

PT High Pressure Hose Pumps

Original Instruction
2021 | 4

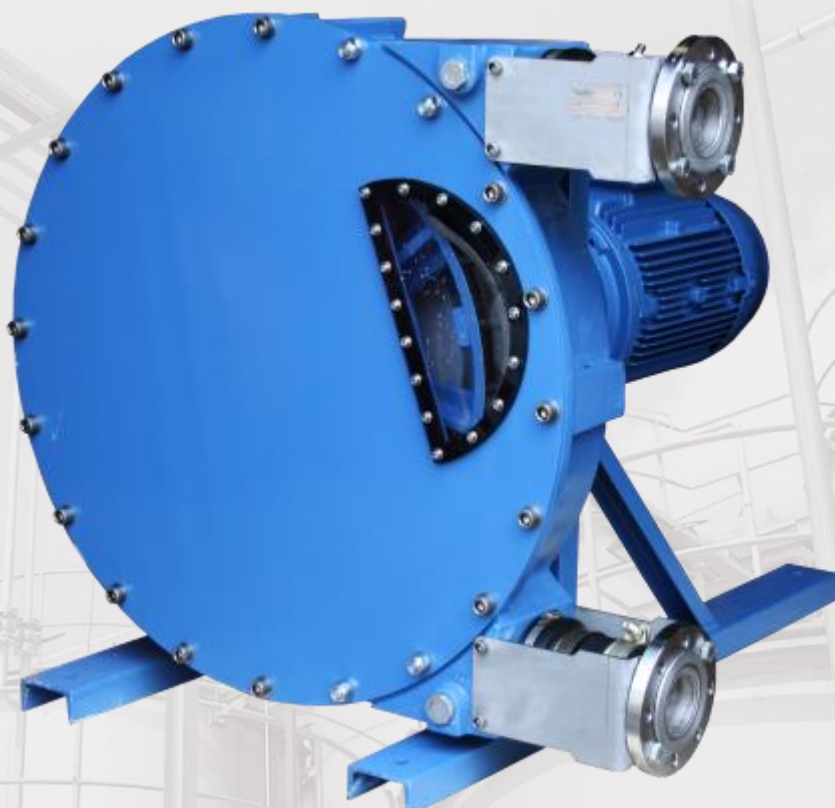


Read this instruction manual carefully,
before you install and operate the pump



Pump models:

PT
5
10
15
20
25
32
40
X40
50
65
X80
80



CONTENTS

EC DECLARATION OF CONFORMITY 02/EU/PT/2021	4
0. GENERAL	5
0.1. Introduction.....	5
0.2. Warning symbols	5
0.3. Qualification and training of personnel	5
0.4. Nameplate	6
1. INSTALLATION	7
1.1. Operation principle	7
1.2. Receiving inspection	7
1.3. Lifting and transportation	7
1.4. Storage.....	8
1.5. Foundation	8
1.6. Environment	8
1.7. Suction and discharge piping	8
1.7.1. Connection of suction pipe	9
1.7.2. Connection of discharge pipe	9
1.8. Health and safety	9
1.8.1. Protection	10
1.8.2. Electrical safety	10
1.8.3. Chemical hazard	10
1.8.4. Noise level	10
1.8.5. Temperature hazards	10
1.8.6. Rotating parts.....	11
1.8.7. Cleaning and disinfection	11
1.9. Installation recommendations	11
1.9.1. Minimum required distance for hose removal	11
1.10. Instruments.....	12
1.10.1. Electric power	12
1.10.2. Optional instruments	12
1.10.3. Thermometer	12
1.10.4. Pressure safety device	12
1.11. Motor connection	13
1.12. Gear-motor standard	13
2. OPERATION	14

CONTENTS

2.1.	Before starting the pump	14
2.2.	Starting and operation	14
2.2.1.	Dry running	15
2.2.2.	Dead head	15
2.2.3.	Optimization of the pump lifetime	15
2.3.	Pump stopping	15
2.4.	Cleaning and disinfection	16
2.5.	Residual risks	16
2.6.	Disposal after expiration of the expected lifetime	16
2.7.	Waste of electrical and electronic equipment (WEEE) directive	16
2.8.	Actions in emergency	16
3.	MAINTENANCE	17
3.1.	Inspections	17
3.2.	When the pump is new or reassembled	17
3.2.1.	Performance test	17
3.3.	Routine inspection	17
3.4.	Complete inspection	18
3.5.	Location of faults	18
3.6.	Disassembly of the pump	19
3.6.1.	Before the disassembly procedure	19
3.6.2.	Disassembly procedure	20
3.6.3.	Test run	23
3.7.	Lubricant emptying and filling procedure	24
3.8.	Hose cleaning	26
3.9.	Hose replacement	26
3.10.	Pump casing cleaning procedure	30
3.11.	Shoe shimming – PT25 – PT80	32
4.	SPARE PARTS	34
4.1.	Exploded view PT5 – PT20	34
4.2.	Spare parts list PT5 – PT20	34
4.3.	Exploded view PT25 – PT40	36
4.4.	Spare parts list PT25 – PT40	36
4.5.	Exploded view PTX40 – PT65	38
4.6.	Spare parts list PTX40 – PT65	38
4.7.	Exploded view PTX80 – PT80	40
4.8.	Spare parts list PTX80 – PT80	40

CONTENTS

4.9.	Stocking recommendation	42
4.10.	How to order parts.....	42
4.11.	Pump code	43
5.	DATA	44
5.1.	Capacity curves.....	44
5.2.	Technical data	46
5.3.	Shimming tables	47
5.4.	Dimensions	47
5.4.1.	PT5 – PT20	48
5.4.2.	PT25 – PT80	49
5.5.	Tightening torques	50
5.6.	Permitted loads on manifolds.....	51
6.	WARRANTY	52
6.1.	Warranty form.....	52
6.2.	Returning parts	53
6.3.	Warranty	53

EC DECLARATION OF CONFORMITY 02/EU/PT/2021

Series: **PT(...)**5...; **PT(...)**10...; **PT(...)**15...; **PT(...)**20...; **PT(...)**25...; **PT(...)**32...; **PT(...)**40...; **PT(...)**X40...; **PT(...)**50...; **PTX(...)**65...; **PT(...)**80...; **PTX(...)**80...

Manufactured by:

Tapflo AB

Filaregatan 4

442 34 Kungälv, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Object of declaration: **HOSE PUMPS**

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- Directive 2006/42/EC of European Parliament and of the Council of 17 May 2006 on machinery, amending Directive 95/16/EC;
- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) Text with EEA relevance
- Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits Text with EEA relevance

Mr Michał Śmigiel is authorized to compile the technical file.

Tapflo Sp. z o.o.

ul. Czatkowska 4b

83-110 Tczew



Signed for and on behalf of Tapflo AB

A handwritten signature in purple ink, appearing to read 'Håkan Ekstrand'.

Håkan Ekstrand

Managing director

Tapflo AB, 13.12.2021 r.

0. GENERAL

0. GENERAL

0.1. Introduction

The Tapflo Hose Pump range is a series of pumps for industrial and hygienic applications. The pumps are designed to be safe, simple and easy to use and maintain. The pumps are suitable for almost all different liquids used by the industry today.

The pumps are powered with an electric motor which is coupled with the rotor. To decrease the motor rotational speed a gearbox is used.

With proper attention to maintenance, Tapflo Pumps will give efficient and trouble free operation. This instruction manual will familiarise operators with detailed information about installing, operating and maintaining of the pump.

When installing, operating and maintaining of the pump unit you must strictly follow the IOM manual. Otherwise injury or life hazard may occur.

In case any instructions in this manual are unclear or any information is missing, please contact Tapflo before handling the pump.

0.2. Warning symbols

The following warning symbols are present in this instruction manual. This is what they say:



This symbol stands next to all safety instructions in this instruction manual where danger to life and limb may occur. Observe these instructions and proceed with utmost caution in these situations. Inform also other users of all safety instructions. In addition to the instructions in this instruction manual, the general safety and accident prevention regulations must be observed.



This signal stands at points in this instruction manual of particular importance for compliance with regulations and directives, for correct work flow and for the prevention of damage to and destruction of the complete pump or its subassemblies.



This symbol signals possible danger caused by the presence of electric fields or live wires.

0.3. Qualification and training of personnel



The personnel in charge of installation, operation and maintenance of the pumps we produce must be qualified to carry out the operations described in this manual. Tapflo shall not be held responsible for the training level of personnel and for the fact that they are not fully aware of the contents of this manual. In case any instructions in this manual are unclear or any information is lacking, please contact Tapflo before handling the pump.

0. GENERAL

0.4. Nameplate

The nameplate is made in the below design. It is made of AISI 304 stainless steel and placed on the pump stand or discharge flange bracket. Nameplate dimensions are 38 x 48 mm.

The nameplate design is a rectangular plate with a light gray background and a thin black border. It contains the following elements:

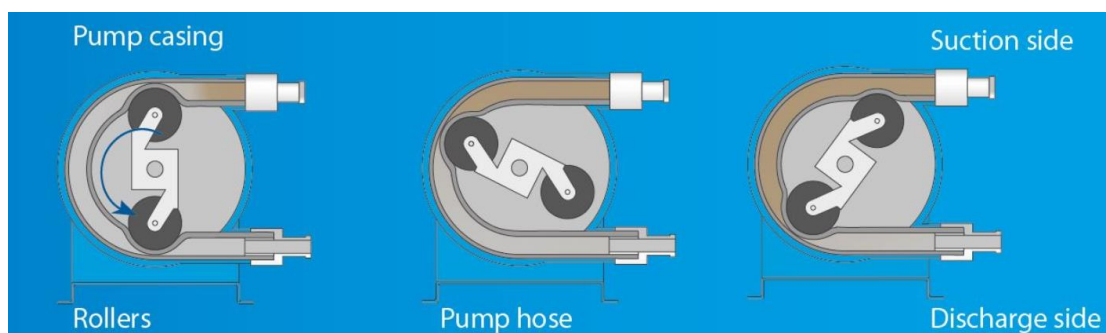
- Top Left:** Three circular icons: a person, a crossed-out trash can, and the CE mark.
- Top Right:** The Tapflo logo in blue, followed by the text "Tapflo AB, www.tapflo.com" and "Filaregatan 4 | S-442 34 Kungälv, Sweden".
- Middle Left:** The text "Pump Model" above a large rectangular input field.
- Middle Right:** A large rectangular input field.
- Bottom Left:** A small circle icon above the text "Serial Number" above a rectangular input field.
- Bottom Middle:** The text "Mfg year" above a rectangular input field.
- Bottom Right:** A small circle icon above the text "Pmax [bar]" above a rectangular input field.

1. INSTALLATION

1. INSTALLATION

1.1. Operation principle

The Tapflo hose pump is driven by a gear-motor. The rotor is installed directly on the shaft. It is equipped with shoes or has a special shape itself. The shoes compress the hose creating vacuum on the suction side of the pump and pressure on the discharge to transfer the liquid. The rotary movement of the shoes compresses the hose along the casing wall, constantly sucking/pushing the liquid through the hose. The hose is the only part of the pump that is in contact with the liquid.



1.2. Receiving inspection

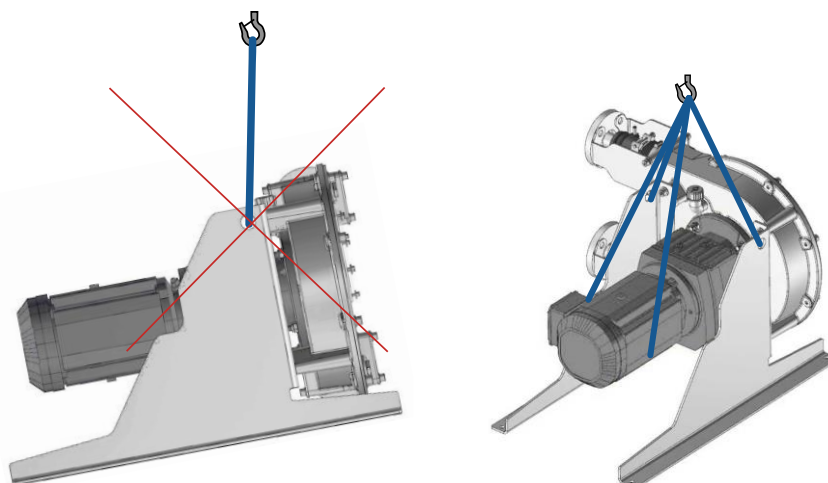
Although precaution is taken by us when packing and shipping, we urge you to carefully check the shipment on receipt. Make sure that all parts and accessories listed on the packing list are accounted for. Immediately report any damage or shortage to the transport company and to us.

1.3. Lifting and transportation



Before handling the pump check the weight of the pump (see 5. Data). Refer to Your local standards on how to handle the pump. If the weight is excessive to transport by hand it must be lifted using slings and a suitable lifting device e.g. a crane or forklift.

The pump is equipped with eye bolts to ease transportation.



1. INSTALLATION

Never lift the pump under pressure.

Be careful that nobody passes under the pump when lifted.

Never try to lift the pump by the manifolds or hoses attached to the pump.

1.4. Storage



If the equipment is to be stored prior to installation, place it in a clean location. The pump should be stored in an ambient temperature of 15°C (59°F) to 25°C (77°F) and relative humidity below 65%. It should not be exposed to any heat source e.g. radiator, sun as this could result in a negative way on the tightness of the pump. Do not remove the protective covers from the pump.

When in storage, turn the shaft by hand at least twice per month. The pump-motor unit should always be stored indoor in dry, vibration and dust free conditions. If the pump is to be stored more than 1 month, remove the hose from the pump. If this is not possible, run the pump 10 min per week. For pump sizes PT5 – PT20 position the rotor so that one of the lobes is submerged in the lubricant.

Spare hoses must be stored in the same conditions as the pump. What is more, they should be protected from direct sunlight. Rubber materials are subject to aging and their performance and lifetime decrease with time.

NOTE! Do not remove protective covers from the hose when in storage.

1.5. Foundation



The pump-motor unit must stand on and be fixed to a sufficiently rigid structure that can support the entire perimeter on which the unit stands. The foundation on a firm bottom is the most satisfactory. Once the pump is in position, adjust level with metal shims between the feet and the surface on which it stands. Check that the feet of the pump motor unit stand well on each of them. The surface on which the foundation stands must be flat and horizontal. If the unit is fitted on a steel structure, make sure that it is supported so that the feet do not warp. In any case, it is advisable to fit some anti-vibration rubber pieces between the pump and the brickwork.

1.6. Environment



- There should be enough space in the vicinity of the pump in order to operate, maintain and repair it.
- The area in which the pump is operated, must be sufficiently ventilated. Excessive temperature, humidity or dirt may affect the pump operation.
- Behind the cooling fan of the motor there must be sufficient room for the hot air to escape the motor.

1.7. Suction and discharge piping

A pump is generally part of a piping system that can include a number of components such as valves, fittings, filters, expansion joints, instruments, etc. The way the piping is arranged and the positioning of the components has a great influence on the operation and the lifetime of the pump. The pump cannot be used as a support for the components connected to it.

1. INSTALLATION

The flow of liquid from the pump must be as even as possible. It is advisable to avoid any tight bends or drastic reductions of diameters that may cause flow resistance in the installation. In case of diameter reduction, it is advisable to use appropriate conical reductions (possibly eccentric on suction side and concentric on discharge side) at changes of diameter and at a minimum distance from pump connections of five diameters.

1.7.1. Connection of suction pipe

Remember that the suction pipe/connection is the most critical point, especially if the pump is priming. Just a small leakage will dramatically reduce the suction capability of the pump. When connecting the suction pipe, the following is recommended:

- 1) For satisfactory operation, use a reinforced hose (the suction power may otherwise shrink the hose) or other flexible piping. The internal diameter of the hose should be at least same as on the suction connection (at the bottom of the pump) to have best suction capability. If the diameter of a hose is smaller, it will affect the pump's performance or cause its malfunction.
- 2) Make sure that the connection between the hose and the pump is completely tight, otherwise the suction capability will be reduced.
- 3) Always use as short suction pipe as possible. Avoid air pockets which can emerge within long piping.

1.7.2. Connection of discharge pipe



For this connection it is only recommended to have a simple and positive flow connection. Use a hose or flexible piping (minimum one meter) between the discharge connection and any rigid fixed piping. Coil the hose at least one turn. All components (hose, pipe, valves etc.) on the discharge piping must be designed for appropriate PN, according to pump maximum pressure. It is recommended to install a check-valve on the discharge side in order to protect the pump from water hammer effect that can be created in the discharge pipeline. If overpressure in the discharge line is possible, an appropriate pressure safety device should be installed to protect the pump. A device must be incorporated into the pump, system, or drive, to prevent the pump exceeding the rated pressure. Do not allow the pump to operate with a closed/blocked discharge unless a pressure relief device is installed.

A pressure relief valve must be assembled obligatory on the discharge side by the customer if overpressure in the system is possible.

1.8. Health and safety

The pump must be installed according to local and national safety rules.



The pumps are constructed for particular applications. Do not use the pump on applications different from that for which it was sold without consulting us to ascertain its suitability.

The pumps are tested with water. If the pumped product can come into reaction with water, please make sure the pump is dry before putting it into operation.

1. INSTALLATION

1.8.1. Protection



In the interest of health and safety it is essential to wear protective clothing and safety goggles when operating, and/or working in the vicinity of Tapflo pumps.

1.8.2. Electrical safety



Do not carry out any maintenance or/and operation on the pump while it is running or before it has been disconnected from the power supply. Avoid any danger caused by electric power (for details see current regulations in force). Check that electrical specifications on the data plate are equivalent to the power supply to which it will be connected.

1.8.3. Chemical hazard



Whenever the pump is to be used for pumping a different liquid, it is essential to clean the pump beforehand in order to avoid any possible reaction between the two products.

1.8.4. Noise level



Hose pumps, including the motor, in normal operating conditions produce a sound level below 70 dB(A). The major sources of noise are: liquid turbulence in the installation, cavitation or any other abnormal operation that is independent from the pump construction nor the pump manufacturer. The user must provide suitable protective means if the sources of noise could produce a harmful noise level for operators and for the environment (in compliance with current local regulations).

1.8.5. Temperature hazards

- Raised temperature can cause damage on the pump and/or piping and may also be hazardous for personnel in the vicinity of the pump/piping. Avoid quick temperature changes and do not exceed the maximum temperature specified when the pump was ordered. See also general max temperatures based on water in chapter 5. *Data*



- When the pump is exposed to ambient temperature variations or if there is big difference between the temperature of the product and the surrounding, the tightening torques of the housing nuts should be checked periodically as part of preventive maintenance (please contact Tapflo for interval proposals). Ambient temperature limits are from -20°C to +40°C. **NOTE!** If ambient temperature is below 0 °C, add antifreeze to the lubricant inside the pump. Remove 15% of the lubricant and fill with antifreeze to the appropriate level (see Fig. 3.7.5.).



- If a hot product is pumped, the pump should not stand still when filled for a longer period of time. This could cause leakage from the pump.
- Below 0°C (32°F) plastic materials become more fragile what can cause accelerated wear of parts made of these materials. This is a hazard that has to be accepted when pumping such cold products. Also in such case, when a pump is not operational it should be drained of all liquid.
- Bear in mind that the viscosity of the product changes with temperature. This has to be taken into consideration when selecting the pump.

1. INSTALLATION

- The fluid remaining in the connected piping, as well as in the pump itself, may expand because of freezing or heat, which may cause damage to the pump or/and piping, and lead to leakage of the fluid.
- Some parts of the hose pump can become hot during operation and cause burns, therefore make sure to use appropriate protection when handling the pump.

1.8.6. Rotating parts



Do not tamper with the protection of the rotating parts, do not touch or approach rotating parts in movement.

1.8.7. Cleaning and disinfection



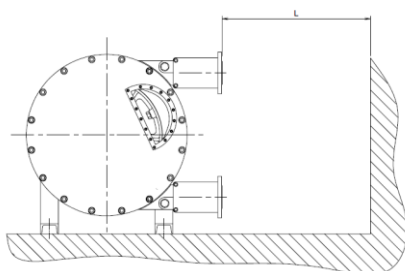
Cleaning and disinfection of the pump system is of greatest importance when the pump is used in a food process installation. Use of a pump system that is NOT cleaned or disinfected can cause contamination of the product

1.9. Installation recommendations

- If liquid contains solid particles bigger than max allowable size for the corresponding pump size, a strainer on the suction side should be used.
- Manometers or pressure sensors must always be installed on the suction and discharge side of the pump to determine proper operation of the pump.
- The suction and discharge piping must be fastened properly so that no strain occurs on the pump manifolds.
- It is recommended to install a check-valve on the discharge side in order to protect the pump from water hammer effect that can be created in the discharge pipeline.
- The suction line should be as short and straight as possible.
- A gate valve could be installed on the discharge line for easier pump disconnection from the pipeline (**ATTENTION!** The gate valve should never be closed during pump operation).
- A pressure relief valve must be assembled obligatory on the discharge side by the customer if overpressure in the system is possible. A device must be incorporated into the pump, system, or drive, to prevent the pump exceeding the rated pressure.

