



Operating Instructions

Hygienic

Centrifugal Pump

Aqueous

Contents

1	Symbols used.....	6
2	Signs used	6
3	Expressions and terms	7
4	Intended use	9
5	Introduction	9
5.1	General.....	9
5.2	Warranty.....	10
5.3	Transport and receipt of goods	10
5.4	Identifying the pump	10
6	Safety	11
6.1	General.....	11
6.2	Personnel	11
6.3	Preventive measures.....	11
7	Hazard analysis with regard to the use of ipp Pump Products GmbH centrifugal pumps and pump units in potentially explosive atmospheres	12
7.1	To be observed in the Atex area	13
7.2	Atex Nameplate.....	13
7.3	ATEX Designations, Example	13
7.3.1	Equipment groups & categories	14
7.4	Remark on EX nameplates regarding CE marking	14
7.5	Temperature classes and permitted temperatures	14
7.6	Liability	15
8	General information.....	15
8.1	Operating principle	15
8.2	Delivery program	15
8.2.1	Connections.....	15
8.2.2	Shaft seals	16
8.2.3	Sizes	16
9	Main components	17
10	Installation	18
10.1	General.....	18
10.2	Transport.....	18
10.3	Storage conditions.....	18
10.4	Lifting	18
10.5	Foundation	19
10.6	Installation dimensions	19
10.7	Piping system	19
10.7.1	General.....	19
10.7.2	Inlet side.....	20
10.8	Check valves	20

10.9	Connecting the lines	20
10.10	Flushing the shaft seals	21
10.11	Barrier pressure tank/Barrier liquid tank	22
10.11.1	Overview sealing pressure tank	22
10.11.2	Installation and connection of the tank	22
10.11.3	Selection of sealing medium	23
10.11.4	Filling and draining the tank	23
10.12	Specification of the direction of rotation	25
10.13	Connecting the drive	25
11	Commissioning	26
11.1	Cleaning the system	26
11.2	Control	26
11.3	Start-up	26
11.4	During operation	26
11.5	Temporarily stopping the pump	26
12	Maintenance	27
12.1	General	27
12.2	Parts in contact with the product	27
12.2.1	General	27
12.2.2	Elastomers	27
12.3	Motor	27
13	Disassembly/Assembly	27
13.1	Spare parts order	27
13.2	Safety measures	28
13.3	Special tools	28
13.3.1	Locking tool	28
13.4	Pump drainage	28
13.5	Removing the pump	29
13.6	Disassembling the pump	29
13.6.1	Disassembling the impeller	30
13.6.2	Disassembling the shaft seal	30
13.6.3	Disassembling the remaining pump components	31
13.6.4	Inspection of the individual components	32
13.7	Installing the pump	33
14	Decommissioning	38
14.1	Removal	38
14.2	Storing	38
14.3	Disposal	38
15	Cross-sectional drawing	38
16	Parts list	38
17	Heaters/heat exchange	39
18	Cleaning	40
18.1	General	40
18.2	CIP cleaning	40

18.3	SIP cleaning	40
18.4	Disinfection	41
18.5	Manual cleaning	41
19	Fault rectification	42
20	Index.....	44
21	Document tracking	44

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 5 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	---

Use and storage of this documentation

These operating instructions are a document prepared by IPP Pump Products GmbH and refer to the installation, safe use and maintenance of the hygienic centrifugal pump. In this respect, this documentation, together with the usage and maintenance instructions by the manufacturers of individual components, is an essential part of the hygienic centrifugal pump.

The purpose of the above documentation is to enable the users to safely operate the hygienic centrifugal pump and as such it contains clear instructions for use; this documentation must be thoroughly read and understood by the users.

Please note that the specifications in all operating and maintenance instructions relating to this pump have been developed to ensure the users' safety and health. For this reason, you yourself, the operators and the maintenance personnel must be able to read and understand these instructions in full and apply the instructions/procedures.

Following these instructions will enable the safe use of the pump and the performance of appropriate interventions. As indicated above, the declaration of conformity and all operating and technical maintenance instructions for the hygienic centrifugal pump must accompany the pump in case of resale. This documentation must be carefully stored until the final disposal of the centrifugal pump and must be accessible to the respective operating personnel.

Please handle the operating instructions carefully, do not damage them, and keep them in a safe place. Do not tear out pages, do not expose them to dirt or heat, and keep them in a legible condition. This documentation and associated appendices must always be available to the respective authorized operating personnel so that they can be consulted at any time in the event of questions regarding the operation of the pump and/or when carrying out maintenance work.

The contents of the technical instructions reflect the state of the art at the time the pump was manufactured. The technical instructions are not considered insufficient due to technological improvements of the hygienic centrifugal pump.

The Technical Instructions and associated appendices are strictly confidential: IPP Pump Products GmbH reserves all rights with respect to these Operating and Maintenance Instructions and the object described therein. The recipient acknowledges these rights vis-à-vis IPP Pump Products GmbH, represented by the Managing Director, Mr. Fredrik Jönsson, and undertakes, even without a written agreement, not to make them available to third parties, either in whole or in part, or to use them for purposes other than those intended. Violations will be prosecuted by law.

The technical instructions for the hygienic centrifugal pump are an integral part of it; therefore, all of the above-mentioned technical documentation must accompany the pump when it is resold.



CAUTION

To ensure proper safety management during the use and maintenance of the hygienic centrifugal pump, all technical documentation must accompany the pump, even if it is resold.



DANGER

The technical instructions contain information/procedures for the use and safe maintenance of the hygienic centrifugal pump. They must be stored near the pump location in a place easily accessible to the operator. The person responsible for operation and the maintenance personnel must be able to locate and view the documentation at any time.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 6 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	---



All technical documentation regarding the hygienic centrifugal pump must be kept in an easily accessible location so that it can be consulted quickly. Moreover, the personnel responsible for operation and maintenance must be informed about the storage location.

1 Symbols used

Important information on technical reliability and safe use is presented in these instructions as follows (these symbols always precede the text to which they refer).



The DANGER symbol calls attention to a procedure, application or similar action that, if not performed correctly, poses the risk of injury. Do not perform any action after seeing a DANGER symbol unless you fully understand and comply with the specified conditions.



The CAUTION symbol calls attention to an operating procedure, application or similar action that is potentially hazardous and poses a risk of serious injury if the instructions are not followed precisely.



The ATTENTION symbol calls attention to an operating procedure, application or similar action which, if not performed or followed correctly, may damage or completely destroy the product. Do not perform any action after seeing an ATTENTION symbol unless you fully understand and comply with the conditions.



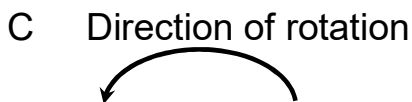
Refers to technical aspects that require particular attention from the pump's user

2 Signs used

The hygienic centrifugal pump features a type plate indicating the centrifugal pump's model and serial number.

Signs are attached to the surface of the various components of the hygienic centrifugal pump that prohibit the centrifugal pump from being run dry (Sign A). If the centrifugal pump is designed for liquids above 50°C, there will be a sign on the pump warning the operator of hot surfaces, as shown in Figure B. Figure C indicates the pump's direction of rotation.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 7 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	---	--



NOTICE

Please note that the markings/signs attached to the hygienic centrifugal pump must not be changed or removed.



CAUTION

It is not allowed to use products of IPP Pump Products GmbH without a type plate. If the type plate is missing from a product, the customer is obliged to inform IPP Pump Products GmbH so that the product can be identified and a new type plate issued.

3 Expressions and terms

Hazardous area: any area at or near a pump where the presence of a person poses a risk to that person's safety and health.

Person at risk: Persons who are fully or partially present in a hazardous area.

Machine: Assembly of parts: as defined in Article 2 of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006.

Manufacturer: IPP Pump Products GmbH

Customer: Physical or legal person for whom the machine was built based on the written acceptance of an order confirmation.

Copyright 2012 IPP Pump Products GmbH

Date of release: 09/24/2022

Reference number: 1058 – Version as of 09/2022

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 8 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	---



CAUTION!

- For all work on and with the pump, the valid regulations regarding working conditions and machine safety must be observed and complied with.
- Never run the pump without the pump housing or without connected lines!
- The pump must not be switched on under any circumstances if the coupling or lantern is not provided with an adequate hand guard!
- In addition, it must be ensured that the drive of the pump is switched off during maintenance work and cannot be switched on again accidentally under any circumstances!
- Protective gloves and goggles must be worn during maintenance work if the pump is pumping potentially harmful liquids!
- Make sure that the pump is depressurized if it has to be disassembled for maintenance purposes! In addition, close off any steam or heating water supply lines!
- Allow the pump to cool down first before maintenance if it has a heating jacket and/or pumps warm liquids!
- When lifting a pump or pump unit, ensure that no one is standing under the lifted load!
- Never put your fingers or other body parts into the pump housing or into the connections. Injuries can also occur when turning the shaft manually!
- Ensure that the drive cannot be started when work is being carried out on the pump unit and the rotating parts are not completely shielded.
- If the pump is already installed: Ensure that the pump is switched off and verify that the pump cannot be switched on unintentionally!
- Work on the electric drive may only be carried out by qualified specialist personnel!
- The pump housing may only be dismantled when the pump is at a standstill, has cooled down and is completely depressurized!

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 9 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	---



ATTENTION!

- The piping system must ALWAYS BE CLEANED or free of solids! Perform appropriate cleaning after reinstalling the system, after any work on the system and each time the system has been opened!
- Every time the pump unit has been detached from the foundation, check the alignment of the coupling between pump and drive, if present!
- If the pump does NOT have a FLUSHED shaft seal, it must NEVER be installed in an arrangement where the pump can possibly run DRY!
- Avoid large temperature fluctuations in the pumped liquid. These can cause damage to the pump if the pump elements expand/shrink.
- The specified maximum values for the operating pressure, rotational speed and temperature must never be exceeded!
- When the pump is running empty, make sure that it does not run dry! This is only permissible if the pump is equipped with a flushed shaft seal.

4 Intended use

The “hygienic centrifugal pump” manufactured by IPP Pump Products GmbH is designed and manufactured for installation in third-party industrial plants with the purpose of pumping liquids suitable for the materials used in the pump.

For proper installation, all technical specifications in these operating and maintenance instructions must be observed.

The use of the hygienic centrifugal pump is only permitted within the permissible pressure and temperature ranges and under consideration of chemical and corrosive influences.

Any use that exceeds the specified operating ranges and specifications is considered improper. Any damage resulting from this is outside the manufacturer’s responsibility, and the user bears the full risk in this regard.

Contact IPP Pump Products GmbH if the pump is to be used for other applications or under other conditions not included in the agreed specifications on the basis of which the pump was selected.



DANGER

Any use of the hygienic centrifugal pump not in accordance with its intended purpose is prohibited unless expressly authorized in writing by IPP Pump Products GmbH.

5 Introduction

5.1 General

These operating instructions contain important information regarding the correct installation, use and maintenance of the pump.

In addition, these operating instructions contain the necessary information for the installer/operator to prevent injuries or difficulties during the installation and operation of this pump and to ensure correct handling of the machine and proper pump function.

