



USER MANUAL SPARE PARTS CATALOG

POSITIVE DISPLACEMENT PUMP

80/100/125 HSP	80/100/125 HSP2S
80/100/125 HSPsp	80/100/125 HSPsp2S
80/100/125 HSPps	80/100/125 HSPps2S
80/100/125 HSPMsp	80/100/125 HSPMsp2S
80/100/125 HSPMps	80/100/125 HSPMps2S

 ATTENTION	This user and maintenance manual is an integral part of the machine. It is (important that the manual is always in the possession of the user of the device. The manual must be available to the machine operators and persons cooperating in its operation, adjustment, repair and overhaul.
 ATTENTION	Before starting the machine, read the operating instructions and follow the recommendations and instructions contained therein regarding the safety and proper use of the machine.

DECLARATION OF CONFORMITY

Designating company - KOMA M. Sp.j
 Address - 49-305 Brzeg, ul. Starobrzeha 24
 Tel. 77 47154 19, e-mail biuro@koma-brzeg.pl



Hereby declares that the device:

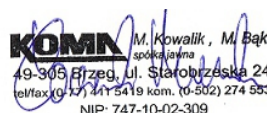
Series pump unit

80/100/125 HSP	80/100/125 HSP2S
80/100/125 HSPsp	80/100/125 HSPsp2S
80/100/125 HSPps	80/100/125 HSPps2S
80/100/125 HSPMsp	80/100/125 HSPMsp2S
80/100/125 HSPMps	80/100/125 HSPMps2S

meets the requirements of the following directives:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/95/EU)
- EMC Directive 2014,90/EU

KOMA Sp.j Quality Control Department Director Marek Kowalik



designation

CONTENTS

Contents

Declaration of Conformity..... 3

Safety rules for working with screw PUMPS3

Signs and markings, safety Signs..... 6

General characteristics of screw PUMPS..... 7

Koma pumps versions..... 8

Koma pumps classification9

Additional devices and the purpose of their use10

Use and handling11

Disassembly and assembly of components.....16

General structure of pump18

Pump operating characteristics.....25

Drawings – pump dimensions.....27

Catalog of consumable parts.....32




Mechanical Seal Replacement Instructions.....43

DECLARATION OF CONFORMITY

TIPS

The following operation and maintenance manual has been prepared in accordance with paragraph 1.7.4 of Directive 89/13/C.E.E. reasgoen 1.7.4 of D.P-R. of 24 july 1996 taking into account the general conditions of operation of machines, in order to inform that failure to comply with the instructions supplied with the machine involvethse risk of the user. Attention: the operating manuals an integral part of the machine, it must be read before starting the machine and kept for possible future consultation

MARKINGS

 ATTENTION	Safety sign Warns of a potential risk of injury. To avoid injury or death, follow all safety instructions marked with this symbol.
	Warning sign Warns against potential dangers that may pose a threat to machinery, equipment and the natural environment.
	Information Important information and tips regarding the device and operating issues.

CE MARKING

The marking used in the HSP 100 screw pumps is in accordance with the directive 94/68/CEE and subsequent annexes. The technical documentation of the devices meets the CE criteria for the provisions described in annex V of the European directive 69/392 with subsequent modifications and is fully in accordance with the directive D.P.R. No. 459 of 24 July 1996

NOISE

The noise generated by the device $L_{eq} = <80$ db which means there is no nose-related risk to personnel.

SAFETY RULES FOR WORKING WITH SCREW PUMPS



ATTENTION

The following operating instructions define the basic safety rules that must be observed during installation, operation, maintenance and storage of the device. Operators, fitters and other



employees servicing the device must be absolutely familiar with this operating instructions. The instructions should be stored so that they are easily and quickly accessible to those who want to use them during operation of the device.

STAFF QUALIFICATIONS, TRAINING



ATTENTION

Personnel responsible for the installation, operation, maintenance and storage of the device should have appropriate qualifications. The plant



management appoints persons responsible for the use of the act, device. The personnel should familiarize themselves with the content of this manual and the manuals of additional devices cooperating with the pump. The user is obliged to check at whether all elements of the manual are fully understood by the persons operating the device.

WORK SAFETY



ATTENTION

The safety regulations described in the manual, national accident prevention regulations and any regulations concerning work, operation and user safety must be observed .In addition, the user must comply with industry and company standards and recommendations.

RISK DUE TO PUMP MISUSE



Failure to comply with safety regulations may result in a risk to people, the device and associated devices, and the environment (surroundings). In particular, non-compliance may result in: Gs Electric shock, mechanical injury, burns, poisoning.
 « Partial or complete immobilization and damage (destruction) of the device
 * Leakage of hazardous substances.

OPERATIONAL SAFETY WARNINGS



The user should provide protection against accidental contact with pump elements that may pose a threat to the operator and people in the vicinity. Special attention should be paid to moving elements, high or very low temperatures, soaked in hazardous liquids. Leakage of hazardous materials (caused by, for example, seal damage) such as flammable materials, toxic substances, overheated liquids, should be properly secured and immediately eliminated so as not to pose a threat to people or the environment.

TRANSPORT



During transport, it is essential to observe occupational health and safety regulations. The user should be aware of the correct lifting equipment and technical fastening in order to avoid the risk of injury. Transport should be carried out in accordance with the recommendations of this manual.

START-UP AND OPERATION



It is necessary to observe general and industry regulations, as well as industry and internal company regulations. Regularly, and appropriately often, perform current inspections, repairs and renovations. If damage to electrical devices or a so-called current leak is detected, the power supply should be disconnected immediately. If any discrepancies are noticed, the device should be immediately stopped working, inspected and appropriately repaired.

REPAIR



The user should familiarize themselves with the pump construction and repair diagram attached to the manual. Before starting the repair, the pump should be cleaned according to the recommendations contained in this manual. The operating personnel should be trained and the repair work should be supervised. When replacing parts and consumables, parts recommended by the pump manufacturer and materials approved for use in the conditions in which the pump will work should be used.

SAFETY WARNINGS DURING MAINTENANCE, INSPECTION, ASSEMBLY



The user should make sure that the current operation, maintenance, inspection and assembly of the device are carried out under the supervision of qualified and trained personnel. It should be ensured that the personnel are familiar with the operating instructions for the devices. It is necessary to ensure compliance with occupational health and safety regulations. The personnel should be equipped with the necessary personal protective equipment (goggles, gloves, appropriate work clothes). All inspection and maintenance activities should be performed with the device switched off and, if switching on the voltage is not required, with the power supply disconnected. Before starting work on the device, the pressure should be released and the device should be cooled down. The device stop procedure should be completed without fail, the pump and consumables should be clean. After the service procedure is finished, all used devices such as dry-run protection or pressure overload protection must be reinstalled and started up. Before restarting, the procedure described in the START-UP chapter must be completed again. During work on the devices, no drinks or meals may be consumed and no tobacco may be smoked (mainly due to the hazards associated with the medium pumped by the device). After repair/inspection, all guards of moving parts (e.g. clutch guard) and safety devices (e.g. safety valve) were correctly installed and switched on.

MODIFICATIONS AND USE OF NON-ORIGINAL SPARE PARTS



Any changes and modifications to the device are only permitted after consultation and with the consent of the device manufacturer. Incorrectly performed modifications may pose a threat to the operator, the device and cooperating devices as well as the natural environment. To maintain the correct functioning of the device and the safety of operation, only original or

Rules of standardized spare parts and accessories approved by the pump manufacturer are required.

The use of spare parts and consumables that are not original or not approved by the manufacturer will void the warranty and release the manufacturer from liability for damages resulting from incorrect operation of the device.

Orders for spare parts should be made using the assembly drawings provided at the end of this DTR. When ordering spare parts, please provide the Drawing No., the date it is valid, the position (number) of the part on the drawing and its name.



PROPER USE



Safety during operation of the device can only be guaranteed if the recommendations contained in this operation and maintenance manual are followed.

The devices are designed to achieve specific parameters. In no case should the maximum permissible operating parameters of the device be exceeded. All installations in which the device is installed should be designed so that it works with its nominal parameters established by the manufacturer.



Any deviations from the above rules may pose a threat to the device and its operators. Failure to follow the above recommendations will void the warranty and exempt the manufacturer from liability for damages resulting from improper operation of the device.

OPERATING LIMITATIONS OF SCREW PUMPS

Pumps must be used in accordance with their intended use. The intended use and operating conditions should be consistent with those described in the pump documentation or they are consulted with the manufacturer and approved when ordering the device. Use of devices in a manner inconsistent with the intended use and permissible operating conditions may result in premature wear, damage or destruction of the pump. Improper operating conditions may lead to changes in physicochemical parameters or damage or destruction of the pumped medium. The user is responsible for damage resulting from improper use.



Screw Pumps are positive displacement pumps, the pressure generated by this type of pump is theoretically unlimited. The values of the nominal and maximum allowable pressure are given on the pump characteristics (charts) and on the plates

(numerical values). In the event of blockage of the discharge section due to, for example, a blocked pipeline or accidental closing of a valve in the system, pressure may even significantly exceed the maximum permissible parameters. In this case, the installation or pump may be damaged or destroyed. Such a situation is dangerous both for the device and for people in the vicinity. It should be noted that screw pumps can be used for media that pose a threat to human health and life. In order to protect the devices against an unwanted increase in pressure, the installation should be equipped with appropriate safety devices such as: pressure switches or a safety valve and a return pipeline (by-pass). For an example of a safety installation, see section PROTECTION AGAINST UNDESIRABLE PRESSURE INCREASE.



WARNING



During operation, maintenance, inspections and repairs, remember about your own safety and the safety of people in the zone of potential hazards that may occur in connection with the use of the device.

It is absolutely necessary to observe general, industry and company regulations concerning accident prevention. All operating activities should be performed in accordance with the recommendations of this OTR and general standards of technical culture.

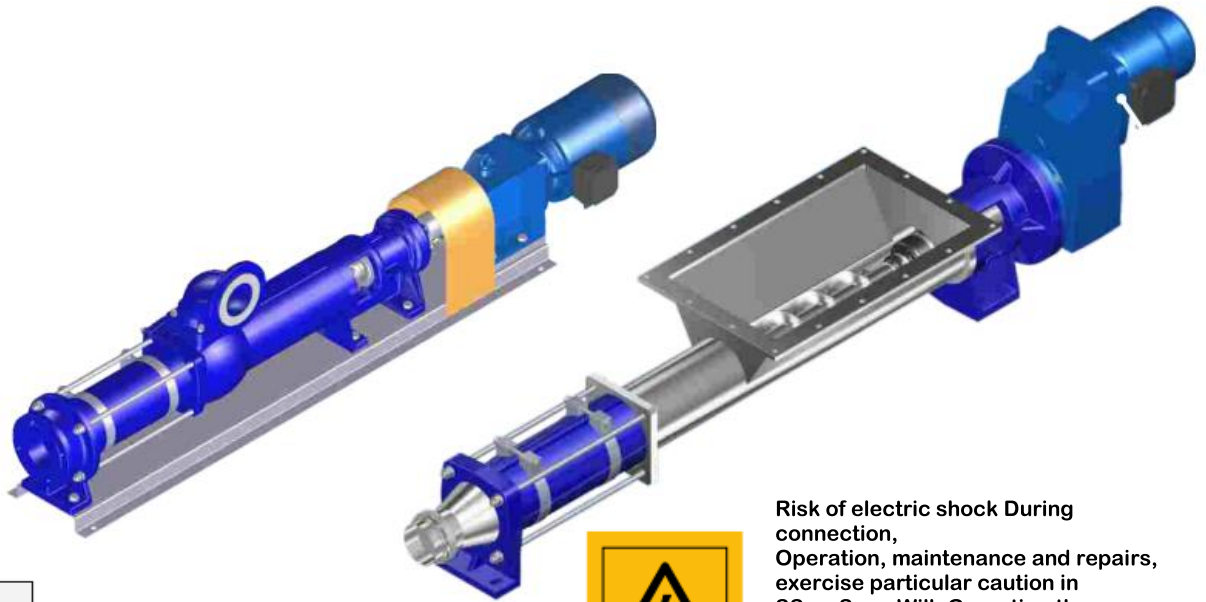


LIMITATION OF LIABILITY

The manufacturer is not liable for damages resulting from the following events:

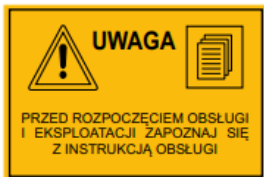
- use of the device contrary to its intended purpose, incorrect assembly, operation, setup, maintenance, repairs or accidents
- reaction to faults
- independent product changes
- harmful action intentionally or negligently
- use of non-original spare parts

PLATES AND MARKINGS, SAFETY SIGNS



Nameplate
device characteristics,
Manufacturer information.

Risk of electric shock During connection, Operation, maintenance and repairs, exercise particular caution in SSareSnon Wihh Gonrsting the device tS the electrical power supply.



Before starting to operate and use, please read the operating instructions



Danger of entrapment and pulling in of limbs! Do not touch moving parts, specially dive shafts, gears, exposed clutches, feeder screws ("worms"), etc

Hazards related to moving machine parts
During operation of the Machine – As long as the parts are im motion - Do not open or remove safety guards



Danger of entrapment and pulling in of limbs! Do not touch moving parts , especially drive shafts, gears, exposed clutches, feeder screws ("worms"), etc.

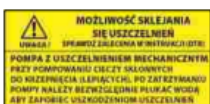
Crushing hazard! Newer reach into the area of crushing hazards! Do not touch machine components or assemblies while the parts located there may still be moving.



Direction of rotation
Arrow indicating the direction of rotation of the motor and pump rotor.



The wer of the device is obliged to ensure that the warning labels and aymbols placed on the device are legible throughout the entire pened of use. In the event of ther damage or destruction they should be replaced withnew omes. The stickers are available from the proctect manufacturer. The manufacturer is notresponsible for any incidents resulting from the lack of warming Inscriptiions and symbols .



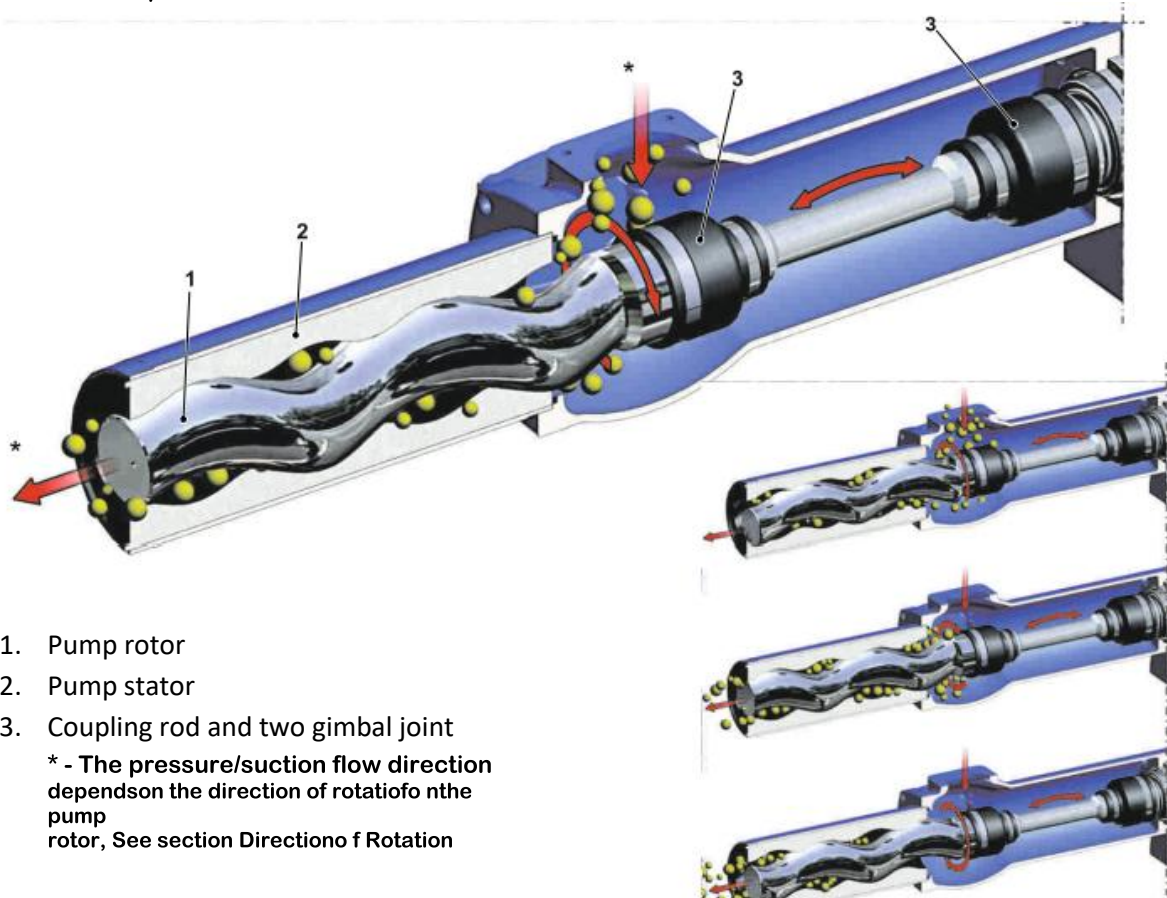
Possibility of sticking of pairs of friction seals! Refer to the recommendations for mechanical seals in the operating instructions / DTR. When pumping liquids that tend to solidify (sticky), flush the seals with water

after stopping the pump to avoid damaging them during the next start-up.

GENERAL CHARACTERISTICS OF SCREW PUMPS

PRINCIPLE OF OPERATION

Screw pumps (also called worm pumps) are rotary displacement pumps. The main elements are: a moving part called ROTOR (see item 1 below) and a fixed part called STATOR (see item 2). The rotor (usually steel) is a screw-shaped element with an extended pitch and a deep cut. The stator is usually made of a flexible elastomer. The inner part of the stator has the shape of a double screw. During the rotation of the rotor, spaces are created inside the stator that move in a spiral motion along the pump axis, through which the pumped medium is transported. The eccentric movement of the rotor is possible thanks to the use of a pair of articulated joints (item 3). The medium passing through the stator is transported by the rotor from the suction to the discharge nozzle, whereby the direction of the medium transport depends on the direction of the pump rotation, while the efficiency depends on the rotor rotational speed.



1. Pump rotor
 2. Pump stator
 3. Coupling rod and two gimbal joint
- * - The pressure/suction flow direction depends on the direction of rotation of the pump rotor, See section Direction of Rotation

Fig. 1 Principle of operation of 4 positive displacement screw pump

PUMP OPERATION CHARACTERISTICS. SCREW PUMP FEATURES.

- * Even, pulsation-free liquid flow proportional to the rotational speed.
- * Can be used as a dosing pump.
- * Simplified process of adjusting pump parameters.
- * Good self-priming ability.
- * Pumping of non-homogeneous products, liquids containing gas, solids, resistance to abrasions (wearing off).
- * Minimal (often unnoticeable) damage to the pumped medium.
- * Possibility of pumping very high viscosity liquids.
- * Valveless design

The discharge pressure depends on the number of stages of the stator used. Possible pressure 6 bar on one degree.

- * Simple design - easy maintenance.
- * Reversibility of the medium flow direction.