1.9.1. Minimum required distance for hose removal

During pump installation provide enough space to be able to perform hose replacement procedure. Please follow the guideline below:



PUMP	L [mm]	PUMP	L[mm]
PT5	400	PT40	1000
PT10	400	PTX40	1200
PT15	500	PT50	1400
PT20	500	PT65	1400
PT25	800	PTX80	1600
PT32	1000	PT80	2000

1. INSTALLATION



NOTE!

Even if all above safety instructions are met and complied with, there still exists a minor danger in the event of a leakage or mechanical damage of the pump. In such case the pumped product can emerge on sealing areas and connections.

1.10. Instruments



In order to ensure a proper control of the performance and the conditions of the installed pump, we recommend using the following instruments:

- a pressure-vacuum gauge on the suction piping;
- a pressure gauge on the discharge piping.

The pressure intakes must be made of straight pieces of piping at a distance of minimum five diameters from the pump inlets. The pressure gauge on discharge must always be fitted between the pump and the regulation valve. The output can be read on the pressure gauge, transformed into meters and then compared with the typical curves.

1.10.1. Electric power

The electric power absorbed by the motor can be measured by means of a wattmeter or an amp gauge.

1.10.2. Optional instruments

The optional instruments can indicate if pump is working in an abnormal way. The abnormal conditions can be caused by: accidentally closed valves, lack of pumped liquid, overloads, etc.

1.10.3. Thermometer

If the temperature of the pumped liquid is a critical parameter, provide the installation with a thermometer (preferably on the suction side).

1.10.4. Pressure safety device

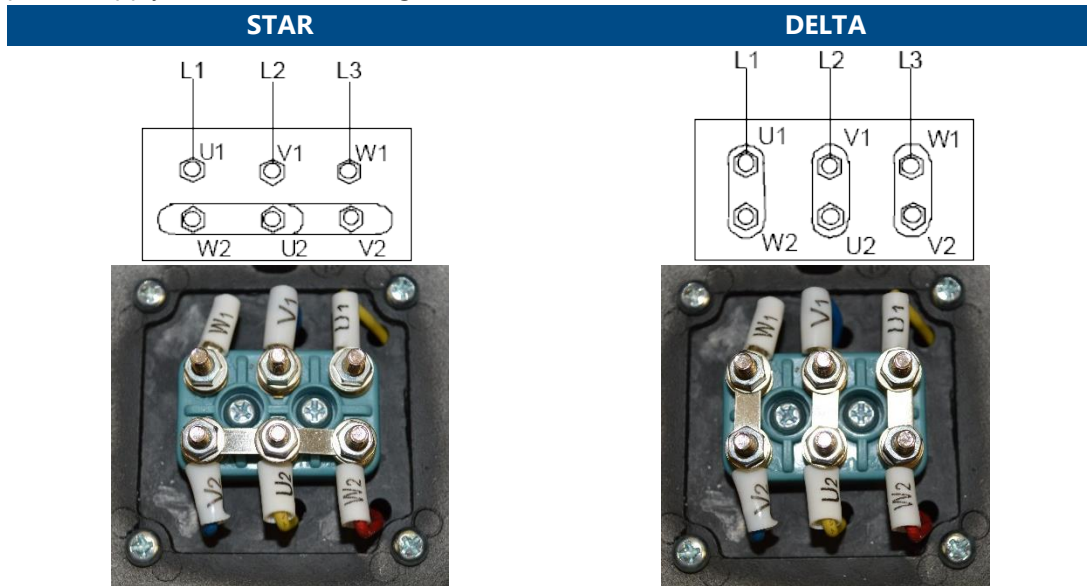
The pump cannot run against higher pressure than stated in this IOM manual. Therefore the pump must be equipped with an appropriate pressure safety device such as a pressure switch, bypass line with a pressure relief valve or motor overload protection that will automatically stop the pump when pressure rises above allowable levels.

1. INSTALLATION

1.11. Motor connection



An expert electrician must always carry out the electrical connection. Compare the power supply with the data plate specifications and then choose a suitable connection. The type of connection is stated on the motor data plate and can be Y (star) or D (Delta), according to the power supply of the motor (see figure below).



Follow the connection standard used in the plant. In no case connect the electrical motor directly to supply network but use a suitable electric switchboard equipped with a knife switch and suitable safety devices (e.g. motor breaker switches) in the power circuit. Safety devices against overloads must also protect the motors. Make sure that the motor has suitable grounding and that it has been connected properly.

1.12. Gear-motor standard

As a standard Tapflo Hose pump are equipped with gear-motors of the following parameters:

- International Mounting Arrangement – **B5**
- Number of poles / Rotation speed [rpm] – **4 / ~1400**
- **Non ATEX**
- Protection grade – **IP55**
- Voltage – **3 phase; 230/400 (below 3 kW) or 400/690V (above 3 kW); 50 Hz**
- Efficiency class – **IE3**
- Output rpm – **12÷63 @ 50 Hz**
- Thermal protection – **PTC**

The rated gear-motor rpm should not be exceed. If you want to operate the pump at higher speed please consult Tapflo for guidelines.

2. OPERATION

2. OPERATION

2.1. Before starting the pump



- Make sure the pump is installed according to the installation instructions (chapter 1).
- Filling of the pump with liquid before start is not necessary.
- Make sure that enough lubricant is inside of the pump. Appropriate level is directly below the sight glass. Add lubricant if necessary.
- Check manually that the motor is free to turn, moving the motor cooling fan.
- Make sure that the piping is not clogged and is free from residues or foreign objects.
- The suction shut-off valve (if any) must be completely open.
- The shut-off valve on the discharge side (if any) must be completely opened.
- Any auxiliary connections must all be connected.
- Make sure the shimming of the pump is correct, according to the desired process.
- When installation is new or reinstalled, a test run of the pump with water should be conducted to make sure that the pump operates normally and does not leak.
- When installation is new or reinstalled, check the pump housing nuts tightening torque (see chapter 5.6 *"Tightening torques"*). After approximately one week of operation, the torque should be checked again. This is important to prevent possible leakage.
- Starting the electrical motor makes the pump run at full capacity!

2.2. Starting and operation



Open the discharge valve and start the electric motor. The pump must not run with completely closed discharge - these conditions can seriously damage the pump and cause injury to the operator.



If the pressure shown on the pressure gauge on the discharge piping does not increase, turn off the pump immediately and release pressure carefully. Repeat the connection procedure.



Make sure that pressure on the discharge does not exceed the rated pressure!

A device must be incorporated into the pump, system, or drive, to prevent the pump exceeding the above rated pressure. Do not allow the pump to operate with a closed/blocked discharge unless a pressure relief device is installed.

A pressure relief valve must be assembled obligatory on the discharge side by the customer.

Pump can be equipped with such a safety device on customer's request.

If there are changes of flow rate, head, density, temperature or viscosity of the liquid, stop the pump and get in touch with our technical service.

The performance of the pump can be adjusted by means of a frequency inverter. The pump operation does not depend upon the direction of rotation and can achieve full capacity in both directions of rotation.

2. OPERATION

2.2.1. Dry running

Although the pump is prepared for dry running it is important to have in mind that long periods of dry run may cause damage to the wearing parts of the pump. What is more, an empty pump should operate at low speeds – controlled by a frequency inverter.

2.2.2. Dead head



The pump cannot operate with closed discharge valve. This may lead to pump malfunction and cause injury to operators in the vicinity of the pump.

The discharge pressure can never exceed pump rated pressure.

2.2.3. Optimization of the pump lifetime

- Continuous operation at higher frequency than 50 Hz will cause premature wear of the components. As a general rule, we recommend to run the pump at $\pm 20\%$ of the rated frequency.
- When reducing the motor rotation speed, control the gear-motor surface temperature if it does not exceed the nominal working temperatures stated by the gear-motor manufacturer.

2.3. Pump stopping



Turn off the motor to stop the pump. Close the discharge shut-off / regulation valve immediately after. The reverse sequence is not recommendable, especially with larger pumps or longer delivery piping. That is to avoid any problems due to water hammering. It is therefore advised to install a check valve on the discharge to protect the pump. If a suction shutoff valve has been installed, it is advisable to close it completely after pump is fully stopped.



The pump should be stopped by cutting of electrical power to the motor or frequency inverter (if used – at 50 Hz cool down should be set to 5 seconds).

NOTE! Never stop the pump by completely closing the discharge valve without motor shut down.

2. OPERATION

2.4. Cleaning and disinfection



Cleaning and disinfection of the pump system is of greatest importance when the pump is used in a food processing installation. Use of a pump system that is NOT cleaned or disinfected can cause contamination of the product. The cleaning cycles as well as chemicals to use for the cleaning vary depending on the pumped product and the process. The user is responsible to establish a suitable cleaning and / or disinfection program according to local and public health and safety regulations.



If the outside of the pump is to be rinsed or flushed, the power supply must be disconnected beforehand.

2.5. Residual risks



Even with proper application and observance of all points listed in this operating manual, there is still an estimable and unexpected residual risk when using the pumps. It may leak, fail due to wear, application-related causes or system-related circumstances.

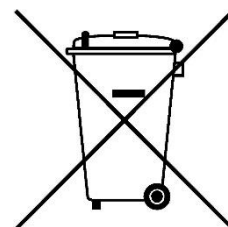
2.6. Disposal after expiration of the expected lifetime

Pump components can be recycled, it must be disposed of properly, according to local regulations. It should be noted that potentially dangerous fluid residues may remain in the pump and can create a hazard to the operator or the environment, therefore the pump has to thoroughly cleaned before disposal.

2.7. Waste of electrical and electronic equipment (WEEE) directive



Users of electrical and electronic equipment (EEE) with the WEEE marking per Annex IV of the WEEE Directive must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to them for the return, recycle, recovery of WEEE and minimize any potential effects of EEE on the environment and human health due to the presence of hazardous substances. The WEEE marking applies only to countries within the European Union (EU) and Norway. Appliances are labelled in accordance with European Directive 2002/96/EC. Contact your local waste recovery agency for a designated collection facility in your area.



2.8. Actions in emergency



In case of a leakage of an unknown fluid, respiratory protection should be worn and contact with the fluid avoided. During firefighting, no special hazards are to be expected from the pump itself. In addition, the currently handled fluid and the corresponding safety data sheet must be taken into account. When fluid leakage occurs, the power supply has to be closed and the pressure released. During spillage of an aggressive liquid, local and national safety rules must be followed.

3. MAINTENANCE

3. MAINTENANCE



Maintenance work on electrical installations must be performed by qualified personnel and only when the power supply has been shut off. Wait five minutes for capacitor to discharge before opening the pump. Follow the local and national safety regulations.

Due to size of some of the pumps at least two persons should perform maintenance activities and if needed use appropriate lifting devices according to local rules and regulations.

3.1. Inspections

- Periodically check suction and discharge pressures.
- Inspect the gear-motor according to the instructions from the motor manufacturer.
- Gear oil must be exchanged in accordance with the gear manufacturer instruction manual.

3.2. When the pump is new or reassembled



If the pump is new or reassembled after maintenance it is important to retighten the screwed connections after one week of operation.

Make sure to use the right torque – see chapter 5.5 “*Tightening torques*”.

3.2.1. Performance test

When installation is new, a test run of the pump should be conducted. Gauge the capacity at specific pump speed. This information is useful for checking performance in the future as wear takes place. You will be able to set schedules for maintenance of the pump and to select spare parts to be kept on stock.

3.3. Routine inspection



Frequent observation of the pump operation is recommended to detect problems. A change in sound of the running pump can be an indication of wearing parts (see chapter 3.5 “*Location of faults*” below). Hose damage can be the main reason of liquid leakage therefore it is advisable to install a hose rupture monitoring system that can detect the hose damage and stop the pump when liquid enters the pump chamber.

Leaking liquid from the pump and changes of performance may also be detected. Routine inspections should be conducted frequently. We recommend to conduct a daily check and keep records of the following:

- Leakage of fluid from any connection of the pump
- Tightness of all connection parts of the pump and any peripheral equipment
- Complete inspection in regular intervals has been done

In case any of the above is not fulfilled, do not start the pump and implement corrective actions.

Establish a preventive maintenance schedule based on the pump’s service history. Scheduled maintenance is especially important to prevent spills or leakage due to hose failure.

3. MAINTENANCE

3.4. Complete inspection



The intervals for a complete inspection depend upon the operation conditions of the pump. The characteristics of the liquid, temperature, materials used in the pump and running time decide how often a complete inspection is necessary.

Nevertheless, Tapflo recommends to inspect the pump at least once a year.

If a problem has occurred, or if the pump is in need of a complete inspection, refer to chapters 3.5 "Location of faults" and 3.6 "Disassembly of the pump". You are of course warmly welcome to consult Tapflo for further help.

Parts that are subject to wear should be kept in stock, see our recommendations in chapter 4.9 "

3.5. Stocking recommendation

recommendation".

3.6. Location of faults

PROBLEM	POSSIBLE ISSUE	POSSIBLE SOLUTION
Pump does not run	Lack of power supply The rotor is stalling Lubricant level detector switched off the pump	Check if the motor is connected properly Check if power supply is ON Check the fixing of the hose Check if the discharge pressure is not too high Check if particles are not blocking the hose Check for any lubricant leakage Check proper functionality of the lubricant detector
The suction is bad	Suction connection is not tight Suction connection is blocked Hose is blocked or damaged Air in suction / discharge line	Tighten the suction line Clean suction line Check for any debris inside the hose Vent suction / discharge line
The pump runs irregular	Hose is blocked or damaged	Check for any debris inside the hose
Bad flow/pressure	Not enough shims under shoes Suction blocked Pressure losses on suction side Too viscous liquid Air in liquid Hose is blocked or damaged	Check shimming and adjust if necessary Check / clean suction connection Check/change installation on suction side Check if pump speed is proper for viscosity Seal suction line; check / refill container Check for any debris inside the hose, replace hose if necessary
Liquid leaks from the pump	Screws on the pump not properly tightened Cover seal worn Shaft seal or seal ring worn Tension / stress from the installation	Check tightening torques of the screws Replace cover seal if necessary Replace if necessary Adjust installation, eliminate stress, when using a dampener provide separate support for it.
Hose life is too short	Wrong selection of material Long periods of dry running Too high discharge pressure Too high speed Wrong shimming Too high liquid temperature	Contact us for information on material selection When dry, run pump slowly (see chapter 2.2) Check if pump rated pressure is not exceeded Check if the discharge line is not blocked Reduce the pump speed Check shimming and adjust if necessary Contact us for information on material selection
Overheating of motor	Flow rate too high Liquid parameters different than calculated	Reduce the flow / rotation speed of the motor Check pumped liquid parameters
Overheating of the pump	Flow rate too high	Reduce the flow / rotation speed of the motor

3. MAINTENANCE

	Liquid temperature too high Foreign objects in the liquid Pump is not filled with liquid	Cool the liquid Use a filter on the suction side Fill pump with liquid
Noise and vibration	The pump sucks air Suction pipe is blocked Flow rate too high Loads on the pipes Foreign objects in the liquid Liquid parameters different than calculated	Make sure all connections are tight Check pipes / valves and filters on suction line Reduce the flow / rotation speed of the motor Connect the pipes independent of the pump Use a filter on the suction side Checked pumped liquid parameters
Abnormal wear	The pump sucks air Liquid temperature too high Loads on the pipes Foreign objects in the liquid	Make sure all connections are tight Cool the liquid Connect the pipes independent of the pump Use a filter on the suction side

3.7. Disassembly of the pump

The numbers put in brackets, refer to the part numbers in the spare part drawings and spare part lists in chapter 4. "Spare parts".



The disassembly should be performed only by qualified personnel. There should always be at least two persons present during disassembly.



Each operation to be fulfilled with the machine must always be carried out once all the electrical contacts have been disconnected. The pump-motor unit must be placed in a position where it cannot be started unintentionally.



Before servicing in any way the parts that come in contact with the pumped liquid, make sure that the pump has been fully emptied and washed. When draining the liquid, make sure that there is no danger for people or the environment.

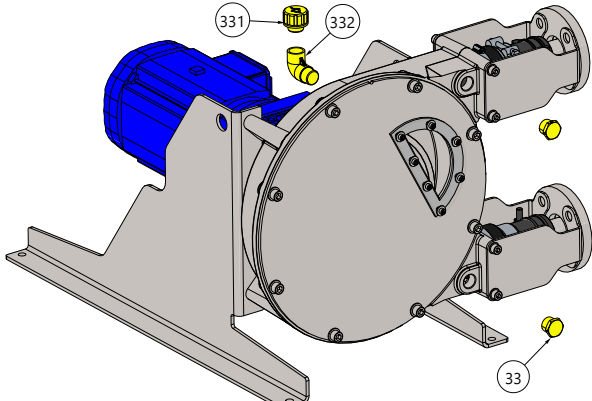
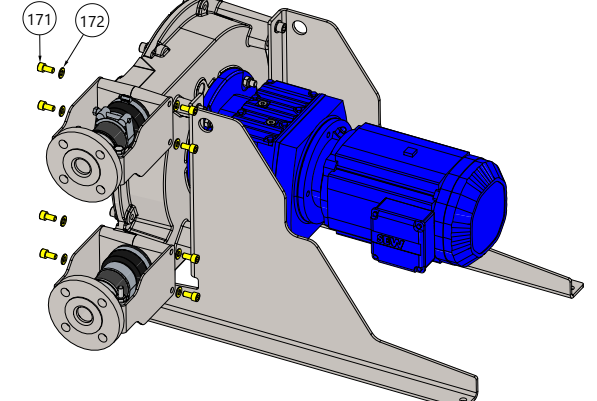
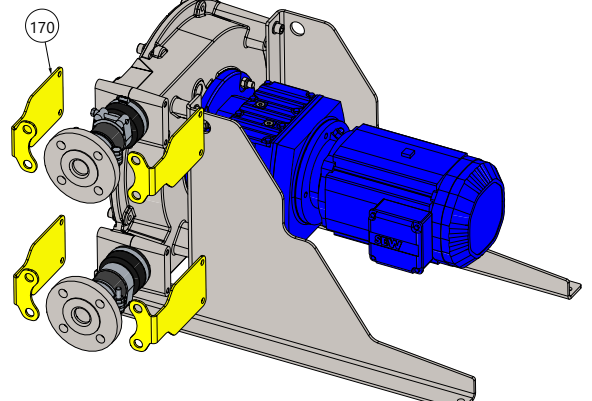
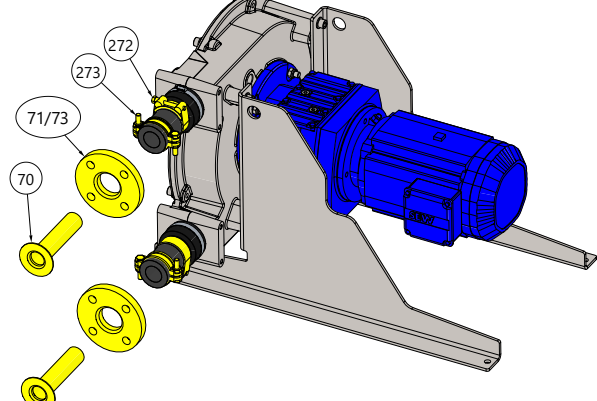
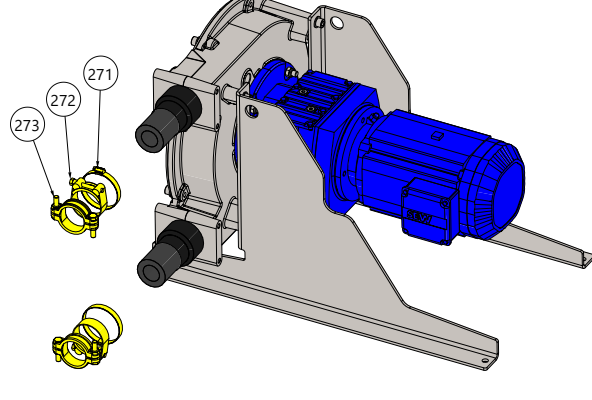
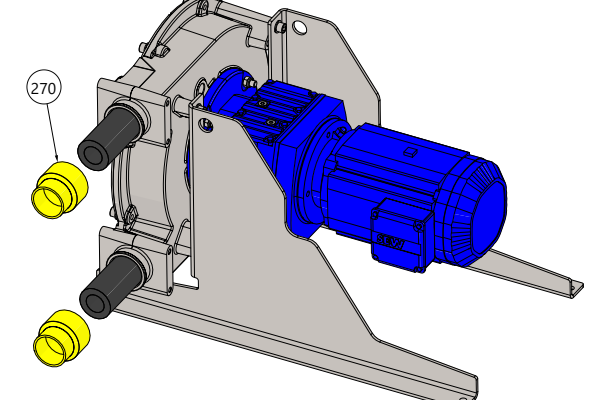
3.7.1. Before the disassembly procedure



