existing rating correspond to the electric drive in use.
- The safety protection of the material for the electric connection (cable, cable press, switch and fusing) must correspond to the environment; furthermore it is important to use cable with a cross section which is suitable to the current passage of the drive in order to prevent the conductors from overheating.
- First earth the drive; therefore use the terminal provided for this purpose at the drive and a conductor with suitable cross-section.
- The cable can be connected to the terminal board either in star or delta connection; adhere to the values regarding mains voltage which are indicated on the motor plate, as described in the picture below.
- The terminals must be connected neatly and professionally without being loaded. During the starting of the drive the current drain raises by 5 to 6 times relating to the nominal value shortly. If the power line is not designed for a rising of the current drain it is recommendable to use a star delta starter or the like (for example an economy transformer).



11 Commissioning

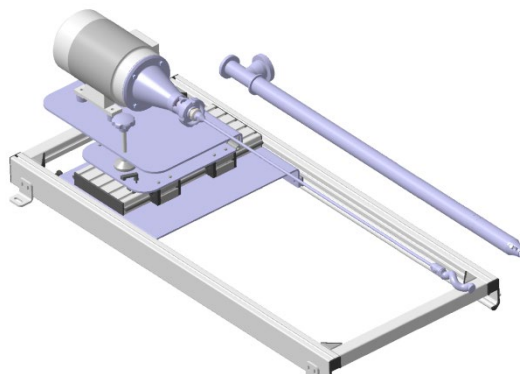
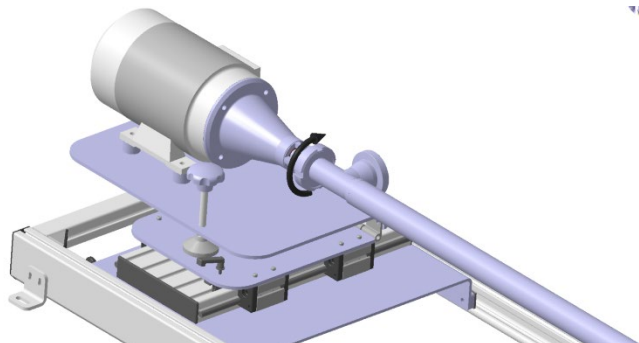
11.1 Disassembly of the pump

Remove the suction sleeve.



Remove the suction sleeve. Caution, don't put load on the overhanging part of the pump if not necessary

Removal of the pump case. Loosen the milk-tube fitting and remove the pump case to the front.

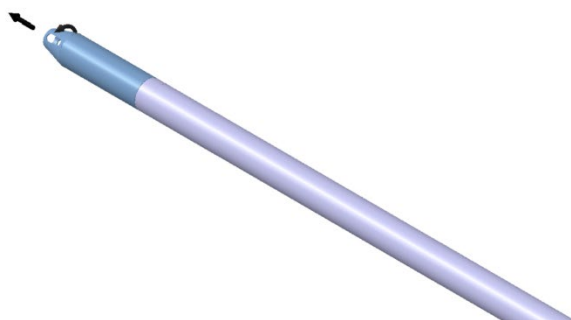


11.2 Dismantling of the stator

The stator spout is the only part of the pump with a left-hand thread and is marked accordingly. All other threads in the pump are right-hand threads.



Dismantle the stator spout. If necessary put a lever through the slots of the stator spout in order to loosen it.



The stator can now be removed.



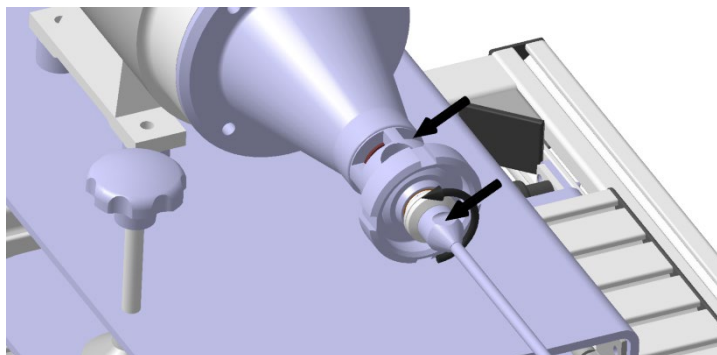
Use a tool and press it onto the pins to push the stator out of the stator spout.