These operating instructions contain current information regarding the pump types mentioned here up to the time of printing of these operating instructions. IPP Pump Products GmbH reserves the right to change the construction principle of the mentioned pump types as well as the contents of these operating instructions at any time without prior or subsequent notice.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 10 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--



ATTENTION

Please read these operating instructions in their entirety before installing, using or repairing this pump. In this context, please ensure that you yourself as well as the operating personnel and technical maintenance personnel are familiar with the symbols used and have understood the contents. The instructions contained in these operating instructions must be followed.

5.2 Warranty

The warranty is strictly linked to the conditions of the company IPP Pump Products GmbH and is only granted under these conditions.

The warranty is valid only if:

- the pump has been installed and commissioned without exception in accordance with the directions given in these operating instructions;
- all maintenance and repair work has been carried out in accordance with the directions contained in these operating instructions;
- only original IPP Pump Products GmbH parts or parts supplied by IPP Pump Products GmbH were used when replacing individual parts;
- the pump has been used exclusively for application purposes in accordance with the agreed conditions;
- the construction principle of the pump has not been changed independently;
- the damage in question is not due to interventions by persons unqualified or not employed for this purpose;
- the damage is not due to force majeure.

5.3 Transport and receipt of goods

Make sure that the pump has not been damaged during transport. Please report any damage immediately to the forwarding agent and to IPP Pump Products GmbH.



ATTENTION

To simplify internal transport and to protect the pump as much as possible, leave it on the pallet or in the delivered wooden crate as long as possible until you have reached the final deployment position.

5.4 Identifying the pump

The serial number and model number can be found on the pump's type plate.

Always quote the relevant serial number and model number in any correspondence and when reordering spare parts.

Manufacturer

The hygienic centrifugal pumps are manufactured by

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

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 11 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	---

6 Safety

6.1 General

These operating instructions contain the necessary information for the installer/operator to prevent injuries or difficulties during the installation and operation of this pump and to ensure correct handling of the machine and proper pump function.

Please read these operating instructions in their entirety before installing, using or repairing this pump.

Ensure that the operating personnel and technical maintenance personnel always familiarize themselves first with the contents of these operating instructions and know the relevant directions.

In this context, please ensure that the operating personnel and technical maintenance personnel are familiar with the symbols used.

The instructions contained in these operating instructions must be followed.

The operating instructions must be kept in a place that is well known and easily accessible to all users.

6.2 Personnel

The persons responsible for the installation, operation or maintenance and overhaul of the pump must have the necessary training and qualifications.

6.3 Preventive measures

- It must be ensured that the drive of the pump is switched off during maintenance work and cannot be switched on again accidentally under any circumstances!
- For all work on and with the pump, the valid regulations regarding working conditions and machine safety must be observed and complied with.
- Protective gloves and goggles must be worn during any work if the pump is pumping potentially harmful liquids!
- Make sure that the pump is depressurized if it has to be disassembled for maintenance purposes!
- Allow the pump to cool down first if it has a heating jacket and/or pumps warm liquids!

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 12 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	---	---

7 Hazard analysis with regard to the use of ipp Pump Products GmbH centrifugal pumps and pump units in potentially explosive atmospheres



Note

For a device to be suitable for an application, this device must be equipped for its intended purpose and also for the environment in which it is to be installed.

Source of danger	Potential Danger	Frequency of Occurrence	Recommended Measure
Hot Surface	The pump is at maximum temperature during normal operation / upstream valve closed	Rare	Temperature Monitoring
Hot Surface, Mechanical Spark	Dry running; overheating. Unintentional mechanical contact. Leakage point. Build-up of explosive gas	Rare	Selection of the sealing system must be suitable for the application. Monitoring of the supply line with limit switch
Electrical Device	Sensors and electric motors are a possible source of ignition	Rare	Only use device with a certificate of conformity
Mechanically generated sparks	Unintentional mechanical contact due to foreign bodies	Rare	Use a run-in strainer to ensure that the system and pump are free of foreign objects
Mechanically generated spark	Unintentional mechanical contact due to cavitation or failure of the bearing	Rare	Ensure that operating limits are not exceeded in the long term.
Mechanically generated spark	mechanical contact due to unsecured connection	Rare	System pressure must not exceed that specified in the design. Observe tightening torques and gaps according to 13.7
Electrostatic discharge	Transferring a non-conductive liquid	not relevant	Operation of the pump entails the risk of generating an electrostatic charge in flowing liquids. The user should initiate measures in accordance with IEC/TS 60079-32-1.
Pump housing / pump housing cover	Liquid leakage at the pump. Build-up of explosive gas.	very rare	Stainless steel, corrosion-resistant
Additional flushing system for shaft sealing	Liquid leakage at the pump. Build-up of explosive gas.	Rare	Selection of an additional sealing system must be suitable for the application. Level monitoring required.
Shaft	randomly generated current	very rare	Ground the Pump
Mobile Unit	When moving the trolley, sparks may be generated by impact with objects or by	Rare	Move at slow walking speed only on level floors and drive well around objects. Use guide wheels. Lay

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 13 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
	tipping over; electrostatic charge; damage to flexible lines due to being driven over		cables outside the danger zone, wind up power cables. Check all cables for damage before each connection. Have damaged cables replaced by qualified personnel. Earthing.

7.1 To be observed in the Atex area

- As the pump must always be filled when running, there is no ATEX zone inside! Risk analysis only applies to outer zone.
- Any dry running must be avoided. The pump and mechanical seals must be protected against dry running.
- Earthing connection must be provided.

7.2 Atex Nameplate

The nameplate of a pump or pump unit with Atex contains the following data:

 II2G Ex h IIC T4 Gb	
SERIAL NUMBER I	
	 PUMP PRODUCTS GMBH SOLUTIONS & TECHNOLOGY
PUMP-SERIES I	
MODEL I	
SERIAL NUMBER I	
Feldmühlenweg 6-10 · D-49593 Bersenbrück Fon +49 (0) 5439-80921-0 · www.pump-products.de	

Pump type and model designation::

Example:

Serial Number: Pump serial number assigned by the manufacturer

Ex Marking: Ex symbol followed by the ATEX designation (see examples below).

7.3 ATEX Designations, Example

Example 1:

Doc. No. 1065 – Version as of 07/2024

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 14 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

II 2G Ex h IIC T4 Gb

II 2G marking according to Group II, Category 2, gas (G) protection,
Ex h non-electrical equipment
IIC Explosion group IIC
T4 Temperature class T4
Gb Equipment protection level (EPL)

Example 2:

II2D Ex h IIIC T120°C Db

II 2G marking according to Group II, Category 2, gas (G) protection,
Ex h non-electrical equipment
IIIC Explosion group IIIC
T120°C Temperature class 120°C
Db Equipment Protection Level (EPL)

The ambient temperature must be between -20°C and +40°C. If this is not the case, the corresponding ambient temperature is specified on the rating plate.

7.3.1 Equipment groups & categories

Equipment groups (Annex I of EU Directive 2014-34)	
Group I	Group II
(mines, mine gas and dust)	(other explosive air mixtures gas/dust)

Category M		Category 1		Category 2		Category 3	
1	2	G (Gas) (Zone 0)	D (Dust) (Zone 20)	(Gas) (Zone 1)	(Dust) (Zone 21)	G (Gas) (Zone 2)	D (Dust) (Zone 22)

For devices that offer a very high level of protection if they are at risk from explosive air.	For devices that offer a high level of protection if they could be endangered by explosive air.	For devices that offer a very high level of protection if they are used in areas where explosive air mixtures are likely to occur.	For devices that offer a high level of protection if they are used in areas where explosive air mixtures are likely to occur.	For devices that offer normal protection if they are used in areas where explosive air mixtures are less likely to occur.
--	---	--	---	---

7.4 Remark on EX nameplates regarding CE marking

According to the CE Machinery Directive, a single pump without a drive is not a machine and does not need to have a CE marking: a II-B manufacturer's declaration is sufficient. However, the CE marking is required by the ATEX regulations and is therefore mandatory.

7.5 Temperature classes and permitted temperatures

During normal operation, the maximum temperature on the pump surface corresponds either to the temperature of the liquid to be pumped, increased by a safety margin for a possible local temperature rise at the mechanical seal, or it corresponds to the temperature of the gear oil or the temperature of the heating medium if the pump is heated by jacketing. The maximum permissible temperature depends on the temperature class (T4) or on the Tmax to which it must correspond. The entire pump surface must be freely ventilated to allow adequate cooling.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 15 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

The ATEX designation refers to a maximum ambient temperature of 40°C. If the ambient temperature is above 40°C, corrections must be made according to the difference. Contact ipp Pump Products GmbH.

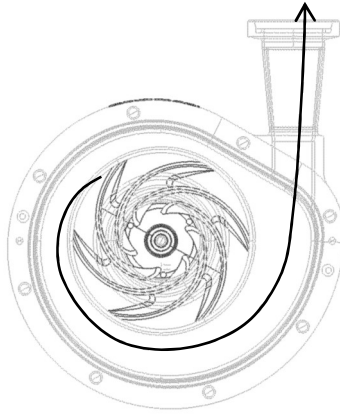
7.6 Liability

The operator must ensure that the prescribed product temperatures are not exceeded and that regular checks and maintenance are carried out to ensure that the shaft seals, bearings and internal pump parts function properly. If this cannot be ensured by the operator, suitable monitoring devices must be provided.

8 General information

8.1 Operating principle

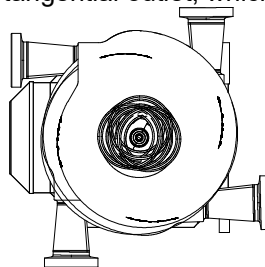
A centrifugal pump is a rotating flow machine. The pump function is based on the transfer of momentum from the impeller to the medium. In the case of the open impellers used as standard, the cover and the housing serve to seal these open surfaces. Adjusting these gaps between the rotating impeller and the static cover and housing is important for fault-free functioning.



8.2 Delivery program

8.2.1 Connections

The delivery program includes pump types with connections DN25, DN32, DN40, DN 50, DN65, DN80 and DN100. The pump has an axial inlet and a tangential outlet, which can be rotated in four stages.