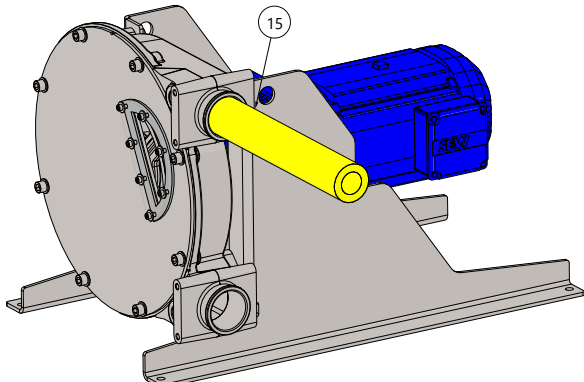
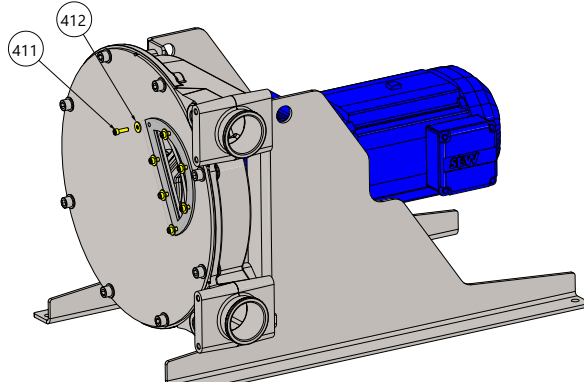
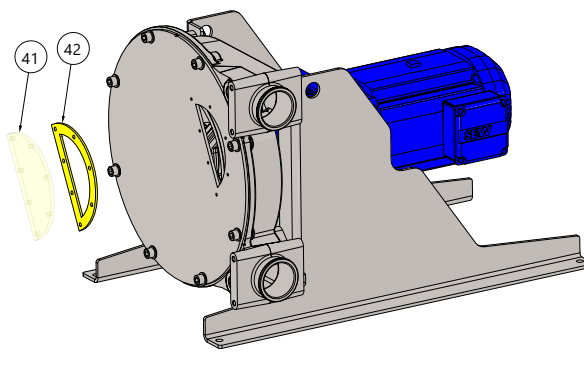
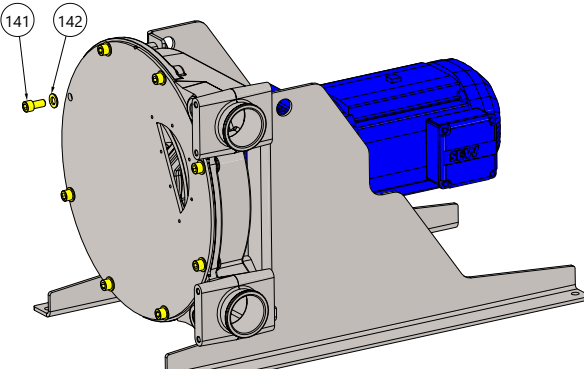
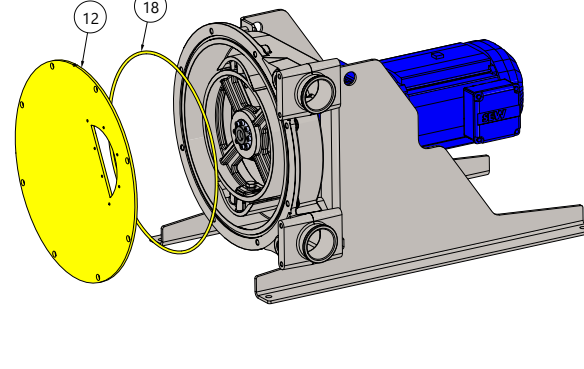
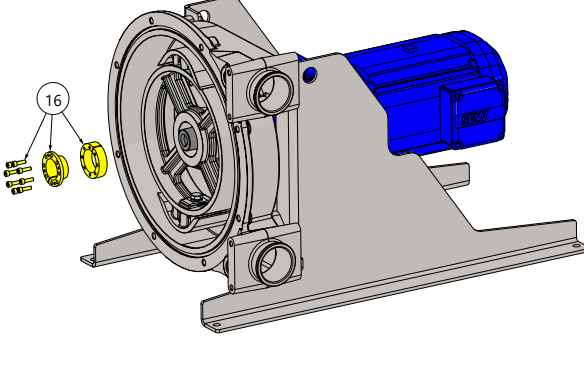
Be sure to drain all liquid from the pump. Cleanse or neutralize the pump thoroughly. Disconnect the electrical connection, air supply and then the suction and discharge connections.

3. MAINTENANCE

3.7.2. Disassembly procedure

 <p>Diagram showing the removal of the breather cap [331], breather cap elbow [332], and drain plugs [33] from the pump assembly.</p>	 <p>Diagram showing the removal of the bracket mounting bolts [171] and their washers [172] from the pump assembly.</p>
<p>Fig. 3.6.1 Unscrew the breather cap [331], breather cap elbow [332] and the drain plugs [33]. NOTE! The pump is filled with lubricant. In order to drain the pump follow the <i>Lubrication emptying and filling</i> procedure in chapter 3.8.</p>	<p>Fig. 3.6.2 Unscrew the bracket mounting bolts [171] and remove them with their washers [172].</p>
 <p>Diagram showing the removal of the brackets [170] from the pump assembly.</p>	 <p>Diagram showing the loosening of hose clamps [272] and [273] and the removal of the flange pipe / insert [70] with the flange rings [71/73] from the pump assembly.</p>
<p>Fig. 3.6.3 Remove the brackets [170] from the pump.</p>	<p>Fig. 3.6.4 Loosen the hose clamps [272] and [273] and remove the flange pipe / insert [70] with the flange rings [71/73].</p>
 <p>Diagram showing the loosening of the big clamp band [271] and the removal of all clamp bands from the pump assembly.</p>	 <p>Diagram showing the removal of the boot covers [270] from the pump assembly.</p>
<p>Fig. 3.6.5 Loosen the big clamp band [271] and remove all clamp bands from the pump.</p>	<p>Fig. 3.6.6 Remove the boot covers [270].</p>

3. MAINTENANCE

	
<p>Fig. 3.6.7 Remove the hose [15] from the pump. NOTE! In order to remove the hose, follow the <i>Hose replacement</i> procedure in chapter 3.10.</p>	<p>Fig. 3.6.8 Unscrew the sight glass mounting bolts [411] and remove them with their washers [412].</p>
	
<p>Fig. 3.6.9 Remove the sight glass [41] with its gasket [42].</p>	<p>Fig. 3.6.10 Unscrew the front cover mounting bolts [141] and remove them with their washers [142]. NOTE! In big pump sizes, the front cover is very heavy and requires special removing procedure. Refer to chapter 3.11. <i>Pump casing cleaning procedure</i> for more information.</p>
	
<p>Fig. 3.6.11 Remove the front cover [12] with its seal [18]. NOTE! In big pump sizes, the front cover is very heavy and requires special removing procedure.</p>	<p>Fig. 3.6.12 Unscrew the clamping set bolts and remove the complete clamping set [16].</p>

3. MAINTENANCE

Refer to chapter 3.11. *Pump casing cleaning procedure* for more information.

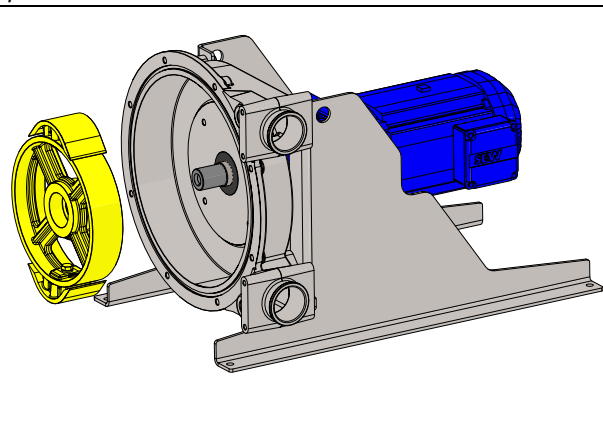


Fig. 3.6.13
Remove the complete rotor assembly from the pump.

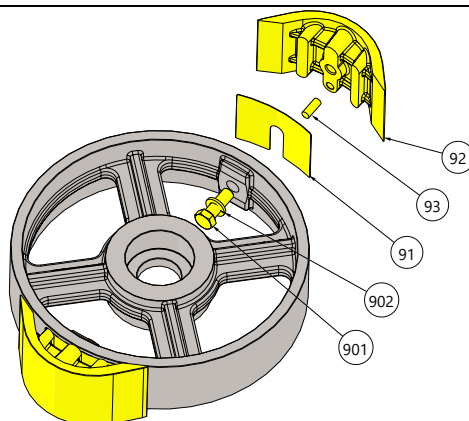


Fig. 3.6.14
Unscrew the shoe mounting bolts [901] and remove it with its washers [902]. Remove the shoes [92] shoe centring pins [93] and shims [91].

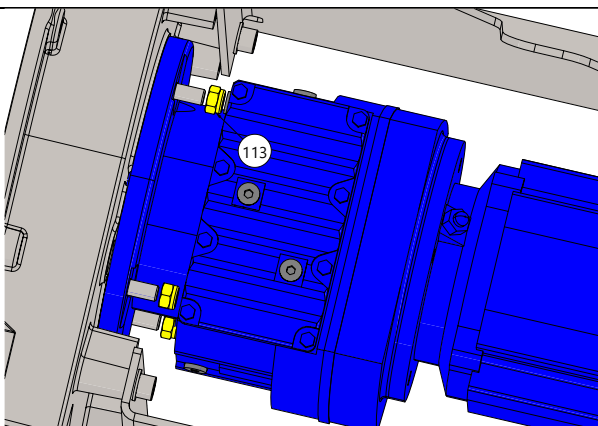


Fig. 3.6.15
Unscrew the gearmotor mounting nuts [113].

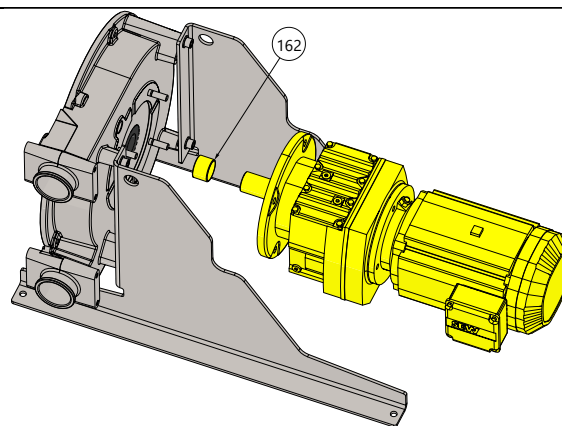


Fig. 3.6.16
Remove the gearmotor along with the seal ring [162].

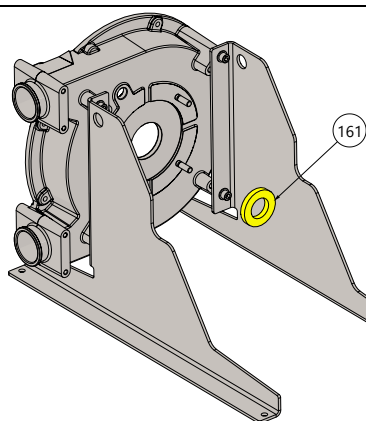


Fig. 3.6.17
Remove the shaft seal [161].

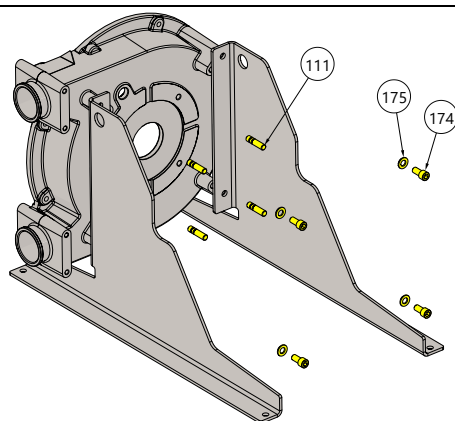
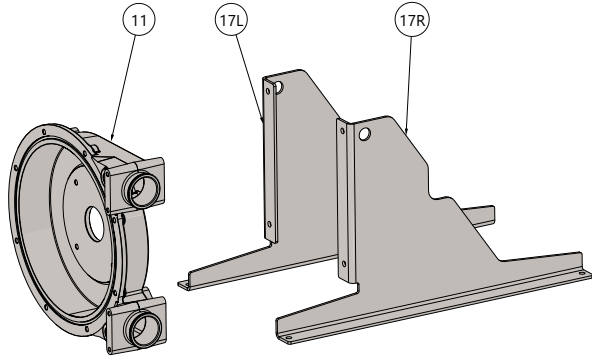


Fig. 3.6.18
Unscrew the gearmotor mounting stud bolts [111]. Unscrew the casing mounting bolts [174] and remove them with their washers [175].

3. MAINTENANCE

	
<p>Fig. 3.6.19 The pump is now completely disassembled. Check all components for wear or damage and replace if necessary.</p>	

3.7.3. Test run



We recommend you to conduct a test run of the pump before installing it in the system, so no liquid gets wasted if the pump leaks or perhaps does not start accordingly to wrong assembly of the pump.

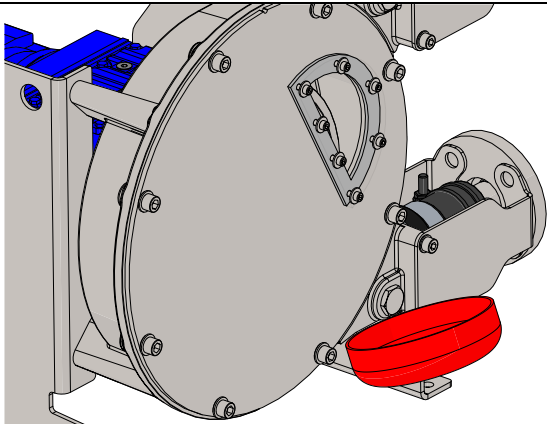
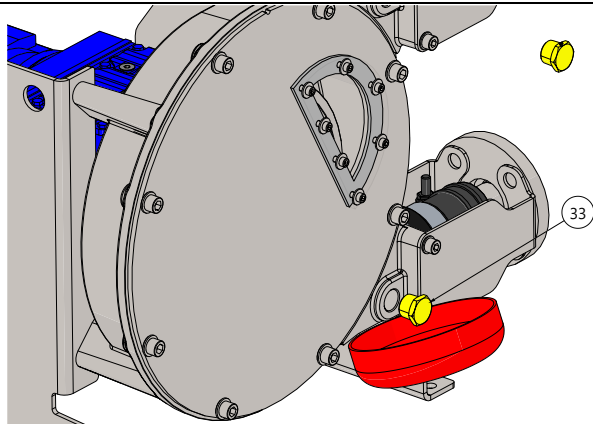
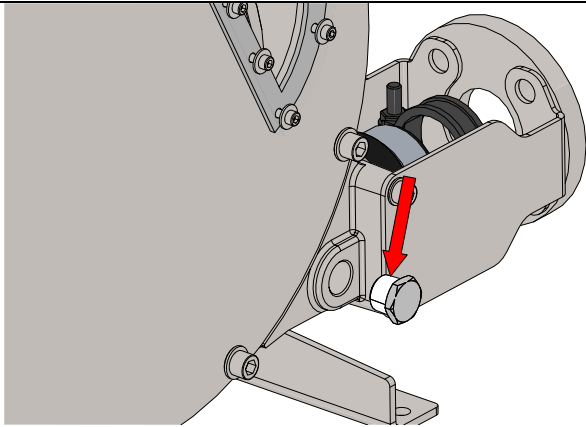
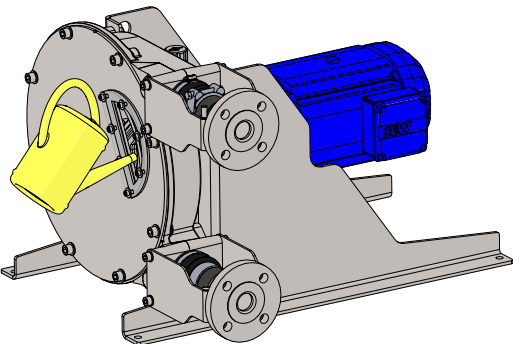
After two weeks of operation retighten the nuts with appropriate torque.

3. MAINTENANCE

3.8. Lubricant emptying and filling procedure

The quality of the lubricant inside the pump is deteriorating with time. It has to be replaced after every two hose changeovers or 5000 hours of operating time, whichever comes first. What is more, the lubricant has to be replaced every time it becomes contaminated e.g. if a hose rupture occurs.

NOTE! Proceed with this procedure only after familiarizing oneself with the instructions at the beginning of chapter 3. *Maintenance* and all safety instruction in chapter 1.8. *Health and safety*.

	
<p>Fig. 3.7.1 Place a drip pan under the drain plug. NOTE! Make sure the drip pan is large enough to contain the whole amount of lubricant that is inside the pump (see chapter 5.2. <i>Technical data</i> for more information).</p>	<p>Fig. 3.7.2 Unscrew the plug [33] and empty the pump from the lubricant. NOTE! If the pump is oriented with the manifolds facing upwards, the drainage is commenced by unscrewing of a few casing screws [141] on the bottom of the casing [11].</p>
	
<p>Fig. 3.7.3 Screw the drain plug [33] back into the pump casing [11]. Use PTFE tape to seal the connection.</p>	<p>Fig. 3.7.4a In order to fill the pump with lubricant, remove the sight glass [41] and its gasket [42] by unscrewing the sight glass mounting screws [411] and washers [412].</p>

3. MAINTENANCE

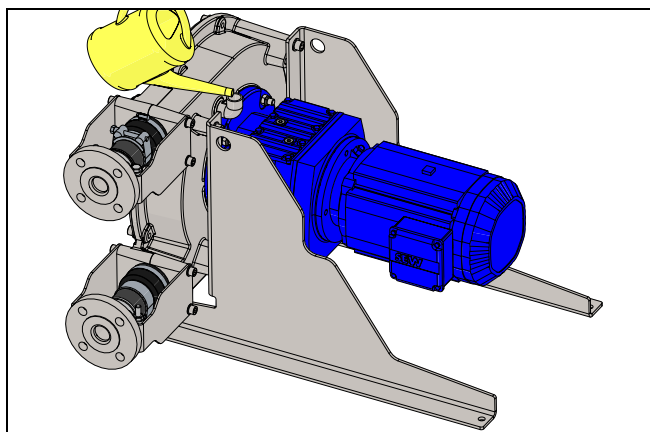


Fig. 3.7.4b

It is also possible to fill the pump with lubricant directly through the vent plug [331] located on the top of the pump.

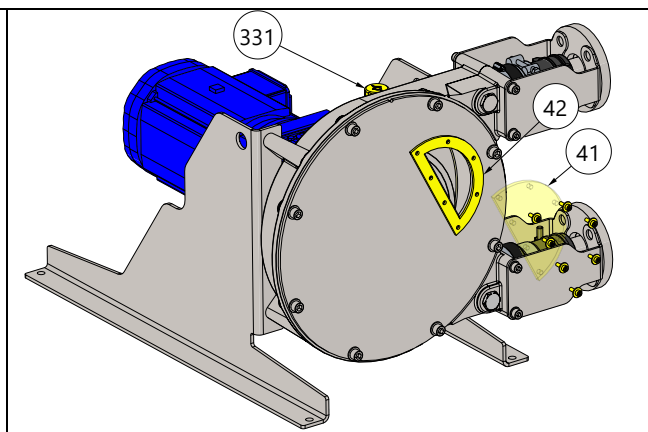
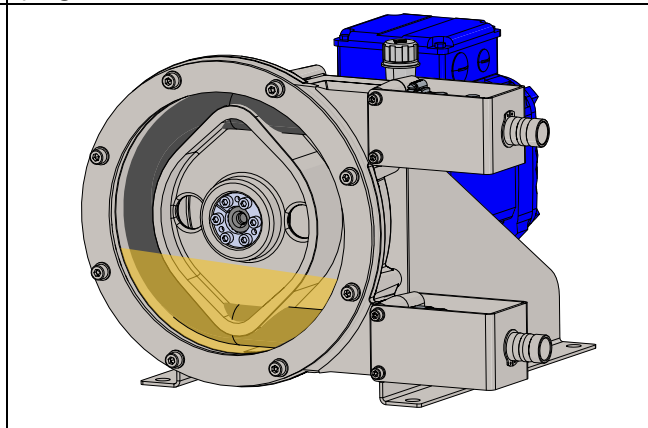
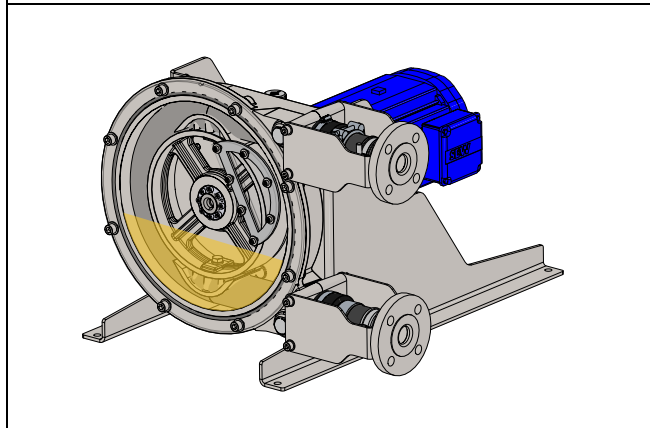


Fig. 3.7.5

Check the condition of the sight glass gasket [42] and reassemble the sight glass [41] or tighten the vent plug [331].