The anti-rotating device can be pulled off the stator.

11.3 Dismantling of the rotor

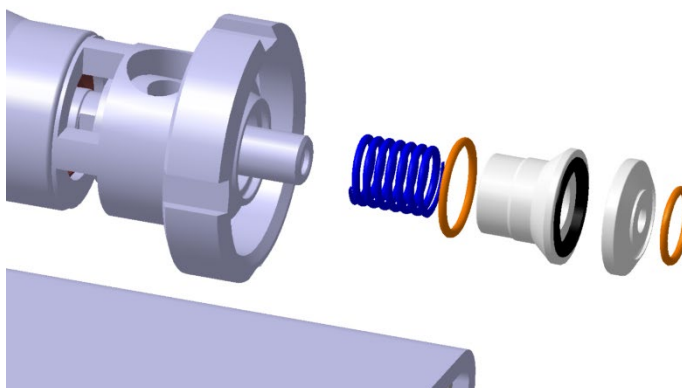
Secure the drive shaft with a spanner which is applied through the bigger slot of the drive lantern. Now screw off the torsion rod.



Loosen the eccentric screw in the same way.

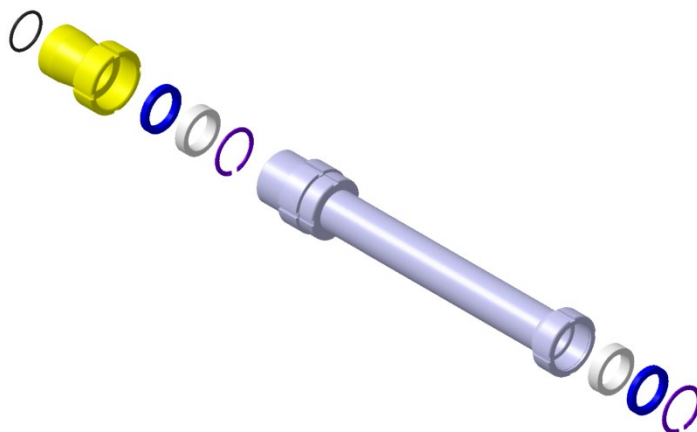
11.4 Dismantling of the seal

The mechanical seal and the seal case are also free and can be removed after loosening the torsion rod.



11.5 Dismantling of the suction sleeve.

When they are cold all collars and radial shaft seals can be removed by hand. For the retaining rings a seeger ring tongs is necessary.



11.6 Cleaning

All dismantled parts can now be cleaned by hand and autoclaved.

Please take care that all parts are not damaged. Avoid shock points and deformation in particular at the threads.

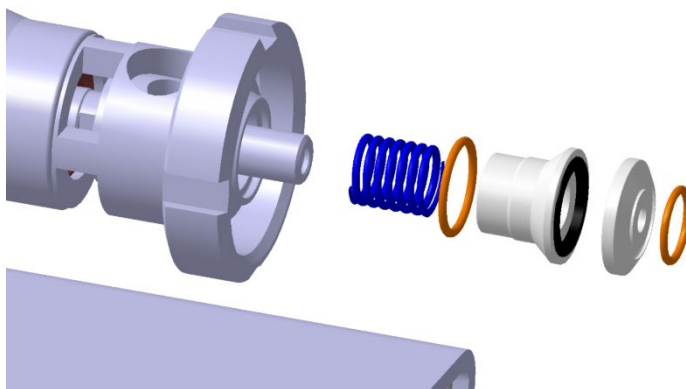
11.7 Assembly of the pump

The assembly is done in reverse order to the disassembly.

