



JSP-100

Sample Gas Pump with Bypass Valve



MANUAL

Handling | Installation | Maintenance

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1 Introduction

1.1 Intended use

The sample gas pumps are intended to be installed in gas analysis systems in industrial applications. The JSP-100 come provided with a factory-made housing.

The sample gas pump is intended exclusively for the pumping of gaseous media. It is not suitable for liquids.

Please note the specifications in the data sheet on the specific intended use, existing material combinations, as well as pressure and temperature limits.

DANGER



Potentially explosive atmosphere

Explosion hazard if used in hazardous areas.

The device is not suitable for operation in hazardous areas with potentially explosive atmospheres.

Do not expose the device to combustible or explosive gas mixtures.

1.2 Scope of delivery

- 1 x Sample gas pump with motor
- Product documentation
- Connection- and mounting accessories (only optional)

For logistics reasons, connection- or mounting accessories such as screw-in connections and/or mounting bracket are not factory installed!

1.3 Product description

The sample gas pump is designed to transport only gaseous media not liquids.

Please observe the information at the end of these instructions in relation to specific intended use, available materials, pressure and temperature ranges. Regard in particular the information and type of protection given on the type plate. Sample gases, which still contain humidity, tend to form condensate in the tubes and in the pump body. In such cases the pump head must be mounted with the head pointing down (see chapter Conversion to pump body pointing down).

NOTICE



Never use sample gas pumps outdoors!

2 Safety instructions

2.1 Important advice

Operation of the device is only permitted if:

- the product is used under the conditions described in the installation- and operation instruction, the intended application according to the type plate and the intended use. In case of unauthorized modifications done by the user JCT Analysentechnik GmbH can not be held responsible for any damage,
- when complying with the specifications and markings on the nameplates.
- the performance limits given in the datasheets and in the installation- and operation instruction are obeyed,
- monitoring devices and safety devices are installed properly,
- service and repair is carried out by JCT Analysentechnik GmbH,
- only original spare parts are used.

This manual is part of the equipment. The manufacturer keeps the right to modify specifications without advanced notice. Keep this manual for later use.

Signal words for warnings

DANGER	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
WARNING	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
CAUTION	Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided.
NOTICE	Signal word for important information to the product.

Warning signs

In this manual, the following warning signs are used:



Warning against hazardous situations



Warning against electrical voltage



Warning against respiration of toxic gases



Warning against acid and corrosive substances



Warning against potentially explosive atmospheres



Warning against hot surface



General notice



Disconnect from mains



Wear respirator



Wear eye/face protection



Wear protection gloves

2.2 General indication of risk

The equipment must be installed by a professional familiar with the safety requirements and risks.

Be sure to observe the safety regulations and generally applicable rules of technology relevant for the installation site.

Prevent malfunctions and avoid personal injuries and property damage.

The operator of the system must ensure:

- Safety notices and operating instructions are available and observed.
- The respective national accident prevention regulations are observed.
- The permissible data and operational conditions are maintained.
- Safety guards are used and mandatory maintenance is performed.
- Legal regulations are observed during disposal.
- Compliance with national installation regulations.

Maintenance, Repair

Please note during maintenance and repairs:

- Repairs to the unit must be performed by JCT Analysentechnik GmbH authorised personnel.
- Only perform conversion-, maintenance or installation work described in these operating and installation instructions.
- Always use genuine spare parts.
- Do not install damaged or defective spare part. If necessary, visually inspect prior to installation to determine obvious damage to the spare parts.

Always observe the applicable safety and operating regulations in the respective country of use when performing any type of maintenance.

DANGER



Electrical voltage

Electrocution hazard.

- Disconnect the device from power supply.
- Make sure that the equipment cannot be reconnected to mains unintentionally.
- The device must be opened by trained staff only.
- Regard correct mains voltage.



DANGER



Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

- Check tightness of the measuring system before putting it into operation.
- Take care that harmful gases are exhausted to a safe place.
- Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.
- Protect yourself during maintenance against toxic / corrosive gases. Use suitable protective equipment.



DANGER**Potentially explosive atmosphere**

Explosion hazard if used in hazardous areas.

The device is not suitable for operation in hazardous areas with potentially explosive atmospheres.

Do not expose the device to combustible or explosive gas mixtures.

CAUTION**Tipping hazard**

Equipment damage.

Secure the device against tipping, sliding and falling.

CAUTION**Hot surface**

Burning hazard

According to the product type and operation conditions, the temperature may exceed 50 °C during operation.

Depending on the conditions at the installation site it may be necessary to provide these areas with appropriate warning signs.

3 Transport and storage

The products should be transported only in its original packaging or a suitable replacement.

When not in use, protect the equipment against moisture and heat. Keep it in a covered, dry and dust-free room at a temperature of -20 °C to +40 °C.

Outdoor storage is forbidden. As a matter of principle, the operator must regard all applicable standards according prevention of damage due to lightning, which may otherwise damage the sample gas pump.

The storage room must not be equipped with any ozone-producing devices like fluorescent light sources, mercury arc lamps, electric high voltage devices.

4 Installation and connection

Remove any transport locks on the fan blade and check the equipment for damage prior to installation. This could be a damaged housing, supply cables, etc., among other things. Never use equipment with obvious damage.

