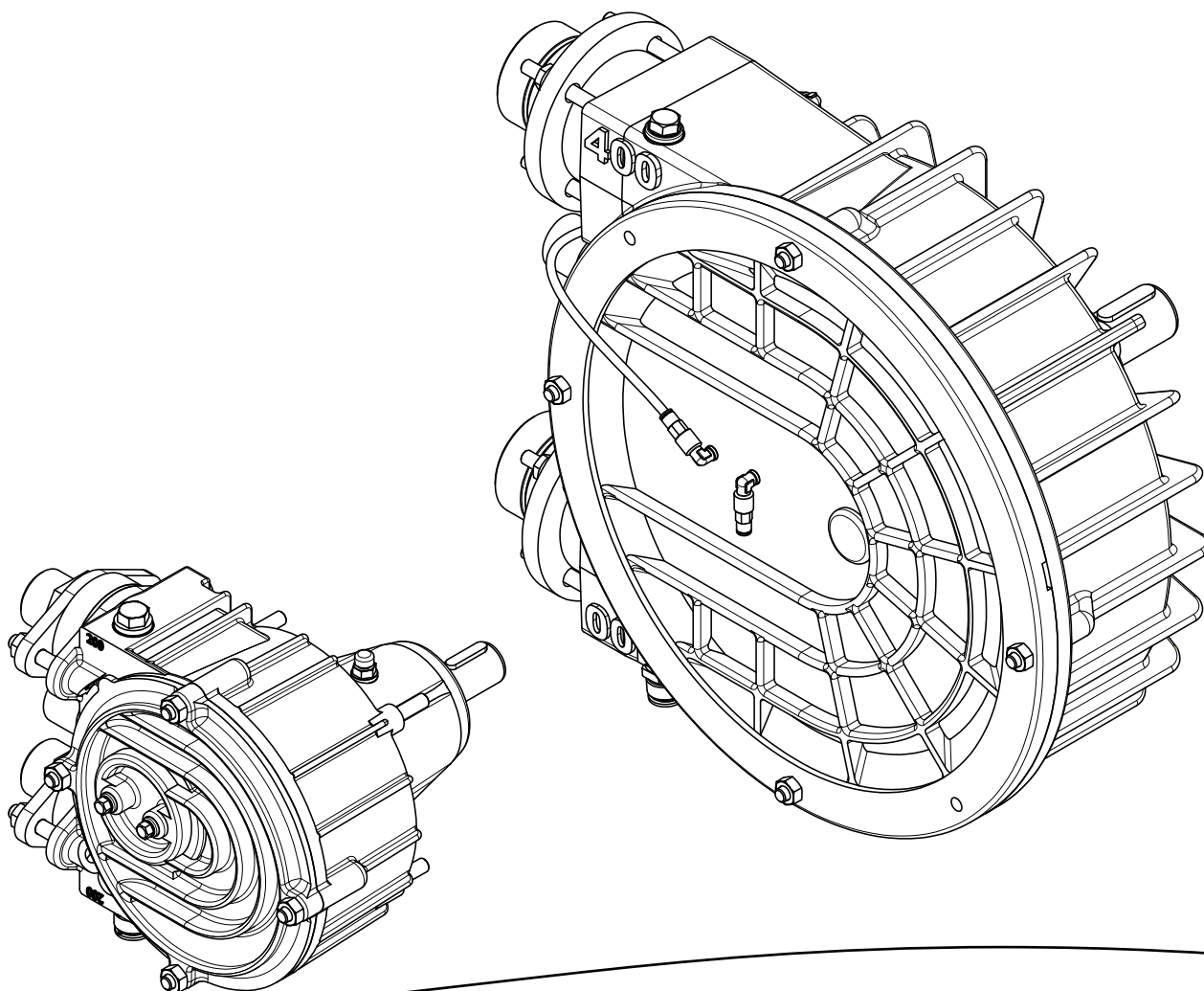


ELRO[®]

BA-IP/XP-GB/01.20

Peristaltic Pumps Series IP 100-800 Series XP 200-800

Operating and
Installation Instructions
Installation, Operation
and Maintenance



CRANE[®]

www.elropumps.com
www.cranecpe.com

**This is the translation of the original declaration of conformity for
ELRO peristaltic pumps series IP and XP**



EC Declaration of Conformity

in compliance with the Machinery Directive 2006/42/EC

We hereby declare, that the pump units manufactured in series production

Designation: ELRO Peristaltic Pump and
ELRO peristaltic pump heads with/without
mounting frame

Series: IP 100, IP 200, IP 400, IP 600, IP 800

Manufacturer: Crane Process Flow Technologies GmbH
Heerdter Lohweg 63-71
40549 Düsseldorf

Serial number: (see identification plate)

in the version delivered by us, is in compliance with the following applicable regulations:

EC directives: Maschinenrichtlinie 2006/42/EG
EMV-Richtlinie 2014/30/EU

Harmonized standards: EN ISO 12100:2011-03, EN ISO 13857:2008-06,
EN 809:2012-10

Mr. Ralf Rennwanz is authorized to compile the technical documents.

Crane Process Flow Technologies GmbH
Heerdter Lohweg 63 - 71
40549 Düsseldorf

Place, date: Düsseldorf, 01.01.2019

Signature of manufacturer:

A handwritten signature in black ink, appearing to read 'H.-D. Ptak', written over a horizontal line.

Information on signatory: H.-D. Ptak, Geschäftsführer



EC Declaration of Conformity

in compliance with the Machinery Directive 2006/42/EC

We hereby declare, that the pump units manufactured in series production

Designation: ELRO Peristaltic Pump and
ELRO peristaltic pump heads with/without
mounting frame

Series: XP 200, XP 400, XP 800

Manufacturer: Crane Process Flow Technologies GmbH
Heerdter Lohweg 63-71
40549 Düsseldorf

Serial number: (see identification plate)

in the version delivered by us, is in compliance with the following applicable regulations:

EC directives: Maschinenrichtlinie 2006/42/EG
EMV-Richtlinie 2014/30/EU

Harmonized standards: EN ISO 12100:2011-03, EN ISO 13857:2008-06,
EN 809:2012-10

Mr. Ralf Rennwanz is authorized to compile the technical documents.

Crane Process Flow Technologies GmbH
Heerdter Lohweg 63 - 71
40549 Düsseldorf

Place, date: Düsseldorf, 01.01.2019

Signature of manufacturer:

A handwritten signature in black ink, appearing to read 'H.-D. Ptak', written in a cursive style.

Information on signatory: H.-D. Ptak, Geschäftsführer



EU Declaration of conformity

in compliance with the terms of Directive 2014/34/EU for equipment authorised for use in potentially explosive environments

The manufacturer: Crane Process Flow Technologies GmbH
Heerdtter Lohweg 63-71, 40549 Düsseldorf

declares that the pump units manufactured in series production, including drive and accessories,

Description: ELRO peristaltic pump with oil-sight glass

Series IP, sizes: 100, 200, 400, 600 and 800

Series XP, sizes: 200, 400 and 800

Materials: Pumping hose: NBR, CSM, NR, EPDM
all hoses are in antistatic design nitrile (NBR, FDA compliant) with insulating hose core: Conformity for liquids of low conductivity (< 50 pS/m) only with ignition risk assessment carried out by the operating company. Hereby, it must be verified within the framework of conveying tests that there is no risk of high charging on the sides touched by the rotor of the conveying hoses.

Connecting ports: Stainless steel, PP electrically conductive

Base frame: Flanged engine frame with coupling guard casing and frame for spur-wheel gear motor

Drives and couplings: Specific manufacturer's declarations of conformity are supplied with drives and couplings

Installed electrical components: Specific manufacturer's declarations of conformity are supplied with all of the electrical units


in the version delivered by us, is in compliance with the following applicable regulations:

EU Directive: Directive 2014/34/EU for equipment authorised for use in potentially explosive environments

Conformity assessment method: Equipment group II, category 2G, explosion group IIC
Temperature class T4, equipment protection level (EPL) Gb

Harmonised standards: DIN EN 1127-1:2011-10
DIN EN ISO 80079-36:2016-12
DIN EN ISO 80079-37:2016-12

Place, date: Düsseldorf, Germany, 06.12.2019

Signature of manufacturer: 

Information on signatory: H.-D. Ptak, Manager

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1. Introduction

ELRO® Peristaltic pumps IP/XP are dimensioned as pumps in accordance with chapter 1, article 1, section (2), paragraph (j), point (ii) of the pressure equipment directive and are therefore no pressure equipment as defined by the EC pressure equipment directive 2014/68/EEC.

The following instructions refer only to the pump.



Caution!

Since the pumps will be used in combination with other assemblies, such as couplings, transmissions and motors, you must also strictly observe and comply with the operating and maintenance instructions for these components as well as the corresponding notes on safe and reliable operation.

Schematic design of a peristaltic pump:

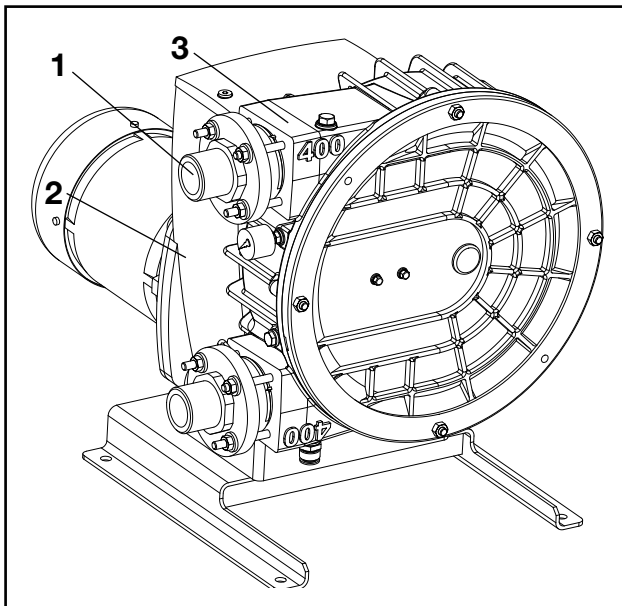


Fig. 1 Standard installation

- | | |
|-----------------|------------------------|
| 1 Suction side | 3 Identification plate |
| 2 Pressure side | |

These instructions contain information for installation, operation and maintenance of ELRO IP peristaltic pumps.

You should therefore thoroughly read these

instructions before use and always follow the information contained therein.

All personnel involved in activities on pump or equipment must have read this manual, especially the chapter "Safety" before starting work. This is too late once work has started.

This applies especially for persons who work on the pump only occasionally, e.g. for maintenance and cleaning work.

Each pump is subject to stringent inspections and function tests before leaving the factory.

You should always bear in mind that correct function, a long lifetime and optimal operational reliability of the pump mainly depend on

- correct installation
- correct commissioning and
- proper and scheduled maintenance.

Enquiries concerning service, spare parts or repairs should be addressed to the manufacturer or an authorized dealer.

Always provide the following information:

- Series
- Pump size
- Serial number of pump

This information is stamped on the identification plate on top of the pump.



Caution

When returning pumps or pump parts to the manufacturer or an authorized dealer for repair or overhaul, the delivery must be accompanied by a certificate stating that the pump is free of product or other aggressive or hazardous substances.

1.1 Warranty

The correct function of each ELRO peristaltic pump is checked at the factory before shipment. The manufacturer or authorized dealer assumes warranty for the product as specified in the effective terms of sales and delivery. Faults resulting from the non-compliance with the aforementioned regulations and notes can only be rectified at the cost of the customer.

1.2 Transport, storage

In order to avoid any problems you should

- check the delivered goods against the delivery note for completeness and correctness,
- check that pumps with drive units have the instruction manual for the drive upon arrival of the goods.

Be careful when unpacking the pump and proceed as follows:

- Examine the packaging for transport damage.
- Take the pump carefully out of the packaging.
- Examine the pump for any visible damage.
- Remove all plugs from the pump ports.



Caution!

Consider the indicated weight before attempting to lift the pump.

Only use lifting gear of appropriate capacity.

Do not step or stand under suspended loads.

Pumps without drive: The hoisting rope must be slung around pump body and drive shaft.

Pumps with drive: The hoisting rope must be slung around pump body and motor.



Caution!

In order to avoid the sling slipping, the rope must be crossed over at the hook.

If the pump is not installed immediately, it should be packed up again and stored in a suitable place. In this case the following points must be observed:

- All pump ports must be closed with appropriate plugs.
- Pumps with corrosion protection must be packed up again and stored in the original packaging material.
- The pump must be stored in a clean, dry and vibration insulated place. If an increased level of dust and humidity is likely, the pump must be covered with a material that provides sufficient protection until final installation.

1.3 Function

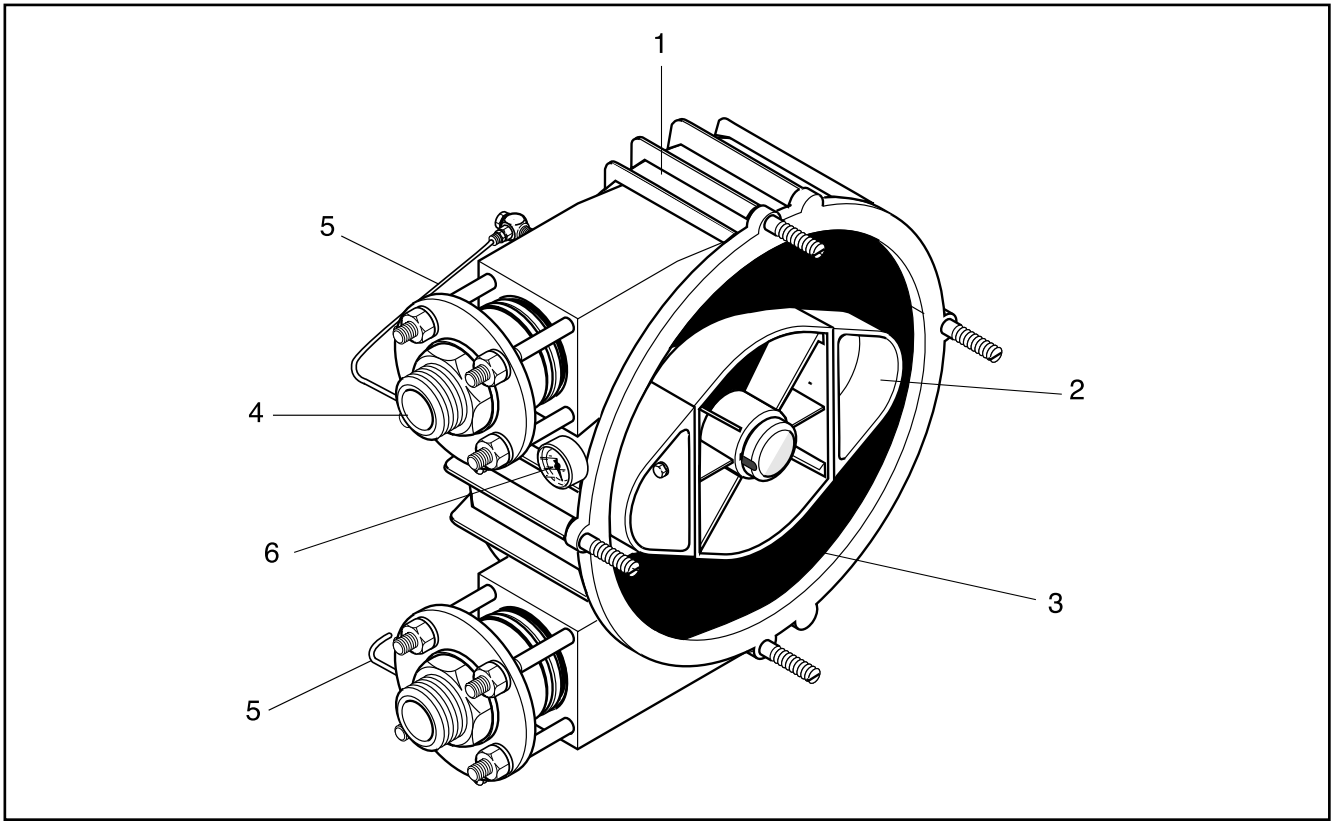


Fig. 2 Pump head

- 1 Torsion resistant cast aluminium housing
- 2 Rotor with sliding pieces
- 3 Hose with vacuum bore
- 4 Connections (standard)
- 5 Vacuum channel
- 6 Vacuum gauge to monitor the vacuum in the pump

The IP/XP series of peristaltic pumps works on the basis of a patented vacuum principle.

IP principle

Air is pumped through an additional channel in the hose (see cross section Fig. 3) out of the upper area of the pump housing.

XP principle

Air is pumped out of the top section of the pump housing via a diaphragm on the pump cover.

