

INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

PROGRESSIVE CAVITY PUMP

KIBER KS / KST



01.610.32.0001



01.610.32.0029



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Original Instructions

01.610.30.11EN

(A) 2021/10

EC Declaration of Conformity



INOXPA S.A.U.

Telers, 60
17820 - Banyoles (España)

hereby declare under our sole responsibility that the

Machine: **PROGRESSIVE CAVITY PUMP**

Model: **KIBER KS / KIBER KST**

Type: **KIBER KS-20, KIBER 2KS-20, KIBER KS-25,
KIBER 2KS-25, KIBER KS-30, KIBER 2KS-30,
KIBER KS-40, KIBER 2KS-40, KIBER KS-50,
KIBER 2KS-50, KIBER KS-60, KIBER 2KS-60,
KIBER KS-80, KIBER 2KS-80, KIBER KST-20,
KIBER 2KST-20, KIBER KST-25, KIBER 2KST-25,
KIBER KST-30, KIBER 2KST-30, KIBER KST-40,
KIBER 2KST-40, KIBER KST-50, KIBER 2KST-50,
KIBER KST-60, KIBER 2KST-60, KIBER KST-80,
KIBER 2KST-80**

Serial number: **IXXXXXXXXXX to IXXXXXXXXXX
XXXXXXXXXXIINXXX to XXXXXXXXXXXXIINXXX**

fulfills all the relevant provisions of the following directive:

**Machinery Directive 2006/42/EC
Regulation (EC) n° 1935/2004
Regulation (EC) n° 2023/2006**

and with the following harmonized standards and/or regulations:

**EN ISO 12100:2010
EN 809:1998+A1:2009/AC:2010
EN 12162:2001+A1:2009
EN 60204-1:2018**

The technical file has been prepared by the signer of this document.

David Reyero Brunet
Technical Office Manager
25th October 2021



Document: 01.610.30.12EN

Revision: (0) 2021/10

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KIBER KS-80, KIBER 2KS-80, KIBER KST-20,
KIBER 2KST-20, KIBER KST-25, KIBER 2KST-25,
KIBER KST-30, KIBER 2KST-30, KIBER KST-40,
KIBER 2KST-40, KIBER KST-50, KIBER 2KST-50,
KIBER KST-60, KIBER 2KST-60, KIBER KST-80,
KIBER 2KST-80**

Serial number: **IXXXXXXXXXX to IXXXXXXXXXX
XXXXXXXXXXIINXXX to XXXXXXXXXXXIINXXX**

fulfils all the relevant provisions of these regulations:

Supply of Machinery (Safety) Regulations 2008

and with the following designated standards:

**EN ISO 12100:2010
EN 809:1998+A1:2009/AC:2010
EN 12162:2001+A1:2009
EN 60204-1:2018**

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David Reyero Brunet
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Revision: (0) 2021/10

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2. Generalities

2.1. INSTRUCTIONS MANUAL

This manual contains information regarding the reception, installation, operation, assembly, disassembly and maintenance of the KIBER KS and KIBER KST pumps.

Carefully read the instruction prior to starting the pump, familiarize yourself with the installation, operation and correct use of the filter and strictly follow the instructions. These instructions should be kept in a safe location near the installation area.

The information published in the instruction manual is based on updated data.

INOXPA reserves the right to modify this instruction manual without prior notice.

2.2. COMPLIANCE WITH THE INSTRUCTIONS

Not following the instructions may impose a risk for the operators, the environment and the machine, and may result in the loss of the right to claim damages.

This non-compliance may result in the following risks:

- failure of important machine/plant functions,
- failure of specific maintenance and repair procedures,
- possible electrical, mechanical and chemical hazards,
- risk to the environment due to the type of substances released.

2.3. WARRANTY

The conditions of the warranty are specified in the General Sales Condition that has been delivered at the time of placing your order.



The machine may not undergo any modification without prior approval from the manufacturer.

For your safety, only use original spare parts and accessories.

The usage of other parts will relieve the manufacturer of any liability.

Changing the service conditions can only be carried out with prior written authorization from INOXPA.

The non-compliance of the prescribed indications in this manual means misuse of this gear on the technical side and the personal safety and this, exempt INOXPA of all responsibility in case of accidents and personal injuries and/or property damage. Also, excluded from the warranty all breakdowns caused by improper use of the gear.

Please do not hesitate to contact us in case of doubts or if further explanations are required regarding specific data (adjustments, assembly, disassembly, etc.)

3. Safety

3.1. WARNING SYMBOLS



Safety hazard for people in general and/or for equipment



Electric hazard

ATTENTION

Important instruction for the protection of the equipment and its functions

3.2. GENERAL SAFETY INSTRUCTIONS



Read the instruction manual carefully before installing and starting the pump. Contact INOXPA in case of doubt.

3.2.1. During the installation



The [9. Technical Specifications of chapter 9](#) should always be observed.

Never start the pump before connecting it to the lines.

Check for proper specifications of the motors, especially if its working conditions create an explosions hazard.



During the installations, all the electric work should be carried out by authorized personnel.

3.2.2. During operation



The [Technical Specifications of chapter 9](#) should always be observed. Under no circumstances can the specified limit values be exceeded.

NEVER touch the pump or the pipework during operation if the pump is being used for transferring hot liquids or during cleaning.

The pump contains moving parts. Never place your fingers inside the pump during operation.

NEVER operate with the suction and discharge valves closed.

NEVER spray water directly on the electrical motor. The standard motor protection is IP55: protection against dust and water spray.

3.2.3. During maintenance



The [Technical Specifications of chapter 9](#) shall always be observed.

NEVER disassemble the pump until the pipes have been emptied. Remember that liquid will remain inside the pump's pump casing (if does not have a purge). Bear in mind that the pumped liquid may be hazardous or extremely hot. Consult the regulations in effect in each country for these cases.

Do not leave loose parts on the floor.



ALWAYS disconnect the electrical power to the pumps prior to carrying out any maintenance.

Remove the fuses and disconnect the cable from the motor's terminals.

All electrical work must be carried out by authorized personnel

4. General Information

4.1. DESCRIPTION

With a compact and robust design, INOXPA's KIBER KS and KST progressive cavity pumps form part of our range of positive-displacement pumps with helical rotor, intended for viscous fluids.

The hydraulic parts that form the pump are the rotor and the stator. The rotor is a round-section worm. The stator has two ribs and its pitch doubles that of the rotor, thus allowing empty cavities between the stator and the rotor. These cavities are used to transport the fluid. When the rotor turns within the stator, the cavities move longitudinally from the suction area to the discharge nozzle.

These kinds of pumps are suitable for pressures from 6 bar (single-stage stator) to 12 bar (double-stage stator).

KS pumps are designed with a fully health-compliant and easy-to-clean transmission. For KST, bolts are fixed through some countersunk screws. The discharge nozzle is eccentric.

Moreover, there is a more robust design of transmission for a longer service life under heavy duty working conditions.

The standard connections are DIN 11851. Also, it is possible to choose other types of connections for the pump, like the CLAMP, SMS, RJT, flanges DIN 2633 PN 16, etc.

All pump parts in contact with the pumped product are manufactured in 1.4404 (AISI 316L) stainless steel, except the feeder screw of the KIBER KST pump which is manufactured in 1.4301. According to the FDA norm, the stator is manufactured in NBR and the standard sealing is EN 12756 L₁K mechanical seal.

This equipment is suitable for his use in food process.

4.2. APPLICATION

The KIBER KS and KIBER KST progressive cavity pumps are used to transfer products of low and high viscosity as well as products containing soft particles.

Some of its applications are for use with edible oils, wine, concentrates and beverages in general.

The intended use of the pump is defined for its characteristic curve.

ATTENTION



The range of application for each type of pump is limited. The pump was selected for a given set of pumping conditions when the order was placed. INOXPA shall not be liable for any damage resulting from the incompleteness of the information provided by the purchaser (nature of the fluid, rpm, etc.).

5. Installation

5.1. RECEPTION OF THE PUMP



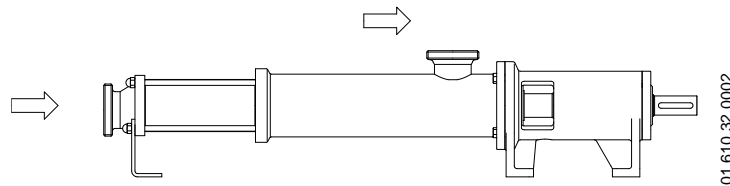
INOXPA cannot be held responsible for the damage sustained by the equipment during transport or unpacking. Please visually check that the packaging is not damaged.

The pump package includes the following documents:

- shipping documents,
- installation, service and maintenance instructions manual,
- instructions and service manual of the motor¹.

Unpack the pump and check the following:

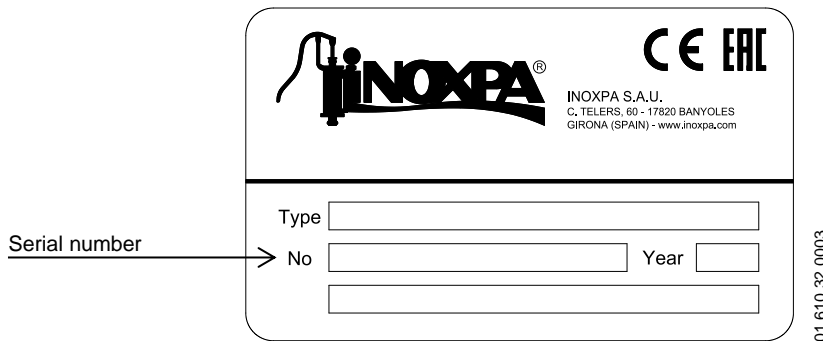
- the suction and discharge connections of the pump, removing any rest of packaging materials,



- the pump and the motor are not damaged,
- if the equipment is not in good condition and/or any part is missing, the carrier should report accordingly as soon as possible.

5.2. IDENTIFICATION OF THE PUMP

Each pump has a nameplate with the basic data required to identify the model.