4.1 Requirements to the installation site

CAUTION



Damage to the device

Protect the equipment against dust, falling objects and external impacts.

Stroke of lightning

Outdoor installation is **forbidden**. As a matter of principle, the operator must regard all applicable standards according prevention of damage due to lightning, which may otherwise damage the device.

The sample gas pumps are built-in units which may only be safely operated inside a housing providing adequate protection for persons against touching live or moving parts (fans). Water and contaminants must also be prevented from entering. The JSP-100 sample gas pumps offers protection from direct contact with an IP20 rating. Depending on the operating and ambient conditions, the required protection may vary and must be taken into account during installation.

Never block the vent, and the exhaust air – including from adjacent units – must not be immediately suctioned in.

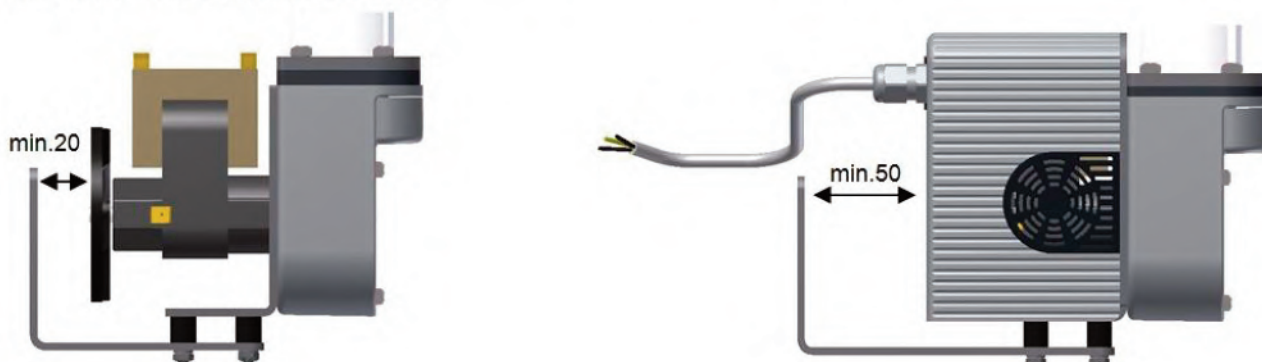
The motor is rated for ambient temperatures of 0 °C to +50 °C as well as installation altitudes ≤ 1000 m above sea level.

Please refer to chapter "Appendix" at the end of the operating and installation instructions for additional installation site ambient parameters.

4.2 Installation

Use suitable rubber-metal buffers when installing to mounting plates. We recommend buffers with a diameter of 10 mm, a height of 10 mm and a shore hardness of 70. These are also available from us.

The base angle of the sample gas pump features 4x M4 tapped holes for mounting the buffers. Suitable buffers and assembly brackets are accessories which may be ordered separately from us.



While installing the sample gas pump, there must be sufficient spacing between the motor and the rear wall (20mm). If you are using a sample gas pump with housing, the required distance between the housing and the rear wall is 50mm. This is due to the minimum permitted bending radius of the power supply line.

The specific mounting bracket for the various product variants can be obtained as an accessory. Using the appropriate mounting bracket guarantees the correct distance between the device and the rear wall.

4.3 Special condition moist sample gas

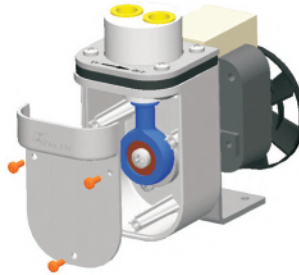
Applications where the sample gas is still moist may result in condensate forming in line and the pump body.

In these events the pump head must be suspended (pump body facing down).

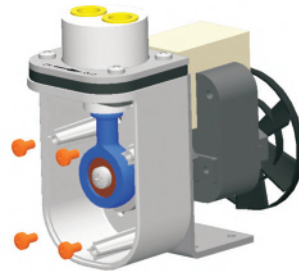
If the pump was not ordered this way, it can easily be converted on site.

Install the line between the gas output and condensate drain with a grade so the condensate can drain and does not collect inside the pump or the lines.

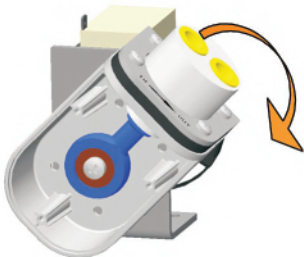
4.3.1 Conversion to pump body pointing down



Loosen the 3 Torx screws (M3x8) on the front cover (Torx T10)
Remove the cover



Loosen and remove the 4 Torx screws (M4x6) on the console (Torx T20)



Carefully turn the pump unit 180°. Then reinstall the 4 Torx screws and tighten to 3 Nm.
Before tightening the screws be sure the pump unit is centered in the base angle.



Now reinstall the front cover and secure using the 3 M 3x8 Torx screws.

4.4 Connecting gas lines

The G1/4 female threads for the respective screw-in connections are factory closed with plastic plugs to protect from dirt. Screw-in connections are generally not included in delivery, but are sold separately for metric or for imperial installation. Avoid mixed-material installation, i.e. metal piping to plastic bodies. If this cannot be avoided in isolated applications,

screw the metal connections into the pump body with care, never use force.