This generates a vacuum inside the sealed aluminium housing. This can be read directly off the vacuum gauge (6), which is attached to the pump. The vacuum gauge pointer must move after switching on the pump and, depending on

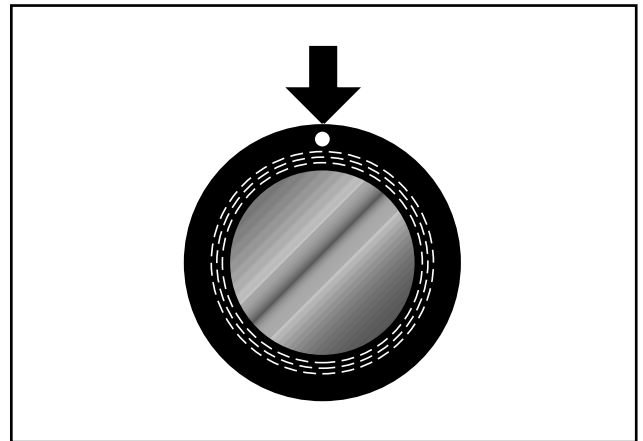


Fig. 3 Position of vacuum bore (IP)

the pump type and number of revolutions, a vacuum will slowly build up (approx. >3min). Otherwise, see to Chp. 6 Troubleshooting.

This additionally aids the restoring force of the hose to its original full cross section.

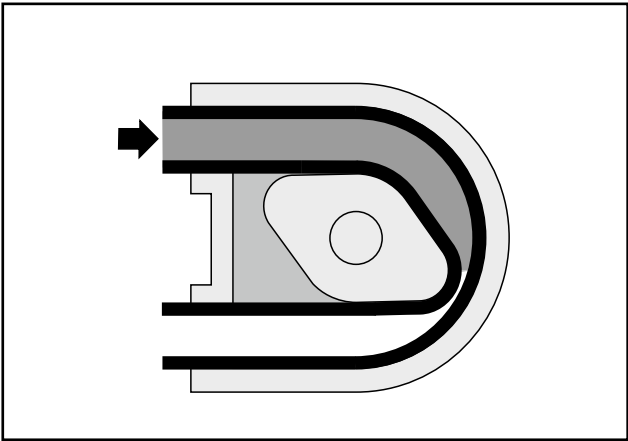


Fig. 4

The rotor rotates inside the lubricant filled pump housing and compresses the hose with its outer rotor ends. This process hermetically separates the suction from the discharge side (Fig. 4).

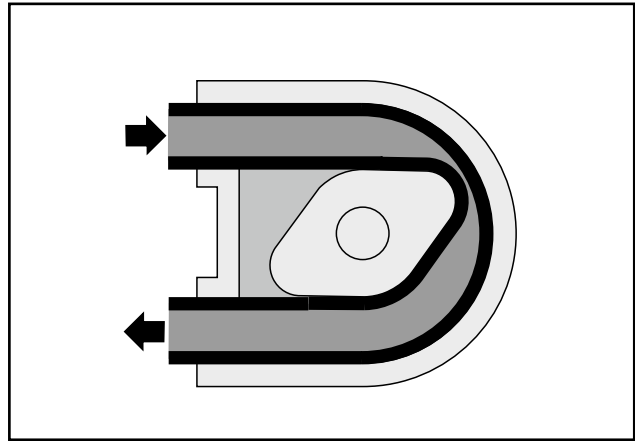


Fig. 6

The rotation of the rotor displaces the product inside the hose towards the outlet port on the discharge side. This generates a vacuum on the suction side each time the hose opens, which ensures constant drawing in of product. This can take place even when there is no product in the pump (dry priming) (Fig. 6).

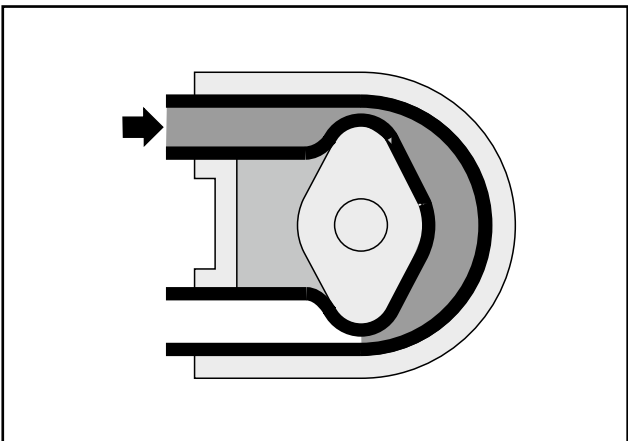


Fig. 5

The volume (Fig. 5) between both rotor ends is exactly half the displacement per revolution.

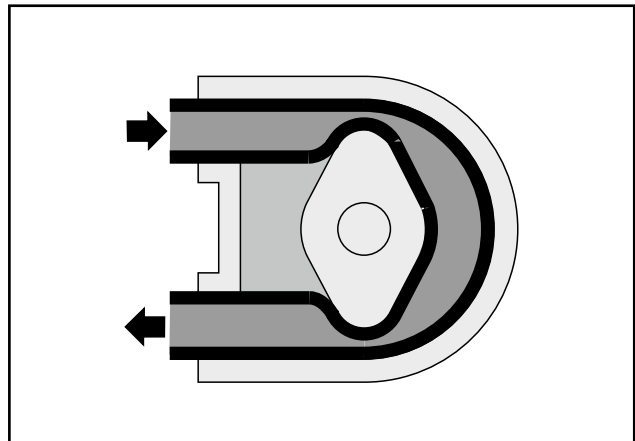


Fig. 7

With each rotation of the rotor the two sliding shoes discharge product towards the discharge side, while the same quantity is drawn in by the vacuum on the suction side (Fig. 7).

2. Safety

2.1 General information

Make sure that the pump is installed in compliance with all applicable national safety regulations.

Always observe all applicable accident prevention instructions and implementing regulations.

The following precautions must be applied before performing maintenance work.

If the product to be pumped is a hazardous or noxious substance, the system must be neutralized and vented.



Caution!

Danger of burning!

Depending on operating conditions the pump may reach temperatures too high to touch. You should therefore switch off the pump and let it cool down before touching it.

- Disconnect main drive unit and pump from the electric power supply (e.g. pull out the mains plug).
- Depressurize the pump head.

The peristaltic pump must not be operated with the pump cover open.

When cleaning the pump manually make sure that all necessary precautions have been applied.

All incorrectly installed, unprofessionally operated or insufficiently serviced machines and pumps are potential safety hazards.

The non-observance of relevant safety measures may cause injury to operating personnel or damage to the pump. Pump unit safety guards must be properly assembled again before restarting.

The pump must be shut down or should not be restarted if any defects are found which could

affect the operating safety and reliability of the pump.

2.2 Intended use

The IP series of peristaltic pumps has been designed and developed for stationary use and permanent operation in industrial applications.



Caution!

The maximum pre-pressure is 13 bar.



Danger

Pumps without explosion protected drive must not be used in explosive environments under any circumstances.

Pumps with glycerine lubricant

The following substances may not be pumped or stored in the same room:

Substances which react severely up to explosively with glycerine.

Examples:

- Calcium hypochloride
- Chlorine
- Chromium trioxide
- Potassium permanganate
- Sodium peroxide
- Phosphorus pentoxide
- Phosphorus triiodide
- Nitric acid
- Sulphuric acid
- Hydrogen peroxide



Danger

Please check before using the peristaltic pump that no chemical reactions can occur when the product comes into contact with the silicone or glycerin lubricant.



Danger

Pumped products which lead to chemical reactions on contact with aluminium may on no account be pumped with a peristaltic pump.

Before using the pump for food applications, make sure that all pump parts that come into contact with the product have been approved for food (see Chapter 8.1.3/8.1.4). All normal hygienic requirements for the pumping of foodstuffs must be strictly observed.

Temperatures

The permissible ambient temperature range is -20 °C to +40 °C.

Operating temperatures on pump hoses	
NR	-20° C – +80° C
NR (Lebensmittel)*	-20° C – +80° C
NBR	-10° C – +80° C
NBR (Lebensmittel)**	-10° C – +80° C
CSM	-20° C – +80° C
EPDM*	-30° C – +80° C

* only for IP series
 ** only for XP series

2.3 Unintended use

The operating safety and reliability of the supplied pump can only be assured if it is used for the purpose it is intended for. The limits mentioned in the technical data sheet must not be exceeded under any circumstances.

Motors with a frequency converter may not be operated at speeds lower than half the nominal speed without an external fan being available.

It is prohibited to operate the pump without a sufficient quantity of lubricant. Please refer to the data sheets for the necessary filling volumes. ATEX pumps have an oil sight glass for inspection purposes. It is not permitted to operate the pumps for more than 15 minutes without pumped medium. The temperature of the pumped medium must not exceed 80 °C.

2.4 Operation of pump

The pump must only be operated by trained, instructed and authorized persons. Any responsibilities must be clearly appointed before starting operation and should always be complied with.

Strictly observe the operating instructions for the connected drive.

2.5 Conversions and alterations to the pump

Conversions and alterations to the pump are strictly prohibited.

However, this does not include minor changes that do not affect safety and reliability, or measures that even enhance the safety. Safety installations must not be made ineffective or changed or used in a way contradicting their purpose.

2.6 Symbols and notes on safety



Danger!

Note on danger which, if not observed, may lead to severe injury or even death.



Life hazard!

Note on danger which, if not observed, may lead to severe injury or even death.



Caution!

Note on danger or hazards from insecure handling and working procedures that may cause injury or extensive damage to equipment and property.



Warning – dangerous electric voltage.

Contact with live parts can cause immediate death. Doors and covers (e.g. hoods and lids) marked with this sign must only be opened by “specialists and/or instructed persons“ after the respective operating voltage (input terminal voltage, operating voltage or external input voltage) has been switched off.



Operating safety of equipment at risk.

The non-observance of this note affects the operational reliability and can lead to pump damage.



**Environment:
 Gives tips on how to handle the**

product in an environmentally friendly way.



Provides useful hints for the optimal and economical use of the product.



Danger of explosion: Provides special information on how to handle explosive products or work in explosive environments.

Attention!

In this manual the attention symbol precedes all safety notes referring to instructions, regulations or work sequences, which must be strictly complied with.

In this manual these symbols are used to highlight notes on possible dangers.

2.7 Maintenance work

Maintenance work must only be performed by qualified and specially instructed persons. This applies particularly for all work on electric, hydraulic and pneumatic equipment.

Keep unauthorized persons away from the pump.

Mechanical and electrical repairs and maintenance work must only be carried out by qualified specialists. The professional execution of this work must be examined and approved by a highly skilled and responsible "inspector".

Before starting repair and maintenance work the equipment must be switched off and shut down and secured against unintended or unauthorized restarting.



Before working with the pump, it must be moved from the ATEX area to a work area

Before starting work on electrical systems and equipment make sure that the system is reliably zero potential.

Apart from this the pump/system must be reliably secured against unexpected restarting.

- lock the switch and remove the key and/or
- attach a warning sign to the main switch.

The customer (or a person authorized by him) is responsible for the compliance with all accident prevention instructions applicable at the place of installation.

As a measure to avoid injury all maintenance, adjustment and repair work should only be carried out using permitted and appropriate tools and working aids.

Blown fuses must not be repaired or bridged and may only be replaced by fuses of the same type.

Cooling facilities, such as ventilation slots, must not be covered or made ineffective.

Rotating or moving parts must be reliably stopped before starting work. It must be assured that these parts will not start to move while work is in progress.

Do not touch rotating parts and always keep a safe distance to avoid clothing or hair being caught.

Always wear protective clothing suitable for the job and the dangers involved.

Depending on the type of work to be performed sufficient protection can be provided by e.g. wearing the following protective clothing: protective goggles, ear defenders, working boots, safety gloves, etc.

Protective clothes should be of tight fit.

If your face might come in contact with chemicals, metal splinters or dust during work, you should wear full face protection with safety goggles.

Always wear safety boots as there is a risk of heavy objects tipping over, slipping or coming loose for any other reason, thereby causing danger to your feet.

2.7.1 Health and safety information on electric equipment

Depending on the version, the pumps may be equipped with electric accessories (controls, motor drives).

Severe damage to health and property can be caused by:

- unauthorized removal of covers
- inappropriate use of pump
- inadequate maintenance

Before starting installation work on electrical equipment this equipment must be reliably zero potential.

Cover non-insulated live power lines and plug connections against unintended contact.

Electric components stored and not used for a longer period of time should be carefully inspected before use, to ensure that the insulation is still intact.

Wet electric assemblies or component parts, which are perfectly zero potential in dry condition, may still be live.

Before touching humid or wet electric components check by measuring whether parts that could be touched are still live.

When working on high voltage assemblies after voltage has been switched off, connect the supply cable to ground and short components, e.g. capacitors, via a discharge combination.

Never attempt to insert any objects through the openings on the pump or attached equipment. This may cause short circuits and electric shocks with danger to life and limb.

2.7.2 Health and safety information for work on pressure lines

Always relieve the pressure before starting work on pressure lines.

- Close shut-off valves
- Vent pressure lines



Caution!

Be careful when checking for leaks on pressurized lines. Fluids or air escaping under pressure can penetrate clothes and skin.

Be careful when loosening or changing pressure lines; lines mixed up by mistake may reverse the function.

Always relieve the pressure from hydraulic or pneumatic systems and move mobile parts to a safe home or parking position before starting work.

Take care when handling hazardous (caustic, harmful) fluids.

- Always wear your personal protective outfit (e.g. gloves, goggles, tight fitting clothes).
- In case of skin contact, inhalation of harmful vapours or eye injury you should immediately contact a doctor.

2.7.3 Regulations and instructions on lubrication

Lubrication work must only be carried out by authorized personnel. The professional execution of this work must be examined and approved by a highly skilled "inspector".

Unauthorized persons must not be permitted to work on machines or units or in their vicinity.

Lubricants and oils must not come in contact with naked flames or glowing parts.

When working on assemblies and components (e.g. motor, gearbox) you must also consider the specific instructions and lubrication instructions for these assemblies and components.

The complete system must generally be switched off and secured against unintended and unauthorized restarting before starting lubrication work.

(Exception: Lubrication work that can only be performed when the system is running).

As a measure to avoid injury all lubrication work should only be carried out using permitted and appropriate tools and working aids.

Rotating or mobile parts must be shut down and reliably secured against restarting before starting work.

Do not touch rotating parts and always keep a safe distance to avoid clothing or hair being caught.

Strict cleanliness is of utmost importance during initial filling and when topping up or changing lubricant so that no foreign matter will enter through the lubrication point.

Overflowing and spilling of oil must be avoided.

Wipe off excessive and emerging grease.

Avoid skin contact with oils and grease – wear protective clothes.

With certain lubricants, e.g. low flammability hydraulic fluids, the special safety instructions for these substances must be observed. (See notes on packaging and instructions of manufacturer).

2.8 Noise emissions (2003/10/EC)

In a room with several pumps you may experience an extreme development of noise. Depending on the sound pressure level the following measures must therefore be applied:

below 70 dB (A): No special measures.

above 70 dB (A): Persons who are permanently in the room must wear ear defenders.

above 85 dB (A): Room with dangerous noise level!

Each entrance must have a clearly noticeable warning sign, to warn persons from entering the room without ear defenders.

Maximum noise emission level < 70 dB(A) (on drive motor) determined from measurements acc. to DIN EN ISO 9614 following DIN EN ISO 11204.

Peristaltic pump I80SNC, 15kW at 28 rpm
Delivery pressure 1 bar
Product: Water, 20 °C

(With a different pump rating and pump size or other application related conditions the max. sound pressure level may deviate.)

2.9 Use of pumps in potentially explosive areas

When using pumps in potentially explosive environments or when pumping combustible liquids, you must check that the unit is suitable according to the declaration of conformity in terms of the applicable ATEX directive for the intended area of use.



If pumping is carried out in explosive areas we recommend using a hose rupture monitoring system.

The chapter “Equipotential bonding/earthing” and “Vibration distance” must be observed when installing the pumps.

Earthing of the pump by means of earthing screw or discharging hoses must take place before bringing the pump into the explosion endangered area.

All connected pipelines, components and hoses must be electrically conductive (bleeder resistance <1 Mega Ohm Meter; surface resistance <1 Giga Ohm).

Chapter 8.2.1 shows all units for use in explosive environments.

Chapter 8.2.4 shows the category division of equipment groups I and II.

3. Installation instructions

3.1 Points to be considered before installation

Installation work may only be performed by professionals and in compliance with the safety regulations (see chapter 2).

The pump is delivered ready for operation.