5.3. TRANSPORT AND STORAGE

ATTENTION

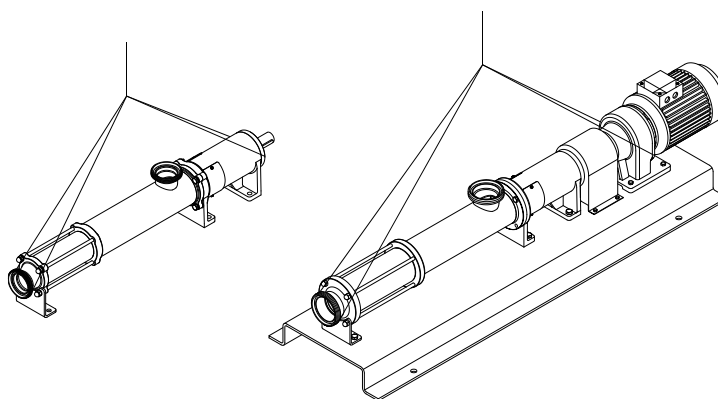


The KIBER KS and KIBER KST pumps are often too heavy to be stored manually. Use an appropriate means of transport. Use the points which are indicated in the drawing for lifting the pump. Only authorized personnel should transport the pump. Do not work or walk under the heavy loads.

¹ If the pump has been supplied with a motor from INOXPA

Lift the pump as indicated below:

- always use two support points placed as far apart as possible.



- secure the supports so that they will not move.

See chapter 9. [Technical Specifications](#) to consult dimensions and weights.

ATTENTION



During the transport, disassembly or assembly of the pump, there is a risk of loss of stability and that the pump could fall down and cause damages to the operators. Make sure that the pump is properly supported.

5.4. LOCATION

- Place the pump as close as possible to the suction tank and if possible below the level of the liquid.
- Leave sufficient space around the pump to provide access to both pump and motor. See chapter 9. [Technical Specifications](#) to consult dimensions and weight.
- Place the pump on a flat and level surface.
- The foundation must be hard, level, flat and vibration free.

ATTENTION



Install the pump so as to allow proper ventilation.

If the pump is installed outdoors, it should be covered by a roof. Its location should allow easy access for inspection or maintenance operations.



If the hopper is not covered when the KST pump is installed at the process, the hopper must cover in order to avoid the accidental access the operators to the pump's moving parts.

5.4.1. Excessive temperatures

Depending on the fluid to be pumped, high temperatures can be reached inside and around the pump.



Over 68°C the operator should take protective measures and place warning notices advising of the danger which exists if the pump is touched.

The type of protection selected should not isolate the pump entirely. It should allow for the bearings to be cooled more efficiently and for the bearings to be lubricated.

5.5. COUPLING

For the selection and fitting of the couplings, please refer to the supplier's manual. In some cases, the starting torque of positive-displacement pumps can be quite high. Therefore, the chosen coupling should be 1,5 to 2 times the recommended torque.

5.5.1. Alignment

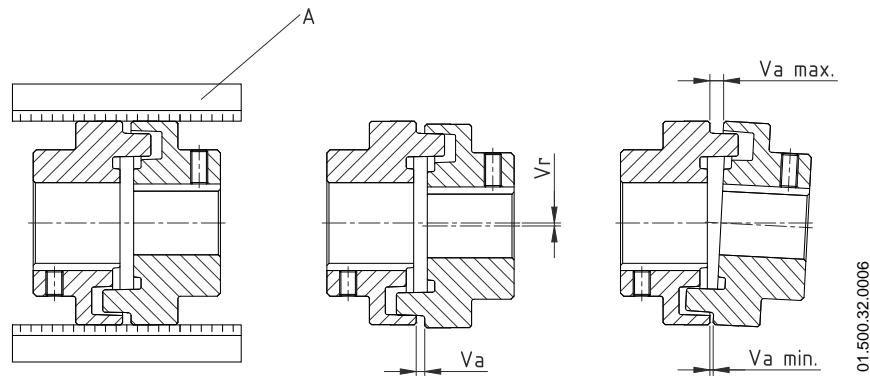
The shafts of the pumping assembly (motor-pump) were properly aligned at the factory.



ATTENTION

Check the alignment of the pumping unit after installation.

- Check the alignment of the pumping assembly after installation. If necessary, realign.
- In the case of applications dealing with high temperatures the pump can be operated temporarily at its working temperature. Then recheck alignment pump-piping.
- Place a straight-edge (A) on top of the coupling: the straight should make contact with both halves of the coupling over their entire length. See the following figure.
- Repeat the check, but this time on both sides of the coupling near the shaft.



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Maximum alignment deviations:

Outside diameter of the coupling [mm]	Va mín. [mm]	Va máx. [mm]	Va max. - Va min. [mm]	Vr [mm]
70 - 80	2	4	0,13	0,13
81 - 95	2	4	0,15	0,15
96 - 110	2	4	0,18	0,18
111 - 130	2	4	0,21	0,21
131 - 140	2	4	0,24	0,24
141 - 160	2	4	0,27	0,27
161 - 180	2	4	0,30	0,30
181 - 200	2	4	0,34	0,34
201 - 225	2	4	0,38	0,38

The coupling has to be adequately protected during operating the pump to avoid possible accidental accesses.



Do not operate the pump if the protectors are not installed adequately.

5.6. PIPES

- As a general rule, install the suction and discharge lines in straight sections, with the minimum possible number of elbows and fittings in order to reduce any pressure losses that may be caused by friction.
- Make sure that the pump's ports are properly aligned with the pipework and have a diameter similar to that of the pump connections.
- Place the pump as close as possible to the suction tank and whenever possible below the liquid level, or even below the tank level in order to achieve the largest possible static head for suction.

- Install support brackets for the lines as close as possible to the pump's suction and discharge ports in order to avoid vibrations and stress on the pump.

5.6.1. Shut-off valves

The pump may be isolated for maintenance. To accomplish this, shut-off valves must be installed and connected to the pump's suction and discharge connections.



ATTENTION

These valves must ALWAYS be open during operation of the pump.

5.6.2. Pressurisation tank

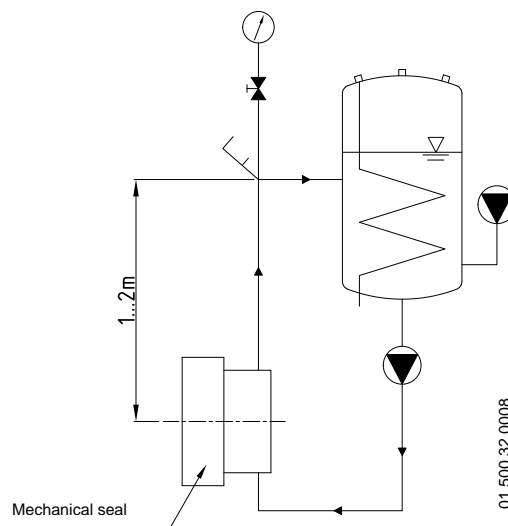
For models with a double mechanical seal, a pressurisation tank needs to be fitted.



ATTENTION

ALWAYS install the pressurization tank at a height of between 1 and 2 meters with respect to the pump shaft.

ALWAYS connect the coolant inlet to the bottom connection on the seal chamber. The coolant will then exit through the top connection on the chamber. See the following figure.



Installation drawing of the pressurization tank

For more information on the pressurization tank (installation, performance, maintenance, etc.), refer to the instruction manual supplied by the manufacturer.

5.7. ELECTRICAL INSTALLATION



Only qualified personnel can connect the electric motors.

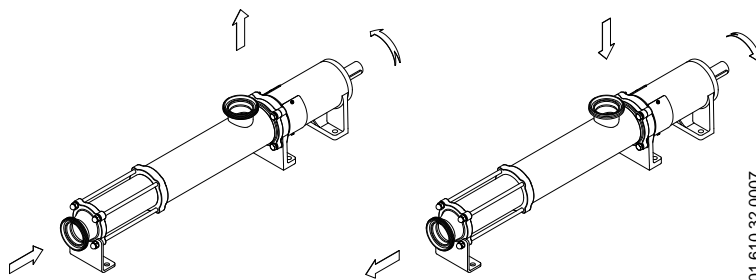
Take the necessary measures to prevent damage to cables and connections.



Electrical equipment, terminals and components of the control systems may still carry current when they are disconnected. Contacting them may impose a hazard to operators or cause irreparable material damage.

Before handling the pump, make sure that the motor is stopped.

- Connect the motor in accordance with the instructions supplied by the motor manufacturer, in accordance with the current national legislation and compliance with EN 60204-1.
- Check the direction of rotation (see the signalling label on the pump).
- Start and stop the pump motor momentarily. Make sure that the direction of rotation is correct. If the pump rotates in the wrong direction it could cause serious damage.



ATTENTION



ALWAYS check the direction of rotation of the motor with liquid inside the pump.

For models with a sealed chamber, ALWAYS make sure that the chamber is full of fluid before checking the direction of rotation.

6. Start-up



Before starting the pump, carefully read the instructions in section 5. [Installation](#).

Carefully read section 9. [Technical Specifications](#). INOXPA will not be liable for improper use of the equipment.



NEVER touch the pump or the lines if hot liquids are being pumped.

6.1. CHECKS BEFORE STARTING THE PUMP

- Completely open the shut-off valves on the suction and discharge lines.
- If liquid does not flow towards the pump, fill it with the liquid to be pumped.



ATTENTION

The pump must never turn dry.

- Check that the power supply matches the rating indicated on the motor plate.
- Check that the direction of rotation of the motor is the right one.
- If the pump has a double or a cooled mechanical seal, mount the auxiliary connection corresponding to the values indicated in chapter 9. [Technical Specifications](#).

6.2. CHECKS WHEN STARTING THE PUMP

- Check that the pump is not making any strange noises.
- Check if the absolute inlet pressure is sufficient to prevent cavitation in the pump. See the curve to determine the minimum pressure required above steam pressure (NPSHr).
- Control the discharge pressure.
- Check for leaks in the sealing areas.



ATTENTION

Shut-off valves on the suction pipe must not be used to regulate the flow. All shut-off valves must be fully open during operation.