KOMA PUMPS - VERSIONS

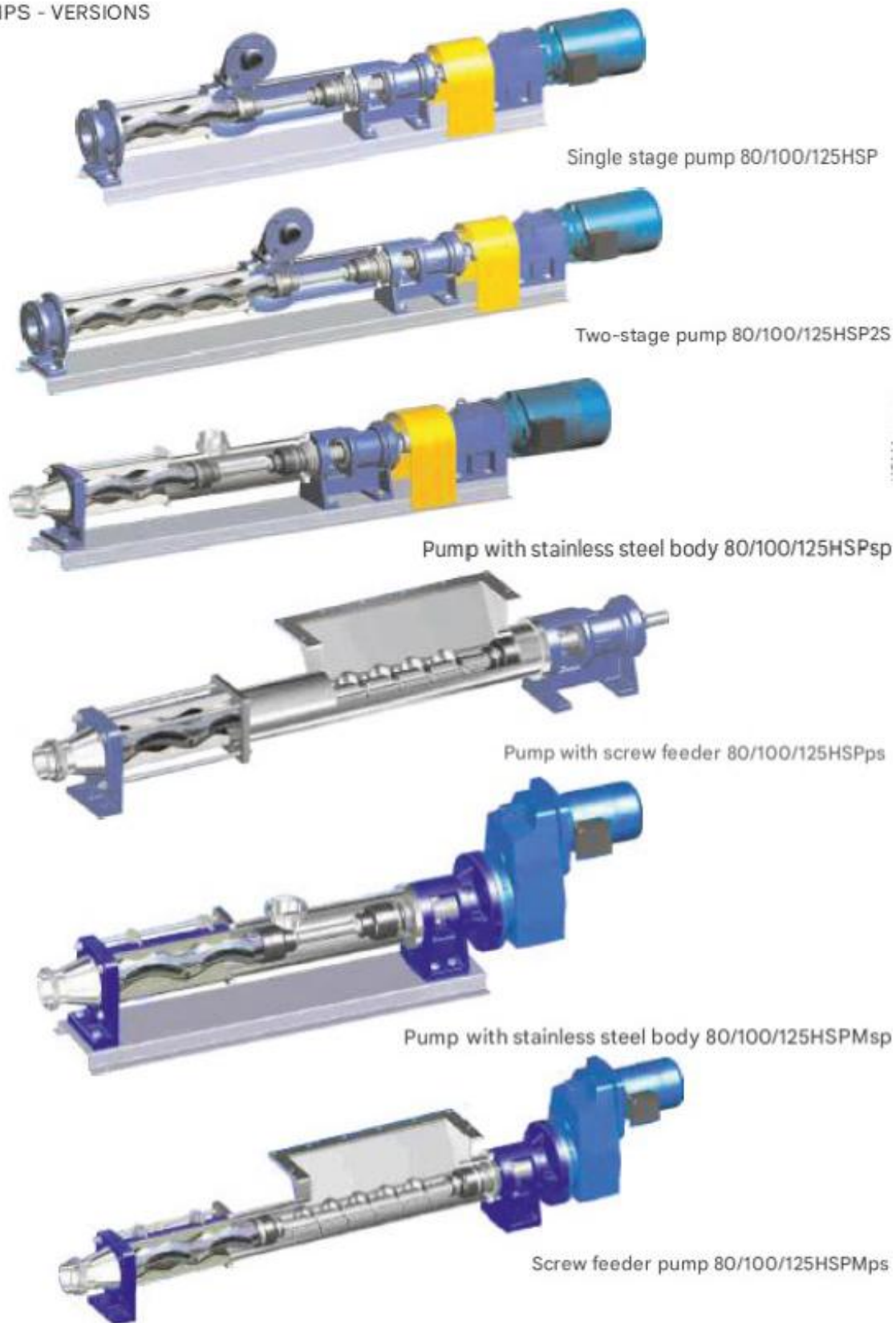


Fig. 2 KOMA screw pump, versions

100HSP PUMPS – CLASSIFICATION

- Screw pumps with an extended free shaft (mounted with drive using a flexible coupling, the whole unit mounted on a base)
- * screw pumps directly connected to the drive (monobloc).

DRIVES

The following types of drives are mainly used:

- "gear motor with electric motor,
- » belt transmissions with motors,
- * hydraulic motor.

AVAILABLE CONFIGURATIONS

100HSP (BASIC PUMP)

100HSP2S (TWO-STAGE PUMP)

-DM (MECHANICAL GLAND)

-D5 (STRING BAND)

/RCH (CHROME ROTOR)

/RN (STAINLESS ROTOR)

/Rk (ACID-RESISTANT ROTOR)

Upon individual request and after consultation with the manufacturer, non-standard versions can be made e.g.: mobile version, on a special base, with a safety device against excessive pressure increase and control panel, with safety installation (overload safety valve and piping ensuring reverse flow), others according to customer needs.

ROTOR TYPES

- chrome rotor (marked RCH)
- stainless steel rotor (RN marking)
- acid-resistant rotor (marked RK)

STATOR CHARACTERISTICS.

The stator is made of a metal pipe filled with elastomer. Depending on the purpose of the pump, different types of elastomers can be used, differing in their physical and chemical properties:

MATERIAL	MAX TEMP
VITON	180 °C
EPDM	120°C
NBR	90°C
SBR	90°C
CSM	70°C

*-MST: maximum surface temperature permissible for Group II devices (EN 50014 standard)

TYPES OF SEALS

Depending on the type of pumped liquid and operating conditions it is possible to, use different type of pump shaft seals. 100 HSP screw pumps can be equipped with the following types of seals:

TYPE DS - Cord seal

TYPE DM = Mechanical seal

ADDITIONAL DEVICES AND THEIR PURPOSE

Screw pumps can be equipped with additional devices that perform specific functions. Examples are given below.

DRY RUNNING PROTECTION DEVICE

Dry running detection prevents stator damage when there is no pumped liquid. If there is a lack of medium, the elastomer stator overheats due to friction. For protection, a thermal sensor connected to the power supply and control panel is mounted to the stator. An increase in temperature causes the sensor to operate, which generates a signal to stop the engine.

CONTROL CABINET

The control cabinet, depending on the needs, can be equipped with all kinds of switches, protections, programmers, controllers, G3M modules, flow meters, etc. It is possible to equip the pump with an inverter enabling smooth regulation of engine speed. It is recommended to consult the pump manufacturer before using complex control-protection-monitoring systems.

PROTECTION AGAINST UNDESIRABLE PRESSURE INCREASES

Protection against pump or installation damage caused by pressure increase in the discharge section is achieved by installing a safety valve that opens when the pump exceeds a predetermined pressure, releasing the liquid in the pump suction nozzle - then it acts as a bypass valve. It is also possible to use an electronic pressure

NON-RETURN VALVE

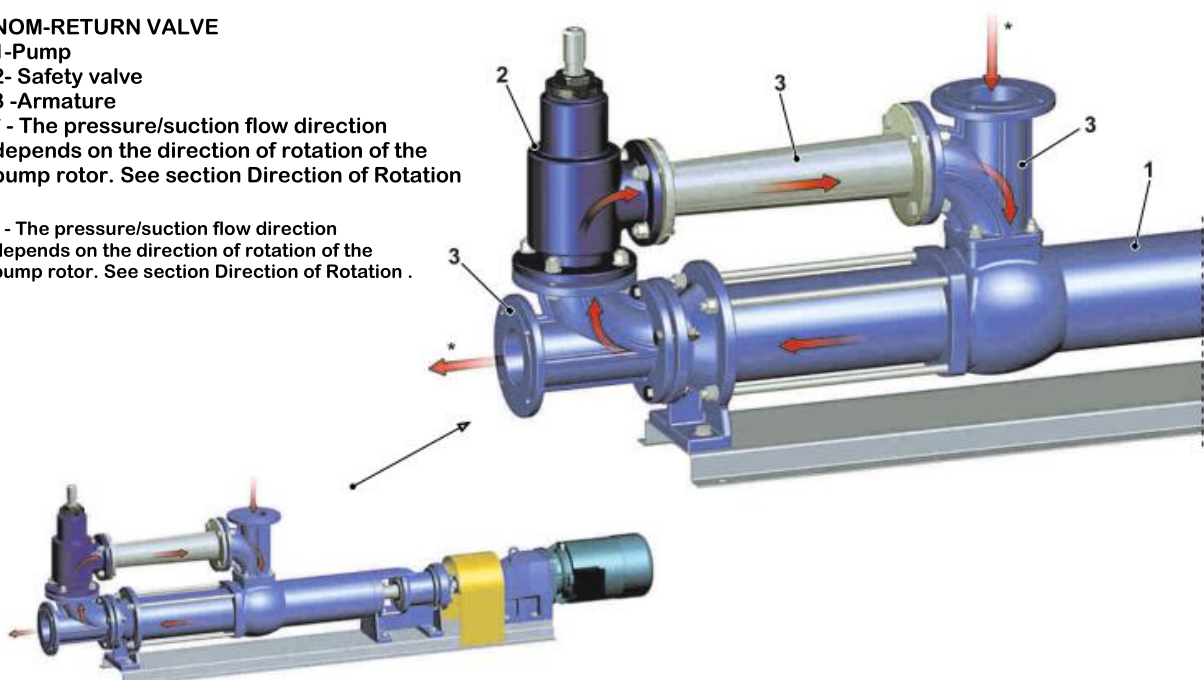
1-Pump

2- Safety valve

3 -Armature

* - The pressure/suction flow direction depends on the direction of rotation of the pump rotor. See section Direction of Rotation

* - The pressure/suction flow direction depends on the direction of rotation of the pump rotor. See section Direction of Rotation .



USE AND OPERATION

TRANSPORT, PACKAGING, STORAGE

Screw pumps are delivered on wooden pallets, unless the customer requests a different method of packaging.

Upon receipt, please check for any damage that may have occurred during transport. Any damage that occurred during transport should be reported to the carrier immediately. To avoid misunderstandings in the event of any irregularities that occurred during transport, we recommend that you prepare an appropriate

protocol in the presence of the carrier delivering the equipment.

Horizontal pumps can only be lifted by the body using belts.

WARNING



The pump may have its center of gravity shifted upwards, which may cause it to wobble, tilt dangerously, and tip over when lifted.

INFORMATION



Due to differences in dimensions, configuration and construction of pump types and subtypes, the above guidelines should be considered general. Transport and assembly should be carried out by experienced and properly trained personnel. For more detailed information on storage and transport of individual types and configurations of devices, please contact the manufacturer.

MOVING MOBILE PUMPS

When moving mobile pumps, care should be taken, in particular:

- Make sure that the engine is switched off and that there is no risk of accidental starting the engine. For increased safety, the pump power supply can be completely disconnected. If there is a risk of damaging the electrical cables, the power supply must be disconnected without fail.
- The device should be moved slowly and carefully, especially if the ground is uneven, or there is a slope,
 - Be careful with any tilt of the device, as there is a risk of it tipping over. - Make sure the ground is firm, block the wheels to avoid unwanted movement.
 - if the device may become unstable after being moved, additional wedges should be installed under the wheel set.
 - if the device is connected using flexible hoses, pay attention to the possibility of their sudden movement when starting the pump after it has been moved.

GENERAL RECOMMENDATIONS

Pumps should be stored in a dry, dust-free room free from the possibility of exposure to corrosive liquids and vapors.

After long-term storage of the pump, it is recommended to carry out a technical inspection, paying attention to the condition of the rubber elements (including seals, the inside of the stator, the flexible clutch insert),

Verification and visual inspection of the connections and electrical wiring should also be carried out, paying attention to the guard of meeting the safety requirements.

COMPONENT RECOMMENDATIONS

+ After long-term storage, the working assembly may become "sticky", making it difficult to start the pump. In addition, during longer storage, the rotor exerts constant pressure on the stator, which can ultimately lead to deformation of the stator. To prevent this, the stator should be dismantled, packed, and protected from damage, light (harmful UV effects), excessive air penetration, and dust. Store the stator in a cool, dry place.

- If the stator is dismantled the rotor must be immobilized and supported, for example with a wooden block, and protected against mechanical damage.
- If the pump is to be stored for a longer period of time, attention should be paid to the possibility of the mechanical seal friction pairs sticking together. This can be prevented by turning the pump shaft periodically (by hand).
- If the pump is to be stored for a period longer than 6 months, periodic turning of the pump shaft is absolutely recommended.
- Stainless steel elements do not require additional protection. Unpainted elements should be protected with technical grease or oil.
- The pump motor, gear motor, control and power panel should be stored in accordance with the manufacturer's recommendations for these devices contained on the relevant instructions.

CONNECTING THE PUMP TO THE ELECTRICAL AND HYDRAULIC SYSTEM



The electrical connection of the pump must be made by authorized personnel in accordance with applicable law.

It is essential to comply with the occupational health and safety standards regulations applicable to work on electrical installations.

The connection of the motor and other electrical devices must be made in accordance with the recommendations contained in the relevant instructions supplied with these devices.

RECOMMENDATIONS



Recommended

- Use of a differential circuit breaker, Using a slightly longer protective conductor core. This means that if the cable is accidentally pulled out, the protective conductor core is the last to be disconnected.

Before starting the pump, check:

Compliance with the connection diagram provided in the instructions for the engine and any power supply and control cabinet.

- Voltage, frequency, number of phases corresponding to the motor.
- Motor connection method - star delta.
- Diameters of the cables used
- Correct mounting of cables in terminal boxes.

ADDITIONAL INFORMATION

- After long-term storage, the working assembly and friction pairs of mechanical seals they can become "glued" - they stick to each other. This causes an increase, determining the use greater starting torque. If the recommendations in section STORAGE have been met, the pump shaft should be started manually by turning it half a turn to the right and left. This operation does not adversely affect the stator and seal provided that the storage recommendations are followed.

- If it is suspected that the storage conditions and method have deviated from those recommended,

contact the pump manufacturer prior to starting the pump to consult on the individual start-up procedure.

ATTENTION



It is unacceptable to operate the pump in a dry run, i.e. to start the pump without filling it with the pumped medium.

INFORMATION



During start-up, attention should be paid to the direction of rotation by empirically confirming the direction of flow of the pumped medium.

DIRECTION OF ROTATION

The pump rotation direction is illustrated by the sticker on the pump. The pump rotation direction determines the direction of fluid flow through the pump. In the case of a change in the direction of rotation, the discharge port becomes the suction port and vice versa. Changing the pump rotation direction to the opposite of the nominal one given on the sticker or nameplate must be consulted and confirmed by the pump supplier. By changing the pump rotation direction, the pumped product flows in the opposite direction. If the pump shaft rotates clockwise as viewed from the drive side, the fluid is sucked in from the port at the end of the pump and pumped out through the port in the middle. If the pump rotates counterclockwise, it sucks in through the port in the middle of the pump and forces out through the port at the end. (see figure below).

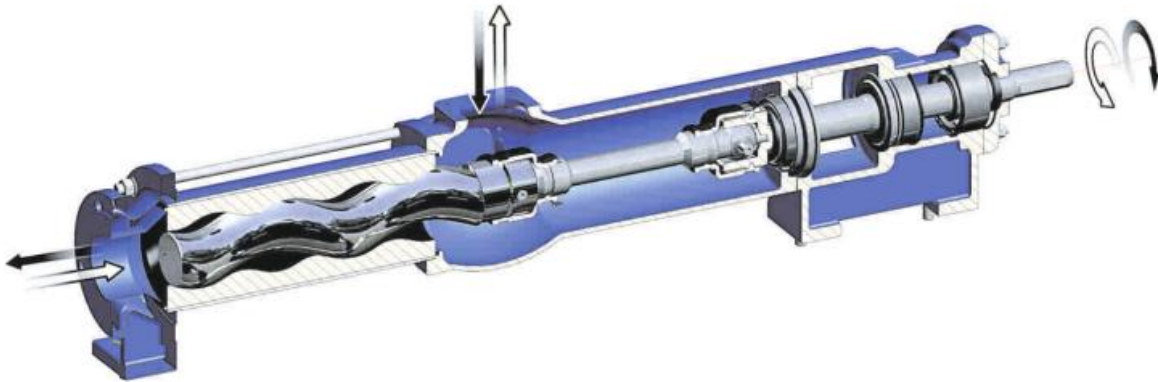


Fig. 4. Direction of pump rotation

CONNECTING PIPES

TIPS AND RECOMMENDATIONS

- The diameter and type of fittings must be selected according to the operating parameters and the type of pumped medium. In particular, attention should be paid to: flow rate, maximum possible pressure in pipelines and in local choking points, physical and chemical parameters of the medium (viscosity, granulation, chemical activity, temperature, etc).
- The pipeline connection must not cause stresses and excessive vibrations that could adversely affect the construction and operation of the pump. Appropriate compensators and proper pipeline construction should be used. Verify correct assembly.
- The suction and discharge pipeline should be routed in such a way that a certain amount of medium remains in the pump. This prevents dry running during start-up and facilitates the suction of liquid when the pump starts.
- Before connecting the pump, the installation must be cleaned.
The installation should be tight enough to prevent the intake of so-called "false" air.
- The pipeline assembly method should provide the possibility of dismantling the stator. This allows for inspections and repairs without having to dismantle the entire pump.
- The diameter of the suction installation must not be smaller than the pump suction connection
- The pump should be installed as close as possible to the tank from which the medium is sucked. Minimizing the length of the pipeline allows for reducing hydraulic resistance and reduces the phenomenon of cavitation.

MAXIMUM PRESSURE

Unless otherwise agreed, it is known that the maximum permissible pressure in the pump housing (in the case of a clockwise rotating pump) is 6 bar

The maximum flow rate pressure should be within:

- flange connections must not exceed nominal pressures (see PN 16),
- threaded connections must not exceed 275 bar,
- DIN 11851 hygienic connections up to DN 100 do not exceed 12 bar,
- 1-stage pumps up to 6 bar,
- multi-stage pumps - do not exceed 6 bar per stator stage.

START**ATTENTION**

The pump should not be allowed to operate without a pumped medium - one so-called dry run. Several minutes of operation without a medium (dry run) may lead to damage or destruction of the stator due to excessive heating and abrasion.



Screw pumps are characterized by the possibility of obtaining theoretically unlimited and in a practice, very high pressure in the discharge pipeline. For this reason, safety valves with on -return bypass of pressure sensors connected to the control and power supply box should be installed on the pipelines. Otherwise, if the pipeline becomes clogged, it may burst.

Both before and during start-up, check the direction of rotation of the pump shaft and the direction of flow of the medium.

Pump capacity is changed by changing the rotor speed. The flow must not be throttled by regulating it using valves and gate valves on both the pressure and suction sides.

RECOMMENDATIONS FOR PUMPS FOR THE FOOD INDUSTRY**GENERAL INFORMATION**

Starting up pumps used in the food industry requires that both the pump and the place of operation are clean. They must strictly comply with industry and company standards and recommendations. We can achieve the appropriate cleanliness of the pump in two ways:

We disassemble the pump and wash/clean each element separately using an appropriate agent. Then we assemble the pump, remembering to maintain cleanliness and making sure of its hygienic condition after assembly.

Use a CIP cleaning-in-place system if the pump design allows it.

Personal protective equipment permitted by industry and company regulations should be used. It is important to remember to use operating materials permitted for contact with the pumped medium.

PUMPS CLEANING GUIDELINES

Situations that require cleaning the pump:

- Start-up - prior to start-up, a thorough cleaning is carried out or the pump is disassembled into parts. or using the CIP method.
- Longer break from work
- Inspection combined with parts replacement.
- Repair and renovation.
- Preparation for the expected downtime.

CLEANING IN PLACE OF USE WITHOUT DISASSEMBLY - CIP METHOD

+ Before starting the actual cleaning, the pump should be pre-cleaned with water to remove any residues of the pumped medium inside and external contamination should be removed.

+ Proper cleaning should be carried out using sodium hydroxide (caustic soda NaOH) o Concentration of 1 to 2. The solution should have a temperature of about 60°C to 80 °C. Washing time is approx. 10 to 20 minutes.

* Then rinse with clean water for 5 to 10 minutes.

+ The next step is cleaning with 1 to 1.5% nitric acid at 50-70 degrees Celsius for 5 to 10 minutes.

The last stage is a final rinse with clean water for 5 to 10 minutes. All stages are to be carried out with a jet of washing liquid, the flow velocity of which in the installation should be about 2 m/s.

START-UP PROCEDURE AFTER A LONG PUMP STANDSTILL

It is recommended to wash the pump after it has been stopped, before a planned stop. This will prevent:

- concentration of the remaining pumped medium,
- crystallization of the pumped medium on the sealing surface
- freezing of the remaining pumped liquid in the event of low temperatures.

When the pump is not in use, the rotor and stator and the friction pairs of the mechanical seal may stick together. To avoid or minimize this phenomenon, follow the procedures described in the STORAGE section.

After a long standstill, the pump usually has the stator dismantled. During assembly, it is recommended to use e.g. Vaseline, soap or diluted dishwashing liquid to lubricate the stator applied to the rotor in order to facilitate sliding the stator onto the rotor.

If partial "gluing" of the rotor and stator and the seal friction pairs occurs, a higher torque than the maximum assumed for the drive unit may be required for the first start-up. In such a case, the initial start-up can be performed by turning the pump shaft manually half a turn to the left and right. Then, the pump can be switched on as usual.

If significant "sticking" of the mating pairs has occurred and shaft rotation is impossible or highly difficult, contact the manufacturer or an authorized supplier to implement appropriate non-standard procedures.

INSPECTION AND MAINTENANCE

ATTENTION

Any maintenance and cleaning work should only be performed when the device is securely mounted and disconnected from the power source. The power source should be protected against uncontrolled switching on.

EMERGENCY INSPECTION

After an emergency stop of the equipment and before restarting it, the pump and installation must be inspected to determine the cause of the failure.

If the pump motor is stopped as a result of the dry-running protection sensor being activated, it must not be restarted until the cause has been identified and eliminated and all pump operation safeguards have been checked again.

In the event of a safety valve being activated due to excessive pressure, the entire installation should be inspected to find and eliminate the cause (e.g. partial or complete blockage of the pipeline).

STANDARD INSPECTIONS AND MAINTENANCE

FASTENERS

Vibrations occur during pump operation. If they do not exceed 2.5 m/sec², they can be classified as normal, characteristic of pump operation. While vibrations of this value should not cause pump failure, they can affect the loosening of screws. Therefore, the degree of screw tightening should be checked regularly.

SURFACE CLEANING

The pump should be cleaned regularly. The frequency of external surface cleaning depends on the conditions in the pump environment, while the frequency and method of internal cleaning depend on the type of pumped medium. The method of cleaning depends on the possibilities and downtime that can be devoted to cleaning and maintenance. For more information on cleaning, see the section GUIDELINES FOR CLEANING PUMPS.

