

BLENDER

M-226 / M-440





INOXPA S.A.U.

Telers, 60
17820 - Banyoles (España)

hereby declare under our sole responsibility that the

Machine: **BLENDER**

Model: **M-226 / M-440**

Serial number: **IXXXXXX to IXXXXXX¹**
XXXXXXXXXXIIN to XXXXXXXXXXXXIIN¹

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
EN ISO 14159:2008
EN 1672-2:2005+A1:2009

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

A handwritten signature in black ink, appearing to read "David Reyer Brunet".

David Reyer Brunet
Responsable Oficina Técnica
8th April 2021



Document: 02.002.30.03EN

Revision: (0) 2021/04

¹⁾ the serial number may be preceded by a slash and by one or two alphanumeric characters

1. Table of Contents

1. Table of Contents	
2. Generalities	
2.1. Instructions manual.....	4
2.2. Compliance with the instructions	4
2.3. Warranty.....	4
3. Safety	
3.1. Warning symbols.....	5
3.2. General safety instructions	5
4. General Information	
4.1. Description	7
4.2. Operating principle.....	7
4.3. Products to be avoided	8
4.4. Application.....	8
5. Installation	
5.1. Reception of the blender.....	9
5.2. Identification of the blender.....	9
5.3. Transport and storage.....	10
5.4. Location	10
5.5. Pipes	11
5.6. Pressurisation tank	11
5.7. Electrical installation	12
6. Start-up	
6.1. Checks before starting the blender.....	13
6.2. Checks when starting the blender.....	13
7. Troubleshooting	
8. Maintenance	
8.1. General considerations	15
8.2. Check the mechanical seal	15
8.3. Maintenance of the seals	15
8.4. Tightening torque	15
8.5. Storage	15
8.6. Cleaning.....	16
8.7. Disassembly and assembly of the blender	17
8.8. Disassembly and assembly of the housing and impeller	17
8.9. Disassembly and assembly of the single mechanical seal	19
8.10. Disassembly and assembly of the cooled mechanical seal	19
8.11. Changing the belts and pulleys	21
8.12. Changing the bearings.....	21
8.13. Changing the motor	22
9. Technical Specifications	
9.1. Weight.....	23
9.2. Dimensions	24
9.3. Exploded drawing of M-226 blender	25
9.4. Technical section and parts list of M-226 blender	26
9.5. Exploded drawing of M-440 blender	28
9.6. Technical section and parts list of M-440 blender	29
9.7. Exploded drawing of M-226 CP blender	31
9.8. Technical section and parts list of M-226 CP blender	32
9.9. Cooled mechanical seal of M-226 blender.....	34
9.10. Cooled mechanical seal of M-440 blender.....	34

2. Generalities

2.1. INSTRUCTIONS MANUAL

This manual contains information about the reception, installation, operation, assembly and maintenance of the M-226 and M-440 blenders.

Carefully read the instruction before starting the blender, familiarize yourself with the installation, operation and correct use of the blender 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 cause the loss of the right to claim damages.

This non-compliance may cause the following risks:

- failure of important machine/plant functions,
- failure of specific maintenance and repair procedures,
- possible electrical, mechanical and chemical hazards,
- the 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 the equipment



Electric hazard

ATTENTION

Important instruction to prevent damage to the equipment and/or its function

3.2. GENERAL SAFETY INSTRUCTIONS



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

3.2.1. During installation



Always take into account the [Technical Specifications of chapter 9](#).

Never start the blender before connecting it to the lines.

Do not start up the blender if the cover has been removed and the impeller is fixed to the blender.

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



During the installation, 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 blender or the pipework during operation if the blender is being used for transferring hot liquids or during cleaning.

The blender contains moving parts. Never place your fingers inside the blender 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 blender until the pipes have been emptied. Remember that liquid will remain inside the housing (if does not have a purge). Bear in mind that the product 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 blender 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

A blender consists, basically, of a casing and a centrifugal pump impeller which are mounted vertically. The following three parts can be distinguished:

- the hopper, located at the top, is the solid material area, which is added using a butterfly valve with regulable handle or with pneumatic drive.
- the middle area consists of the venturi, which is the blender's suction and where the liquid is introduced.
- the mixing chamber, located at the bottom, is where the liquid and solid material are meet and the mix is produced.

The M-226 blender has a compact design, the hydraulic part is joined to the motor and the connections are clamp type.

The M-440 blender has the hydraulic part and motor separated and they are mounted on a baseplate. The transmission is through pulleys mounted beneath the baseplate.

All the parts in contact with the product are manufactured in 1.4404 (AISI 316L) stainless steel.

The standard motor complies with IEC standards, with IP-55 protection and class F insulation.

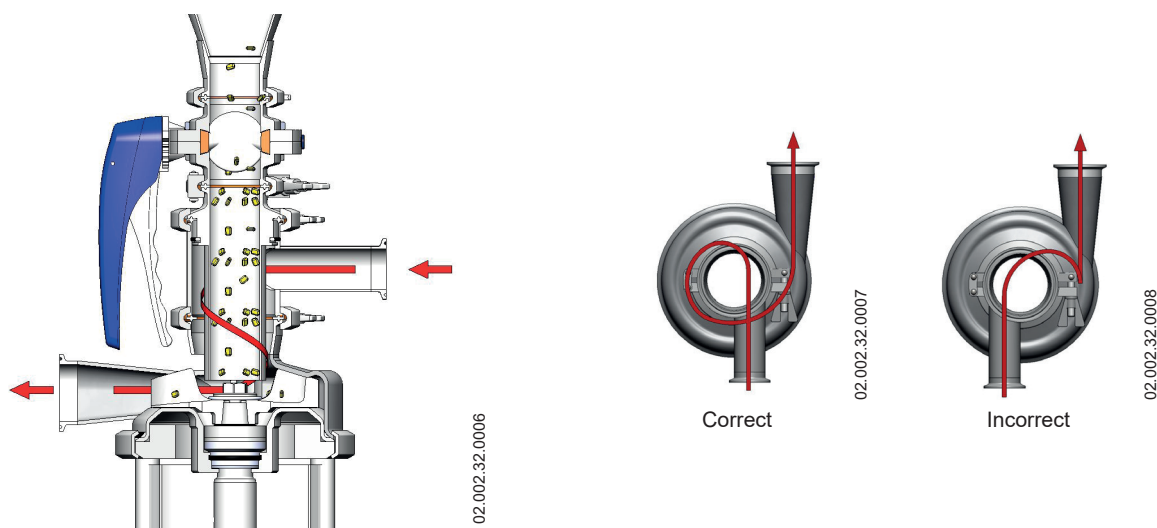
4.2. OPERATING PRINCIPLE

The internal venturi, where the aspiration of the fluid is produced, has an annular double-wall pipe, as shown in figure 02.002.32.0006, that keeps the liquid and powder separate until they enter the mixing chamber. This pipe prevents the powder from becoming damp.

The suction created by the blender impeller sucks the powder from the hopper through the internal venturi to the mixing chamber. The other pipe is used to introduce the liquid towards the impeller. The liquid enters the mixing chamber tangentially, following the same rotating direction as the impeller. In this way, the powder-inlet pipe remains dry while the blender is in operation.

If the inlet pipe appears to be blocked, check that the rotating direction of the impeller is correct and/or that the distribution assembly is correctly assembled.

To check the distributor installation, draw a continuous arrow from the inlet to the outlet without changing direction as shown in figure 02.002.32.0007. During normal operation, a vortex is formed in the centre of the impeller, sucking the powder through the internal venturi. If the vortex is not formed, as shown in figure 02.002.32.0008, the powder might become damp and flocs may form in the mixture; the inlet pipe might even become blocked.



Other reasons why the powder may become damp or wet:

- **incorrect liquid-intake flow rate:** A very high flow rate and/or pressure may destroy the blender vortex, and it would then not be able to pump the liquid with sufficient speed. This can also happen with a very low flow rate, as it causes the powder to accumulate on the impeller, thus making it impossible to create the vortex in the centre of the impeller.
- **incorrect pressure:** the differential pressure of the blender must be low (6-9 m), the same as the pressure at the blender intake which must be negative.
- **high viscosity:** a viscous product naturally causes counterpressure. Adding this to the counterpressure caused by the grille leads to very high pressure. It is advisable to remove the grille, which is an optional part when highly viscous products need to be mixed.
- **high discharge pressure:** if the discharge pipe is too long or its diameter is too small, or viscosity is very high, a very high counterpressure will be caused.

If counterpressure increases in the blender, the vortex diminishes thus reducing the mixing capacity of the solid and liquid ingredients. To resolve these problems the piping must be of correct dimensions, or if necessary, a pump must be fitted to the blender outlet. It may be a centrifugal pump, but its pumping capacity is limited if the maximum mixture yield is required. It is also important to maintain negative pressure at the blender intake.

The amount of powder that can be added is very difficult to define, as a great number of variables are involved like dampness, fatty material content, microscopic texture (smooth, rough), density, fluidity (air volume in the product), powder type (granular, flaky, fines), etc.