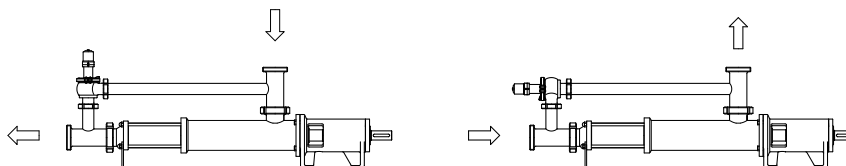


ATTENTION

Control the motor consumption to prevent an electrical overload.

6.3. BY-PASS PRESSURE

If the pump has an incorporated pressure by-pass, the rotation can be of only one direction. To invert the direction of rotation, mount an overflow valve as indicated in the next figure. The single stage pump has the overflow valve calibrated at 6 bar and 10 bar for the double stage ones.



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The pump always leaves INOXPA with a by-pass mounted to work with the aspiration in the pump casing and the impulsion ahead.



If the pump has not an incorporated a pressure by-pass you should mount a relief valve or any other device that limits the pressure to 7 bar for single-stage stator or 14 for double-stage stator pump.

8. Maintenance

8.1. GENERAL CONSIDERATIONS

This pump, just like any other machine, requires maintenance. The instructions contained in this manual cover the identification and replacement of spare parts. The instructions are aimed at maintenance personnel and those responsible for the supply of spare parts.



Carefully read chapter [9. Technical Specifications](#).

Maintenance work can only be carried out by qualified personnel that are trained and equipped with the necessary resources to carry out this work.

All parts or materials that are replaced must be properly disposed of/recycled in accordance with the current directives applicable in each area.



ALWAYS disconnect the pump before beginning any maintenance work.

8.2. CHECK THE MECHANICAL SEAL

Periodically check that there are no leaks around the shaft. If leakage is detected through the mechanical seal, replace it following the instructions in the chapter [8.7. Disassembly and assembly of the pump](#).

8.3. LUBRICATION

The KIBER KS and KIBER KST pumps use one cylinder roller bearing (70), which should be re-lubricated periodically with special lithium grease, and another one ball bearing (70A) which is lubricated for life therefore it is not needed re-lubricated.

Optionally, the pump can be mounted with a heavy duty transmission (see chapter [8.7. Heavy duty transmission](#)). This transmission is lubricated with AL-H food grade grease. The transmission should be checked regularly for its proper functioning. If necessary, should be changed or added the adequate quantity of the grease.

8.4. TIGHTENING TORQUE

Size	Nm	lbf-ft
M6	10	7
M8	21	16
M10	42	31
M12	74	55
M16	112	83

8.5. STORAGE

Before being stored the pump must be completely emptied of liquids. Avoid, as far as possible, the exposure of the parts to excessively damp atmospheres.

8.6. CLEANING



The use of aggressive cleaning products such as caustic soda and nitric acid may give raise to skin burns.

Use rubber gloves during cleaning procedures.

Always use protective goggles.

8.6.1. Automatic CIP (clean-in-place)

If the pump is installed in a system with a CIP process, it is not necessary to disassemble the pump.

If the automatic cleaning process is not provided, proceed to disassemble the pump as indicated in the chapter [8.7. Disassembly and assembly of the pump](#).

Cleaning solutions for CIP processes

Use only clear water (without chlorides) for mixing with the cleaning agents:

a. Alkaline solution: 1 kg in weight of caustic soda (NaOH) a 70°C (150°F)

1 kg NaOH + 100 l H₂O = cleaning solution

o

2,2 l NaOH at 33% + 100 l H₂O = cleaning solution

b. Acid solution: 0,5% in weight of nitric acid (HNO₃) a 70°C (150°F)

0,7 l HNO₃ at 53% + 100 l H₂O = cleaning solution

ATTENTION



Check the concentration of the cleaning solutions. Incorrect concentrations may lead to the deterioration of the pump seals.

To remove any traces of cleaning products ALWAYS perform a final rinse with clean water at the end of the cleaning process.

8.6.2. Automatic SIP (sterilization-in-place)

The process of sterilization with steam is applied to all the equipment including the pump.

Do NOT start the pump during the process of sterilization with steam.

The parts/materials suffer no damage if the indications specified in this manual are observed.

No cold liquid can enter the pump till the temperature of the pump is lower than 60°C (140°F).

The pump generates an important pressure drop through the sterilization process, use a bypass circuit provided with a discharge valve is recommended for ensuring that the steam or overheated water sterilizes the circuit integrity.



Maximum conditions during SIP process with steam or overheated water:

- a) Maximum temperature: 140°C / 284°F
- b) Maximum time: 30 min
- c) Cooling: sterile air or inert gas
- d) Materials: EPDM (recommended)
FPM/NBR (use with caution)

8.7. DISASSEMBLY AND ASSEMBLY OF THE PUMP

The assembly and disassembly of the pumps should be done by qualified personnel. Make sure that the personnel read carefully this instruction manual and, in particular, those instructions which refer to the work they will perform.

ATTENTION



Incorrect assembly or disassembly may cause damage to the pump's operation and lead to high repair costs and a long period of downtime.

INOXPA is not responsible for accidents or damages caused by a failure to comply with the instructions in this manual.

Preparation

Provide for a clean working environment so some parts, including the mechanical seal, require very careful handling and others have close tolerances.

Check that the parts which are used are not damaged during transport. When doing this, you need to inspect the adjustment edge, the butted faces, the tight fit, burrs, etc.

After each disassembly, carefully clean the parts and check for any damage. Replace all damaged parts.

Tools

Use the proper tools for assembly and disassembly operations. Use them correctly.

Cleaning

Before disassembling the pump, clean it outside and inside.



NEVER clean the pump by hand when it is running.

8.7.1. Stator, rotor and connecting rod

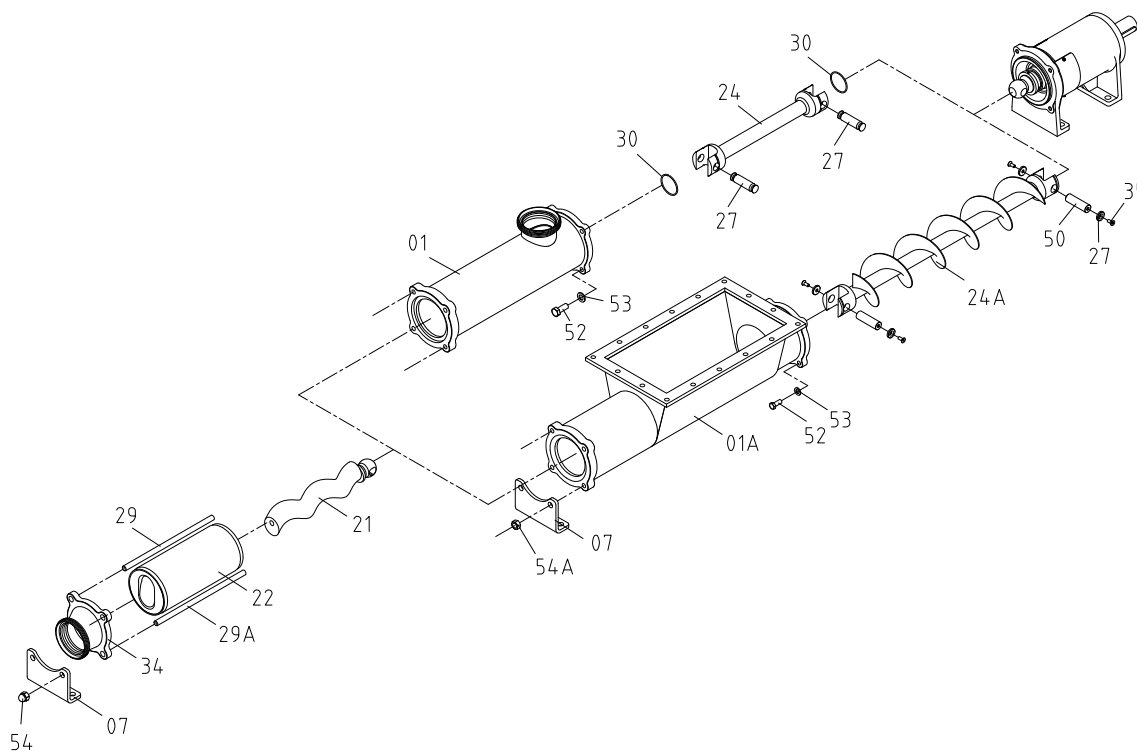
A. Standard transmission

Disassembly

- Loosen the nuts (54) and remove the leg (07) and the discharge nozzle (34).
- Pull out the tie bars (29/29A) and then remove the stator (22); if necessary secure the rotor (21) by holding the pump shaft (05).
- Remove the screws (52) and the washers (53).
- Pull out the pump casing (01/01A) from the front side.
- For KS pump, remove the safe ring (30) and the bolt (27) so that the rotor (21) comes out.
- For KST, remove the screws (50), bolt washers (35), and bolt (27) to take out the rotor (21).
- Proceed likewise on the other end of the connecting rod (24/24A) in order to remove it.

Assembly

- For the KS model, connect the connecting rod (24) to the pump shaft (05) with the bolt (27) and attach the bolt with the safe ring (30).
- For the KST, connect the feeder screw (24A) to the shaft with the bolt (27) that will be attached with the screws (50) and bolt washers (35). Add some industrial adhesive LOCTITE 270 to ensure that the screws (50) do not loosen.
- Proceed likewise with the rotor on the other end of the connecting rod (21).
- Mount the pump casing (01/01A) and fasten it with the screws (52) and the washers (53).
- Introduce the stator (22) lubricating it with soapy water and if necessary secure the rotor (21) by holding the pump shaft (05).
- Mount the discharge flange (34) and the leg (07) and fasten it with the nuts (54).