MALFUNCTIONING - CAUSES AND APPROPRIATE RECOMMENDATIONS

	I	II	III	IV	V	VI	VII	VIII	IX	X	
1	*						*				Faulty electrical connection
2	*						*				New rotor and stator are blocking
3			*	*			*	*	*		Delivery pressure too high
4	*	*					*	*	*		Swollen stator - high temperature
5	*		*			*	*				There is a foreign body in the pump
6	*	*					*				Incorrect stator material
7	*				*	*	*	*			Diam of solids are too large
8	*	*		*		*	*	*		*	Pumping medium settles when the pump stops
9		*	*	*	*						Inflow of "false" air through the seal
10	*			*	*						"False" air in the suction system
11		*	*	*	*						Too much resistance on the suction side
12		*	*	*						*	Low RPM, too low flow rate
13		*	*	*					*		Incorrect rotor rotation Direction
14		*			*					*	Cavitation phenomenon occurs = NPStHoo rlo w*
15		*	*	*		*	*			*	Periodic lack of medium in the pump
16		*	*	*			*			*	Stator damaged/destroyed by chemical attack
17		*	*							*	Stator damaged - probable overheating
18		*	*	*				*			Damaged rotor
19					*	*					Drive shaft does not engage with drive
20			*	*	*	*					Intermediate shaft connected incorrectly
21					*	*					Intermediate shaft damaged
22					*	*					Damaged/destroyed Bering
23					*		*	*			Rotation speed to high
24	*	*				*	*			*	Liquid viscosity too high
26		*							*		Incorrect seal used

- | | |
|----------------------------------------|---------------------------------------------|
| I - the pump is not working. | Vi - Unintentional pump stop, |
| II - The pump does not suck, | VII - Damora degstrukci on of the stator, a |
| III - Pump flow or capacity incorrect, | VIII - Rotor damage or destruction, g . |
| IV - Uneven or patchy flow, | IX - Leakage from the seal, 4 |
| V - Noisy pump operation, | XX - Too low discharge pressure |

RECOMMENDED PROCEDURE IN THE EVENT OF ABNORMALITIES

Verify the electrical connection using the diagram and descriptions in the manual for the pump, motor or power supply and control cabinet.

- If an EPDM stator is used, mineral oil must not be used.
- Check whether the pumped medium is the same as that specified in the order. If necessary, replace the stator with one appropriate for the pumped medium.
- Tighten the cord by tightening the gland bolts or replace the cord or other worn damaged gland components. In the case of a mechanical seal, it should be carefully cleaned, inspected and replaced if necessary.
- The level of liquid flow to the pump should be increased to prevent false suction of air.
- Check the seal condition.
- Increase the inflow level and/or lower the temperature of the pumped medium.
- Replace the stator. Find the cause of the stator overheating (e.g. dry running, too much friction, too high medium temperature).
- The cause of accelerated rotor wear should be identified (abrasion, corrosion, cavitation, mechanical damage). Depending on the identified cause, take preventive measures, @.9.: improve cavitation surplus, change rotor material, use screens on the suction system, etc.).
- Reduce the speed of the drive gear or control device.
- Check viscosity, compare with parameters given in the pump order. If viscosity is as given in the order and cannot be lowered, reduce speed and/or improve inflow conditions.
- Check the specific gravity of the liquid and compare with the order.
- Select another type of seal. Consult the problem with the manufacturer or authorized pump distributor.

STATOR

The stator wear should be checked on average every 20 hours of pump operation. The degree of wear depends on the operating conditions, in particular on the temperature, abrasive properties and chemical activity of the pumped medium.

SEALS

ROPE SEAL

The characteristic feature of cord seals is to limit leakage, but they do not completely protect against leakage. A small amount of leakage is necessary to prevent excessive friction and consequently overheating.

When replacing the seal or when starting the pump, slightly loosen the gland screws, start the pump and after approx. 10-15 minutes of operation, stop the engine and tighten them more tightly, pressing the cord, which will minimize leakage.

ATTENTION

In the case of corded glands, there must be a slight leakage from the seal during operation. If the packing string & over-tightened, the packing may be damaged or the shaft may wear excessively. In both cases, the consequence is excessive leakage at the seal,

BELLOWS MECHANICAL SEAL

Periodically, check for leaks around the seal. The frequency of inspections must be greater the more unfavourable the pump operating conditions. The seal should be inspected on average every 900 operating hours.

Pumps can be supplied with various types of seals. It is recommended that before replacing the seal, you familiarise yourself with its designation given in the order confirmation or in other documentation supplied with the pump. If a significant leak is detected, the seal should be dismantled and inspected. The O-ring seal seat and the shaft whether seal rings are seated should also be inspected. Seal wear can occur in various ways and in various places. The friction pairs, the compression spring and the rubber elements of the seal should be carefully inspected.

It is recommended to replace the seal as a whole, i.e. both rings as a set. Any replacement of only one of the rings should be preceded by consultation with the manufacturer or an authorized distributor.

JOINTS.

One of the most loaded pump elements are the joints, which is why they should be checked regularly. Even if the Pump operation does not indicate possible wear of the joints, they should be inspected periodically. Attention should be paid to the condition of the elastomeric covers, pins and bushings, as well as ball joints. If signs of wear are noticed, the elements should be replaced with new ones or regenerated. To facilitate dismantling of the joint covers, unfasten and remove the securing steel rings, then remove the covers. Before installing the new covers, place them in warm water, which will facilitate their assembly, preventing damage when putting them on the joint. The method of dismantling the rotor and joint is illustrated in the section ROTOR DISMANTLING AND JOINT REPLACEMENT.

LUBRICATION

If it is necessary to replace lubricated elements, it is necessary to do so during assembly. Lubricate them with the greases listed below:

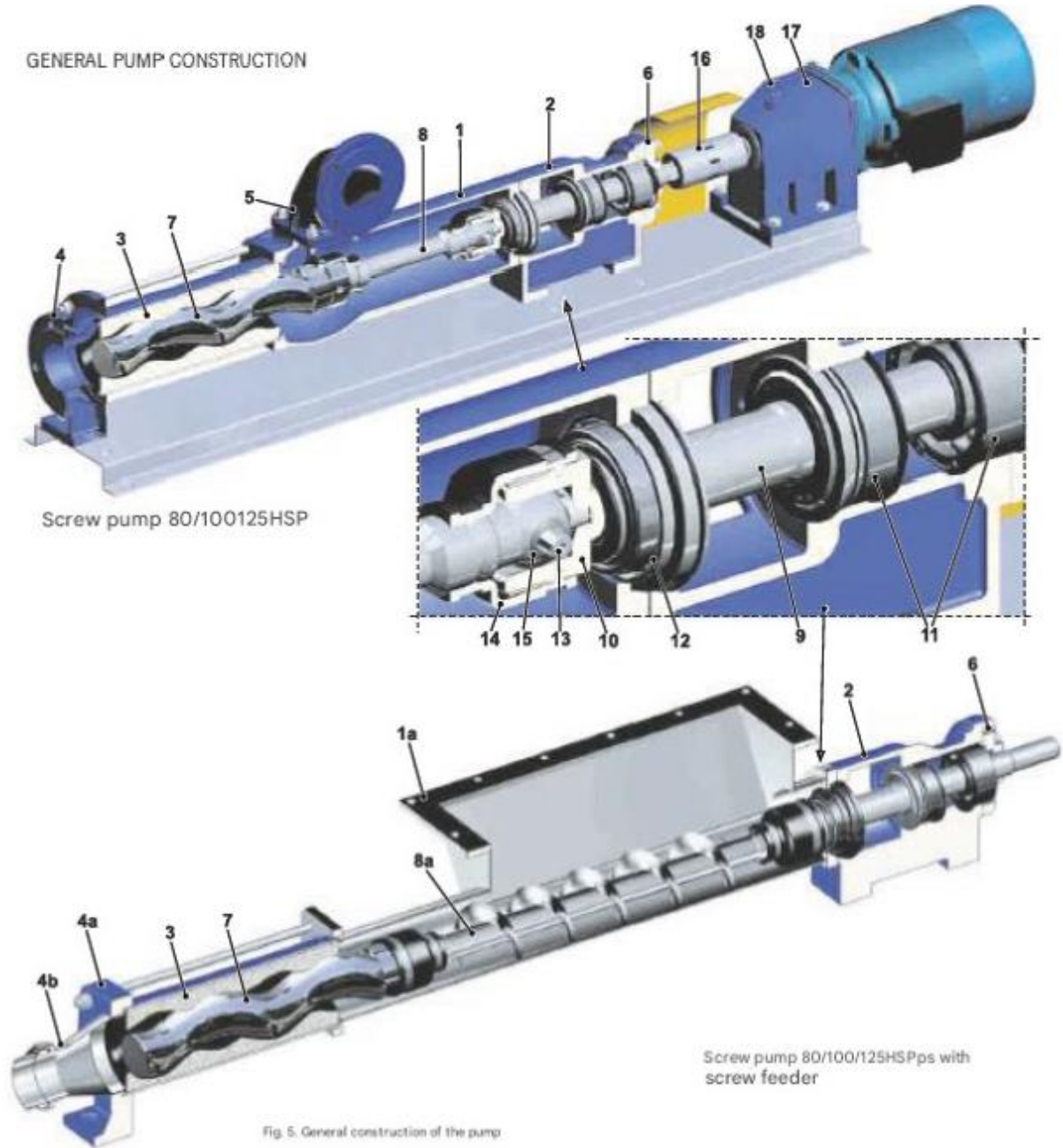
- Steel joint - LITEN GREASE,
- Bearings - GREASE LT 43,
- Rubber stator - TECHNICAL VASELINE.



The joints in the rubber casing of pumps for the food industry should be lubricated with a grease approved for use in contact with food. Detailed recommendations are contained in the relevant industry and/or company regulations.

**DISASSEMBLY AND ASSEMBLY OF COMPONENTS
INFORMATION**

Before disassembling components, familiarize yourself with the pump structure and the nomenclature used.

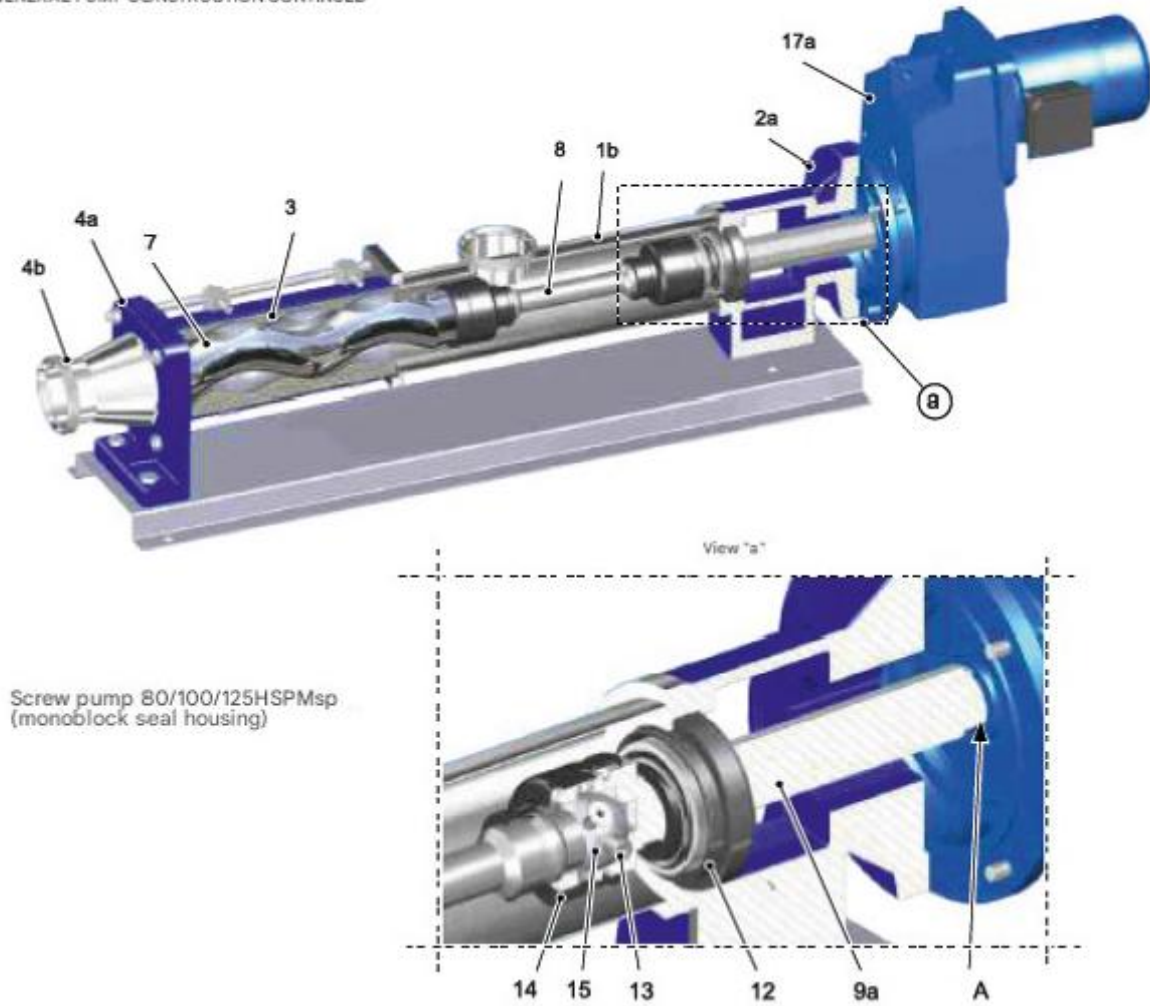


Pos	Part name
1	Pump housing
1a	Pump casing
2	Bearing housing
3	Stator
4	Discharge flange
4a	Discharge port housing
4b	Discharge port

Pos	Part name
5	Suction elbow
6	Front cover
7	Rotor
8	Drive shaft
8a	Worm driveshaft
9	Shaft
10	Joint housing

Pos	Part name
11	Bearings
12	Sealing
13	Joint pin
14	Rubber joint cover
15	Cardan shaft insert
16	Clutch
17	Gear motor
18	Gear motor handle

GENERAL PUMP CONSTRUCTION CONTINUED



Screw pump 80/100/125HSPmsp
(monoblock seal housing)

Fig. 5a General construction of the monoblock pump

Pos.	Part name	Pos.	Part name	Pos.	Part name
1b	Pump housing stainless steel	4b	Discharge port	12	Sealing
2a	Stator pump	7	Rotor	13	Joint pin
3	connector	8	Driveshaft	14	Rubber joint cover
4a	Discharge port housing	9a	Drive shaft M- monoblock power transmission	15	Cardan shaft insert
				17a	Gear motor for 80/100/125HSPM (Monoblock pump)
				---	Drive shaft support

Devices can be customized to individual customer requirements. As a result, they can come in different configurations, which can be identified based on the information provided on the nameplate.

The manufacturer reserves the right to introduce changes affecting the technical characteristics of the devices.

ATTENTION



- Before starting dismantling/assembly work
- Follow the safety instructions in the manual,
 - The pump and piping should be drained.



STATOR DISASSEMBLY AND ASSEMBLY

ATTENTION

Some types of stators have integral seals at their ends. In this case, separate O-rings are not necessary. In any other case, the O-rings should be replaced with new ones each time they are dismantled.



DO NOT OVERTIGHTEN THE STATOR MOUNTING SCREWS because the thread could damage the pump body. The tightening force should be approx. 40-50 Nm. Do not overtighten the screws and stop rods.

WARNING



Be careful with your fingers when inserting the rotor into the stator.

STATOR DISASSEMBLY

1. disconnect the pump from the suction and discharge systems,
 2. Support the pump body with wooden blocks and support the stator,
 3. unscrew the screws holding the discharge flange, unscrew the screws holding the pump body to the base,
 4. remove the discharge flange by removing the nuts and washers,
 5. remove the screws from the mounting sockets,
 6. remove the other foot if present,
 7. Remove the stator from the rotor by turning it slowly and pulling it in the direction of the black arrow until it stops.
- his complete photo.

STator INSTALLATION

1. Before reassembly, carefully clean the visible and disassembled parts,
2. Place the stator on the rotor, lubricating it with glycerine, petroleum jelly or silicone oil. The assembly should be carried out in reverse order of disassembly,
3. The assembly is completed after re-inserting the pump body and stator, retaining rods,

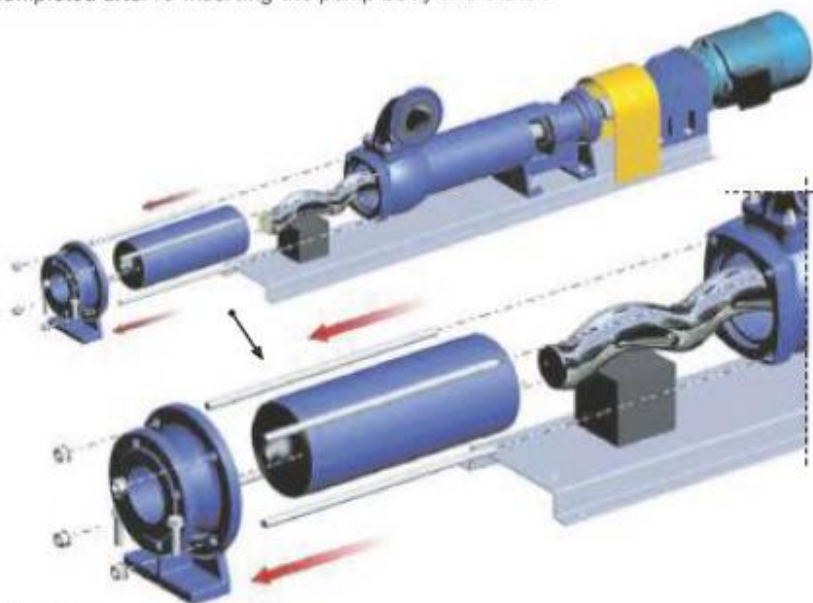


Fig. 6. Disassembly of the stator

BOLT TIGHTENING TORQUE VALUES

Screw	Dia	M6	M8	M10	M12	M16	M20	M24	M30
Moment	Nm	8	15	30	45	75	80	100	120

ROTOR DISASSEMBLY AND JOINT REPLACEMENT

- When reassembling the joint, the joint boot should be immersed in hot water to softening it. This will make it easier to fit the cover into the mounting grooves. To ensure that the reassembly is carried out correctly, follow the instructions for disassembly in reverse order.

1. To remove the stator, follow the instructions in the Stator Disassembly section,
2. Remove the pump body in the direction of the arrow (see drawing) then you will see the joint connected to the rotor,
3. Remember to support the rotor with a wooden block,
4. Follow the instructions below depending on the type of joint your pump is equipped with.

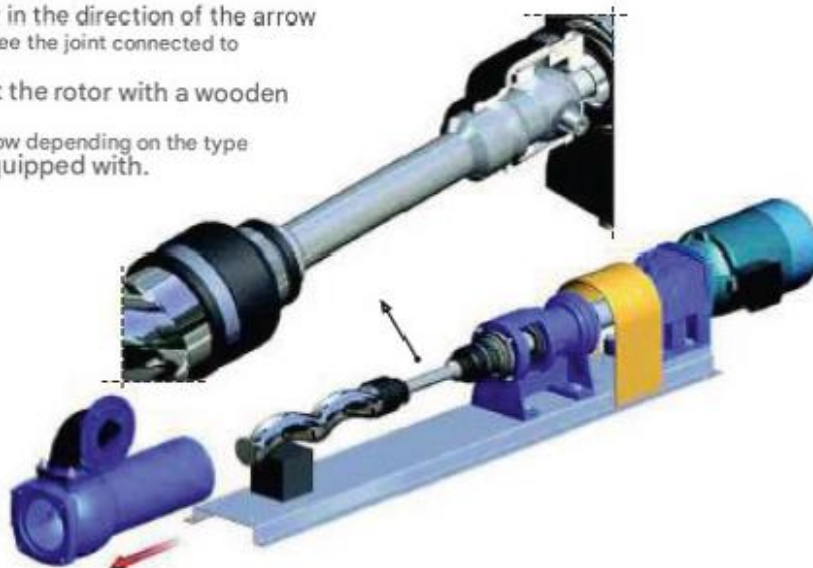


Fig. 7. Disassembly of the body, view of the joints

CROSS JOINT - DISASSEMBLY

1. Remove the securing straps (7)
2. Remove the rubber cover of the joint (3)
3. Remove the two rings (9) securing the pin
4. After removing the pin and the crosspiece, the rotor can be dismantled.