3.7.6

Fill the pump casing [11] with appropriate amount of lubricant (see chapter 5.2. *Technical data* for more information).

The appropriate level of the lubricant inside the pump is:

- Below the shaft for PT5 – PT20;
- Below the bottom edge of the sight glass for PT25 – PT80.

3. MAINTENANCE

3.9. Hose cleaning

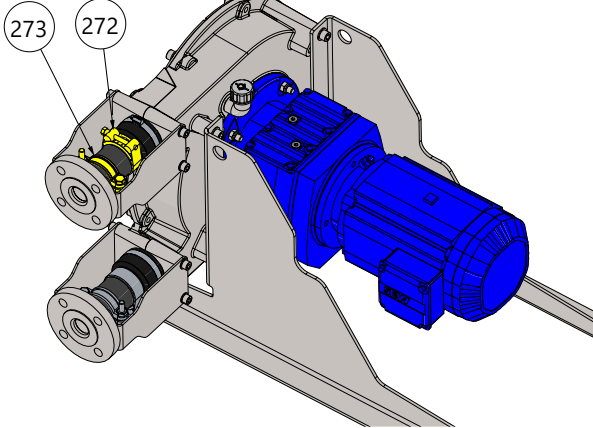
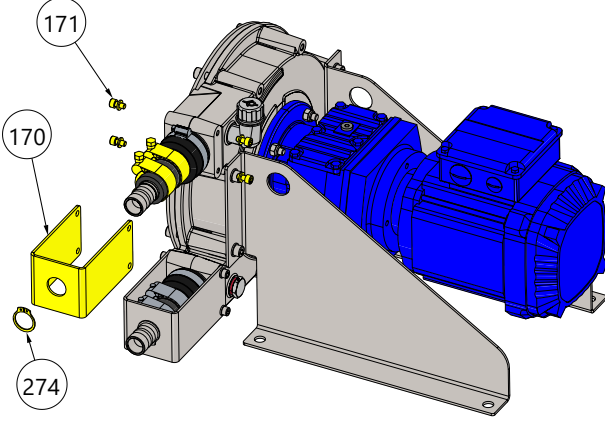
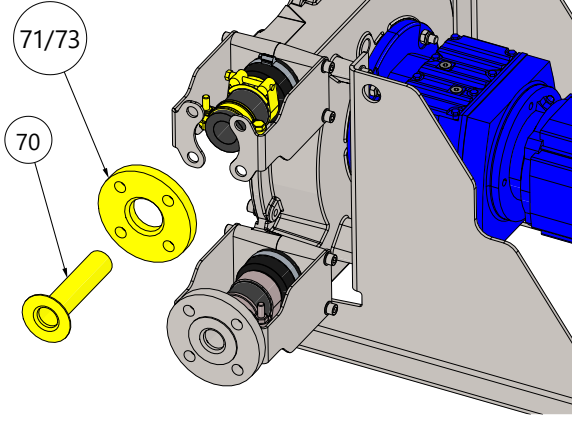
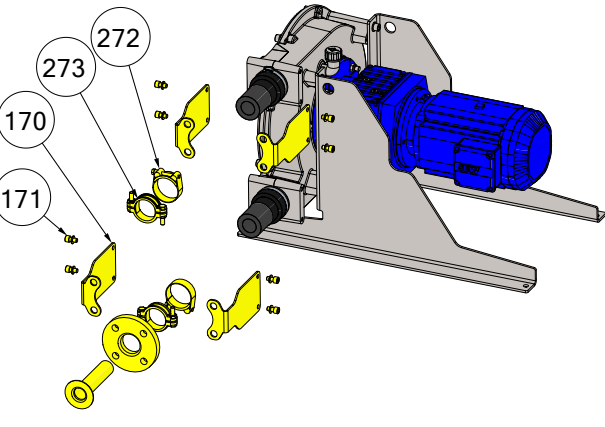
The hose can be cleaned in place without disassembly. It can be done with water or any other appropriate agent as long as it is compatible with the hose material. Check not only the chemical compatibility but also the allowable temperature for the utilized hose.

3.10. Hose replacement

The hose can be replaced without the whole pump disassembly. Before starting of this procedure, drain the pump from the lubricant according to the procedure shown in chapter 3.8. *Lubricant emptying and filling procedure.*

In order to avoid costly downtime of the pump, it is recommended to inspect the hose after about 90% of the lifetime of the first hose as part of preventive maintenance.

NOTE! Proceed with this procedure only after familiarizing oneself with the instructions at the beginning of chapter 3. *Maintenance* and all safety instruction in chapter 1.8. *Health and safety.*

	
<p>Fig. 3.9.1a PT25 – PT80 Loosen the clamp bands [272] and [273] on the suction side of the pump.</p>	<p>Fig. 3.9.1b PT5 – PT20 Remove the circlip [274]. Unscrew the bracket bolts [171] and remove the bracket [170].</p>
	
<p>Fig. 3.9.2 Remove the insert [70] and, if applicable, the flange ring [71/73].</p>	<p>Fig. 3.9.3a PT25 – PT80 Follow steps 3.9.1a and 3.9.2 on the discharge side of the pump. Additionally, unscrew the bracket bolts [171] and remove the brackets [170]. Remove the clamp bands [272] and [273].</p>

3. MAINTENANCE

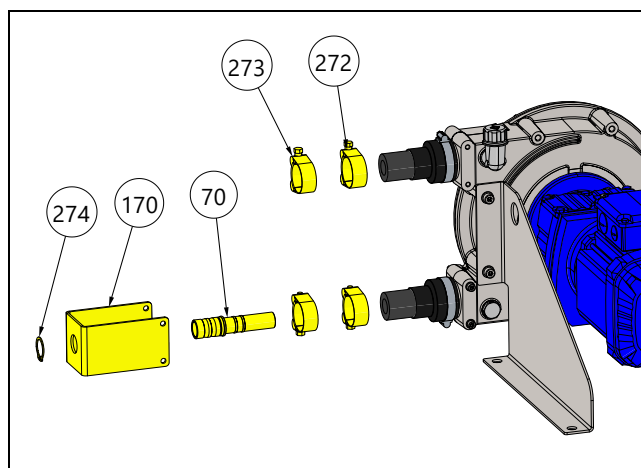


Fig. 3.9.3b PT5 – PT20

Follow steps 3.9.1b and 3.9.2 on the discharge side of the pump. Additionally, remove the clamp bands [272] and [273].

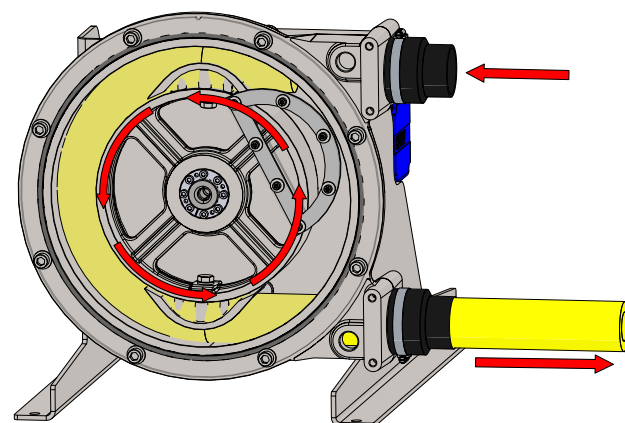


Fig. 3.9.4

Start and stop the motor repeatedly in short bursts (jog run) to extract the hose on the discharge side of the pump.

NOTE! During this operation, make sure no one is standing directly in front of the pump connections as the hose can come out of the casing at significant speed and cause severe injury to the operator.

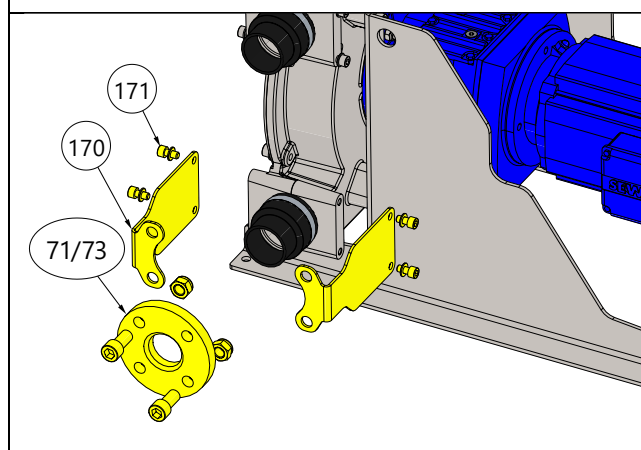


Fig. 3.9.5a PT25 – PT80

Pre-assemble the flange ring [71/73] using two bolts on the discharge side of the pump.

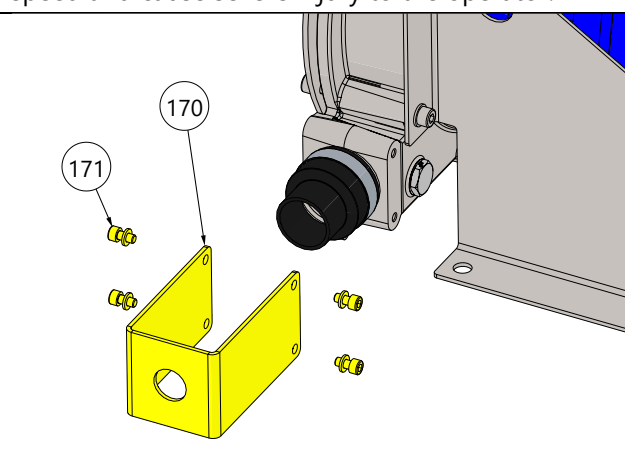


Fig. 3.9.5b PT5 – PT20

Pre-assemble the bracket [170] on the discharge side of the pump.

3. MAINTENANCE

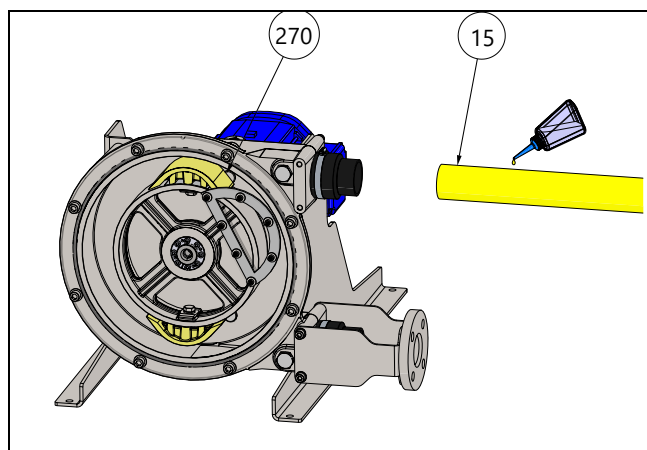


Fig. 3.9.6

Clean the new hose [15] thoroughly before assembly. Slightly lubricate the hose [15] and the inside of the boot cover [270] with Tapflo lubricant.

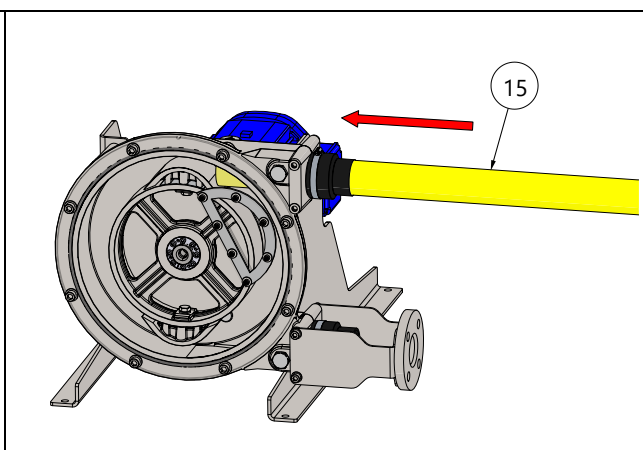


Fig. 3.9.7

Insert the hose [15] by hand to the suction port of the pump.

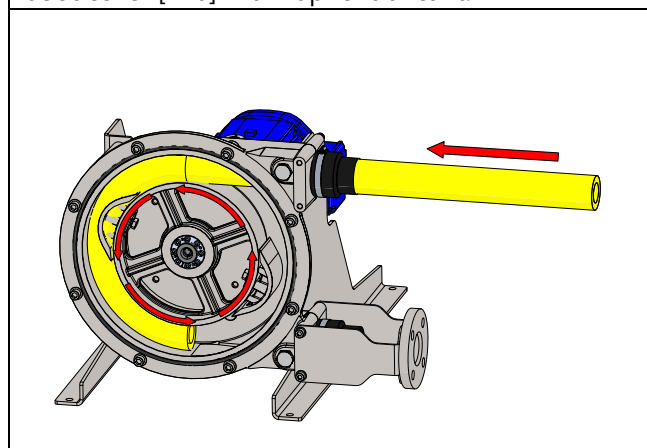


Fig. 3.9.8

While pushing in the hose jog run the motor. The shoes [92] / rotor [90] will guide the hose through the pump into the suction port.

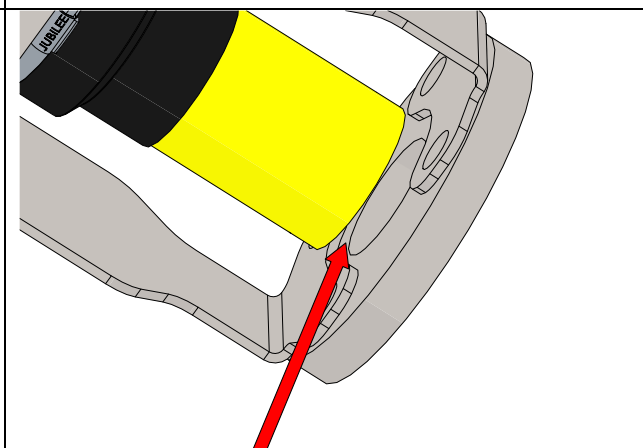


Fig. 3.9.9

Guide the hose [15] to the discharge flange ring [71/73].

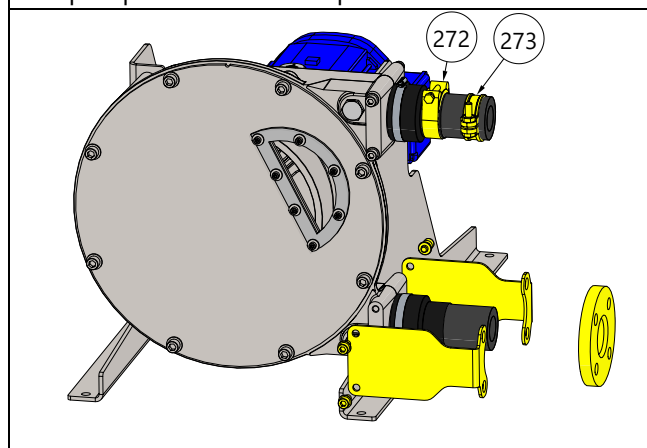


Fig. 3.9.10

Insert the clamp bands [272] and [273] on the suction side of the pump. Disassemble the flange ring and brackets on the discharge side.

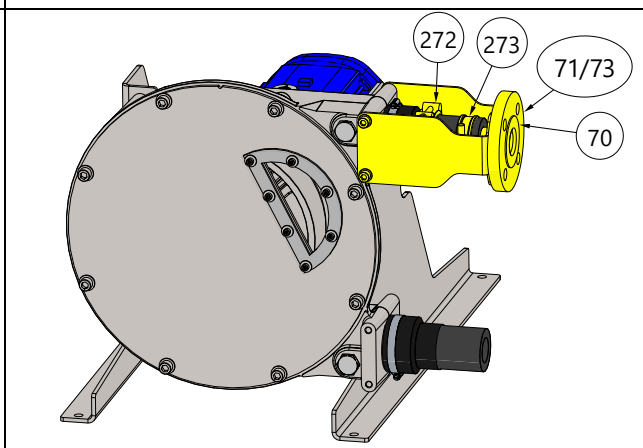
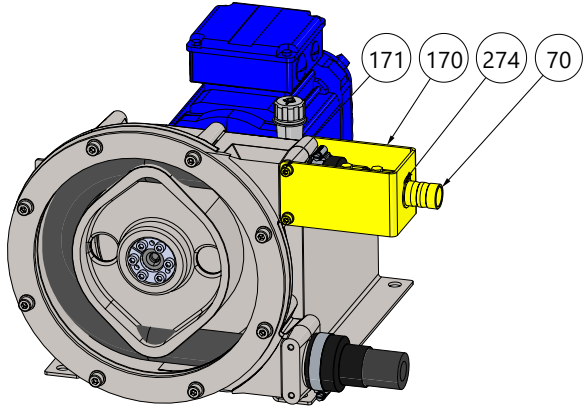
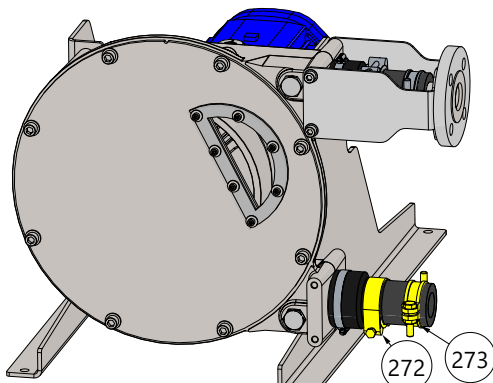
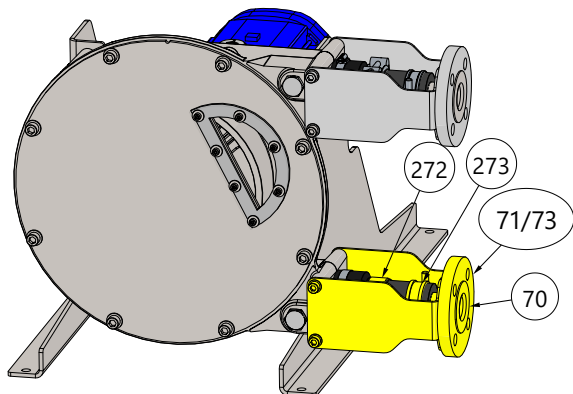
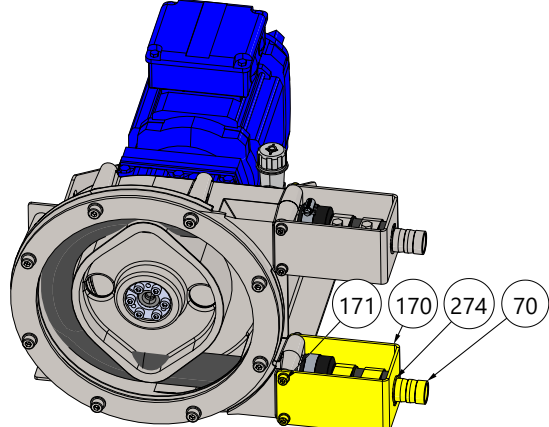


Fig. 3.9.11a PT25-PT80

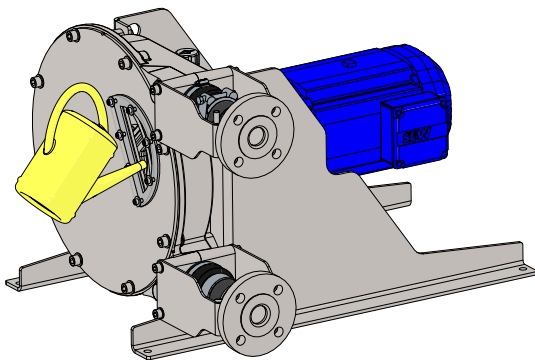
Assemble the brackets [170]. Assemble the insert [70] with the flange ring [71/73] into the hose and tighten the clamp bands [272] and [273].

NOTE! Tapflo lubricant may be used to ease assembly of the insert into the hose.