Before commissioning make sure that pump and drive unit are correctly assembled. The standard pump is delivered with suction port at top/pressure port at bottom – connections on left-hand side (Fig. 8). Pipe lines must be routed in a way that the weight of the pipes does not rest on the pump.

If the pump is to be installed in a rigid pipe system it is recommended to use flexible pipe sections (e.g. expansion joints, pressure resistant hoses) on pressure and suction side to reduce pulsations.

In order to avoid damage to the pump new installations should generally be checked for any debris (welding beads, pieces of wire, etc.) in tank and pipeline system.

Check the pump arrangement to ensure that suction lift and discharge head are not exceeded. Check also motor speed and power in kW.

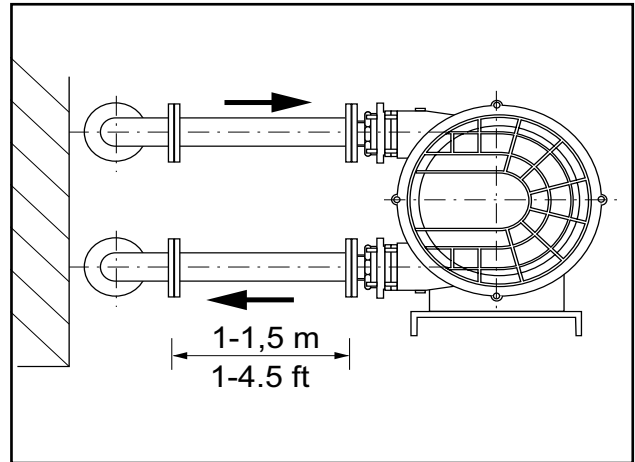


Fig. 8 Standard connections

The pump diagram can be used to check the flow rate at a given speed.

3.2 Installation instructions for peristaltic pump heads

The customer is obliged to make the necessary design calculations for shaft-hub connection, coupling and drive unit himself.

The data sheets “Required drive power and torque” can be found in Annex 8.4.

Peristaltic pump head without base frame

Align the pump head in accordance with the ordered socket position and suction side to the structure it is to be connected to (see sticker for tp side, suction side and sense of rotation).

Before taking the pump head into operation assemble the supplied ventilation valve at the upper side of the shaft neck (Fig. 9).

Peristaltic pump head with base frame

The correct sense of rotation in accordance with the ordered suction side must be assured.

Frame for flange motors:

The manufacturer recommends the use of couplings with Taperlock clamping bushings to simplify the alignment of coupling halves.

If a coupling is ordered, a fitting Taperlock clamping bushing can also be delivered to match the planned diameter of the gear shaft.

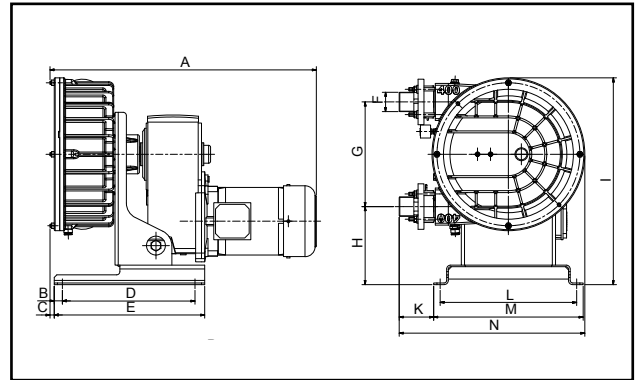


Fig. 9 Main dimensions

Connection measurements [mm]			
Type	Shaft dimension Pump head	Flange diameter Gear motor	max. length Gear shaft
IP100	ø30 x 60	160	70
IP/XP 200	ø30 x 60	160	70
IP/XP 400	ø40 x 80	250	110
IP600	ø60 x 120	350	140
IP/XP 800	ø60 x 150	450	147/170 *)

*) Special frame

Type	A	B	øC	D	E	ca. Pump weight
IP100	355	262	11	385	288	46
IP / XP200	355	262	11	385	288	52 / 60
IP / XP400	408	420	14	463	460	157 / 176
IP600	493	640	22	563	700	348
IP / XP800	610	780	26	700	840	620 / 693

all dimensions in mm (dimension deviations with special frames possible)

3.3 Installation and connection

The pump unit must be installed and fastened on a level base of sufficient load bearing capacity for the weight of the pump. See foundation plan Fig. 9.

Since the pump is a positive displacement pump, it must be assured that the discharge piping has no shut-off elements, pipe tapers or components that could cause clogging of the piping. An On/Off-switch with locking against switching on (e.g. lockable switch, switch with detachable switching lever) should be installed near the pump. This is a precaution to avoid accidents, e.g. when inspecting the inside of the pump. To avoid overloading of the pump we recommend the installation of a motor protection switch.



Electrical installations and connections must only be made by a qualified electrician.

In order to ease the necessary service work it is recommended to install an approx. 1 – 1.5 m removable line (hose or pipe) between pump ports and pipe system (Fig. 10). This provides sufficient working space for changing the pumping hose.

The pump cover must always be easily accessible!

Peristaltic pumps are positive displacement pumps, which produce a pulsating product flow. In order to prevent these pressure shocks from being transferred into the piping system, both pressure and suction sides should be fitted with expansion joints (Fig. 10). As an additional measure to minimize pulsation, the pressure pipe can be fitted with an active pulsation damper. These must be adjusted to the respective working range. For optimal results refer to the installation instructions provided by the respective manufacturers of expansion joints and pulsation dampers.

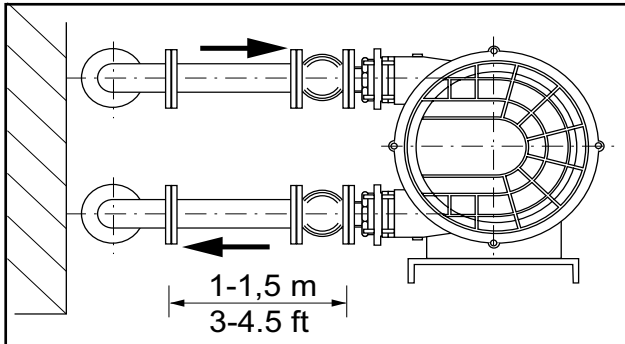


Fig. 10 Installation recommendations

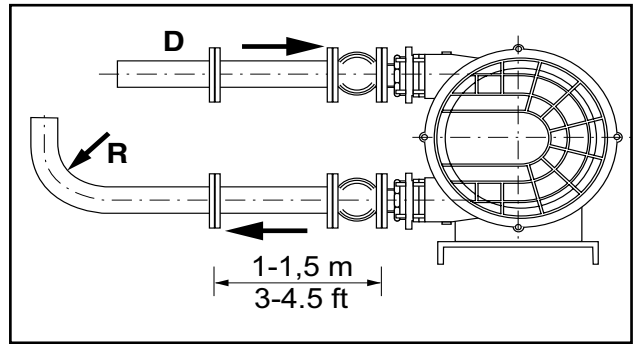


Fig. 12 Installation recommendations

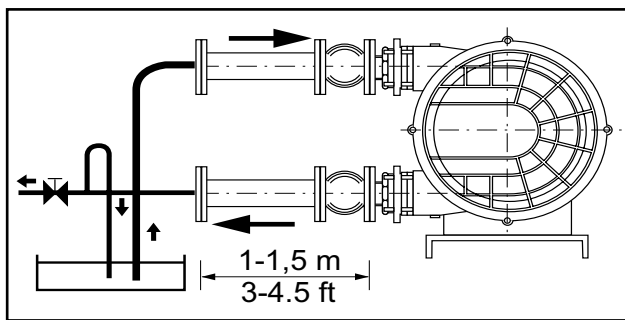


Fig. 11 Installation recommendations

The use of shut-off valves in the discharge line requires the installation of an overflow valve with return line (or by-pass or an over-pressure switch), in order to avoid damage to the peristaltic pump caused by operating errors (Fig. 11). Should this not be possible, the pump must be switched off before switching off the valve.



Peristaltic pumps must never be operated against closed shut-off elements on the discharge side.

The inner diameters of suction and discharge lines should be at least the same size as the pumping hose. The ideal radius for elbows is $> 2 - 3$ the pipe diameter (Fig. 12).

When pumping highly viscous fluids (> 10.000 mPas) the diameter of the suction line should be as big as possible, or its lengths as short as possible.

The suction power can possibly be increased by installing a frequency converter to reduce the pump speed.

3.4 Equipotential bonding / earthing

In principle, pumps and accessories must be earthed or provided with equipotential bonding if there is the possibility of product specific electro-static charging and for use in explosive environments.

3.5 Vibration distance

During installation, the following distance must be maintained between pump and other components, with the exception of the ports.

Type	Distance [cm]
IP100	5
IP/XP 200	5
IP/XP 400	5
IP600	10
IP/XP 800	10

4. Operation

4.1 Points to be considered before commissioning

Please check:

that the max. permissible product temperature of 80°C is not exceeded,

that the max. permissible product temperature of 13°C is not exceeded. If necessary install a pressure relief valve or a sensor,

whether the pump is correctly installed and connected,

whether the direction of pump rotation is correct.

The sense of rotation is “clockwise”, when viewed from the pump cover (standard, if not specified differently by the customer).

An arrow on the pump casing marks the direction of rotation; IP pumps with integrated vacuum system is not suitable for both rotation directions.

that a pump without explosion protected drive is under no circumstances used in a potentially explosive area,

whether the pumping hose inside the pump is suitable for the product to be pumped.

whether suction and pressure lines are correctly connected.

whether switches and power connections for the drive are correctly connected.

whether the pump is correctly earthed in order to avoid electro-static charging.

whether the ventilation bore on the gearbox is free and open,

For the electric motor an overcurrent relay must be installed. For this the wiring diagram in the motor's electric junction box must be observed,

On motors with thermal circuit breakers all cables and terminals are arranged inside the junction box of the motor. These must be connected so that the motor is stopped when the switch is triggered.

4.2 Commissioning

The drive unit is to be started up in accordance with the respective operating instruction.

Check the lubrication of the drive unit. Geared motor and regulating gears are filled for grease lubrication. In case of oil lubrication the oil in the gear housing must be checked and, if necessary, filled up before commissioning.

Make sure that all safety features are fastened and fully functional.



The peristaltic pump must not be operated against closed shut-off valves.

The pump housing must always be filled with a sufficient amount of lubricant.

Switching on

The pump starts when the main switch for the drive is switched on.

Switching off

Switch the main switch for the pump off again.

4.3 Decommissioning



Strictly observe the safety regulations in chapter 2 of these instructions.

The shut-down procedure for maintenance, installation and cleaning work must only be performed by authorized and trained personnel.

Switch off the electric power supply and secure against unintended restarting.

Close shut-off valves on suction and pressure lines.

Relieve the pressure in suction and pressure lines.



Fluids escaping under pressure can cause severe injury. Take care when loosening pressure fittings; wear protective clothing. Be extremely careful when handling hazardous fluids.

Consult a doctor immediately if you come into contact with such substances.

Loosen suction and pressure fittings carefully. The system may still be under pressure or tension.

Disconnect suction and pressure lines from the pump and disassemble the rinsing line (if present).

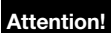
If worn parts are detected when inspecting the pump, the respective parts must be replaced.

4.4 Waste disposal after expiry of the expected service life



The metal components used (aluminium, grey cast iron, stainless steel and steel) can be recycled. Plastic parts are not recyclable and must be disposed of with the general waste.

5. Maintenance



Always observe the safety regulations in chapter 2 when performing maintenance work and conversions!

Check all lines and fittings regularly for leaks and externally visible damage!

Eliminate any faults immediately!

IP series peristaltic pumps require only little maintenance. Ball bearings and radial seals in the pump neck are lifetime lubricated by the silicone oil or glycerin filling.



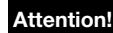
After a hose breakage, the bearings are to be checked for damage. On all pumps, the anti-friction bearings and rotors are to be exchanged after 15,000 operating hours. The pump housing is to be exchanged after 60,000 operating hours.

The drive must be serviced according to the instructions of the respective manufacturer.

The pumping hose is the only wear item on the pump.



Pumps with electric drive must be generally be switched off and disconnected from the electric power supply before starting maintenance work!



If the pump is used for aggressive, caustic or toxic media, the pump must generally be flushed with a neutral agent before opening the pump housing.

5.1 Cleaning

General notes:



Always wear protective clothing when working with solvents or cleansing agents.

Housing, cooling fins, openings and covers on equipment components are very often not just protections, but have additional functions such as cooling, insulation, noise reduction, splash protection, etc.



Pumps for use in explosive areas must always be kept clean of dust deposits.

After each use, the pump should only be stored with completely empty and clean pumping hose. This can be carried out by using appropriate hose cleaning balls or small cloths.

Some of these functions can be impaired or may become totally ineffective by excessive deposits of dirt.

Here is some advice on how to remove dirt.

Stubborn, encrusted dirt can be removed by scratching, scraping or brushing

Minor dirt deposits, such as layers of dust and fine deposits can be wiped off, cleaned off with a vacuum cleaner, removed with a brush or broom.

5.1.1 Cleaning pumps for food applications (CIP = Clean In Place)

The pumps can be cleaned manually after disassembly or in place (CIP).

Consult the pump supplier for special application related cleaning procedures.



Caution!

Do not touch the pump or pipes. Danger of burning.

Always wear your personal protective outfit when handling chemicals.

Always flush the system thoroughly after.

Always observe the applicable regulations when storing or handing out chemicals.

Observe the compatibility list for the hoses when selecting cleaning media.

Possible CIP cleaning procedure for NR/NBR-pumping hoses made of natural rubber.

The pump must be flushed with cold water to clean the pumping hose.

For products susceptible to sticking or incrustation we recommend using additional cleaning balls.

Flush the pump with hot water (max. 90°C) for max. 20 minutes (when using a frequency converter run a slow speed).

Clean with approx. 2.5% sodium hydroxide solution.

Finally flush with cold water.

5.1.2 Selection of pumping hoses

Peristaltic pumps may be fitted with hoses of various materials, depending on the application.

The following materials are available:

IP-hoses	Colour code
Natural rubber (NR) technical	yellow
Natural rubber for food	blue
Hypalon (CSM)	black
Nitrile rubber (NBR)	red
EPDM (EPDM)	white

XP-hoses	Colour code
Natural rubber (NR) technical	yellow
Hypalon (CSM)	black
Nitrile rubber (NBR) Food	red

You will find selection aids and appropriate spare parts kits in Chapter 8.

Before installing a new hose please check whether the available hose material is suitable for the intended purpose (see compatibility list). If the hose inside the pump has not been damaged by normal mechanical wear but by chemical influences, you should use a hose of different material.

If necessary, please contact the authorised dealer or manufacturer for checking and advice.

5.2 IP 100-800

Note:

The following notes on installation apply for pumps of series IP.

5.2.1 Replacing the pumping hose

If after a short period of operation the pointer does not move on the vacuum gauge, then the pumping hose must be exchanged. Observe chapter 6 Troubleshooting when installing a new pumping hose.

5.2.1.1 Removing the old pumping hose

1. Switch off the pump and secure it against switching on, disconnect it on the suction and discharge sides from the pipeline system.



Danger of burning with hot product (max. 80°C)

Caution!

Before removing the pumping hose allow the pump to cool down to contact temperature.

2. Place a container under the pump to catch the lubricant.
3. Unscrew plug (item 2, Fig. 13), unscrew cap from oil drain valve (item 3, Fig. 13), screw on fitting and drain lubricating fluid into a container.

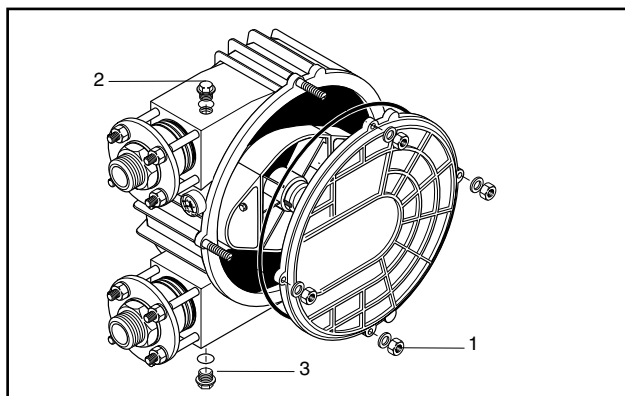


Fig. 13 Pump head

- 1 Cover fastening nuts
- 2 Oil filler bore with plug
- 3 Oil drain bore with plug
- 4 Vacuum gauge

4. Unscrew the 4 cover nuts (Pos. 1, Fig. 13), take off pump cover and O-ring and drain all lubricant from the pump housing into a collecting vessel.