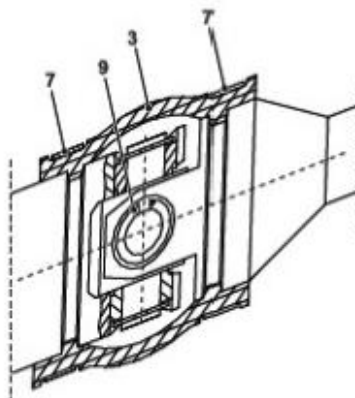


Fig. 8 Disassembly of the universal joint

PIN JOINT - DISASSEMBLY

1. Remove the securing straps (7)
2. Remove the rubber cover of the joint (3)
3. Remove the screw securing the ring (4) of the pin lock (8)
4. Slide out the pin (6) of the joint after removing the ring (4)

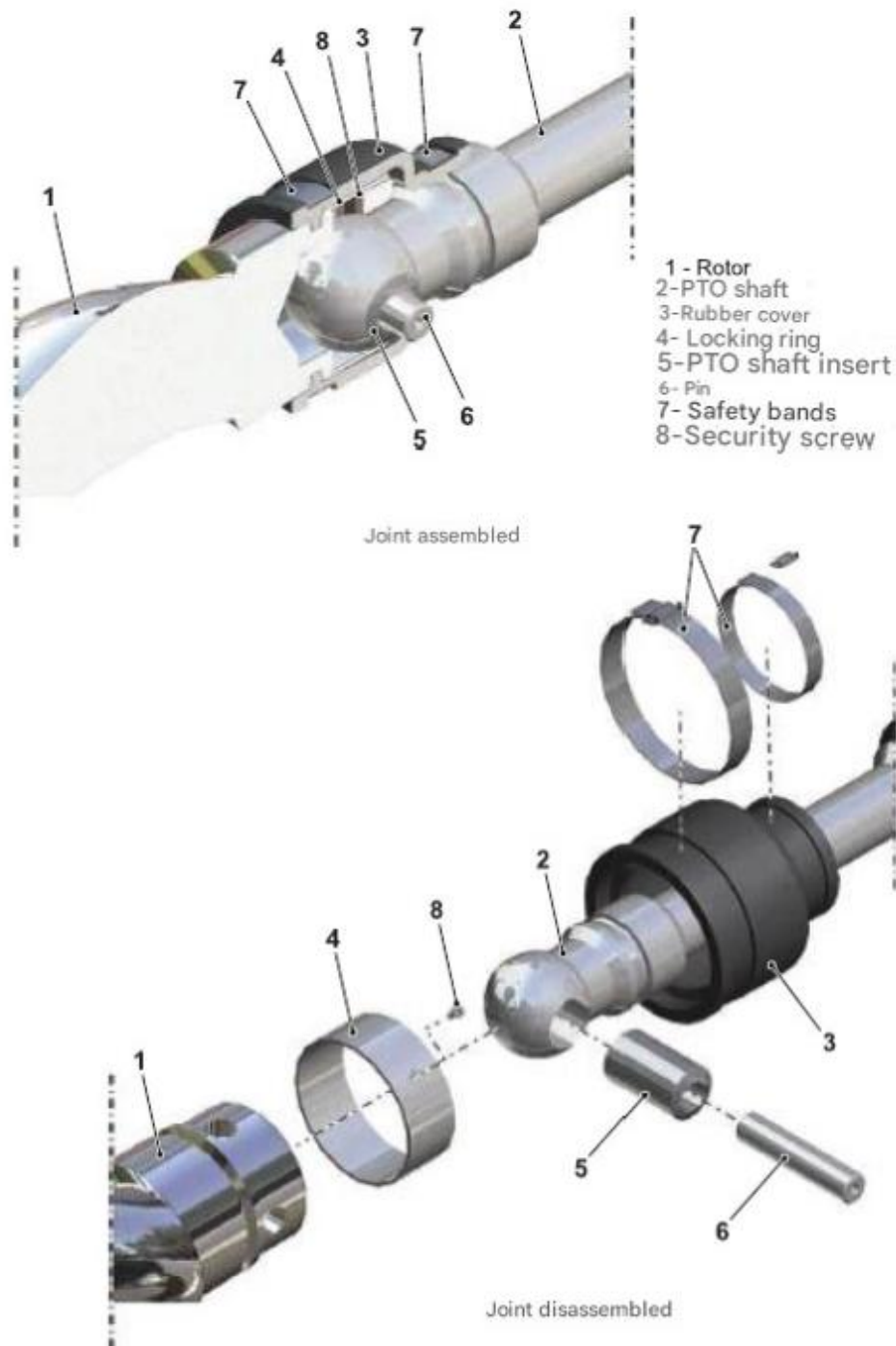


Fig. 9. Disassembly of the pivot joint

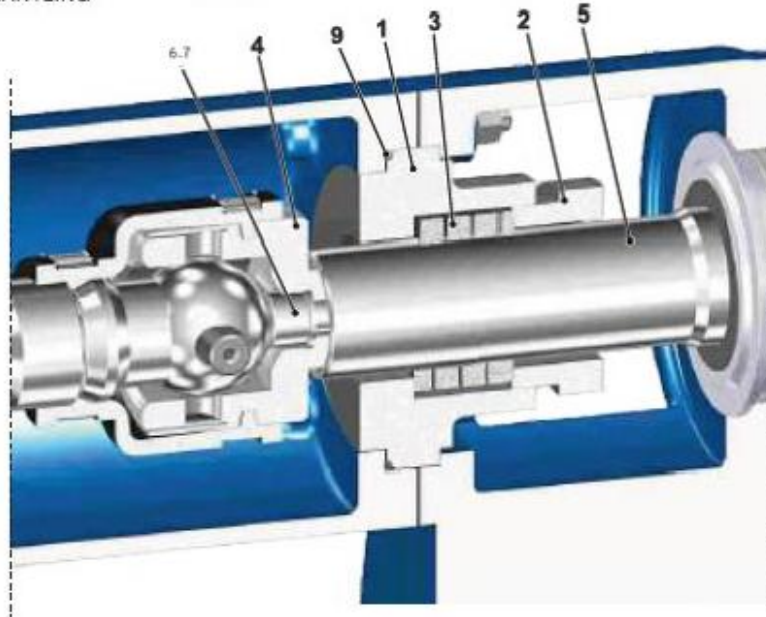
DISMANTLING SEALS (GLANDS)



WARNING

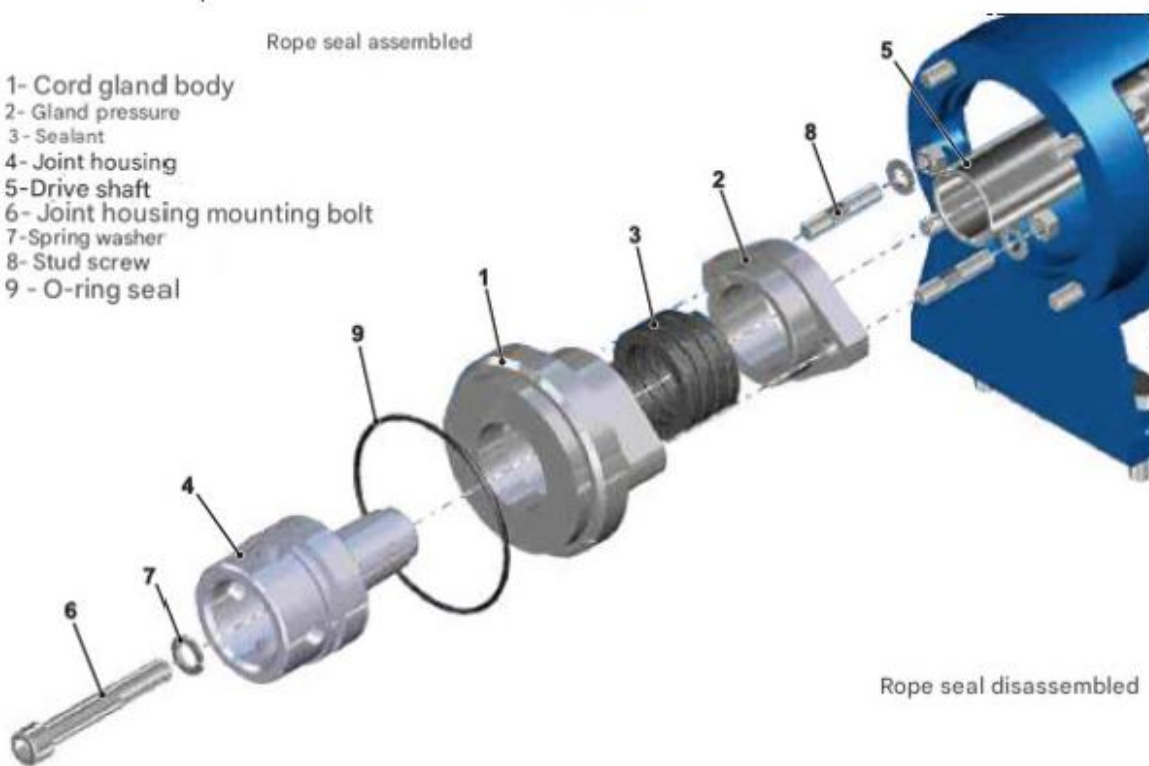
Do not use any sharp tools when inserting the seal as this could damage the shaft or the seal itself.

ROPE SEAL - DISMANTLING



Rope seal assembled

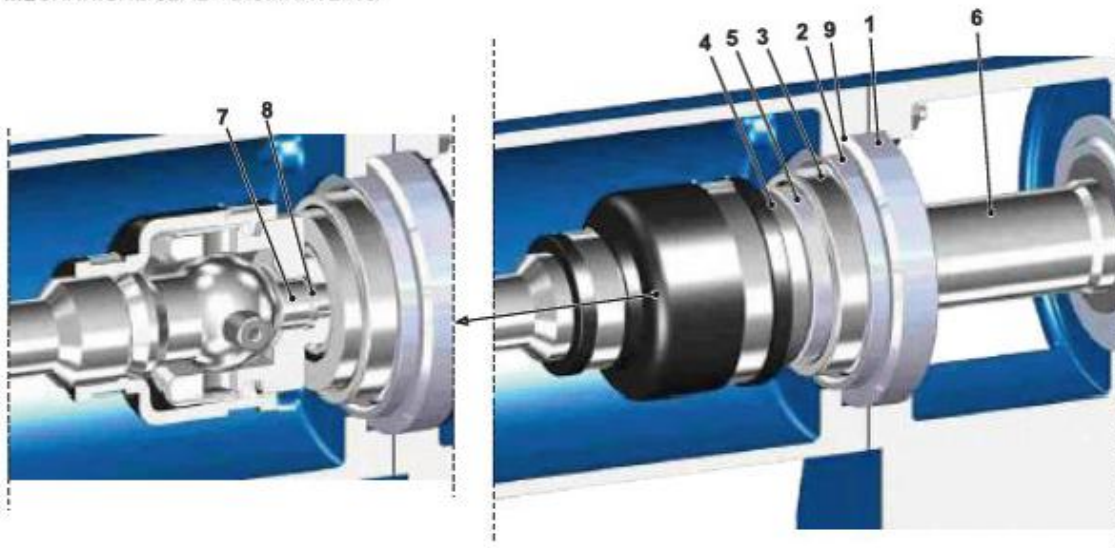
- 1- Cord gland body
- 2- Gland pressure
- 3- Sealant
- 4- Joint housing
- 5- Drive shaft
- 6- Joint housing mounting bolt
- 7- Spring washer
- 8- Stud screw
- 9 - O-ring seal



Rope seal disassembled

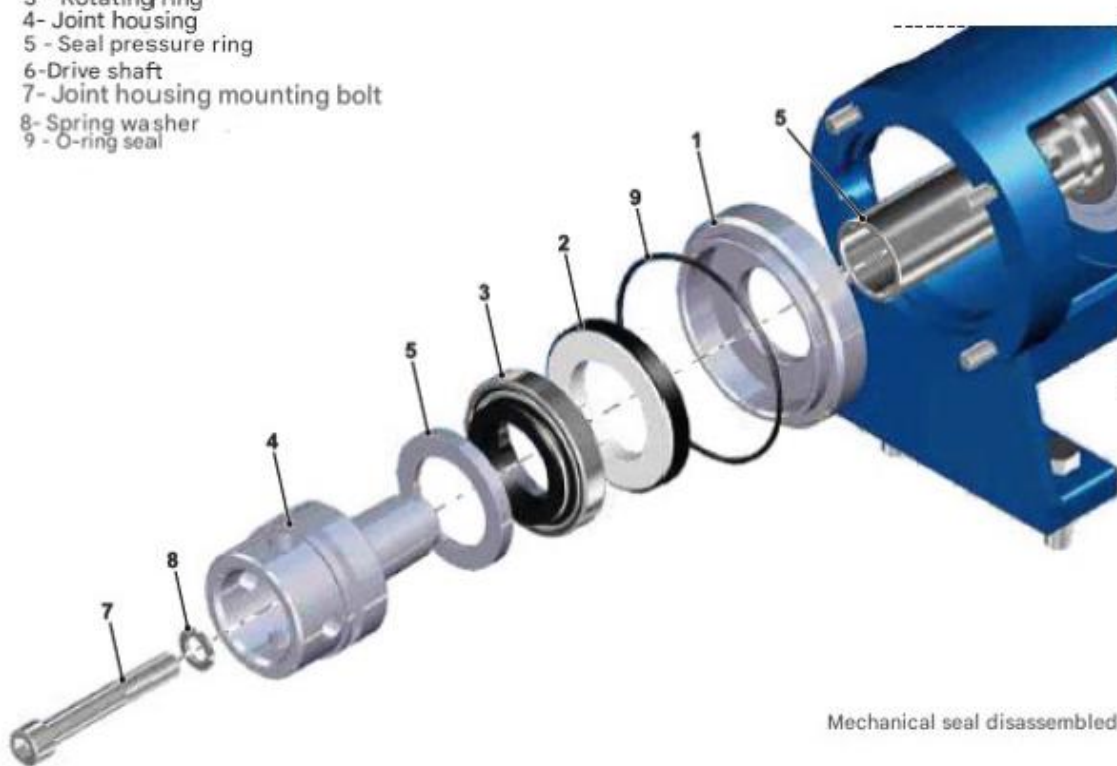
Fig. 10. Dismantling the cord seal

MECHANICAL SEAL - DISMANTLING



Mechanical seal assembled

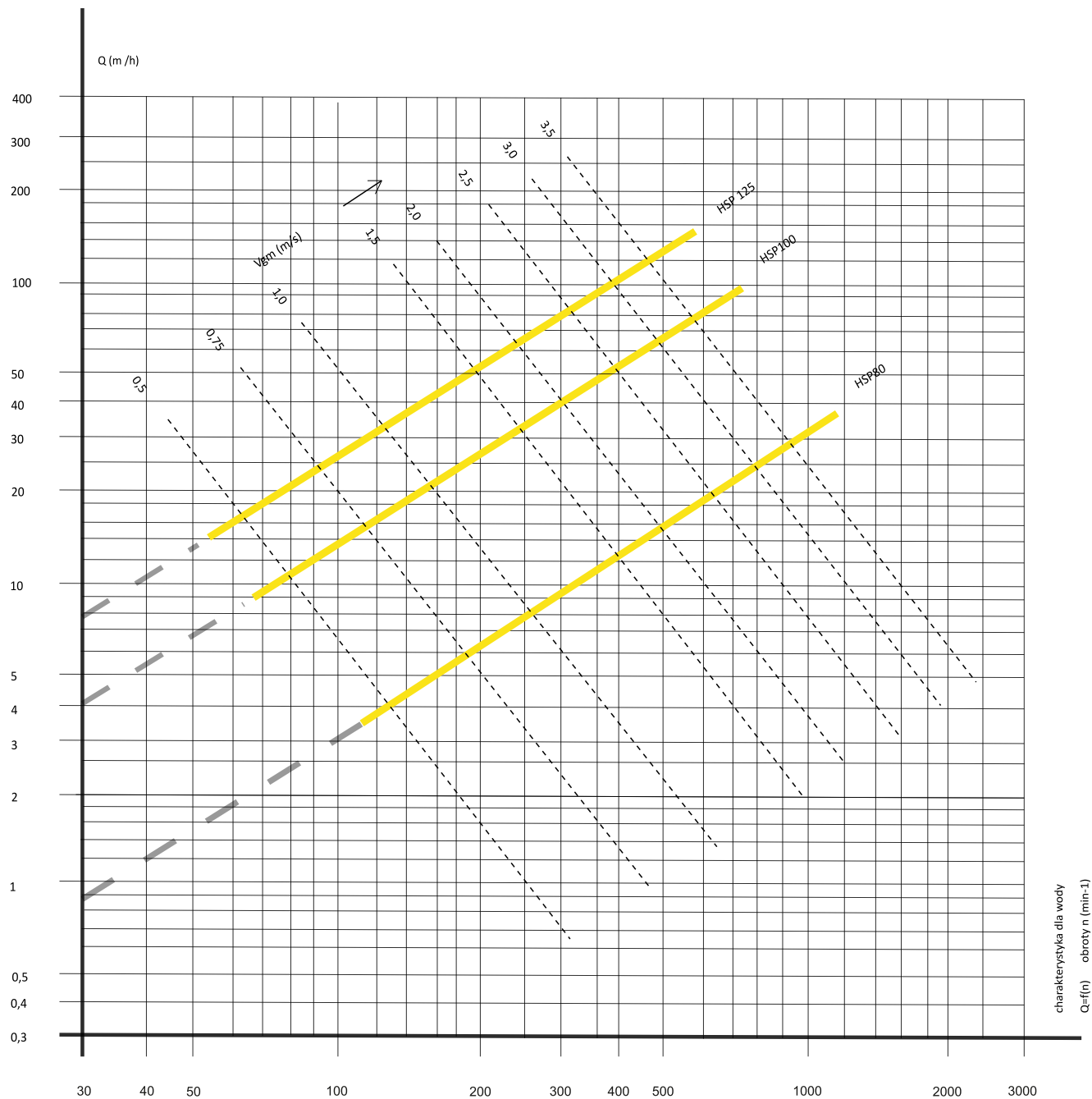
- 1 - Mechanical gland body
- 2 - Fixed ring
- 3 - Rotating ring
- 4 - Joint housing
- 5 - Seal pressure ring
- 6 - Drive shaft
- 7 - Joint housing mounting bolt
- 8 - Spring washer
- 9 - O-ring seal



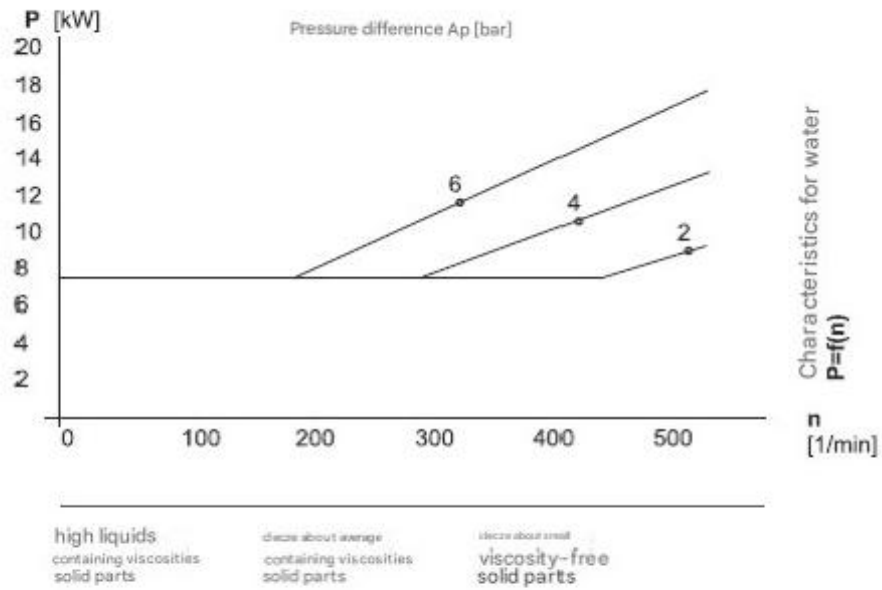
Mechanical seal disassembled

Fig. 11. Disassembly of the mechanical seal

Pump performance



PERFORMANCE CHARACTERISTICS OF THE 80/100/125HSP PUMP

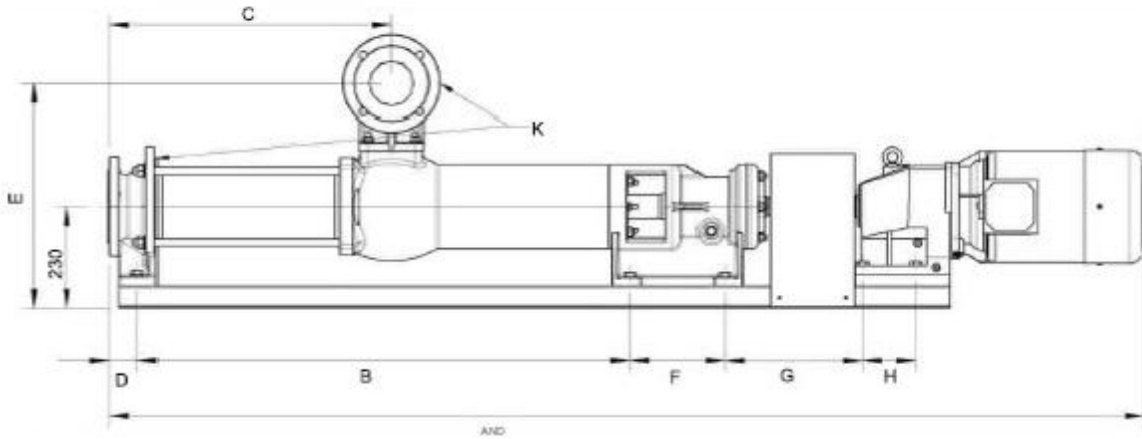


The division into individual types of pumped medium is indicative for the initial selection of the pump.

*The manufacturer reserves the right to introduce changes affecting the technical characteristics of the devices.
Before ordering, please contact the Technical and Sales Department to agree and confirm the device parameters.