4.3. PRODUCTS TO BE AVOIDED

The products to be avoided in order to have a blender optimum operation are:

- **abrasives:** these products deteriorate the mechanical seals and impellers.
- **effervescent:** The gas that emits these products prevents the vacuum from forming and the powder from falling from the hopper.
- **high temperatures:** it is not advised to work at temperatures above 65 °C. At higher temperatures a product vapour may be given off that may cause the venturi to be blocked. This may also cause cavitation in the blender as the temperature approaches the boiling point.
- **very high viscosities:** the blenders cannot pump products with a viscosity above 250 cPs.
- **incompatible products:** products incompatible with the various mechanical seals and elastomers.

4.4. APPLICATION

The M-226 and M-440 blenders are suitable for use in food process. They can be used in any process which needs to mix solids and liquids as powdered milk, whey, chocolates, sauces, brines, fertilisers, lactose, stabilisers, etc.

5. Installation

5.1. RECEPTION OF THE BLENDER



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.

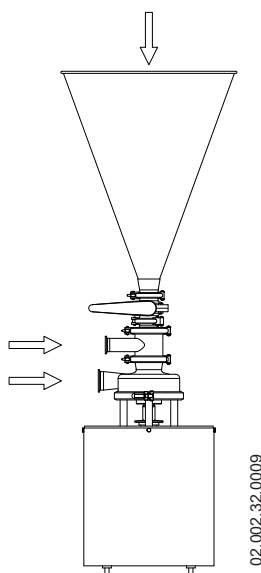
The blender package includes the following documents:

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

1) if the blender has been supplied with a motor from INOXPA

Unpack the blender and check the following:

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



- the blender 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 BLENDER

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



CE EAC
INOXPA S.A.U.
 C. TELERS, 60 - 17820 BANYOLES
 GIRONA (SPAIN) - www.inoxpa.com

Type

Serial number → No Year

01.214.32.0014

5.3. TRANSPORT AND STORAGE

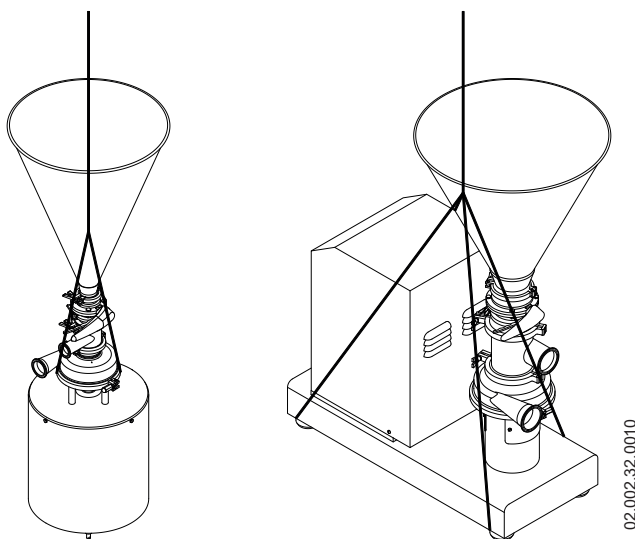
ATTENTION



The blenders 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 blender.
Only authorized personnel should transport the blender.
Do not work or walk under the heavy loads.

Lift the blender 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 the dimensions and weight of the blender.

ATTENTION



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

5.4. LOCATION

Place the blender as close as possible to the suction tank whenever possible below the liquid and leaving enough space around to can access the blender and the motor. If necessary, consult in chapter 9. [Installation](#) the dimensions of the blender.

Once a place is chosen, the blender should be mounted on a flat and level surface.

ATTENTION



Install the blender so as to allow proper ventilation.
If the blender is installed outdoors, it should be covered by a roof. Its location should allow easy access for inspection or maintenance operations.

5.4.1. Excessive temperatures

Depending on the fluid to be mixed, high temperatures can be reached inside and around the blender.



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

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

5.5. PIPES

About the installation pipes:

- As a general rule, install the suction and discharge lines in straight sections, with the minimum possible number of elbows and fittings to reduce any pressure losses that may be caused by friction.
- Make sure that the blender's ports are properly aligned with the pipework and have a diameter similar to that of the blender connections.
- Place the blender 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 blender's suction and discharge ports to avoid vibrations and stress on the blender.

5.5.1. Shut-off valves

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

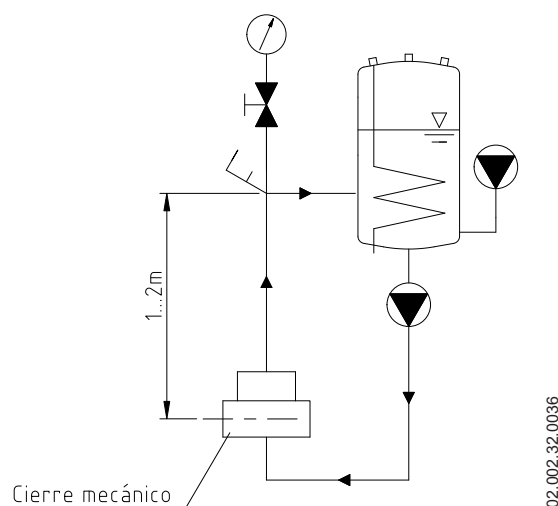
5.6. PRESSURISATION TANK

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



Always install the pressurization tank at a height of between 1 and 2 meters with respect to the blender shaft as shown in figure 02.002.32.0036.

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 as shown in figure 02.002.32.0036.



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

5.7. ELECTRICAL INSTALLATION



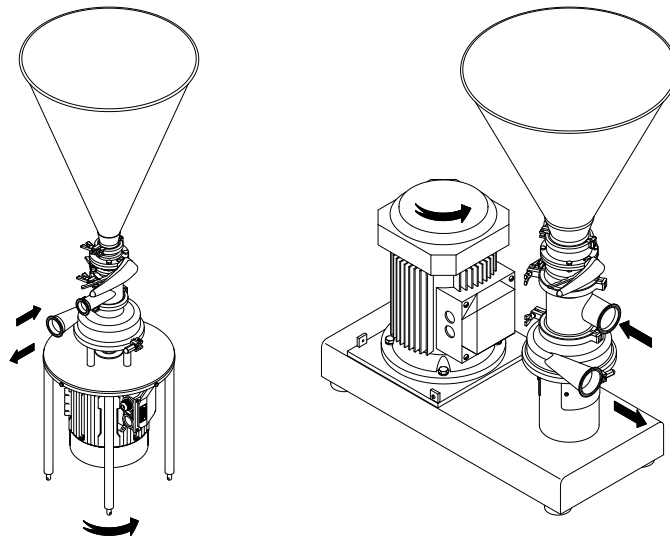
Only qualified personnel can connect the electric motors.
Take the necessary measures to prevent damage to cables and connections.



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 blender make sure that the motor is stopped.

To do the electrical installation:

- connect the motor in accordance with the instructions supplied by the motor manufacturer, in accordance with the current national legislation and in compliance with EN 60204-1,
- check the direction of rotation (see the signalling label on the blender),
- start and stop the blender motor momentarily. Make sure that the direction of rotation is correct.



ATTENTION



ALWAYS check the direction of rotation of the motor with liquid inside the blender.
For models with a sealed chamber, make sure that the blender is full of liquid before checking the direction of rotation.

6. Start-up



Before starting the blender, 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 blender or the lines of hot liquids that are being mixed.

6.1. CHECKS BEFORE STARTING THE BLENDER

Before starting the blender:

- completely open the shut-off valves on the suction and discharge lines,
- if the liquid does not flow towards the blender, fill it with the liquid to be mixed,



ATTENTION

The blender must never turn dry.

- check that the motor rotation direction is correct.
- check that the impeller rotates without scraping, taking into account the mechanical seal and, in the case of the M-440 blender, the transmission belts.
- If the blender has a cooled mechanical seal, mount the auxiliary connection according to the values indicated in chapter [9. Technical Specifications](#).
- Check that the venturi has been installed correctly.

6.2. CHECKS WHEN STARTING THE BLENDER

When starting the blender check:

- that the blender is not making any strange noises,
- if the absolute inlet pressure is sufficient to prevent cavitation in the blender.
- check the flow pressure,
- that there are no 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.



Use special protection when the sound pressure in the operation area exceeds 85 dB(A).

7. Troubleshooting

The following table provides solutions to problems that might arise during the operation of the blender. The blender is assumed to have been properly installed and be suitable for the relevant application. Please contact INOXPA if technical assistance is required.