8.2.2 Shaft seals

The following shaft seal variants are available:

- Single mechanical seal
- Double mechanical seal with flushing or liquid quench (pressureless or with overpressure)

8.2.3 Sizes

Type	max. rotational speed[min^{-1}]	Nominal connection width Suction/Discharge
120-25	3600	DN32/DN25
120-32	3600	DN40/DN32
120-40	3600	DN50/DN40
150-25	3600	DN32/DN25
150-32	3600	DN40/DN32
150-40	3600	DN50/DN40
150-50	3600	DN65/DN50
150-65	3600	DN80/DN65
150-80	3600	DN80/DN80
190-32	3600	DN40/DN32
190-40	3600	DN50/DN40
190-50	3600	DN65/DN50
190-65	3600	DN80/DN65
190-80	3600	DN100/DN80
240-32	3600	DN40/DN32
240-40	3600	DN50/DN40
240-50	3600	DN65/DN50
240-65	3600	DN80/DN65
240-80	3600	DN100/DN80

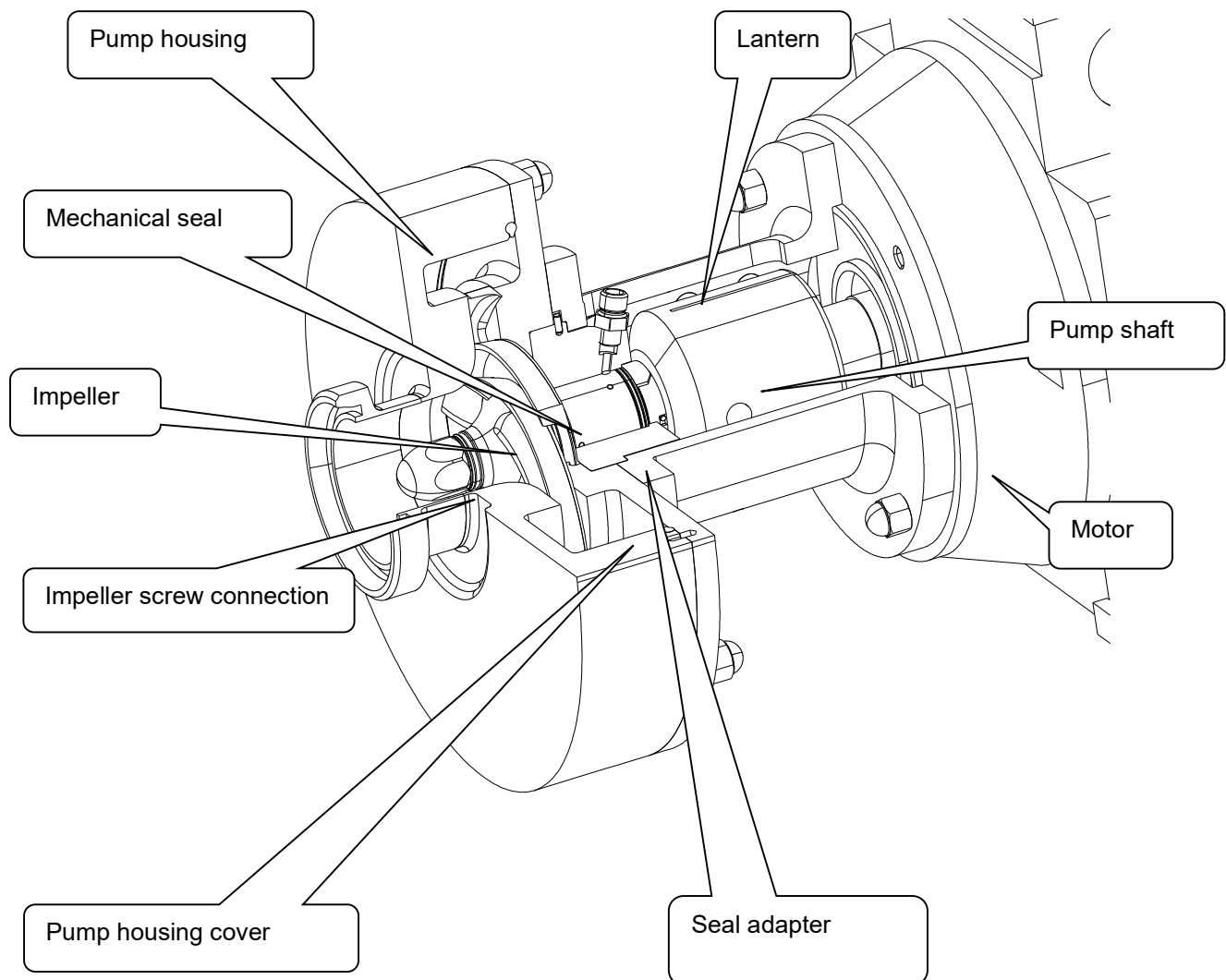


NOTICE

The values stated represent maximum values. In practice, the achievable values may be lower, depending on the type of pumped product or the design of the system in which the pump is integrated.

9 Main components

The pump has the following structure:



		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 18 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

10 Installation

10.1 General

The surface must be firm, flat and level.

The room in which the pump unit is installed must be sufficiently well ventilated. An excessively high ambient temperature, humidity or even a dusty environment can impair the function of an electric motor.

There must be sufficient space around the pump unit to be able to operate, clean, maintain and possibly repair the pump.

To ensure an unobstructed air supply, there must be a free space behind the ventilation grille of an electric drive that is at least about $\frac{1}{4}$ as large as the diameter of the ventilation grille. For exact specifications, refer to the operating instructions of the respective electric motor.



DANGER

For all work on and with the pump, the valid regulations regarding working conditions and machine safety must be observed and complied with.

10.2 Transport



ATTENTION

To simplify internal transport and to protect the pump as much as possible, leave it on the pallet or in the delivered wooden crate as long as possible until you have reached the final deployment position.

10.3 Storage conditions

If the pump is not used immediately, the following storage conditions must be observed for later fault-free operation. Store the pump at a room temperature of approx. 20°C and protect it from moisture and dust as well as from mechanical influences and UV rays.

Close the connections of the pump with the caps provided.

If the pump was in operation before storage, clean the pump thoroughly inside and out. If the pump is equipped with a sealing pressure tank, this and its connection lines must also be drained and thoroughly cleaned.

If the pump is stored with an electric motor, make sure that the motor is protected from cold, dust and especially moisture, but also from humidity. In addition, the motor manufacturer's storage and transport conditions must be observed.

To prevent damage to the gearbox and the mechanical seals after prolonged storage, check the shaft for free movement prior to commissioning.

10.4 Lifting

If a suitable lifting device is available, use it to move the pump (the pump unit).

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 19 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

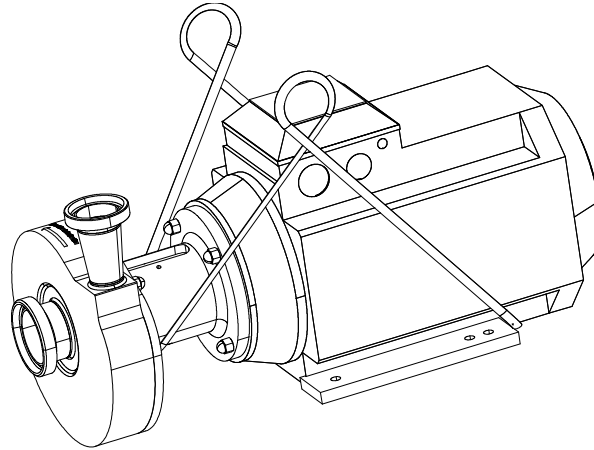


DANGER

Standing under a lifted load is prohibited!

The pump with motor can be attached with lifting straps as follows:

1. Pay attention to connections in case of a double mechanical seal
2. Align the strap so that the pump is suspended horizontally



DANGER

Never put your fingers into the pump housing or into the connections. Bodily injuries can also occur when turning the shaft manually!

10.5 Foundation

The surface must be hard, flat and horizontal.

When designing and constructing the foundation, consider the leakage drain and the space required for pump drainage as well as maintenance, installation and repair.

10.6 Installation dimensions

The correct installation dimensions for the pump unit can be found in the unit drawing, which was supplied separately or can be obtained from IPP Pump Products GmbH.

10.7 Piping system

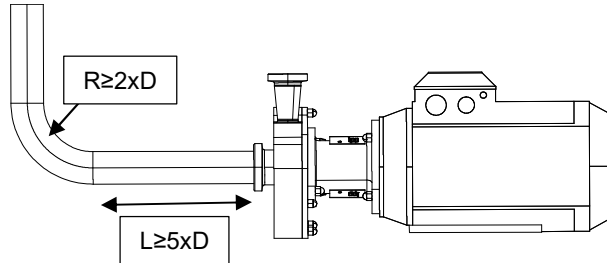
The piping system must meet the following requirements:

10.7.1 General

- Make sure that the piping system is adequately supported everywhere, in particular at the pump connections. The weight of the piping must not rest on the pump.
- It must be possible to attach the on-site connections to the pump connections in exact alignment.
- The lines must be installed and connected without tension.
- Lines that are installed crooked, poorly supported or under preload can cause considerable damage to the pump!
- Please also pay attention to thermal stress, which can cause inadmissible forces and torques on the pump.
- Ensure that the lines and connections are tight, that there is no leakage, and that no foreign air is allowed into the system.

10.7.2 Inlet side

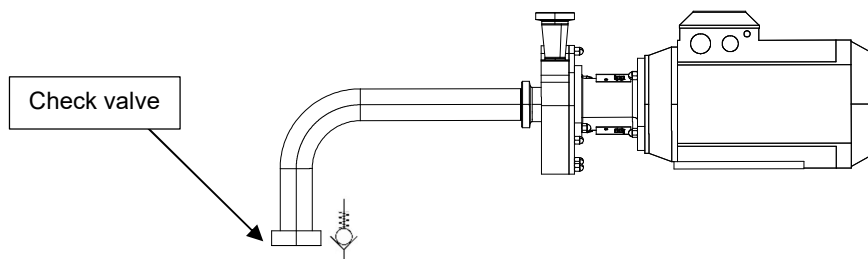
Preferably, the pump should be set up **below** the liquid level. If the liquid supply is uniform, no air can enter the piping system.



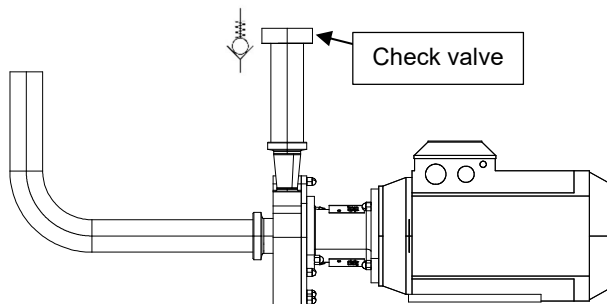
Otherwise, the supply line should be as steadily falling or rising as possible to avoid sinks and air pockets.

10.8 Check valves

If a pump is set up **above** the liquid level, a check valve is to be installed in the inlet line so that the line is always filled with liquid. This applies in particular when pumping low-viscosity liquids. The valve is installed at the foot of the line.



In systems where the liquid is under vacuum, a check valve should be installed in the outlet line. This prevents any air or liquid from flowing back.



10.9 Connecting the lines



DANGER

Ensure that the motor **CANNOT** be started when work is being carried out on the pump unit and the rotating parts are not completely shielded.



ATTENTION

The piping system must **ALWAYS BE CLEANED** or free of solids! Perform appropriate cleaning after reinstalling the system, after any work on the system and each time the system has been opened! Dirt and hard particles can cause severe damage!



ATTENTION

If the pump does NOT have a FLUSHED shaft seal, it must NEVER be installed in an arrangement where the pump can possibly run DRY!