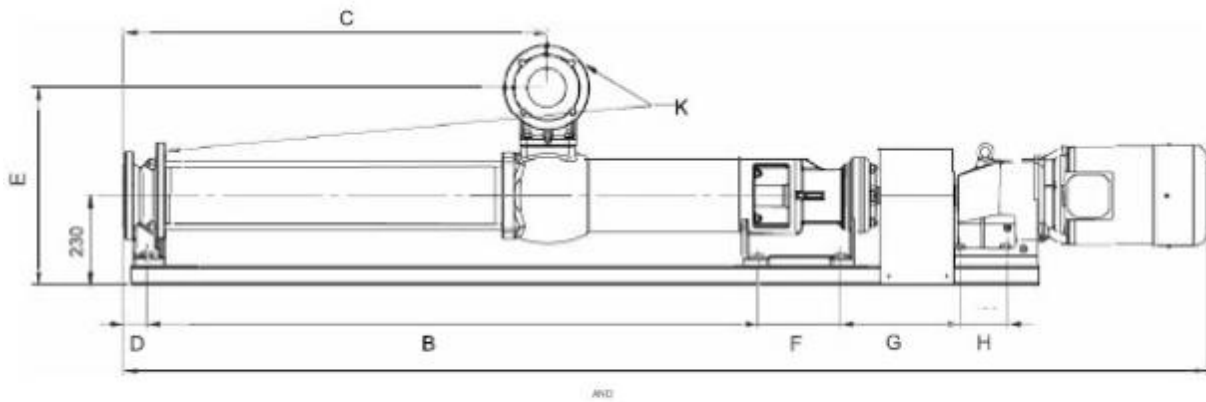
Pump 100HSP

PUMP DIMENSIONS



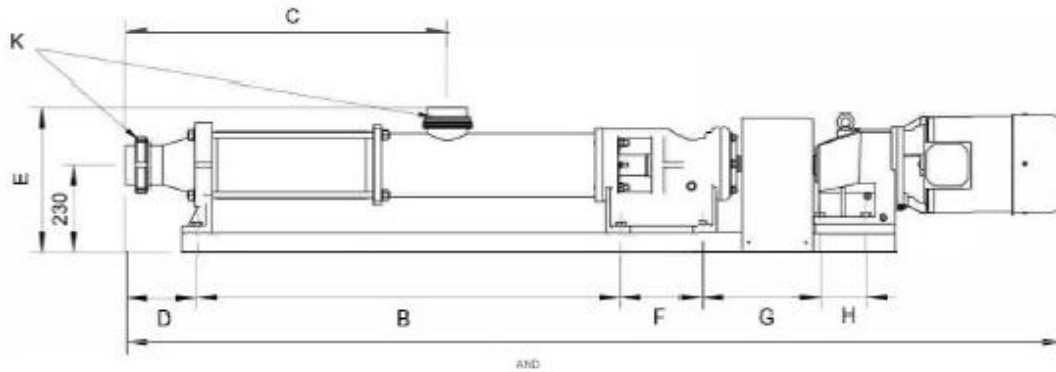
100HSP pump dimensions									
dimensions (mm)									
pump type	A	B	C	D	E	F	G	H	K
100HSP	2330	1109	633	63	506	210	311	120	DN100

Pump 100HSP2s



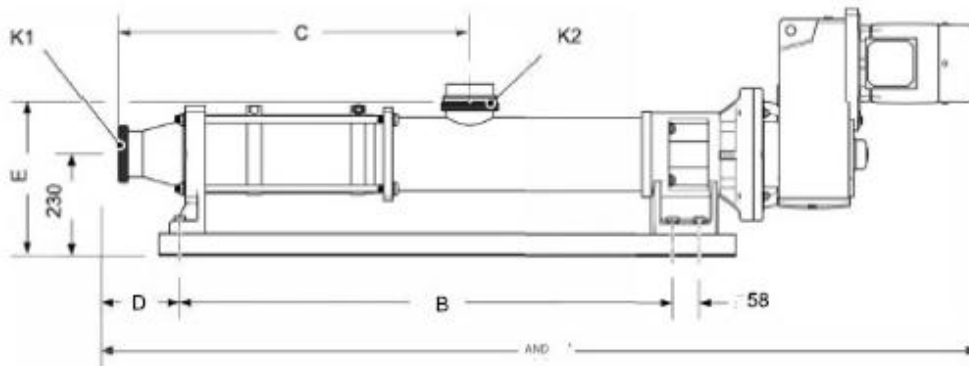
dimensions of the pump 100HSP2S - two-stage									
dimensions (mm)									
pump type	A	B	C	D	E	F	G	H	K
100HSP2s	2770	1549	1073	63	506	210	311	120	DN100

100HSPsp pump with stainless steel body



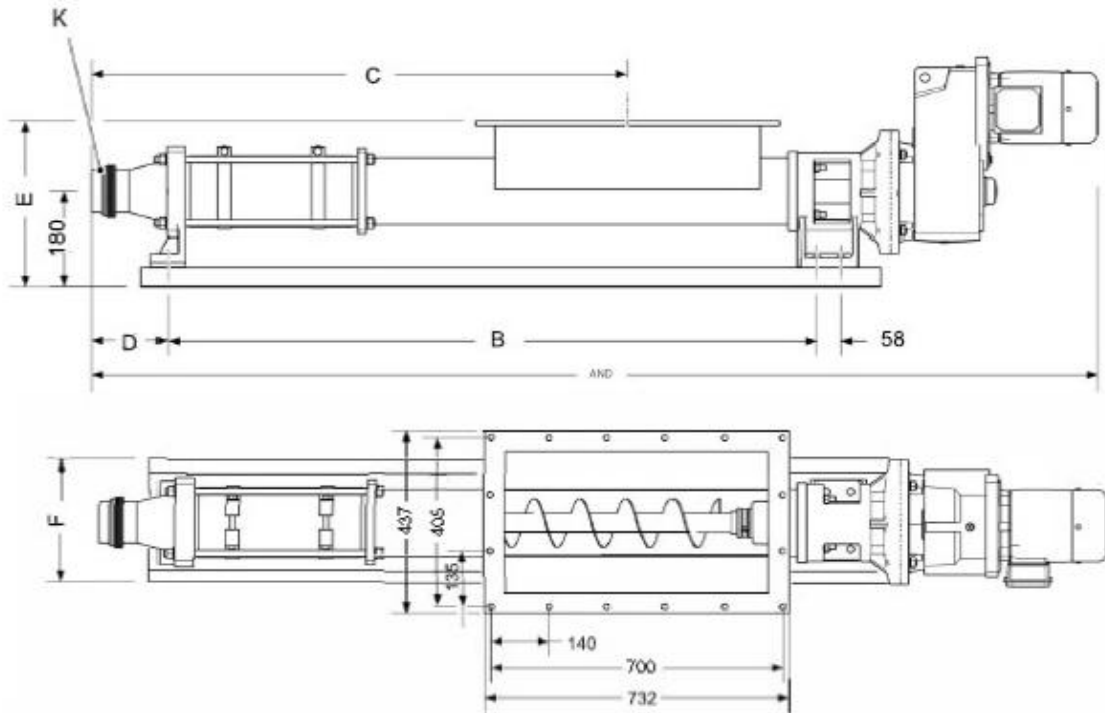
dimensions of the pump with stainless steel body HSPsp									
dimensions (mm)									
pump type	A	B	C	D	E	F	G	H	K
100HSPsp	2448	1190	836	181	381	210	311	120	DN100

HSPMsp pump with stainless steel body (food grade)



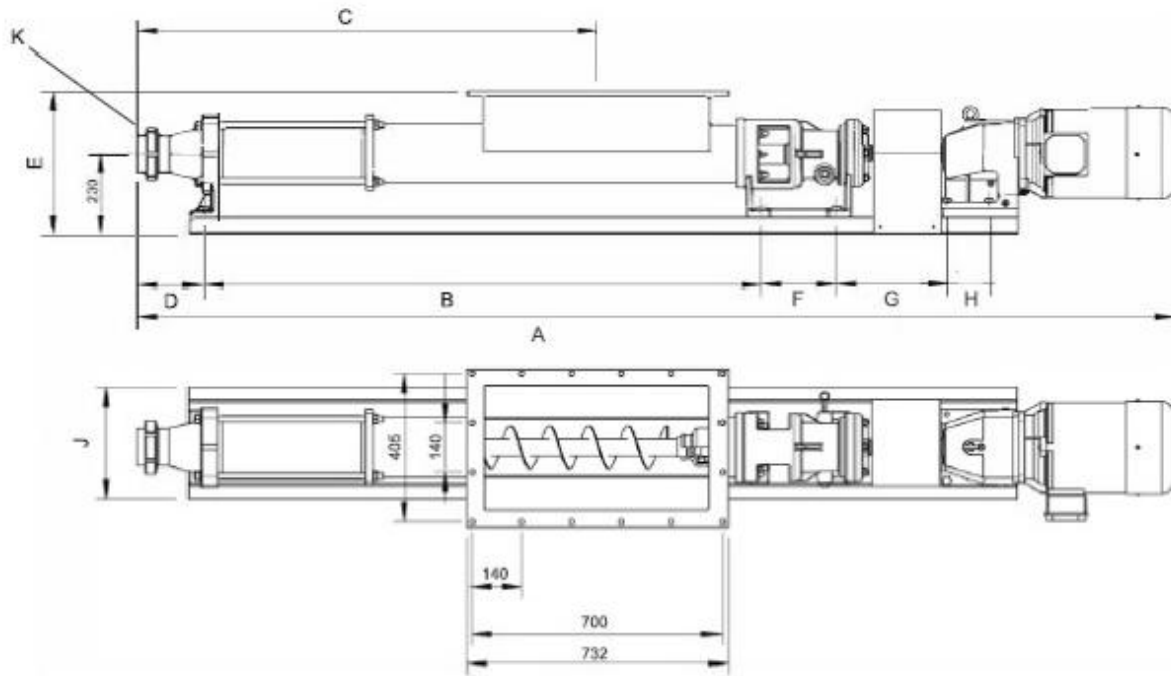
dimensions of pumps with stainless steel housing HSPMsp and HSPMsp2S								
Lp	dimensions (mm)							
	pump type	AND	B	C	D	E	K1	K2
single-stage								
1	80HSPMsp	1694	946	559	62	298	DN80	DN80
2	100HSPMsp	1967	1106	833	159	331	DN100	DN100
3	125HSPMsp	2440	1206	1042	92	340	DN125	DN125
two-stage								
1	80HSPMsp2S	1922	1346	794	62	298	DN80	DN80
2	100HSPMsp2S	2367	1506	1233	180	331	DN100	DN100
3	125HSPMsp2S	2923	1606	1546	95	340	DN125	DN125

HSPMps pump



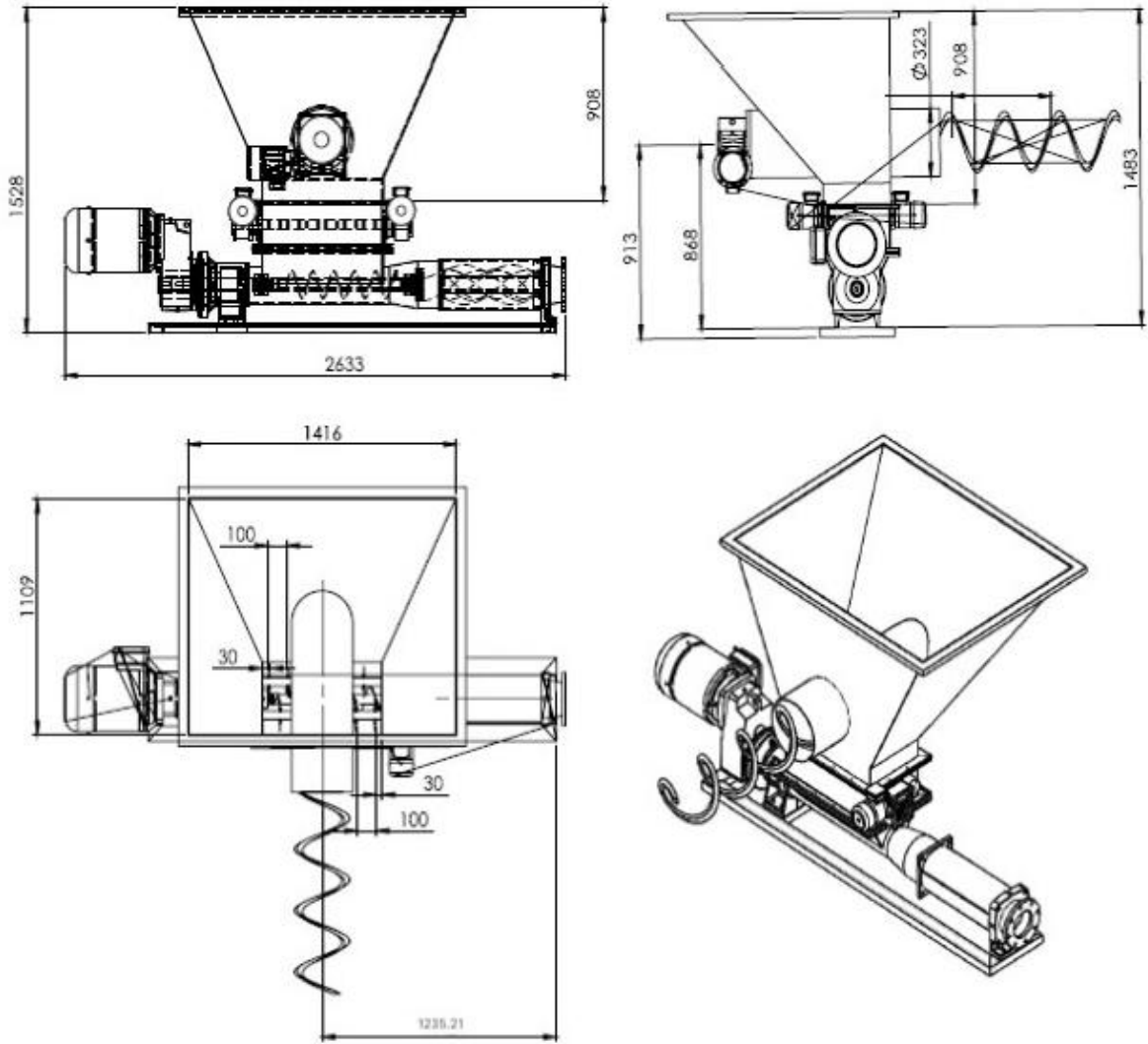
dimensions of HSPMps and HSPMps2S pumps								
Lp	dimensions (mm)							
	pump type	AND	B	C	D	E	F	K
single-stage								
1	80HSPMps	2128	1401	995	62	405	300	DN80
2	100HSPMps	2415	1561	1282	110	405	300	DN100
3	125HSPMps	2892	1661	1432	110	405	300	DN125
two-stage								
1	80HSPMps2S	2368	1641	1235	62	405	300	DN80
2	100HSPMps2S	2815	1961	1782	110	405	300	DN100
3	125HSPMps2S	3442	2211	1982	110	405	300	DN125

Pump 100HSPps

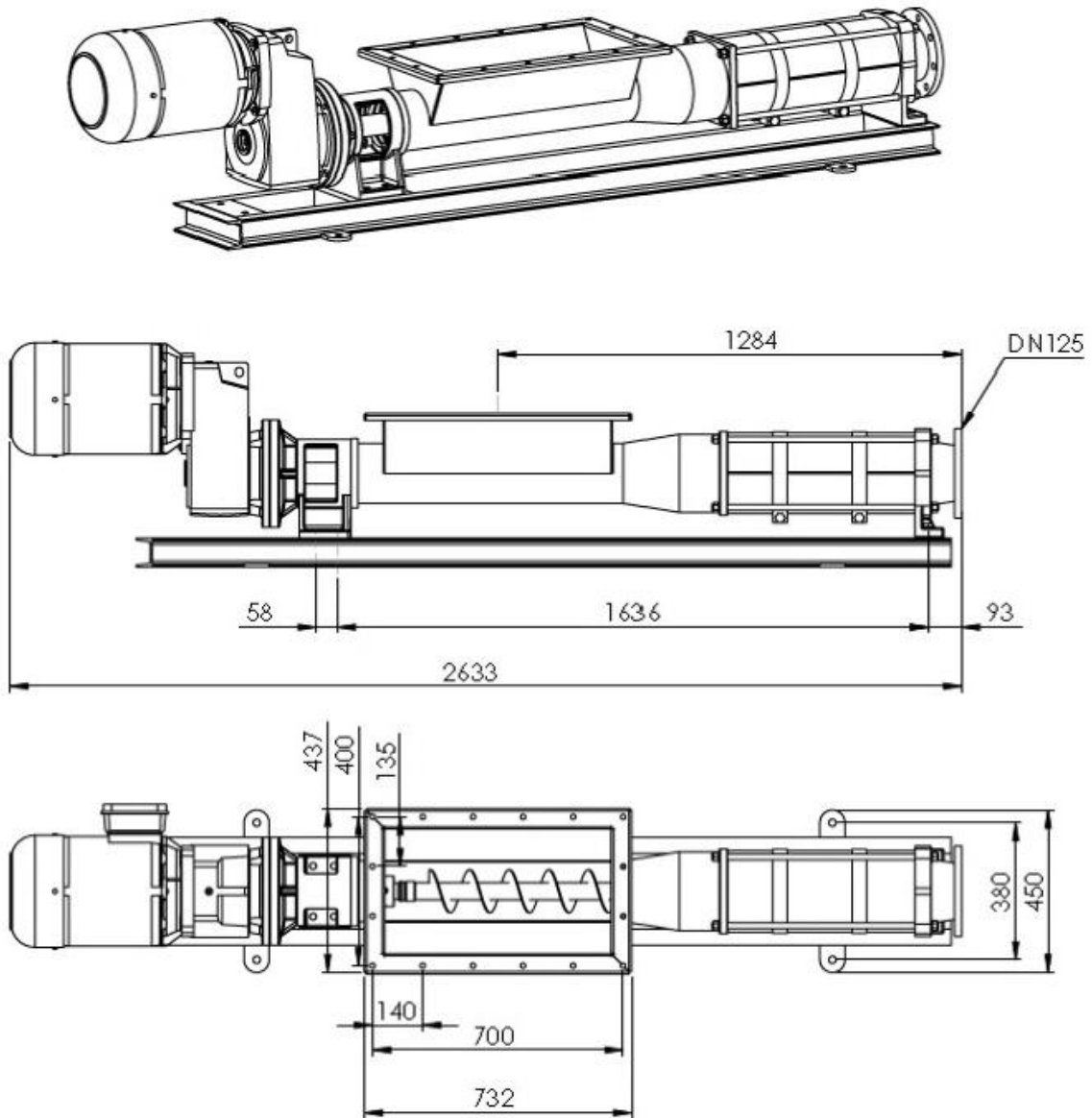


100HSPps pump dimensions										
dimensions (mm)										
pump type	A	B	C	D	E	F	G	H	J	K
100HSPps	2893	1554	1281	180	404	210	311	120	310	DN100

125HSPMps pump with hopper



125HSPMsp Pump

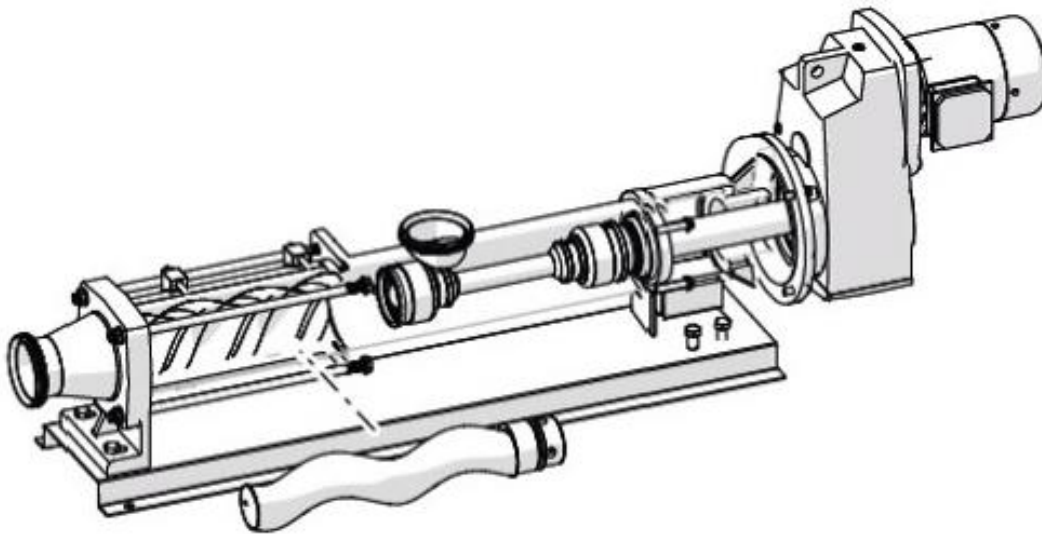


SPARE PARTS CATALOGUE

POSITIVE DISPLACEMENT PUMP

80/100/125HSP
80/100/125HSPsp
80/100/125HSPps
80/100/125HSPMsp
80/100/125HSPMps

80/100/125HSP2S
80/100/125HSPsp2S
80/100/125HSPps2S
80/100/125HSPMsp2S
80/100/125HSPMps2S