- Check all parts for damages and faults.
- Only start the assembly when all parts have cooled down completely. Warm parts are extended accordingly and can complicate or even impede the assembly. In case of disregard there is the risk of damages to the pump.
- Handle all seals with utmost care. External air can reduce the pump performance completely.

11.7.1 Fitting of the mechanical seal and the torsion rod

First insert the seal case with the o-ring and then the mechanical seal as shown below. The o-ring of the stationary mechanical seal must be lubricated in order to fit perfectly.



The cylinder pin of the protection against torsion must reach into the slot of the stationary mechanical seal. A pre-alignment is necessary. Markings on the slide ring and seal case can help you. Now the torsion rod can be fitted against the pressure of the spring.

Insert the o-ring and screw on the eccentric screw.

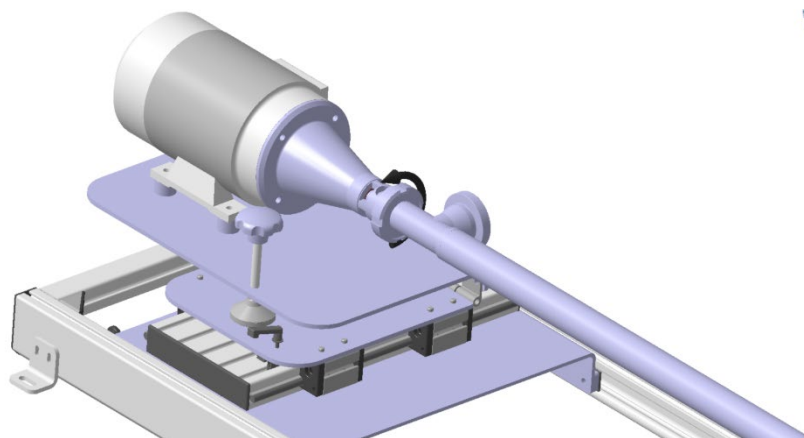
It is sufficient to tighten by hand. When the pump is running these components are tightened automatically. Thus a loosening during operation of the pump is not possible.

11.7.2 Assembly of the stator and pump case

Insert the drive disc into the stator. The chamfers of the drive disc face upwards. Now push the stator into the stator spout and ensure that the drives reach into the drive holes of the stator spout.

Fix the stator spout together with the stator onto the pump case. It is sufficient to tighten by hand. Due to the left-hand thread the screwing tightens automatically when the pump is running.

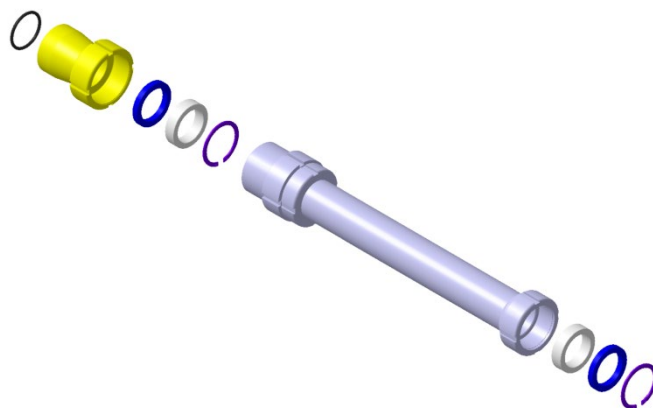
Now put on the pump case and tighten the milk tube screwing at the end. Before, set the pump connection to the desired position.



11.7.3 Assembly of the suction sleeve

When all parts have cooled down and all surfaces are free of damages, fit the retaining rings, the collars and the radial shaft seals.

Now insert the PTFE-seal into the fluid-bag-connection and screw this onto the suction sleeve. Lock it with a counter nut.