3. MAINTENANCE

	
<p>Fig. 3.9.11b PT5-PT20</p> <p>Insert the suction side clamp bands [272] and [273] on the hose. Assemble the insert [70] into the hose. Fix the bracket [170] with the mounting bolts [171] and block the insert with the circlip [274]. Tighten the clamp bands.</p> <p>NOTE! Tapflo lubricant may be used to ease assembly of the insert into the hose.</p>	<p>Fig. 3.9.12</p> <p>Insert the clamp bands [272] and [273] on the discharge side of the pump.</p>
	
<p>Fig. 3.9.13a PT25 – PT80</p> <p>Assemble the brackets [170]. Assemble the insert [70] into the hose and tighten the clamp bands [272] and [273].</p> <p>NOTE! Tapflo lubricant may be used to ease assembly of the insert into the hose</p>	<p>Fig. 3.9.13b PT5 – PT20</p> <p>Insert the discharge side clamp bands [272] and [273] on the hose. Assemble the insert [70] into the hose. Fix the bracket [170] with the mounting bolts [171] and block the insert with the circlips [274]. Tighten the clamp bands.</p> <p>NOTE! Tapflo lubricant may be used to ease assembly of the insert into the hose.</p>

3. MAINTENANCE

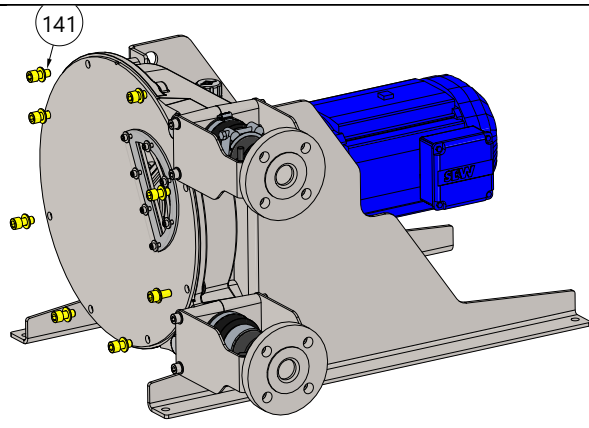
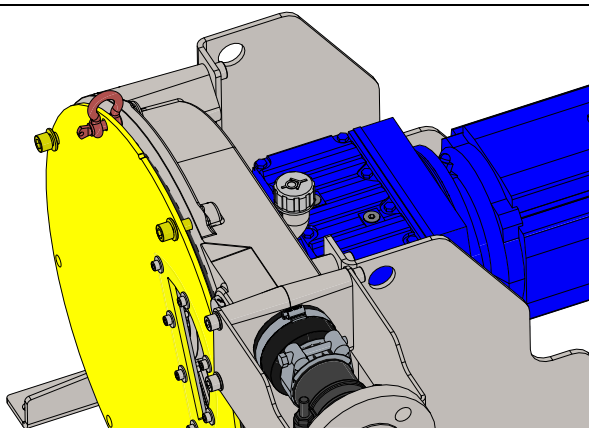
	
<p>Fig. 3.9.14 Fill the pump with lubricant – see chapter 3.8. <i>Lubricant emptying and filling procedure.</i></p>	

The hose is now re-assembled. Make sure to open the suction and discharge valves before pump start-up. Check the direction of rotation of the motor. Check for any lubricant leakage from the pump casing.

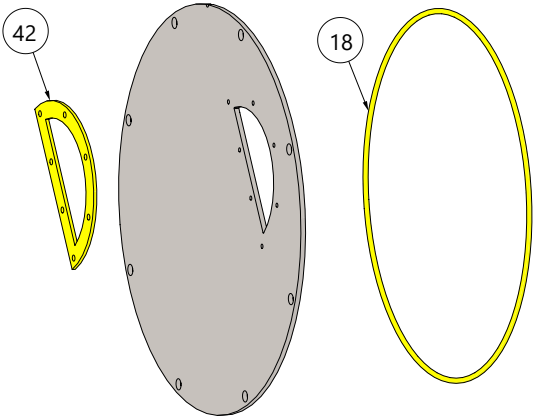
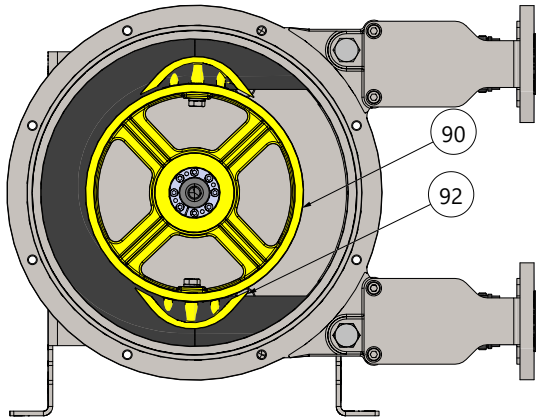
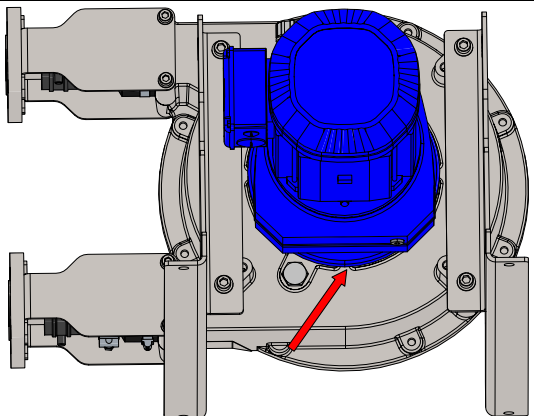
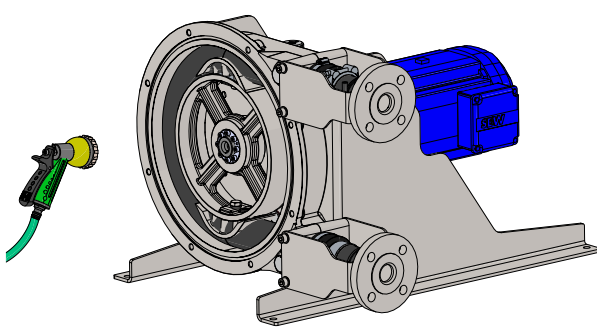
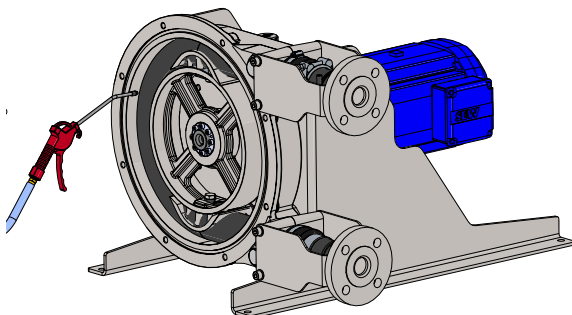
3.11. Pump casing cleaning procedure

When a hose rupture has occurred, the pump casing and the lubricant inside the pump will be contaminated. In such case cleaning of the pump casing is required.

NOTE! Proceed with this procedure only after familiarizing oneself with the instructions at the beginning of chapter 3. *Maintenance* and all safety instruction in chapter 1.8. *Health and safety*.

	
<p>Fig. 3.10.1 Remove the front cover mounting bolts [141], leaving two of them partially fastened to avoid accidental falling off of the pump.</p>	<p>Fig. 3.10.2 Retract the front cover [12] slightly and instal a shackle in one of the top bolt holes NOTE! PT80 – PT125 pumps are equipped with a dedicated lifting lug on top of the front cover.</p>

3. MAINTENANCE

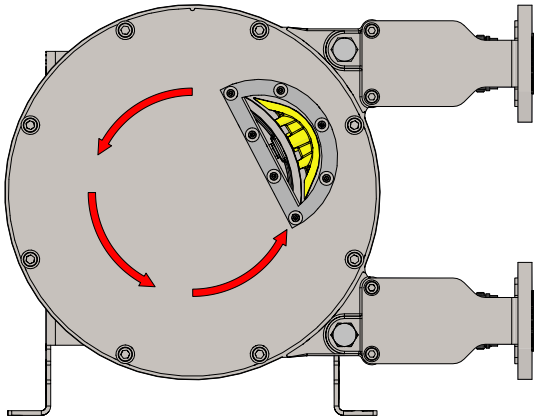
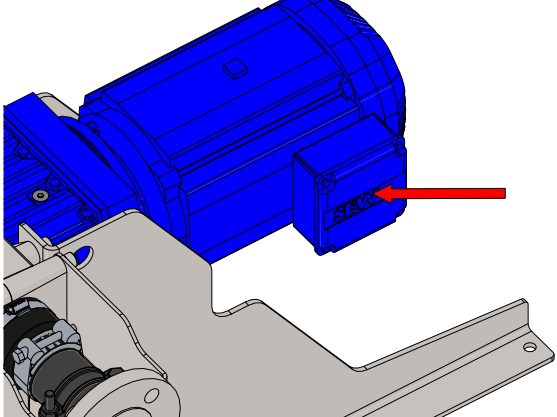
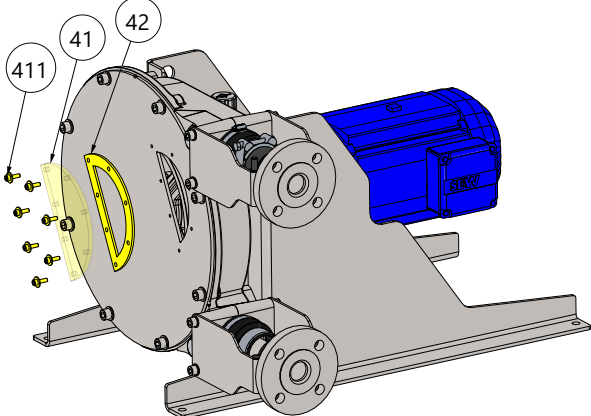
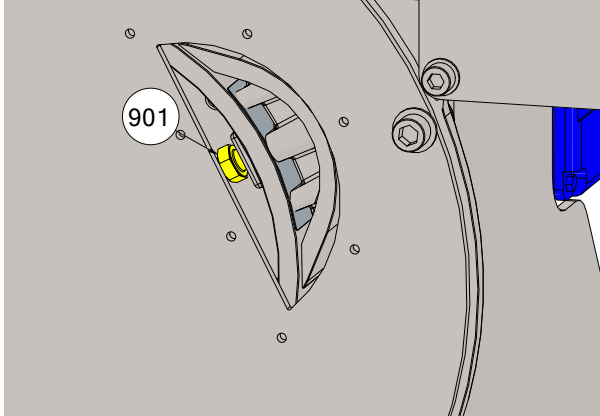
	
<p>Fig. 3.10.3 Check condition of casing gasket [18] and sight glass gasket [42]. Replace if necessary.</p>	<p>Fig. 3.10.4 Check condition of the rotor [90] / shoes [92] and replace if necessary.</p>
	
<p>Fig. 3.10.5 Check condition of the shaft seal [161] and seal ring [162] and replace if necessary.</p>	<p>Fig. 3.10.6 Wash the casing with water and remove any debris left inside the casing.</p>
	
<p>Fig. 3.10.7 Dry the pump casing thoroughly and reassemble the pump cover.</p>	

3. MAINTENANCE

3.12. Shoe shimming – PT25 – PT80

During pump operation as the hose starts to wear, internal leakage inside the hose can occur. In order to avoid this, additional shims can be added under the shoes in order to increase the compression of the hose. This is an important procedure, as internal leakage reduces the hose lifetime and affect the pump flow. The shoe shimming varies based on pump rotation speed, discharge pressure and liquid viscosity. This operation can be done without complete pump disassembly, through the sight glass.

NOTE! Proceed with this procedure only after familiarizing oneself with the instructions at the beginning of chapter 3. *Maintenance* and all safety instruction in chapter 1.8. *Health and safety*.

	
<p>Fig. 3.11.1 Start and stop the motor repeatedly in short bursts (jog run) to position the shoe [92] in front of the sight glass [41].</p>	<p>Fig. 3.11.2 Disconnect power supply from the motor.</p>
	
<p>Fig. 3.11.3 Unscrew the sight glass bolts [411] and remove the sight glass [41] with its gasket [42]. NOTE! Check condition of the gasket and replace if necessary.</p>	<p>Fig. 3.11.4 Slightly unscrew the shoe mounting bolt [901].</p>

3. MAINTENANCE

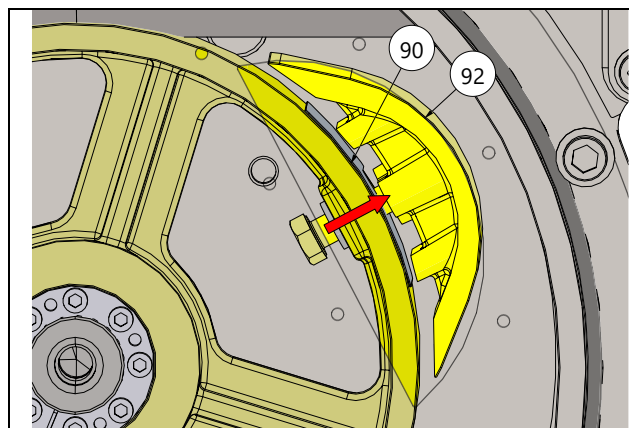


Fig. 3.11.5

Lift the shoe [92] slightly from the rotor [90].

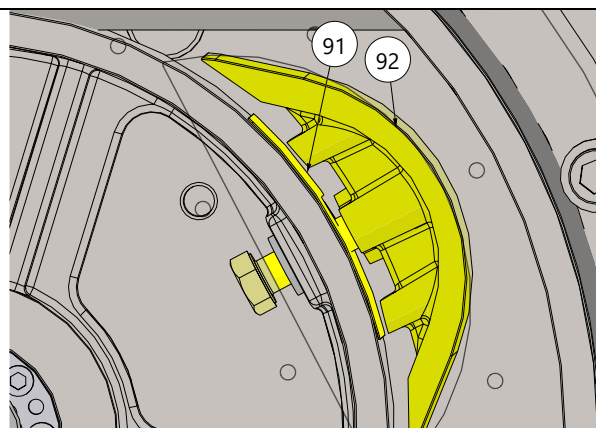


Fig. 3.11.6

In this position you are able to insert or withdraw the shims [91] from underneath the shoe [92].

NOTE! See chapter 5.3. *Shimming table* for more information.

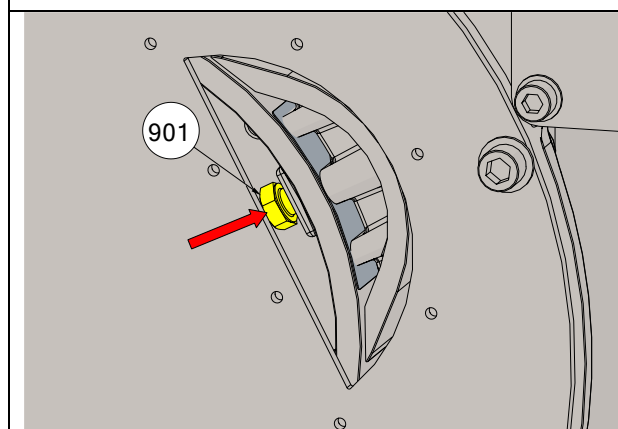


Fig. 3.11.7

Re-tighten the shoe mounting bolts [901] with appropriate torque.

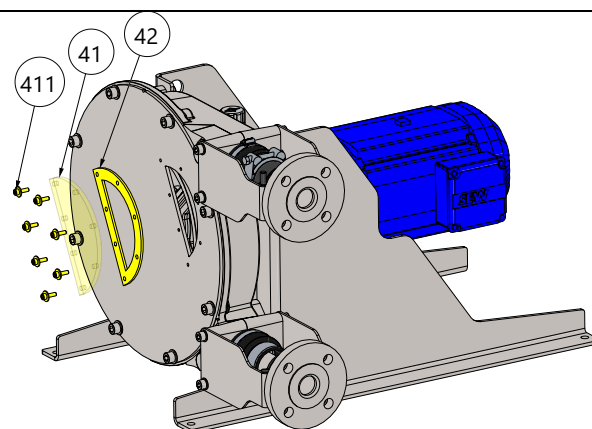


Fig. 3.11.8

Re-assemble the sight glass [41] with its gasket [42].

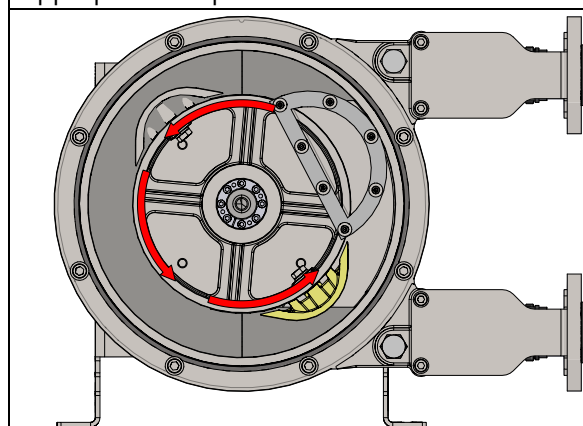


Fig. 3.11.9

Re-connect the power to the motor and jog run until the other shoe comes in front of the sight glass.

3.11.10

Disconnect power from the motor and repeat operations 3.11.3 – 3.11.8 on the other shoe.

NOTE! There should always be the same amount of shims on both shoes.

4. SPARE PARTS

4. SPARE PARTS

Full part number consist of three parts, pump type (15 for PT pumps; 16 for PTL), pump size (e.g. 025, 040, ...) and part position which corresponds to the number in the drawing e.g. **15-xxx-18**:

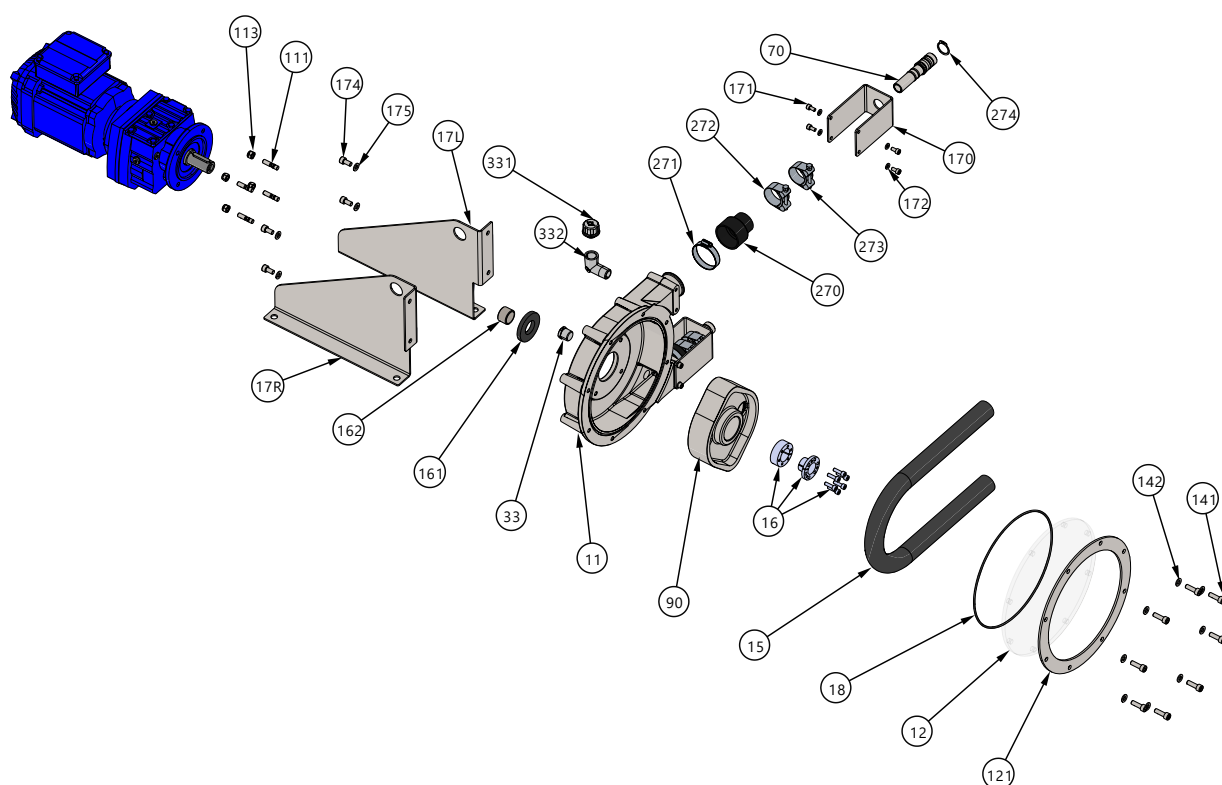
15 – PT high pressure hose pump

xxx – pump size

18 – part position

NOTE! Use only Original Tapflo spare parts. Using counterfeit parts creates a risk of improper operation, increases possibility of breakdown and voids warranty terms.