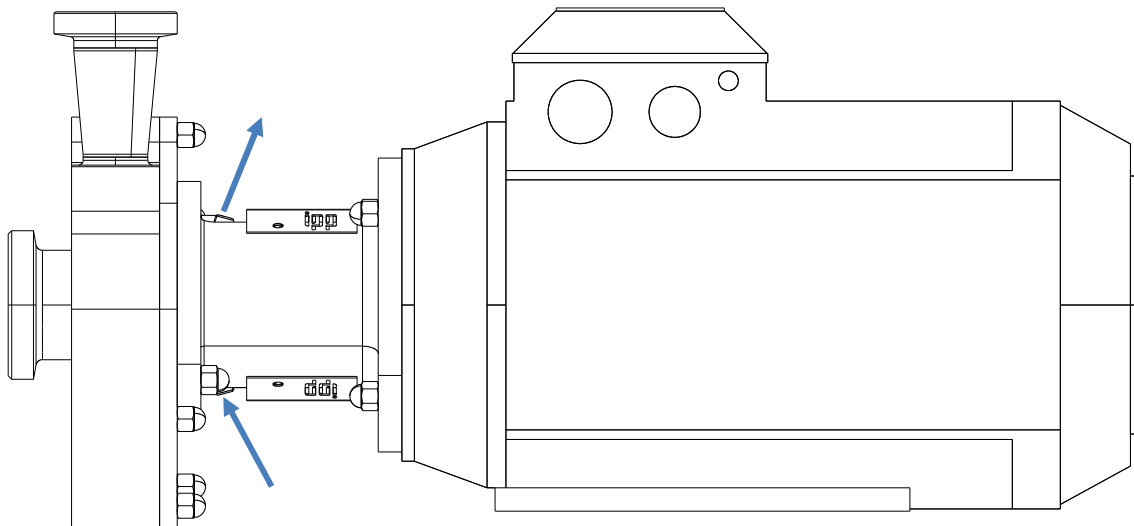
10.10 Flushing the shaft seals

The **flushing lines are connected** via the openings in the lantern. G1/8" female threads are provided as standard connections.

The **flow rate** in the flushing system is determined individually in the project planning phase. The flow rate can range from **0.5 l/min** to **2 l/min**.

If a **low-pressure flush or quench** is used, the pressure in the flushing system must **not exceed 0.2 bar**. **Connect the supply of the flushing lines to the underside!**

If **pressure flushing** (flush) is used, the pressure of the flushing system must be approx. **2 bar** higher than the system pressure. **Connect the supply of the flushing lines to the underside!**



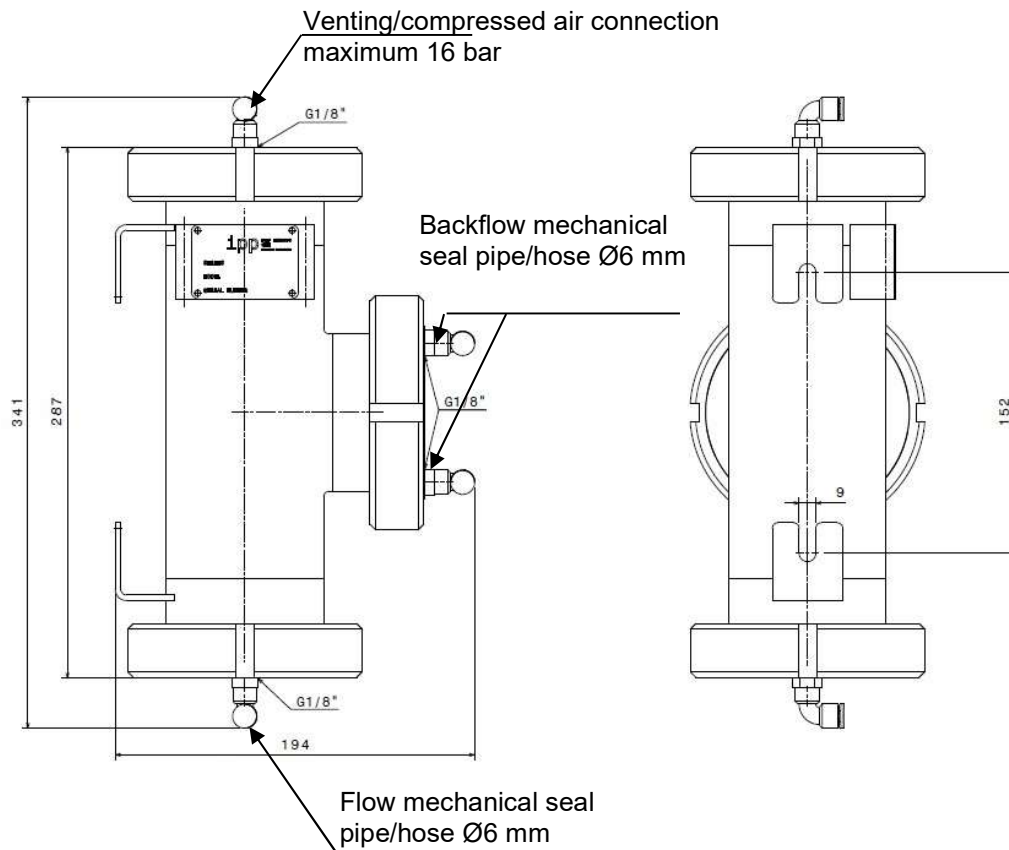
10.11 Barrier pressure tank/Barrier liquid tank

The barrier pressure tank is delivered ex works without sealing medium. To prevent damage to the mechanical seals, the barrier pressure tank must be filled with a suitable medium before the commissioning of the pump.

The barrier pressure tank can be operated unpressurized or pressurized. In pressurized operation, the barrier pressure must be approx. 2 bar higher than the pump's operating pressure. The barrier pressure must not exceed a permissible pressure of 16 bar.

If the barrier pressure tank is operated without pressure, it functions as a quench tank, and the quench medium is a flushing medium in this case.

10.11.1 Overview sealing pressure tank



10.11.2 Installation and connection of the tank

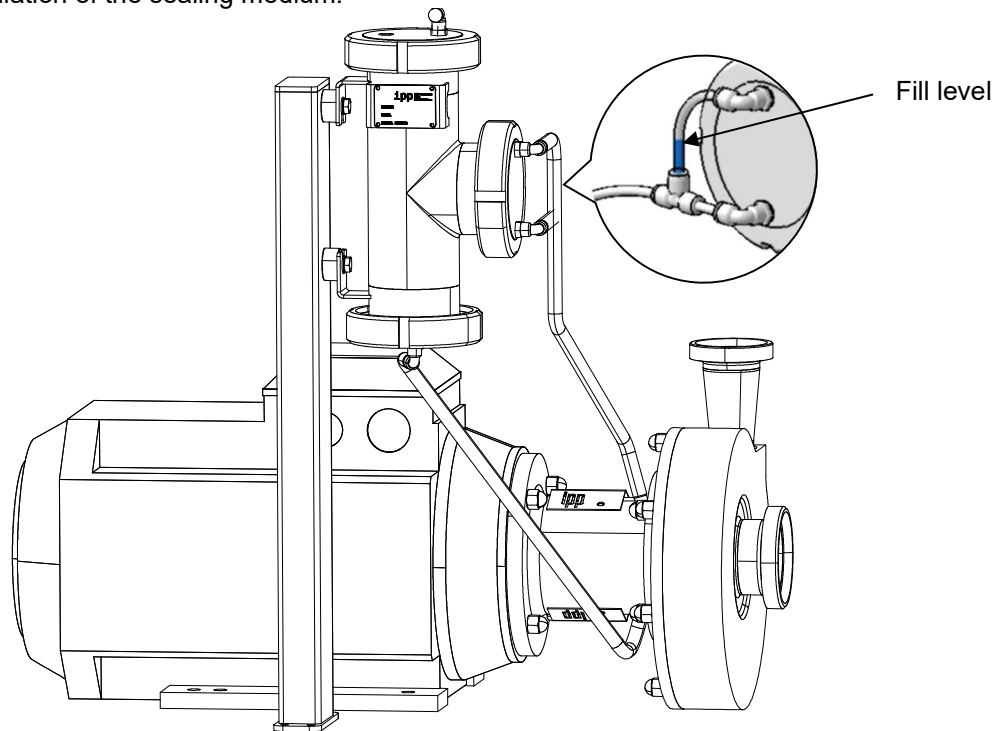
As standard, the sealing pressure tank is connected to the pump with hoses and delivered mounted on the base plate. In special cases, it may be possible that the sealing pressure tank is not delivered pre-assembled

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 23 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

and must be installed by the customer on site. The following points must be observed during subsequent installation.

Since this barrier pressure tank is a system with a thermosiphon circuit, the barrier pressure tank must be arranged so that the lines from the mechanical seals to the barrier pressure tank are steadily rising as possible.

When laying the pipes or hoses, always ensure that any subsequent formation of air pockets is avoided. This ensures proper circulation of the sealing medium.



The connections can be connected with hoses or pipes. The selection of the material depends on the application and the flushing medium and shall be chosen by the customer.

10.11.3 Selection of sealing medium

The sealing medium must be compatible with the pumped medium to be sealed, have adequate lubricating properties and an adequate heat capacity.

The sealing liquid should be soluble in the pumped medium. This ensures the mixing of both media and a complete and thorough flushing of the mechanical seals.

The O-rings and seals in contact with the flushing medium must be checked for compatibility with the selected sealing liquid and selected appropriately.

10.11.4 Filling and draining the tank



Never open a pressurized barrier pressure tank! Prior to each opening, the sealing pressure system must be fully released. To avoid scalding due to escaping sealing medium, allow the sealing pressure system to cool down before opening.

To refill, open the sealing pressure tank by unscrewing the groove nut at the top using a suitable tool (e.g., hook wrench for groove nut DN80). The system is filled with sealing liquid until the fill level is centered in the hose between the T-piece and the upper inlet of the sealing pressure tank (see 10.11.2).

For special versions with sight glass, the fill level should be approximately in the center of the sight glass. If a fill-level monitor is installed, the operating instructions for this device must be observed.

Doc. No. 1065 – Version as of 07/2024

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 24 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--



ATTENTION

With all variations of barrier pressure tanks, the circulation circuit must always be closed.

The barrier pressure tank is then closed again with the groove nut and can be put into operation.

The barrier medium should be replaced in suitable intervals. To do this, disconnect the inlet line at the lowest point and empty the barrier pressure tank and the outlet line. To remove any remaining barrier medium in the mechanical seals, close the disconnected inlet line and connect a compressed air line to the top connection of the sealing pressure tank and then pressurize the opened circuit. The system can then be cleaned and the sealing pressure tank refilled.

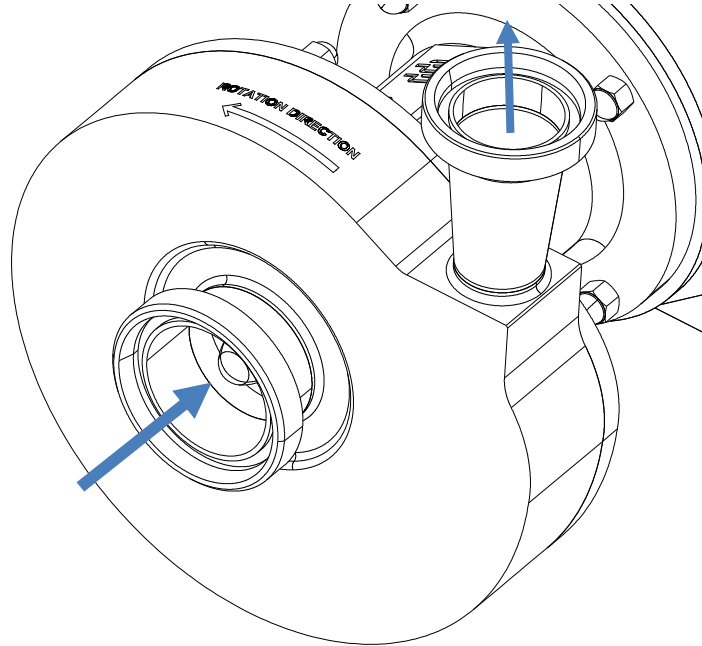
10.12 Specification of the direction of rotation



ATTENTION

Never run the pump without pump cover or without connected lines!

