



**Innovative
Systems
GmbH**

Operation Manual

Jabsco PUREFLO 21 Single Use



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The German version is the original operation manual.
Other languages are translations of the original operation manual.

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1. Introduction

1.1 Foreword

This manual for the Jabsco PUREFLO 21 Single Use is formulated in general terms, as individual customer solutions can be realized. Please consult your Xylem contact person. Read this manual carefully and instruct the operating and technical personnel accordingly.

- ▶ Please refer to the type plate on the pump sent to you and the order-related documents under the enclosed documents to find out which type, size, design and additives apply to your pump.

1.2 Contact

Xylem Water Solutions Deutschland GmbH
Bayernstraße 11
30855 Langenhagen
+49 511 7800-0

1.3 Scope of delivery

The scope of delivery includes:

- Feed chamber PUREFLO PU 21 Single Use
- Drive unit (optional)
- Motor and motor cover (optional)
- Base plate/assembly (optional)
- Control Cabinet (optional)

PUREFLO 21 can be sold as either a complete motorized pump unit (partly assembled) or as an individual head unit. These operating instructions apply to both. Please follow the instructions carefully and refer to the individual motor instructions supplied with the unit.

1.4 Scope of the documentation

The documentation consists of:

- This operating manual
- Standard documentation
- Chargeable optional component-related certificates / documents

Notice:

All images within this document are to be understood as examples and may deviate from reality.

1.5 Target Group

This operating manual is intended for:

- Operator of the pump
 - Service and maintenance personnel
- Furthermore, a generally accepted technical understanding is assumed, which is necessary for commissioning, servicing and maintenance of pump units. Sections which are only intended for specially authorised personnel are specially marked by a preceding note.

1.6 Presentation conventions

Instructions, which must be processed in a defined order, are numbered consecutively:

1. Step 1
2. Step 2

Instructions that do not have to be processed in a fixed order are marked with triangles:

- ▶ Action 1
- ▶ Action 2

Enumerations are marked with dashes:

- Enumeration 1
 - Subitem 1
- Enumeration 2

Safety Instructions

Safety instructions are marked at the appropriate places in the operating instructions.

The safety instructions are explained below:

DANGER

A safety note with the signal word **Danger** warns of personal hazards that inevitably lead to death or serious injury.

WARNING

A safety note with the signal word **Warning** warns of personal hazards that can lead to death or serious injury.

CAUTION

A safety instruction with the signal word **Caution** warns of personal hazards that can lead to medium or light injuries.

ATTENTION

A safety note with the signal word **Attention** warns of material damage.

Notice:

All safety instructions depend on the operating and ambient conditions. If you have any questions, please contact your Xylem representative.

2 Safety Instructions

In this chapter you will discover what you must observe for your own safety.

2.1 Basic Safety Instructions

The operating instructions contain elementary information that must be always observed. For this reason, they must be read by the responsible operating and technical personnel before the individual steps are taken.

- ▶ Read this manual completely prior to installation and use. Ensure the manual is available at point of use.
- ▶ All work described here may only be carried out by qualified personnel and with caution.
- ▶ The safety instructions in this operating manual, the existing national accident prevention regulations and any internal working, operating and safety regulations of the operator must be observed.
- ▶ **Danger of contamination:** When conveying hazardous media, please strictly observe the legal and operational safety regulations.

2.2 Appropriate use

The Jabsco PUREFLO 21 Single Use standard configuration is designed for use in pharmaceutical and biotechnology industry.

The Jabsco PUREFLO PU 21 Single Use is designed for specified maximum temperatures and pressures, depending on the model and size.

The pump may only be operated under the application specified. If the operating conditions differ from the specified conditions, please contact the sales department.

The operational safety of the delivered machine is only guaranteed if it is used for its intended purpose in accordance with the following sections of these operating instructions. Under no circumstances may the specified limit values be exceeded.

A disregard of the safety relevant advice constitutes a danger for persons, machine and environment. Furthermore, disregarding the safety advice may lead to the loss of any claims for damages.

A disregard of the advice given in this instruction manual may cause dangers which are explained in more detail during this instruction manual and are listed as examples in appendix 1.

2.3 Personnel

To close safety loopholes and make the work process safer, personnel must be trained and/or qualified to use the PUREFLO 21 SU. This applies to all work cycles, such as operation, assembly and disassembly. It is the responsibility of the operator of the machine to properly assign and supervise the responsibilities of the appropriate personnel. Appropriate instruction of untrained personnel can be provided by the appropriate contact (sales department) in consultation with the operator. The entire contents of these operating instructions must be understood by the responsible personnel. The responsibility lies with the operator of the machine.

Operational safety is only guaranteed if the machine is used in accordance with its intended purpose as described in the following sections of these operating instructions.

2.4 Foreseeable misuse

The PURELO 21 Single Use in standard version must not be used in explosive atmospheres.

Pumping non-designated fluids may destroy the pump. In this case, the pump must be subjected to an individual resistance test, especially for corrosive, oily, toxic or highly viscous media. Check in advance whether the medium is critical for the components in contact with the medium.

The presence of foreign bodies in the pumped medium can block and destroy the pump.

These operating instructions describe the pump with the associated drive assembly. Modifications or alterations to the machine are only permitted with the written approval of Xylem. The original spare parts and accessories authorized by the manufacturer are used for safety. The use of other parts may invalidate the liability for the resulting consequences. In the case of unauthorized exceptions and the installation of additional attachments, any warranty is excluded. Modifications, alterations and repairs to the PUREFLO 21 Single Use are not permitted. After use, the PUREFLO 21 SU should be replaced by a new one.

WARNING

When using a PUREFLO 21 SU without a safety valve, particular care must be taken to ensure that the system pressure does not exceed **4 bar** (no protection in the pump).

2.5 Pump-specific safety instructions

ATTENTION

Impermissible work on the pump head

Never remove the cap plug on the safety valve to change the set pressure. This will change the performance data considerably and the warranty will no longer apply.

When ordering, pay attention to the required connection position (see 3.3). Subsequent modification is no longer possible, as otherwise leaks may occur.

CAUTION

Inadmissible temperature range

Personal injury and damage to property due to bursting or leakage of the pump. Exceeding the max. operating temperature can lead to destruction of the seals. This may cause hot pumping medium to escape.

- ▶ Never exceed the specified operating temperatures. Maintain the temperature range of the pump.
 - The maximum permissible temperature of the medium is **40°C**.

CAUTION

Cold or hot machine parts

Skin burns from touching the machine surface.

- ▶ Check the temperature before touching the machine surface.
- ▶ Use appropriate PPE when working with product.
- ▶ As a minimum, hot or cold machine parts must be correctly guarded against contact by the customer.

WARNING

Gripping or winding of moving machine parts

Severe personal injury and damage to property caused by graspcatching or wrapping limbs and/or clothing.

- ▶ Always ensure any moving parts are adequately guarded.
- ▶ Never run the drive assembly without the associated pump head or guarding.
- ▶ Observe safety instructions.

DANGER

Contact or inhalation of hazardous liquids, mists or vapours

Death, serious personal injury and material damage due to contact with or inhalation of hazardous liquids, mists or vapours.

- ▶ Drain leaks of hazardous materials to be conveyed in such a way that there is no danger to persons or the environment.
- ▶ Observe legal regulations.

CAUTION

Risk of tripping and falling

Serious personal injury from tripping / falling over electrical cables leading to the machine.

- ▶ In the case of permanently installed and mobile pumps, place the electrical supply line in such a way that there is no risk of tripping or damage to electrical cables.

DANGER

Electric shock

Death or serious personal injury due to contact with live machine parts.

- ▶ Only use technically flawless plugs and cables.
- ▶ Have the electrical connection carried out by a licensed specialist.
- ▶ Observe the VDE and local regulations, in particular the safety regulations.

DANGER

Danger due to electrical overload

An overload can cause death, serious bodily injury or property damage.

- ▶ Compare the voltage specifications on the motor plate with the operating voltage.
- ▶ Install a motor circuit breaker if necessary.

WARNING

Switching variants

For the circuit variants, refer to the motors installed in the system (see additional documentation or documents for motors used on site).

CAUTION

Noise emission during operation of the pump

The acoustic measurement in the sound room according to DIN EN ISO 9614-2. showed that the sound pressure is about **60dB**.

- ▶ We recommend wearing hearing protection, when standing near the running pump.
- ▶ Comply with the local legal regulations for noise pollution.

ATTENTION

Danger due to hard or abrasive parts in the pumped medium

Parts that are too hard or abrasive in the pumped medium will destroy the pump.

- ▶ Make sure that no hard or abrasive parts enter the pump.

ATTENTION
Danger due to sticking

Sticky or highly viscous pumped media can limit the pump's performance or even destroy it.