4.1. Exploded view PT5 – PT20



4.2. Spare parts list PT5 – PT20

Pos.	Q-ty	Description	Material
11	1	Pump casing	Nodular cast iron
111	4	Gearmotor mounting stud bolts	A2-70
113	4	Gearmotor mounting nuts	A4
12	1	Front cover	Polycarbonate
121	1	Front cover reinforcement flange	Galvanized steel
141	4/8 ¹⁾	Front cover mounting bolt	A4-70
142	4/8 ¹⁾	Front cover mounting washer	A4-70
15	1	Hose	NR, NBR, EPDM
16	1	Clamping set	Steel, cast iron
161	1	Shaft seal	NBR, EPDM

4. SPARE PARTS

162	1	Seal ring	1.7035 steel
16S	1	Complete clamping set (16+161+162)	<i>Various</i>
17L	1	Pump foot – left	Galvanized steel, AISI 340L
17R	1	Pump foot – right	Galvanized steel, AISI 340L
170	2	Connection bracket	Galvanized steel, AISI 304L
171	8	Connection bracket bolt	A4-70
172	8	Connection bracket washer	A4-70
174	4	Casing mounting bolt	A4-70
175	4	Casing mounting washer	A4-70
18	1	Casing gasket	NBR, EPDM
270	2	Boot cover	EPDM, NBR
271	2	Clamp band big - casing	AISI 304
272	2	Clamp band small – boot cover	AISI 316
273	2	Clamp band small - hose	AISI 316
274	2	Circlip	Zinc plated steel
33	2/1 ³⁾	Drain plug	AISI 316L
331 ²⁾	1	Breather plug	PA/NBR/AISI304
332 ²⁾	1	Breather plug elbow	AISI 316L
70	2	Insert	AISI 316L, PP-H
90	1	Rotor	Nodular cast iron / Aluminum

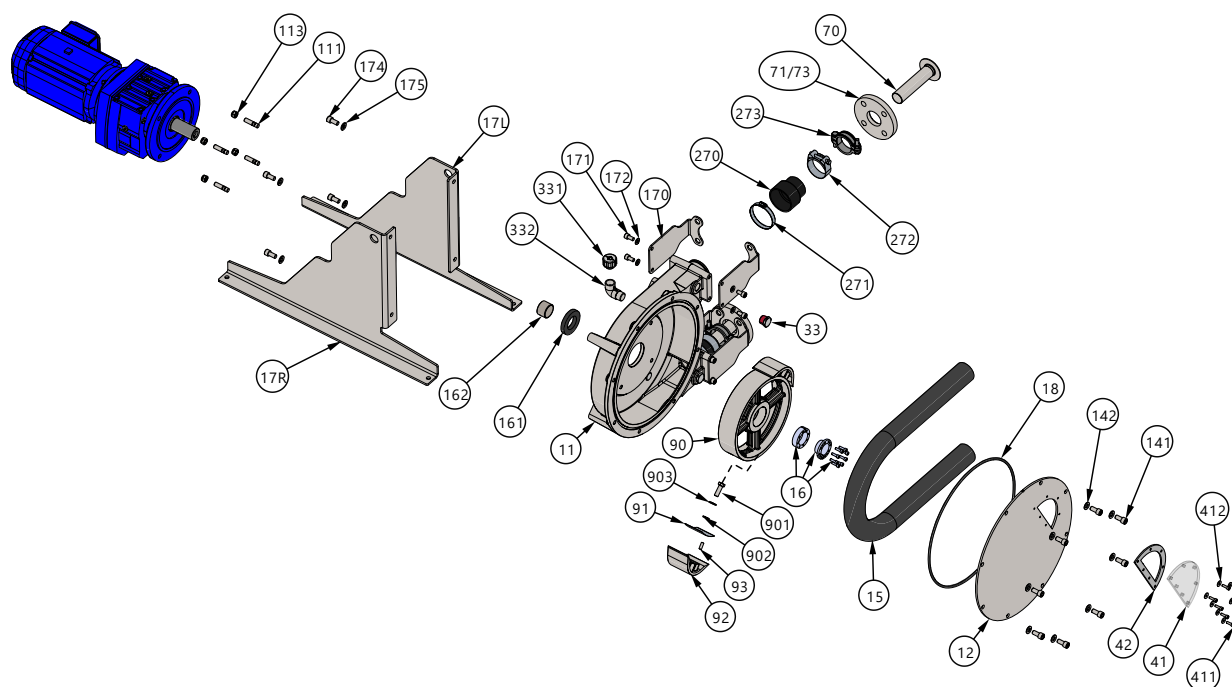
1) **4** for PT5-PT10 / **8** for PT15-PT20

2) Only for PT15-PT20

3) **2** for PT5-10 / **1** for PT15-20

4. SPARE PARTS

4.3. Exploded view PT25 – PT40



For interactive exploded view go [HERE](#)

4.4. Spare parts list PT25 – PT40

Pos.	Q-ty	Description	Material
11	1	Pump casing	Nodular cast iron
111	4	Gearmotor mounting stud bolts	A2-70 / Zinck plated steel
113	4	Gearmotor mounting nuts	A4
12	1	Front cover	Galvanized steel
141	8	Front cover mounting bolt	A4-70
142	8	Front cover mounting washer	A4-70
15	1	Hose	NR, NBR, EPDM
16	1	Clamping set	Steel, cast iron
161	1	Shaft seal	NBR, EPDM
162	1	Seal ring	1.7035 steel
16S	1	Complete clamping set (16+161+162)	Various
17L	1	Pump foot – left	Galvanized steel, AISI 304L
17R	1	Pump foot – right	Galvanized steel, AISI 304L
170	4	Connection bracket	Galvanized steel, AISI 304L
171	8	Connection bracket bolt	A4-70
172	8	Connection bracket washer	A4-70
174	4	Casing mounting bolt	A4-70
175	4	Casing mounting washer	A4-70
18	1	Casing seal	EPDM, NBR
270	2	Boot cover	EPDM, NBR
271	2	Clamp band big – casing	AISI 304
272	2	Clamp band small – hose	AISI 316

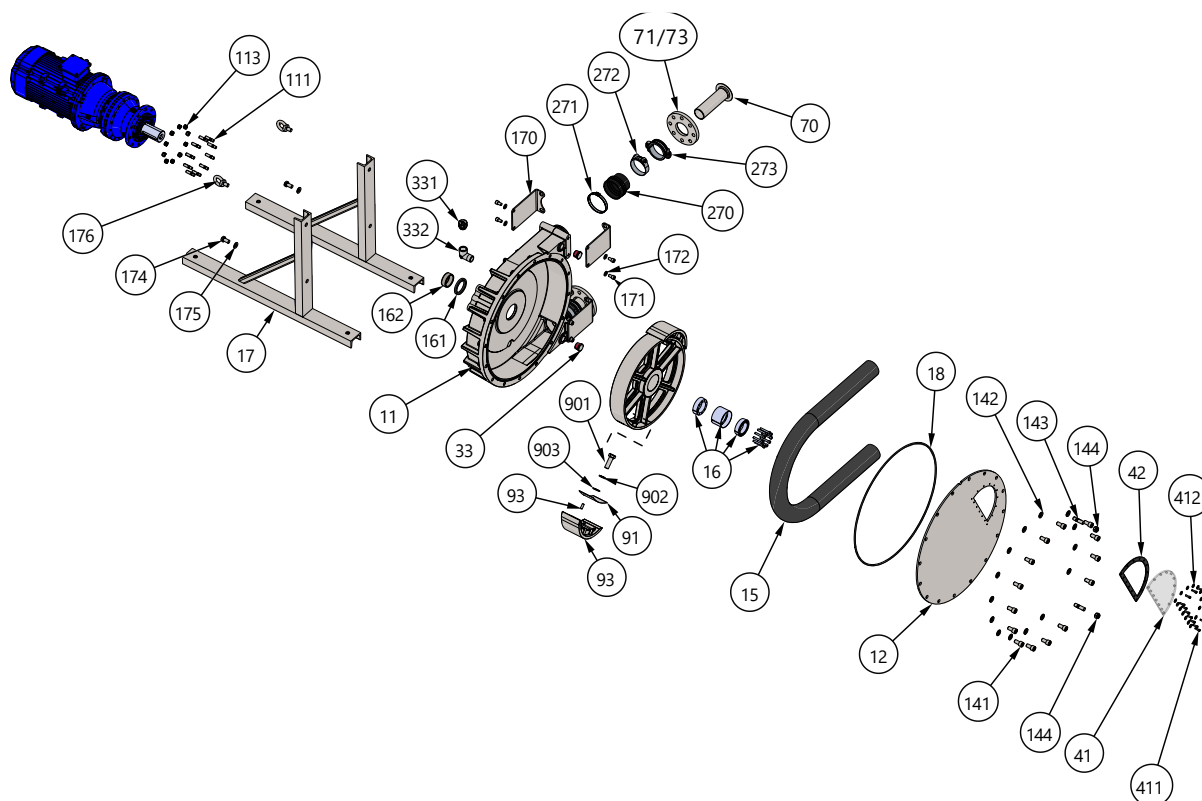
4. SPARE PARTS

273	2	2-piece hose clamp	Zinc plated steel
33	3	Drain plug	AISI 316L
331	1	Breather plug	PA/NBR/AISI304
332	1	Breather plug elbow	AISI 316L
41	1	Sight glass	Polycarbonate
42	1	Sight glass gasket	NBR
411	6/7 ¹⁾	Sight glass mounting bolt	A4-70
412	6/7 ¹⁾	Sight glass mounting washer	A4-70
70	2	Flange pipe / insert	AISI 316L, PP-H
71/73	2	Flange ring ANSI / DIN	AISI 316L
90	1	Rotor	Nodular cast iron
91	8	Shim	AISI 304L
92	2	Shoe	Nodular cast iron
93	2	Shoe centering pin	A2
901	2	Shoe mounting bolt	A4-70
902	2	Shoe mounting spring washer	A4-80
903	2	Shoe mounting washer	A4-70

1) **6** for PT25 / **7** for PT32-PT40

4. SPARE PARTS

4.5. Exploded view PTX40 – PT65



4.6. Spare parts list PTX40 – PT65

Pos.	Q-ty	Description	Material
11	1	Pump casing	Nodular cast iron
111	4/10 ²⁾	Gearmotor mounting stud bolts	A2-70 / Zinck plated steel
113	4/10 ²⁾	Gearmotor mounting nuts	A4
12	1	Front cover	Galvanized steel
141	10/14 ³⁾	Front cover mounting bolt	A4-70
142	10/14 ³⁾	Front cover mounting washer	A4-70
143	2	Front cover stud bolts	Zinck plated steel
144	2	Front cover stud bolt nut	A4
15	1	Hose	NR, NBR, EPDM
16	1	Clamping set	Steel, cast iron
161	1	Shaft seal	NBR, EPDM
162	1	Seal ring	1.7035 steel
16S	1	Complete clamping set (16+161+162)	Various
17	2	Pump foot	Galvanized steel, AISI 340L
170	4	Connection bracket	Galvanized steel, AISI 304L
171	8	Connection bracket bolt	A4-70
172	8	Connection bracket washer	A4-70
174	2	Casing mounting bolt	A4-70
175	2	Casing mounting washer	A4-70
176	2	Eye bolt	Zinck plated steel
18	1	Casing seal	EPDM, NBR

4. SPARE PARTS

270	2	Boot cover	EPDM, NBR
271	2	Clamp band big - casing	AISI 304
272	2	Clamp band small – hose	AISI 316
273	2	2-piece hose clamp	Zinc plated steel
33	3	Drain plug	AISI 316L
331	1	Breather plug	PA/NBR/AISI304
332	1	Breather plug elbow	AISI 316L
41	1	Sight glass	Polycarbonate
42	1	Sight glass gasket	NBR
411	10/15 ¹⁾	Sight glass mounting bolt	A4-70
412	10/15 ¹⁾	Sight glass mounting washer	A4-70
70	2	Flange pipe / insert	AISI 316L, PP-H
71/73	2	Flange ring ANSI / DIN	AISI 316L
90	1	Rotor	Nodular cast iron
91	8	Shim	AISI 304L
92	2	Shoe	Nodular cast iron
93	2	Shoe centering pin	A2
901	2	Shoe mounting bolt	A4-70
902	2	Shoe mounting spring washer	A4-80
903	2	Shoe mounting washer	A4-70

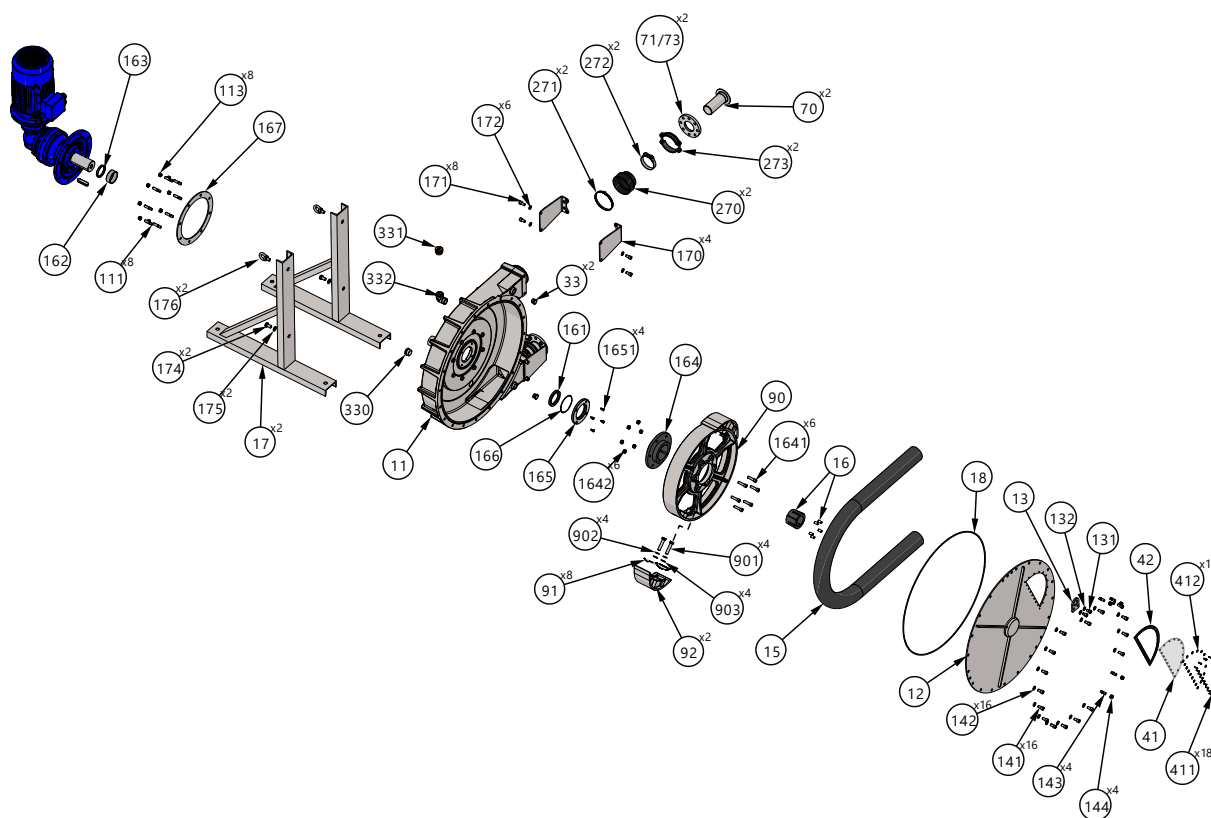
1) **10** for PTX40 / **15** for PT50-PT65

2) **4** PTX40 / **10** for PT50-PT65

3) **10** for PTX40 / **14** for PT50-PT65

4. SPARE PARTS

4.7. Exploded view PTX80 – PT80



4.8. Spare parts list PTX80 – PT80

Pos.	Q-ty	Description	Material
11	1	Pump casing	Nodular cast iron
111	8	Gearmotor mounting stud bolts	Zinck plated steel
113	8	Gearmotor mounting nuts M16	A4
12	1	Front cover	Galvanized steel
13	1 ²⁾	Lifting ring	Galvanized steel
131	2 ²⁾	Lifting ring mounting bolts	A4-70
132	2 ²⁾	Lifting ring mounting washers	A4-70
141	16	Front cover mounting bolt M16x35	A4-70
142	16	Front cover mounting washer M16	A4-70
143	4	Front cover stud bolts M16x30	Zinck plated steel
144	4	Front cover stud bolt nut M16	A4
15	1	Hose	NR, NBR, EPDM
16	1	Taper bush	Steel, cast iron
161	1	Shaft seal	NBR, EPDM
162	1	Seal ring	1.7035 steel
163	1	Spacer ring	1.7035 steel
164	1	Taper bush flange	Cast iron
1641	6	Taper bush flange mounting bolts	Zinc plated steel
1642	6	Taper bush flange mounting nuts M16	A4
165	1	Seal flange	Steel
1651	4	Seal flange mounting screw M10x16	A4-70

4. SPARE PARTS

166	1	Seal flange O-ring	NBR
167	1 ²⁾	Centering flange	Steel
17	2	Pump foot	Galvanized steel, AISI 304L
170	4	Connection bracket	Galvanized steel, AISI 304L
171	8	Connection bracket bolt M12x20	A4-70
172	8	Connection bracket washer M12	A4-70
174	2	Casing mounting bolt M20x35	A4-70
175	2	Casing mounting washer	A4-70
176	2	Eye bolt	Zinck plated steel
18	1	Casing seal	EPDM, NBR
270	2	Boot cover	EPDM, NBR
271	2	Clamp band big - casing	AISI 304
272	2	Clamp band small – hose	AISI 316
273	2	2-piece hose clamp	Zinc plated steel
33	2	Drain plug – small	AISI 316L
330	1	Drain plug – big	AISI 316L
331	1	Breather plug	PA/NBR/AISI304
332	1	Breather plug elbow	AISI 316L
41	1	Sight glass	Polycarbonate
42	1	Sight glass gasket	NBR
411	18	Sight glass mounting bolt M6x20	A4-70
412	18	Sight glass mounting washer	A4-70
70	2	Flange pipe / insert	AISI 316L, PP-H
71/73	2	Flange ring ANSI / DIN	AISI 316L
90	1	Rotor	Nodular cast iron
91	8	Shim	AISI 304L
92	2	Shoe	Nodular cast iron
93	2 ³	Shoe centering pin	A2
901	2/4 ¹⁾	Shoe mounting bolt M20x75	A4-70
902	2/4 ¹⁾	Shoe mounting spring washer M20	A4
903	2 ³⁾	Shoe mounting washer M20	Zinc plated steel

1) **2** for PTX80 / **4** for PT80

2) Only for PT80

3) Only for PTX80

4. SPARE PARTS

4.9. Stocking recommendation

Even at normal operation some elements in the pump will be worn. In order to avoid expensive breakdowns we recommend having a few spare parts in stock as a minimum:

Pos.	Description	Q-ty
15	Hose	2-3*
161	Shaft seal	1
18	Casing seal	1
42	Sight glass gasket**	1
91	Shim**	8

* Depending on the application conditions it is recommended to keep 2 to 3 hoses on stock.

** Only for PT25-PT80.

What is more Tapflo offers **1 year spare parts KITS** for the PT pumps:

- For PT5 – PT20 pumps: **KIT PT5/10, KIT PT15, KIT PT20**

Pos.	Description	Q-ty
12	Front cover	1
16S	Complete clamping set (16+161+162)	1
18	Casing O-ring	2
270	Boot cover	4
271	Clamp band big – casing	4
272	Clamp band small - hose/boot cover	4
273	Clamp band small - hose/insert	4
274	Circlip	4

- For PT25 – PT65 pumps: **KIT PT25, KIT PT32/40, KIT PTX40, KIT PT50, KIT PT65**

Pos.	Description	Q-ty
16S	Complete clamping set (16+161+162)	1
18	Casing O-ring	2
41	Sight glass	2
42	Sight glass gasket	2
91	Shim	2
270	Boot cover	4
271	Clamp band big – casing	4
272	Clamp band small - hose	4
273	2-piece hose clamp	4

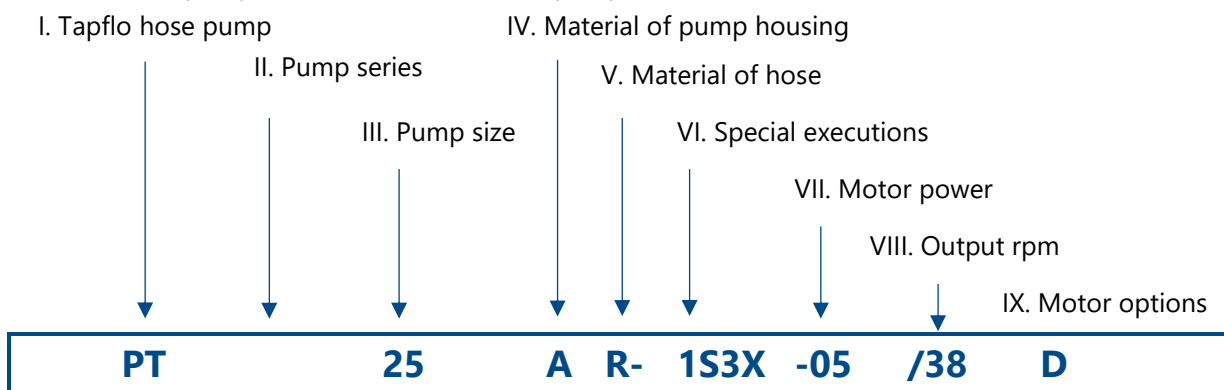
4.10. How to order parts

When ordering spare parts for Tapflo pumps, please let us know what is the **model number** and **serial number** from the pump centre body or housing. Then just indicate the part numbers from the spare parts list and quantity of each item.