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**ATTENTION**

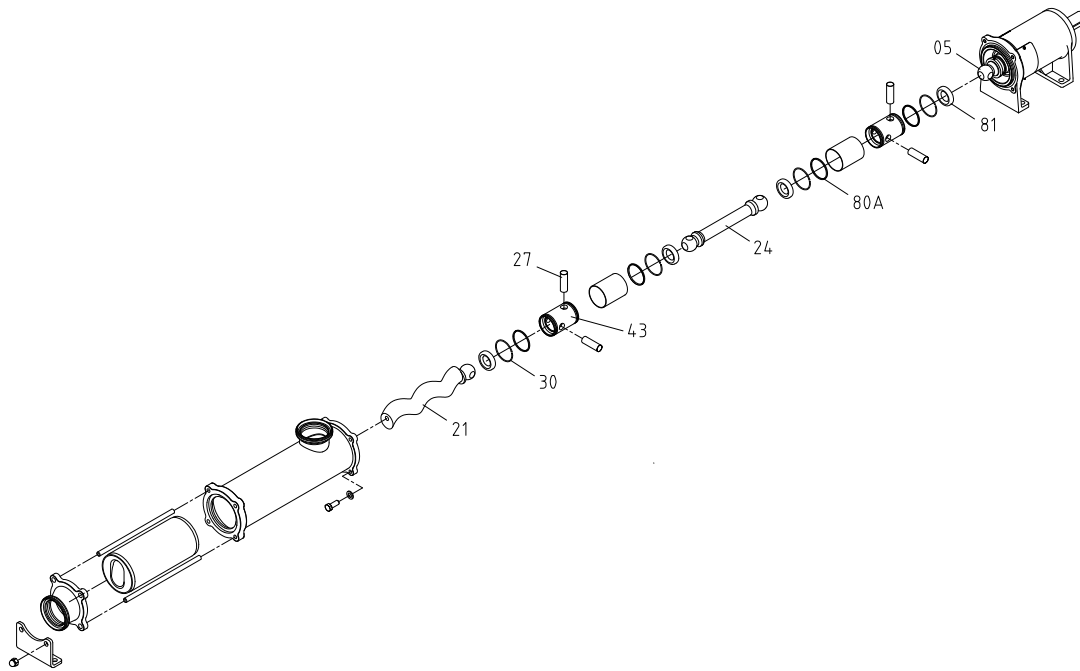
When installing the different parts and seals, use soapy water to allow them to slide better.

B. Heavy duty transmission (only optional for KIBER KS)**Disassembly**

- Loosen the nuts (54) and remove the leg (07) and the discharge nozzle (34).
- Pull out the tie bars (29/29A) and then remove the stator (22); if necessary secure the rotor (21) by holding the pump shaft (05).
- Remove the screws (52) and the washers (53).
- Pull out the pump casing (01) from the front side.
- Remove the safe rings (30), the transmission shield bushing (17A) and the bolts (27), so that the rotor (21) and one end of the connecting rod (24) come out.
- Proceed likewise on the other end of the connecting rod in order to remove it.

Assembly

- Place the O-ring (81) on the pump shaft (05) / shaft complement (26) and the connecting rod (24), and the seals (80A) on the transmission bushing (43).
- Place the transmission bushing (43) on the pump shaft (05) and place the drive bolt (27) and the bolt for the connecting rod. Lubricate all the internal zone with AL-H food grade grease.
- Place the transmission shield bushing (17A) on the transmission bushing (43) and fasten it with the safe rings (30).
- Proceed likewise with the rotor (21) on the other end of the connecting rod (21).
- Mount the pump casing (01) and fasten it with the screws (52) and the washers (53).
- Introduce the stator (22) lubricating it with soapy water and if necessary secure the rotor (21) by holding the pump shaft (05).
- Mount the discharge flange (34) and the leg (07) and fasten it with the nuts (54).



01.610.32.0010



ATTENTION

When installing the different parts and seals, use soapy water to allow them to slide better.

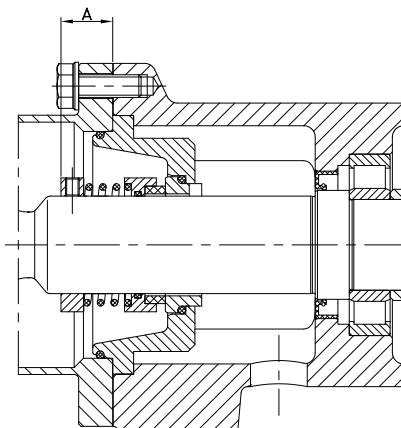
8.7.2. Mechanical seal

Disassembly

- Follow the disassembly procedure described in the chapter [8.7.1. Stator, rotor and connecting rod](#).
- If the protections (47A) were not removed previously, remove them now.
- Loosen the pins (55) to remove the seal ring (31).
- Remove the seal cover (09) to pull out the seal at the same time as the mechanical seal (08).
- Finally, gently remove the stationary part of the seal, which has remained housed inside the seal cover.

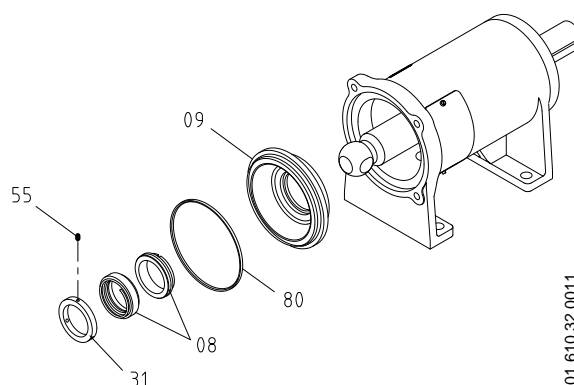
Assembly

- Mount the fixed part of the mechanical seal (08) and the O-ring (80) to the seal cover (09).
- Place the cover on the support of the bearing (06).
- Slide the rotary part of the seal (08) into the pump shaft (05).
- Place the seal ring (31) on the shaft and fasten it with the pins (55) according to the following assembly dimension:



01.610.32.0012

Pump type	A (mm)
KS – 20	12
KS – 25/30	16,5
KS – 40/50	23
KS – 60/80	23,5



01.610.32.0011

**ATTENTION**

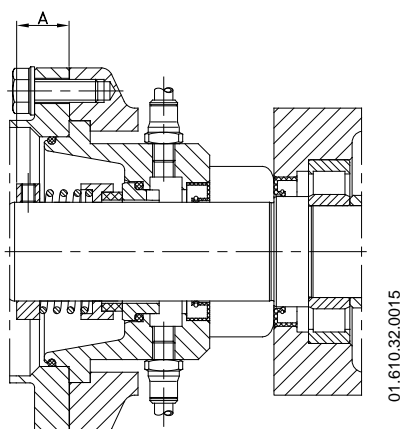
When mounting the new seal, be care to mount the parts and seals with soapy water to facilitate their sliding.

8.7.3. Cooled mechanical seal (quench)**Disassembly**

- First follow the disassembly procedure described in chapter 8.7.1. [Stator, rotor and connecting rod](#).
- If the protections (47A) were not removed previously, remove them now.
- Loosen the pins (55) to remove the seal ring (31).
- Remove the seal cover (09A) to pull out the seal at the same time as the mechanical seal (08) and the lip seal (88B).
- Finally, gently remove the stationary part of the seal, which has remained housed inside the seal cover and the lip seal.

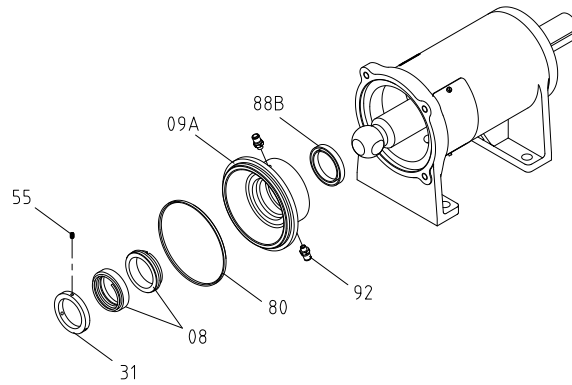
Assembly

- Mount the fixed part of the mechanical seal (08), the lip seal (88B), the O-ring (80) and the raccords (92) to the seal cover (09A), the quenching liquid pipes can be connected to the connections through the bearing support windows.
- Place the cover on the support of the bearing (06).
- Slide the rotary part of the seal (08) into the pump shaft (05).
- Place the seal ring (31) on the shaft and fasten it with the pins (55) according to the A dimension shown in the following figure:



01.610.32.0015

Pump type	A (mm)
KS – 20	12,0
KS – 25/30	16,5
KS – 40/50	23,0
KS – 60/80	23,5



01.610.32.0016

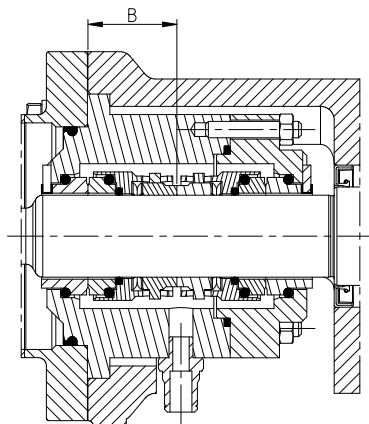
8.7.4. Double mechanical seal

Disassembly

- First follow the disassembly procedure described in chapter 8.7.1. [Stator, rotor and connecting rod](#).
- If the protections (47A) have not been removed previously, remove them now.
- Remove the nuts (54A); now the double seal back cover is loose (10A).
- Remove the seal cover (10). The fixed part of the inside seal (08A) will remain housed inside the double seal back cover (10A).
- Remove the two rotary parts of the seals (08A,08B).
- Remove the double seal back cover (10A), the fixed part of the outside mechanical seal (08B) will remain housed inside the cover.