When connecting the drive, the correct direction of rotation for the pump drive shaft must be set. The pump has a predetermined direction of rotation and flow.



10.13 Connecting the drive



DANGER

The pump must not be switched on under any circumstances if the lantern is not provided with an adequate hand guard!

The following important aspects must be considered for an **electric drive**:



DANGER

An electric drive may only be connected by authorized and qualified personnel!

First familiarize yourself with the locally applicable regulations of the electric power companies before connecting an electric drive!

- Secure the electric drive against overload.
- If possible, install an operating switch on the pump.
- Install a ground fault circuit interrupter, if possible.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 26 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

11 Commissioning

11.1 Cleaning the system

Newly installed systems or revised systems are often contaminated with foreign matter in the form of welding beads, burrs, grinding residue, etc. Flush the system to prevent surface damage.

11.2 Control

Check the pressure of the flushing system, if connected.

With the double mechanical seal, the **pressureless flushing** (quench) must have a flow rate between **0.5 l/min and 2 l/min. Connect the supply of the flushing lines to the underside!**

With the double mechanical seal, the **pressurized flushing** (flush) must have a pressure that is approx. **2 bar higher than the system pressure.**

Connect the supply of the flushing lines to the underside!

Check whether the temperature of the heating system, if connected, is at the desired value.

11.3 Start-up

- Open the shut-off valves of the flushing lines, if present.
- Close the shut-off valve on the discharge side, if present.
- Open the shut-off valve of the inlet side, if present.
- Start the pump unit.
- Open the shut-off valve on the discharge side, if present.

11.4 During operation



ATTENTION

The pump should not pump for too long against a closed valve to avoid overheating!



NOTICE

Avoid large temperature fluctuations in the pumped liquid. These can cause damage to the pump if the pump elements expand/shrink.

The specified maximum values for the pressure, rotational speed or temperature must never be exceeded!

11.5 Temporarily stopping the pump

When interrupting or stopping the pumping process, make sure that the pump does not run dry! This is only permissible if the pump is equipped with a flushed shaft seal.

Stop the pump by switching off the drive.

If the system remains pressurized, leave the shut-off valves (if present) of the flushing lines OPEN.

If the pump is equipped with heating jackets, leave the shut-off valves (if present) of the heating system OPEN if the pump is pumping a liquid that may solidify at lower temperatures.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 27 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

12 Maintenance

12.1 General

The following aspects must be checked at regular intervals:

- Faultless operation of the pump. **Excessive noise** may indicate problems such as bearing wear, contact between rotating and static components, or cavitation.
- Leak test in the area of the shaft seals.
- If applicable: Pressure and capacity of the **flushing system**.
- If applicable: The temperature of the **heating system**.
- Pressure on the inlet and outlet side.
- Visual inspection: Check for corrosion.

12.2 Parts in contact with the product

12.2.1 General

During each maintenance, check the surfaces for scoring, warping or other imperfections to determine possible contact points. Minor damage can be repaired using IPP Smart Repair. The damage can allow conclusions as to the cause. Please contact IPP for this purpose.

12.2.2 Elastomers

Notice: Wear parts, including elastomers, are excluded from the warranty.

IPP recommends that the elastomers used in the area in contact with the product be checked for scratches, porosity and other imperfections during each maintenance and be replaced, if necessary. Regardless of this, the elastomers should be replaced once a year. Since the service life is highly dependent on the pumped products, shorter intervals may be necessary.

To replace the O-ring between the impeller and the impeller screw, follow the procedure below:

1. Disassembly of the impeller screws, as described in 13.6.1. Make sure that the parts are dry.
2. Check surfaces behind the O-ring seal between the impeller screw and the impeller for contamination, paying particular attention to the threaded areas. If contamination is present, start the cleaning procedure of the impeller mounting threads from chapter 18.5.
3. Remove the O-ring from the impeller screw and dispose of it.
4. Lightly grease the new O-ring and place it in the groove provided in the impeller screw.
5. Using the locking tool, tighten the impeller screw to the specified torque (Chapter 13.7).

12.3 Motor

- Lubricate motor bearings according to the manufacturer's instructions.

13 Disassembly/Assembly

13.1 Spare parts order

The following information is required when ordering spare parts:

- The **serial number**. This can be found on the pump's type plate.
- The **model number**. This can be found on the pump's type plate.
- The item numbers, quantities and – if known – the article numbers of the required individual components.

Chapter 16 contains a cross-sectional drawing of the pump with a spare parts list showing the correct item numbers.

13.2 Safety measures



DANGER

Never run the pump without the pump housing or without connected lines!



DANGER

It must be ensured that the drive of the pump is switched off during maintenance work and cannot be switched on again accidentally under any circumstances!



DANGER

Protective gloves and goggles must be worn during any work if the pump is pumping potentially harmful liquids!



DANGER

Make sure that the pump is depressurized if it has to be disassembled for maintenance purposes!

13.3 Special tools

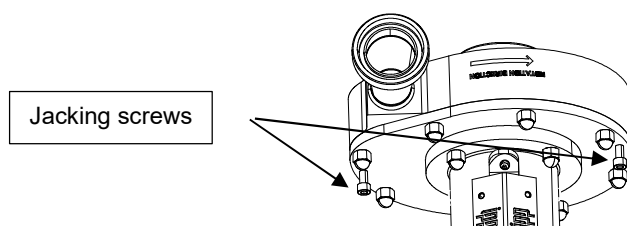
13.3.1 Locking tool

The locking tool is required to loosen the impeller screw without damaging the pump.

Type	Motor size
Ø6	80
Ø8	
Ø10	132
Ø12	

13.4 Pump drainage

- Close the shut-off valves on the pump's inlet and outlet side. If no shut-off valves are present, ensure that the system is drained below the pump level.
- Place a collecting tray underneath the front side of the pump housing.
- **Partially** loosen the cap nuts on the pump housing cover.
- The housing can be removed a short distance from the back of the cover using jacking screws



- Collect the liquid leaking from under the pump housing in the collecting tray.
- Once no more liquid leaks out, retighten the cap nuts hand-tight.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 29 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

13.5 Removing the pump

Disconnect the flushing lines from the shaft seal, if present.

Disconnect the steam or heating lines from the heating jacket, if present.



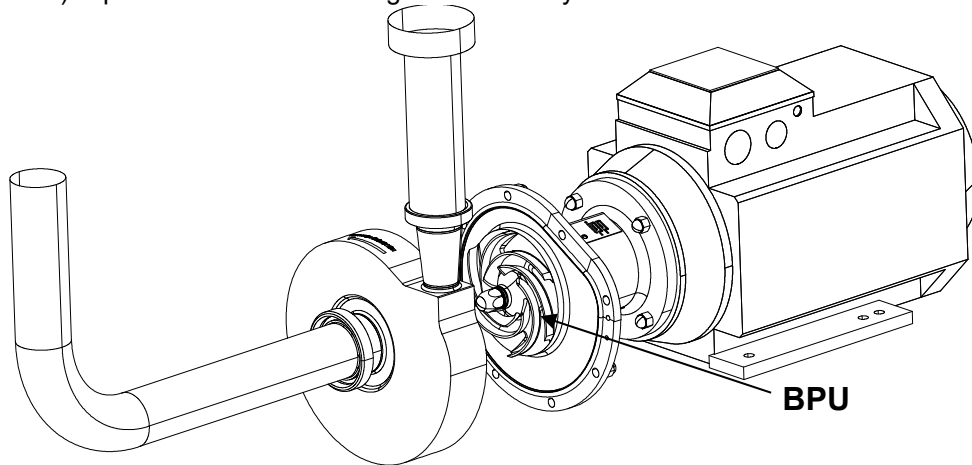
DANGER

When doing so, make sure that the steam or heating medium supply is closed and the heating jacket has cooled down!

Disconnect the connections from the pressure and suction connectors. **Make sure that the lines are adequately supported!**

Remove the pump and, if necessary, use a suitable lifting device for this purpose. Corresponding lifting instructions can be found in paragraph 10.4.

For the sake of simplicity, the housing can also remain in the pipe, so that only the remaining pump body (**back-pullout unit**) is pulled out after loosening the necessary screws.



13.6 Disassembling the pump

An explanation of the item numbers can be found in the cross-sectional drawing with the parts lists in paragraph 15.

Place the pump on a work bench that can support the weight of the pump.

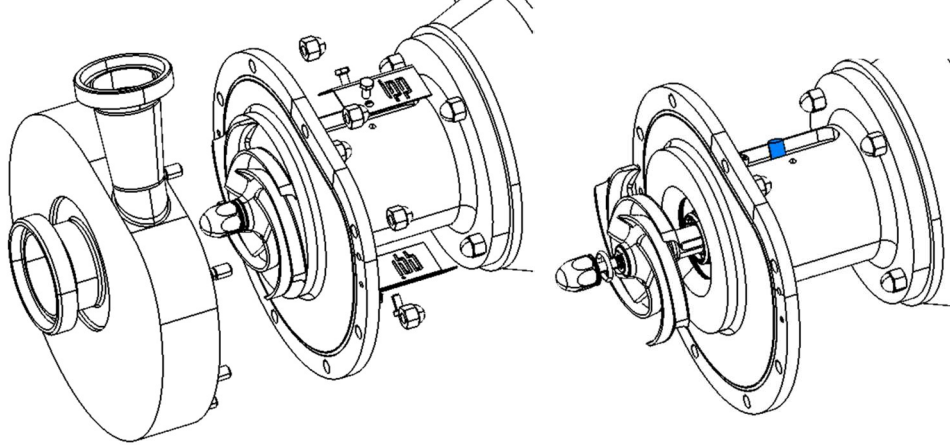


NOTICE

Liquid residue may still escape from the pump. Take this into account and place the pump in a shallow collecting tray, for example.

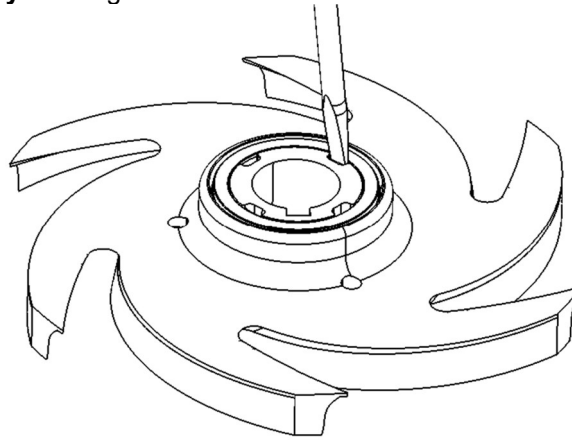
13.6.1 Disassembling the impeller

Remove the hand guard on the lantern. Disassemble the cap nuts on the back of the cover and remove the pump housing and the O-ring. Using the supplied locking tool (blue), you can secure the shaft against rotation and thus loosen the impeller screw connection. Remove the impeller with O-rings from the shaft.



13.6.2 Disassembling the shaft seal

The rotating seal ring is located in the recesses in the already disassembled impeller. Remove the seal ring or the shaft sleeve by **carefully** levering it out with a screwdriver or other suitable tool.