- ▶ Before using the pump for the first time, consult your Xylem representative to avoid possible misuse.
- ▶ Upon request, the pump can be tested for its intended use and, if necessary, approved separately.

Notice:

The pumping medium for the 5-chamber diaphragm pump Jabsco PUREFLO 21 SU is aqueous media. Please contact your Xylem representative for detailed information regarding the pumped media to avoid misuse.

The applications of the 5-chamber diaphragm pump Jabsco PUREFLO 21 SU are manifold. Please contact your Xylem representative for more detailed information regarding possible applications to avoid misuse.

2.6 Warning and information signs

- ▶ Warnings and notes attached directly to the machine must be observed and kept in a completely legible condition.
- ▶ Do not remove or change any markings on the machine.
- ▶ Damaged or lost markings must be replaced immediately in accordance with the original.
- ▶ On each drive/carrier unit as well as on each pump head supplied, a type plate is attached which approximates the sample layout (see below).

Information on the type plate:

- - Company logo / brand
- - Company data
- - country of manufacture
- - Month of manufacture
- - pump name
- - pump type
- - Pump number / serial number
- - Technical data
- - Customer data (order no.)
- - Hardware version

Notice:

The type plates may differ from the layout shown.

The type plates are attached to the corresponding assembly.

Drive/Carrier Unit:

Distributed only by JABSCO				Pureflo 21 SU	
				Made in Germany	
				Year of construction: 01/2024	
Drive/Carrier Unit			Motor-Type: e.g. HFI 3790-N400		
ISG S/N.: e.g. 21K2-304XXX.00X			Motor-EEA.: e.g. 8737910365		
Part No.: e.g. DE58896652-0004_Rev_f			Motor-S/N.: e.g. 94754XX		
Order No.: e.g. 2457XX			Design: e.g. 804-0001		
Manufacturer ISG Innovative Systems GmbH Hildastraße 10 44145 Dortmund					

Pumphead Unit:

Distributed only by JABSCO				Pureflo 21 SU	
				08/2024 Made in Germany	
				Bypass-Setup: e.g. 4 bar	
Type: e.g. 800-001-Adva.				Rotational Speed: e.g. 590XX	
Part No.: e.g. 590XX				Connection: 8810 / 17Nm	
Order No.: e.g. 209XX					
S/N: e.g. 1007.XXXX					
Manufacturer Innovative Systems GmbH Hildastraße 10 44145 Dortmund		 			
		0035 2571			

Notice:

The QR code on the nameplates contains technical data relevant to the production of the assemblies and the sales URL.

Individual customer requirements can be catered for after consultation. This must be checked for feasibility beforehand.

A separate typeplate is located on the valve housing of the pump head.

2.7 Returning

If, due to a malfunction, the pump or the drive group does not meet the required performance parameters, please contact your Xylem representative. For a quick error analysis, it is advisable to return the affected products. For this purpose, please fill out the clearance certificate, which can be found in the appendix. Product-specific data can be found on the type plate.

Send the pump / drive assembly directly to the production site.

*Innovative Systems GmbH
Hildastraße 10
44145 Dortmund
Germany*

Your Xylem contact will get back to you as soon as possible.

3 Construction and function

This chapter contains information on the pumps design and use.

The limits of use are described in Appendix 3 Technical data, liability and maintenance. You must know and comply with these limits.

3.1 Product description

The PUREFLO 21 SU is a 5-chamber diaphragm pump. In this type of pump, the five sections of the feed diaphragm are driven by each other via a centering disk connection due to the stroke movements of the eccentric shaft. The pump is self-priming, safe to run dry and has no rotating parts inside the pump housing. This prevents damage caused by components rubbing against each other.

The feed direction can be adjusted to suit the situation. By rotating the pump housing by 90° in each case, this adjustment can be made independently of the direction of rotation of the motor.

When integrating the pump, attention must be paid to the construction and alignment of the system and the corresponding components. For example, the drive assembly, including the motor, can be supplied mounted on a base plate.

In addition, different connection options can be realized for the Jabsco PUREFLO 21 Single Use, which must be coordinated with the construction. The connection variants are shown in more detail in chapter 3.3.

Each Jabsco PUREFLO 21 SU is marked with a type plate. The pump head is given a type classification.

Each Jabsco PUREFLO 21 Single Use pump is subjected to a final inspection prior to release for shipment.

The operator must ensure that the pump is suitable for the intended application before commissioning.

Notice:

The Jabsco PUREFLO 21 Single Use is a single use product. This means that the pump must be replaced after a single use. This saves time by eliminating cleaning procedures, making cross-contamination impossible.

3.2 Appropriate use

WARNING

Danger due to improper use

Operating the pump in a manner different from that specified in the purchase order may result in death, serious personal injury, or property damage.

- ▶ Only pump the media specified in the order. The pump has been specially designed for this purpose.
- ▶ Operate the pump only in the electrical network specified in the order.

3.2.1 Pump identification

The exact pump type, pump size, pump number and the most important operating data are indicated on the type plate.

3.2.2 Performance data

The pump has been tested for function, flow rate and tightness before delivery. Units with a safety valve receive the set value in the documentation (opening pressure). This is 4,0 bar as standard. However, this can be adjusted according to customer requirements.

3.2.3 Connections and lines

The nominal pipeline width of the system should be equal to or greater than the nominal pump width DNE (suction side) or DNA (pressure side) and the connecting elements to the pump must correspond exactly to the construction standard/standard of the connection counterpart permanently installed on the pump. The suction pipe must be absolutely tight and laid in such a way that no air pockets can be formed. Furthermore, it must be ensured that the hose does not get sucked onto any surface. Avoid tight bends and valves immediately in front of the pump.

Notice:

To avoid pressure peaks or a malfunction, make sure that the suction and pressure sides, i.e. inlet (In) and outlet (Out) are not closed at the same time (An inlet to the pump must always be ensured).

Please observe the "Connection combinations" provided and shown in 3.3. If the pump is not used as intended or if structural modifications are made, malfunctions of the pump may occur, for which the manufacturer accepts no liability.

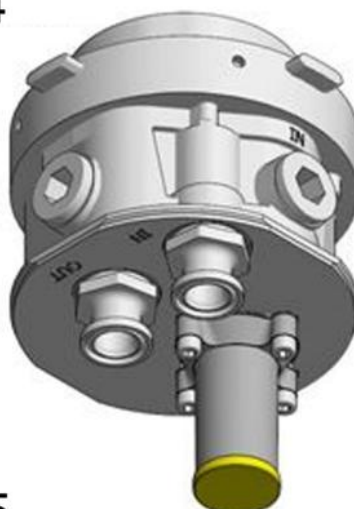
Never change the connection or valve position. This can lead to personal injury and damage to property, for which the manufacturer also accepts no liability.

3.3 Connection combinations

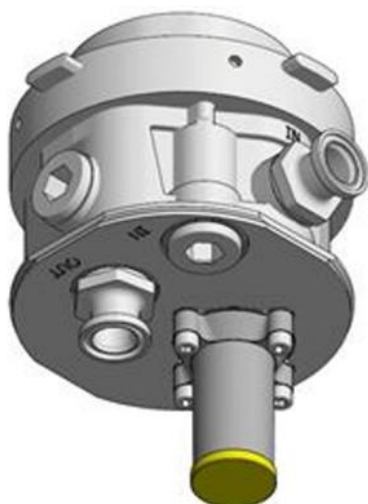
1



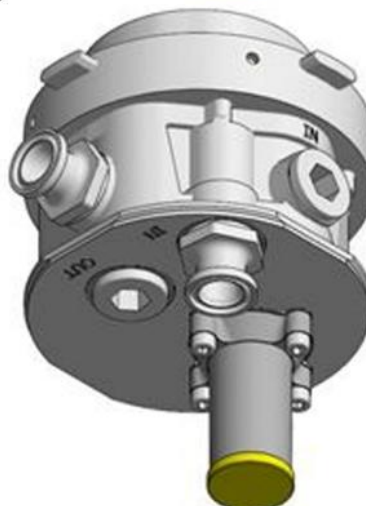
4



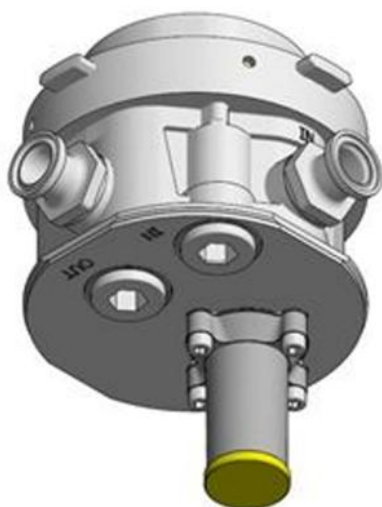
2



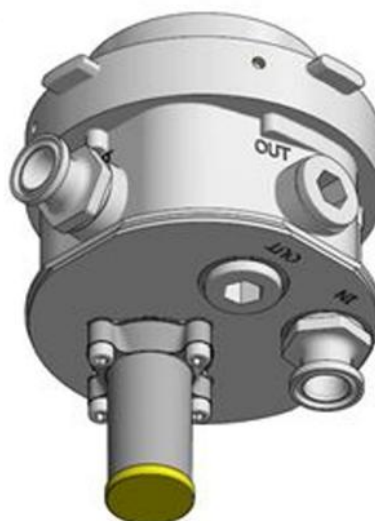
5



3



6



4 Installation, assembly and connection

In this chapter you will learn how to set up, align and install the pump in the pipeline. You will learn what you must consider when connecting the pump electrically and how to improve the approaching flow of the pump.