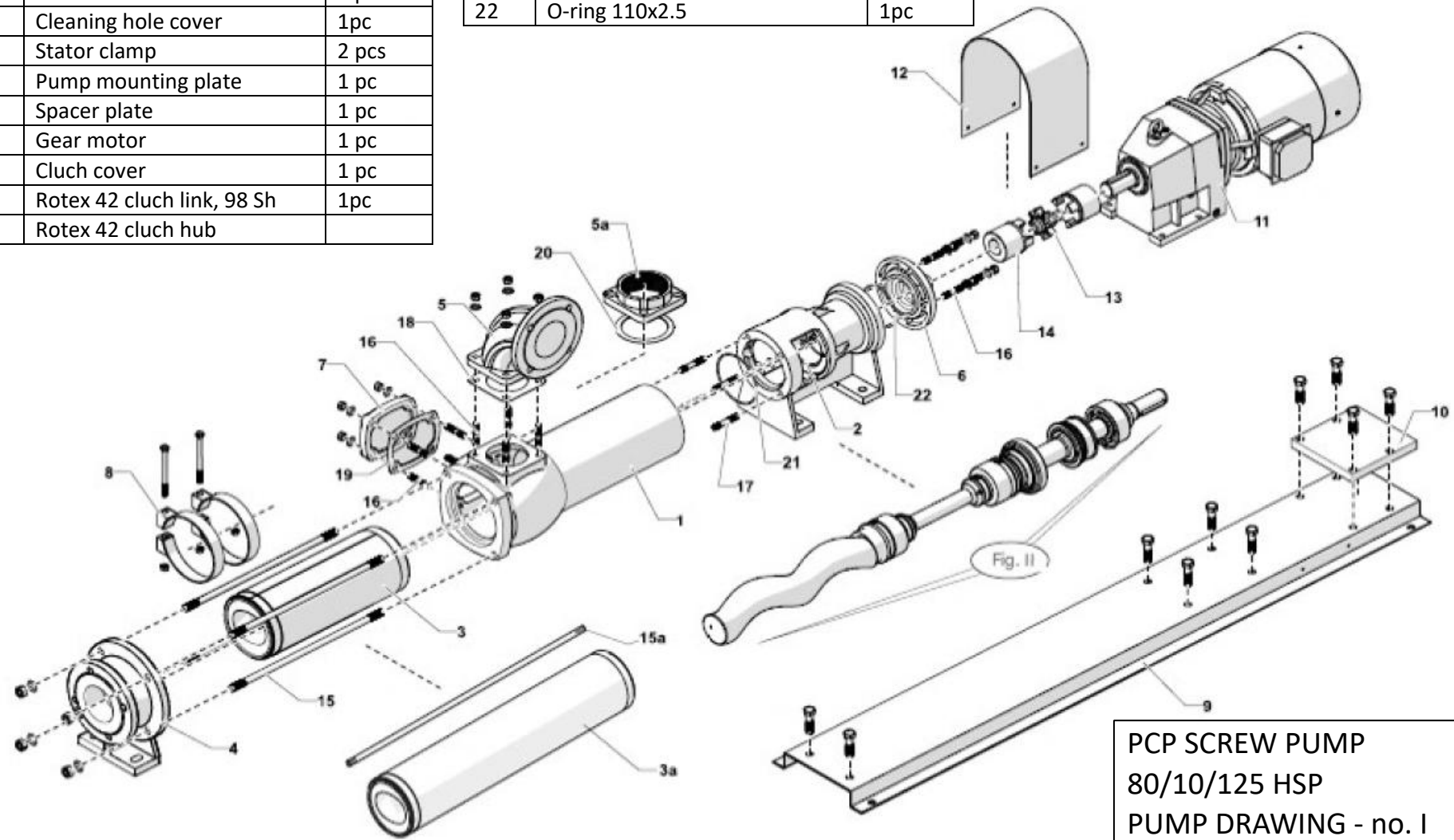


ATTENTION

- Before starting inspections, maintenance, repairs or overhauls, please read the recommendations and notes contained in the device's operating instructions.
- When working on the device, follow the manufacturer's recommendations contained in the device's operating instructions.
- When working on the device, observe occupational health and safety regulations and environmental protection standards.

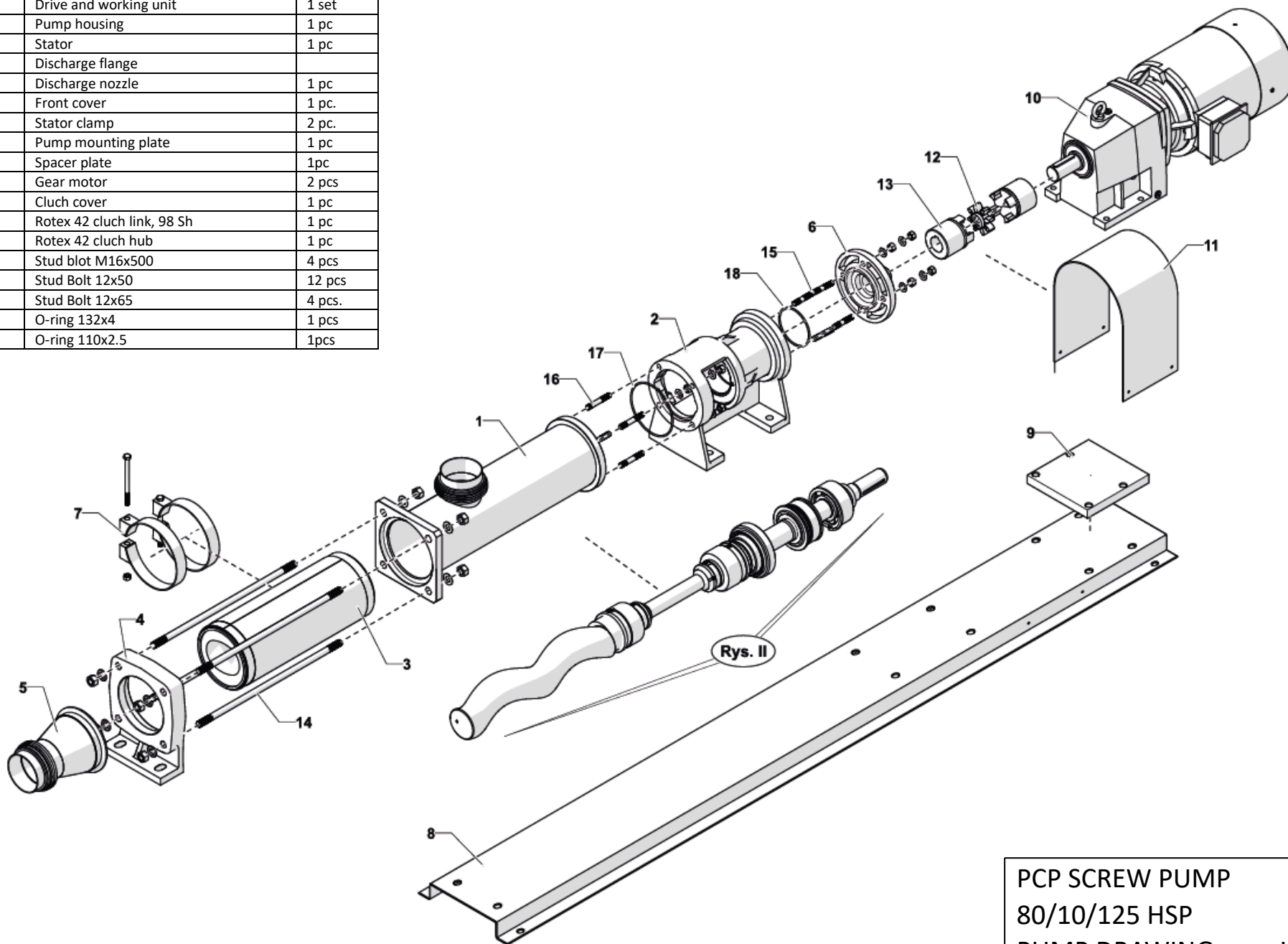
Pos	Part name	Quantity
1	Drive and working unit	1 set
2	Pump housing	1 pc
3	Stator	1 pc
3a	2-stage pump stator	
4	Discharge flange	
5	Suction elbow	1 pc.
5a	Threaded suction flange 4"	1 pc.
6	Front cover	1 pc
7	Cleaning hole cover	1pc
8	Stator clamp	2 pcs
9	Pump mounting plate	1 pc
10	Spacer plate	1 pc
11	Gear motor	1 pc
12	Cluch cover	1 pc
13	Rotex 42 cluch link, 98 Sh	1pc
14	Rotex 42 cluch hub	

Pos	Part name	Quantity
15	Stud Bolt M16x500	4 pcs.
15a	Stud Bolt M16 for 2stage pump	4 pcs.
16	Stud Bolt M12x50	12 pcs.
17	Stud Bolt M12x50	4 pcs.
18	Suction flange gasket	1 pcs.
19	Cleaning cover gasket	1 pc.
20	Suction flange gasket	1 pc.
21	O-ring 132x4	1 pc
22	O-ring 110x2.5	1pc



PCP SCREW PUMP
80/10/125 HSP
PUMP DRAWING - no. I

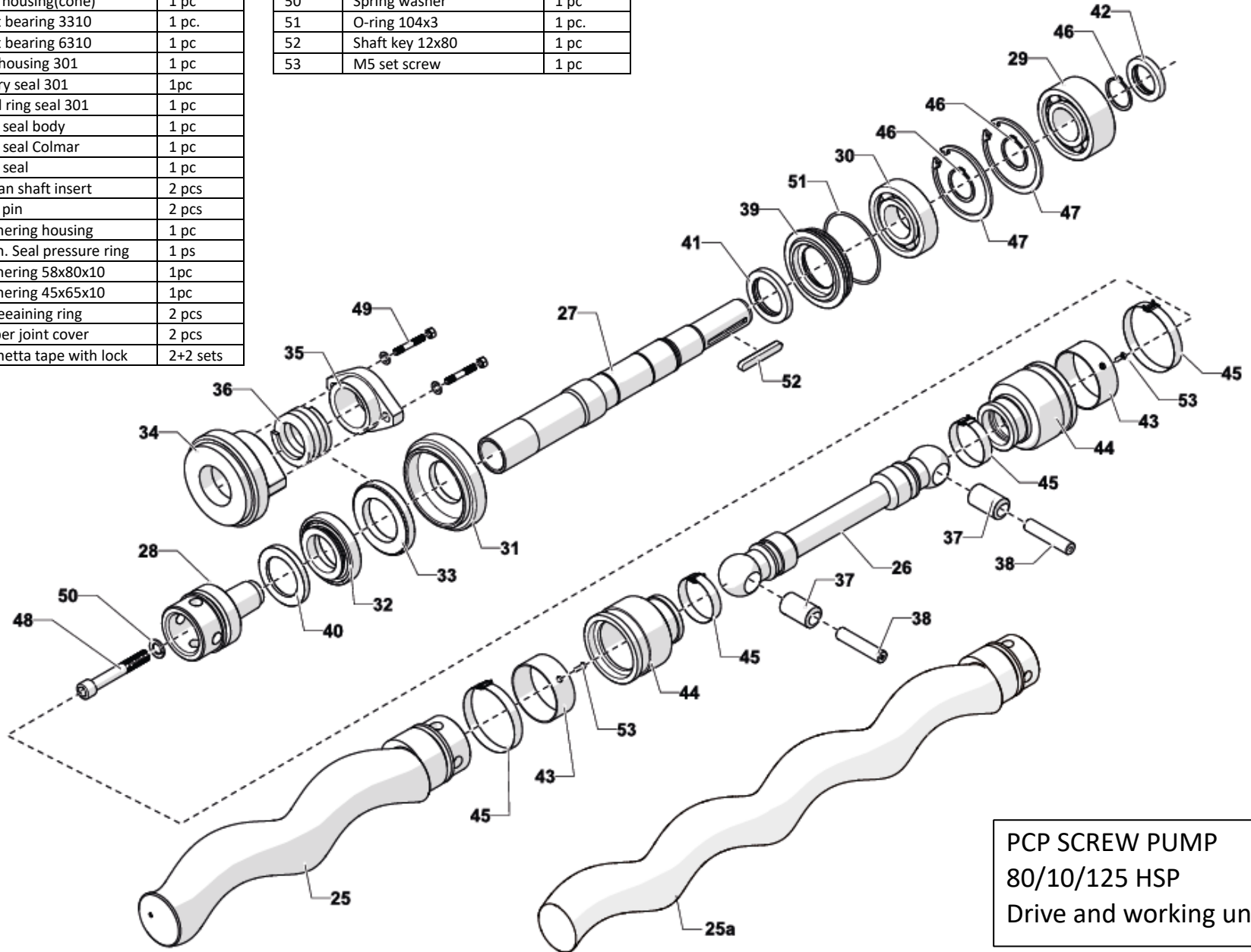
Pos	Part name	Quantity
1	Drive and working unit	1 set
2	Pump housing	1 pc
3	Stator	1 pc
4	Discharge flange	
5	Discharge nozzle	1 pc
6	Front cover	1 pc.
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
9	Spacer plate	1pc
10	Gear motor	2 pcs
11	Cluch cover	1 pc
12	Rotex 42 cluch link, 98 Sh	1 pc
13	Rotex 42 cluch hub	1 pc
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
17	O-ring 132x4	1 pcs
18	O-ring 110x2.5	1pcs



PCP SCREW PUMP
80/10/125 HSP
PUMP DRAWING - no. I

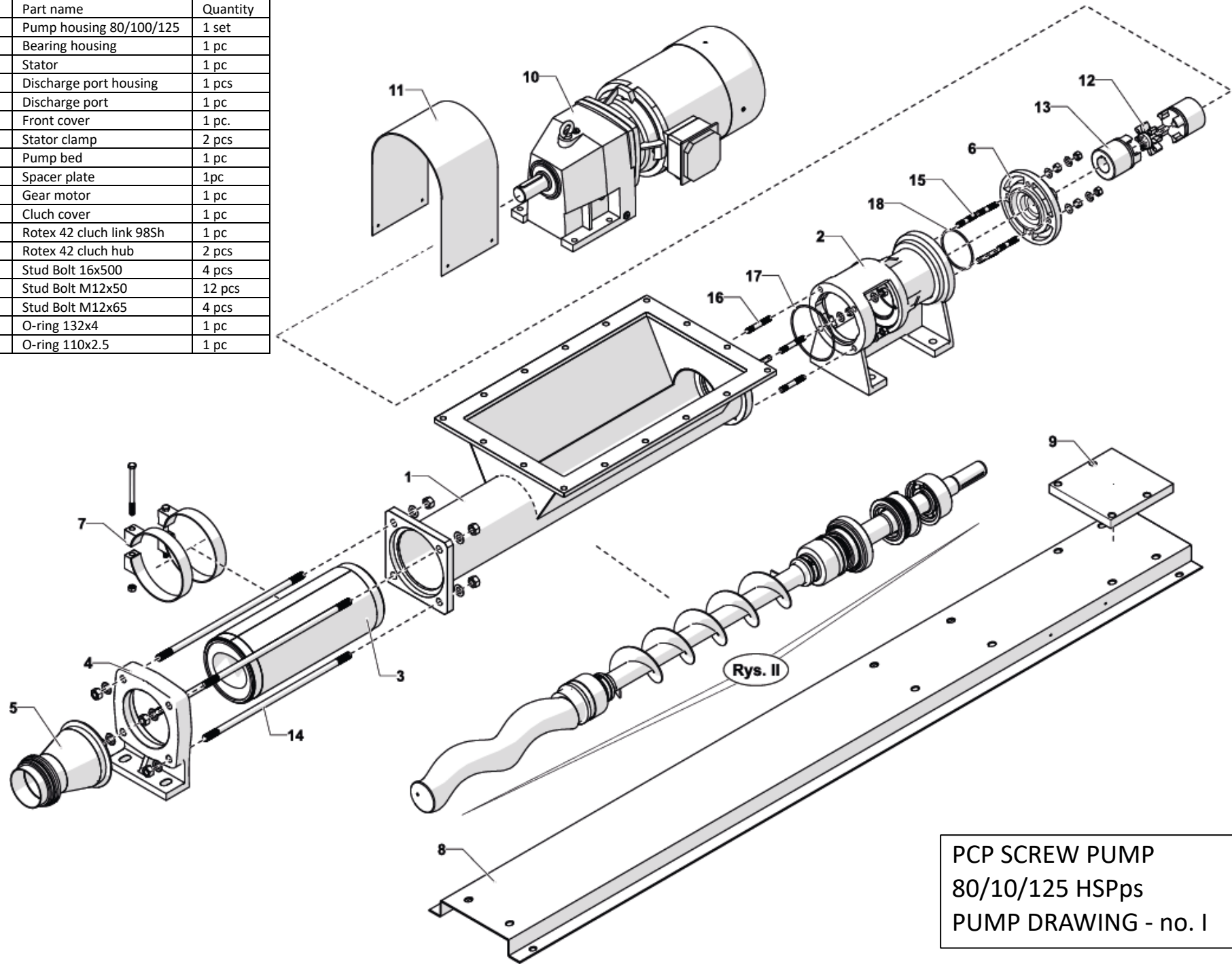
Pos	Part name	Quantity
25	Rotor 80/100/125HSP	1 set
25a	Rotor 80/100/125HSP2S	1 pc
26	Cardan shaft	1 pc
27	Drive shaft w. tapered end	1 pcs
28	Joint housing(cone)	1 pc
29	Shaft bearing 3310	1 pc.
30	Shaft bearing 6310	1 pc
31	Seal housing 301	1 pc
32	Rotary seal 301	1pc
33	Fixed ring seal 301	1 pc
34	Wire seal body	1 pc
35	Wire seal Colmar	1 pc
36	Wire seal	1 pc
37	Cardan shaft insert	2 pcs
38	Joint pin	2 pcs
39	Simmering housing	1 pc
40	Mech. Seal pressure ring	1 ps
41	Simmering 58x80x10	1pc
42	Simmering 45x65x10	1pc
43	Pin reaining ring	2 pcs
44	Rubber joint cover	2 pcs
45	Normetta tape with lock	2+2 sets

Pos	Part name	Quantity
46	Ext. retaining ring O45	3 pcs
47	Int. retaining ring O45	2 pcs
48	Allen screw M16x110	1 pc
49	Stud bolt M12x60	1 pcs
50	Spring washer	1 pc
51	O-ring 104x3	1 pc.
52	Shaft key 12x80	1 pc
53	M5 set screw	1 pc



PCP SCREW PUMP
80/10/125 HSP
Drive and working unit - no. II

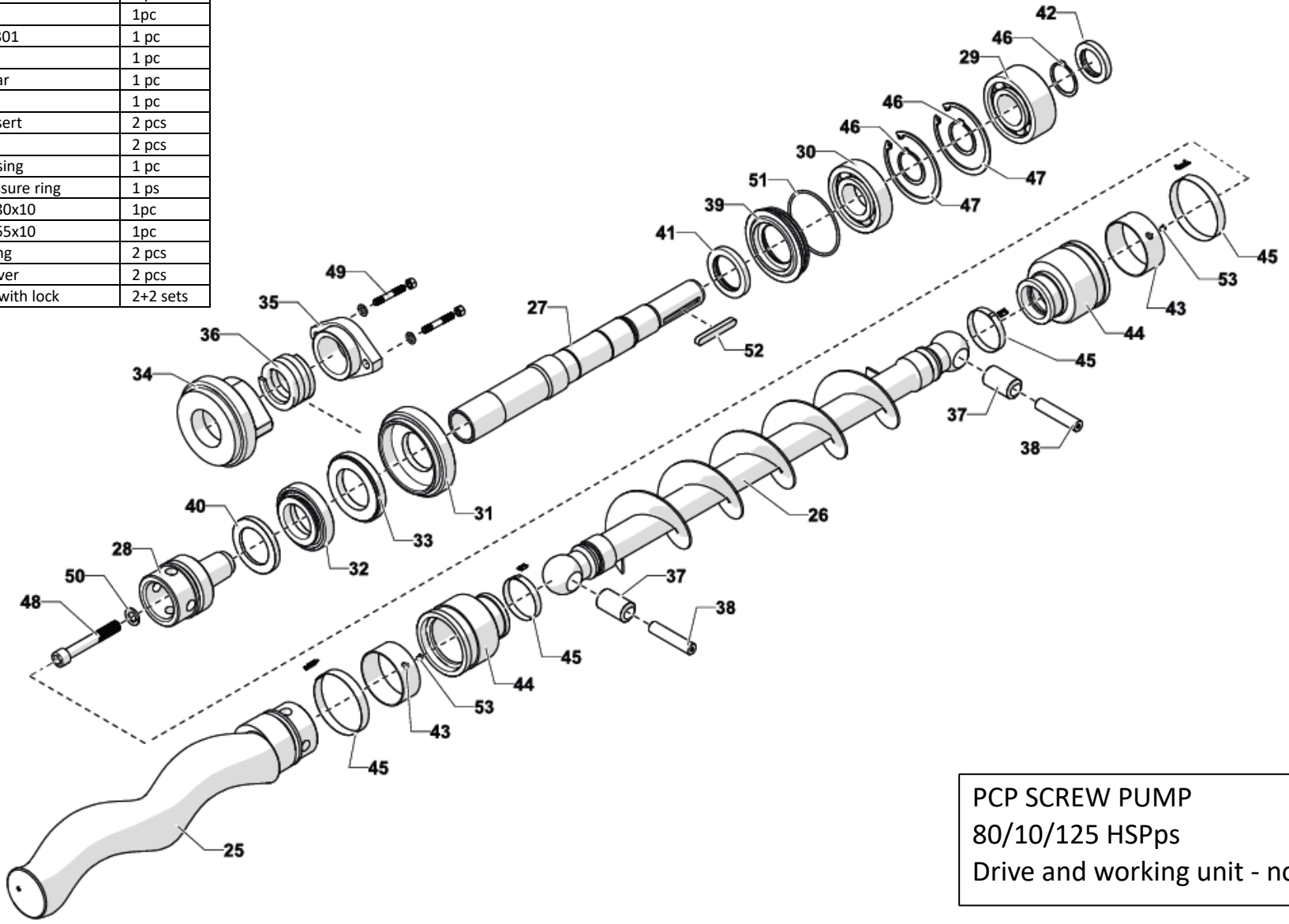
Pos	Part name	Quantity
1	Pump housing 80/100/125	1 set
2	Bearing housing	1 pc
3	Stator	1 pc
4	Discharge port housing	1 pcs
5	Discharge port	1 pc
6	Front cover	1 pc.
7	Stator clamp	2 pcs
8	Pump bed	1 pc
9	Spacer plate	1pc
10	Gear motor	1 pc
11	Cluch cover	1 pc
12	Rotex 42 cluch link 98Sh	1 pc
13	Rotex 42 cluch hub	2 pcs
14	Stud Bolt 16x500	4 pcs
15	Stud Bolt M12x50	12 pcs
16	Stud Bolt M12x65	4 pcs
17	O-ring 132x4	1 pc
18	O-ring 110x2.5	1 pc