4. SPARE PARTS

4.11. Pump code

The model number on the pump and on the front page of this instruction manual tells the pump size and materials of the pump.



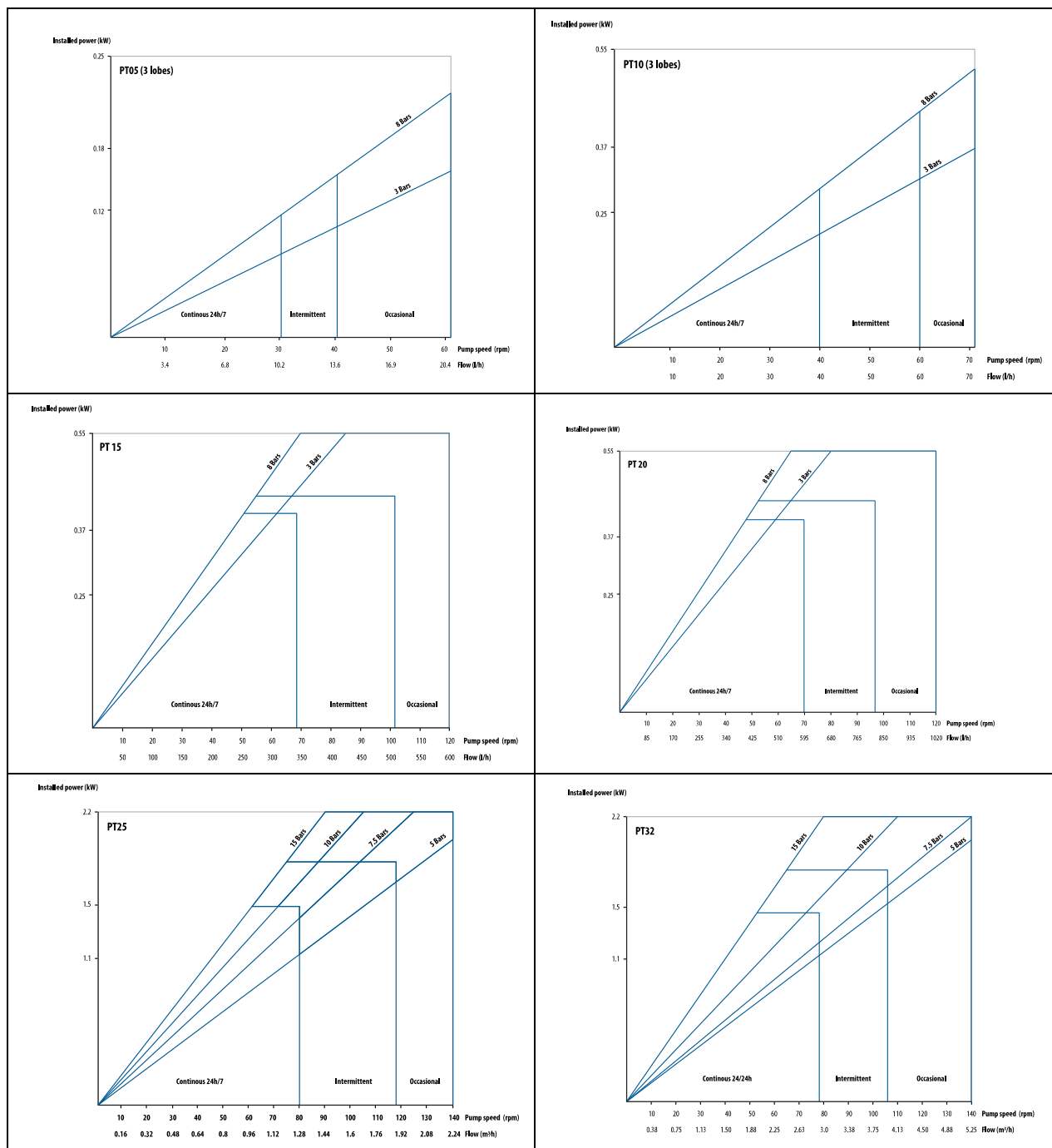
- | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|-------------|--|-------------|--|
| <p>I. PT = Tapflo Hose pump</p> <p>II. Pump series:
 <i>blank</i> = High pressure pumps
 D = Duplex pump – 2 pump heads with one gearmotor</p> <p>III. Pump size = Hose inner diameter</p> <p>IV. Material of pump housing:
 G = Nodular Cast Iron (standard)</p> <p>V. Material of hose:
 E = EPDM
 N = NBR (nitrile rubber)
 R = NR (standard)
 W = EPDM FDA
 S = NR FDA
 F = NBR FDA
 C = CSM</p> <p>VI. Special executions:
 1 = Optional in/outlet material
 S = AISI 316L (standard)
 T = PTFE
 P = PE AST
 L = PP
 2 = Inlet/outlet direction (looking from pump head side)
 L = Left
 R = Right (standard)
 U = Up
 D = Down
 3 = Optional connection type
 A = ANSI/ASME B16.5 Class 150 Flange
 B = BSP male thread
 C = SMS 3017 clamp
 F = EN 1092-1 flange (standard on PT25-PT80)
 H = Hose tail (standard on PT5-20)
 T = DIN 32676 clamp</p> | <p>5 = Other special executions
 D = Switch for rotation direction change
 F = Flat pack → pump head semi-assembled
 H = Horizontal pump orientation
 L = Hose leak detection system
 MS = Gearmotor support frame
 PF = Painted frame
 R = Revolution counter
 T = 3-lobe rotor (standard on PT5)
 VA = Automatic vacuum system
 VV = Venturi vacuum system</p> <p>6 = Flange bracket options
 <i>blank</i> = Galvanized steel
 S = AISI 316L stainless steel</p> <p>VII. Motor power</p> <table border="0"> <tbody> <tr> <td>01 = 0.18 kW</td> <td>75 = 7.5 kW</td> </tr> <tr> <td>02 = 0.25 kW</td> <td>90 = 9.0 kW</td> </tr> <tr> <td>03 = 0.37 kW</td> <td>110 = 11 kW</td> </tr> <tr> <td>05 = 0.55 kW</td> <td>150 = 15 kW</td> </tr> <tr> <td>07 = 0.75 kW</td> <td>185 = 18.5 kW</td> </tr> <tr> <td>11 = 1.1 kW</td> <td>220 = 22 kW</td> </tr> <tr> <td>15 = 1.5 kW</td> <td>300 = 30 kW</td> </tr> <tr> <td>22 = 2.2 kW</td> <td>340 = 34 kW</td> </tr> <tr> <td>30 = 3.0 kW</td> <td></td> </tr> <tr> <td>40 = 4.0 kW</td> <td></td> </tr> <tr> <td>55 = 5.5 kW</td> <td></td> </tr> </tbody> </table> <p>VIII. Output rpm</p> <p>IX. Motor options
 C = External cooling fan
 D = Built on frequency inverter
 A = Angle reducer
 R = mechanical variator</p> | 01 = 0.18 kW | 75 = 7.5 kW | 02 = 0.25 kW | 90 = 9.0 kW | 03 = 0.37 kW | 110 = 11 kW | 05 = 0.55 kW | 150 = 15 kW | 07 = 0.75 kW | 185 = 18.5 kW | 11 = 1.1 kW | 220 = 22 kW | 15 = 1.5 kW | 300 = 30 kW | 22 = 2.2 kW | 340 = 34 kW | 30 = 3.0 kW | | 40 = 4.0 kW | | 55 = 5.5 kW | |
| 01 = 0.18 kW | 75 = 7.5 kW | | | | | | | | | | | | | | | | | | | | | | |
| 02 = 0.25 kW | 90 = 9.0 kW | | | | | | | | | | | | | | | | | | | | | | |
| 03 = 0.37 kW | 110 = 11 kW | | | | | | | | | | | | | | | | | | | | | | |
| 05 = 0.55 kW | 150 = 15 kW | | | | | | | | | | | | | | | | | | | | | | |
| 07 = 0.75 kW | 185 = 18.5 kW | | | | | | | | | | | | | | | | | | | | | | |
| 11 = 1.1 kW | 220 = 22 kW | | | | | | | | | | | | | | | | | | | | | | |
| 15 = 1.5 kW | 300 = 30 kW | | | | | | | | | | | | | | | | | | | | | | |
| 22 = 2.2 kW | 340 = 34 kW | | | | | | | | | | | | | | | | | | | | | | |
| 30 = 3.0 kW | | | | | | | | | | | | | | | | | | | | | | | |
| 40 = 4.0 kW | | | | | | | | | | | | | | | | | | | | | | | |
| 55 = 5.5 kW | | | | | | | | | | | | | | | | | | | | | | | |

5. DATA

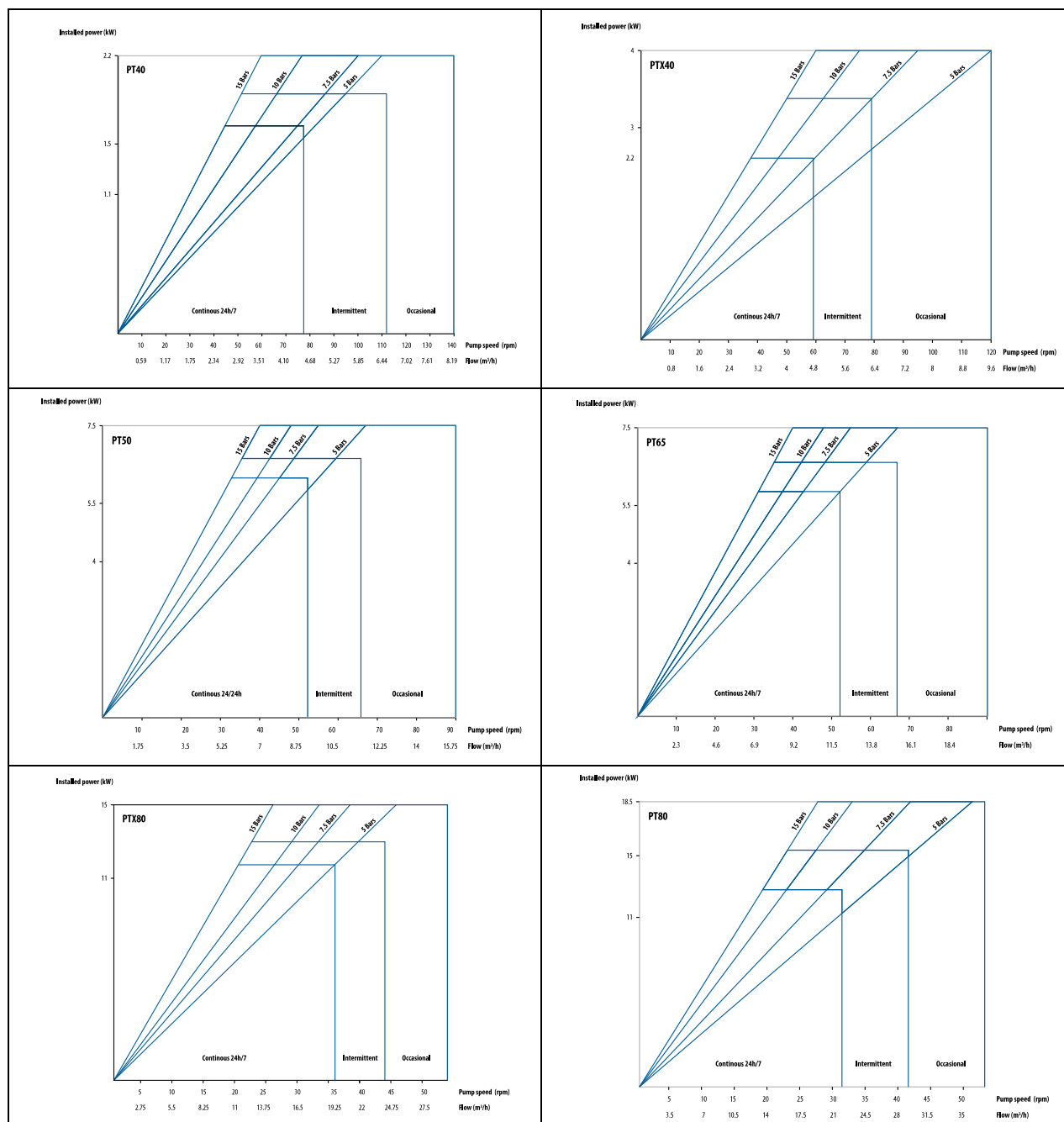
5. DATA

5.1. Capacity curves

The performance curves are based on water at 20°C. Other circumstances might change the performance. See below how the capacity will change at different viscosities and suction lifts. Intermittent duty = 1 hour stop for every 2 hours of operation. Occasional duty = not more than 1 hour per day.



5. DATA



5. DATA

5.2. Technical data

TECHNICAL DATA	PUMP TYPE				
	PT5	PT10	PT15	PT20	PT25
Max capacity @ 50 Hz [l/h] / [US GPM]	14.3 / 0.06	90 / 0.4	315 / 1.4	535 / 2.4	1000 / 4.4
Max discharge pressure [bar] / [psi]	8 / 116	10 / 145	10 / 145	10 / 145	15 / 218
Max suction lift [m] / [Ft]	9 / 30	9 / 30	9 / 30	9 / 30	9 / 30
Maximum pump speed [rpm @ 50 Hz]	42	60	63	63	61
Max liquid temperature* [°C] / [°F]	80 / 176	80 / 176	80 / 176	80 / 176	80 / 176
Weight with biggest gearmotor [kg] / [lb]	25 / 55	25 / 55	35 / 77	35 / 77	80 / 176
Lubricant volume [l] / [US Gallon]	0.2 / 0.05	0.2 / 0.05	0.55 / 0.15	0.55 / 0.15	2 / 0.53

TECHNICAL DATA	PUMP TYPE				
	PT32	PT40	PTX40	PT50	PT65
Max capacity @ 50 Hz [m3/h] / [US GPM]	2.3 / 10.1	3.6 / 15.9	5 / 22	10.3 / 45.4	13.6 / 60
Max discharge pressure [bar] / [psi]	15 / 218	15 / 218	15 / 218	15 / 218	15 / 218
Max suction lift dry [m] / [Ft]	9 / 30	9 / 30	9 / 30	9 / 30	9 / 30
Maximum pump speed [rpm @ 50 Hz]	61	61	63	59	59
Max liquid temperature* [°C] / [°F]	80 / 176	80 / 176	80 / 176	80 / 176	80 / 176
Weight with biggest gearmotor [kg] / [lb]	130 / 287	145 / 320	210 / 463	315 / 695	335 / 739
Lubricant volume [l] / [US Gallon]	3 / 0.8	3 / 0.8	6 / 1.6	13 / 3.4	13 / 3.4

TECHNICAL DATA	PUMP TYPE	
	PTX80	PT80
Max capacity @ 50 Hz [m3/h] / [US GPM]	20.9 / 92	18.9 / 83.2
Max discharge pressure [bar] / [psi]	15 / 218	15 / 218
Max suction lift dry [m] / [Ft]	9 / 30	9 / 30
Maximum pump speed [rpm @ 50 Hz]	38	27
Max liquid temperature* [°C] / [°F]	80 / 176	80 / 176
Weight with biggest gearmotor [kg] / [lb]	650 / 1433	930 / 2050
Lubricant volume [l] / [US Gallon]	27 / 7.1	40 / 10.6

* Max temperature can depend on hose material utilized in the pump.

5. DATA

5.3. Shimming tables

Only pump sizes PT25 – PT80 are equipped with shims. Refer to chapter 3.12. *Shoe shimming* for information about the shim adjustment procedure.

The amount of shims used under each shoe inside the pump depends on various factors like speed, pressure or liquid temperature. The below shimming guidelines will allow to increase the hose lifetime.

NOTE! If the pumped liquid is above 60 °C, remove one shim in comparison to the table below.

NOTE! If the pumped liquid viscosity is over 3.000 cP or the density is above 300 kg/m³, remove one shim in comparison to the table below.

NOTE! If the suction lift is higher than 4 mWC, add one shim in comparison to the table below.

NOTE! Both shoes must have the same amount of shims at all times.

Pressure [bar] [psi]	PUMP TYPE								No of shims
	PT25	PT32	PT40	PTX40	PT50	PT65	PTX80	PT80	
	Speed [rpm]								
$\Delta P < 5$ (72.5)	0-40	0-45	0-40	0-55	0-30	0-30	0-25	0-20	0
	40-70	40-70	40-70	40-70	30-70	30-70	25-38	20-27	0
5 (72.5) $\leq \Delta P < 7.5$ (109)	0-40	0-40	0-40	0-55	0-30	0-30	0-25	0-20	2
	40-70	40-70	40-70	40-70	30-65	30-55	25-38	20-27	1
7.5 (109) $\leq \Delta P < 10$ (145)	0-40	0-40	0-40	0-55	0-30	0-30	0-25	0-20	3
	40-70	40-70	40-70	40-70	30-50	30-47.5	25-38	20-27	2
10 (145) $\leq \Delta P \leq 15$ (217.5)	0-40	0-40	0-40	0-55	0-30	0-30	0-25	0-20	4
	40-70	40-70	40-70	40-60	30-42	30-40	25-31	20-27	3

ΔP = differential pressure

5.4. Dimensions

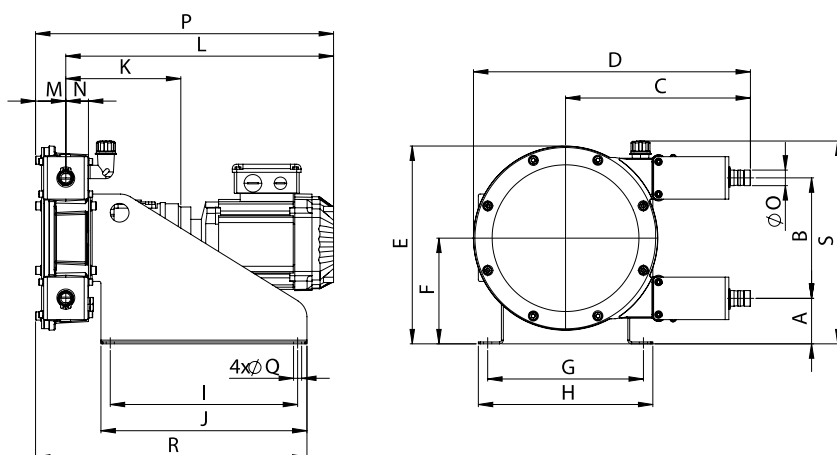
Dimensions in mm (where other is not indicated)

Dimensions in inch (where other is not indicated)

General dimensions only, ask us for detailed drawings. Changes reserved without notice.