4.1 Setting up and aligning the pump unit

CAUTION

Danger of the pump falling over (tipping) due to incorrect foundation

An unsuitable base can cause bodily injury or property damage.

- ▶ Make sure that the surface on which the pump is installed is clean, level and has sufficient load bearing capacity.
- ▶ Secure the pump system accordingly, as it tends to tip over without proper fastening.

WARNING

Electrical hazard due to short circuit

Short circuits can cause death, serious physical injury or material damage.

- ▶ Never position the motor below the pump when the pump is installed vertically. In the event of a leakage, fluid could enter the motor.

This is how to align the pump:

1. Use a machinist's level to align the unit horizontally by placing it on the machined mating surfaces of the connection ports.
2. After aligning the aggregation/pump-motor unit, tighten the fastening screws evenly crosswise.

Customer-specific installation:

Depending on the customer's wishes and requirements, a specially designed installation, e.g. in the form of a base plate, can be optionally ordered. A type plate is positioned at a suitable location, agreed with the customer, which summarises the fixed assemblies. Please consult the sales department for this.

4.1.1 Unpacking

If, after careful unpacking and careful checking, you should still discover damage, please inform the carrier (forwarding agent, post office, railway, shipping company, etc.) immediately. Please file your claim for damages with them. The transport risk is transferred to the customer as soon as the shipment has left the manufacturer's warehouse.

4.1.2 Storage

If the pump is not to be used directly, suitable storage must be provided. A vibration-free

storage room is recommended, which is protected against external influences such as heat and UV radiation as well as cold and wetness.

4.1.3 Gamma irradiation

The conveying chamber is gamma sterile as specified. The manufacturer must be consulted about the dose of irradiation. A slight discolouration of the original colouring may be the result, which, however, has no material-specific limitations on the function and use.

4.2 Installation in the pipeline

CAUTION

Danger due to mechanical overload

Overloading the pump can cause bodily injury or property damage to the pump or system. Pumped medium can escape under high pressure.

- ▶ The pump and its connecting branches must not be used to support the pipeline.
- ▶ When installing the pump in the pipeline / plant, observe the general rules of mechanical and plant engineering as well as the regulations of the manufacturers of the connecting elements used (e.g. flanges). If necessary, these regulations contain information on the tightening torque, max. permissible angular misalignment, the tools/auxiliary equipment to be used.
- ▶ Absolutely avoid distortion of the pump.
- ▶ After piping, check the flange connection.
- ▶ The suction line must be tight and laid in such a way that no air pockets can form.
- ▶ Avoid tight bends and valves directly before the pump. These impair the approaching flow of the pump and thus the NPSH of the system.
- ▶ Make sure that the pressure of the system is not higher than the pressure guaranteed by the pump.
- ▶ Make sure that the nominal pipeline widths of the system are equal to or larger than the connections DNE or DNA of the pump.

5 Commissioning / De-commissioning

In this chapter you will learn how to start and stop the pump properly and safely. You will be informed about which tests are essential for trouble-free operation and long service life of the pump.

5.1 Check the operating conditions

To check the permissible operating conditions of the pump:

1. Compare the information in the following documents with the intended operating conditions of the pump:
 - Order documents (order confirmation)
 - Type plate
 - Instruction manual
2. Make sure that the pump is only operated under the specified operating conditions. These conditions concern e.g. pressure, temperature and pumping medium.

5.2 Commissioning the pump

To put the pump into operation:

1. Check all connections for tightness.
2. Make sure that all safety devices are installed.
3. Make sure that the electrical connections are correct.
4. Open the shut-off valves in the system.
5. Ensure that the suction tank is sufficiently filled.
6. Deaerate/bleed the system.
7. Open the suction and discharge shut-off valves completely.
8. Switch on the pump

CAUTION

Danger from overheating and pressure over-load

Pumping against a closed shut-off valve results in heating and pressure increase, which may cause damage to the pump and personnel.

- ▶ Avoid conveying against a closed shut-off device.
- ▶ Pumps without a safety valve do not have protection against pressure exceedances.

CAUTION

If there is no increase in the delivery head after commissioning:

1. Switch off the pump.
2. Deaerate/bleed the system again.
3. Repeat steps 7 to 8 as indicated above.

If the malfunction cannot be corrected, contact your Xylem representative.

The PUREFLO 21 Single-Use Pump is delivered ready for installation. Each packaging box holds three Single-Use Pumps. Please consider this when placing your order to ensure maximum efficiency. Install the pump according to the instructions in Chapter 5.8 and following. Before operating the pump, everyone should familiarize themselves with the possible hazards and the contents of these operating instructions. This will ensure that in the event of a fault, the fault can be quickly identified and rectified. In the event of faults that cannot be rectified by itself or the causes of which are unclear, the Xylem contact person responsible should be contacted. Faults involving the conveying chamber will not be dealt with further, as repair is not envisaged and only replacement is possible.

5.3 Test run before the first commissioning

A test run is recommended before use in the process. This will allow you to familiarize yourself with the pump's mode of operation.

Notice:

Innovative Systems GmbH also builds the PUREFLO 21 Single Use according to specific customer requirements or adapted to the requirements of special applications. For this reason, these general operating instructions cannot show or describe all possible variants.

Please contact your Xylem representative if you have any questions about the different versions.

Make sure that the suction line is sufficiently dimensioned. A too small pipe cross-section in the suction line can lead to a reduced maximum flow rate and cavitation.

If hoses are used in the suction line, make sure that they do not collapse because of the negative pressure.

During installation, make sure that there is sufficient space around the pump for operation. Observe the space required for the assembly and disassembly of the feed chamber (see 5.7 ff.).

During commissioning, it is essential to observe the warnings and safety instructions in chapter 2 of these operating instructions.

5.4 Decommissioning the pump

ATTENTION

Risk of pressure shocks

Pressure shocks may cause damage to the pump or system. If shut-off devices on the discharge side are closed too quickly, this can lead to pressure shocks.

- ▶ Never close the inlet shut-off valve during pump operation.

To take the pump out of service:

1. Switch off the pump / system.
2. Close the shut-off valve on the pressure side.
3. Close the suction shut-off valve.
4. Make sure that the pump is depressurized.



The mains plug must be disconnected during all work to prevent the system from being switched on unintentionally. In addition to an EMERGENCY OFF switch, warning notices should be attached to prevent the system from being switched on again.



All work should be carried out on a stable surface.



When handling caustic or toxic chemicals, observe the generally applicable accident prevention regulations.

5.5 Dispose of pump after de-commissioning

The pump head must be disposed of properly after final decommissioning! **Cleaning is not provided due to the single use application.**

- ▶ If you have any questions regarding proper disposal, please contact your Xylem representative.
- ▶ Observe the generally applicable legal regulations.

5.6 Changing the PUREFLO 21 Single Use Pump Heads

As described in chapter 3.1, PUREFLO 21 Single Use is a single use product. To save time, the pump head can be exchanged as described in chapter 5.7, 5.8 and 5.9. It is possible to order additional exchange heads in sets. The pump head unit can be replaced by the operator based on these operating instructions, observing the step sequence. Before the pump head unit is changed, it must be ensured that the pump is neither in operation nor can be started up by mistake.

ATTENTION

Compliance with statutory occupational health and safety regulations, such as the

- Workplace Ordinance (ArbStättV)
- Ordinance on Hazardous Substances (GefStoffV)
- Accident Prevention Regulations (BGV 1A), as well as the regulations on environmental protection, such as the Recycling and Waste Management Act (KrW/AbfG), Water Resources Act (WHG)

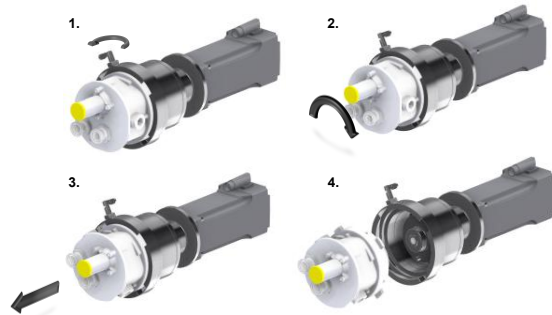
obligate all commercial companies to protect their employees or people and the environment from harmful effects when handling hazardous substances. Check the regulations that apply to you.