The blender does not suction		
Insufficient pressure on impulsion		
Motor overload		
Noise		
Vibrations		
Leaks		
	PROBABLE CAUSES	SOLUTIONS
•	Pump supply incorrect	Select the correct pump size for such an application
•	Wrong motor rotation direction	Reverse the motor rotation direction
•	Distribution assembly not properly assembled	Check and assemble the distribution assembly
•	Very high powder percentage	See chapter 4. General Information
•	Very high temperature	Reduce temperature
•	Leaks in the supply pump suction	Check the suction pipe and all of its connections
•	Worn mechanical seal	Replace the blender mechanical seal and/or supply pump mechanical seal
•	Differential pressure is too high	Reduce pressure. See chapter 4. General Information
•	The suction pressure is too high	Reduce suction pressure. Posibilidad de prescindir de una bomba de alimentación. Ver apartado 4. General Information
•	Solids proportion too high to work with mesh	Remove the mesh
•	Insufficient liquid	Check the supply pump
•	Viscosity product or delivery height is too high	Install a suction pump
•	High solid proportion to mix with the mesh	Remove the mesh
•	High percentage solids	Install an extraction pump
•	Worn motor bearings	Replace bearings as indicated on the manufacturer instruction manual
•	Worn blender bearings	Replace bearings and/or check the blender
•	Foreign bodies inside the blender	Disassemble the blender and remove the foreign bodies. Verify the housing, the impeller and the mechanical seal
•	The blender is not at the right level	Correct the level and the alignment of the blender
•	The impeller is damaged	Replace the impeller
•	Blender cavitation	Reduce the pressure drop on the suction or use a suction pump
•	O-rings inadequate for the fluid	Mount the correct O-rings consulting previously with the supplier
•	Spring mechanical seal tension is too low	Adjust according to the Instruction Manual
•	Clamp is loose	Tighten the clamp

8. Maintenance

8.1. GENERAL CONSIDERATIONS

This blender, 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 blender 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 chapter 8.9. [Disassembly and assembly of the single mechanical seal](#) and 8.10. [Disassembly and assembly of the cooled mechanical seal](#).

8.3. MAINTENANCE OF THE SEALS

SEALS REPLACEMENT

Preventive maintenance	Replace after twelve (12) months. We also recommend replacing the gaskets during mechanical seal replacement.
Maintenance after a leak	Replace at the end of the process
Scheduled maintenance	Regularly check that there are no leaks and that the blender is operating correctly. Keep a maintenance record of the blender. Use statistics to plan inspections.
Lubrication	During assembly, use soapy water or oil compatible for the food industry when fitting the different gaskets to allow them to slide better.

The period between each preventive maintenance service will vary depending on the operating condition of the blender: temperatures, flow, number de cycles per day, cleaning solutions used, etc.

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

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

Two types of solutions can be used for CIP processes:

a. alkaline solution: 1% by weight of caustic soda (NaOH) a 70°C (150°F). To make this solution:

1 kg NaOH + 100 l H₂O¹ = cleaning solution

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

b. acid solution: 0,5% by weight of nitric acid (HNO₃) a 70°C (150°F). To make this solution:

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

1) only use chlorine-free water to mix with the cleaning agents

ATTENTION



Check the concentration of the cleaning solutions. Incorrect concentrations may lead to the deterioration of the blender 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 steam sterilisation process is applied to all equipment including the blender.

ATTENTION



Do NOT operate the equipment during the steam sterilisation process.

The parts and the materials will not suffer damage provided the instructions set out in this manual are followed.

Cold liquid cannot be introduced until the blender temperature is below 60°C (140°F).

The blender generates a substantial pressure loss through the sterilisation process. We recommend the use of a bypass circuit provided with a discharge valve to ensure that the steam or overheated water sterilises the entire circuit.

Maximum conditions during the steam or overheated water SIP process:

a. maximum temperature: 140°C / 284°F

b. maximum time: 30 min

c. cooling: sterile air or inter gas

d. materials: EPDM (the materials HNBR y FPM are not recommended)

8.7. DISASSEMBLY AND ASSEMBLY OF THE BLENDER

The assembly and disassembly of the blenders 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 in the blender'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.

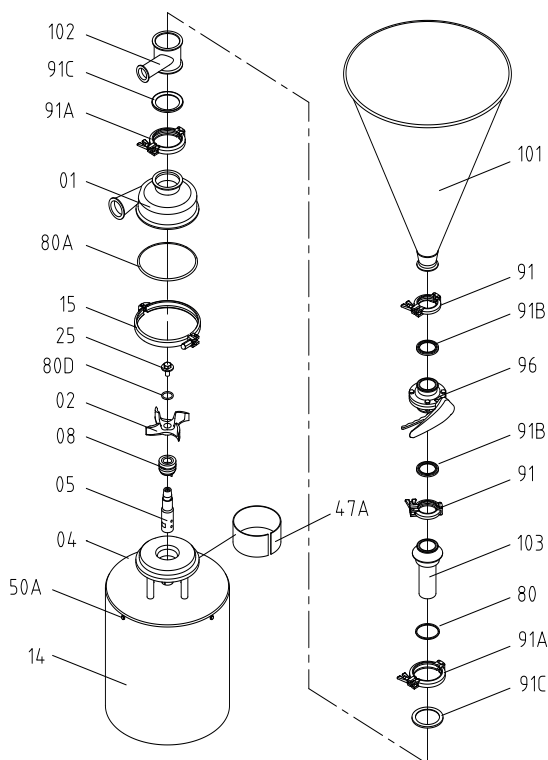
Cleaning

Before disassembling the blender, clean it outside and inside.

8.8. DISASSEMBLY AND ASSEMBLY OF THE HOUSING AND IMPELLER

8.8.1. Disassembly of the housing and impeller for the M-226 blender

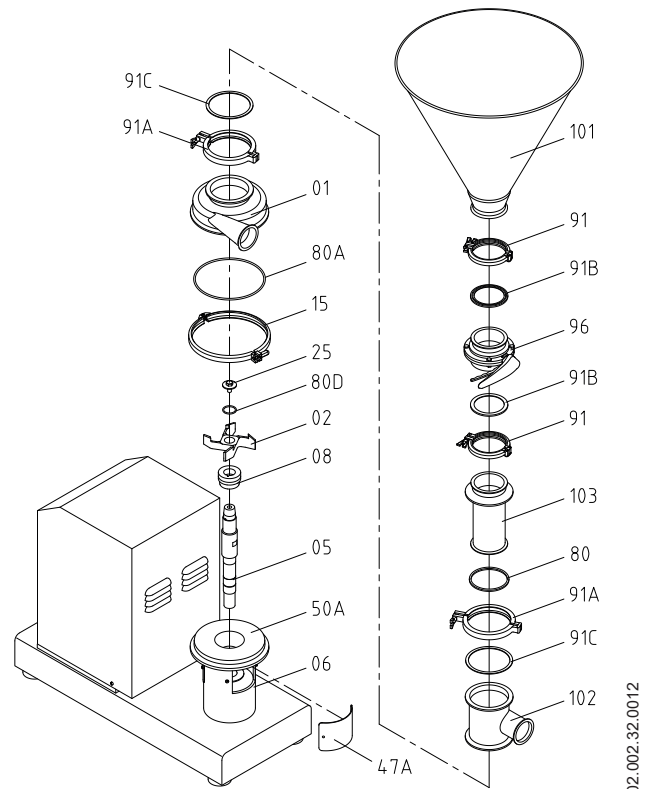
1. Close the suction and the discharge valve.
2. Remove, sequentially, the pieces which are on the housing (01) top: hooper (101), butterfly valve (96), distribution assembly (102) and internal venturi (103), removing the clamps (91,91A) which join these pieces.
3. Remove the retention ring (15).
4. Check that the O-ring (80A) is still in good condition.
5. Remove the housing (01).
6. Loosen and remove the screws (50A) and remove the motor shroud (14).
7. Disassemble the drive fan protection according to the manufacturer instruction manual.
8. Fix, with a spanner, the fan shaft taking care not to damage it, to avoid the blender shaft rotation.
9. Remove the screw which fixes the impeller (25) and the O-ring (80D) with a box spanner.
10. Remove the impeller (02). If necessary, give it a thud with a plastic hammer to remove the cone.



02.002.32.0028

8.8.2. Disassembly of the housing and impeller for the M-440 blender

1. Close the suction and the discharge valve.
2. Remove, sequentially, the pieces which are on the housing (01) top: hooper (101), butterfly valve (96), distribution assembly (102) and internal venturi (103), removing the clamps (91,91A) which join these pieces.
3. Remove the retention ring (15).
4. Check that the O-ring (80A) is still in good condition
5. Remove the housing (01).
6. Remove the protector (47A).
7. Place a fixed spanner in the shaft (05) planes to avoid the rotation.
8. Disassemble the impeller screw (25) and the O-ring (80D).
9. Remove the impeller (02). If necessary, give it a thud with a plastic hammer to remove the cone.



02.002.32.0012

8.8.3. Assembly of the housing and impeller for the M-226 blender

1. Slide the impeller (02) over the shaft (05) until it touches the rotating part of the mechanical seal (08).
2. Assemble the O-ring (80D) in the slot of the impeller screw (25) and tighten this screw over the impeller (02) using a box spanner and with a spanner in the motor fan shaft taking care not to damage it, to avoid the rotation shaft.
3. Mount the housing (01) and fix it to the lantern (04) using the retention ring (15).
4. Mount the distribution assembly (102), the internal venturi (103) with its O-ring (80), the butterfly valve (96) and the hooper (101) with their respective clamps (91,91A) and clamp gaskets (91B,91C).