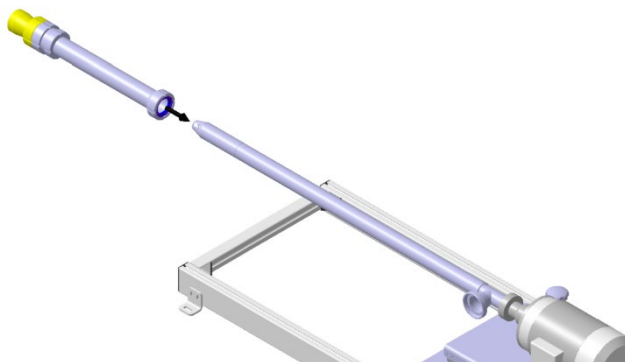
DANGER

Danger of injury! Never tighten the counter nut by hand. Use a suitable tool!



11.7.4 Assembly of the suction sleeve

Now the suction sleeve can be pushed onto the pump case. When the suction sleeve can be moved by hand „sucking“ the collars and the radial shaft seals are in intended condition.



The pump is now finished.

12 Maintenance

General Instructions

The following points are subject to a routine inspection:

- Proper pump performance. Appearance of noises could be a result of worn rotor / stator or cavitations
- Check for leakage at the shaft seals
- Check for leakage at all static seals and collars
- If applicable: Pressure and capacity of the flush system
- Pressure at inlet and outlet side
- Visual check: corrosive attack

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 30 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

13 Disassembly / Assembly

13.1 Order of spare parts

When ordering spare parts please indicate the following information:

- The serial number. This is printed on the name plate of the pump.
- The model designation. This is printed on the name plate of the pump.
- The item number, quantity and if known, the part numbers of the requested spare parts.

Chapter 15 contains a cross sectional drawing of the pump with a spare parts list and the correct item numbers.

13.2 Precautions



DANGER

Never allow the pump to run when it is disassembled or partly disassembled or when it is not connected to the piping!



DANGER

Ensure that the drive of the pump is switched off and cannot be re-started when performing maintenance works to the pump!



DANGER

When performing maintenance work to the pump always wear protective gloves and safety goggles if the pump conveys liquids which are a health hazard!



DANGER

Ensure that the pump is depressurized, when it has to be disassembled for overhaul!

		Instruction & Operation Manual Eccentric screw pump FLB	Date: 12/09/26 Page 31 of 36 Doc.No: 0180_09/2012 Est. by: D. Lünemann
---	---	---	--

13.3 Inspection of the spare parts

Replace defective parts by original - **ipp Pump Products GmbH –parts only.**

- Check all radial shaft seals, o-rings, flat seals for possible leakages.
- Check all non-defective parts and check for scratches, burrs, inclusion of foreign matter respectively excessive wear.
- Clean all spare parts with a lint-free cloth.

14 Decommissioning

14.1 Storage

If the pump is going to be stored the pump shaft must be rotated manually once per month.

If the pump is going to be stored for a long period of time it must be done so on a vibration-free base

A suitable rust-proofing resp. corrosion protection is required

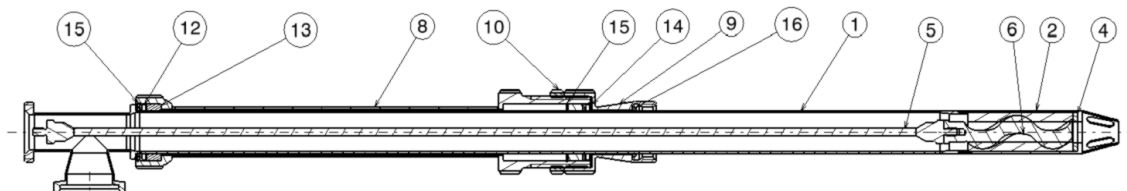
14.2 Disposal

If the pump is to be disposed of, take care of the following items:

- Clean the inside of the pump case if it contains residual product
- Drain the oil completely from the gearbox
- Offer the pump to a company specialized in handling and disposing of metal waste and plastic waste.