ATTENTION

The specified pressure resistance and tightness of the conveying chamber is only given if it is installed on the drive/carrier unit in accordance with the regulations.

5.7 Sequence of disassembly of the pump head unit

1. open the locking lever on the drive/carrier unit (top=open).
2. Turn the pump head as far as it will go (cw).
3. Pull out the pump head unit.

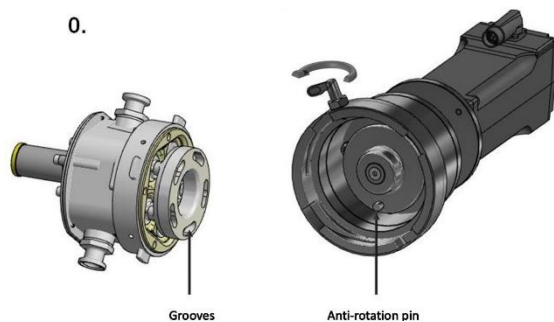


CAUTION

Pay attention to the hazard groups in Appendix 1: Hazard groups!

5.8 Preparation for the assembly of the pump head unit

0. Open the locking lever on the drive/carrier unit (top=open) and align the anti-rotation pin so that it can be guided in one of the grooves of the pump head. Then continue with chapter 5.9.



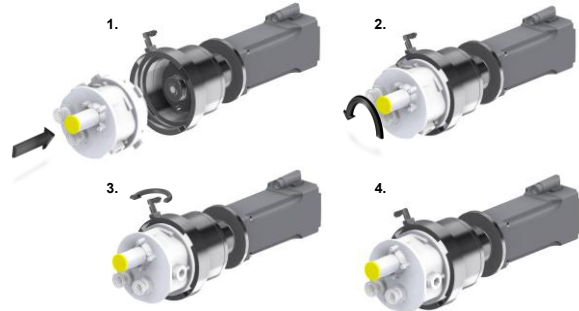
Pay attention to the hazard groups in Appendix 1: Hazard groups!

ATTENTION

When mounting the pump head unit, pay attention to the position of the anti-rotation pin in the drive/carrier unit.

5.9 Sequence of assembly of the pump head unit

1. Push the pump head unit in as far as it will go and pay attention to the anti-rotation lock (see chapter 5.8).
2. Turn the pump head until it engages (ccw).
3. Lock the locking lever on the drive/carrier unit (bottom=closed).



CAUTION

Pay attention to the hazard groups in Appendix 1: Hazard groups!

Notice:

- The pump is assembled in the reverse order to disassembly.
- The direction of rotation depends on the design of the drive/carrier unit and may deviate from the layout.
- Always replace defective parts only with original parts.
- Never use greases containing mineral oil when assembling the parts.

ATTENTION

When assembling the pump, the safety instructions of section 6.1 Safety instructions for maintenance, inspection and assembly work must be observed. According to the design standard, all tools, storage facilities and other aids used for disassembly must ensure that all parts of the pump can be assembled without damage (e.g. scratches) and without tilting.

6 Maintenance / Servicing

This chapter contains important information on the maintenance and servicing of the pump. Be sure to read this chapter before performing maintenance or troubleshooting.

6.1 Safety instructions for maintenance, inspection and assembly work

CAUTION

Danger due to improper execution of work

Improper execution of maintenance, inspection and assembly work can cause serious physical injury or damage to property.

- ▶ Have all maintenance, inspection and assembly work performed by authorized and qualified personnel. These qualified personnel must be sufficiently informed by these operating instructions beforehand.

WARNING

Risk of electric shock from contact with live parts

Electric shock can cause serious personal injury or death.

- ▶ Always disconnect the pump from the power supply before eliminating faults.

WARNING

High pressure fluid ejection hazard

The ejection of high-pressure fluids may cause death, serious injury or material damage.

CAUTION

Danger from hot system and pump parts

Hot system and pump parts can cause physical injury through burns.

- ▶ Always allow the pump to cool down before eliminating faults.

WARNING

Danger due to unintentional switch-on of the pump

Unintentional switch-on of the pump can lead to death, serious injury or material damage.

- ▶ Be sure to secure the pump against unintentional switch-on.

WARNING

Danger from contact with or inhalation of hazardous substances

Contact with or inhalation of hazardous substances can lead to death or serious injury.

- ▶ Decontaminate pumps that convey media that are hazardous to health.

WARNING

Danger due to missing safety and protective devices

Missing safety and protective devices can cause death, serious physical injury or material damage.

- ▶ Immediately after completion of the work reinstall all safety and protective devices and put them into operation.

ATTENTION

Danger due to frost

Frost can destroy the pump.

- ▶ Drain the pump completely if there is a risk of frost. Observe the general limits of use of the pump. If necessary, contact your Xylem representative.

ATTENTION

Danger from the use of unsuitable tools

Unsuitable tools can damage the pump or the system.

- ▶ According to the design standard, all tools, storage facilities and aids must ensure that all parts of the pump can be mounted without damage (e.g. scratches).

6.2 Maintenance of the drive/carrier unit

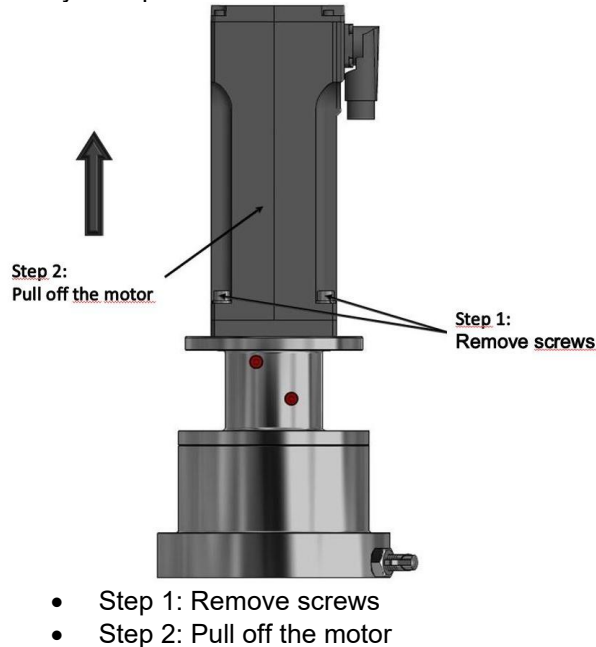
Regularly check the shaft and bearing units as required and in accordance with the application. If necessary, the shaft and bearing units must be replaced (replacement group). The maintenance intervals and the possible courses of action for the installed motor must be taken from the motor operating manual.

6.3 Disassembly drive/carrier unit

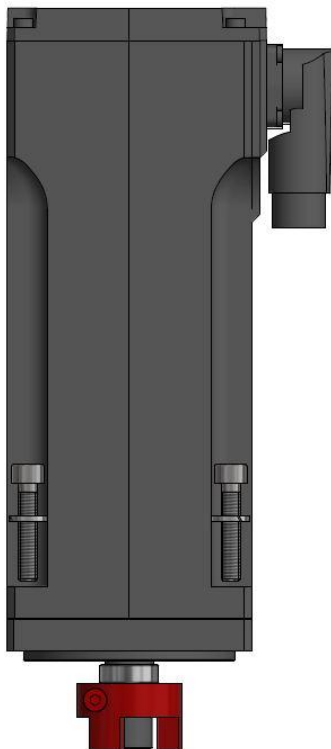
See first 5.7: Sequence of disassembly of the pump head unit.

6.3.1 Motor disassembly

The disassembly of the motor can be carried out by the operator.

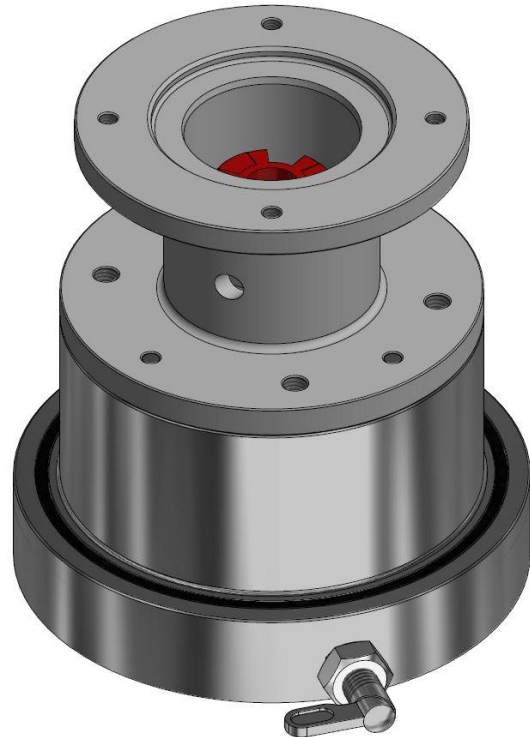


If problems arise with the motor within the agreed warranty period, contact your Xylem representative and return the motor if necessary.