8.8.4. Assembly of the housing and impeller for the M-440 blender

1. Slide the impeller (02) over the shaft (05) until it touches the rotating part of the mechanical seal (08).
2. Assemble the O-ring (80D) in the slot of the impeller screw (25) and tighten this screw over the impeller using a box spanner and with a spanner in the motor fan shaft taking care not to damage it, to avoid the rotation shaft.
3. Place the protector (47A) and fix it with the screws (50A).
4. Place the housing (01) and fix it to the lantern (04) using the retention ring (15).
5. Mount the distribution assembly (102), the internal venturi (103) with its O-ring (80), the butterfly valve (96) and the hooper (101) with their respective clamps (91,91A) and clamp gaskets (91B,91C).

ATTENTION



Take care to mount the distribution assembly in the correct direction for the blender correct operation.

8.9. DISASSEMBLY AND ASSEMBLY OF THE SINGLE MECHANICAL SEAL

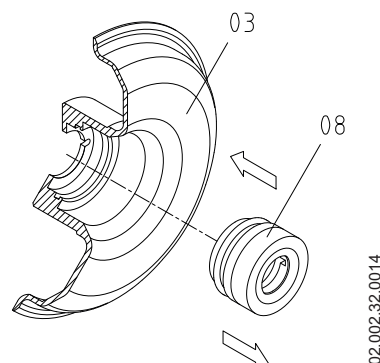
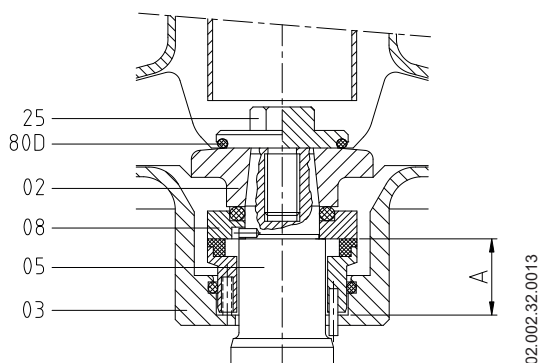
8.9.1. Disassembly for the M-226 and M-440 blender

1. Disassemble the housing and impeller as shown in chapters 8.8.1. Disassembly of the housing and impeller for the M-226 blender or 8.8.2. Disassembly of the housing and impeller for the M-440 blender.
2. Remove the rotating part of the mechanical seal (08).
3. Remove the blender cover (03).
4. Remove the fixed part of the mechanical seal (08) which is housing inside the cover blender (03).

8.9.2. Assembly for the M-226 and M-440 blender

1. Mount the blender cover (03). In the M-226 model, mount it over the lantern and in the M-440 model mount it over the bearing support.
2. Place the fixed of the mechanical seal (08) in the housing of the cover (03) taking into account the shaft pivot. Check that the assembly measure is that which is detailed in the following table:

Model	Seal diameter	A (mm)
M-226	1"	26
M-440	1½	31



3. Slide the rotating part of the mechanical seal (08) through the shaft (05) until the stop.

ATTENTION



When assembly the new single mechanical seal, take care to assemble the pieces and the seals lubricated with soapy water to facilitate their slide, as the fixed part as of the rotating part.

8.10. DISASSEMBLY AND ASSEMBLY OF THE COOLED MECHANICAL SEAL

8.10.1. Disassembly cooled mechanical seal for the M-226 blender

1. Remove the rotating part of the mechanical seal (08).
2. Remove the blender cover (03A).
3. Remove the fixed parts of the mechanical seals (08) which are housing inside the blender cover (03A).
4. Disassemble the pins of the rotating part of the bottom mechanical seal (08) and slide it through the shaft (05).

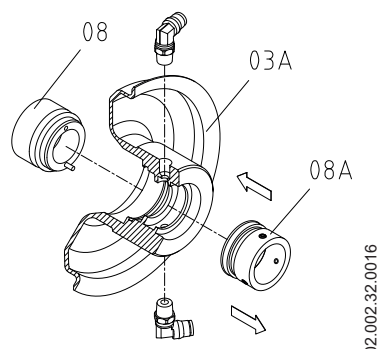
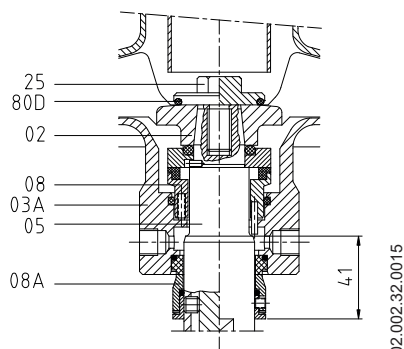
8.10.2. Disassembly cooled mechanical seal for the M-440 blender

1. Remove the rotating part of the mechanical seal (08).
2. Remove the blender cover (03A) together with the cap (10).
3. Remove the fixed parts of the mechanical seals (08) which are housing inside the blender cover (03A).

- Disassemble the pins of the rotating part of the bottom mechanical seal (08) and slide it through the shaft (05).

8.10.3. Assembly cooled mechanical seal for the M-226 blender

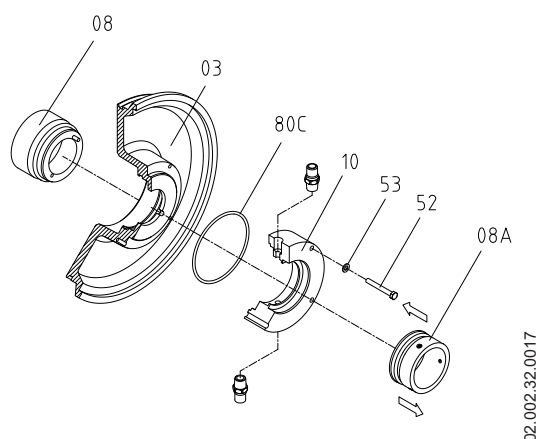
- Place the rotating part of the external mechanical seal (08) on the shaft (05) and fix it according to the assembly measure indicated in the following technical section:



- Mount the fixed part of the external mechanical seal (08A) in the cover (03A) and then put the cover on the lantern (04).
- Mount the internal mechanical seal following the instructions of the chapter [8.9. Disassembly and assembly of the single mechanical seal](#).

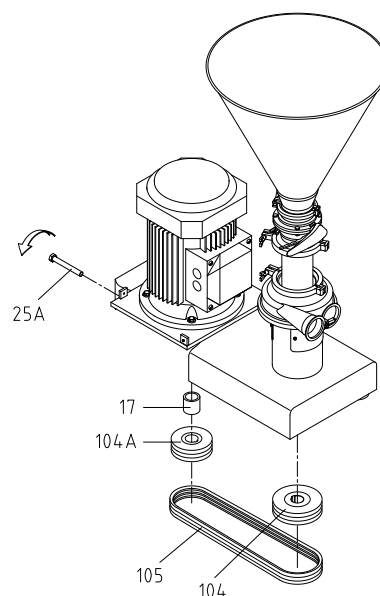
8.10.4. Assembly cooled mechanical seal for the M-440 blender

- Place the rotating part of the external mechanical seal (08) on the shaft without fixing it.
- Place the O-ring (80C) over the seal cover alignment (03).
- Place the cap (10) over this alignment and fix it to the seal cover (03) using hexagonal screws (52) and washers (53).
- Mount the fixed part of the external mechanical seal (08) inside the seal cover (03).
- Mount, carefully, this assembly on the bearing support alignment (06).
- Place the rotating part of the external mechanical seal (08A) until it touches the fixed part (08A) and fixes it with the pins.
- Mount the internal mechanical seal following the instructions of the chapter [8.9. Disassembly and assembly of the single mechanical seal](#).



8.11. CHANGING THE BELTS AND PULLEYS

1. Loosen the transmission belts (105) screwing the two tightening screws (25A) to facilitate the belts extraction.
2. Remove the three pulleys (105).
3. Loosen the studs of the pulley bottom part (104,104A) and remove them.
4. When the new belts are mounted (105) must be correctly tightenend. After a few hours of working, check that they have not lost their tautness.



02.002.32.0018



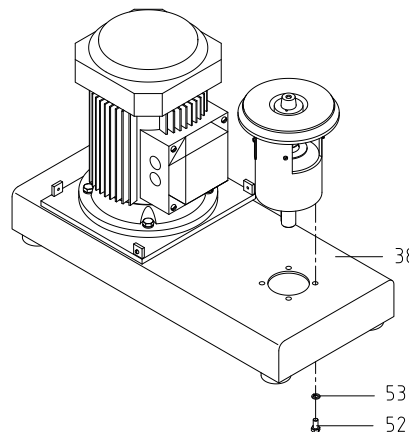
ATTENTION

Do not tighten the belts too much as this may damage the support and motor bearings.