5. DATA

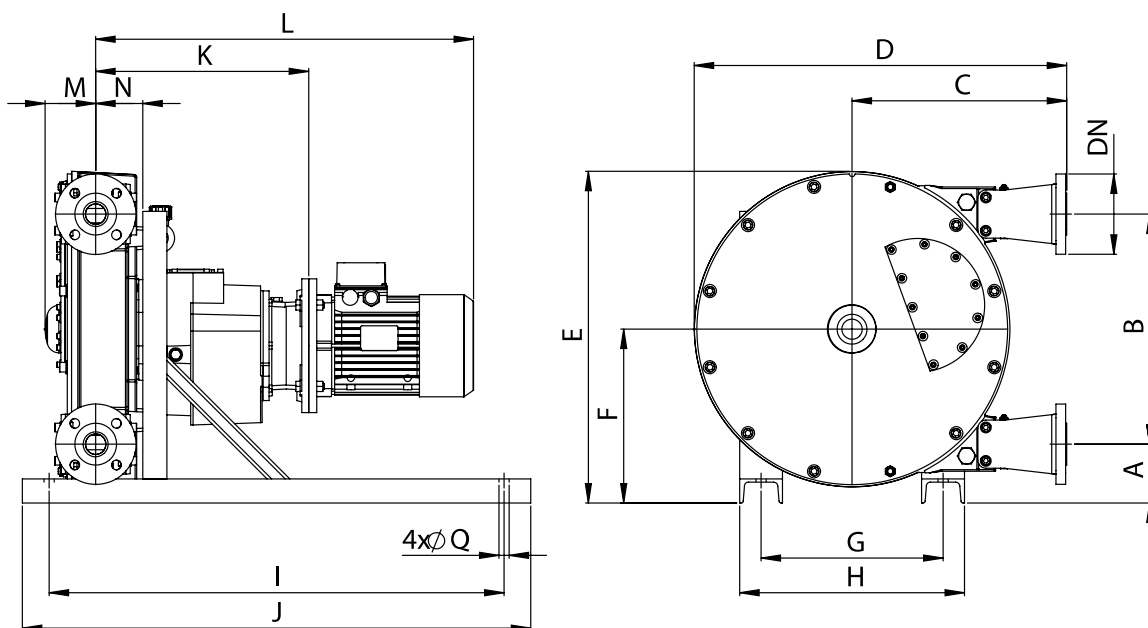
5.4.1. PT5 – PT20



	PUMP SIZE			
	PT5	PT10	PT15	PT20
A	152	152	73	73
	5.98	5.98	2.87	2.87
B	115	115	193	193
	4.53	4.53	7.60	7.60
C	226	226	296	296
	8.90	8.90	11.65	11.65
D	323.5	323.5	443.5	443.5
	12.74	12.74	17.46	17.46
E	195	195	317	317
	7.68	7.68	12.48	12.48
F	160	160	169	169
	6.30	6.30	6.65	6.65
G	220	220	249.5	249.5
	8.66	8.66	9.82	9.82
H	240	240	279.5	279.5
	9.45	9.45	11.00	11.00
I	260	260	300	300
	10.24	10.24	11.81	11.81
J	280	280	330	330
	11.02	11.02	12.99	12.99
K	183.5	183.5	184	184
	7.22	7.22	7.24	7.24
L	396	428	487	429
	15.59	16.85	19.17	16.89
M	45	45	48	48
	1.77	1.77	1.89	1.89
N	34.5	34.5	36	36
	1.36	1.36	1.42	1.42
ØO	Ø16	Ø16	Ø20	Ø25
	0.63	0.63	0.79	0.98
P	441	473	477	477
	17.36	18.62	18.78	18.78
ØQ	4 x Ø9	4 x Ø9	4 x Ø13	4 x Ø13
	4 x 0.35	4 x 0.35	4 x 0.51	4 x 0.51
R	380	380	435	435
	14.96	14.96	17.13	17.13
S	261	261	325	325
	10.28	10.28	12.80	12.80

5. DATA

5.4.2. PT25 – PT80

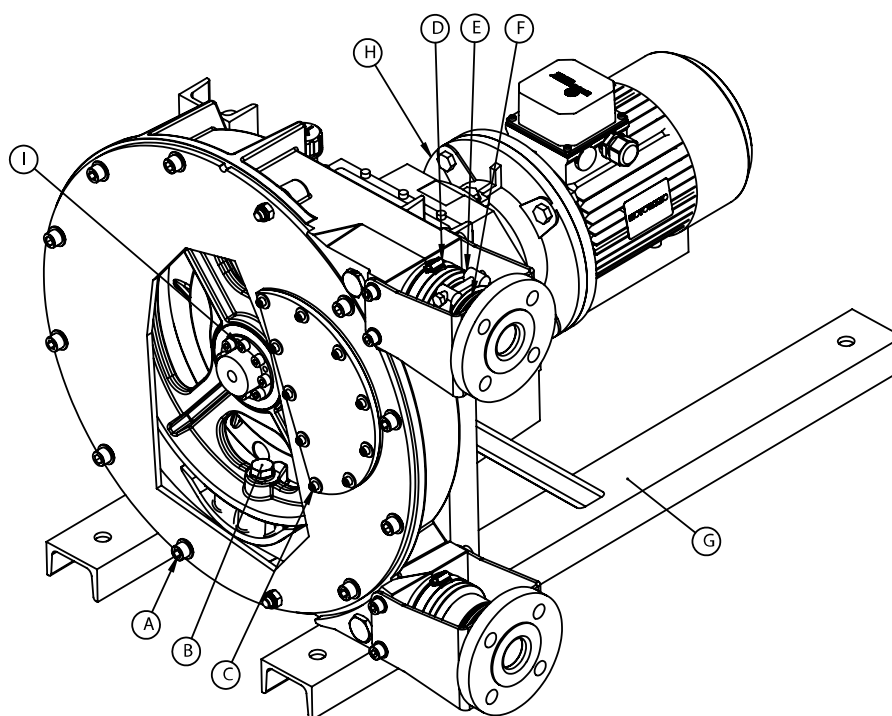


	PUMP SIZE							
	PT25	PT32	PT40	PTX40	PT50	PT65	PTX80	PT80
A	94	121	121	110	165	165	170	267
	3.70	4.76	4.76	4.33	6.50	6.50	6.69	10.51
B	262	330	330	430	554	554	746	876
	10.31	12.99	12.99	16.93	21.81	21.81	29.37	34.49
C	352	435.5	437.5	401	515	517	608	806.5
	13.86	17.15	17.22	15.79	20.28	20.35	23.94	31.75
D	543	676.5	676.5	696	877.5	879.5	1088	1372.5
	21.38	26.63	26.63	27.40	34.55	34.63	42.83	54.04
E	416	527	527	620	804	804	1023	1271
	16.38	20.75	20.75	24.41	31.65	31.65	40.28	50.04
F	225	286	286	325	442	442	543	705
	8.86	11.26	11.26	12.80	17.40	17.40	21.38	27.76
G	317	423.5	423.5	340	513	513	580	690
	12.48	16.67	16.67	13.39	20.20	20.20	22.83	27.17
H	352	473.5	473.5	420	593	593	680	830
	13.86	18.64	18.64	16.54	23.35	23.35	26.77	32.68
I	520	770	770	850	950	950	1150	1050
	20.47	30.31	30.31	33.46	37.40	37.40	45.28	41.34
J	560	800	800	950	1050	1050	1250	1150
	22.05	31.50	31.50	37.40	41.34	41.34	49.21	45.28
K	261	273	273	398	382	382	537.5	?
	10.28	10.75	10.75	15.67	15.04	15.04	21.16	#ARG!
L	616.5	621.5	621.5	706	805	805	1035	?
	24.27	24.47	24.47	27.80	31.69	31.69	40.75	#ARG!
M	64.5	88	88	95	102	102	112	144.5
	2.54	3.46	3.46	3.74	4.02	4.02	4.41	5.69
N	69	88	88	88	100	100	137.5	146.5
	2.72	3.46	3.46	3.46	3.94	3.94	5.41	5.77
ØQ	4 x Ø13	4 x Ø13	4 x Ø13	4 x Ø19	4 x Ø19.5	4 x Ø19.5	4 x Ø19.5	4 x Ø27
	4 x 0.51	4 x 0.51	4 x 0.51	4 x 0.75	4 x 0.77	4 x 0.77	4 x 0.77	4 x 1.06
DN EN1092-1	DN25	DN32	DN40	DN40	DN50	DN65	DN80	DN80

5. DATA

5.5. Tightening torques

Checking of the tightening torques is necessary after all periods of stoppage, when temperature variations are a factor and after all transport and maintenance of the pump. What is more, for proper operation and safety the torque values should be checked frequently as part of preventive maintenance (please contact Tapflo for interval proposals). Although pump applications vary, a general guideline is to re-torque the pump every two weeks.

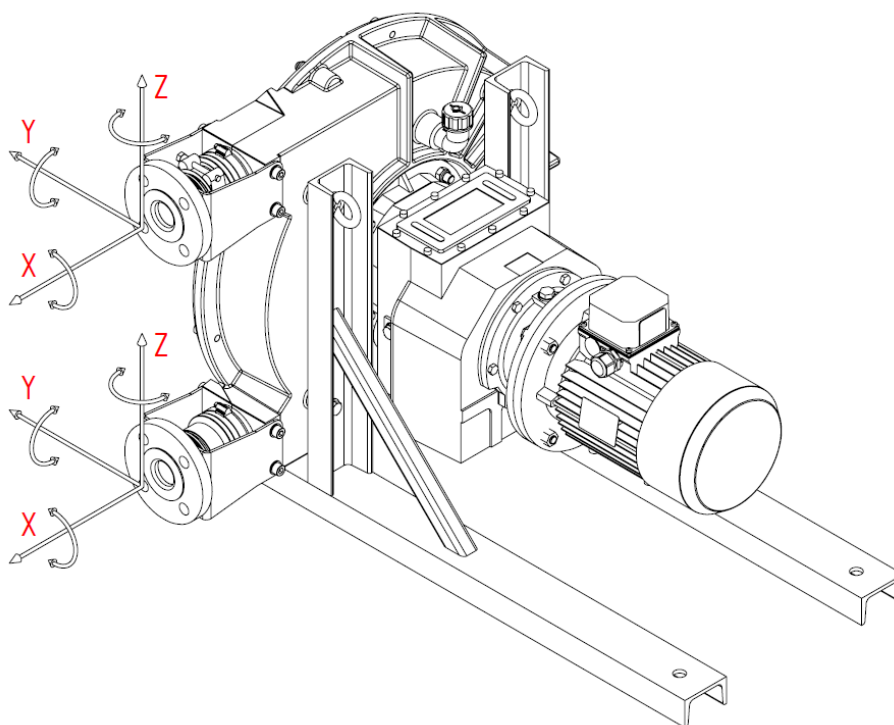


Item	Bolt pos.	Name	TPRQUE [Nm]						
			PT5-20	PT25	PT32-40	PTX40	PT50-65	PTX80	PT80
A	141	Front cover	3.3	7.8	27	27	65	65	65
B	901	Shoe	-	46	79	79	402	402	402
C	411	Sight glass	-	3.3	3.3	3.3	3.3	3.3	3.3
D	271	Clamp band big - casing	4	4	4	4	4	4	4
E	272	Clamp band small – hose	12	16	30	30	30	30	45
F	273	2-piece hose clamp	12	50	50	50	50	50	50
G	174	Casing	8	15	27	27	65	127	127
H	113	Gearmotor	34	67	116	116	116	291	291
I	16	Clamping set	12	13	13	27	35	110	110

5. DATA

5.6. Permitted loads on manifolds

We recommend not to exceed the following loads and forces reacting on the manifolds.



Pump size	Direction	Load [Nm]	Force [Nm]
PT5 – PT10	X	340	75
	Y	220	35
	Z	110	35
PT15 – PT20	X	190	25
	Y	90	25
	Z	60	10
PT25	X	320	25
	Y	70	30
	Z	50	10
PT32	X	740	110
	Y	190	165
	Z	520	40
PT40	X	290	60
	Y	100	40
	Z	230	20

Pump size	Direction	Load [Nm]	Force [Nm]
PTX40	X	940	65
	Y	180	135
	Z	540	35
PT50	X	670	180
	Y	210	210
	Z	640	45
PT65	X	840	190
	Y	220	220
	Z	760	55
PTX80	X	890	120
	Y	210	155
	Z	170	60
PT80	X	1640	440
	Y	360	495
	Z	1110	105

6. WARRANTY

6. WARRANTY

6.1. Warranty form

Company:			
Telephone:		Fax:	
Address:			
Country:		Contact Name:	
E-mail:			
Delivery Date:		Date of pump installation:	
Pump type:			
Serial No (see name plate or stamped on pump housing):			
Description of the fault:			

The installation:

Liquid: _____

Temperature [°C]: _____ Viscosity [cPs]: _____ Spec grav. [kg/m³]: _____ pH-value: _____

Content of particles: _____ %, of max size [mm]: _____

Flow [l/min]: _____ Duty [h/day]: _____ No of starts per day: _____

Discharge head [bar]: _____ Suction head / lift [m]: _____

Air pressure [bar]: _____ Quality of the air (filter, micron, lubrication): _____

Other: _____

Place for sketch of installation:

6. WARRANTY

6.2. Returning parts

When returning parts to Tapflo please follow this procedure:

- Consult Tapflo for shipping instructions.
- Cleanse or neutralize and rinse the part/pump. Make sure the part/pump is completely empty from liquid.
- Pack the return articles carefully to prevent any damage during transportation.

Goods will not be accepted unless the above procedure has been complied with.

6.3. Warranty

Tapflo warrants products under conditions as stated below for a period of not more than 5 years from installation and not more than 6 years from date of manufacturing.

1. The following terms and conditions apply to the sale of machinery, components and related services and products, of Tapflo (hereinafter "the products").
2. Tapflo (the manufacturer) warrants that:
 - a. its products are free of defects in material, design and workmanship at the time of original purchase;
 - b. its products will function in accordance with Tapflo operative manuals; Tapflo does not guarantee that the product will meet the precise needs of the Customer, except for those purposes set out in any invitation to render documents or other documents specifically made available to Tapflo before entering into this agreement;
 - c. high quality materials are used in the construction of the pumps and that machining and assembly are carried out to the highest standards.

Except as expressly stated above, Tapflo makes no warranties, express or implied, concerning the products, including all warranties of fitness for a particular purpose.

3. This warranty shall not be applicable in circumstances other than defects in material, design, and workmanship. In particular warranty shall not cover the following:
 - a. Periodic checks, maintenance, repair and replacement of parts due to normal wear and tear (seals, O-rings, rubber items, diaphragms, air valves etc.);
 - b. Damage to the product resulting from:
 - b.1. Tampering with, abuse or misuse, including but not limited to failure to use the product for its normal purposes as stated at the time of purchase or in accordance with Tapflo instructions for use and maintenance of the product, or the installation or improper ventilation or use of the product in a manner inconsistent with the technical or safety standard in force;
 - b.2. Repairs performed by non-skilled personnel or use of non-original Tapflo parts;
 - b.3. Accidents or any cause beyond the control of Tapflo, including but not limited to lightning, water, fire, earthquake, and public disturbances, etc.;

6. WARRANTY

4. The warrantee shall cover the replacement or repairing of any parts, which is documented faulty due to construction or assembling, with new or repaired parts free of charges delivered by Tapflo. Parts subjected to normal tear and wear shall not be covered by the warranty. Tapflo shall decide as to whether the defective or faulty part shall be replaced or repaired.
5. The warrantee of the products shall be valid for a period in accordance to the current law from the date of delivery, under the condition that notice of the alleged defect to the products or parts thereof be given to Tapflo in written within the mandatory term of 8 days from the discovery. Repair or replacement under the terms of this warranty shall not give a right to an extension to, or a new commencement of, the period of warranty.
6. Repair or replacement under the terms of this warranty shall not give a right to an extension to, or a new commencement of, the period of warranty. Repair or replacement under the terms of this warranty may be fulfilled with functionally equivalent reconditioned units. Tapflo qualified personnel shall be solely entitled to carry out repair or replacement of faulty parts after careful examination of the pump. Replaced faulty parts or components will become the property of Tapflo.
7. The products are built in accordance with standard CE normative and are tested (where applicable) by Tapflo. Approval and tests by other control authority are for the customer's account. The products shall not be considered defective in materials, design or workmanship if they need to be adapted, changed or adjusted to conform to national or local technical or safety standards in force in any country other than that for which the unit was originally designed and manufactured. This warranty shall not reimburse such adaptations, changes or adjustments, or attempt to do so, whether properly performed or not, nor any damage resulting from them, nor any adaptation, change or adjustments to upgrade the products from their normal purpose as described in the products operative manual without the prior written consent of Tapflo.
8. Installation, including electric and other connections to utility mains according to Tapflo drawings, is for the cost and responsibility of the customer, unless otherwise agreed in writing.
9. Tapflo will not be liable on any claim, whether in contract, tort, or otherwise, for any indirect, special, incidental, or consequential damages, caused to the customer or to third parties, including loss of profits, arising by any possible infringement of par. 3 above or by the customer or third parties being in the impossibility of using the products.

Steady the above, Tapflo liability to the customer or third parties from any claim, whether in contract, tort, or otherwise, shall be limited to the total amount paid by the customer for the product that caused the damages.

Sweden

Filaregatan 4 | S-442 34 Kungälv

Tel: +46 303 63390

Fax: +46 303 19916

E-mail addresses:

Commercial questions: sales@tapflo.com

Orders: order@tapflo.com

Tech support: support@tapflo.com

Tapflo products and services are available worldwide.

Tapflo is represented by own Tapflo Group Companies and carefully selected distributors assuring highest Tapflo service quality for our customers' convenience.

AUSTRALIA | AUSTRIA | AZERBAIJAN | BAHRAIN | BELARUS | BELGIUM | BOSNIA & HERZEGOVINA | BRAZIL | BULGARIA | CANADA | CHILE | CHINA | COLOMBIA | CROATIA | CZECH REPUBLIC | DENMARK | ECUADOR | EGYPT | ESTONIA | FINLAND | FRANCE | GEORGIA | GERMANY | GREECE | HONG-KONG | HUNGARY | ICELAND | INDIA | INDONESIA | IRELAND | ISRAEL | ITALY | JAPAN | JORDAN | KAZAKHSTAN | KUWAIT | LATVIA | LIBYA | LITHUANIA | MACEDONIA | MALAYSIA | MEXICO | MONTENEGRO | MOROCCO | NETHERLANDS | NEW ZEALAND | NORWAY | POLAND | PORTUGAL | PHILIPPINES | QATAR | ROMANIA | RUSSIA | SAUDI ARABIA | SERBIA | SINGAPORE | SLOVAKIA | SLOVENIA | SOUTH AFRICA | SOUTH KOREA | SPAIN | SWEDEN | SWITZERLAND | TAIWAN | THAILAND | TURKEY | UKRAINE | UNITED ARAB EMIRATES | UNITED KINGDOM | USA | UZBEKISTAN | VIETNAM

Tapflo Group Companies

Australia

Tapflo Oceania (Pty) Ltd
Tel: +61 1800 303 633
sales@tapflo.com.au

Austria

Tapflo Austria
Tel: +43 732 27292910
sales@tapflo.at

Baltic States

Tapflo Latvia
Tel: +371 67472205
sales@tapflo.lv

Belarus

Tapflo Belarus
Tel: +375 17 3934609
sales@tapflo.by

Belgium

Tapflo Benelux B.V.
Tel: +31 (0)85 00 743 00
info@tapflo.nl

Bulgaria

Tapflo EOOD
Tel: +359 (0)2 974 18 54
office@tapflo.bg

Canada

Tapflo Canada
Tel: +1 514 813 5754
canada@tapflo.com

Croatia

Tapflo d.o.o.
Tel: +385 91 4884 666
sales@tapflo.hr

Czech Republic

Tapflo s.r.o.
Tel: +420 513 033 924
tapflo@tapflo.cz

China

Tapflo (Wuxi)
Tel: +86 510 8241 7072
sales@tapflo.cn

Denmark

Tapflo Danmark
Tel: +45 36 454600
info@tapflo.dk

France

Tapflo France
Tel: +33 1 34 78 82 40
info@tapflo.fr

Hungary

Tapflo kft.
Tel: +36 30 148 8551
office@tapflo.hu

India

Tapflo Fluid Handling India Pvt Ltd
Tel: +91 20 65000215
ac@tapflo.in

Ireland

Tapflo Ireland Ltd
Tel: +353 1 2011911
info@tapflo.ie

Italy

Tapflo Italia
Tel: +39 0362307698
info@tapfloitalia.com

Japan

Tapflo Japan K.K.
Tel: +81-3-6240-3510
tapflojp@tapflo.co.jp

Kazakhstan

Tapflo Kazakhstan
Tel: +7 727 3278347
sales@tapflo.kz

Netherlands

Tapflo Benelux B.V.
Tel: +31 (0)85 00 743 00
info@tapflo.nl

Poland

Tapflo Sp. z o.o.
Tel: +48 58 530 42 12
info@tapflo.pl

Romania

S.C. Tapflo Rom. S.r.l.
Tel: +40 21 3451255
sales@tapflo.ro

Russia

Tapflo Company
Tel: +7 495 232 18 28
sales@tapflo.com.ru

Serbia

Tapflo d.o.o.
Tel: +381 21 44 58 08
sales@tapflo.rs

Slovakia

Tapflo s.r.o.
Tel: +421 911 137 883
tapflo@tapflo.sk

Slovenia

Tapflo GmbH
Tel: +386 68 613 474
sales@tapflo.hr

Spain

Tapflo Iberica
Tel: +34 91 8093182
avives@tapfloiberica.es

South Africa

Tapflo (Pty) Ltd
Tel: +27 31 701 5255
sales@tapflo.co.za

Turkey

Tapflo Makina Ltd
Tel: +90 216 467 33 11
sales@tapflo.com.tr

Ukraine

TOB Tapflo
Tel: +380 44 222 68 44
sales@tapflo.ua

Uzbekistan

Tapflo Uzbekistan
Tel: +998 712370940
sales@tapflo.uz

United Kingdom

Tapflo (UK) Ltd
Tel: +44 2380 252325
sales@tapflo pumps.co.uk



If your country is not listed
please visit
www.tapflo.com/en/contact

www.tapflo.com

Tapflo is a registered trademark of Tapflo AB. All rights reserved.

Information in this document is subject to change without notice. Reproduction in any manner without written permission of Tapflo Group is forbidden.
Tapflo Group reserves the right to make changes in product design, or detail, and to discontinue any product or material without notice.