Assembly

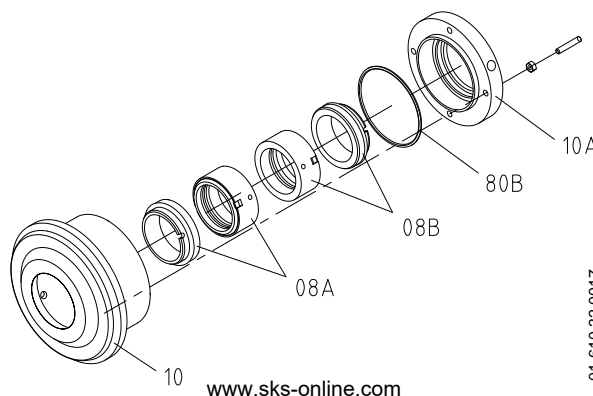
- Place the fixed part of the outside mechanical seal (08B) in its housing inside the double seal back cover (10A).
- Insert this cover (10A), leaving it loose at the end of the pump shaft (05A).
- For the KS-60 and KS-80 pumps, slide the rotary part of the outside mechanical seal (08B) according to the assembly dimension shown in the following table.



01.610.32.0018

Pump type	B (mm)
KS – 20	-
KS – 25/30	32,5
KS – 40/50	31,0
KS – 60/80	-

- Mount the rotary part of the inside seal (08A).
- Place the fixed part of the inside seal (08B) into its housing inside the seal cover (10).
- Mount the cover (10) to the support of the bearing (06) having previously laced the O-rings (80,80B), and fasten it with the back cover of the double seal (10A) using the pins (55A) across the nuts (54A).



01.610.32.0017

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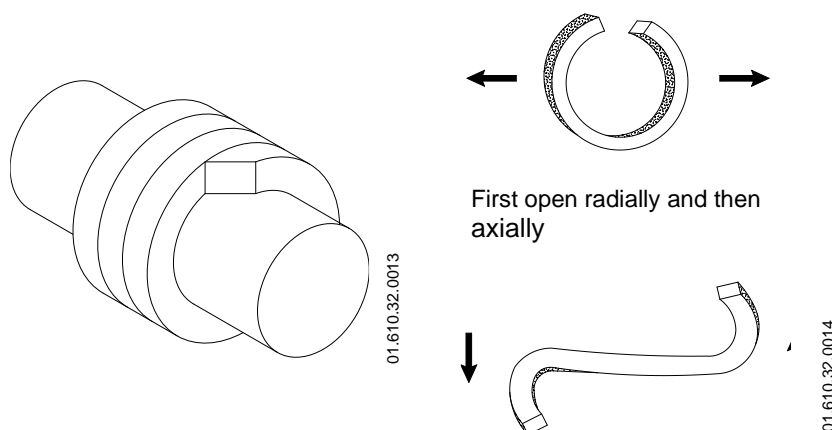
8.7.5. Gland packing

Disassembly

- First follow the disassembly procedure described in chapter 8.7.1. [Stator, rotor and connecting rod](#).
- Remove the packing from the packing box (36) with the gland (37) from the front side.
- Once the packing has been removed, remove the gland (37) by loosening the nuts (57).
- Proceed to replace the gland packing rings (08C).

Assembly

- Before introducing the new gland packing, check the condition of the surface of the driving shaft (05) and the packing box (36). The shaft should have a polished surface finishing.
- Cut the rings to the required length with a 45° angle, as shown in Figure 01.610.32.0013, Check that the cuts match on the shaft.
- Gently open the rings, as shown in figure 01.610.32.0014, to allow the passage of the shaft, and place them each in turn separately. First, insert the junction and then push the rings to the end.



- The rings (08C) must be in contact with each other, and the cuts of each ring must be arranged against each other forming a 120° angle.
- Insert the gland packing (37) and fit the pins (55A) and nuts (57) avoiding fastening them excessively.
- Mount this assembly to the shaft (05).
- Turn the drive shaft (05) from time to time to facilitate the settlement of the rings.
- Fasten the nuts (57) manually and evenly and make sure that the shaft rotates freely. Now follow the assembly procedure described in chapter 8.7.1. [Stator, rotor and connecting rod](#).
- Let the pump operate with constant leaks for about 10 minutes, then fasten the gland (37) using the nuts (57) until the leaks are reduced to an acceptable level (15 to 20 drops/minute approximately). A dripping leak is essential for the normal operation of the gland packing in order to avoid the overheating of the screws.
- When the packing has become fully compressed after successive adjustments, replace the full contents of the box (never replace the packing only partially). Always use good-quality packing.

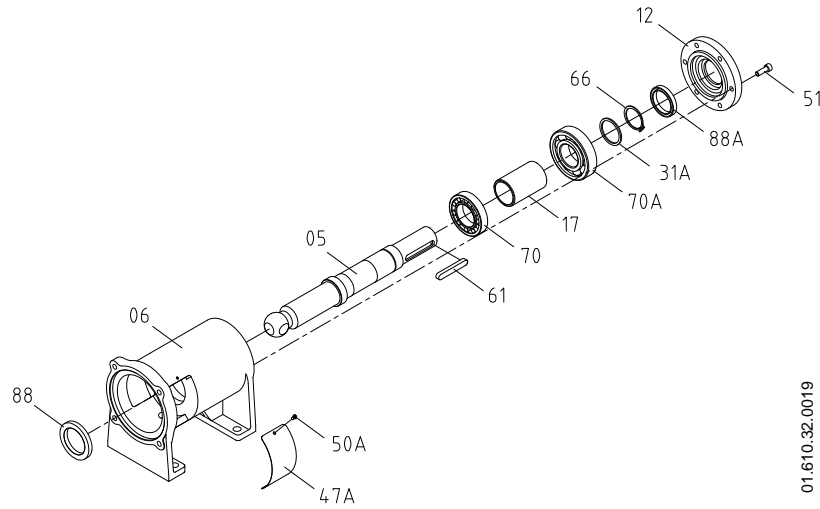
8.7.6. Bearing support

Disassembly

- First follow the disassembly procedure described in chapters 8.7.1. [Stator, rotor and connecting rod](#) and 8.7.2. [Mechanical seal](#).
- Remove the bearings cover (12) using the allen screws (51).
- Remove the shaft (05) with the bearings still mounted on the back side of the support (06) by gently knocking with a plastic hammer on the other end of the shaft (05).
- If the seal (88) has come out along with the shaft (05), pull it out.
- Remove the elastic ring (66) and the stop washer (31A).
- Remove the ball bearing (70A), the spacer bushing (17) and the inner ring of the roller bearing (70).
- Finally, remove the outer ring together with the bearing rollers (70) which will have remained housed into the support of the bearing (06).

Assembly

- Insert the inner ring of the bearings (70) into the pump shaft (05) to the stop.
- Insert the spacer bushing (17), the roller bearing (70A) and the stop washer (31A), and fasten it all with the elastic ring (66).
- Place outer ring together with the bearing rollers (70) into the housing in the support (06).
- Mount the shaft-bearings assembly into the support of the bearing (06).
- Place the seal (88).
- Mount the bearings cover (12) with the seal (88A) inside it using the allen screws (51).



01.610.32.0019

9. Technical Specifications

Maximum viscosity	1000000 mPa.s
Maximum temperature	85°C
Sound level	60 – 80 dB(A)



Use special protection when the noise level in the operation are exceeds 85 dB(A).

Materials

Parts in contact with the product	1.4404 (AISI 316L)
Feeder screw (KIBER KST pump)	1.4301 (AISI 304)
Other stainless steel parts	1.4301 (AISI 304)
Seals in contact with the product	FPM
Other materials for the seal	consult with INOXPA
External surface finish	matt
Internal surface finish	polished Ra ≤ 0,8 µm

Mechanical seal

Type of seal:	single inside seal
Stationary parts material	graphite (C)
Rotary parts material	silicon carbide (SiC)
Seal material	FPM

Cooled mechanical seal

Working pressure	0,5 bar
Flow rate of the circulation	0,25 – 0,6 l/min

Double mechanical seal

Operating pressure	1,5 – 2 bar above the operating pressure of the pump
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Gland packing

Packing material	Teflon-reinforced aramid fibre
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Pump type	Volume a 100 rev (l)	Maximum flow (m ³ /h)	Maximum pressure (bar)		Maximum speed (rpm)
			Single stage ¹	Double stage ²	
KS-20 / 2KS-20	2,8	2,4	6	12	1450
KST-20 / 2KST-20	2,8	0,8	6	12	500
KS-25 / 2KS-25	6,7	3,8	6	12	950
KST-25 / 2KST-25	6,7	2,0	6	12	500
KS-30 / 2KS-30	9,8	5,6	6	12	950
KST-30 / 2KST-30	9,8	2,9	6	12	500
KS-40 / 2KS-40	23,7	13,5	6	12	950
KST-40 / 2KST-40	23,7	5,7	6	12	400
KS-50 / 2KS-50	45,1	19,5	6	12	720
KST-50 / 2KST-50	45,1	9,5	6	12	350
KS-60 / 2KS-60	82,0	24,6	6	12	500
KST-60 / 2KST-60	82,0	17,2	6	12	350
KS-80 / 2KS-80	185,4	44,5	6	12	400
KST-80 / 2KST-80	185,4	33,5	6	12	300

1) KS-XX: single stage
2) 2KS-XX: double stage

9.1. PARTICLE SIZE



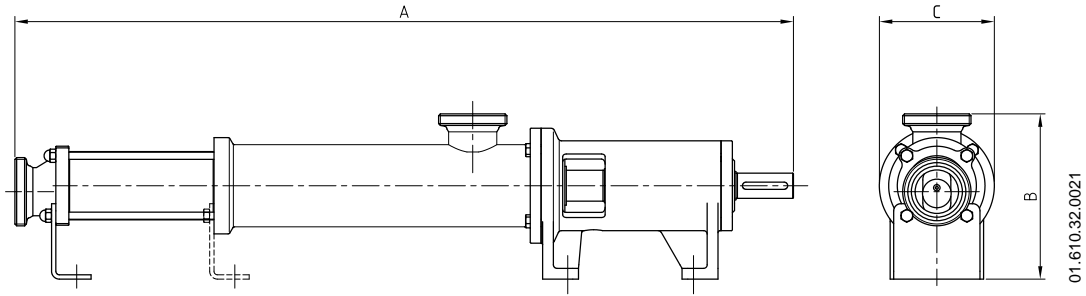
Only soft particles can be pumped

Pump type	Inside diameter of connections (mm)	Maximum nominal sphere size (mm)	Recommended nominal sphere size (mm)
KS-20 / KST-20 2KS-20 / 2KST-20	35	13	5
KS-25 / KST-25 2KS-25 / 2KST-25	48	18	6
KS-30 / KST-30 2KS-30 / 2KST-30	48	24	8
KS-40 / KST-40 2KS-40 / 2KST-40	60,5	30	10
KS-50 / KST-50 2KS-50 / 2KST-50	72	40	13
KS-60 / KST-60 2KS-60 / 2KST-60	97,5	48	16
KS-80 / KST-80 2KS-80 / 2KST-80	97,5	62	20