PCP SCREW PUMP
80/10/125 HSPps
PUMP DRAWING - no. I

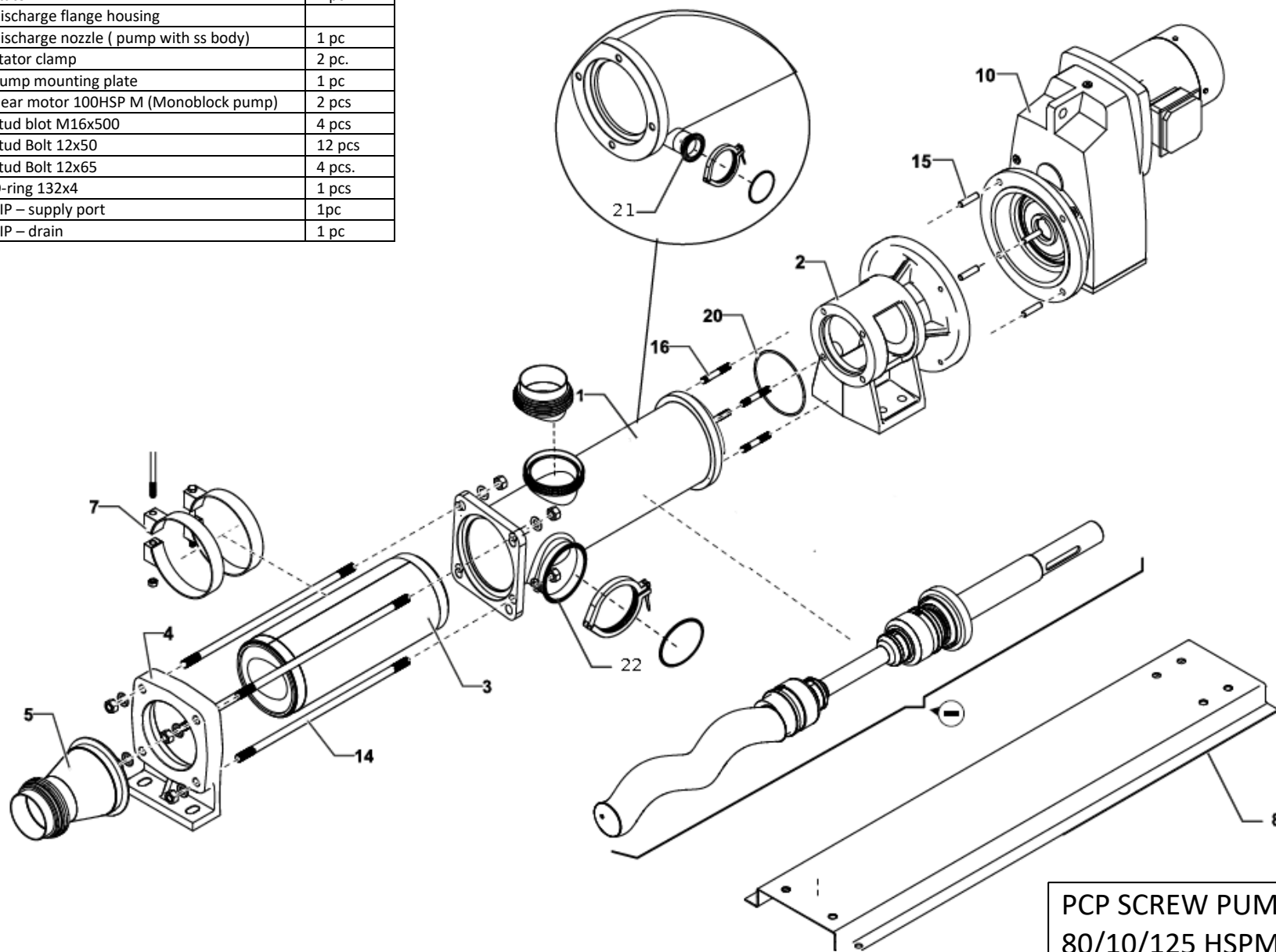
Pos	Part name	Quantity
25	Rotor 80/100/125HSP	1 set
25a	Worm drive shaft for 80/100/125HSPps	1 pc
26	Cardan shaft	1 pc
27	Drive shaft w. tapered end	1 pcs
28	Joint housing(cone)	1 pc
29	Shaft bearing 3310	1 pc.
30	Shaft bearing 6310	1 pc
31	Seal housing 301	1 pc
32	Rotary seal 301	1pc
33	Fixed ring seal 301	1 pc
34	Wire seal body	1 pc
35	Wire seal Colmar	1 pc
36	Wire seal	1 pc
37	Cardan shaft insert	2 pcs
38	Joint pin	2 pcs
39	Simmering housing	1 pc
40	Mech. Seal pressure ring	1 ps
41	Simmering 58x80x10	1pc
42	Simmering 45x65x10	1pc
43	Pin reaining ring	2 pcs
44	Rubber joint cover	2 pcs
45	Normetta tape with lock	2+2 sets

Pos	Part name	Quantity
46	Ext. retaining ring O45	3 pcs
47	Int. retaining ring O45	2 pcs
48	Allen screw M16x110	1 pc
49	Stud bolt M12x60	1 pcs
50	Spring washer	1 pc
51	O-ring 104x3	1 pc.
52	Shaft key 12x80	1 pc
53	M5 set screw	1 pc



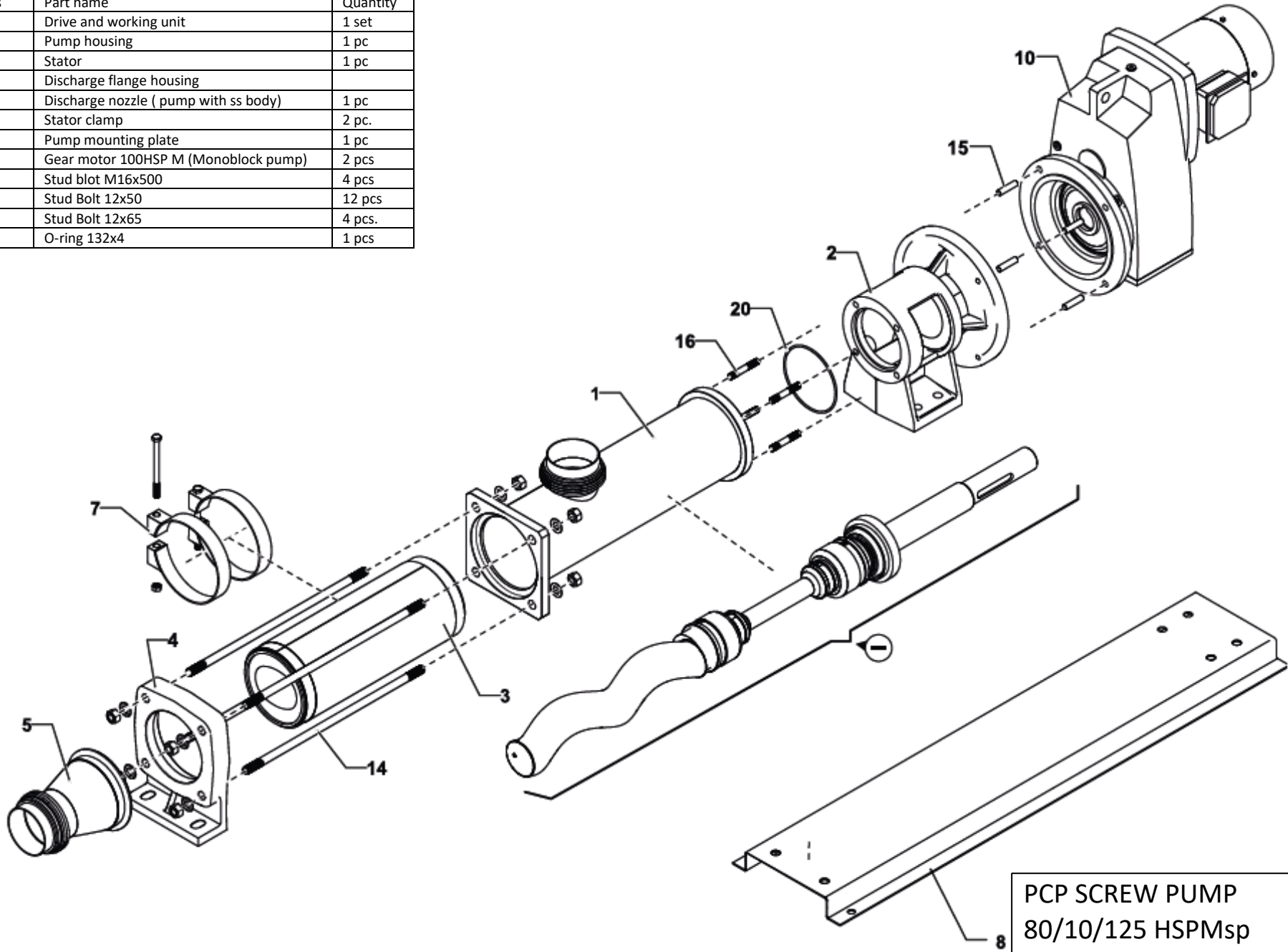
PCP SCREW PUMP
80/10/125 HSPps
Drive and working unit - no. II

Pos	Part name	Quantity
1	Drive and working unit	1 set
2	Pump housing	1 pc
3	Stator	1 pc
4	Discharge flange housing	
5	Discharge nozzle (pump with ss body)	1 pc
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
10	Gear motor 100HSP M (Monoblock pump)	2 pcs
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
20	O-ring 132x4	1 pcs
21	CIP – supply port	1pc
22	CIP – drain	1 pc



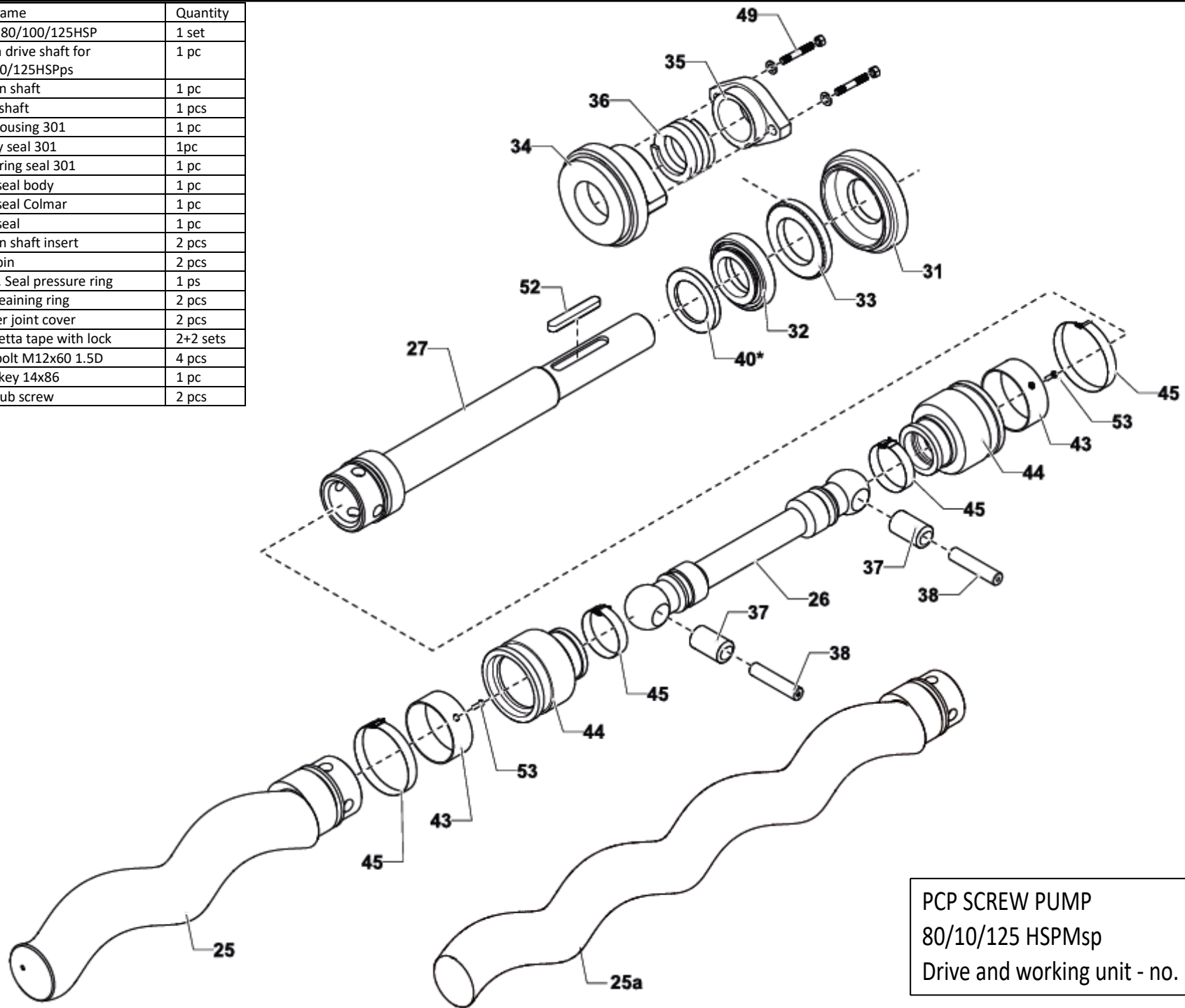
PCP SCREW PUMP
80/10/125 HSPMsp - CIP
PUMP DRAWING - no. I Msp

Pos	Part name	Quantity
1	Drive and working unit	1 set
2	Pump housing	1 pc
3	Stator	1 pc
4	Discharge flange housing	
5	Discharge nozzle (pump with ss body)	1 pc
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
10	Gear motor 100HSP M (Monoblock pump)	2 pcs
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
20	O-ring 132x4	1 pcs



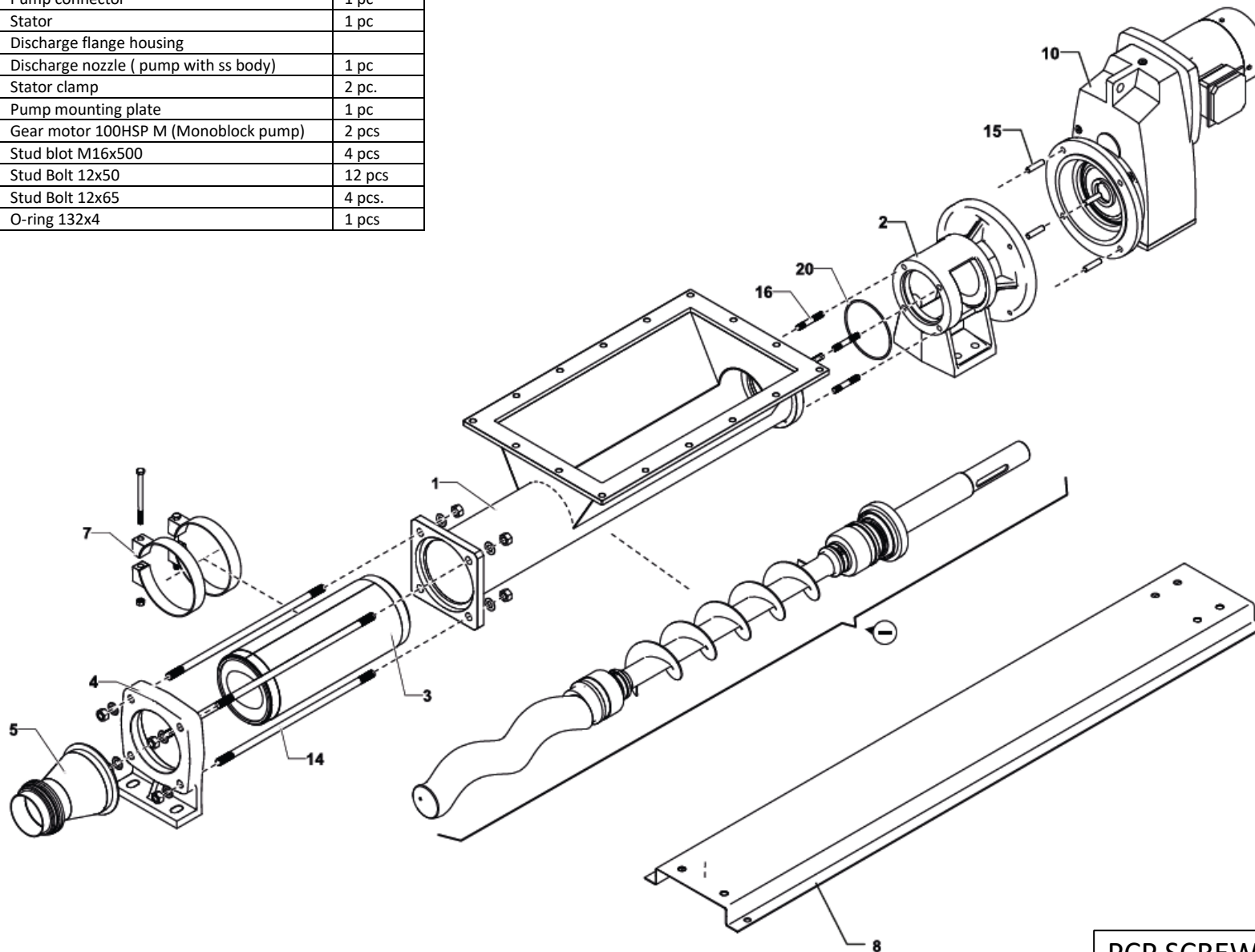
PCP SCREW PUMP
80/10/125 HSPMsp
PUMP DRAWING - no. I Msp

Pos	Part name	Quantity
25	Rotor 80/100/125HSP	1 set
25a	Worm drive shaft for 80/100/125HSPps	1 pc
26	Cardan shaft	1 pc
27	Drive shaft	1 pcs
31	Seal housing 301	1 pc
32	Rotary seal 301	1pc
33	Fixed ring seal 301	1 pc
34	Wire seal body	1 pc
35	Wire seal Colmar	1 pc
36	Wire seal	1 pc
37	Cardan shaft insert	2 pcs
38	Joint pin	2 pcs
40	Mech. Seal pressure ring	1 ps
43	Pin reeaining ring	2 pcs
44	Rubber joint cover	2 pcs
45	Normetta tape with lock	2+2 sets
49	Stud bolt M12x60 1.5D	4 pcs
52	Shaft key 14x86	1 pc
53	M5 grub screw	2 pcs