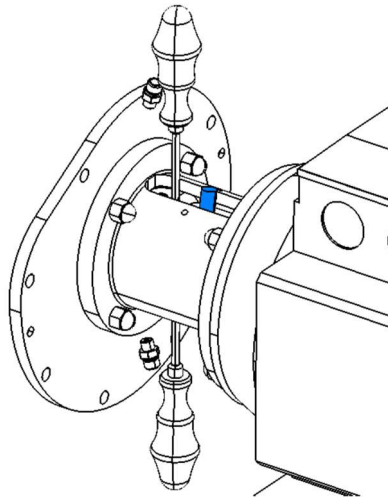


ATTENTION

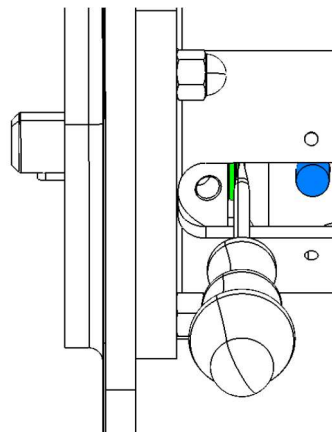
This requires the utmost care! Never use a striking tool for this purpose and do not make any thrusting movements with the screwdriver!

The remaining parts of the shaft seals are disassembled as follows:

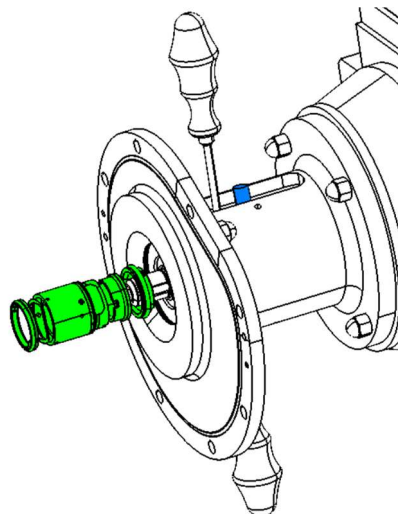
Remove the screw connection for the flush of the mechanical seal if present. On both sides of the shaft, insert a screwdriver into the mounting holes located at the top and bottom of the lantern.



Place the screwdriver or another suitable tool behind the edges of the seal housing visible in it.



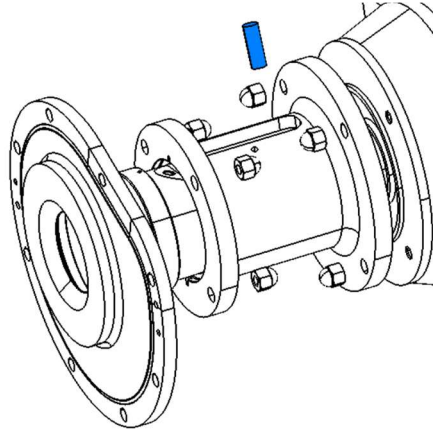
Now carefully lever (using both screwdrivers at the same time) the seal housing out of the seal chamber with the shaft seal facing forwards.



Remove the seal housing with the shaft seal from the front of the shaft.

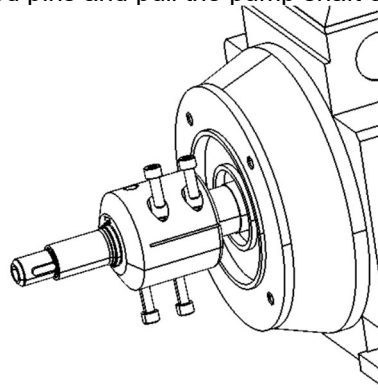
13.6.3 Disassembling the remaining pump components

Loosen the nuts on the lantern's back flange that secure the cover. Disassemble the cover and the sealing adapter.



Remove the locking tool and loosen the nuts on the back of the lantern flange that connect the lantern to the motor. Remove the lantern.

Loosen the cylinder head screws/threaded pins and pull the pump shaft off the motor shaft.



13.6.4 Inspection of the individual components

Always replace defective components with **original IPP Pump Products GmbH parts**.

Inspect all non-defective parts and check for scratches, burrs, foreign material inclusions or excessive wear.
Clean all individual components with a lint-free cloth.

13.7 Installing the pump

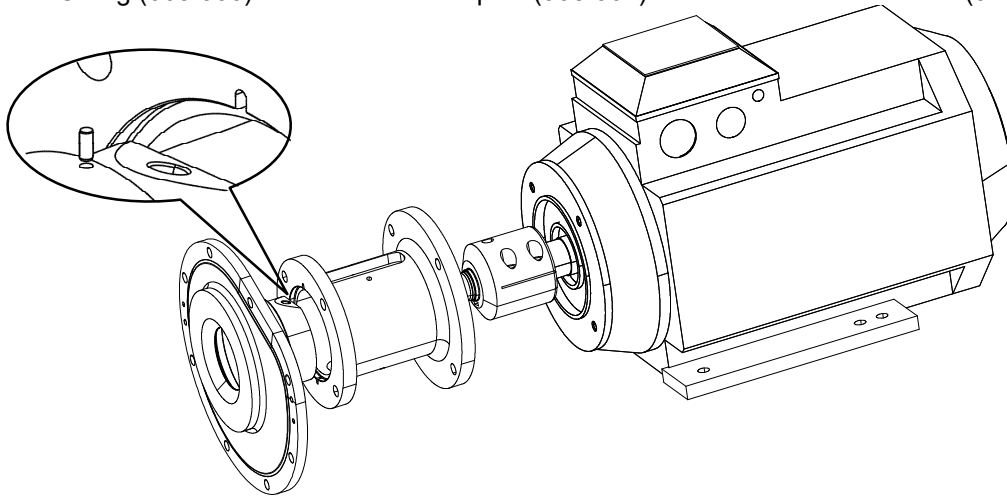
An explanation of the item numbers can be found in the cross-sectional drawing with the parts lists in paragraph 15.

The axial clearance of the pump must always be adjusted or at least checked. Information about the gaps can be found in this chapter.

Make sure that all individual components are clean; in addition, ensure a clean working environment!

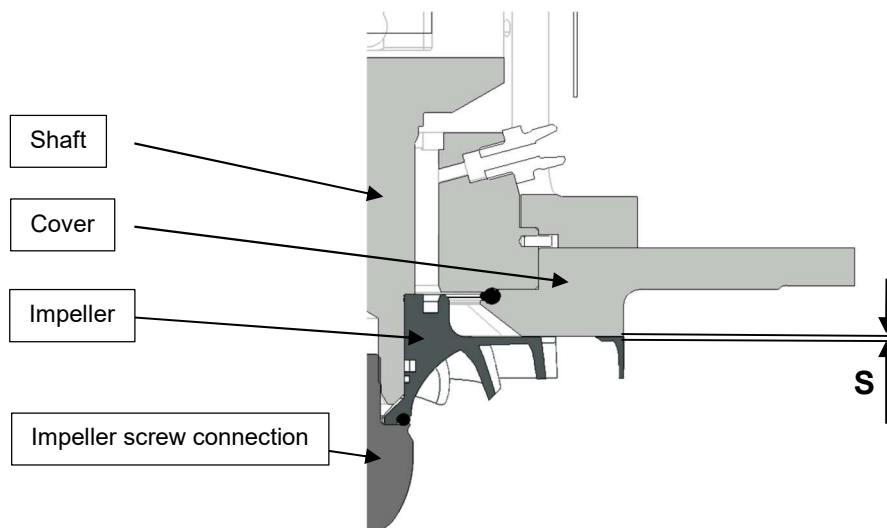
Push the pump shaft (605.000) with pins (908.002) and key (923.000) already inserted onto the motor shaft until it stops and then pull it back approx. 5 mm. Tighten the screws/threaded pins (914.000) hand-tight.

Attach the lantern (127.000) to the motor flange. Insert the sealing adapter (669.000) with the preassembled pins (908.004) into the lantern. Then slide on the cover (148.000) with preassembled stud bolts (902.002), inserted O-ring (663.006) and hammered-in pins (908.001) and fasten it with the nuts (920.002).



Adjust/check gaps

Narrow gaps between the impeller and the housing as well as between the impeller and the cover have a significant effect on the pump's function. The impeller is fixed by the position of the pump shaft.



Pump size	S ^{+0,-0,05} [mm]
120-25	0,3
120-32	0.3
120-40	0,3
150-25	0,3
150-32	0.3
150-40	0.3
150-50	0.3
150-65	0.4
150-80	0,4
190-32	0.3
190-40	0.4
190-50	0.4
190-65	0.4
190-80	0.4
240-32	0.4
240-40	0.4
240-50	0.4
240-65	0.5
240-80	0.5

To adjust the correct gaps, loosen the screws/threaded pins (914.000) in the pump shaft again. The pump shaft can now be moved axially on the motor shaft. Fasten the impeller (201.000) to the shaft with the impeller screw (687.000). Attention, the mechanical seal is not installed. You can now use a feeler gauge to create the required gap "S" between the impeller and the cover. In the process, tighten the screws (914.000) of the pump shaft with the appropriate torque.

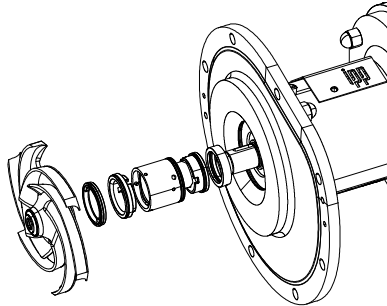
Thread size	General tightening torque [Nm]
M6	10
M8	24
M10	48
M12	82
M16	204

Check the gap after tightening the screws. In case of deviations from the default, repeat the adjust gap procedure.

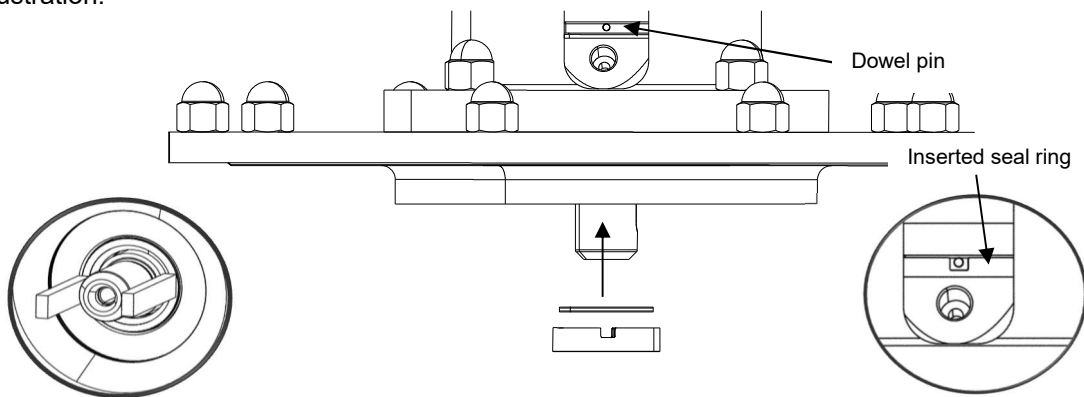
Loosen the impeller again to be able to install the mechanical seal.