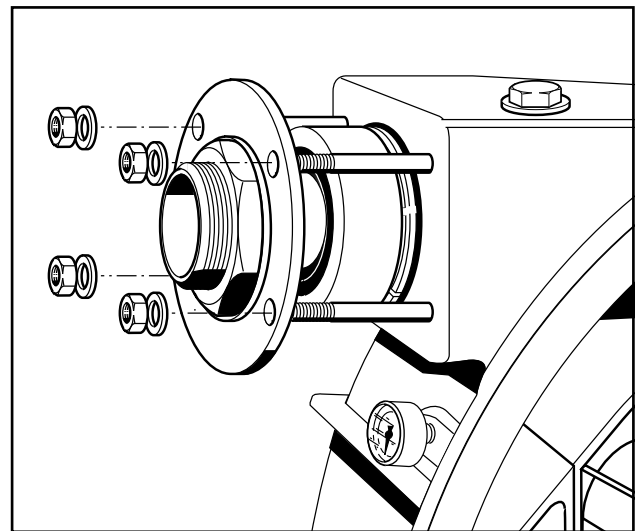


Fig. 14 Disassembly of connecting sockets

5. Unscrew both connecting sockets complete with retaining flange and hexagon tube nuts from the pump housing (Fig. 14) and pull both connecting sockets out of the pumping hose.

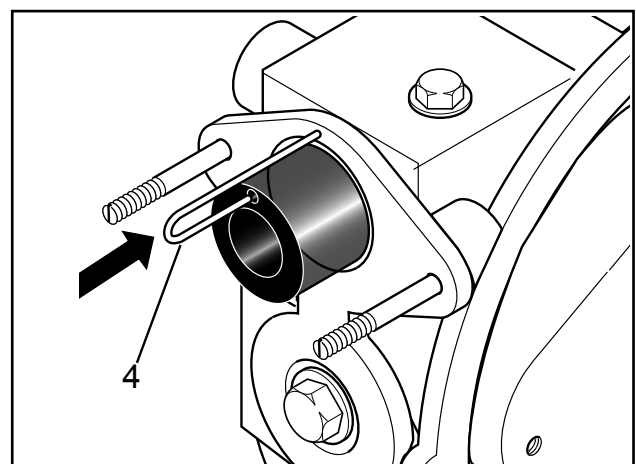


Fig. 15 4 Position of ventilation pipe

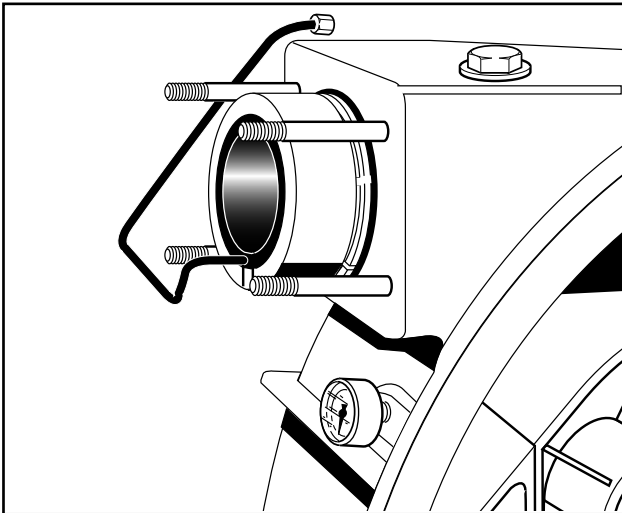


Fig. 16 4 Position dof vacuum bore

6. Then remove the ventilation pipes from the suction and discharge side (Fig. 15 and 16). Remove retaining ring, clamp ring, stepped ring and O-ring from the pump hose (Fig. 17).
7. Attach pump cover with O-ring and tighten slightly with nuts.

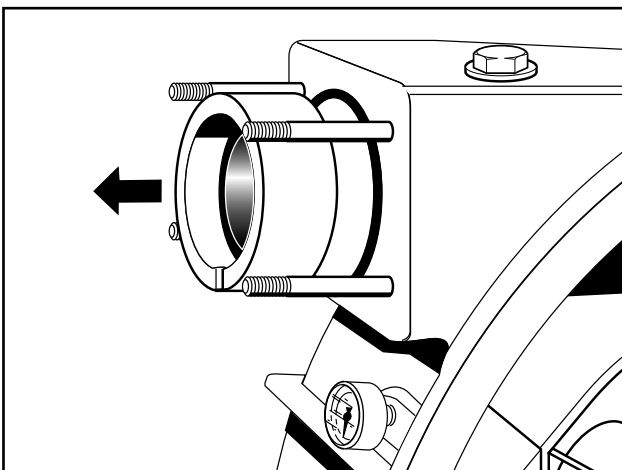


Fig. 17 Disassembly of clamping ring pack

8. Switch the pump on for a moment, so that the pumping hose is pushed out of the pump housing (keep on pulling the pumping house out of the housing).

Attention! Perform this process with utmost attention. In case of a failure switch off the pump immediately.

9. Switch the pump off.
Remove pump cover and O-ring again and inspect the inside of the housing.

5.2.1.2 Inspecting the inside of the pump

1. Before installing a new pumping hose clean the inside of the pump housing and check for damage.
2. Replace damaged parts.

5.2.1.3 Installing the new pumping hose

1. Wet housing and rotor with lubricant.

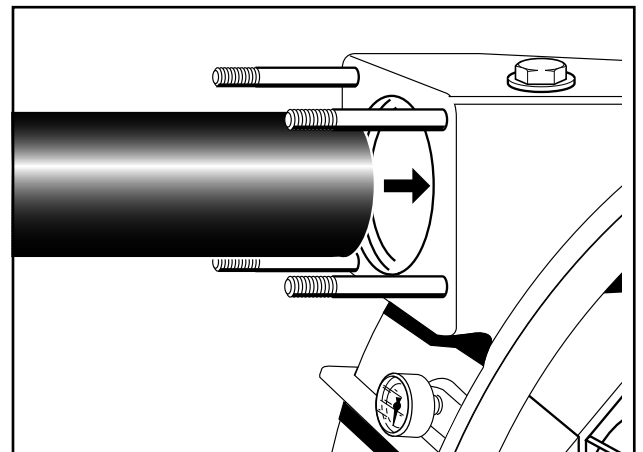


Fig. 18 Position dof vacuum bore

2. Replace the pump cover with a new O-ring and tighten the nuts. Before using the new pump hose, please check that there are no packaging residues in the pump hose or in the vacuum channel.
3. Slightly lubricate one end of the pump hose with lubricating fluid and push it into the suction port of the pump (Fig. 18), until the hose abuts. Place a small amount of lubricating fluid in the vacuum channel. Please make sure that the hose bore is aligned correctly.

IP 100/200: Side facing away from the rotor (outer side), Fig. 19

IP 400-800: Side facing the rotor (inner side), Fig. 20

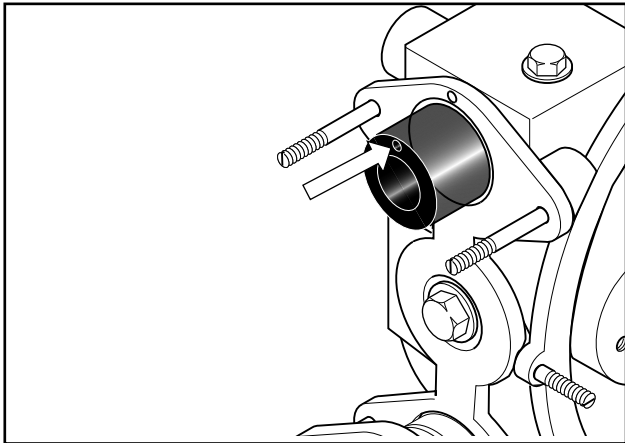


Fig. 19 Position of vacuum bore IP 400-800

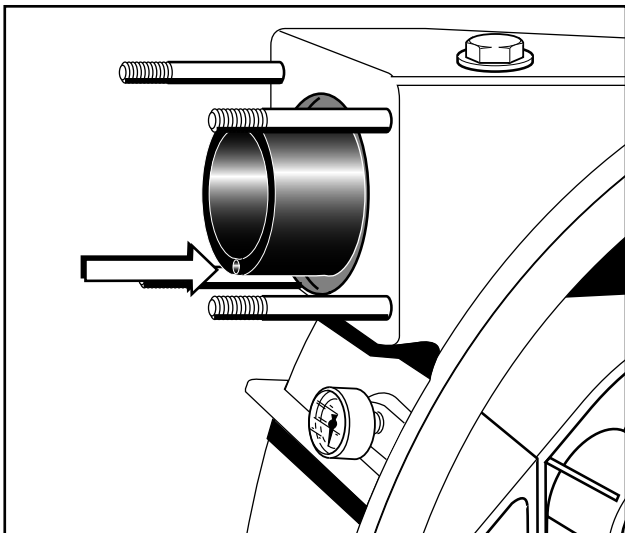


Fig. 20 Position of vacuum bore IP 100-200

4. Switch the pump on for a moment. Keep pushing the hose so that the rotor can pull the pumping hose step by step into the pump housing.

Switch the pump on again briefly, so that the correct installation position can be reached. Pumping hoses are delivered in correct installation lengths.

The pump hose is supplied in correct installation lengths. The correct installation position is achieved when the hose reaches the non-threaded part of the studs (Fig. 21).

Attention! The vacuum bores in the hose must be exactly in line. The hose must not be twisted during installation.

If the hoses protrudes too far out of the pump housing on the pressure side, it must be completely removed and reassembled again.

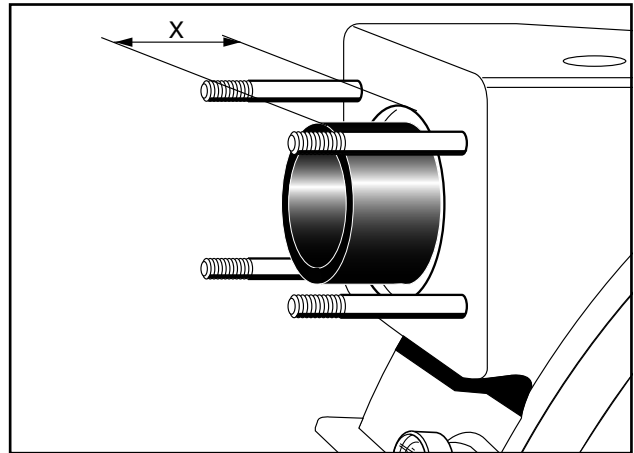


Fig. 21 Installing the new pumping hose

5. First, completely assemble the connecting socket on the discharge side. Start by assembling the new O-ring (item 2, Fig. 22) followed by the stepped ring (item 1, Fig. 22).

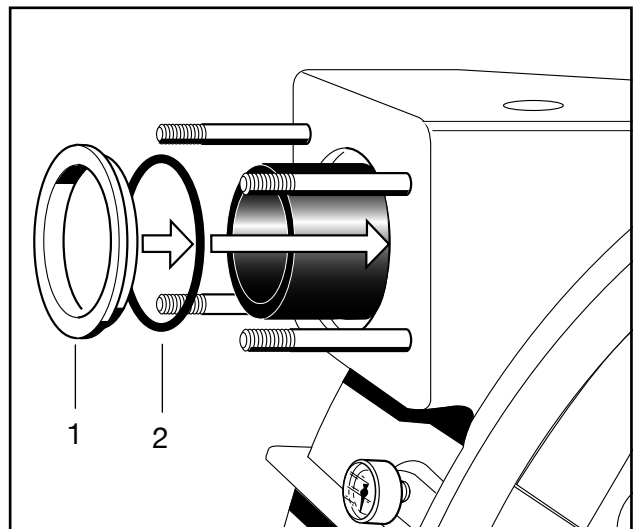


Fig. 22 Assembling the retaining ring

- 1 Retaining ring
- 2 O-ring

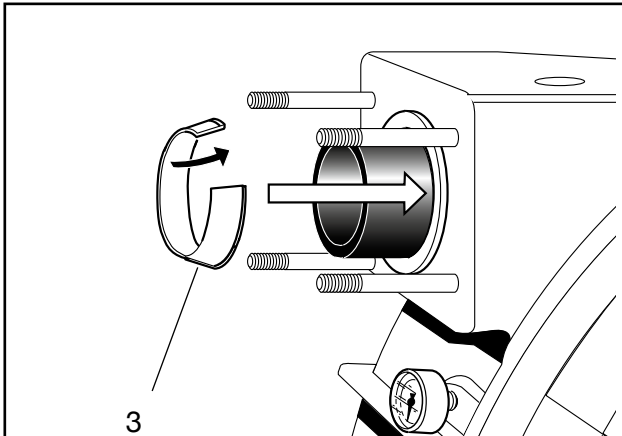


Fig. 23 Assembling the clamping ring pack
3 Clamping ring

Then assemble the clamping ring (Fig. 23).

Slightly lubricate the ventilation pipe (pressure side) with lubricating fluid and push it into the small hose bore and insert it into the groove in the retaining ring (narrow).

Then insert the connecting socket carefully into the pumping hose and tighten the retaining flange evenly.

Attention! Perform this process with utmost attention. In case of a failure switch off the pump immediately.

Switch the pump on again for a short moment, so that the end of the hose on the suction side is pulled to the correct installation position.

6. Assemble the connecting socket on the suction side. Assemble the connecting port as described under Pt. 5.

IP 100/200: Insert the ventilation pipe (suction side) into the small hose bore and push the other side into the designated housing recess. Then push the new O-ring (hose) alternating with the retaining ring over the pump hose. Make sure that the free end of the ventilation pipe is placed in the groove at the inside diameter of the retaining ring.

IP 400-800: First insert the ventilation pipe (suction side) into the small hose bore and lay it into the groove in the retaining ring

(narrow) (Fig. 18). Insert the other end into the angle fitting and fasten it with the spigot nut.

7. Close the oil drain bore, fill in lubricant (see chapter Technical Data).

Fill in lubricant through the oil filler bore.

Attention! The pumping hose with vacuum bores may on no account be operated without ventilation pipe.

5.2.2 Conversion suction side “top” to suction side “bottom”

For XP pumps, only the direction of rotation of the drive needs to be changed, while for IP pumps the vacuum system also needs to be modified.

1. Switch off the pump and secure it against restarting.
2. Disconnect the pump from the pipeline system on suction and discharge side (see chapter 5.2.1.1)

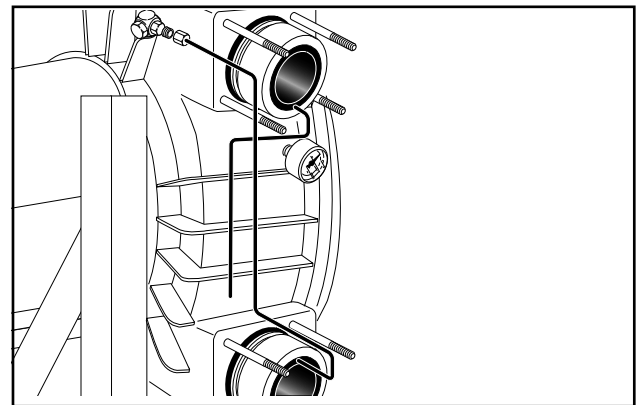


Fig. 24 Ventilation pipe

3. The ventilation pipe on suction side is replaced with a different version and connected with the angle fitting on the back of the pump. The ventilation pipe on discharge side is guided to the outside (Fig. 24).
4. Connect suction and discharge lines according to the new function.

5.2.3 Pump conversion for different discharge pressure

5.2.3.1 IP/XP 100/200

Each peristaltic pump is adjusted to the desired discharge pressure in the factory. However, should an application related change become necessary, the desired discharge pressure can be adjusted by installing a different rotor.

1. Switch off the pump and secure it against restarting.
2. Remove the pumping hose (see chapter 5.2.1.1)
3. Remove the rotor, loosen the rotor screw for this purpose. When loosening the rotor screw the rotor is also extracted from the shaft. Check shaft and fitting key for possible damage.
4. Slide the new rotor over the shaft and tighten the rotor screw.
5. Installing the pumping hose (see chapter 5.2.1.3)

Attention! Changing the rotor requires a new pumping hose

Rotor diameter in dependence on the required discharge pressure

5.2.3.2 IP/XP 400-800

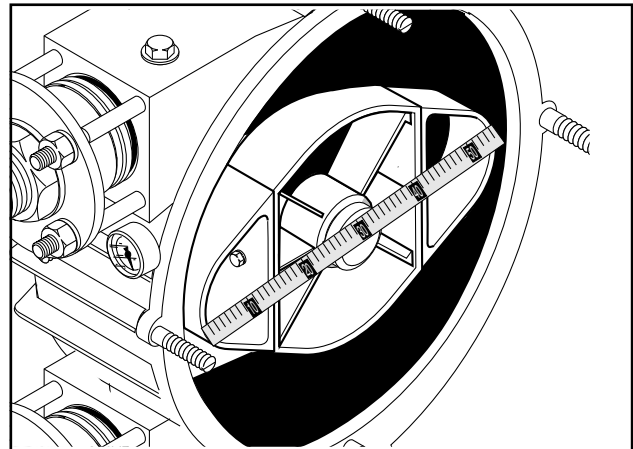


Fig. 25 Rotor diameter

Each peristaltic pump is adjusted to the desired discharge pressure in the factory. Should an application related change in discharge pressure become necessary, the desired discharge pressure can be adjusted by changing the rotor diameter (Fig. 25).