8.12. CHANGING THE BEARINGS

8.12.1. Disassembly

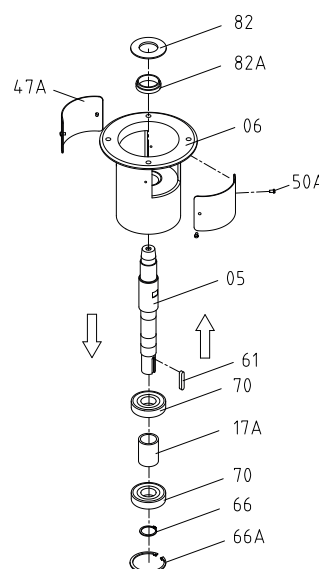
1. Disassemble the mechanical seal and the pulleys and belts following the instructions of chapters 8.9. Disassembly and assembly of the single mechanical seal, 8.10. Disassembly and assembly of the cooled mechanical seal and 8.11. Changing the belts and pulleys.
2. Remove the bearing support assembly from the bedplate (38) loosening the hexagonal screws (52) and the washers (53).
3. Remove the elastic ring (66A) from under the bottom bearing (70) using a suitable plier.
4. Remove the splash ring (82,82A).
5. Remove the shaft (05) with the bearings still mounted beneath the support by gently knocking on the top part of the shaft.
6. Remove the elastic ring (66) and the bearings (70) and the separator (17A).



02.002.32.0019

8.12.2. Assembly

1. Place the top bearing (70) on the shaft (05).
2. Mount the separator (17A) and the second bearing fixing the assembly with the elastic ring (66A).
3. Mount the shaft assembly with the bearings in the support and fix it with the elastic ring (66A).
4. Place the splash ring (82,82A) on the shaft (05).
5. Mount the whole assembly on the baseplate (38) with the screws (52) and washers (53).

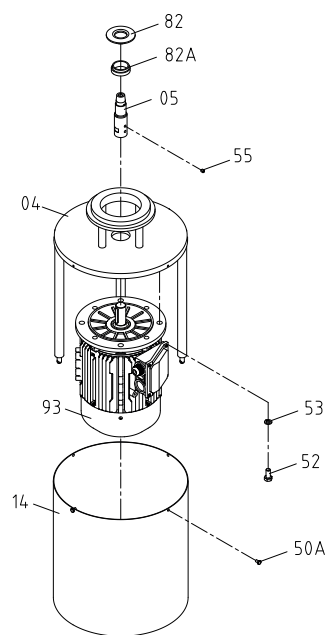


02.002.32.0020

8.13. CHANGING THE MOTOR

8.13.1. Changing the motor for the M-226 blender

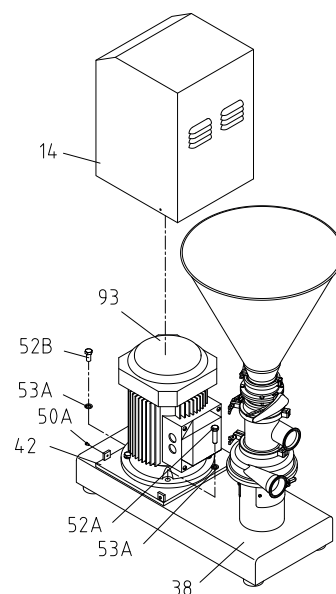
1. Remove the splash rings (82,82A).
2. Loosen the spins (55) and remove the shaft (05) overhead.
3. Remove the screws (50A) and take out the motor shroud (14).
4. Remove the hexagonal screws (52) and washers (53) which join the motor (93) to the lantern (04) sustaining the motor at the same time to avoid that the motor not fall.
5. Remove the motor from beneath the feet (07).



02.002.32.0021

8.13.2. Changing the motor for the M-440 blender

1. Disassemble the belts and pulleys following the instructions of chapter [8.11. Changing the belts and pulleys](#).
2. Remove the screws (50A) and take out the motor shroud (14).
3. Remove the hexagonal screws (52A,52B) which join the motor to the bedplate (38) and the tensioner platform (42).
4. Remove the motor (93) with the help of slings due to its high weight. At the same time, hold the tensioner platform (42) to it does not lift with the motor.



02.002.32.0034

ATTENTION



Change the motor or the motor bearings according to the manufacturer instruction manual.

9. Technical Specifications

Blender	M-226	M-440
Motor	4 kW, 3000 rpm	11 kW, 3000 rpm
Suction	CLAMP 1½"	CLAMP 3"
Drive	CLAMP 2"	CLAMP 3"
Liquid flow	≤ 33000 l/h	≤ 65000 l/h
Suction of solids ¹	3000 kg/h	9000 kg/h
Hopper capacity	43 l	60 l

1) The amount of product suctioned depends on product features and the installation. If necessary, contact INOXPA for auxiliary pumps selection

Materials

Parts in contact with the product	1.4404 (AISI 316L)
Other stainless steel parts	1.4301 (AISI 304)
Seal incontact with the product	EPDM - standard
Other materials for the seals	consult with INOXPA
Internal surface finish	polished Ra ≤ 0,8 µm
External surface finish	matt

Mechanical seal

Type of the seal	inside single seal
Stationary part material	graphite
Rotatory part material	stainless stell
Seal material	EPDM