9.2. WEIGHT

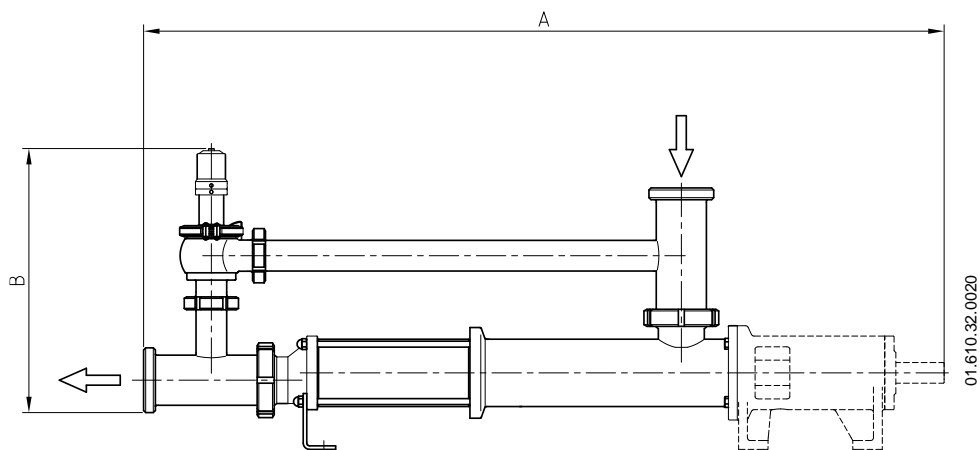
Pump type	Weight (Kg)	Pump type	Weight (Kg)	Pump type	Weight (Kg)	Pump type	Weight (Kg)
KS-20	14	2KS-20	15	KST-20	19	2KST-20	20
KS-25	23	2KS-25	24	KST-25	30	2KST-25	31
KS-30	24	2KS-30	25	KST-30	31	2KST-30	32
KS-40	38	2KS-40	44	KST-40	47	2KST-40	53
KS-50	42	2KS-50	51	KST-50	51	2KST-50	60
KS-60	88	2KS-60	107	KST-60	107	2KST-60	126
KS-80	105	2KS-80	138	KST-80	124	2KST-80	157

9.3. DIMENSIONS OF KIBER KS PUMP



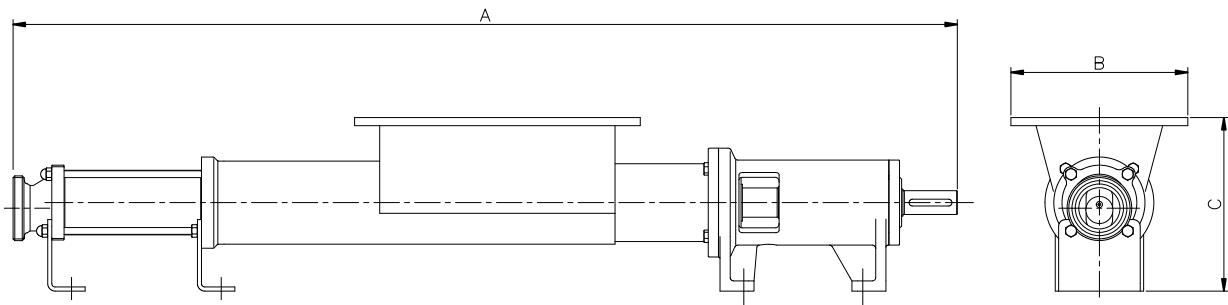
Pump type	A	B	C
KS-20	635	170	110
2KS-20	736	170	110
KS-25	800	200	135
2KS-25	890	200	135
KS-30	800	200	135
2KS-30	950	200	135
KS-40	1090	230	160
2KS-40	1275	230	160
KS-50	1160	250	160
2KS-50	1415	250	160
KS-60	1405	295	220
2KS-60	1705	295	220
KS-80	1535	295	240
2KS-80	1935	295	240

9.4. DIMENSIONS OF KIBER KS PUMP WITH BY-PASS PRESSURE



Pump type	A	B
KS-20	785	420
2KS-20	885	420
KS-25	970	470
2KS-25	1065	470
KS-30	970	465
2KS-30	1120	465
KS-40	1280	510
2KS-40	1470	510
KS-50	1360	540
2KS-50	1615	540
KS-60	1650	625
2KS-60	1950	625
KS-80	1770	610
2KS-80	2170	610

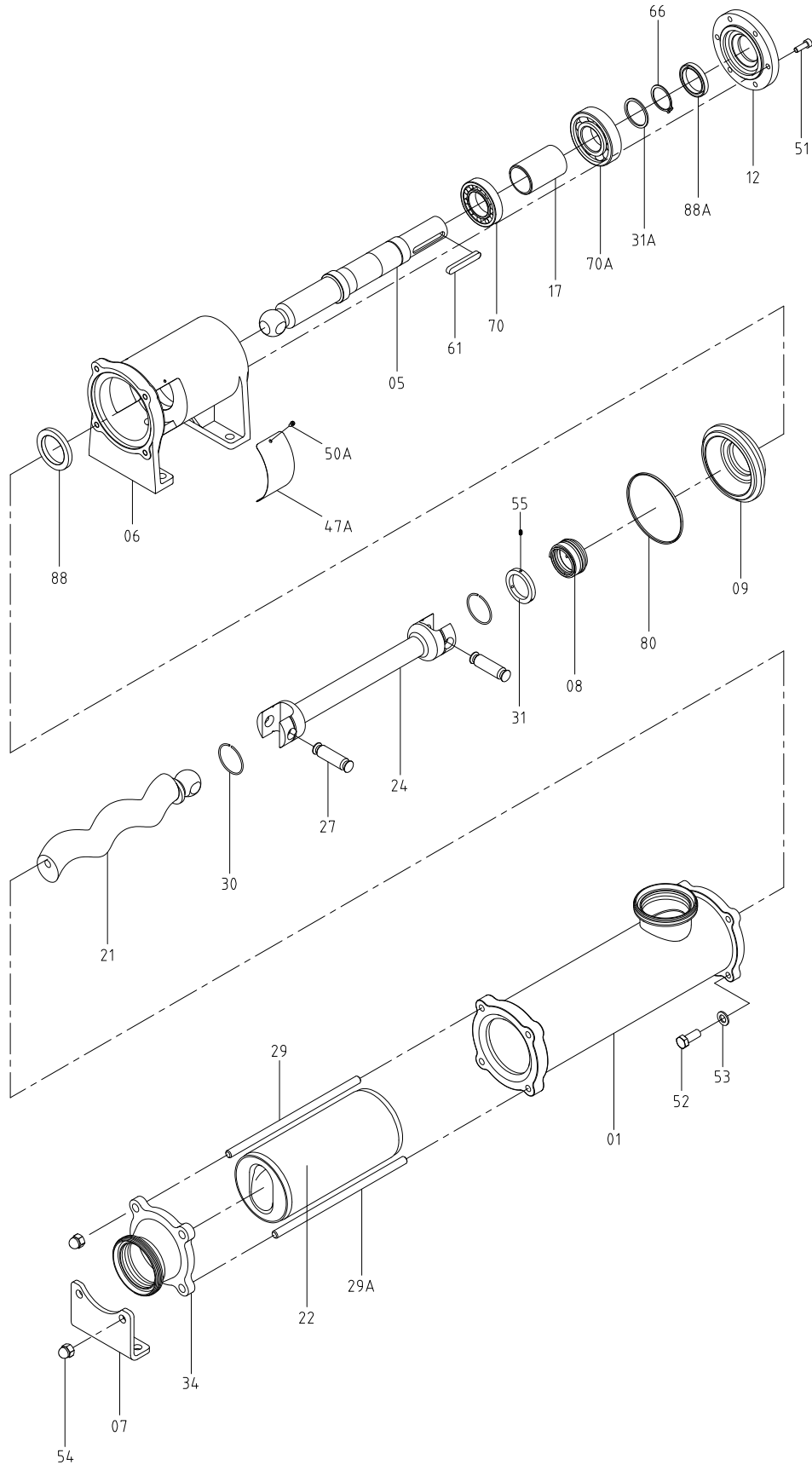
9.5. DIMENSIONS OF KIBER KST PUMP



01.610.32.0022

Pump type	A	B	C
KST-20	835	210	175
2KST-20	935	210	175
KST-25	1035	250	235
2KST-25	1125	250	235
KST-30	1035	250	235
2KST-30	1185	250	235
KST-40	1300	260	255
2KST-40	1490	260	255
KST-50	1375	260	255
2KST-50	1630	260	255
KST-60	1735	340	320
2KST-60	2035	340	320
KST-80	1865	340	320
2KST-80	2265	340	320