Lay the lines so the line at the inlet and outlet remains flexible for an adequate distance.

The pumps are marked **IN** for inlet and **OUT** for outlet at the mounting ring. Be sure the gas line connections are tight.

4.5 Electrical connections

WARNING



Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION



Wrong mains voltage

Wrong mains voltage may damage the device.

Regard the correct mains voltage as given on the type plate.

A switch or circuit breaker (in accordance with IEC 60947-1 and IEC 60947-3) is to be provided. This must be organized to be easily accessible for the operator. The switch must be labelled as an isolating device for the unit. It must not be inserted into a mains power line or interrupt the protective conductor. Furthermore, the switch must separate the sample gas pump from the live parts for all the poles.

The sample gas pump must be secured against unacceptable excessive warming by using a suitable overload protection (motor protection circuit breaker). Sample gas pumps with a BLDC motor have already integrated protection against excessive warming in the motor electronics.

Observe the rated current for the protective switch (230 V = 0,48 A, 115 V = 0,84 A, 12 V DC = 1,55 A, 24 V DC = 0,8 A).

Make sure that mains voltage **and** frequency meet the specifications of the motor (voltage tolerance $\pm 5\%$ and frequency tolerance $\pm 2\%$.)

JSP-100 Sample gas pumps are delivered as standard with a 3 m connecting cable.

If your sample gas pump has a factory-installed on/off switch on the housing, verify it is set to the zero position before connecting to power.

WARNING



Hazardous electrical voltage

The On/Off switch does not ensure switching off all poles.



It is essential to connect the protective earth conductor to the marked protection earth terminal. The protective earth has to be connected to the green/yellow wire of the connection cable (see fig. Electrical Connection).

Select mains and protection earth cross section according to the rated current.

For the electrical connections especially for the protective conductor use a cable cross-section from minimum 0,75 mm².

Obey differing specifications on the type plate. The conditions at the installation site must meet all specifications on the type plate.

All parts under voltage must be protected through appropriate measures against contact by persons or foreign body procedures.

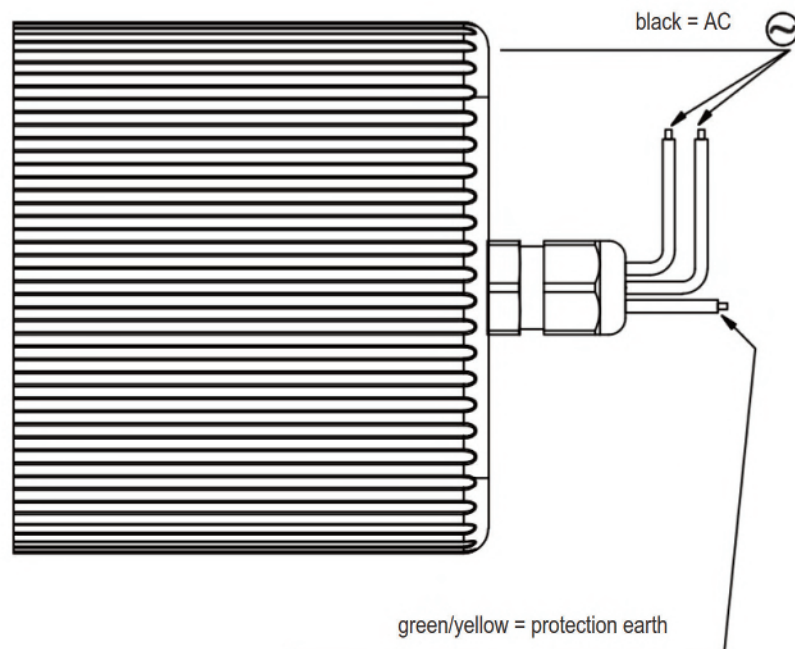
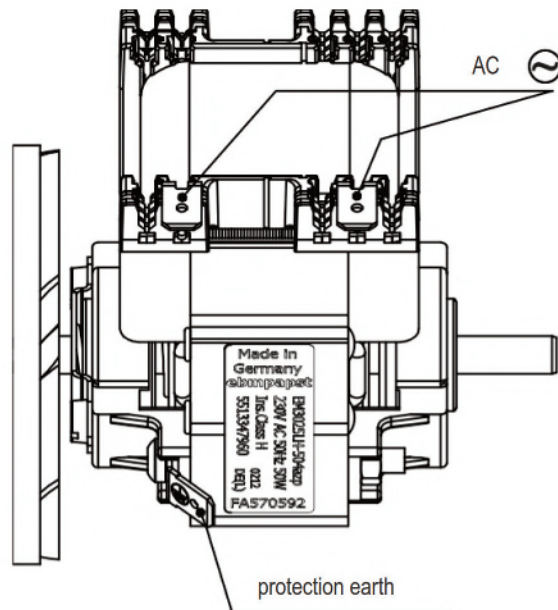
JSP-100 115 V/230 V

Fig. 1: Electrical connection

5 Operation and control

NOTICE



The device must not be operated beyond its specifications.