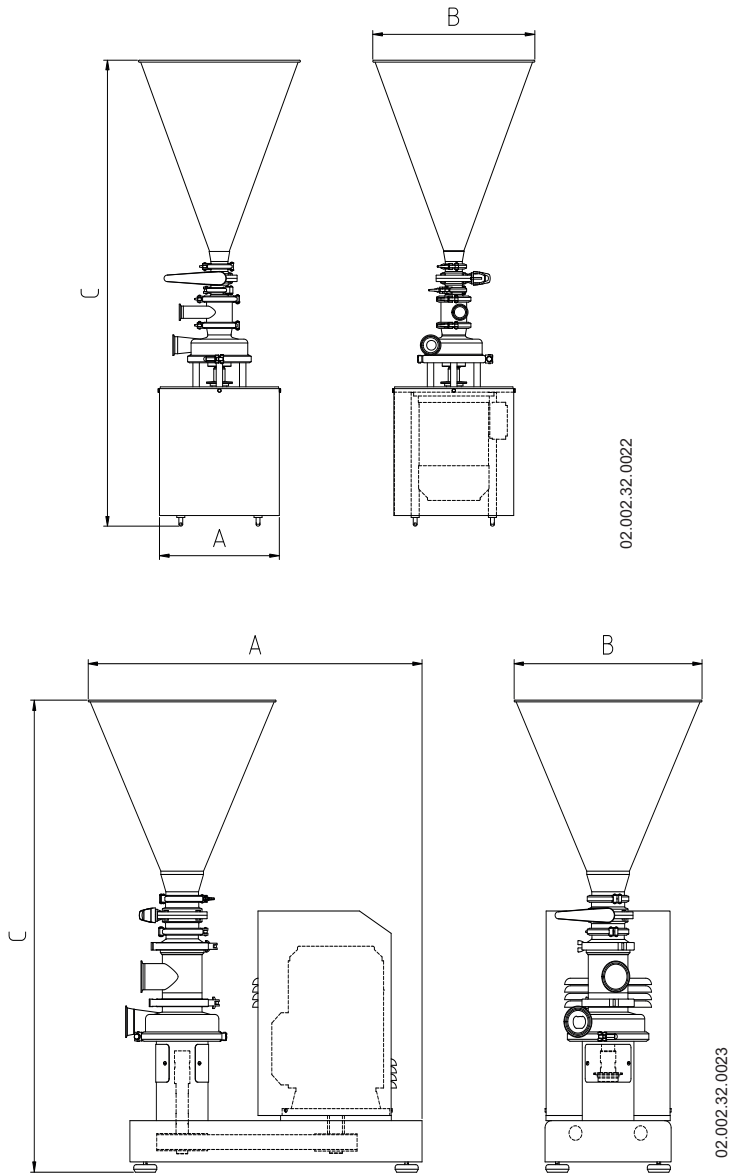
Cooled mechanical seal

Maximum pressure	50 kPa (0,5 bar)
Consumption	0,25 - 0,5 l/min

9.1. WEIGHT

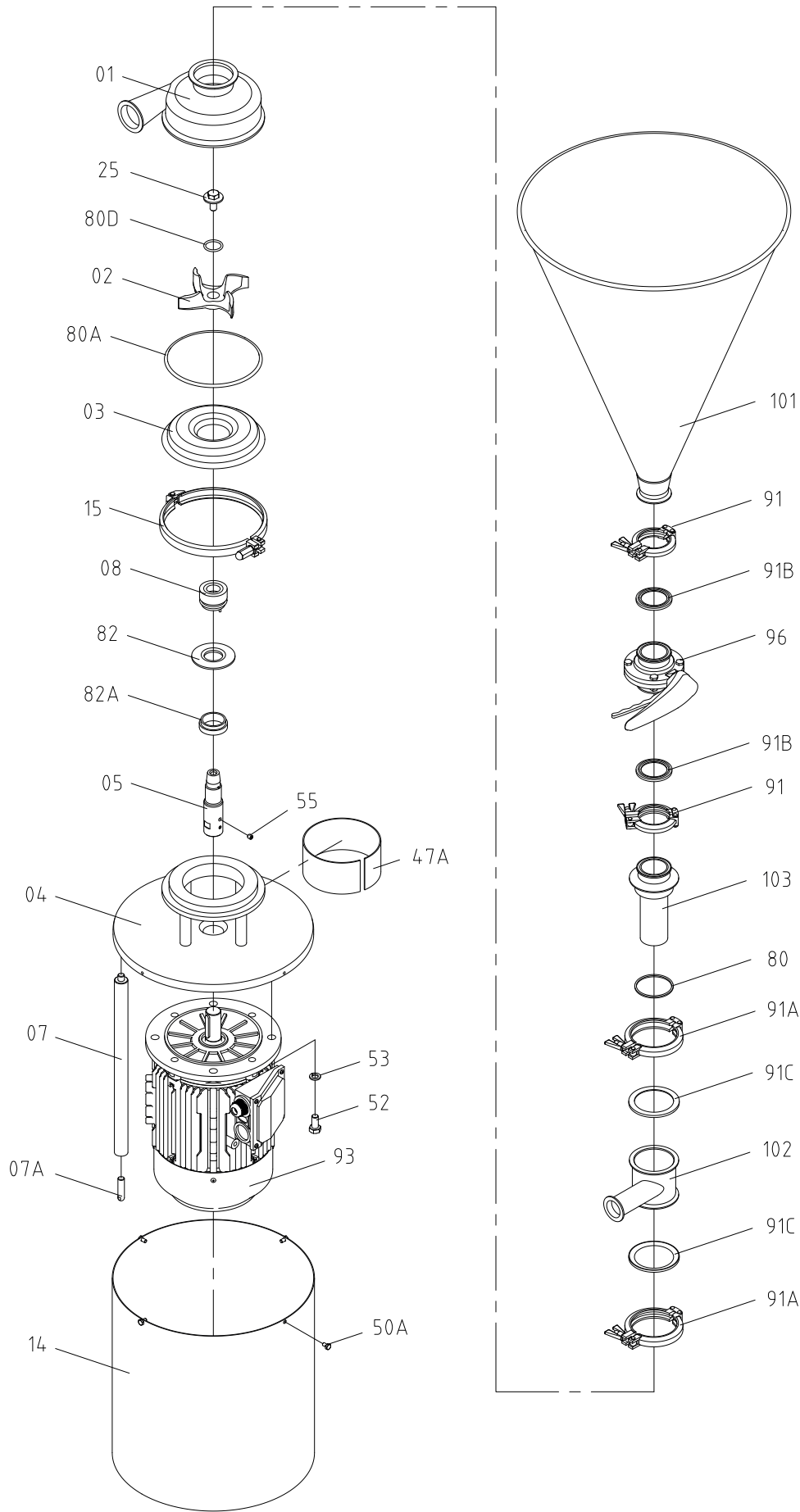
Blender	Weight (kg)
M-226	83
M-440	225

9.2. DIMENSIONS



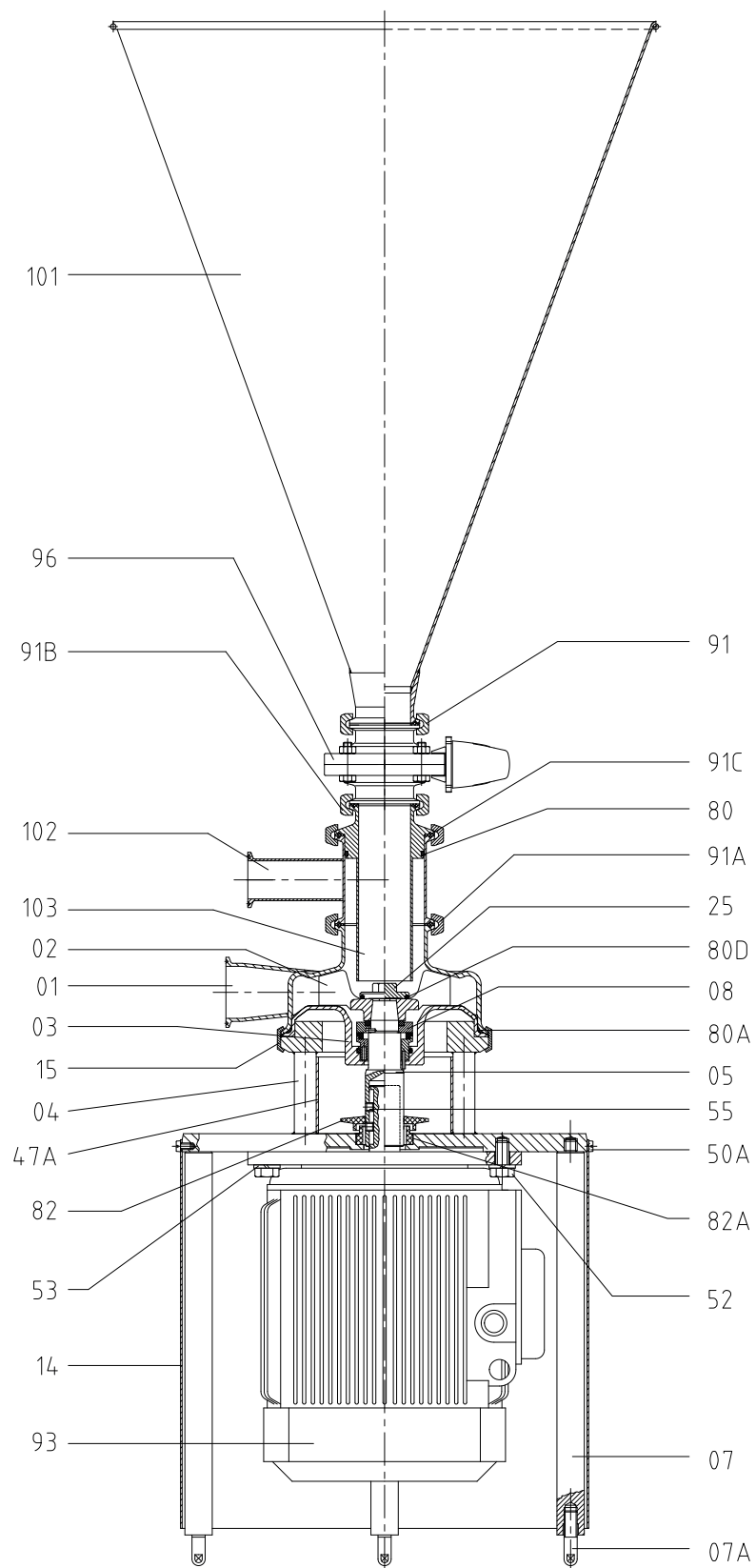
Blender	Dimensions (mm)		
	A	B	C
M-226	375	500	1450
M-440	1085	615	1380