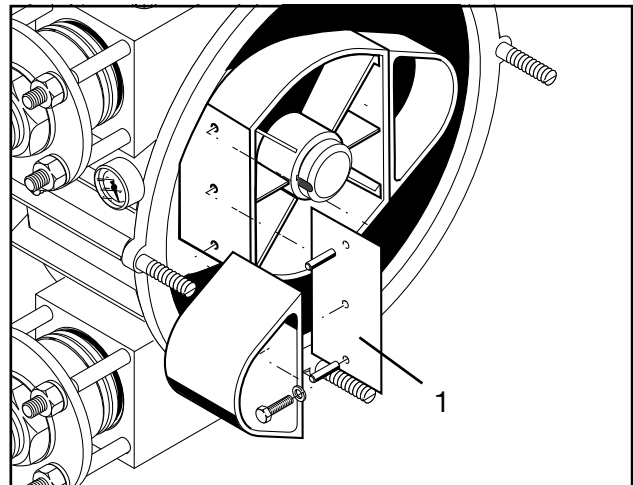


Fig. 26 Disassembling the sliding block
1 Shim

1. Switch off pump and secure against switching on.
2. Drain off the lubricant (see chapter 5.2.1.1)
3. Remove pump cover with O-ring.
4. Turn the rotor by hand until one sliding piece is free.

5. Then the shims (Fig. 28) must be removed to reduce the discharge pressure or additional shims must be added to increase the discharge pressure. If shims are changed, you must make sure that both sliding shoes are changed to the same dimension. The measurements must comply exactly with the table (see below).
6. Fasten the pump cover again with O-ring (see chapter 5.2.1.3).
7. Close the oil drain bore.
8. Fill in lubricant.
9. Turn the plug back in.

Rotor diameter in dependence on the required discharge pressure Chap. 8.4.

Attention! When changing the rotor dimension use the same shims on both sides.

In principle, use one shim less than the actually required pressure stage with product temperatures (> 60°C).

5.2.3.3 Installation of a full fabric hose

Besides operation with vacuum, the pump can also be operated with a pumping hose without vacuum bore.

Attention! Before installing a full fabric hose, a ventilation valve must be installed on the pump housing.

The installation procedure for a so-called full fabric hose is identical with the procedure for a standard pumping hose. Switch off the pump and secure it against restarting. Then proceed as described in chapter 5.2.1.3.

5.3 XP 200-800

Note:
The following notes on installation only apply to pumps in the XP series.

5.3.1 Replacing the pumping hose

5.3.1.1 Removing the old pumping hose

1. Switch off the pump and secure it against switching on, disconnect suction and pressure side from the pipeline system.



Caution!

Danger of burning with hot product (max. 80 °C)

Before removing the pumping hose allow the pump to cool down to contact temperature.

2. Place a container under the pump to catch the lubricant.
3. Unscrew plug (item 2, Fig. 27), unscrew cap from oil drain valve (item 3, Fig. 27) and drain lubricating fluid into a container.
4. Pumpendeckel und O-Ring nach dem Abschrauben der 4 Deckelmuttern (Pos. 1, Abb. 27) abnehmen und Rest-Gleitflüssigkeit aus dem Pumpengehäuse in das Auffanggefäß ablaufen lassen.

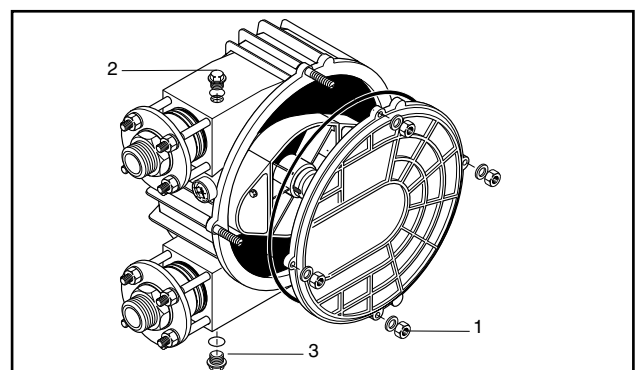


Fig. 27 Pump head

- 1 Cover fastening nuts
- 2 Oil filling of plug
- 3 Oil Drain Valve

5. Unscrew both connecting sockets complete with retaining flange and hexagon tube nuts from the pump housing (Fig. 28) and pull both connecting sockets out of the pump hose.

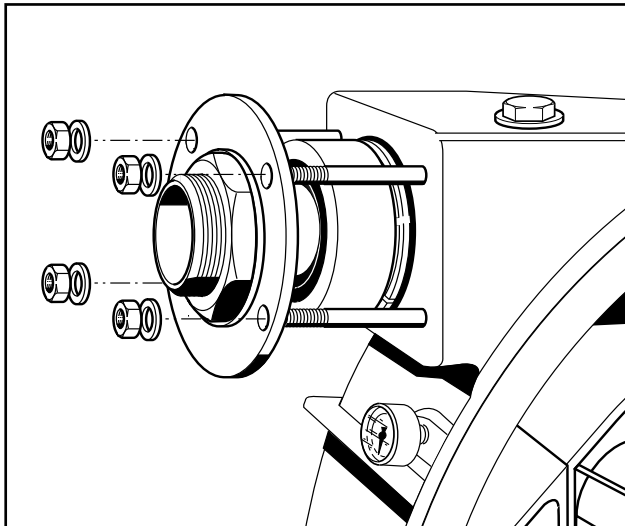


Fig. 28 Disassembly of connecting sockets

6. Then remove the ventilation pipes from suction and discharge side (Fig. 29). Remove retaining ring, segment ring, step ring and O-ring from the pumping hose (Fig. 30).

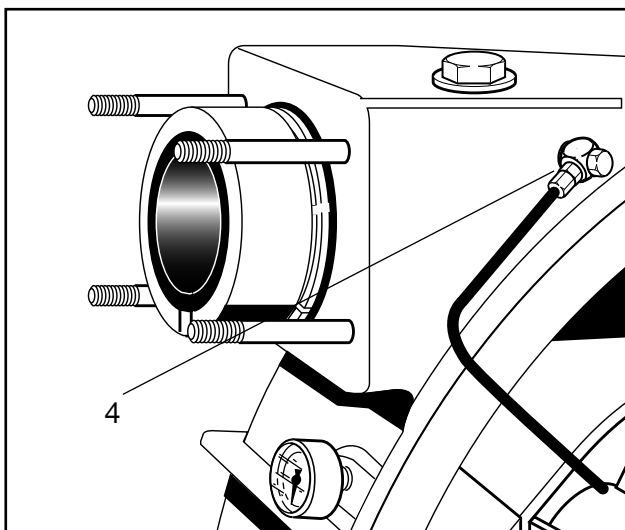


Fig. 29 4 Ventilation pipe

7. Attach pump cover with O-ring and tighten slightly with nuts.

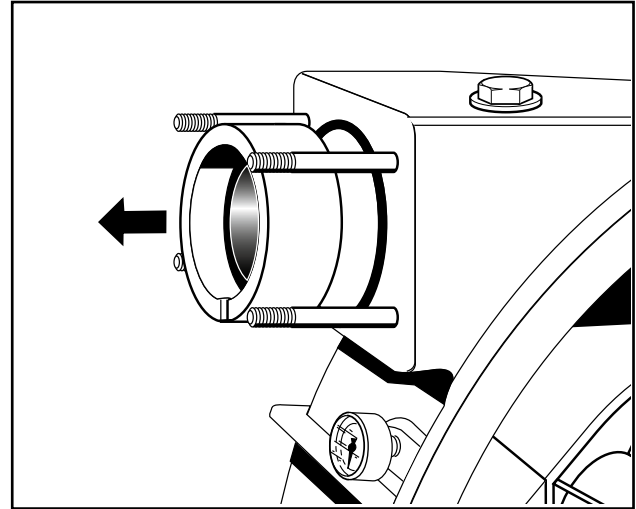


Fig. 30 Disassembly of clamping ring pack

8. Switch the pump on for a moment, so that the pumping hose is pushed out of the pump housing (keep on pulling the pumping house out of the housing).

Attention! Perform this process with utmost attention. In case of a failure switch off the pump immediately.

9. Switch the pump off.
Remove pump cover and O-ring again and inspect the inside of the housing.

5.3.1.2 Inspecting the inside of the pump

Before installing a new pumping hose clean the inside of the pump housing and check for damage.
Replace damaged parts.

5.3.1.3 Installing the new pumping hose

1. Attach the pump cover with a new O-ring and tighten the nuts.
2. Slightly lubricate one end of the pumping hose with lubricant and push it into the suction port of the pump (Fig. 23), until the hose abuts.

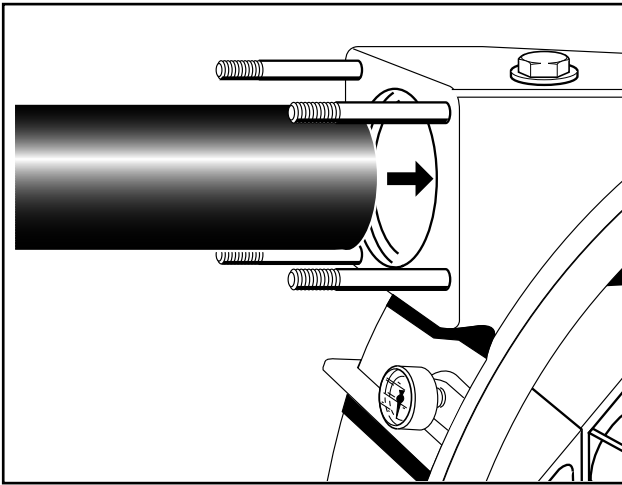


Fig. 31 Montage Assembling the pumping hose

Before using the new pumping hose please check that there are no packaging residues (Fig. 31) in the pumping hose.

3. Switch the pump on for a short moment, so that the rotor can pull the pumping hose step by step into the pump housing, keep pushing to assist.

Switch the pump on again briefly, so that the correct installation position can be reached.

The pump hose is supplied in correct installation lengths. The correct installation position is achieved when the hose reaches the non-threaded part of the studs (Fig. 32).

If the hose protrudes too far out of the pump housing on the pressure side, it must be completely removed and reinserted in the housing.

4. First, completely assemble the connecting socket on the discharge side. Start by assembling the new O-ring (item 2, Fig. 33) followed by the stepped ring (item 1, Fig. 33).

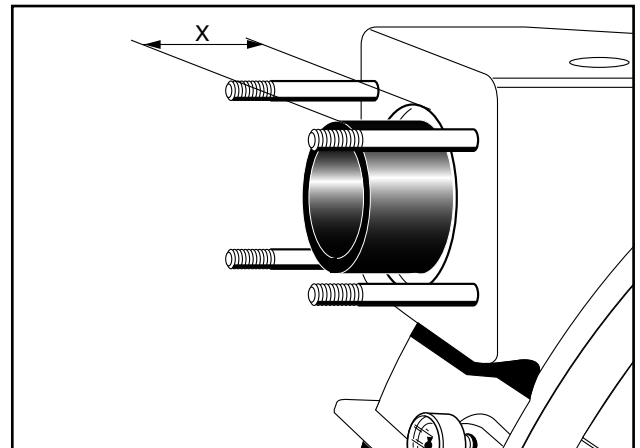


Fig. 32 Assembling the pumping hose

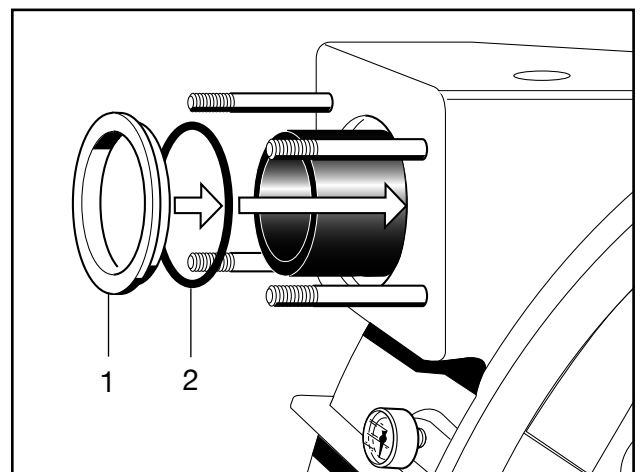


Fig. 33 Assembling the stepped ring

- 1 Retaining ring
- 2 O-ring

Then assemble the clamping ring (Fig. 34).

5. Then insert the connecting socket carefully into the pumping hose and tighten the retaining flange evenly.

Attention! Perform this process with utmost attention. In case of a failure switch off the pump immediately.

Switch the pump on again for a short moment, so that the end of the hose on the suction side is pulled to the correct installation position.

6. Assemble the connecting socket on the suction side. Assemble the connecting port as described under Pt. 5.

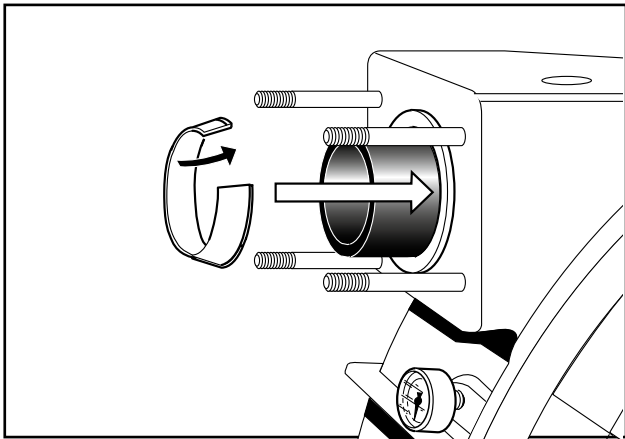


Fig. 34 Assembling the clamping ring pack

3 Clamping ring

7. Close the oil drain bore, fill in lubricant (see chapter Technical Data).

Fill in sliding fluid through the oil filler bore.

8. Assemble ventilation hose.

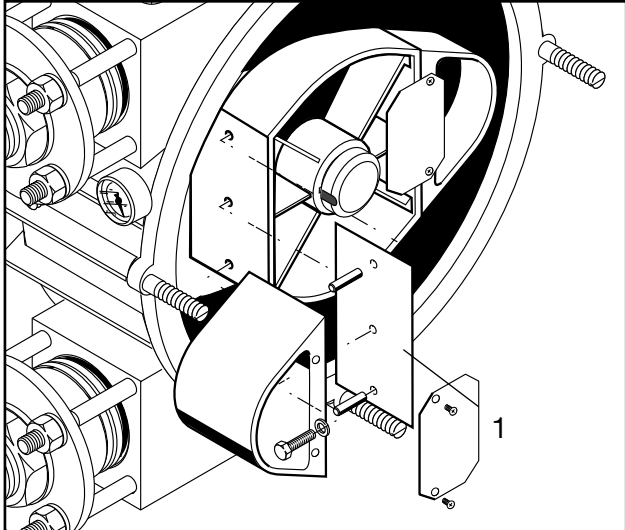


Fig. 35 Disassembling of the sliding shoe

1 Shim

5.3.2 Exchanging the vacuum diaphragm

If after a short period of operation the pointer in the vacuum gauge does not move, the vacuum diaphragm must be exchanged.

The vacuum diaphragm must generally be replaced with every hose change.

The vacuum diaphragm is located on the rear side of the pump cover. It is held by a retaining ring, which is secured with 6 screws. The vacuum diaphragm can be removed by loosening the screws. The diaphragm is reassembled by evenly tightening the screws.