Assembly of the mechanical seal

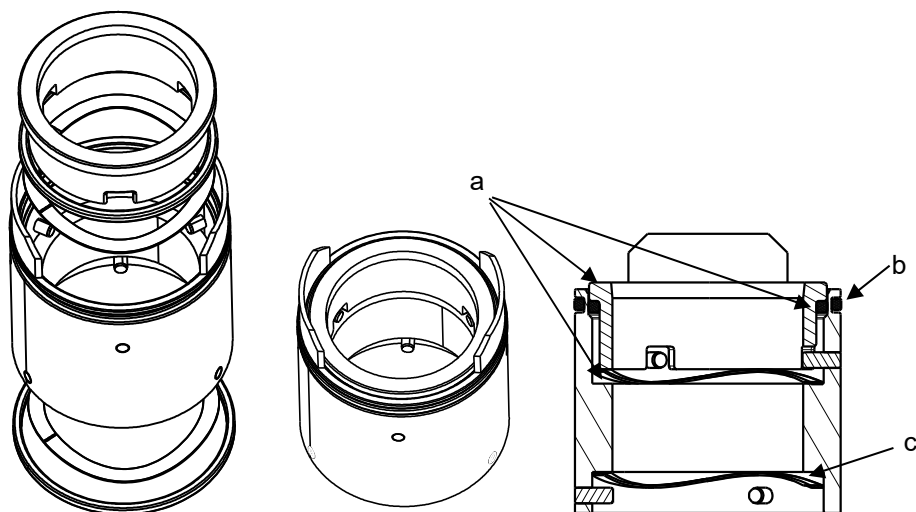
For the double mechanical seal, carry out steps 1 to 5. For the single mechanical seal, carry out steps 2c to 5.



1. First place the rotating atmosphere-side seal ring (661.001) on the shaft. It is recommended to first insert the O-ring (663.001) into the seal ring. Lightly grease the O-ring beforehand with a suitable lubricant without pulling on the O-ring. Rotate the shaft so that the dowel pins for the anti-rotation device can be seen in the leakage slots of the lantern. Insert the seal ring so that the dowel pins engage in the locking grooves. Two of the supplied plastic pieces can be used as an aid, see illustration.

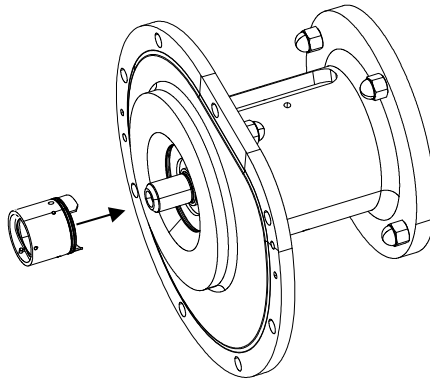


2. Next, install the mechanical seal housing (668.000).
 - a. Insert the shaft spring (660.000) and make sure that the shaft spring is behind the dowel pins for the anti-rotation device. Lightly grease the O-ring (663.002) with a suitable lubricant and place it on the seal ring (662.002). When inserting the seal ring, the dowel pins on the atmosphere side must engage in the locking grooves of the seal ring.



- b. Mount the static O-ring (663.000) on the outside diameter of the mechanical seal housing. Do not overstretch the O-ring. Lightly grease the O-ring with a suitable lubricant.
 - c. Insert the shaft spring (660.000) on the side opposite to a

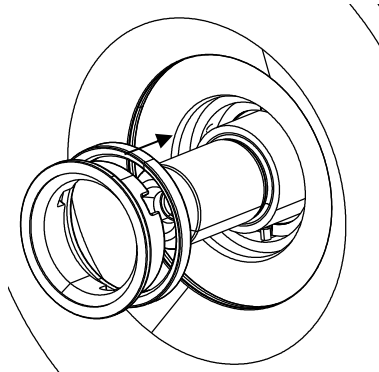
3. Insert the mechanical seal housing into the pump housing.



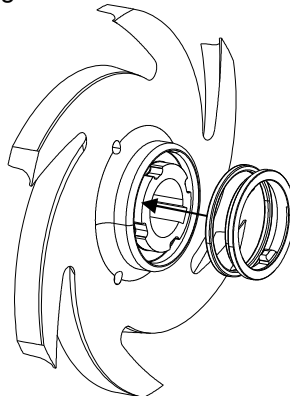
NOTICE

The sliding surfaces of both atmosphere-side seal rings must be degreased beforehand. The anti-rotation lugs must engage in the recesses provided. These are on a level with the leakage slots in the lantern.

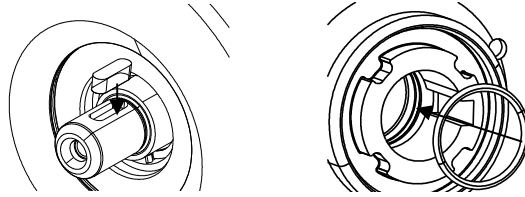
4. Now insert the stationary seal ring (662.003) together with the O-ring (663.003). It is recommended to first place the O-ring on the seal ring. Make sure that the dowel pins of the mechanical seal housings engage in the locking grooves of the seal ring. Attention: Lightly grease the O-ring with a suitable lubricant.



5. Now insert the rotating seal ring (661.002) together with the already installed O-ring (663.004) in the impeller (201.000). Make sure that the lugs of the seal ring engage in the impeller's grooves. Attention: Lightly grease the O-rings with a suitable lubricant.



Insert the key (923.000) into the shaft groove and the O-ring (663.007) into the impeller groove (see sectional drawing in chapter 15). Degrease the sliding surfaces.



6. Install the impeller.

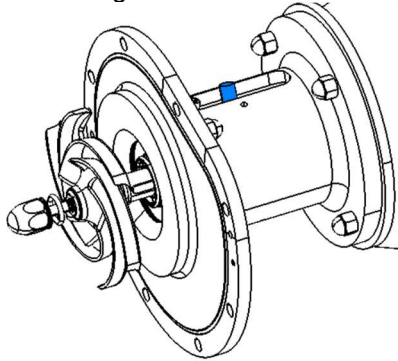


ATTENTION

The mechanical seal does not require any force during assembly if all parts interlock as intended. Check the spring function before installing the impeller.

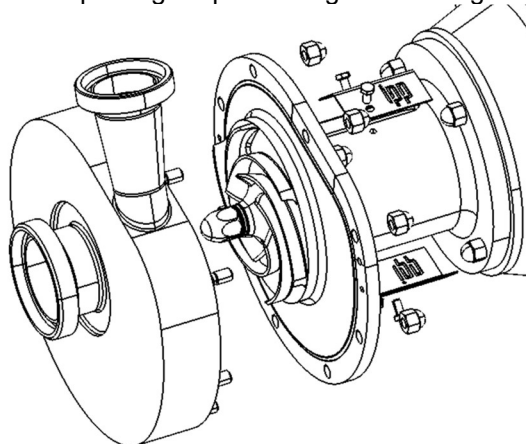
Block the rotation of the shaft using the supplied locking tool, which is inserted into the bore hole of the shaft. Recheck the spring action of the mechanical seal by pushing the impeller against the seat. The shaft spring must push the impeller back again.

Now insert the O-ring (663.008), which is lightly greased, and the impeller screw (687.000), while adhering to the torque from the following table.



Type	Tightening torque of impeller screw connection [Nm]
120-25/32/40 150-25	8 Nm
150-32/40/50/65 190-32/40/50	20 Nm
190-65/80 240-32/40/50/65/80	40 Nm

After installing the impeller, remove the locking tool and install the hand guards (667.000). Next, fasten the housing (101.000). Pay attention to the pinning for positioning the housing.



14 Decommissioning

14.1 Removal

See Section 13.5 for the removal of the pump.

14.2 Storing

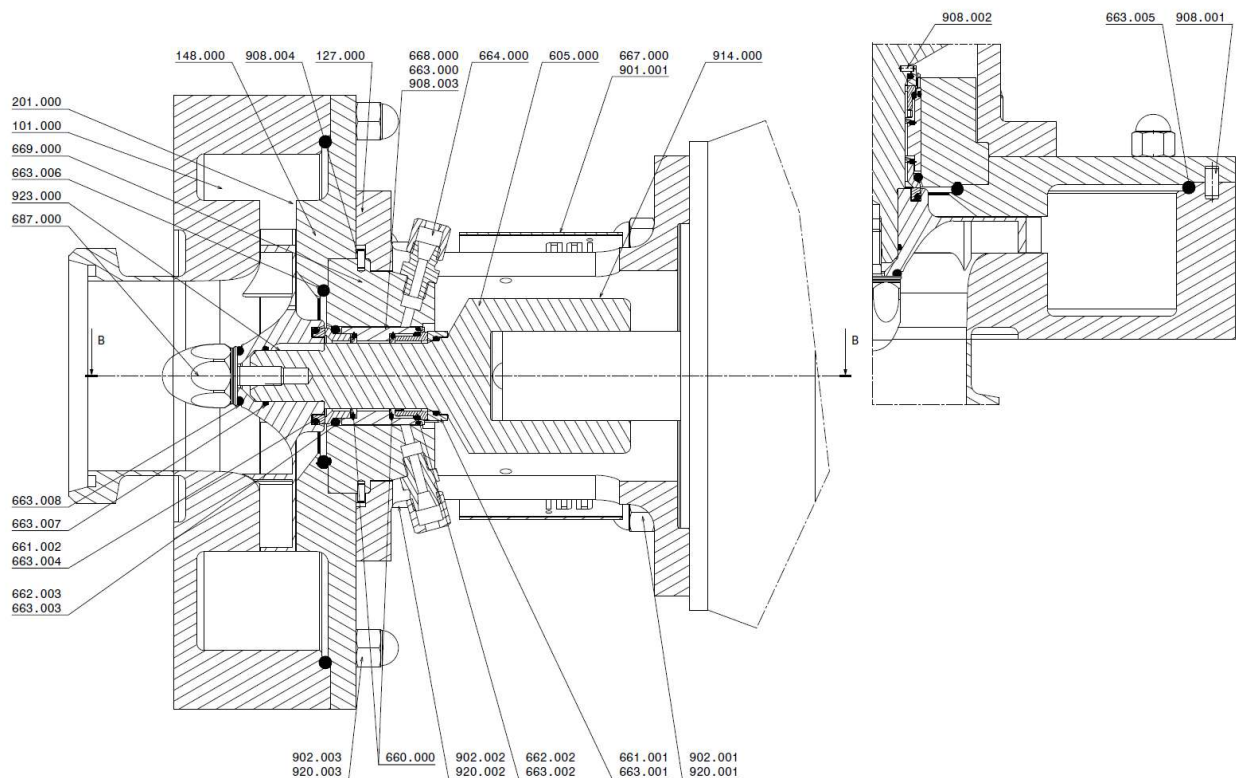
See Section 10.3 Storage conditions.

14.3 Disposal

The following aspects must be taken into account when disposing of the pump:

Clean the inside of the pump housing if it may still contain residue of the pumped liquid.
Offer the disused pump to a company that processes and disposes of metal waste or contact IPP.