9.6. EXPLODED DRAWING AND PARTS LIST OF KIBER KS PUMP



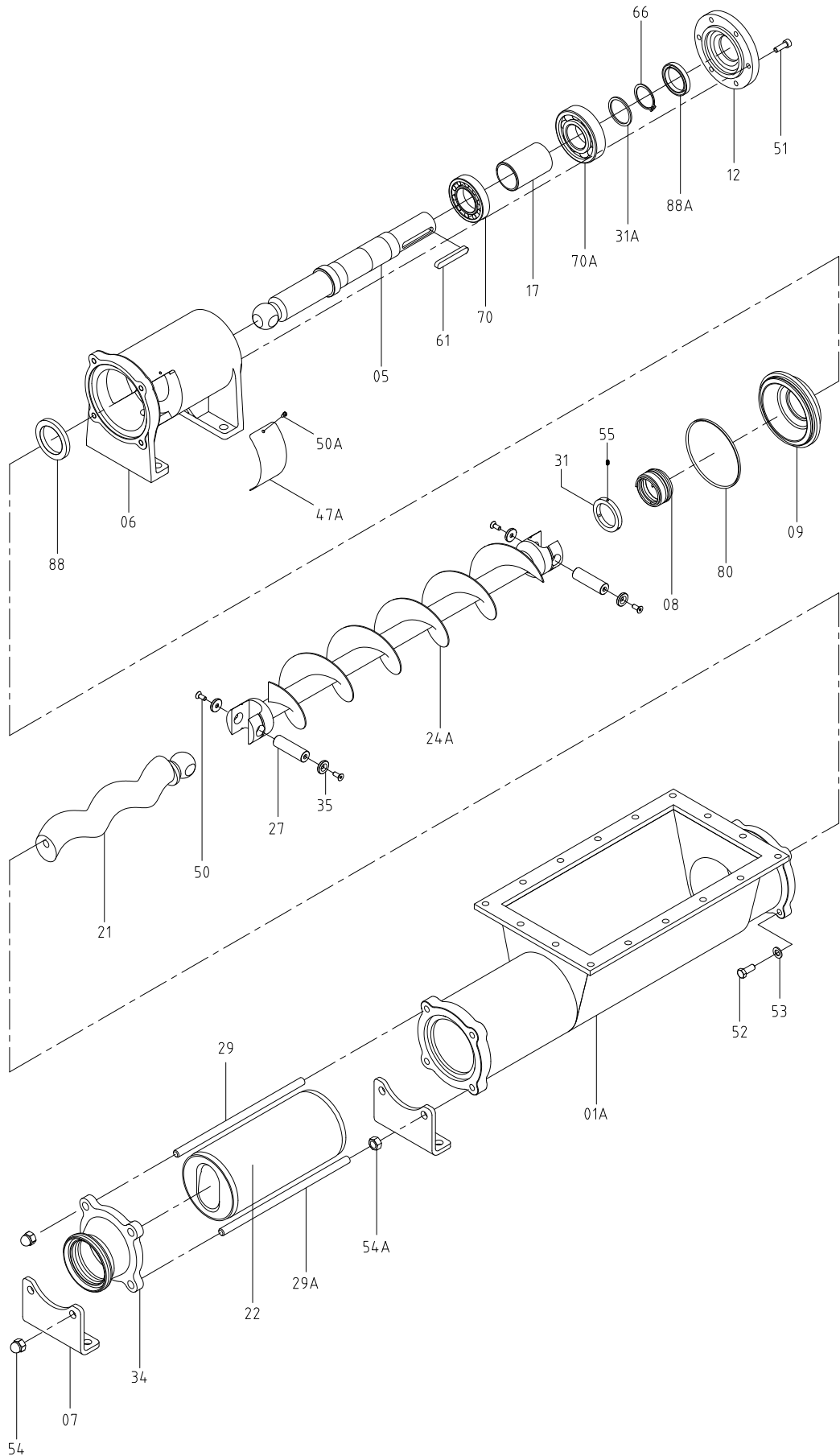
Position	Description	Quantity	Material
01	Pump casing	1	1.4404 (AISI 316L)
05	Pump shaft	1	1.4404 (AISI 316L)
06	Bearing support	1	GG-25
07	Leg	1	1.4301 (AISI 304)
08	Mechanical seal ¹	1	-
09	Seal cover	1	1.4404 (AISI 316L)
12	Bearings cover	1	F-114
17	Spacer bushing	1	F-114
21	Rotor	1	1.4404 (AISI 316L)
22	Stator ¹	1	NBR negro
24	Connecting rod ³	1	1.4404 (AISI 316L)
27	Bolt ^{1,3}	2	1.4404 (AISI 316L)
29	Upper tie bar	2	1.4301 (AISI 304)
29A	Lower tie bar	2	1.4301 (AISI 304)
30	Safe ring ³	2	1.4404 (AISI 316L)
31	Seal stop ring	1	1.4404 (AISI 316L)
31A	Stop washer	1	F-522
34	Discharge nozzle	1	1.4404 (AISI 316L)
47A	Protection	2	Plastic
50A	Screw	4	A2
51	Allen screw	4 ²	A2
52	Hexagonal screw	4	A2
53	Flat washer	4	A2
54	Blind nut	4	A2
55	Pin	3	A2
61	Key	1	1.4301 (AISI 304)
66	Elastic ring	1	Steel
70	Roller bearing	1	Steel
70A	Ball bearing	1	Steel
80	O-ring ¹	1	FPM
88	Lip seal ¹	1	FPM
88A	Lip seal ¹	1	FPM

¹ recommended spare parts

² 6 units in the models KIBER KS-60, KIBER 2KS-60, KIBER KS-80, KIBER 2KS-80

³ pieces include in the transmission kit

9.7. EXPLODED DRAWING AND PARTS LIST OF KIBER KST PUMP



01.610.32.0024

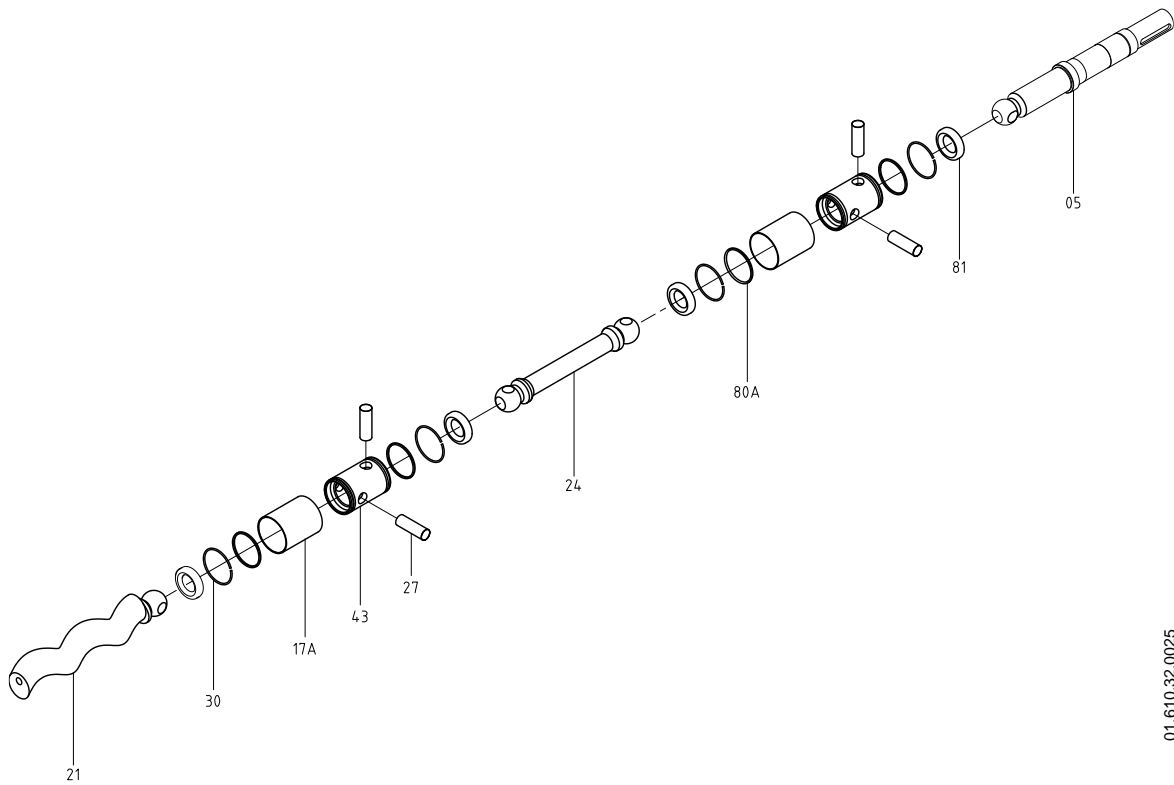
Position	Description	Quantity	Material
01A	Hopper casing	1	1.4404 (AISI 316L)
05	Pump shaft	1	1.4404 (AISI 316L)
06	Bearing support	1	GG-25
07	Leg	2	1.4301 (AISI 304)
08	Mechanical seal ¹	1	-
09	Seal cover	1	1.4404 (AISI 316L)
12	Bearings cover	1	F-114
17	Spacer bushing	1	F-114
21	Rotor	1	1.4404 (AISI 316L)
22	Stator ¹	1	NBR negro
24A	Feeder screw ³	1	1.4301 (AISI 304)
27	Bolt ^{1,3}	2	1.4404 (AISI 316L)
29	Upper tie bar	2	1.4301 (AISI 304)
29A	Lower tie bar	2	1.4301 (AISI 304)
31	Seal stop ring	1	1.4404 (AISI 316L)
31A	Stop washer	1	F-522
34	Discharge nozzle	1	1.4404 (AISI 316L)
35	Bolt washer ³	4	1.4404 (AISI 316L)
47A	Protection	2	Plastic
50	Countersunk screw ¹	4	A2
50A	Screw	4	A2
51	Allen screw	4 ²	A2
52	Hexagonal screw	4	A2
53	Flat washer	4	A2
54	Blind nut	4	A2
54A	Hexagonal nut	2	A2
55	Pin	3	A2
61	Key	1	1.4301 (AISI 304)
66	Elastic ring	1	Steel
70	Roller bearing	1	Steel
70A	Ball bearing	1	Steel
80	O-ring ¹	1	FPM
88	Lip seal ¹	1	FPM
88A	Lip seal ¹	1	FPM