CAUTION



Hot surface

Burning hazard

According to the product type and operation conditions, the temperature may exceed 50 °C during operation.

Depending on the conditions at the installation site it may be necessary to provide these areas with appropriate warning signs.

DANGER



Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

- Check tightness of the measuring system before putting it into operation.
- Take care that harmful gases are exhausted to a safe place.
- Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.
- Protect yourself during maintenance against toxic/corrosive gases. Use suitable protective equipment.



5.1 Switching on the sample gas pump

Before switching on the unit, check:

- the hose- and electrical connections are not damaged and correct installed
- no parts of the sample gas pump have been removed (e.g. cover)
- the gas inlet and outlet of the sample gas pump are not closed
- the pre-pressure is below 0.3 bar
- a bypass is installed for continuous operation for throttling below 150 L/h
- ambient parameters are met
- data on the rating plate is met
- the voltage and frequency of the motor match the mains values
- electrical connections are securely connected and monitoring devices are connected and set as prescribed
- air inlets and cooling surfaces are clean
- ventilation slots in the housing cover are not covered or dirty, but are freely accessible
- precautions have been taken; earthing!

When switching the sample gas pump on make sure that

- no abnormal sounds or vibrations occur
- the flow rate is neither too low nor too high. This would indicate a cracked bellow

5.2 Operating the sample gas pump

CAUTION



Risk of injury by moving parts

The device may be damaged if it falls down or by impacts. Pay attention to any accessible moving parts. Operation without cover or with damaged cover is not allowed!

The sample gas pump is suitable for delivering gases only. It is not suitable for liquids.

The sample gas pump should be operated without pressure. A system pressure above 0.3 is not allowed. The gas outlet must not be closed. The flow rate must be at least 50 l/h (150 l/h with system pressure 0.3 bar). If the flow rate continuously is throttled below 150 l/h during operation, the flow rate must be controlled with a bypass valve.

NOTICE



Extreme throttling reduces the life time of the bellow.

If the pump is equipped with a bypass valve, the flow rate can be adjusted. Do not apply force when turning the valve, because the valve may be damaged otherwise! The turning range of the valve is about 5 turns.

6 Maintenance

Maintenance work on the device must be carried out in a cooled state.

The following section describes repair, maintenance and conversion work that can also be carried out easily by you on site, without the sample gas pump having to be sent to us.

During maintenance, remember:

- The equipment must be maintained by a professional familiar with the safety requirements and risks.
- Only perform maintenance work described in these operating and installation instructions.
- When performing maintenance of any type, observe the respective safety and operation regulations.

NOTICE



Please refer to the assembly drawings in the appendix when carrying out maintenance.

DANGER



Electrical voltage

Electrocution hazard.

- Disconnect the device from power supply.
- Make sure that the equipment cannot be reconnected to mains unintentionally.
- The device must be opened by trained staff only.
- Regard correct mains voltage.



DANGER



Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

- Check tightness of the measuring system before putting it into operation.
- Take care that harmful gases are exhausted to a safe place.
- Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.
- Protect yourself during maintenance against toxic / corrosive gases. Use suitable protective equipment.



CAUTION



Tipping hazard

Equipment damage.

Secure the device against tipping, sliding and falling.

CAUTION



Gas leakage

The sample gas pump should not be dismantled under pressure.

CAUTION



Hot surface

Burning hazard

According to the product type and operation conditions, the temperature may exceed 50 °C during operation.

Depending on the conditions at the installation site it may be necessary to provide these areas with appropriate warning signs.

Depending on the composition of the sample gas, it may be necessary to replace the in- and out-let valves from time to time. If the valves are heavily contaminated, especially after a short time, consider installing a particle filter upstream the pump. This increases the service life significantly. The screws of the fastening ring should be re-tightened after 500 hours of operation with torque 3 Nm.

6.1 Replacing the inlet and outlet valves



First detach the screw connections.

Unscrew the inlet or outlet valve with a wide slot screwdriver.

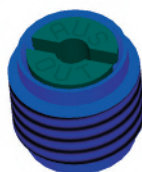
Attention: The PVDF and PVDF with bypass valve pump bodies already have PTFE gaskets installed in the gas inlets and outlets. These are also included in the valve spare parts kit. Remove the old gaskets before installing the new ones.

The inlet and outlet valves are identical. Their installation position determines the function. As shown in the image, the valves are blue on one side and black on the other. The valves are further marked "IN" or for inlet and "OUT" for outlet.

Inlet valve



Outlet valve



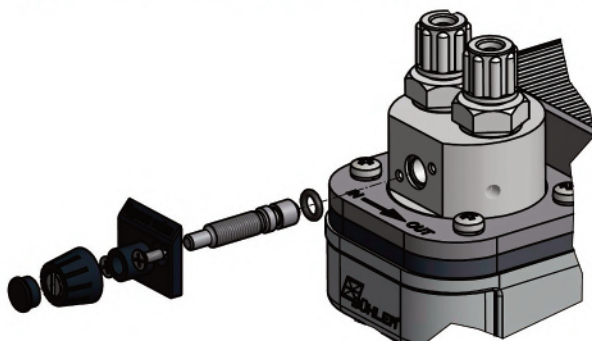
To assemble the sample gas pump, perform the steps in reverse order. When tightening the inlet and outlet valves be sure to observe the required tightening torque of max. 1 Nm.