Further disassembly of the drive/carrier unit is excluded for warranty and traceability reasons. If this assembly is damaged, please return it in consultation with your contact person. You will receive a replacement assembly as soon as possible, which will be charged with the calculated damage.

We can also prepare a replacement assembly for you on request, so that a smooth exchange can take place.



Notice:

Assembly is carried out in reverse order to disassembly. Position the motor to match the drive/carrier unit and tighten the screws. Observe the tightening torques of the screws from Appendix 3.

Assembly should only be carried out by trained personnel to reduce or avoid errors. For this reason, this operating manual does not go into any further detail on assembly. Please contact your Xylem representative for any training required.

6.3.2 Wearing parts

- Bearings, circlips and retaining rings
- Washers and screws
- Eccentric shaft, centering disk
- Clutch backlash-/ maintenance-free

7. Control Cabinet Application

In this chapter, you will find important information on the parameterization and operation of the configurable control cabinet application. Be sure to read this chapter before operating the control cabinet for the Jabsco PUREFLO 21 Single Use Pump, if it is included in your order.

7.1 Basic Technical Information

The control cabinet is pre-configured and parameterized at the factory. The maximum speed at 100% is 2500 RPM. If a pump with a safety valve is to be tested, the maximum allowable speed is 1800 RPM. This corresponds to 72% of the maximum speed of the control cabinet system.

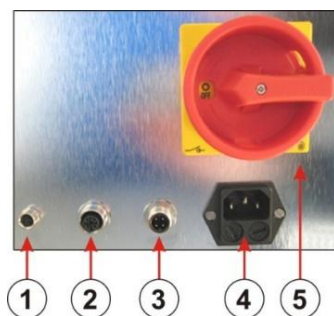


Inside the control cabinet operates a compact DC motor with the following technical specifications:

- Motor voltage: 48 V DC
- Power: 356 W
- Speed: 4,000 RPM
- Torque: 0.85 Nm at 4,000 RPM
- Protection class: IP 54

The control cabinet itself has the following technical specifications, as well as optional connection versions that can be equipped with corresponding additional functions:

- Power supply: 100 to 240 VAC (input is automatically detected)
- Input frequency: 50-60 Hz
- Control voltage: 24 VDC
- Protection class: IP 65
- Operation: Touch pad Start / Stop / Speed + / - Digital display 0-100%
- Speed control: 0 - 100% corresponds to 0 - 2,500 RPM
- Operating modes: 0...10 V DC Manual / Automatic, switchable via key combination
- Connections: Pressure and level (sensors not included)



1 = Level sensor, M8 socket

2 = Pressure sensor, M12 socket

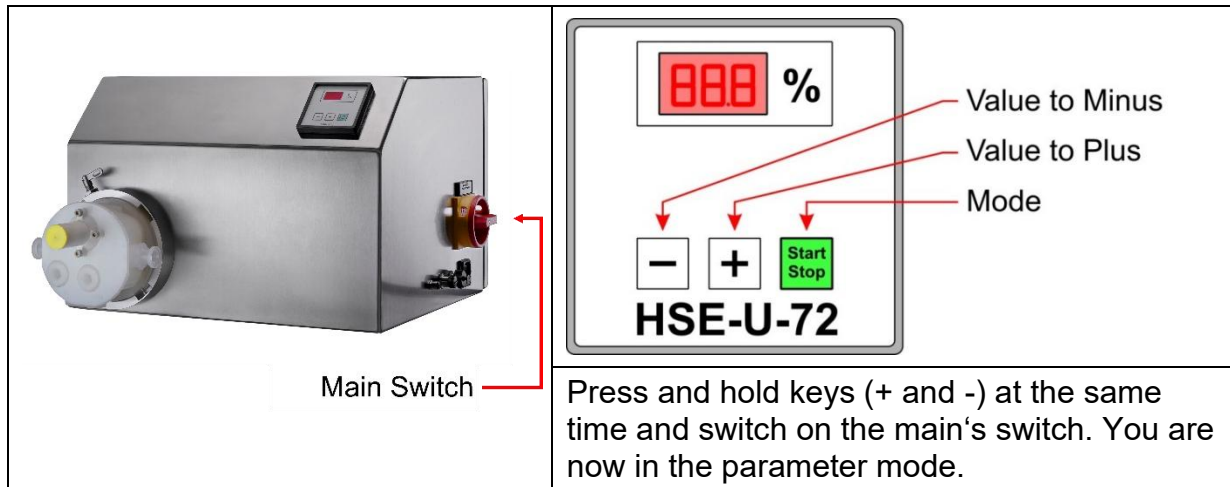
3 = External control, M12 plug

4 = Power supply for cold device plug with fuse

5 = ON/OFF switch

7.2 Parameterization of the Control Cabinet Electronics

A change of the parameters is only necessary, when you want to change the manufacturer's settings.

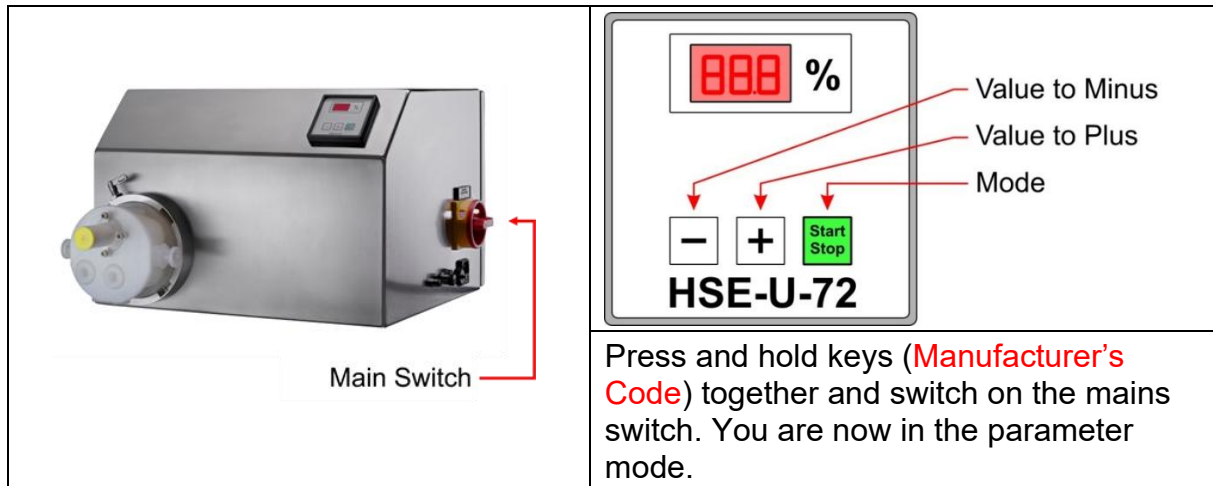


When the unit is switched on, the display will identify the version no. of the software (for example 4.0) for a short time.

Parameters	Level 1 (User)
Function →	1. Press key + and – and switch on mains switch 2. Display shows Parameter P 1.0 3. Choose parameter with key + or - 4. Press Mode Key = display is illuminated GREEN 5. Change with key + or – to new value 6. Press Mode key (GREEN off) new value is stored 7. Switch mains switch off and on, or wait for 20 seconds. The unit is now ready for use.
The following parameters can be chosen:	
P 0.0	Back to manufacturers settings
P 1.0	Manufacturer's setting = 1.6 Sets the minimum flow.
P 2.0	Manufacturer's setting = 80.0 Sets the maximum flow.
P 3.0	Not used = 0.0

⚠ WARNING

A change of parameter P 1.0 and P 2.0 can only be changed within the units of the manufacturer's specifications (parameters 11.0 and 12.0). Before you store new settings, the system will check P 1.0 against P 11.0 and P 2.0 against P 12.0. If the new parameters are outside of the specifications, the system will automatically choose the values of P 11.0 and P 12.0.