¹ recommended spare parts

² 6 units in the models KIBER KST-60, KIBER 2KST-60, KIBER KST-80, KIBER 2KST-80

³ pieces include in the transmission kit

9.8. HEAVY DUTY TRANSMISSION

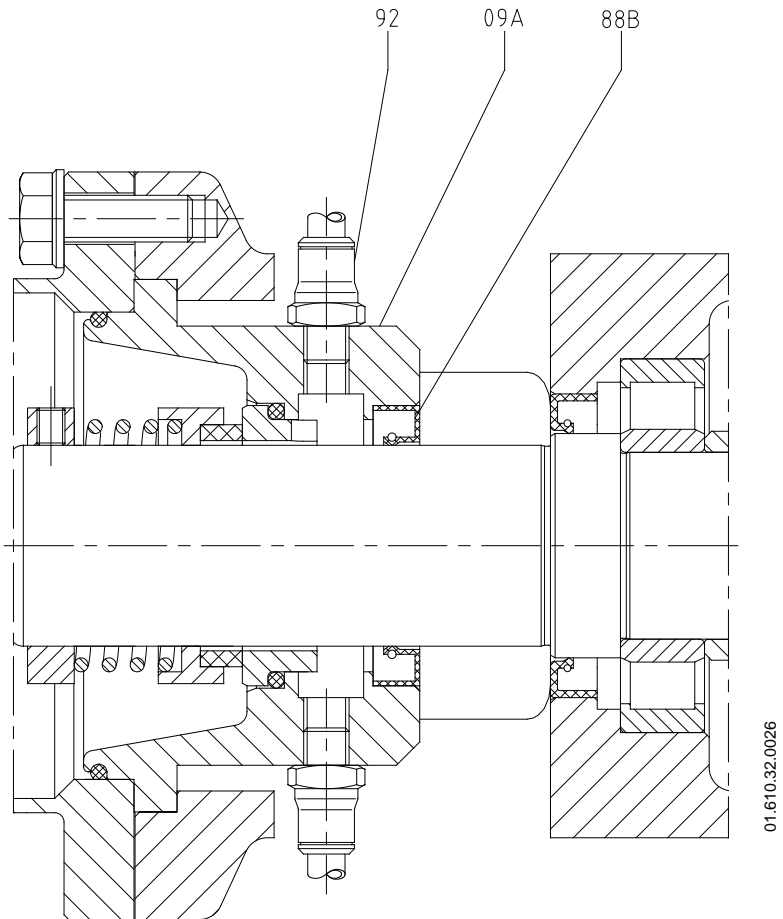


01.610.32.0025

Position	Description	Quantity	Material
05	Pump shaft	1	1.4404 (AISI 316L)
17A	Transmission shield bushing	2	1.4404 (AISI 316L)
21	Rotor	1	1.4404 (AISI 316L)
24	Connecting rod	1	1.4404 (AISI 316L)
27	Bolt ¹	4	1.4404 (AISI 316L)
30	Safe ring	4	1.4404 (AISI 316L)
43	Transmission bushing	2	1.4404 (AISI 316L)
80A	O-ring ¹	4	FPM
81	O-ring	4	FPM

¹ recommended spare parts

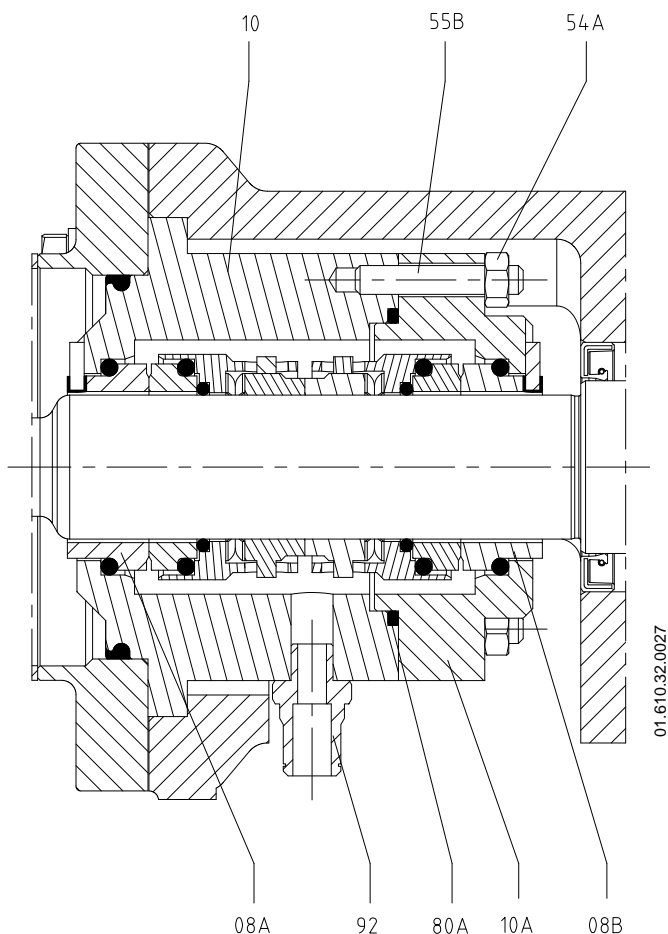
9.9. COOLED MECHANICAL SEAL



Position	Description	Quantity	Material
09A	Cooled seal cover	1	1.4404 (AISI 316L)
88B	Lip seal ¹	1	FPM
92	Racord	2	1.4404 (AISI 316L)

¹ recommended spare parts

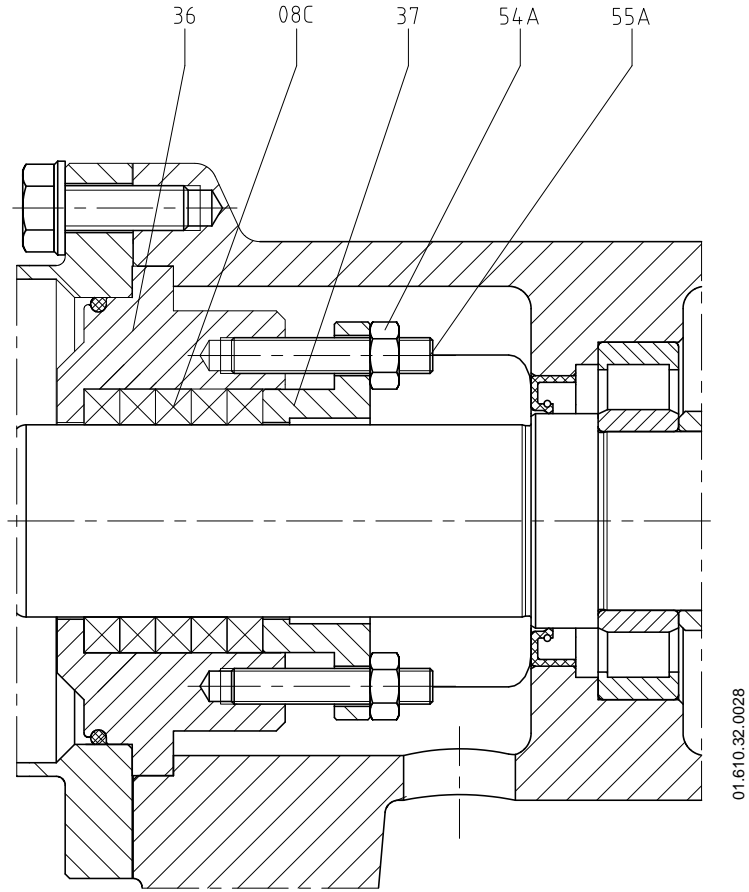
9.10. DOUBLE MECHANICAL SEAL



Position	Description	Quantity	Material
08A	Inside mechanical seal*	1	-
08B	Outside mechanical seal*	1	-
10	Double seal cover	1	1.4404 (AISI 316L)
10A	Double seal back cover	1	1.4404 (AISI 316L)
54A	Hexagonal nut	2	A2
55B	Threaded rod	2	A2
80B	O-ring ¹	1	FPM
92	Racord BSPT	2	1.4401 (AISI 316)

¹ recommended spare parts

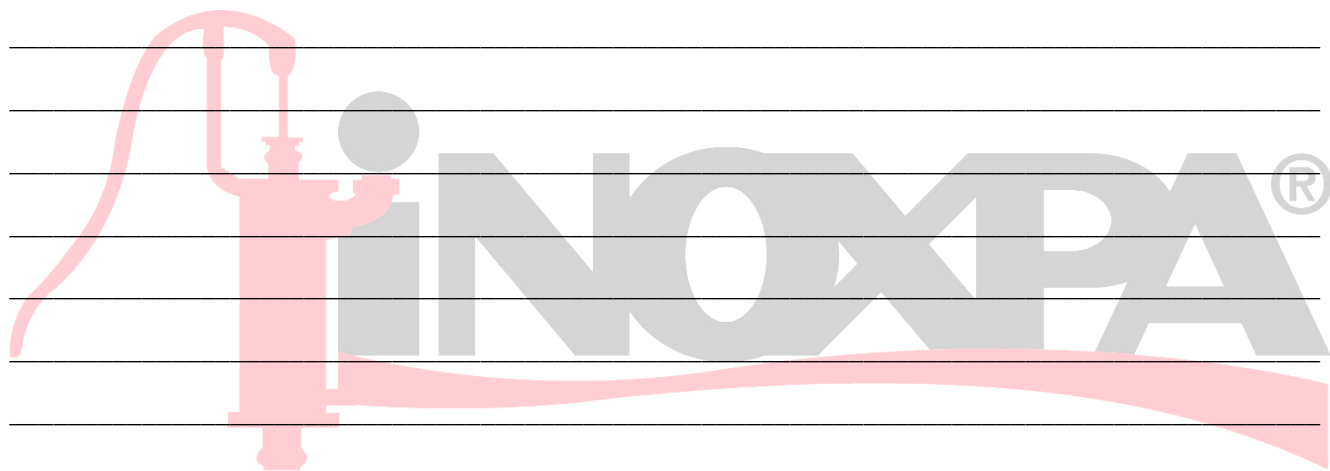
9.11. GLAND PACKING



Position	Description	Quantity	Material
08C	Gland packing ¹	5 rings	-
36	Packing box	1	1.4404 (AISI 316L)
37	Gland	1	1.4404 (AISI 316L)
55A	Pin	2	A2
57	Self-locking nut	2	A2







How to contact INOXPA S.A.U.:

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Please visit www.inoxpa.com to access the information.



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