CAUTION! Tightening the valves more will permanently deform the pump body, requiring replacement.

When installing the screw connection, ensure the connection is tight.

6.2 Replacing the O-ring on the bypass valve (optional)

- Loosen the two screws on the valve plate and carefully remove the entire unit.
- Coat the new O-ring with suitable O-ring grease (e.g. Fluoronox S90/2) and install in the spindle.
- Carefully insert the entire unit into the pump body while turning and tighten screws.



6.3 Replacing parts inside the pump housing



First detach the screw-in connections as described in chapter „Conversion to pump body pointing down“. Loosen the 4 Torx screws M4x18 (Tx20) and lift the pump head along with mounting ring and foam cover off the console.

6.4 Replacing the bellow



To replace the bellow carefully unscrew it from the connecting rod counter clockwise. Be sure not to lose any installed shims. Before reinstalling the bellow be sure it is not damaged. Reinstall hand tight in reverse order.

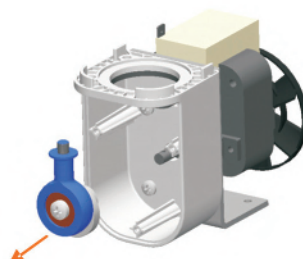
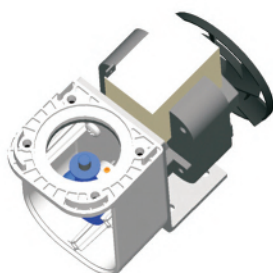
6.5 Crank gear replacement

NOTICE



Restrictions for connecting rod-eccentric replacement

The individual replacement of the eccentric, connecting rod or bearings is not allowed. Only the factory pre-assembled connecting rod-eccentric combination is suitable for replacement by the operator.



The crank gear consists of the connecting rod with ball bearing and eccentric.

After removing the bellow remove the set-screw inside the eccentric M3 using a size 1.5 setscrew wrench (or Tx6 for torx drive depending on the screw type).

The crank gear may now be removed from the motor shaft.

Before installing the replacement part remove any rust residue on the motor shaft and coat with non-resinous oil.

Reinstall the set screw with a drop of medium-strength threadlocker. When tightening the set screw, be sure it is seated in the locking hole on the shaft. Once it touches the bore, tighten the set screw 90° more.

6.6 Assembly of the sample gas pump

If the sample gas pump was removed, install in reverse order. Be sure the sealing surfaces of the below and pump head are clean and aren't scratched (even minimal grooves can cause leaks). First evenly tighten the 4 Torx screws M4x18 at 1 Nm. Then tighten the screws to 3 Nm.

CAUTION! Tighten each screw only once at 3 Nm. The bellow and pump body material (PTFE) is very weak and has high flow properties.

Check the sample gas pumps for tightness and proper function.

7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation. Repairs to the unit must be performed by JCT authorised personnel.

Please contact our Service Department with any questions:
P +43 2622 87201 or service@jct.at

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment using our online RMA form and follow the on screen instructions.
www.jct-gs.com/en/rma

7.1 Troubleshooting

CAUTION



Risk due to defective device

Personal injury or damage to property

- a) Switch off the device and disconnect it from the mains.
- b) Repair the fault immediately. The device should not be turned on again before elimination of the failure.



CAUTION



Hot surface

Burning hazard

According to the product type and operation conditions, the temperature may exceed 50 °C during operation. Depending on the conditions at the installation site it may be necessary to provide these areas with appropriate warning signs.

Problem / Failure	Possible cause	Solution
Pump does not start	– Mains disrupted or not correctly mounted	– Check fitting, fuse and switches
Pump does not transport	– Valves damaged or spoiled	– Blow out valves carefully or replace them
	– Bypass valve open	– Close bypass valve
	– Bellow cracked	– Replace bellow
Pump noisy	– Crank gear worn-out	– Replace crank gear
Insufficient delivery rate	– Leakage	– Retighten the head screws, regard allowed torque (chapter 6.6 Assembly of the Sample Gas Pump)
	– Bellow cracked	– Check bellow and replace it, if necessary
	– Valves damaged or spoiled	– Blow out valves carefully or replace them

Tab. 1: Trouble shooting

7.2 Spare parts and accessories

Please also specify the model and serial number when ordering parts. Upgrade and expansion parts can be found in our catalog.

Available spare parts:

Spare part	Item no.	Pos. in spare parts drawing 42/018-Z03-01-2
Bellow PTFE	85.97105	18
Set in- or outlet valves	85.97107	2 x 23/26
O-ring bypass valve	85.97108	28
Crank assembly spare parts kit	85.97106	6, 7, 8, 9, 10
JSP-100 Mounting Set	85.97109	39, 40, 41, 42, 43a

Tab. 2: Spare parts and accessories

8 Disposal

Dispose of parts so as not to endanger the health or environment. Follow the laws in the country of use for disposing of electronic components and devices during disposal.