9.3. EXPLODED DRAWING OF M-226 BLENDER



02.002.32.0024

9.4. TECHNICAL SECTION AND PARTS LIST OF M-226 BLENDER

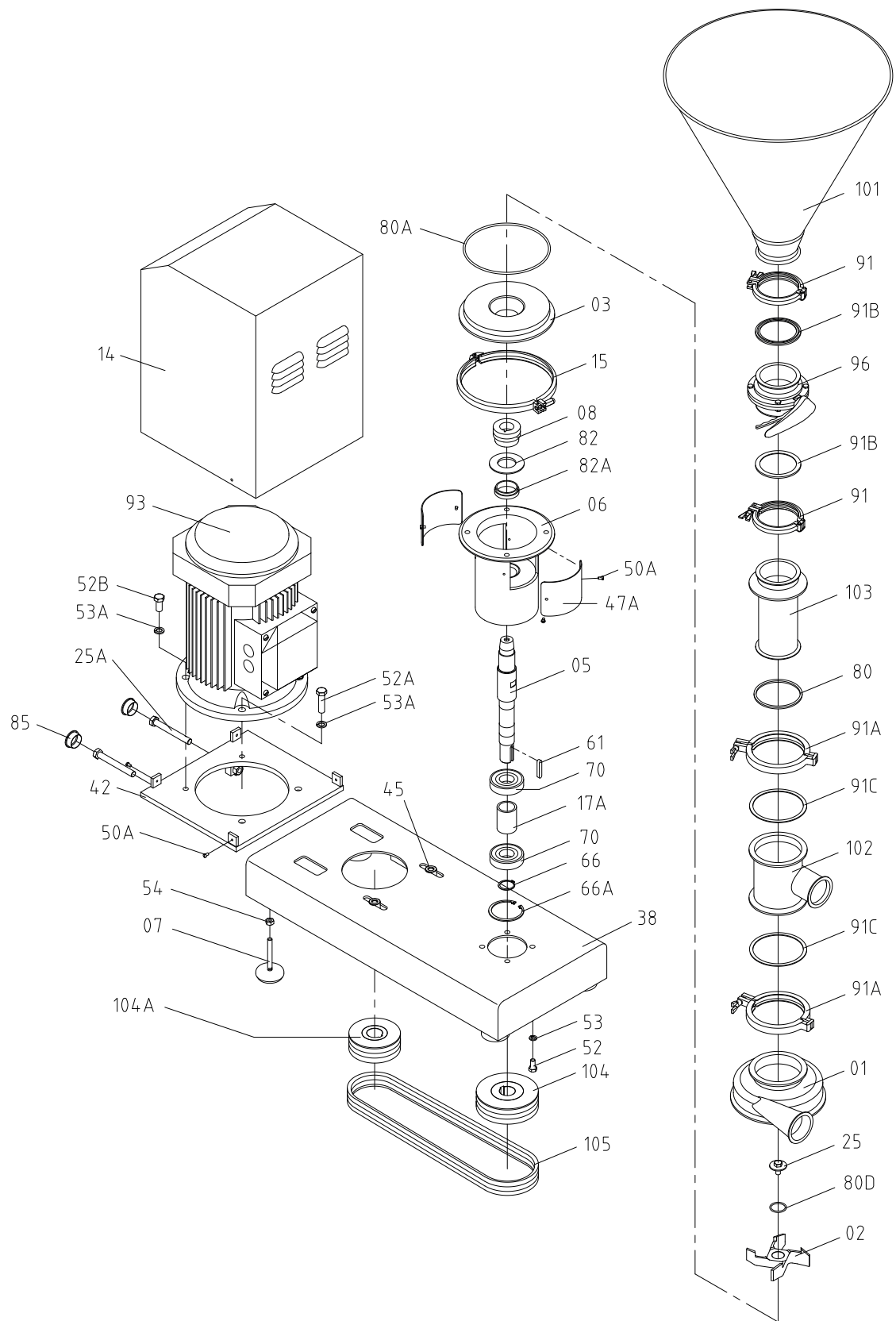


02.002.32.0025

Position	Description	Quantity	Material
01	housing	1	1.4404 (AISI 316L)
02	impeller	1	1.4404 (AISI 316L)
03	blender cover	1	1.4304 (AISI 316L)
04	lantern	1	1.4301 (AISI 304)
05	shaft	1	1.4304 (AISI 316L)
07	blender foot	4	1.4301 (AISI 304)
07A	adjustable foot	4	1.4301 (AISI 304)
08	mechanical seal ¹	1	C/St.St.
14	shroud	1	1.4301 (AISI 304)
15	retention ring	1	1.4301 (AISI 304)
25	impeller screw	1	1.4304 (AISI 316L)
47A	lantern protector	2	plastic
50A	screw	4	A2
52	hexagonal screw	4	A2
53	flat washer	4	A2
55	pin	2	A2
80	O-ring ¹	1	EPDM
80A	O-ring ¹	1	EPDM
80D	O-ring ¹	1	EPDM
82	upper splash ring	1	silicone
82A	lower splash ring	1	silicone
91	clamp	2	1.4301 (AISI 304)
91A	clamp	2	1.4301 (AISI 304)
91B	clamp gasket ¹	2	EPDM
91C	clamp gasket ¹	2	EPDM
93	motor	1	-
96	butterfly valve	1	1.4304 (AISI 316L)
101	hopper	1	1.4304 (AISI 316L)
102	distribution assembly	1	1.4304 (AISI 316L)
103	internal venturi	1	1.4304 (AISI 316L)