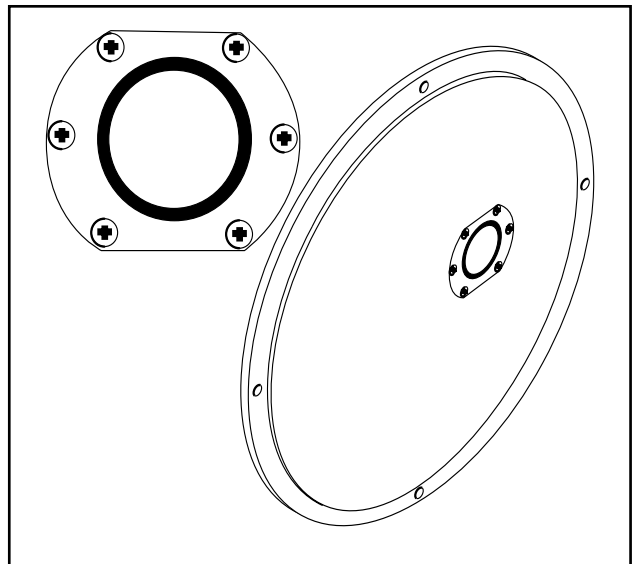


Fig. 36 Housing cover with vacuum diaphragm

6. Troubleshooting

Fault	Possible cause	Remedy
No pump flow	Pressure and suction valves closed	Open valves
	Wrong direction of rotation	Reverse rotation
	Suction line blocked	Remove blockage
	Leaks in suction pipe (entering of air)	Find and eliminate leaks
	Suction head too high	Check for vapour pressure, change arrangement
	Motor incorrectly connected	Check installation
Pumping power too low	Discharge pressure too high	Reduce pressure
	Leaks in suction pipe	Find and eliminate leaks
	Speed too low	Check speed and electric wiring
	Suction line blocked	Remove blockage
	Viscosity too high	Reduce viscosity or redesign pump
	Insufficient suction pressure	Increase suction pressure
	Pump parts worn	Replace these parts
Pump does not generate vacuum (no display on vacuum gauge)	Check direction of rotation	Motor incorrectly connected
	O-rings on connecting port or on the pump cover damaged	Renew O-rings
	Sealing rings on plugs damaged or missing	Renew sealing rings
	Vacuum diaphragm damage	Replace vacuum diaphragm

ELRO® Peristaltic Pumps Series IP 100-800 / XP 200-800

Fault	Possible cause	Remedy
Pump loses suction abilities	Leaks in suction line Suction lift too high or air or gas in fluid Pump worn Speed too low	Find and seal leaks Increase suction pressure, degas fluid Examine, if necessary replace parts Increase speed
Pump runs very loud	Cavitation Pump worn or defective Air or gas in fluid Solids in fluid	Increase suction pressure Examine, if necessary replace defective parts Degas fluid Install a dirt trap in the suction line
Drive heats up or is overloaded	A certain heating of electric motors is normal Discharge pressure too high Fluid of higher viscosity than expected when designed Speed too high Pump parts corroded or stuck together. Motor incorrectly connected Suction or ventilation pipes leaking or squashed	Check the current consumption to be sure Reduce the pressure, check the pressure gauge Install a stronger motor Reduce the speed Examine and alter pump conditions. Check connection and change, if necessary Reseal or renew

Fault	Possible cause	Remedy
Pumping hose service life insufficient	Chemical attack. Hose swollen or peeling	Check chemical compatibility of hose material on the basis of the resistance list, if necessary contact the authorized dealer or manufacturer.
	Too high speed	Reduce speed using a frequency converter
	Too high pumping pressure	Raise the hose service life by changing the discharge side conditions (reduction).
	Abrasive solids-containing medium	Check pumping hose and if necessary reduce speed
	Washouts in pump hose	Back flow, i.e. too high pumping pressure, change the rotor setting according to the pressure table, installation of pressure gauge
	Pumping hose defective on discharge side (pressure stop)	Pump operated against closed shut-off valve
	Pumping hose burnt externally	Too little lubricant or wrong lubricant

7.0 Spare Parts

7.1 Stock keeping of spare parts

Since the degree and scope of recommended spare parts storage is aligned to the duration of use and different operating conditions of the pumps, please contact the manufacturer or an authorized dealer.

7.2 Ordering spare parts

When placing an order for spare parts please state the following:

- Pump type
- Construction year and serial number
- Spare part item No.

If subsequent material modifications have been undertaken for various pump components, please give details of this as well. You will find the necessary spare parts and their item numbers in the list of spare parts.

Liability for use of non-original spare parts:

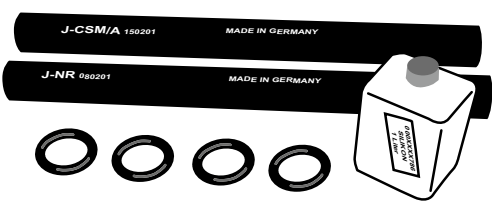
Installation and/or use of non-original spare parts or accessories can negatively alter and consequently impair the design-related features of the peristaltic pump. Any liability or warranty claims are excluded if damage is incurred by the use of non-original spare parts and/or accessories on the pump, equipment/system or product.

8. Appendix

8.1 Selecting a hose

8.1.1 IP Selecting a hose without ATEX or for non food applications

The following combinations of hose and lubricant are available in this case:

Gen. spare parts kits					Hose + Lubricant						
ESK	-	Series IP	Size / nom. width x -		y						
					Hose core	Spare parts kit					
						Silicone	Glycerin				
								100	NBR	ESK-IPx-B	ESK-IPx-D
								200	NBR full fab. hose.	ESK-IPx-T	ESK-IPx-U
								300	NR	ESK-IPx-N	ESK-IPx-M
								400	NR full fab. hose.	ESK-IPx-W	ESK-IPx-Y
								500	CSM	ESK-IPx-C	ESK-IPx-H
								600	CSM full fab. hose.	ESK-IPx-X	ESK-IPx-Z
								800	EPDM	ESK-IPx-E	ESK-IPx-F

Content:

- 1 x IP pumping hose
- 1 x pump cover O-ring
- 2 x connecting port O-ring
- 1 x filling volume of silicon/glycerin
- 2 x Seal

Example of ordering a spare parts kit:

You want to retrofit the suitable NR hose for your IP200.
The lubricant would be silicone:

The ESK-IP200-N spare parts kits is the right choice for you

8.1.2 XP Schlauchauswahl ohne ATEX- bzw. Lebensmittelanforderung

The following combinations of hose and lubricant are available in this case:

Spare parts kits		Series	Size / nom. width		Hose + lubricant		
ESK	-		x	-	y		
					Hose core	Spare parts kit	
						Silicone	Glycerin
					NBR	ESK-XP _x -B	ESK-XP _x -D
					NR	ESK-XP _x -N	ESK-XP _x -G
					CSM	ESK-XP _x -C	ESK-XP _x -H



200
400
800

Content:

- 1 x XP pumping hose
- 1 x pump cover O-ring
- 2 x connecting port O-ring
- 1 x filling volume of silicon/glycerin
- 2 x plugs inc. Seal

Example of ordering a required spare parts kit:

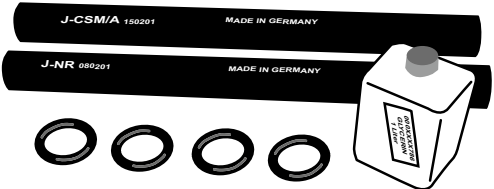
You want to retrofit the suitable NR hose for your XP200.
The lubricant would be silicone:

The ESK-XP200-N spare parts kit is the right choice for you

8.1.3 IP Suitability of components/hose selection for food applications

Name	ELRO peristaltic pump									
	suitable for FOOD applications						Not suitable for FOOD applications			
Series	IP100	IP200	IP300	IP400	IP500	IP600	IP800			
Extra										
Materials										
IP pumping hoses	Nitrile rubber (NBR) FDA grade		Natural rubber (NR) FDA grade				Nitrile (NBR) antistat. quality	Hypalon (CSM) antistat. quality	Natural rubber (NR) antistat. quality	EPDM
Lubricant	Glycerin		Silicone ¹⁾							
Connecting port	Stainless steel	1.4571 316Ti					PP	PP electr. conductive		

1) FDA-§178.3570 (LUBRICANTS WITH INCIDENTAL FOOD CONTACT) Dimethylpolysiloxane with a viscosity greater than 300 centistokes, with addition to food limited to 1 p.p.m. (FR June 30, 1965). Adherence required using system specific precautions. We recommend the use of our Early Warning System EWS.

FOOD spare parts kits				Hose + Lubricant				
ESK	-	Series	Size / nom. width		y			
		IP	x	-				
					Hose core (FDA)	Spare parts kit		
							Glycerin	Silicone
					NBR	ESK-IPx-D	ESK-IPx-B	
					NBR full fab. hose	ESK-IPx-U	ESK-IPx-T	
					NR-L	ESK-IPx-P	ESK-IPx-L	
					100			
					200			
					300			
400								
500								
600								
800								

Content:

- 1 x IP pumping hose
- 1 x pump cover O-ring
- 2 x connecting port O-ring
- 1 x filling volume of glycerin
- 2 x Seal

Example of ordering a spare parts kit:

You want to retrofit the appropriate NBR hose on your IP200 for food applications.

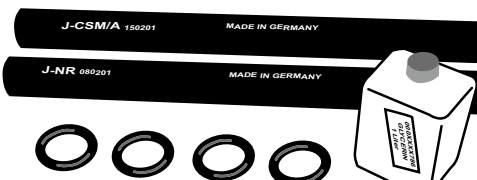
The lubricant would be glycerin:

The ESK-IP200-D spare parts kits is the right choice for you

8.1.4 XP Suitability of components/hose selection for food applications

Name	ELRO – peristaltic pump							
	suitable for FOOD applications					Not suitable for FOOD applications		
Series	XP200	XP400	XP800					
Extra								
Materials								
XP pumping hoses	Nitrile rubber (NBR) FDA grade					Hypalon (CSM)	Natural rubber (NR)	
Lubricating fluid	Glycerin	Silicone ¹⁾						
Connecting port	Stainless steel	1.4571 316Ti			PP			

1) FDA-β178.3570 (LUBRICANTS WITH INCIDENTAL FOOD CONTACT) Dimethylpolysiloxane with a viscosity greater than 300 centistokes, with addition to food limited to 1 p.p.m. (FR June 30, 1965). Adherence through application related precautions required. We recommend using our early warning system EWS.

FOOD spare parts kits		Series	Size / nom. width		Hose + lubricant		
ESK	-	XP	x	-	y		
					Hose core (FDA)	Spare parts kit	
						Glycerin	Silicone
					NBR	ESK-XPx-D	ESK-XPx-B

200
400
800

Content:

- 1 x XP pumping hose
- 1 x pump cover O-ring
- 2 x connecting port O-ring
- 1 x filling volume of glycerin
- 2 x plugs inc. Seal

Example of ordering a required spare parts kit:

You want to retrofit the appropriate NBR hose on your XP200 for FOOD applications.

The lubricant would be glycerine:

The ESK-XP200-D spare parts kit is the right choice for you

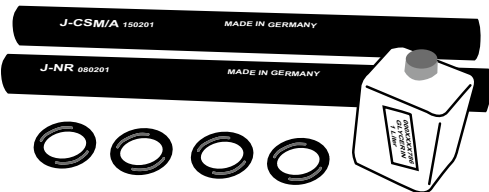
8.2 Units for use in explosive environments

8.2.1 ATEX suitability of components/hose selection

Designation	ELRO peristaltic pump with ATEX II 2G Ex h IIC T3/T4 Gb				
	ATEX suitable			Not ATEX suitable	
	IP100	IP/XP200	IP/XP400	IP600	IP/XP800
Conveying hoses	Nitrile rubber (NBR) antistatic quality Nitrile rubber (NBR) FDA grade with insulating core (IP) 1) Hypalon (CSM) antistatic quality Natural rubber (NR), antistatic quality EPDM, antistatic quality (IP)			Natural rubber (NR-L), FDA quality (IP)	
Connecting nozzle	Stainless steel 1.4571, 316 Ti PP elec. conductive			PP	
Frame	Flanged motor frame with coupling guard Spur-wheel geared motor frame			Flanged motor frame, mobile	
Drives and couplings	ATEX geared drive 2) Polynorm AR coupling 2)			Bipex BWT coupling	
Attached elec. components:	BETA vacuum switch 2)			Pressure sensor, conductivity sensor, EWS	
Extra	With oil sight glass			No oil sight glass	

1) Conformity for liquids of low conductivity (< 50 pS/m) only with ignition risk assessment carried out by the operating company. Hereby, it must be verified within the framework of conveying tests that there is no risk of high charging on the sides touched by the rotor of the conveying hoses.

2) ATEX classification must be at least equal to the pump.

ATEX spare parts kits				Hose + Lubricant		
ESK	Series	Size / nom. width		Hose + Lubricant		
-	IP/XP	x	-	y		
		100		Hose core (antistat.)	Spare parts kit	
		200		NBR	Silicone	Glycerin
		400		NR	ESK-IPx-A ESK-XPx-A	ESK-IPx-R ESK-XPx-R
		600		NR full fab. hose.	ESK-IPx-N ESK-XPx-N	ESK-IPx-M ESK-XPx-M
		800		CSM	ESK-IPx-W ESK-IPx-Y	
				CSM full fab. hose	ESK-IPx-C ESK-XPx-C	ESK-IPx-H ESK-XPx-H
			EPDM	ESK-IPx-X ESK-IPx-Z	ESK-IPx-E ESK-IPx-F	

Content:

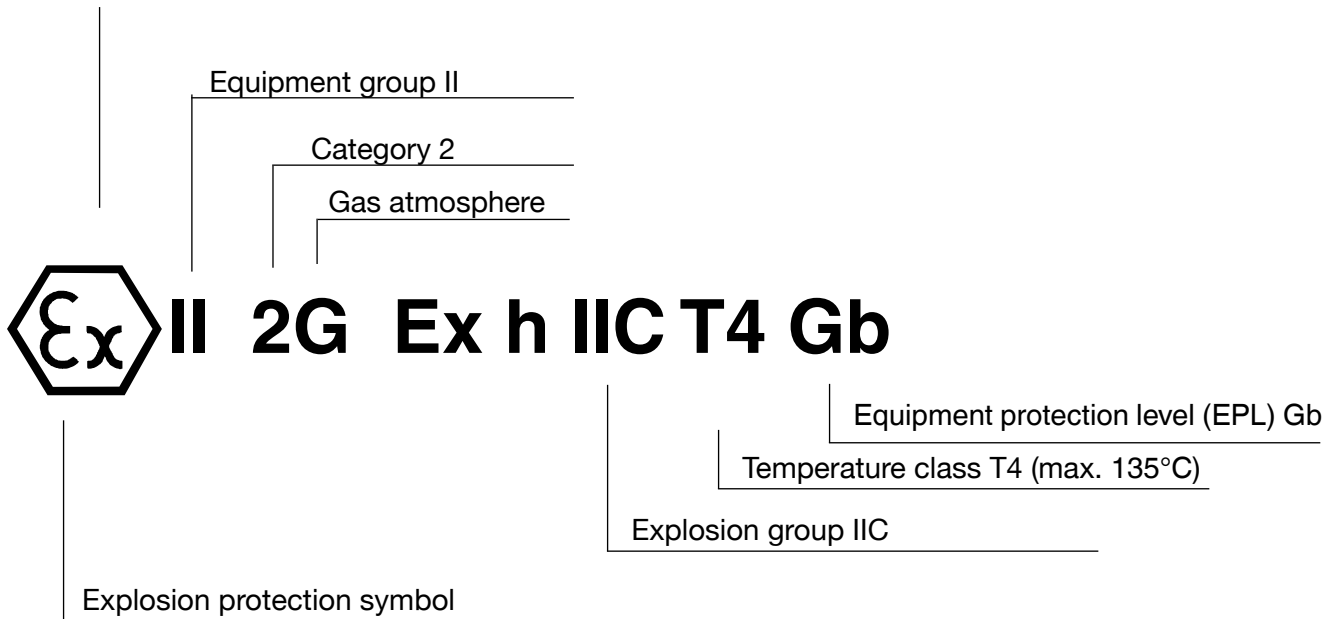
- 1 x IP pumping hose
- 1 x pump cover O-ring
- 2 x connecting port O-ring
- 1 x filling volume of silicon/glycerin
- 2 x Seal

Example of ordering a spare parts kit:

You want to retrofit the suitable NR hose for your IP200. The lubricant would be silicone.