9 Appendices

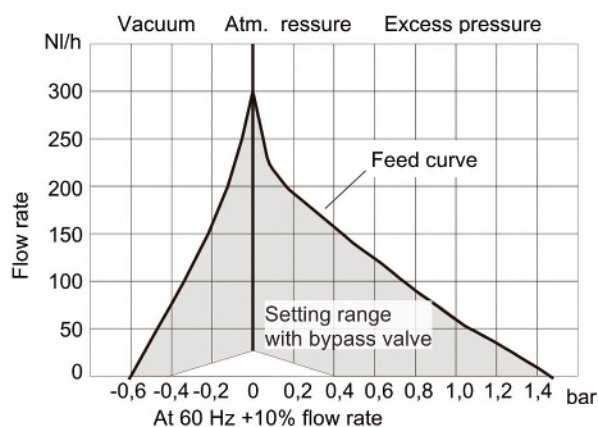
9.1 Technical data

Technical Data

Supply voltage/power input:	230 V 50 Hz 0.48 A 115 V 60 Hz 0.84 A
Type of protection OEM/housing:	IP 00/IP 20
Mechanical load	tested based on DNV-GL CG0339 vibration class A (0.7g) 2 Hz-13.2 Hz amplitude ± 1.0 mm 13.2 Hz -100 Hz 0.7 g acceleration
Weight (without accessories):	approx. 1.3 kg
Medium temperature:	70 °C
Ambient temperature:	0 °C to 50 °C
Nominal output:	280 L/h
Materials in contact with media:	PTFE, PVDF, Viton
Varies by configuration:	

The gas lines are connected via screw-in connections (G1/4 thread). The respective screw-in connections are sold separately.

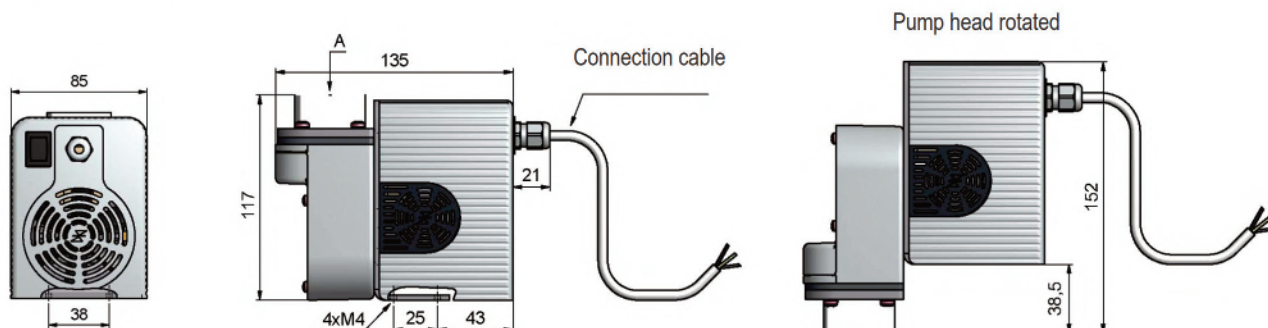
9.2 Feed curve



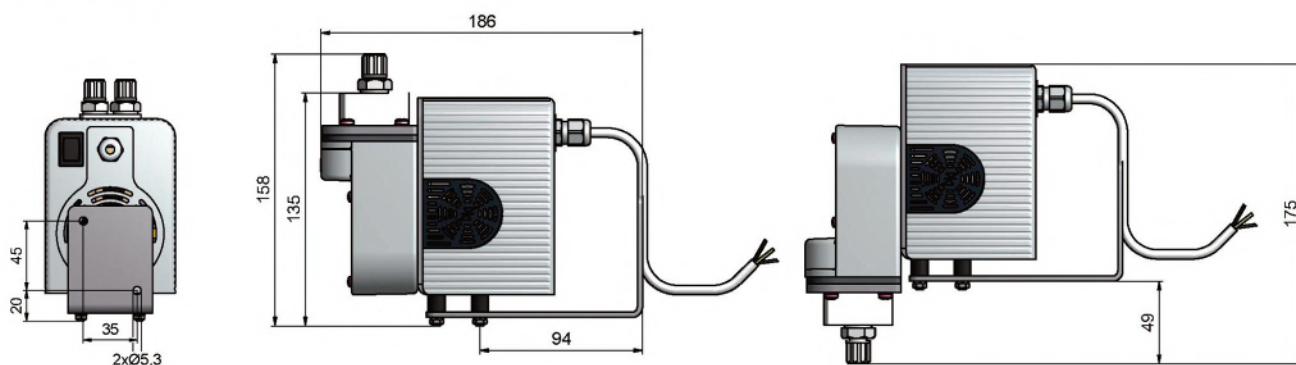
9.3 Dimensions (all voltages)

The sample gas pump may be connected by standard 3 m connecting cable.

without accessories:



with accessories:



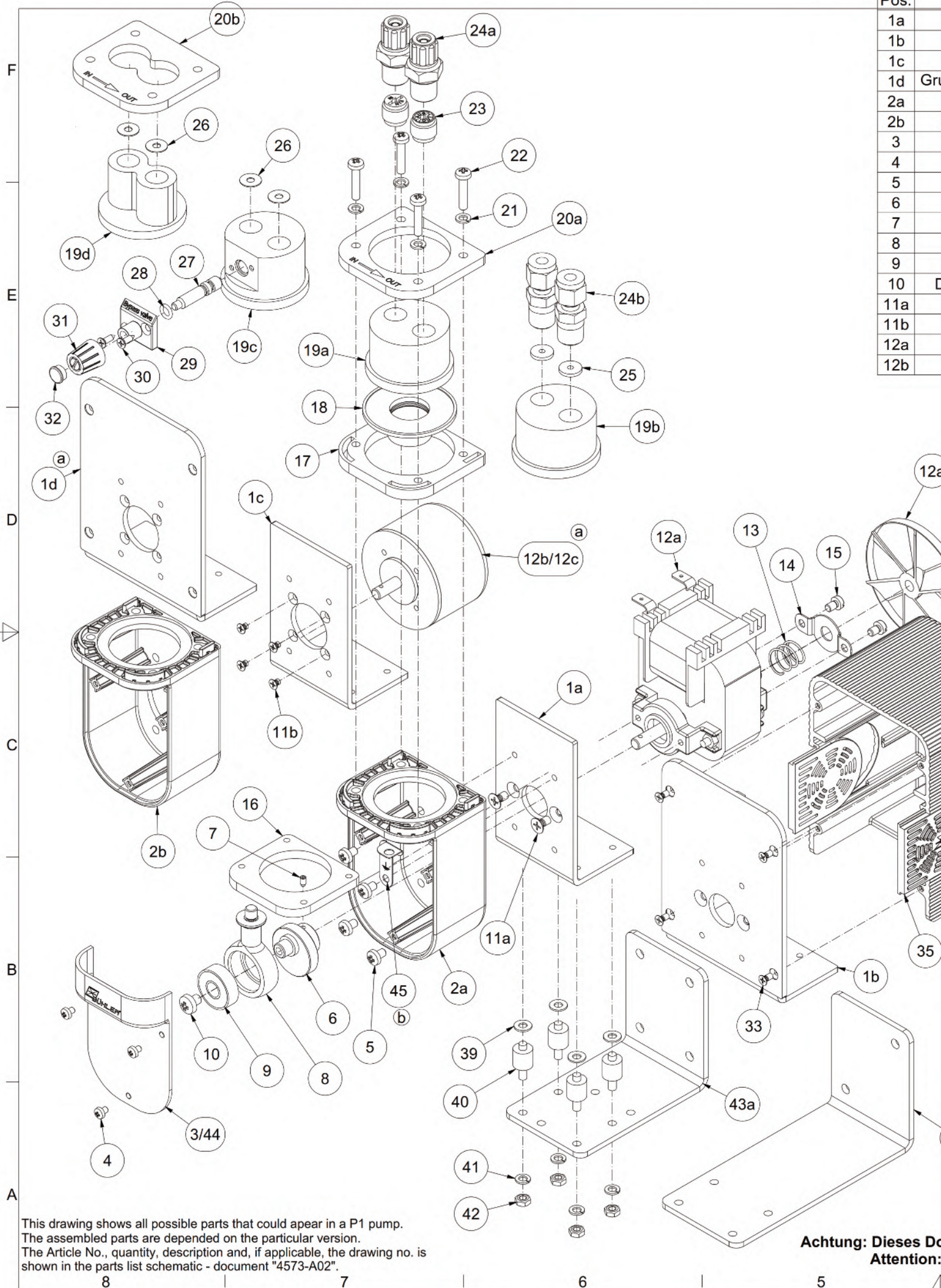
9.4 Order codes

Part No.

85.07103	JSP-100 Sample gas pump with bypass valve 230 V / 50 Hz
85.07104	JSP-100 Sample gas pump with bypass valve 115 V / 60 Hz
85.07105	JSP-100 Sample gas pump with bypass valve 115 V / 60 Hz / FM C-US

10 Attached documents

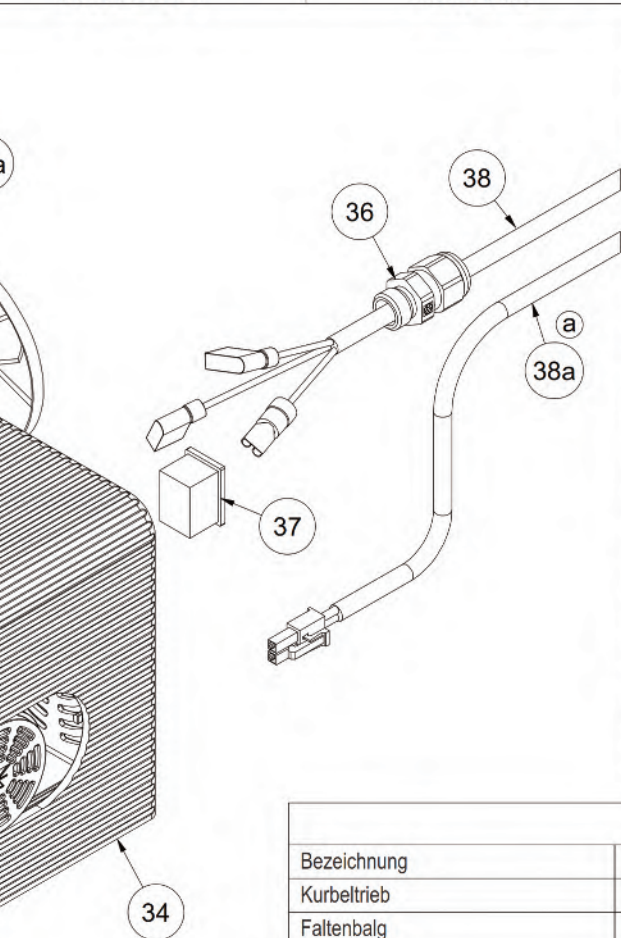
– Spare parts and assembly drawing: 42/018-Z03-01-2