15 Cross-sectional drawing



16 Parts list

Main item	Sub-item	Designation	Main item	Sub-item	Designation
101	000	Housing	663	008	O-ring impeller screw
127	000	Lantern	664	000	straight screw-in socket

148	000	Cover	667	000	Guard plate
201	000	Impeller	668	000	Seal housing-1 / single and double
605	000	Pump shaft	669	000	Seal adapter-1
660	000	Shaft spring	687	000	Impeller screw connection-1
661	001	Rotating seal ring, atmosphere	901	001	Hexagon screw for guard plate
661	002	Rotating seal ring, product	901	002	Hexagon screw for motor lantern
662	002	Stationary seal ring, atmosphere	902	002	Stud bolt for cover lantern
662	003	Stationary seal ring, product	902	003	Stud bolt for housing cover
663	000	O-ring for seal housing	908	001	Dowel pin for housing cover
663	001	O-ring for rotating seal ring, atmosphere	908	002	Dowel pin for shaft seal ring, atmosphere
663	002	O-ring for stationary seal ring, atmosphere	908	003	Dowel pin for seal housing
663	003	O-ring for stationary seal ring, product	914	000	Cylinder head screw/threaded pin for pump shaft
663	004	O-ring for rotating seal ring, product	920	001	Cap nut
663	005	O-ring for housing	920	002	Cap nut
663	006	O-ring for seal adapter	920	003	Cap nut
663	007	O-ring for impeller shaft	923	000	Key

17 Heaters/heat exchange

The series can be equipped with a heatable pump housing.

The heat exchange surfaces also allow for cooling of the pump.

This allows the surface temperatures of the pump to be adjusted. The heat exchanger surfaces are not dimensioned for cooling or heating the entire system.

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 40 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

18 Cleaning

To clean the outside of the hygienic centrifugal pump, only use cleaning agents that do not attack external metal parts or external elastomers.

Cleaning in the area of the rotary shaft seals with a high-pressure cleaner is prohibited. The liquids can enter the motor and impair the lubrication and corrosion properties.

18.1 General

The hygienic centrifugal pump is CIP-capable.

The cleaning result depends on several factors:

- Type of flow
- Flow rate
- Type of cleaning medium
- Temperature
- Time

Manual cleaning is practiced in rare cases; this type of cleaning takes the most time and involves possible handling errors.



NOTICE

These factors and the type of cleaning must be communicated to IPP Pump Products during pump design so that the pump can be optimally designed for the intended use.

18.2 CIP cleaning

During CIP (Clean In Place) cleaning, the pump and system are flushed with a cleaning fluid. This cleaning should be carried out immediately after the production stop in order to avoid hardening and sticking of product residue.

The flow rates in the pipe and in the pump must be approximately 1.5 to 2.5 m/sec.

The necessary duration, type and concentration of cleaning agents and the temperature depend on numerous factors, such as the characteristics of the product or the system layout. Therefore, IPP can only provide recommendations for the cleaning process: (Maximum cleaning properties can be found in DIN 11483-2)

1. Pre-rinse with water at 40-60°C
2. Rinse with lye (NaOH 1.5%, 82°C)
3. Intermediate rinsing with water
4. Rinse with acid (HNO₃ 1%, 62°C)
5. Rinse clear with water
6. Visual inspection of the cleaning result



DANGER

Do not open the pump during CIP cleaning. Do not touch the pump and piping. There is a risk of burns!

18.3 SIP cleaning

SIP cleaning may only be carried out after consultation with IPP, as its suitability depends on the elastomers used.

The IPP pumps should be used with a drainage system so that no liquid residue remains in the pump.

CIP cleaning must be performed before the actual sterilization of the pump.



ATTENTION

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 41 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

The pump must not be running during SIP cleaning. In addition, there is a risk of burns!
Be sure to contact IPP Pump Products if the pump is intended to run during SIP cleaning. Before production is started again, the pump must cool down to the process temperature on its own.



DANGER

Do not open the pump during SIP cleaning. Do not touch the pump and piping. There is a risk of burns!

18.4 Disinfection

The system can be disinfected with a chlorine disinfectant after CIP cleaning (observe the cleaning agent manufacturer's instructions). Subsequently, it must be rinsed with water.

18.5 Manual cleaning

A specific cleaning procedure for the impeller mounting threads is described following the general manual cleaning procedure. Disassembly and assembly of the pump are described in paragraph 13. During cleaning, care should be taken to avoid damaging any pump parts or mechanical seal faces. For this type of cleaning, it is necessary at a minimum to remove the pump housing and the impeller, which contains the rotating part of the mechanical seal. **The necessary duration, type and concentration of cleaning agents and the temperature depend on numerous factors, such as the characteristics of the product. Therefore, IPP can only provide recommendations for the cleaning process:**

1. Immerse parts in or spray with 1.5% lye (NaOH) for an exposure time of 5 minutes.
2. Thoroughly scrub surfaces with a brush.
3. Rinse components with water.
4. Immerse parts in or spray with 1% acid (HNO₃) for an exposure time of 5 minutes.
5. Thoroughly scrub surfaces with a brush.
6. Rinse all cleaned parts with water for 2 minutes and then dry with compressed air
7. Visual inspection

Cleaning the impeller mounting threads:

1. Loosen impeller screw (see disassembly)
2. Immerse the impeller screw in and spray the shaft's interior thread with 1.5% lye (NaOH) for an exposure time of 5 minutes.
3. Thoroughly scrub the thread of the immersed screw with a brush for 2 minutes. Also pay attention to the area up to the O-ring groove.
4. Clean the threaded hole with a pipe brush for 2 minutes and meanwhile continue to rinse with lye. Also pay attention to the area up to the O-ring seal face.
5. Rinse with water for 2 minutes.
6. Immerse the impeller screw in and spray the shaft's interior thread with 1% acid (HNO₃) for an exposure time of 5 minutes.
7. Thoroughly scrub the thread of the immersed screw with a brush for 2 minutes. Also pay attention to the area up to the O-ring groove.
8. Clean the threaded hole with a pipe brush for 2 minutes and meanwhile continue to rinse with acid. Also pay attention to the area up to the O-ring seal face.
9. Rinse all cleaned parts with water for 2 minutes and then dry with compressed air
10. Back up the visual inspection by evaluating the residual germ content using a swab.
11. Repeat the cleaning steps if the residual germ content is too high.

It is the responsibility of the operator to perform a successful cleaning.
Therefore, IPP Pump Products cannot be held responsible for contamination or the loss of pumped media.



ATTENTION

		Operating Instructions Hygienic Centrifugal pump	Date: 09/24/2022 Page 42 of 44 Doc. No. 0158 Created by: C. Kuhlmann W. Stein
---	---	--	--

Do not use mild steel wool, mild steel brushes or other mild steel tools when working with surfaces that come into contact with the product. After the contact of the stainless steel with mild steel, rust may form on the surface.



DANGER

Observe the safety instructions for skin and eye contact and other relevant safety instructions and wear personal protective equipment.

19 Fault rectification

A fault in a pump system can have various causes. The fault does not necessarily have to be related to the pump itself, but can also be due to a fault in the piping system, or in another fitting in the system. If the actual operating conditions deviate too much from the specifications on the basis of which the pump was purchased, this can also result in a fault. Therefore, it is essential to first check the following aspects:

Has the pump been installed correctly?

Do the operating conditions still meet the original specifications?

Are the other fittings in the piping system working properly?

In general, the following faults can occur with a pump:

1. The pump delivers no liquid or does so irregularly
2. Liquid flow too low, total dynamic head too low
3. Liquid flow too high
4. The pump overheats
5. The motor overheats
6. Excessive impeller wear
7. Leakage at the shaft seal
8. The pump shakes or generates a high noise level
9. The pump stops
10. The pump stops during start-up

The table on the following page lists possible causes for the above-mentioned faults and suggestions for their rectification:

Fault										Cause	Procedure
1	2	3	4	5	6	7	8	9	10		
	*									Incorrect direction of rotation	Change the motor's direction of rotation
*										Pump not filled with liquid	Vent the suction line and the pump housing and fill liquid into the pump housing
*	*						*			Insufficient NPSHA	Increase the diameter of the suction line or suction head, or simplify and shorten the suction line, or decrease the flow rate and product temperature
*	*						*			Air enters the suction line	Check the connections
*	*						*			Gas in the suction line	Vent the suction line/the pump housing/suction line is steadily rising
*	*									Air enters at the shaft seal	Check shaft seal and elastomers/change to double mechanical seal
*	*						*			Insufficient static feed pressure	Increase the liquid level to increase the static feed pressure
*	*						*			Suction line blocked	Clean filter/line
	*		*	*						Product viscosity too high	Reduce the rotational speed/increase the product temperature
			*		*	*	*			Product temperature too high	Cool the product/pump housing/insert double mechanical seal
				*	*	*	*	*	*	Foreign object in the product	Clean the system/insert a filter at the inlet side
*	*									Pressure too high on the pressure side	Check the lines for blockages/adjust valve/simplify the pressure line
	*									Pump/impeller selected too small	Contact IPP
	*									Deposits in the impeller	Clean
		*		*			*			Pressure too low on the pressure side	Reduce pipe diameter/adjust valve
		*		*						Impeller diameter too large	Reduce impeller diameter, reduce rotational speed
			*	*			*	*		Pump housing deformed by the piping system	Check the balancing of the piping system/support the piping system
							*			Impeller grinds against adjacent parts	Check gaps, readjust if necessary
		*		*			*			Rotational speed too high	Reduce the rotational speed
	*									Rotational speed too low	Increase the rotational speed
							*			Pump runs dry	Immediately supply pumped medium
							*	*		Insufficient flushing	Increase the flushing pressure/flushing capacity
							*			Impeller screw loose	Check contact surfaces and O-ring. Tighten with correct torque
							*	*		Shaft seal worn	Replace shaft seal, including elastomers
					*	*	*	*	*	Worn bearings	Replace the worn parts

20 Index

ATEX	12, 13, 14	Outlet side	9, 19, 20, 42, 43
Temperature classes	14	Parts list	
Check valves	20	Double mechanical seal	16
Cleaning	26	Pump	38
Commissioning	26	Single mechanical seal	16, 34
Connecting the lines	20	Piping system	9, 19, 20, 42, 43
Coupling	8, 25	Protective equipment	8, 11, 28
Cross-sectional drawing	27, 29, 33, 38	Pump structure	
Decommissioning	38	Components	17
Delivery program	15	Purpose of use	9
Description of function	15	Removal	31
Direction of rotation	25, 43	Removing the pump	28
Disassembling the pump	29	Safety	6, 11, 25, 40
Draining the pump	28	Safety measures	28
Drive	25	Shaft seal	
Fault	42	Removal	30
Flushing pressure		Shaft seals	16, 21, 27, 30
Control	21, 26	Signs	6
Heating/heat exchange	39	Sizes	16
Impeller		Spare parts	27
Removing the impeller	30	Start-up	26, 42
Inlet side	9, 19, 20, 42, 43	Stopping	26
Installation	18	Storage	5, 38
Installation dimensions	19	Storing the pump	5, 38
Installing the pump	33	Symbols	6
Liability	15	Transport	10, 18
Maintenance	5, 6, 8, 9, 11, 19, 27	Lifting	18
manufacturer	13	Transport and receipt of goods	10
Manufacturer	5, 7, 10	Troubleshooting	42
Operating Instructions		Warranty	10
Use and storage	5		

21 Document tracking

Action	Date
Creation	August 2023
Added Sizes; Added Atex Hazard Analysis	July 2024