Parameters	Level 2 (Master Mode)
Function →	1. Press Manufacturer's Code (can be published if required) 2. Display shows parameter P 1.0 3. Choose parameter with + or – key. 4. Press Mode key. Display is illuminated GREEN 5. Change with key + or – to new value 6. Press Mode key (GREEN off) new value is stored 7. Switch mains switch off and on, or wait for 20 seconds. The unit is now ready for use.
The following parameters can be changed if the Manufacturer's Code known...	
P 0.0 to 3.0	As described under level 1
P 4.0	Not used = 0.0
P 5.0, P 6.0, P 7.0 and P 8.0	Used to adjust values of display 0...99.9 % to value from external source 0...10 V DC Fixed factory setting when supplied: P 5.0 = 0.0 lower value of analogue input signal from external source = 0 V P 6.0 = 99.9 upper value of analogue input signal from external source = 10 V P 7.0 = 0.0 lower value of display for input signal from external source = 0.0 % P 8.0 = 99.9 upper value of display for input signal from external source = 99.0 %
P 9.0 and P 10.0 P 11.0 and P 12.0	Fixed factory setting when supplied... P 9.0 = Display output min. value = 0.0 % equivalent to P 11.0 = Analogue output min. set point = 1.6 (0,16 V DC) P 10.0 = Display output maximum value = 99.9 % equivalent to P 12.0 = Analogue output max. set point = 80.0 (8,0 V DC)
P 13.0	Manufacturer's setting = 0.1 This value shows increments in 0.1 % steps.
P 14.0	Manufacturer's setting = 50.0 This value is the manufacturers setting. The new setting is updated when the Start key is pressed. The unit will always use the previous setting.

Function "Manual Use"
Mains switch on
Press Start / Stop key = illuminated GREEN = Pump in use
Press Start / Stop key again = GREEN OFF = Pump not in use
Press + key to increase the speed / Press key – to reduce the speed
The speed can be chosen between 0.0 and 100% in advance or can be changed during use.

Function "Automatic Use"
The connection to the external signal is made with the M12 plug next to the mains switch.
Contacts:
PIN 1 = BN = +24 V DC = only active when you have chosen and started the automatic.
PIN 2 = WH = 0...10 V DC = value from external source.
PIN 3 = BU = GND
PIN 4 = BK = +24 V DC from PIN 1 = Start / Stop from external source.

Main's switch ON to switch over to "Automatic Use"
Mains switch on Press Start / Stop key = illuminated GREEN = Pump in use Press Start / Stop key again = GREEN OFF = Pump not in use Press + key to increase speed / Press Key - to reduce speed The speed can be chosen between 0.0 and 100 % in advance or be changed during use.
The pump is ready for use in the automatic mode, but doesn't start.
The PIN 1 has now got a + 24 V DC supply, which is switched automatically to PIN 4 = pump can be used now.
Switch OFF of pump with external switch or Start/Stop key of pump unit.
The + and - keys of the display are out of function, the speed is adjusted with the external signal from PIN 2.

Changing back to "Manual Use"
Press Start / Stop key > 6 seconds = Display is not illuminated for a short time --.- (seconds) = and displays afterwards the settings of value set before with +/- keys (0...100%).
The unit can be switched "ON" and "OFF" again with Start / Stop keys. The + and - keys can be used to change the speed.

Switch off at Over Pressure: PUREFLO® 21

Connector (2) M12

Configuration:

PIN 1 = BN +24 V DC

PIN 2 = WH not configured

PIN 3 = BU -24 V DC

PIN 4 = BK +24 V DC from external pressure switch at maximum pressure.

Connections to normal pressure switch with relay contact which can be programmed to a limiting value.

Possible connection variants:


Switch off at Low Fluid Level: PUREFLO® 21

Connector (1) M8

Configuration:

PIN 1 = BN +24 V DC

PIN 2 = WH not configured

PIN 3 = BU -24 V DC

PIN 4 = BK +24 V DC from external level sensor at low fluid level (tank empty).

Connection to normal level sensor with relay contact.

Possible connection variants:



Appendix 1: Hazard groups

WARNING

Mechanical hazards

- **Crushing**

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head in the drive unit	Crushing may occur when mounting the pump head into the drive unit
Operation of the drive unit	Risk of crushing due to fingers engaging in the drive unit without inserted pump head
Maintenance of the drive unit	Risk of crushing fingers during maintenance of the drive unit components
Assembly and installation of the drive unit on the motor	Risk of crushing the fingers or hand when mounting the drive unit on the motor

- **Shear**

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head in the drive unit	Injury of fingers from mounting the pump head in the drive unit

- **Cutting**

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head	Cuts by sharp edges at the pump head
Disassembly of the pump head	Cuts by sharp edges at the pump head
Assembly and installation of the pump head in the drive unit	Possibility of cutting and severing fingers during improper installation of the pump head into the drive unit

- **Grasping**

Hazard location / operation phase	Description of hazard
Operation of the drive unit	Risk of fingers being caught by a rotating centering disk due to incorrect use or operation without the pump head mounted

- **Pulling in**

Hazard location / operation phase	Description of hazard
Operation of the drive unit	Risk of work gloves worn being pulled in by a rotating centering disk due to incorrect use or operation without the pump head mounted

- **Abrasions**

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head	Rough surfaces and sharp edges of the pump head can cause abrasions during installation
Disassembly of the pump head	Rough surfaces and sharp edges of the pump head can cause abrasions during installation
Assembly and installation of the pump head in the drive unit	Slippage during assembly of the pump head into the drive unit, which can cause abrasions
Operation of the drive unit	Risk of abrasions from a rotating centering disk if used incorrectly
Maintenance of the drive unit	Abrasions on fingers and hand due to improper maintenance of the components

- **Intrusion of liquids under pressure**

Hazard location / operation phase	Description of hazard
Operation of the pump head	Liquids may enter the space through leaks

⚠ WARNING

Thermal hazards

- Burnings

Hazard location / operation phase	Description of hazard
Operation of the pump head	Heating of the surface of the pump head by the conveyance of hot media
Taking the pump head out of operation	Heating of the surface of the pump head by the conveyance of hot media
Disassembly of the pump head	Heating of the surface of the pump head by the conveyance of hot media
Operation of the drive unit	Risk of burns due to heated surface of the drive unit
Taking the drive unit out of operation	Risk of burns due to heated surface of the drive unit

- Scalding

Hazard location / operation phase	Description of hazard
Disassembly of the pump head	Scalding of previously pumped hot media

- Frostbite

Hazard location / operation phase	Description of hazard
Operation of the pump head	Frostbite caused by contact with the surface of the pump head when cold media is pumped
Taking the pump head out of operation	Frostbite caused by contact with the surface of the pump head when cold media is pumped
Disassembly of the pump head	Frostbite caused by contact with the surface of the pump head when cold media is pumped

⚠ WARNING

Hazards due to noise

- Uneasiness

Hazard location / operation phase	Description of hazard
Operation of the pump head	Disturbing or annoying volume levels may cause discomfort
Operation of the drive unit	Disturbing or annoying volume levels may cause discomfort

- Stress

Hazard location / operation phase	Description of hazard
Operation of the pump head	Disturbing or annoying volume levels may lead to stress
Operation of the drive unit	Disturbing or annoying volume levels may lead to stress

- Fatigue

Hazard location / operation phase	Description of hazard
Operation of the pump head	Disturbing or annoying volume levels may lead to fatigue
Operation of the drive unit	Disturbing or annoying volume levels may lead to fatigue

⚠ WARNING

Ergonomic hazards

- Discomfort

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head	Discomfort by a strenuous posture during assembly
Assembly and installation of the pump head in the drive unit	Discomfort by a strenuous posture during assembly
Maintenance of the drive unit	Problems during maintenance of the drive unit
Assembly and installation of the drive unit on the motor	Difficulties during installation of the drive unit on the motor

- Fatigue

Hazard location / operation phase	Description of hazard
Maintenance of the drive unit	Disturbing or annoying volume levels may lead to fatigue
Assembly and installation of the drive unit on the motor	Disturbing or annoying volume levels may lead to fatigue

- Stress

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head	Stress due to physical effort during assembly
Assembly and installation of the pump head in the drive unit	Stress due to physical effort during assembly
Maintenance of the drive unit	Difficulties during maintenance of the drive unit
Assembly and installation of the drive unit on the motor	Difficulties during installation of the drive unit on the motor

⚠ WARNING

Additional common hazards

- Incorrect assembly

Hazard location / operation phase	Description of hazard
Assembly and installation of the pump head	Incorrect installation may cause errors in the operation of the pump, which in turn may lead to injuries
Assembly and installation of the drive unit	Improper installation of the drive unit may lead to damage which may endanger the user due to flying parts.

- Break during operation

Hazard location / operation phase	Description of hazard
Operation of the pump head	Liquid leakage due to a breakage of the component parts may lead to injuries
Operation of the drive unit	If the drive unit breaks during operation, this may lead to damage that may endanger the user through flying parts

- Objects or liquids being ejected

Hazard location / operation phase	Description of hazard
Operation of the pump head	Liquid leakage due to incorrect installation and/or incorrect use and flying parts may lead to injuries

- Changing the speed of rotation

Hazard location / operation phase	Description of hazard
Operation of the drive unit	Improper use of the drive unit may lead to damage which may endanger the user due to flying parts.

- Use of non-compliant liquid

Hazard location / operation phase	Description of the hazard
Operation of the pump head	When using media that attack the sealing elements, increased wear can occur during the process, resulting in leakage.