This drawing shows all possible parts that could appear in a P1 pump.
The assembled parts are depended on the particular version.
The Article No., quantity, description and, if applicable, the drawing no. is
shown in the parts list schematic - document "4573-A02".

Achtung: Dieses Dokument ist ein Entwurf und darf nicht für die Herstellung von Bauteilen verwendet werden.
Attention: This document is a design and must not be used for the production of parts.

4			3		2		1	
Bezeichnung	Description	Pos.	Bezeichnung	Description				
Grundträger	base angel	12c	Motor BLDC mit Stecker	motor bldc with plug				
Grundträger Gehäuse	base angel enclosure	13	Feder	spring				
Grundträger BLDC	base angel bldc	14	Erdungsblech	protective ground sheet	F			
Grundträger Gehäuse BLDC	base angel enclosure bldc	15	DIN 85 M4x6	DIN 85 M4x6				
Pumpenkonsole	pump console	16	Gegenring	counter ring				
Pumpenkonsole BLDC	pump console bldc	17	Abdeckung	cover				
Konsolendeckel	cover	18	Faltenbalg	bellow				
E5451 30x8	E5451 30x8	19a	Pumpenkörper PTFE	pump head PTFE				
B7380 M4x6	B7380 M4x6	19b	Pumpenkörper VA	pump head SS	—			
Exzenter	Eccentric	19c	Pumpenkörper PVDF Bypass	pump head PVDF bypass				
DIN 915 M3x5	DIN 915 M3x5	19d	Pumpenkörper PVDF	pump head PVDF				
Stößel	Plunger	20a	Befestigungsring	mounting ring				
Bearing	Kugellager	20b	Befestigungsring nur PVDF Körper	mounting ring only PVDF head				
DIN 7985 M5x6 or M5x8	DIN 7985 M5x6 or M5x8	21	DIN 127 B4,1 oder DIN 6796	DIN 127 B4,1 or DIN 6796	E			
WS 9475 M4x8	WS 9475 M4x8	22	B7380 M4x20	B7380 M4x20				
DIN 965 M3x6	DIN 965 M3x6	23	Ein- Auslassventil	In- Outletvalve				
Motor AC	motor AC	24a	Verschraubung PVDF	Fitting PVDF				
Motor BLDC	motor bldc	24b	Verschraubung VA	Fitting SS				



25	Verdränger	displacer	
26	Dichtscheibe	valve sealing	
27	Spindel	spindle	
28	O-Ring	o-ring	
29	Ventilplatte	valve plate	
30	DIN 7982 2,9x9,5	DIN 7982 2,9x9,5	
31	Drehknopf	knob	
32	Abdeckung	cover	
33	E5454 30x8	E5454 30x8	
34	Gehäuseteil 1	enclosure part 1	
35	Gehäuseteil 2	enclosure part 2	
36	Kabelverschraubung	cable gland	
37	Blindstopfen	dummy plug	
38	Anschlusskabel	connection cable	
38a	Anschlusskabel BLDC	connection cable bldc	
39	DIN 125 A4,3	DIN 125 A4,3	
40	Gummi Puffer	vibration damper	
41	DIN 127 B4,1 oder DIN 6796	DIN 127 B4,1 or DIN 6796	
42	DIN 934 M4	DIN 934 M4	
43a	Montagekonsole	Mounting console	
43b	Montagekonsole Gehäuse	Mounting console enclosure	
44	Konsolendeckel mit Lüftungsschlitzen	Cover with ventilation slots	
45	Potentialausgleichsblech	Equipotential bonding sheet	

Ersatzteile / Spare parts			
Bezeichnung	Description	Artikel Nr. / Article no.	Pos.Nr. / Pos.no.
Kurbeltrieb	Crank assembly	85.97106	6/7/8/9/10
Faltenbalg	Bellow PTFE	85.97105	18
O-Ring	O-ring	85.97108	28

43b

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Alle Kanten gratfrei	Alle Rechte vorbehalten	Maße ohne Toleranzangabe nach ISO 2768-mK	Maßstab: 1:1,6	Masse:
✓ = √ RoH		Datum: 13.10.2015	Werkstoff:	
✓ = √ Rz 63		Name: Sundergeld	Benennung:	Exploded view of the P1.x Pumps
✓ = √ Rz 16			ZeichnungsNr.:	42/018-Z03-01-2B
✓ = √ Rz 4			Art.Nr.:	42...
			Arbeitsanweisung:	