The ESK-IP200-N spare parts kits is the right choice for you

8.2.2 Example



8.3.3 Surface temperature

Temperature classes	Ignition temperature range of the mixture	Maximum permissible surface temperature of the electric operating material
T1	> 450 °C	450 °C
T2	> 300 ... 450 °C	300 °C
T3	> 200 ... 300 °C	200 °C
T4	> 135 ... 200 °C	135 °C
T5	> 100 ... 135 °C	100 °C
T6	> 85 ... 100 °C	85 °C

8.2.4 Category division of equipment groups I and II

Equipment groups (Appendix I of the EU directive 2014/34/EU)							
Group I (mines, mine gas and dust)		Group II (other explosive mixed gases/dust)					
Category M		Category 1		Category 2		Category 3	
1 (Zone 0/20)	2 (Zone 1/21)	G (Gas) (Zone 0)	D (Dust) (Zone 20)	G (Gas) (Zone 1)	D (Dust) (Zone 21)	G (Gas) (Zone 2)	D (Dust) (Zone 22)
for equipment which offers a very high level of safety when there is danger from an explosive atmosphere	for equipment which offers a high level of safety when there is potential danger from an explosive atmosphere	for equipment which offers a <u>very high level of protection</u> for use in areas where an explosive atmosphere can potentially occur		for equipment which offers a <u>high level of protection</u> for use in areas where an explosive atmosphere can potentially occur		for equipment which offers a <u>nominal level of protection</u> for use in areas where an explosive atmosphere can occur	

Pumps and pump units for use in potentially explosive atmospheres are usually graded in Group II, Category 2. The user is responsible for classifying the group and the category.

8.3 Datenblätter

Technical data IP 100

Recommended motor size and torque

	0-2 bar	> 2-4 bar	> 4-6 bar	> 6-8 bar	> 8-10 bar	> 10-12 bar	13 bar
30 RPM	0,37 kW 48 Nm	0,37 kW 52 Nm	0,37 kW 61 Nm	0,37 kW 65 Nm	0,55 kW 72 Nm	-	-
40 RPM	0,37 kW 45 Nm	0,37 kW 50 Nm	0,37 kW 58 Nm	0,55 kW 64 Nm	0,75 kW 70 Nm	-	-
60 RPM	0,37 kW 42 Nm	0,37 kW 48 Nm	0,55 kW 55 Nm	0,75 kW 61 Nm	0,75 kW 65 Nm	-	-
80 RPM	0,55 kW 40 Nm	0,55 kW 46 Nm	0,75 kW 53 Nm	0,75 kW 58 Nm	0,75 kW 63 Nm	-	-
100 RPM	0,55 kW 36 Nm	0,75 kW 43 Nm	0,75 kW 50 Nm	0,75 kW 56 Nm	1,1 kW 61 Nm	-	-
120 RPM	0,75 kW 33 Nm	0,75 kW 40 Nm	0,75 kW 48 Nm	1,1 kW 53 Nm	1,1 kW 58 Nm	-	-
max. 140 RPM	0,75 kW 32 Nm	0,75 kW 38 Nm	0,75 kW 47 Nm	1,1 kW 50 Nm	1,1 kW 55 Nm	-	-
Continuous use 24 hr		Intermittent use max 12 hr		Short time use max 4 hr			

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Rotor diameter

Pressure	Diameter *)
0 - 6 bar	156 mm
> 6 - 10 bar	160 mm

*) also valid for full fabric hoses

Shaft end

Ø 30 mm, Length 60 mm

Hose materials available

Standard	Full layer	Color code
EPDM (EPDM) conductive		white
Hypalon (CSM)		black
Natural rubber	(NR)	yellow
	(NR-L) Food approved	blue
Nitrile rubber	(NBR) Food approved	red
	(NBR E) conductive	red

Hose dimensions, Flow rate per rotation

Ø_i = 15 mm Ø_a = 41 mm Length = 570 mm ca. 0,07 Litre

Pump speed	Lubricant capacities
0 - 140 RPM	0,4 Liter

Prescribed lubricants Art. no.

Silicon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	230/400 V, 50 Hz
Operating type	S ₁ -VDE 0530
Type of protection	IP 55

Standard connections

External thread ISO 228-G1 B
Stainless steel
Plastic PP

Technical data IP 200

Recommended motor size and torque

	0-2 bar	> 2-4 bar	> 4-6 bar	> 6-8 bar	> 8-10 bar	> 10-12 bar	13 bar
30 RPM	0,37 kW 47 Nm	0,37 kW 59 Nm	0,37 kW 70 Nm	0,55 kW 82 Nm	0,75 kW 94 Nm	1,1 kW 110 Nm	1,1 kW 120 Nm
40 RPM	0,37 kW 45 Nm	0,37 kW 57 Nm	0,37 kW 68 Nm	0,55 kW 80 Nm	0,75 kW 93 Nm	1,1 kW 107 Nm	1,1 kW 118 Nm
60 RPM	0,37 kW 45 Nm	0,37 kW 55 Nm	0,55 kW 65 Nm	0,75 kW 76 Nm	1,1 kW 89 Nm	1,1 kW 102 Nm	1,1 kW 115 Nm
80 RPM	0,55 kW 40 Nm	0,55 kW 50 Nm	0,75 kW 62 Nm	1,1 kW 75 Nm	1,1 kW 85 Nm	1,1 kW 100 Nm	1,1 kW 113 Nm
100 RPM	0,55 kW 39 Nm	0,75 kW 47 Nm	0,75 kW 60 Nm	1,1 kW 72 Nm	1,1 kW 83 Nm	1,1 kW 96 Nm	1,5 kW 110 Nm
120 RPM	0,75 kW 36 Nm	0,75 kW 45 Nm	1,1 kW 56 Nm	1,1 kW 66 Nm	1,1 kW 80 Nm	1,1 kW 92 Nm	1,5 kW 102 Nm
140 RPM	0,75 kW 36 Nm	0,75 kW 43 Nm	1,1 kW 52 Nm	1,1 kW 63 Nm	1,5 kW 78 Nm	1,5 kW 90 Nm	1,5 kW 96 Nm
Continuous use 24 hr		Intermittent use max 12 hr			Short time use max 4 hr		

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Rotor diameter

Pressure	Diameter *)
0 - 6 bar	156 mm
> 6 - 10 bar	160 mm

*) also valid for full fabric hoses

Shaft end

Ø 30 mm, Length 60 mm

Hose materials available

Standard	Full layer	Color code
EPDM (EPDM) conductive		white
Hypalon (CSM)	Hypalon	black
Natural rubber	(NR) technical	yellow
	(NR-L) Food approved	blue
Nitril (NBR)	(NBR) Food approved	(NBR) Food
Nitrile rubber	(NBR E) conductive	red

Hose dimensions, Flow rate per rotation

Ø_i = 30 mm Ø_a = 54 mm Length = 550 mm ca. 0,2 Litre

Pump speed	Lubricant capacities
0 - 140 RPM	0,4 Liter

Prescribed lubricants Art. no.

Silicon M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	230/400 V, 50 Hz
Operating type	S ₁ -VDE 0530
Type of protection	IP 55

Standard connections

External thread ISO 228-G1 1/4 B
Stainless steel
Plastic PP

Technical data IP 400

Recommended motor size and torque

	0-2 bar	> 2-4 bar	> 4-6 bar	> 6-8 bar	> 8-10 bar	> 10-12 bar	13 bar
20 RPM	1,5 kW 195 Nm	1,5 kW 360 Nm	2,2 kW 440 Nm	3,0 kW 535 Nm	3,0 kW 610 Nm	3,0 kW 700 Nm	4,0 kW 810 Nm
30 RPM	1,5 kW 190 Nm	1,5 kW 350 Nm	2,2 kW 430 Nm	3,0 kW 530 Nm	3,0 kW 600 Nm	3,0 kW 690 Nm	4,0 kW 790 Nm
40 RPM	1,5 kW 180 Nm	1,5 kW 340 Nm	2,2 kW 420 Nm	3,0 kW 500 Nm	3,0 kW 600 Nm	3,0 kW 690 Nm	4,0 kW 785 Nm
50 RPM	1,5 kW 170 Nm	2,2 kW 330 Nm	3,0 kW 410 Nm	3,0 kW 500 Nm	4,0 kW 600 Nm	4,0 kW 680 Nm	5,5 kW 770 Nm
60 RPM	1,5 kW 170 Nm	3,0 kW 320 Nm	3,0 kW 410 Nm	4,0 kW 500 Nm	4,0 kW 580 Nm	5,5 kW 670 Nm	5,5 kW 770 Nm
Continuous use 24 hr		Intermittent use max 12 hr			Short time use max 4 hr		

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Rotor diameter

Pressure	Diameter *)
0 - 2 bar	338 mm
> 2 - 4 bar	339 mm
> 4 - 6 bar	340 mm
> 6 - 8 bar	341 mm
> 8 - 10 bar	342 mm
> 10 - 13 bar	343 mm

*) also valid for full fabric hoses

Shaft end

Ø 40 mm, Length 80 mm

Hose materials available

Standard	Full layer	Color code
EPDM (EPDM)		white
Hypalon (CSM)	Hypalon	black
Natural rubber	(NR) technical	yellow
	(NR-L) Food approved	blue
Nitrile rubber	(NBR) Food approved	red
	(NBR E) conductive	red

Hose dimensions, Flow rate per rotation

Ø_i = 50 mm Ø_a = 82 mm Length = 1050 mm ca. 1,6 Litre

Pump speed	Lubricant capacities
0 - 70 RPM	2,0 Liter

Prescribed lubricants Art. no.

Silicon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	230/400 V, 50 Hz
Operating type	S ₁ -VDE 0530
Schutzart	IP 55

Standard connections

External thread ISO 228-G2 B
Stainless steel
Plastic PP

Technical data IP 600

Recommended motor size and torque

	0-2 bar	> 2-4 bar	> 4-6 bar	> 6-8 bar	> 8-10 bar	> 10-12 bar	13 bar
10 RPM	2,2 kW 440 Nm	2,2 kW 610 Nm	2,2 kW 840 Nm	2,2 kW 1080 Nm	3,0 kW 1320 Nm	4,0 kW 1550 Nm	5,5 kW 1620 Nm
20 RPM	1,5 kW 405 Nm	1,5 kW 600 Nm	2,2 kW 825 Nm	2,2 kW 1060 Nm	3,0 kW 1300 Nm	4,0 kW 1520 Nm	5,5 kW 1600 Nm
30 RPM	3,0 kW 385 Nm	3,0 kW 580 Nm	3,0 kW 740 Nm	4,0 kW 960 Nm	4,0 kW 1140 Nm	5,5 kW 1370 Nm	7,5 kW 1580 Nm
40 RPM	3,0 kW 360 Nm	3,0 kW 560 Nm	4,0 kW 735 Nm	4,0 kW 930 Nm	5,5 kW 1130 Nm	7,5 kW 1330 Nm	7,5 kW 1550 Nm
50 RPM	3,0 kW 355 Nm	3,0 kW 540 Nm	4,0 kW 730 Nm	5,5 kW 910 Nm	7,5 kW 1090 Nm	7,5 kW 1280 Nm	9,2 kW 1530 Nm
60 RPM	3,0 kW 350 Nm	4,0 kW 510 Nm	5,5 kW 680 Nm	7,5 kW 880 Nm	7,5 kW 1040 Nm	9,2 kW 1260 Nm	11,0 kW 1480 Nm
Continuous use 24 hr		Intermittent use max 12 hr			Short time use max 4 hr		

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Shaft end

Ø 60 mm, Length 120 mm

Rotor diameter

Pressure	Diameter *)
0 - 2 bar	543 mm
> 2 - 4 bar	543 mm
> 4 - 6 bar	545 mm
> 6 - 8 bar	547 mm
> 8 - 10 bar	551 mm
> 10 - 13 bar	552 mm

*) also valid for full fabric hoses

Hose materials available

Standard	Full layer	Color code
EPDM (EPDM)		white
Hypalon (CSM)	Hypalon	black
Natural rubber	(NR)	yellow
	(NR-L) Food approved	blue
Nitrile rubber	(NBR) Food approved	red
	(NBR E) conductive	red

Hose dimensions, Flow rate per rotation

Ø_i = 60 mm Ø_a = 90 mm Length = 1580 mm 4 Litre

Pump speed	Lubricant capacities
0 - 60 RPM	5,0 Liter

Prescribed lubricants Art. no.

Silicon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	400/690 V, 50 Hz
Operating type	S ₁ -VDE 0530 (continuous operation)
Type of protection	IP 55 or EEx ell cT3

Standard connections

External thread ISO 228-G2 1/2 B
Stainless steel
Plastic PP

Technical data IP 800

Recommended motor size and torque

	0-2 bar	> 2-4 bar	> 4-6 bar	> 6-8 bar	> 8-10 bar	> 10-12 bar	13 bar
10 RPM	4,0 kW 650 Nm	4,0 kW 980 Nm	5,5 kW 1310 Nm	7,5 kW 1620 Nm	11,0 kW 2080 Nm	11,0 kW 2410 Nm	11,0 kW 2630 Nm
20 RPM	4,0 kW 590 Nm	5,5 kW 950 Nm	7,5 kW 1290 Nm	7,5 kW 1610 Nm	11,0 kW 2040 Nm	11,0 kW 2380 Nm	11,0 kW 2650 Nm
30 RPM	4,0 kW 580 Nm	5,5 kW 950 Nm	7,5 kW 1270 Nm	7,5 kW 1620 Nm	11,0 kW 2020 Nm	11,0 kW 2300 Nm	11,0 kW 2550 Nm
40 RPM	4,0 kW 600 Nm	5,5 kW 930 Nm	7,5 kW 1240 Nm	7,5 kW 1580 Nm	11,0 kW 1970 Nm	11,0 kW 2240 Nm	11,0 kW 2500 Nm
50 RPM	4,0 kW 580 Nm	5,5 kW 910 Nm	7,5 kW 1220 Nm	9,2 kW 1540 Nm	11,0 kW 1920 Nm	15,0 kW 2200 Nm	15,0 kW 2460 Nm
60 RPM	5,5 kW 600 Nm	7,5 kW 900 Nm	11,0 kW 1190 Nm	11,0 kW 1580 Nm	15,0 kW 1900 Nm	15,0 kW 2190 Nm	18,5 kW 2460 Nm
Continuous use 24 hr		Intermittent use max 12 hr			Short time use max 4 hr		

All data are based on pumping water at a temperature of 20° C.

Saughöhe

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Rotor diameter

Pressure	Diameter *)
0 - 2 bar	725 mm
> 2 - 4 bar	725 mm
> 4 - 6 bar	727 mm
> 6 - 8 bar	729 mm
> 8 - 10 bar	731 mm
> 10 - 13 bar	733 mm

*) also valid for full fabric hoses

Shaft end

Ø 70 mm, Length 150 mm

Hose materials available

Standard	Full layer	Color code
EPDM (EPDM) conductive		white
Hypalon (CSM)	Hypalon	black
Natural rubber	(NR)	yellow
	(NR-L) Food approved	blue
Nitrile rubber	(NBR) Food approved	red
	(NBR E) conductive	red

Hose dimensions, Flow rate per rotation

Ø_i = 70 mm Ø_a = 110 mm Length = 2100 mm ca. 6,8 Litre

Pump speed	Lubricant capacities
0 - 60 RPM	10 Liter

Prescribed lubricants Art. no.

Silicon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	400/690 V, 50 Hz
Operating type	S ₁ -VDE 0530
Type of protection	IP 55

Standard connections

External thread ISO 228-G3 B
Stainless steel
Plastic PP

Technical data XP 200

Recommended motor size and torque

	1 bar	3 bar	5 bar	7 bar	9 bar	10 bar
30 RPM	0,55 kW 140 Nm	0,55 kW 150 Nm	0,55 kW 170 Nm	0,75 kW 180 Nm	0,75 kW 200 Nm	0,75 kW 205 Nm
60 RPM	0,75 kW 120 Nm	1,1 kW 130 Nm	1,1 kW 150 Nm	1,1 kW 160 Nm	1,5 kW 180 Nm	1,5 kW 185 Nm
90 RPM	1,5 kW 100 Nm	1,1 kW 105 Nm	1,5 kW 120 Nm	1,5 kW 130 Nm	1,5 kW 140 Nm	1,5 kW 150 Nm
120 RPM	1,1 kW 90 Nm	1,5 kW 100 Nm	1,5 kW 110 Nm	2,2 kW 120 Nm	2,2 kW 140 Nm	2,2 kW 145 Nm
140 RPM	1,5 kW 80 Nm	1,5 kW 90 Nm	2,2 kW 105 Nm	2,2 kW 120 Nm	2,2 kW 135 Nm	2,2 kW 140 Nm
	Continuous use 24 hr		Intermittent use max 12 hr		Short time use max	

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Rotor diameter

Pressure	Diameter
0 - 6 bar	166 mm
> 6 - 10 bar	170 mm

Shaft end

Ø 30 mm, Length 60 mm

Hose materials available

Standard	Color code
Hypalon (CSM)	black
Natural rubber (NR)	yellow
Nitrile rubber (NBR) Food approved	red

Hose dimensions, Flow rate per rotation

Ø_i = 35 mm Ø_a = 54 mm Length = 550 mm ca. 0,3 Litres

Pump speed	Lubricant capacities
0 - 140 RPM	0,4 Litres

Prescribed lubricants Art. no.