15 Technical Data

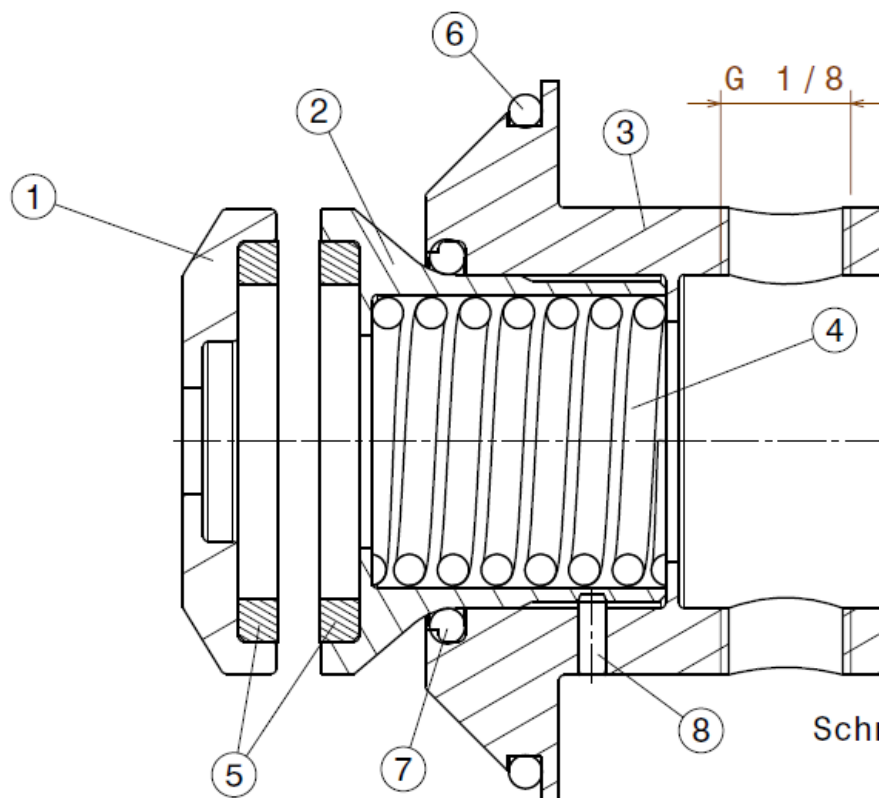
15.1 Cross-sectional drawing



ITEM	QUANTITY	PART NO. / DESCRIPTION	DRAWING NO.
1	1	Pump case, DN 40 DIN 11851	610-000-001-001
2	1	Stator cover	610-000-002-001
3	1	Stator PTFE	610-000-003-001
4	1	Anti-rotating device	610-000-004-001
5	1	Flexi shaft	610-000-005-001
6	1	Eccentric Screw	610-000-006-001
8	1	Suction Sleeve	610-000-008-003
9	1	Fixing nut Fluid-bag connection	610-000-009-001
10	1	Counter nut / suction sleeve	610-000-010-002
12	2	Radial shaft seal PTFE	610-000-012-001
13	2	Slide bearing PTFE	610-000-013-001
14	1	Flat seal PTFE	610-000-014-001
15	2	Inside locking ring A2	12-103-0011-001
16	1	O-ring, fixing nut	330-001-003-005

15.2 Shaft seals

15.2.1 Single mechanical seal



ITEM	DESCRIPTION	QUANTITY
1	Rotary seal face inboard	1
2	Stationary seal face inboard	1
3	Seal housing single mechanical seal	1
4	Pressure spring	1
5	Mechanical seal SiC	2
6	O-Ring pump case outboard	1
7	O-Ring stationary inboard	1
8	Cylinder pin	1

16 Trouble shooting

A malfunction in a pump system may have various causes. The malfunction is not always necessarily in the pump itself, but can also be caused by a malfunction in the piping system or in another appendage in the system. If the operating conditions deviate too greatly from the specifications by which the pump was purchased this can also cause malfunctioning.

Therefore always check first:

- Has the pump been installed correctly?
- Are the operating conditions still in accordance to the original specifications?
- Are the further appendages in the pipe system functioning correctly?