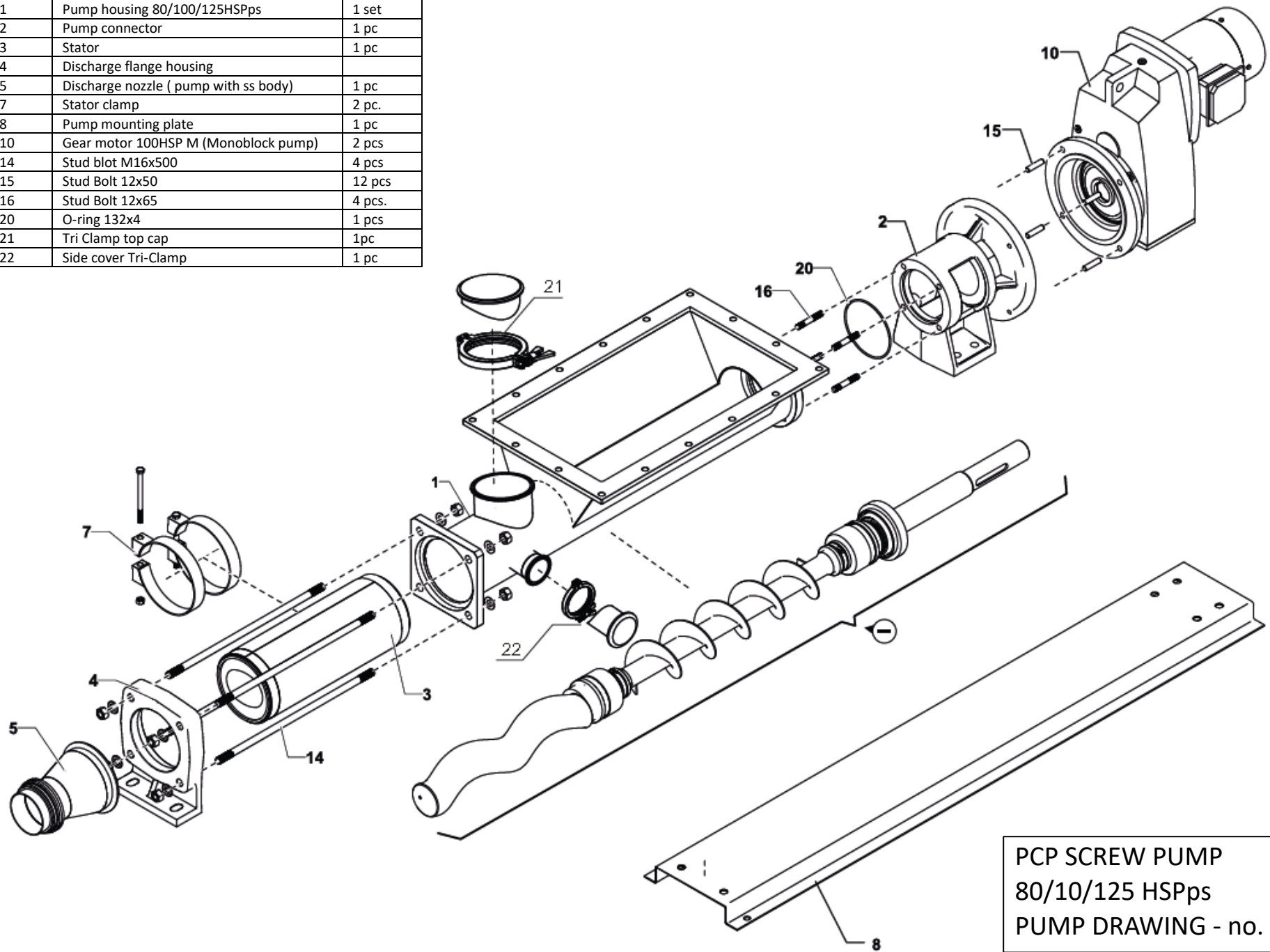
PCP SCREW PUMP
80/10/125 HSPMsp
Drive and working unit - no. II Msp

Pos	Part name	Quantity
1	Pump housing 80/100/125HSPps	1 set
2	Pump connector	1 pc
3	Stator	1 pc
4	Discharge flange housing	
5	Discharge nozzle (pump with ss body)	1 pc
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
10	Gear motor 100HSP M (Monoblock pump)	2 pcs
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
20	O-ring 132x4	1 pcs



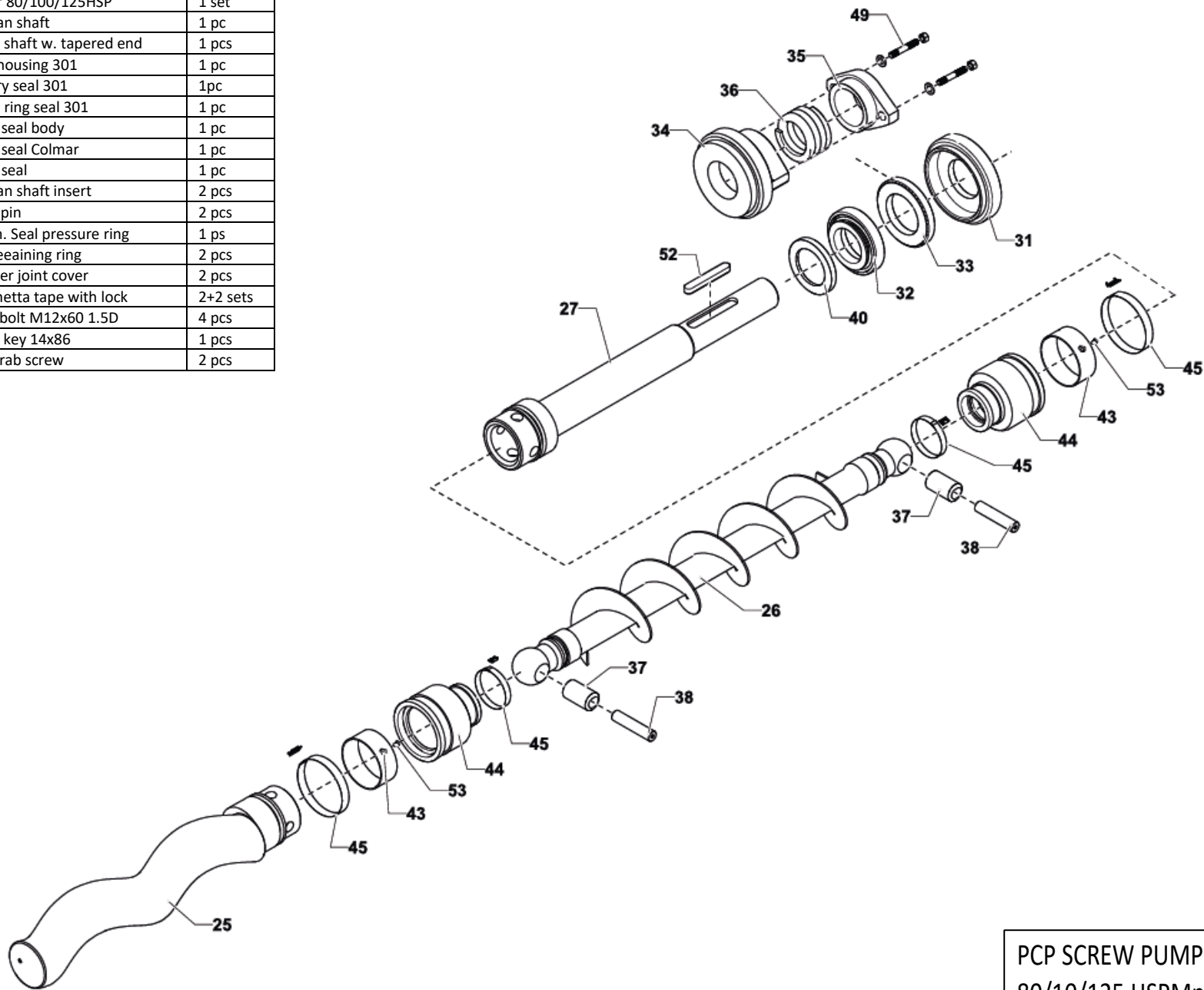
PCP SCREW PUMP
 80/10/125 HSPMps
 PUMP DRAWING - no. I Mps

Pos	Part name	Quantity
1	Pump housing 80/100/125HSPps	1 set
2	Pump connector	1 pc
3	Stator	1 pc
4	Discharge flange housing	
5	Discharge nozzle (pump with ss body)	1 pc
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
10	Gear motor 100HSP M (Monoblock pump)	2 pcs
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
20	O-ring 132x4	1 pcs
21	Tri Clamp top cap	1pc
22	Side cover Tri-Clamp	1 pc



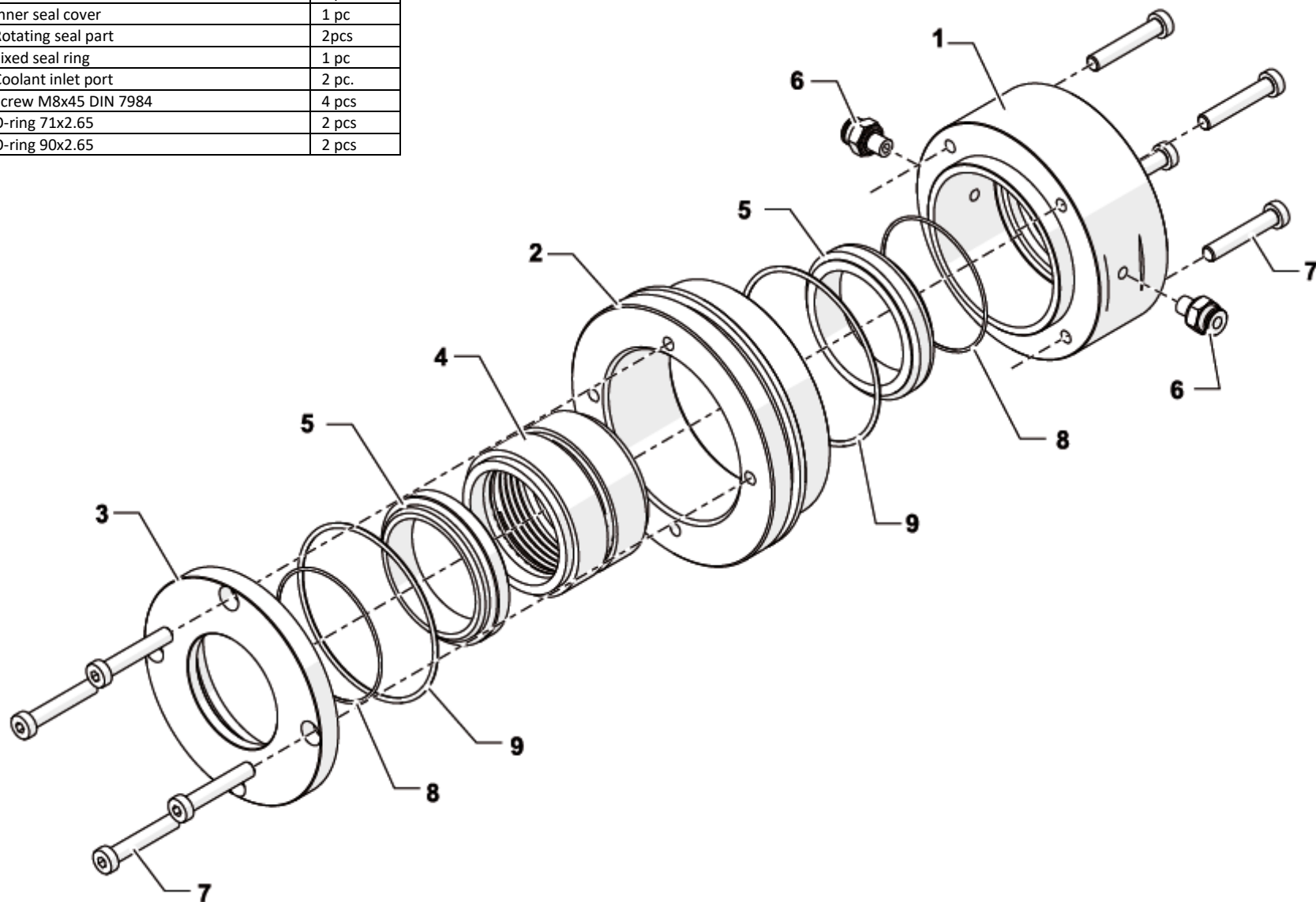
PCP SCREW PUMP
80/10/125 HSPps
PUMP DRAWING - no. I

Pos	Part name	Quantity
25	Rotor 80/100/125HSP	1 set
26	Cardan shaft	1 pc
27	Drive shaft w. tapered end	1 pcs
31	Seal housing 301	1 pc
32	Rotary seal 301	1pc
33	Fixed ring seal 301	1 pc
34	Wire seal body	1 pc
35	Wire seal Colmar	1 pc
36	Wire seal	1 pc
37	Cardan shaft insert	2 pcs
38	Joint pin	2 pcs
40	Mech. Seal pressure ring	1 ps
43	Pin retaining ring	2 pcs
44	Rubber joint cover	2 pcs
45	Normetta tape with lock	2+2 sets
49	Stud bolt M12x60 1.5D	4 pcs
52	Shaft key 14x86	1 pcs
53	M5 grab screw	2 pcs



PCP SCREW PUMP
 80/10/125 HSPMps
 Drive and working unit - no. II Mps

Pos	Part name	Quantity
1	Outer seal cover	1 set
2	Middle seal cover	1 pc
3	Inner seal cover	1 pc
4	Rotating seal part	2 pcs
5	Fixed seal ring	1 pc
6	Coolant inlet port	2 pc.
7	Screw M8x45 DIN 7984	4 pcs
8	O-ring 71x2.65	2 pcs
9	O-ring 90x2.65	2 pcs



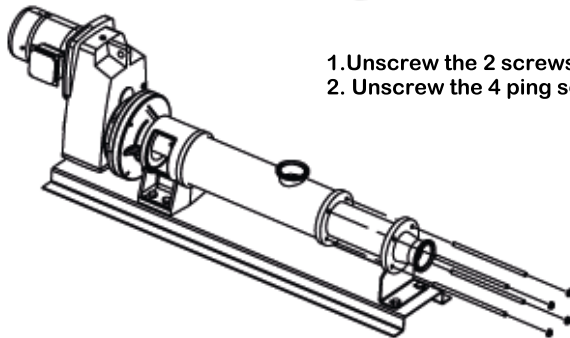
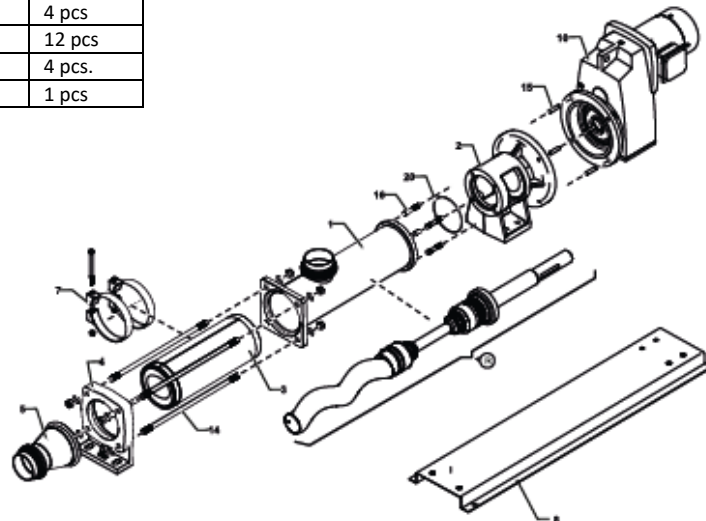
PCP SCREW PUMP
Double mechanical seal - BTB

Mechanical Seal Replacement Instructions

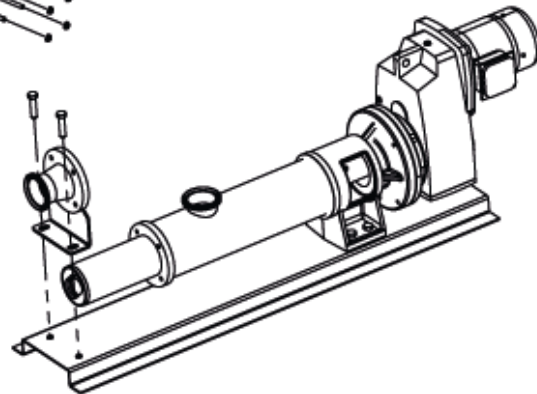


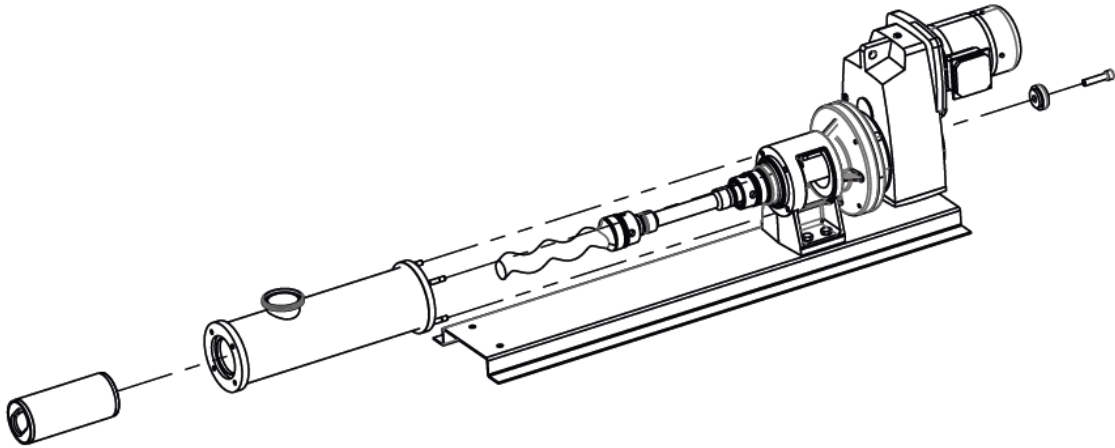
Before any repairs to the pump, it must be switched off and the power supply disconnected. **CAUTION! DO NOT REMOVE** the pump connector (2) with the gear motor (10) from the pump bed (8)

Pos	Part name	Quantity
1	Drive and working unit	1 set
2	Pump housing	1 pc
3	Stator	1 pc
4	Discharge flange housing	
5	Discharge nozzle (pump with ss body)	1 pc
7	Stator clamp	2 pc.
8	Pump mounting plate	1 pc
10	Gear motor 100HSP M (Monoblock pump)	2 pcs
14	Stud blot M16x500	4 pcs
15	Stud Bolt 12x50	12 pcs
16	Stud Bolt 12x65	4 pcs.
20	O-ring 132x4	1 pcs

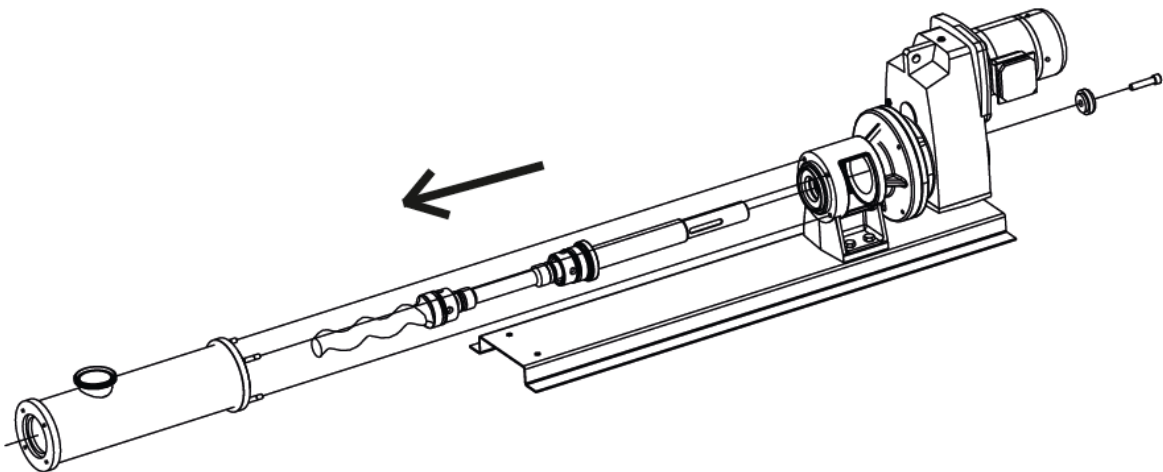


1. Unscrew the 2 screws securing the discharge port housing (4) to the pump bed (8)
2. Unscrew the 4 pins securing the discharge port housing to the (4) pump housing (1)

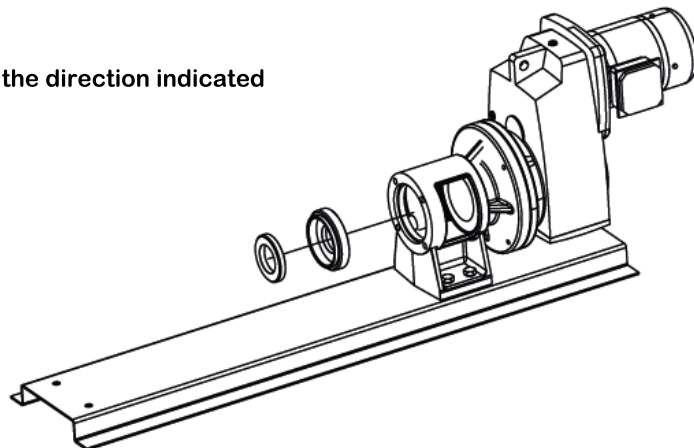




3. remove the stator (3)
4. Unscrew the 4 screws connecting the pump housing (1) to the pump connector (4)
5. Remove The pump housing (1)
6. Unscrew the screw securing the gear mater (10) to the drive and operating unit (FR)



7. Pull out the drive and working unit in the direction indicated



8. replace the stationary seal ring on the seal housing
9. replace the rotating ring on the shaft

Installation
perform the assembly procedure in reverse order