⚠ WARNING

Hazards arising from the use of pressure equipment

- Designed for the required load capacity

Hazard location / operation phase	Description of hazard
Operation of the pump head	If the specified load capacity is exceeded, this leads to fluid leakage and thus poses a risk of injury

- Wear

Hazard location / operation phase	Description of hazard
Operation of the pump head	Component wear and tear resulting in loss of performance Liquid leakage may lead to injuries

- Protection against exceeding the permissible limits of the pressure equipment

Hazard location / operation phase	Description of hazard
Operation of the pump head	If the permissible limits are exceeded, this leads to fluid leakage and thus poses a risk of injury

- Equipment with safety function

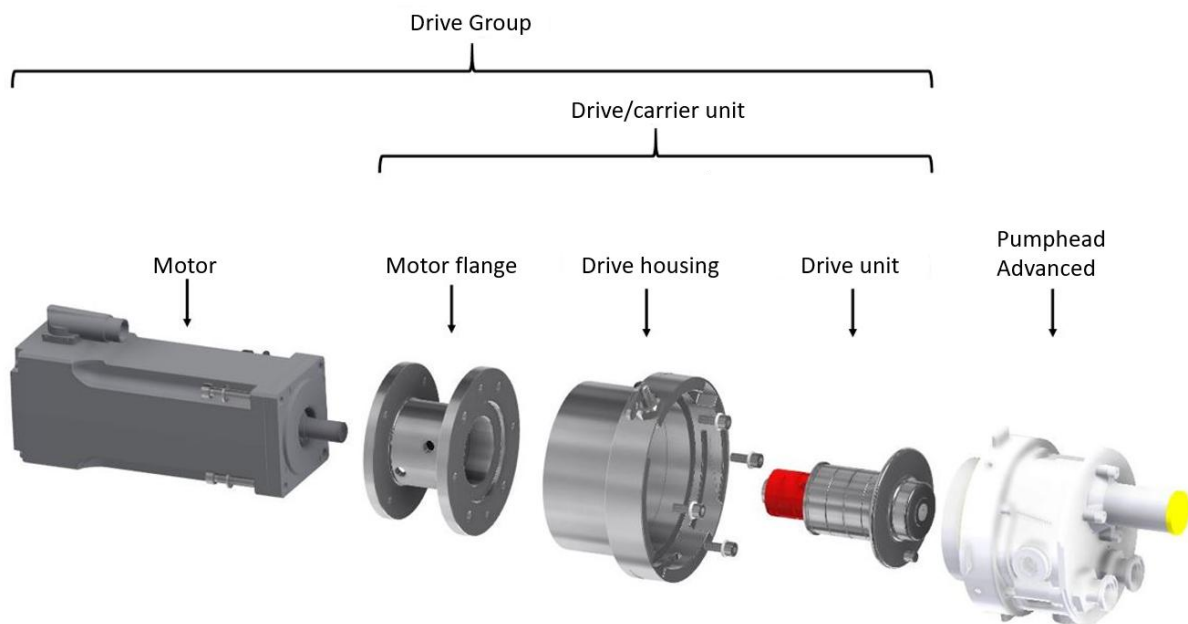
Hazard location / operation phase	Description of hazard
Operation of the pump head	Incorrect adjustment of the safety valve on the Advanced model may cause fluid leakage and incorrect operation, which in turn may lead to injury

Notice:

The hazards listed above are examples and do not exclude other hazards. Furthermore, all hazards are dependent on the operating conditions and serve as examples.

Appendix 2: Parts overview

Drive unit with pump head


Notice:

If the replacement unit requires repair, the drive/carrier unit must be returned! Take the disassembly process from chapter 6.3. You will receive a new / prepared drive / carrier unit as soon as possible. Due to the final assembly, the drive unit is delivered in three parts - coupling, eccentric shaft with bearings and spacer sleeves as well as the centering disk with integrated retaining pin. If you have any questions regarding the final assembly, please contact your Xylem representative.

Spare parts / Accessory parts provided by the manufacturer:

Article No.	Description
804-0001	Drive group (versions depending on motor)
803-0001	Drive/carrier unit (version dependent on motor)
802-0001	Motor (versions optional)
802-0001-K	Hybrid cable (version optional)
800-0004-1	Motor flange / motor connection flange adapter (versions depend on motor)
888_ALG-0001	NBR sealing ring Rd=ø120.24 x ø3.53 for drive housing
806-000X-X	Advanced pump head (version pressure and connection dependent)

Material certificates of the drive/carrier unit exist for the following components:

Eccentric shaft (1.4404)	Motor flange (1.4404)	Drive housing (1.4404)	Centering disk (1.4462)
			

Notice:

For other material designs or queries, contact your Xylem representative.

Appendix 3: Technical data, liability and maintenance

Pumping pressure

Jabsco PUREFLO 21 Single Use	Pumping pressure [barg]
Minimum	0
Maximum	4,0

Limit pressure safety valve

Jabsco PUREFLO 21 Single Use	Set pressure [barg]
Minimum	2,0
Maximum	4,0

Temperature of the pumped medium

Jabsco PURELO PU 21 Single Use	Temperature [°C]
Minimum	5
Maximum	40

Viscosity of the pumped medium

Jabsco PUREFLO 21 Single Use	Viscosity [cp]
Maximum	250

Notice:

*If your application exceeds the specified values, consult with your Xylem contact and your request will be reviewed and approved if necessary. The safety valve limiting pressure must be defined when ordering. Contact your Xylem representative for more information. **The maximum motor speed is specified in the type examination certificate in accordance with the Pressure Equipment Directive. Operation above this operating point is expressly prohibited (1800rpm).***

Tightening torque

Jabsco Pureflo PU 21 Single Use	Tightening torque [Nm]
Clutch EKL	4 Nm
Screws M6 x 30	8.4 Nm
Screws M6 x 20	8.4 Nm

Notice:

Observe the respective assembly instructions for the disassembly and assembly processes. Ensure that the screws are correctly fixed and that the pump head is seated correctly on the drive group. If you have any questions, please contact your Xylem representative.

Disclaimer:

This product is not made under the controls of ISO 13485. It is the responsibility of the customer to ensure that sterilization and filtration of the product in compliance with ISO 13485 is met before process completion.

Maintenance:

The following maintenance intervals are recommendations in order to maintain successful operation in the long term.

Component	Interval recommendation	Activity
Drive/carrier unit or exchange group	1000h operating hours, every 12 months or after other abnormalities (increased running noise, leaks, etc.)	Replacement of the unit possible through preassembled replacement sets
Motor and related components (cables)	Observe the maintenance instructions in the operating manual of the motor	
Clutch	Observe the maintenance instructions in the operating manual of the coupling	

Appendix 4: Pureflo 21 Single Use Performance Chart

Test medium: Deionized water at 22°C

Environment: Air-conditioned clean room ISO 7

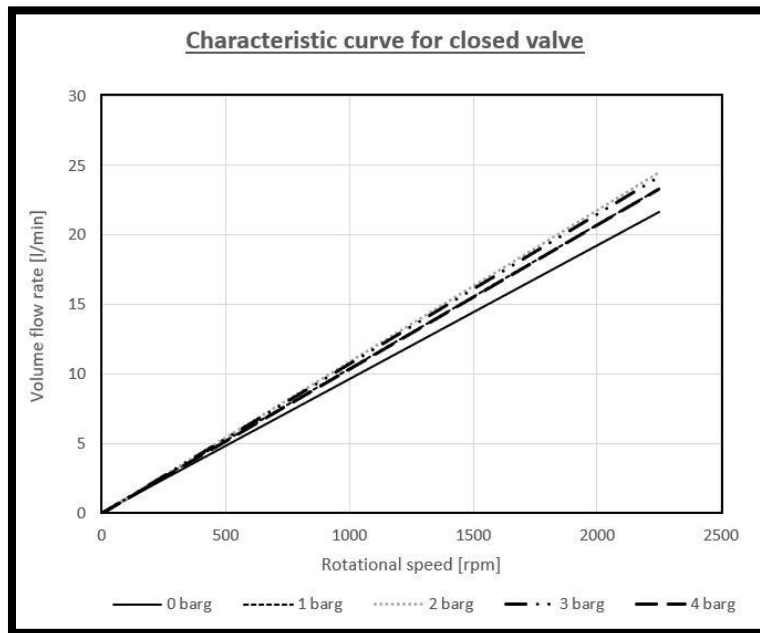
Conveying pressures: 0,0 bis 4,0 barg

Connections: ¾" Tri-Clamp

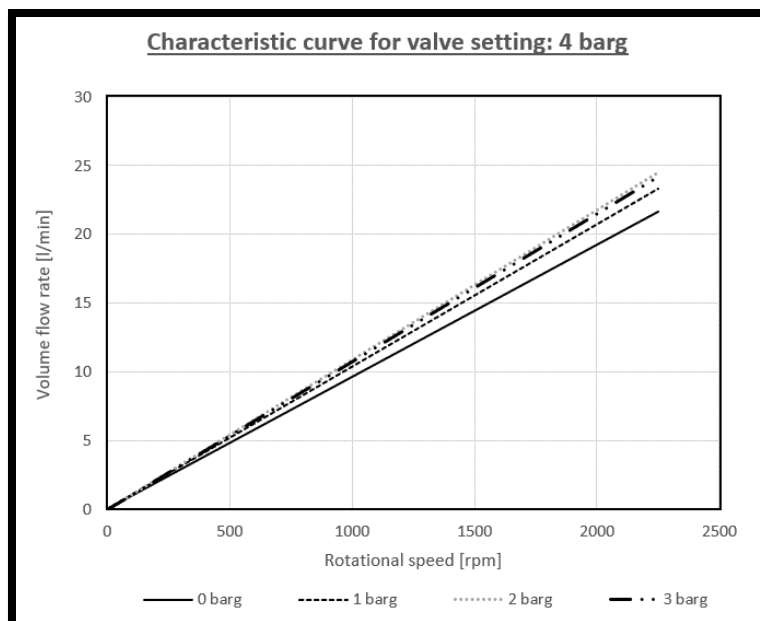
Notice:

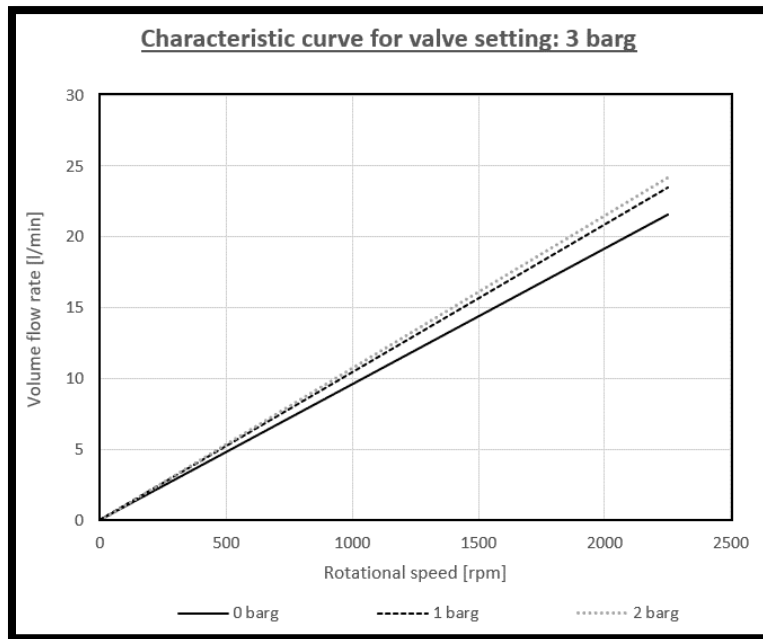
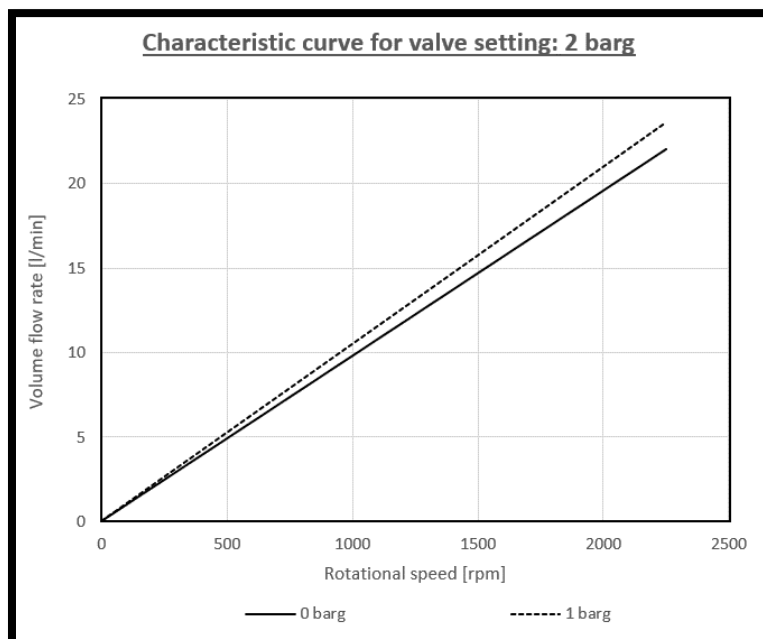
The diagrams show the ideal flow rates. These depend on the valve set pressure, the connections, the medium and the motor speed. Testing is carried out exclusively with new components directly after final assembly. Consequently, the flow data may deviate from reality.

Performance range I: Closed valve



Performance range II: 4 barg valve set pressure



Performance range III: 3 barg valve set pressure

Performance range IV: 2 barg valve set pressure

Notice:

After consultation, tests according to your requirements are also possible. Please contact your Xylem representative for more information.

Appendix 5: Type Examination Module B+D

Certificate

EU-Type examination – production type in accordance with Directive 2014/68/EU

Certificate no.: 01 202 642/B-22 T049

Name and address of the
manufacturer: ISG Innovative Systems GmbH
Hildastr. 10
44145 Dortmund
Germany

It is herewith certified that the type specimen mentioned below
meets the requirements of the Directive 2014/68/EU.

Tested acc. to Directive
2014/68/EU:

Module B
EU-Type examination – production type

Test report no.: 268512254-10-B1, Rev. 0 dated 2022-11-03

Description of type specimen: PUREFLO 21 Single Use Pump Head Unit
Integrated safety valve, set pressure 2.0 up to 4.0 bar

Drawing no.: 1003780; 1002440 Rev. 0; 1002635 Rev. 8; 1002638 Rev. 2;
1002639 Rev. 3; 1003788.

Manufacturing plant/Supplier: ISG Innovative Systems GmbH
Hildastr. 10
44145 Dortmund
Germany

Valid until: 11/2032
This certificate becomes invalid if the product is changed or
modified in any way.

The CE marking must not be affixed and the Declaration of Conformity not be issued prior to
completion of the corresponding conformity assessment procedure according to Directive
2014/68/EU.

D-Aachen, 2022-11-03

TÜV Rheinland Industrie Service GmbH
Notified Body for Pressure Equipment, ID-No. 0035
Am Grauen Stein, D-51105 Köln, GERMANY



Manfred Rönning
Dipl.-Ing. Manfred Rönning
Expert

www.tuv.com

T1.50 MS-0001602 Rev.6

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Certificate	
Quality Assurance System acc. to Directive 2014/68/EU	
Certificate no.:	01 202 641/Q-22 0070
Name and address of the certificate holder:	ISG Innovative Systems GmbH Hildastr. 10 44145 Dortmund Germany
Herewith we certify that the above -mentioned manufacturer operates a quality system according to the European Directive 2014/68/EU. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System: CE 0035	
Test basis:	Directive 2014/68/EU: QA-System (Module D) (the QS-Modules E1, E, D1 are covered by Module D)
Audit report no.:	01 202 641/Q-22 0070
Scope:	Manufacturing of pumps with integrated safety valve, see annex (Rev.:0, 2022-12-23) to certificate
Manufacturing plant:	see certificate holder
Validity:	This certificate is valid until 2026-01-12.
Cologne, 2023-01-13	 Dipl.-Ing. (FH) Vera Ruff
	
TÜV Rheinland Industrie Service GmbH Notified Body for Pressure Equipment, ID-No. 0035 Am Grauen Stein, D-51105 Cologne	
MS-0037317 E-008-Rev01	
www.tuv.com  TÜVRheinland® Precisely Right.	

Note:

Contact your Xylem sales representative for the original document.

Appendix 6: Declaration of decontamination

Due to legal regulations for the protection of our employees and operating equipment, we require the signed "Declaration of decontamination" before your order can be processed.

Company / Operator:		Email:	
Contact person:		Phone:	
Optional information:			
Type designation:		Serial number:	
Submission reason:			
Information			
Did the product come into contact with medium?	☐ YES	☐ NO	(Cleaning and information on the medium are omitted)
Cleaning			
Has the pump or the drive assembly been cleaned properly and without residues?	☐ YES	(Information on the medium is omitted)	☐ NO
Media details			
What media did the product come into contact with?			
Has a safety data sheet been enclosed?	☐ YES	☐ NO	
Hazard potential			
 Flammable ☐	 Caustic ☐	 Irritant ☐	 Explosive ☐
 Biohazardous ☐	 Carcinogenic ☐	 Radioactive ☐	 Toxic or very toxic ☐
The media/substances used react with:			
Water	☐ YES	☐ NO	
Air	☐ YES	☐ NO	
Cleaner alkaline	☐ YES	☐ NO	
Others	☐ YES (name below)	☐ NO	
Date:	Name:	Signature:	