Silikon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	230/400 V, 50 Hz
Operating type	S ₁ -VDE 0530
Type of protection	IP 55

Standard connections

Male thread ISO 228-G1 1/2 B
Stainless steel
Plastic PP

Technical data XP 400

Recommended motor size and torque

	1 bar	3 bar	5 bar	7 bar	9 bar	11 bar	13 bar
30 RPM	1,5 kW 200 Nm	1,5 kW 420 Nm	2,2 kW 580 Nm	3,0 kW 730 Nm	3,0 kW 900 Nm	4,0 kW 1050 Nm	4,0 kW 1270 Nm
40 RPM	1,5 kW 200 Nm	2,2 kW 420 Nm	3,0 kW 580 Nm	4,0 kW 730 Nm	4,0 kW 900 Nm	5,5 kW 1050 Nm	5,5 kW 1270 Nm
50 RPM	1,5 kW 200 Nm	2,2 kW 420 Nm	4,0 kW 580 Nm	4,0 kW 730 Nm	5,5 kW 900 Nm	5,5 kW 1050 Nm	7,5 kW 1270 Nm
60 RPM	1,5 kW 200 Nm	3,0 kW 420 Nm	4,0 kW 580 Nm	5,5 kW 730 Nm	5,5 kW 880 Nm	7,5 kW 1000 Nm	7,5 kW 1050 Nm
Continuous use 24 hr		Intermittent use max 12 hr			Short time use max 4 hr		

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Shaft end

Ø 40 mm, Length 80 mm

Rotor diameter

Pressure	Diameter
0 - 2 bar	362 mm
> 2 - 4 bar	363 mm
> 4 - 6 bar	364 mm
> 6 - 8 bar	365 mm
> 8 - 10 bar	366 mm
> 10 - 13 bar	367 mm

Hose materials available

Standard	Color code
Hypalon (CSM)	black
Natural rubber (NR)	yellow
Nitrile rubber (NBR) Food approved	red

Hose dimensions, Flow rate per rotation

Ø _i = 63 mm	Ø _a = 82 mm	Length = 1050 mm	ca. 2,7 Litres
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Pump speed	Lubricant capacities
0 - 60 RPM	2,0 Litres

Prescribed lubricants Art. no.

Silicon oil
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

Connection voltage	230/400 V, 50 Hz
Operating type	S _i -VDE 0530
Type of protection	IP 55

Standard connections

Male thread ISO 228-G2 1/2 B
Stainless steel
Plastic PP

ELRO® Peristaltic Pumps Series IP 100-800 / XP 200-800

Technical data XP 800

Recommended motor size and torque

	1 bar	3 bar	5 bar	7 bar	9 bar	10 bar
30 RPM	4,0 kW 1060 Nm	7,5 kW 1850 Nm	9,2 kW 2540 Nm	11,0 kW 3300 Nm	15,0 kW 3800 Nm	18,5 kW 4580 Nm
40 RPM	5,5 kW 1070 Nm	9,2 kW 1830 Nm	11,0 kW 2530 Nm	15,0 kW 3120 Nm	18,5 kW 4020 Nm	18,5 kW 4730 Nm
50 RPM	7,5 kW 1120 Nm	11,0 kW 1830 Nm	15,0 kW 2570 Nm	22,0 kW 3670 Nm	22,0 kW 4080 Nm	22,0 kW 4020 Nm
60 RPM	5,5 kW 1100 Nm	7,5 kW 1800 Nm	11,0 kW 2390 Nm	11,0 kW 3160 Nm	30,0 kW 3330 Nm	30,0 kW 3330 Nm
	Continuous use 24 hr		Intermittent use max 12 hr		Short time use max 4 hr	

All data are based on pumping water at a temperature of 20° C.

Suction head

Dry	Wet
ca. 9,0 m	ca. 9,5 m

Shaft end

Ø 70 mm, Length 150 mm

Rotor diameter

Pressure	Diameter
0 - 4 bar	763 mm
> 4 - 8 bar	765 mm
> 8 - 10 bar	766 mm

Hose materials available

Standard	Color code
Hypalon (CSM)	black
Natural rubber (NR)	yellow
Nitrile rubber (NBR) Food approved	red

Hose dimensions, Flow rate per rotation

Ø_i = 91 mm Ø_a = 110 mm Length = 2100 mm ca. 13 Litres

Pump speed	Lubricant capacities
0 - 60 RPM	10 Litres

Prescribed lubricants Art. no.

Silicon oil M350 / EL420-001-BG
Glycerine DAB 10 / 99,5% / EL430-001BG

Drive: 3-phase geared motor

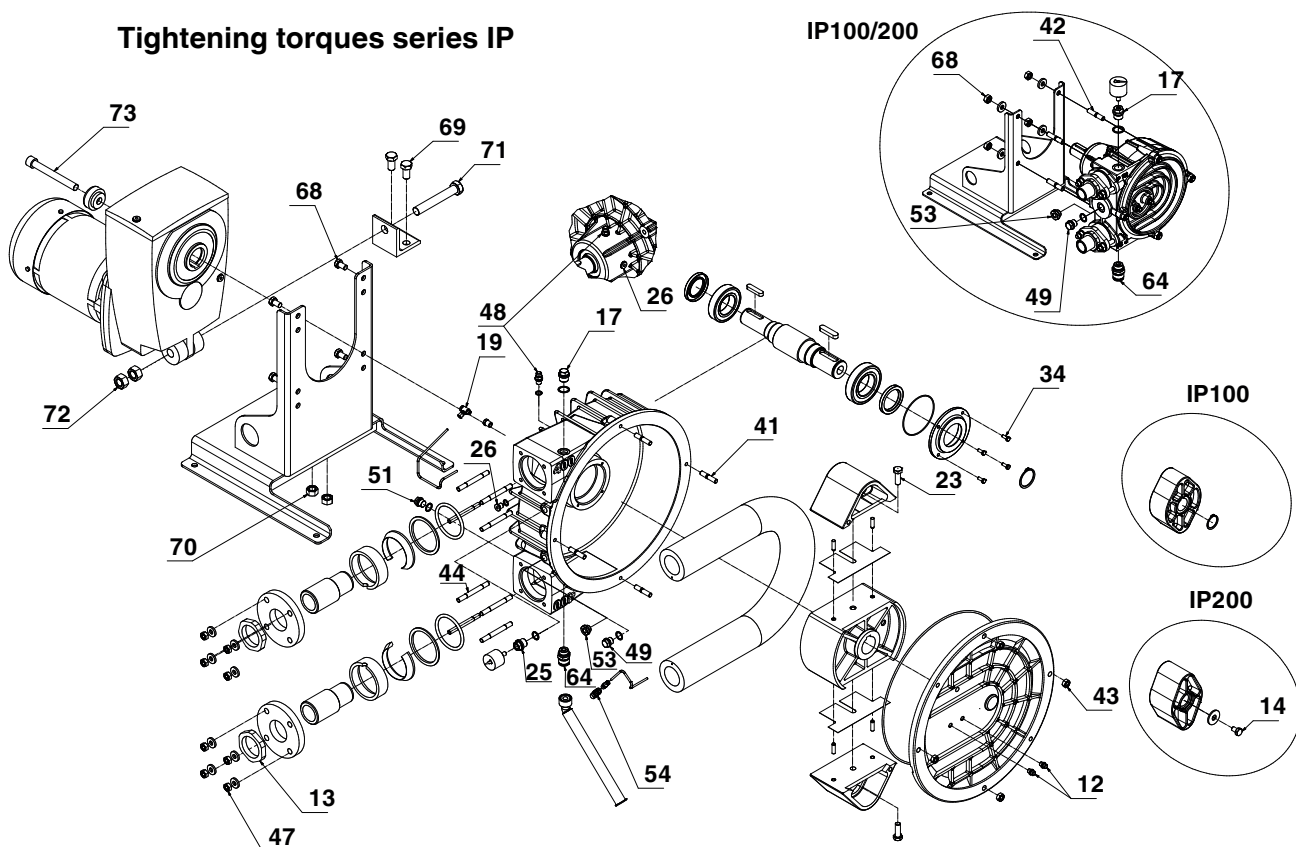
Connection voltage	400/690 V, 50 Hz
Operating type	S ₁ -VDE 0530
Type of protection	IP 55

Standard connections Item No.

Flange DIN/ANSI 4"
Stainless steel
Plastic PP

8.4 Tightening torques

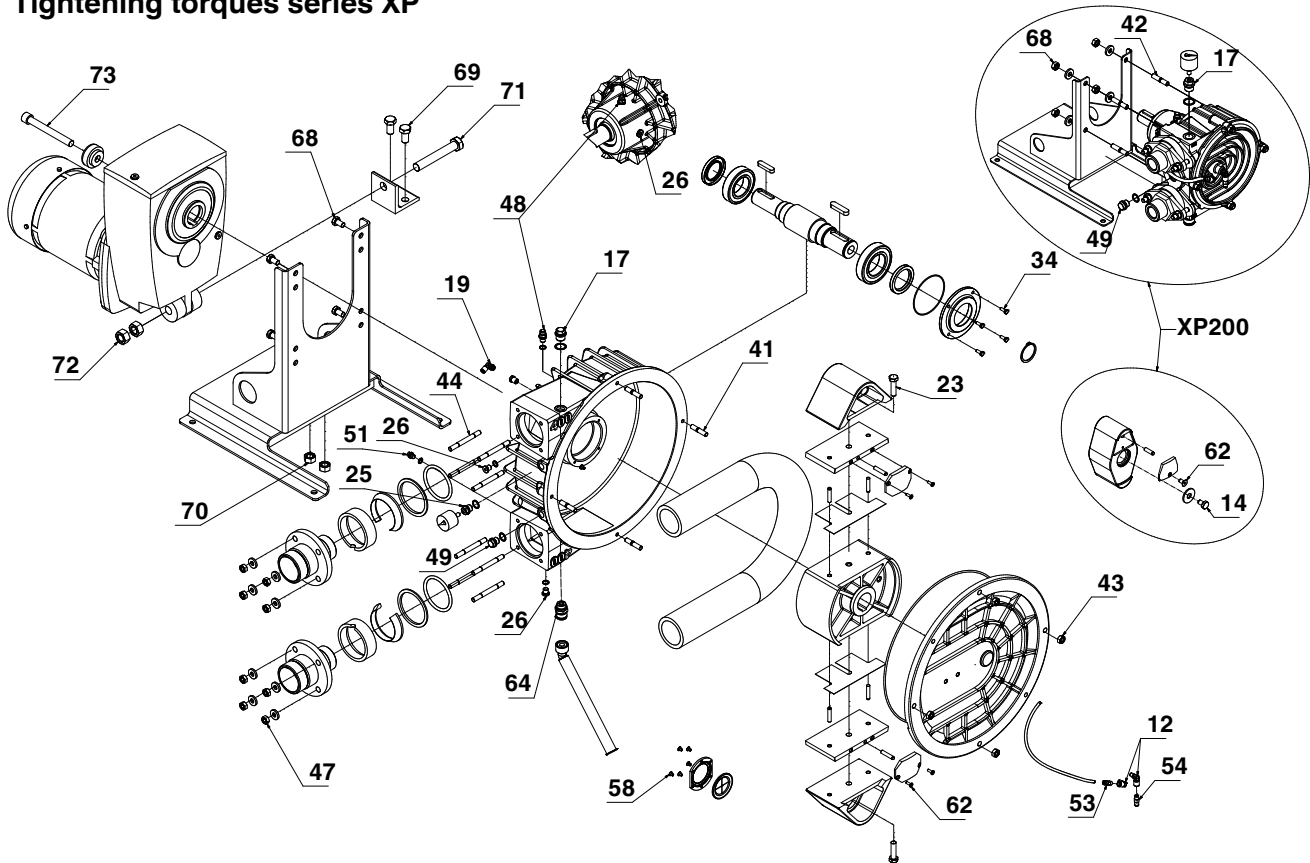
Tightening torques series IP



Pos.	Pump size				
	100	200	400	600	800
12	12 Nm	12 Nm	12 Nm	12 Nm	12 Nm
13	38 Nm	48 Nm	76 Nm	95 Nm	114 Nm
14	54 Nm	54 Nm	-	-	-
17	75 Nm	75 Nm	75 Nm	110 Nm	110 Nm
19	-	-	23 Nm	23 Nm	23 Nm
23	-	-	40 Nm	100 Nm	100 Nm
26	18 Nm	18 Nm	70 Nm	70 Nm	70 Nm
34	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm
41	23 Nm	23 Nm	23 Nm	100 Nm	100 Nm
43	23 Nm	23 Nm	23 Nm	100 Nm	100 Nm
44	23 Nm	23 Nm	23 Nm	40 Nm	100 Nm
47	23 Nm	23 Nm	23 Nm	40 Nm	100 Nm
48	18 Nm	18 Nm	18 Nm	70 Nm	70 Nm
49	40 Nm	40 Nm	40 Nm	40 Nm	40 Nm
51	12 Nm	12 Nm	12 Nm	18 Nm	18 Nm
53	6 Nm	6 Nm	6 Nm	6 Nm	6 Nm
64	75 Nm	75 Nm	75 Nm	110 Nm	110 Nm
68	35 Nm	35 Nm	41 Nm	197 Nm	340 Nm
69	18 Nm	18 Nm	35 Nm	144 Nm	485 Nm
70	18 Nm	18 Nm	35 Nm	144 Nm	485 Nm
71	-	-	-	-	-
72	13 Nm	13 Nm	15 Nm	60 Nm	110 Nm
73	54 Nm	54 Nm	230 Nm	464 Nm	464 Nm

ELRO® Peristaltic Pumps Series IP 100-800 / XP 200-800

Tightening torques series XP



Pos.	Pump size		
	200	400	800
12	12 Nm	12 Nm	12 Nm
13	60 Nm	-	-
14	54 Nm	-	-
17	75 Nm	75 Nm	110 Nm
19	-	23 Nm	23 Nm
23	-	40 Nm	100 Nm
26	18 Nm	70 Nm	70 Nm
34	5 Nm	5 Nm	5 Nm
41	23 Nm	23 Nm	100 Nm
43	23 Nm	23 Nm	100 Nm
44	23 Nm	23 Nm	100 Nm
47	23 Nm	23 Nm	100 Nm
48	18 Nm	18 Nm	70 Nm
49	40 Nm	40 Nm	40 Nm
51	12 Nm	12 Nm	18 Nm
53/54	8 Nm	8 Nm	8 Nm
58	3 Nm	3 Nm	3 Nm
62	3 Nm	3 Nm	3 Nm
64	75 Nm	75 Nm	110 Nm
68	35 Nm	41 Nm	340 Nm
69	18 Nm	35 Nm	485 Nm
70	18 Nm	35 Nm	485 Nm
71	-	-	-
72	13 Nm	15 Nm	110 Nm
73	54 Nm	230 Nm	464 Nm

Note on Declaration of Harmlessness

We want to protect our employees against dangers through contaminated devices and allow the timely handling of your return.

Please understand that for this reason we can only accept your shipment upon submission of our declaration of non-objection including return number.

Upon our receipt of the filled-out declaration of non-objection, you will receive a return number from us.

Please affix the same then to the package so that it is readily visible from the outside.

This is the translation of the original declaration of conformity for ELRO peristaltic pumps series IP and XP

Declaration of Harmlessness

Please send this declaration to your CPFT contact by Email or fax before sending the goods.

Crane Process Flow Technologies GmbH

Heerdter Lohweg 63-71
40549 Düsseldorf
Fax +49 (0) 211 5956 139

We want to protect our employees as much as possible against any risks arising from contaminated equipment. Therefore, please understand that we will only be able to carry out inspections/repairs after we have received this fully filled-in and signed declaration. We cannot accept media samples.

Concerning the return dated _____

Delivery note No. _____

Pump type / spare parts _____

Drive type _____

With my signature I declare,

- that the returned pump/drive has been thoroughly cleaned and decontaminated before shipment,
- that the returned pump/drive will not pose any dangers caused by bacteriological, virological, chemical or radioactive contamination,
- that I am authorized to issue such declarations for the company concerned.

For repair service, we kindly ask you to supply us with the following additional information:

Detected defect

Which media was used

Company stamp

Name _____

Position _____

Date/ signature

You can request the declaration of non-objection through our contact listed below.

ALOYCO • CENTER LINE • DUO-CHEK • FLOWSEAL • JENKINS • KROMBACH • NOZ-CHEK • PACIFIC • STOCKHAM • TRIANGLE
DEPA • ELRO • PSI • RESISTOFLEX • RESISTOPURE • REVO • SAUNDERS • XOMOX

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Düsseldorf District Court, HR B 24702, Managing Director: Hans D. Ptak



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We reserve the right to change all technical information.