In general the following malfunctions can happen at the pump

- Pump gives no liquid
- Pump gives irregular liquid flow
- Capacity too low
- Pump overheats
- Motor overheats
- Excessive rotor / stator wear
- Excessive wear of shaft sealing
- Pump vibrates excessively or makes too much noise
- Pump stops
- Pump Stops during start-up

The table on the next page gives a possible cause and solution for the malfunctions mentioned above.

Fault										Cause	Action
1	2	3	4	5	6	7	8	9	10		
*										Wrong direction of rotation	Change direction of rotation of drive
*										Pump is not filled with liquid	Vent suction line and pump casing and prime pump casing with liquid
*	*	*					*			insufficient NPSHa	Enlarge diameter of suction line, or simplify suction line and make it shorter, or reduce speed and product temperature
		*	*					*		Creation of vapor in suction line	
	*	*					*			Air entering the suction line	Check the connections
*	*	*					*			Gas in the suction line	Vent suction line / pump casing
	*	*					*			Insufficient static head	Increase liquid level to enlarge static head
			*	*			*		*	Product viscosity is too high	Lower the speed / increase the product temperature
		*								Product viscosity is too low	Increase the speed / lower the product temperature
		*	*		*		*		*	Product temperature is too high	Cool the product / pump casing
				*					*	Product temperature is too low	Heat the product / pump casing
					*	*	*	*		Foreign particles in the product	Clean the system / place a filter at suction side
		*	*	*	*		*	*	*	Pressure at pump discharge is too high	Check piping for obstructions / simplify the discharge line
			*	*	*		*	*		Pump casing distorted by piping	Check balancing of the piping / support the piping
				*			*			Speed too high	Lower the speed
		*								Speed too low	Increase the speed
			*	*	*	*	*	*		Insufficient flushing	Increase flushing pressure / - capacity
			*	*	*	*	*	*	*	Worn bearings	Replace worn bearings
*										Pressure relief valve in charge	Check the discharge for any obstructions, closed valves or further reasons for resistance

17 Index

Alignment	19	Pump	32
Anti-rotating device	24	Personal Protective Equipment	8, 11, 30
Antrieb	28	Piping	18
Application	9, 11	PPE	8, 11, 30
Autoclave	26	Pump	
Built-in dimensions	17	Alignment	19, 20
Cleaning	26	Assembly	27
Commissioning	22, 27	Components	14
Components	14	Connection	20
Connections	12	Decommissioning	31
Cress-sectional drawing	32	Disassembly	22, 23, 25
Danger	6	Intended use	9, 11
Direction of Rotation	12, 21, 35	Maintenance	29
Documentation	5	Pump unit	
Drive	21	Installation	15
Drive disc	27	Pumping principle	11
Electric connection	21	Receipt of the goods	10
Electric drive	21	Rotor	25
Flexishaft	12, 25, 27	Rules	8, 11, 15
Fluid-bag	18, 19, 20	Safety	8, 9, 11, 15, 30
Foundation	16	Operating pressure	8, 16
Free wheeling bearing	12	Safety device	8, 16
Freewheel bearing	12, 21, 35	Safety rules	8, 11, 15
Identification plate	7, 10	Scope of supply	12
Installation	15	Shaft seals	33
Built-in dimensions	17	Spare Parts	30
Foundation	16	Staff	11
Inlet piping	18	Stator	23, 27, 32
Piping	18	Stator spout	27
Left-hand thread	23	Suction sleeve	26, 28, 29
Lifting	15	Symbols	6
Lubrication	12, 13	Tags	7
Maintenance	29	Technical Data	32
Manual	5	Torsion rod	12, 25, 27
Mechanical Seal	25, 33	Transport	10, 15
Assembly	27	Trouble shooting	34
Milk-tube fitting	22, 27	Warranty	10
Models	13	X-Axis	20
Outlet	20	Y-Axis	19
Parts list		Z-Axis	19
Mechanical Seal	33		