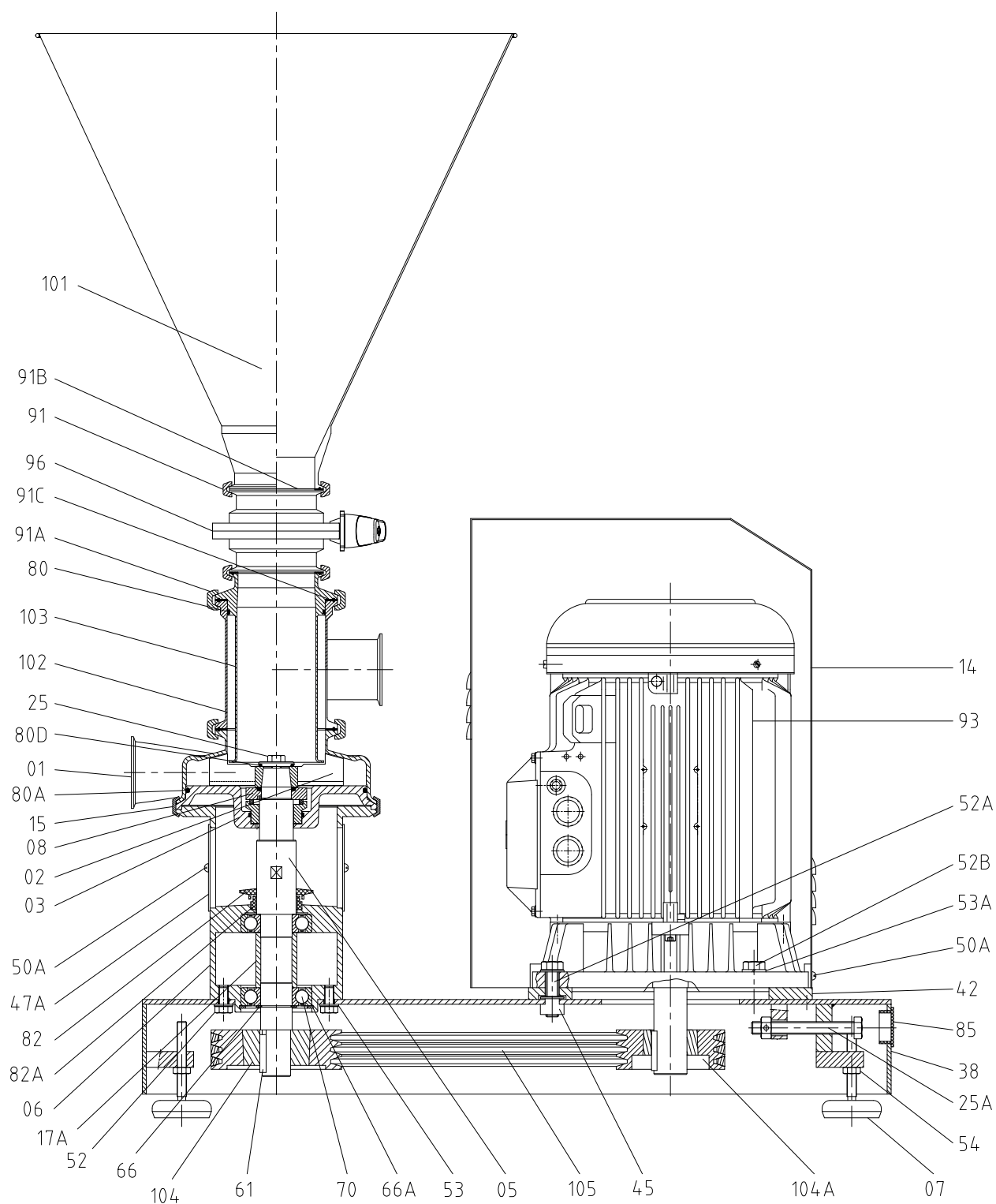
1) recommended spare parts

9.5. EXPLODED DRAWING OF M-440 BLENDER



02.002.32.0026

9.6. TECHNICAL SECTION AND PARTS LIST OF M-440 BLENDER

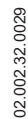


02.002.32.0027

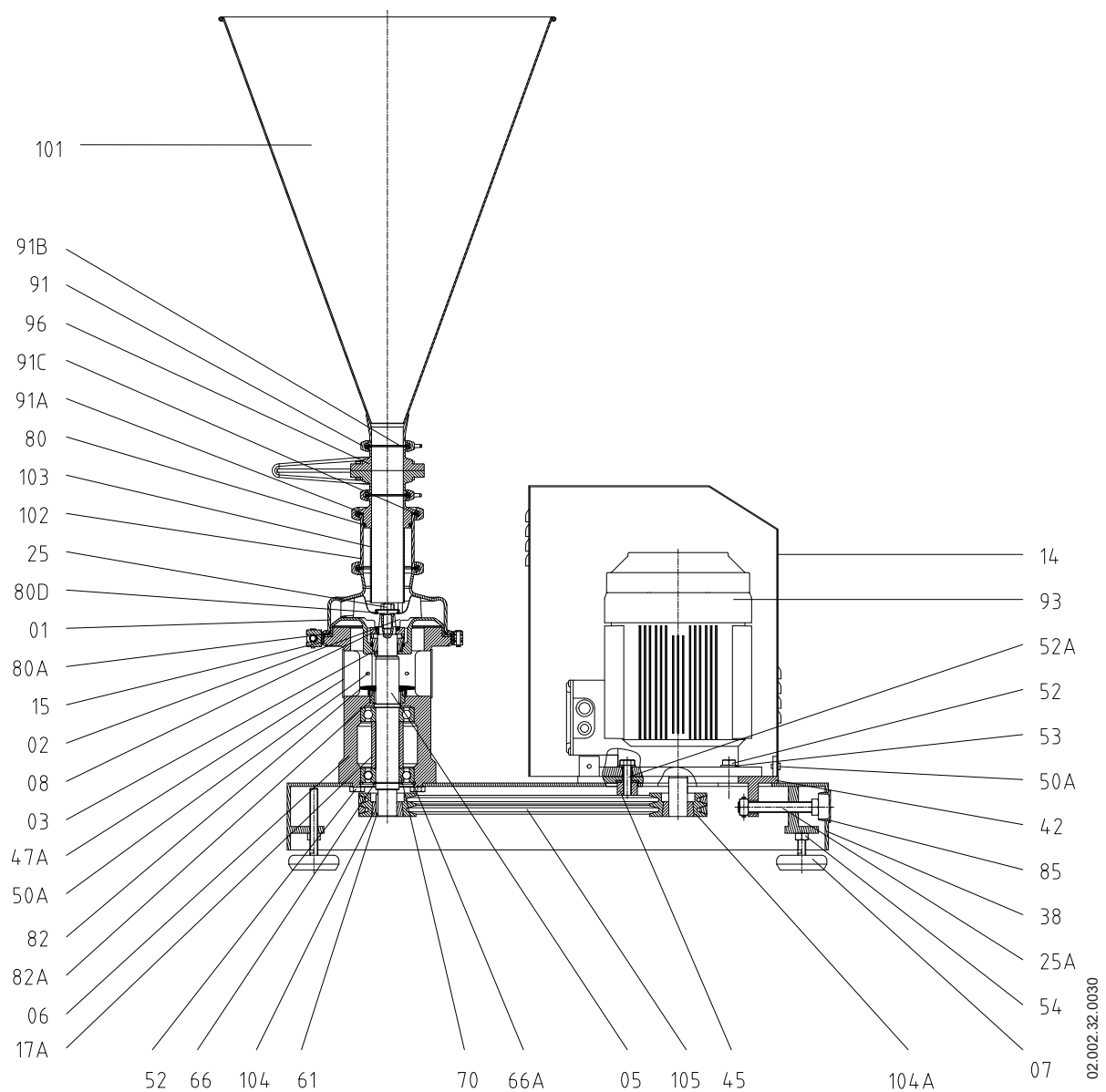
Position	Description	Quantity	Material
01	housing	1	1.4404 (AISI 316L)
02	impeller	1	1.4404 (AISI 316L)
03	blender cover	1	1.4304 (AISI 316L)
05	shaft	1	1.4304 (AISI 316L)
06	bearings support	1	1.4301 (AISI 304)
07	adjustable foot	4	1.4301 (AISI 304)
08	mechanical seal ¹	1	C/St.St.
14	shroud	1	1.4301 (AISI 304)
15	retention ring	1	1.4301 (AISI 304)
17A	spacer bushing	1	F-114
25	impeller screw	1	1.4304 (AISI 316L)
25A	tightening screw	2	A2
38	bedplate	1	1.4301 (AISI 304)
42	tensioner platform	1	1.4301 (AISI 304)
45	motor retention nut	2	1.4301 (AISI 304)
47A	support protection	2	plastic
50A	screw	6	A2
52	hexagonal screw	4	8.8
52A	hexagonal screw	2	8.8
52B	hexagonal screw	2	8.8
53	grower washer	4	steel
53A	grower washer	4	steel
54	hexagonal nut	4	A2
61	key	1	F-114
66	elastic ring	1	steel
66A	elastic ring	1	steel
70	ball bearing ¹	2	steel
80	O-ring ¹	1	EPDM
80A	O-ring ¹	1	EPDM
80D	O-ring ¹	1	EPDM
82	upper splash ring	1	silicone
82A	lower splash ring	1	silicone
85	plug	2	plastic
91	clamp	2	1.4301 (AISI 304)
91A	clamp	2	1.4301 (AISI 304)
91B	clamp gasket ¹	2	EPDM
91C	clamp gasket ¹	2	EPDM
93	motor	1	-
96	butterfly valve ¹	1	1.4304 (AISI 316L)
101	hopper	1	1.4304 (AISI 316L)
102	distribution assembly	1	1.4304 (AISI 316L)
103	internal venturi	1	1.4304 (AISI 316L)
104	blender side pulley	1	steel
104A	motor side pulley	1	steel
105	belt ¹	3	-

1) recommended spare parts

31



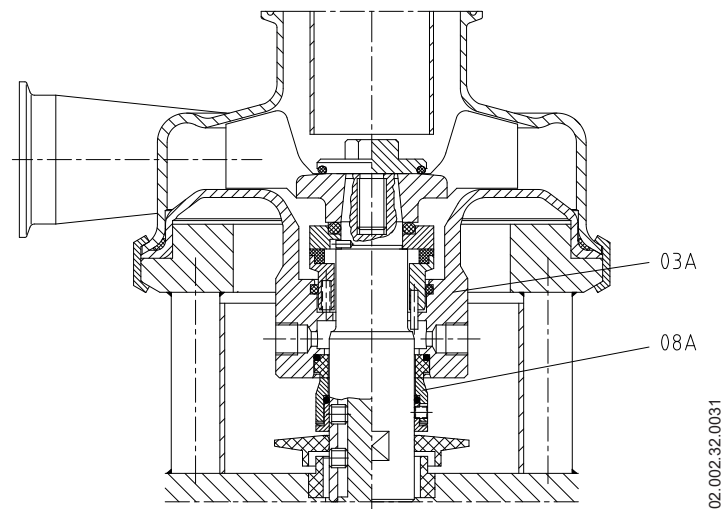
9.8. TECHNICAL SECTION AND PARTS LIST OF M-226 CP BLENDER



Position	Description	Quantity	Material
01	housing	1	1.4404 (AISI 316L)
02	impeller	1	1.4404 (AISI 316L)
03	blender cover	1	1.4304 (AISI 316L)
05	shaft	1	1.4304 (AISI 316L)
06	bearing support	1	1.4301 (AISI 304)
07	adjustable foot	4	1.4301 (AISI 304)
08	mechanical seal ¹	1	C/St.St.
14	shroud	1	1.4307 (AISI 304L)
15	retention ring	1	1.4307 (AISI 304L)
17A	separator	1	F-114
25	impeller screw	1	1.4304 (AISI 316L)
25A	tightening screw	2	A2
38	bedplate	1	1.4307 (AISI 304L)
42	tensioner platform	1	1.4307 (AISI 304L)
45	motor hold nut	2	1.4307 (AISI 304L)
47A	support protection	2	plastic
50	screw	4	A2
50A	screw	4	A2
52	hexagonal screw	6	A2
52A	hexagonal screw	2	A2
53	washer	4	A2
54	hexagonal nut	4	steel
61	key	1	F-114
66	elastic ring	1	steel
66A	elastic ring	1	steel
70	ball bearing ¹	2	steel
80	O-ring ¹	1	EPDM
80A	O-ring ¹	1	EPDM
80D	O-ring ¹	1	EPDM
82	upper splash ring	1	silicone
82A	lower splas ring	1	silicone
85	stopper	2	plastic
91	clamp	2	1.4307 (AISI 304L)
91A	clamp	2	1.4307 (AISI 304L)
91B	clamp gasket ¹	2	EPDM
91C	clamp gasket ¹	2	EPDM
93	motor	1	-
96	butterfly valve ¹	1	1.4304 (AISI 316L)
101	hopper	1	1.4304 (AISI 316L)
102	distribution assembly	1	1.4304 (AISI 316L)
103	internal venturi	1	1.4304 (AISI 316L)
104	pulley	1	steel
104A	pulley	1	steel
105	belt ¹	3	-

1) recommended spare parts

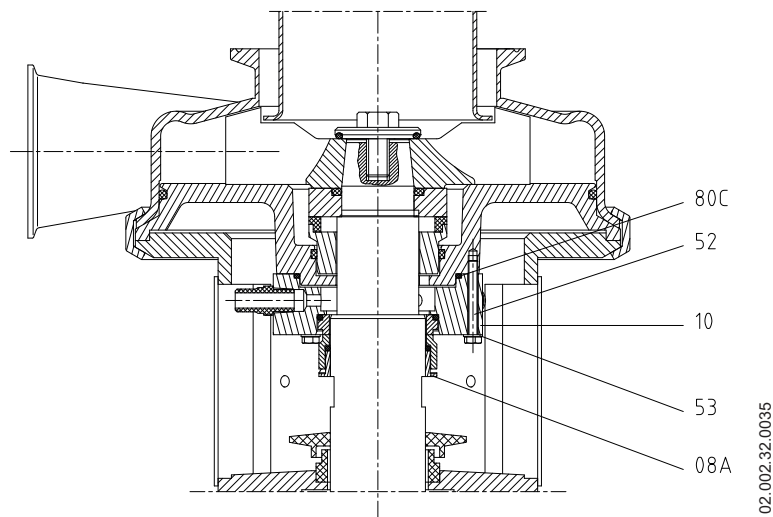
9.9. COOLED MECHANICAL SEAL OF M-226 BLENDER



Position	Description	Quantity	Material
03A	cooled seal cover	1	1.4404 (AISI 316L)
08A	mechanical seal ¹	1	-

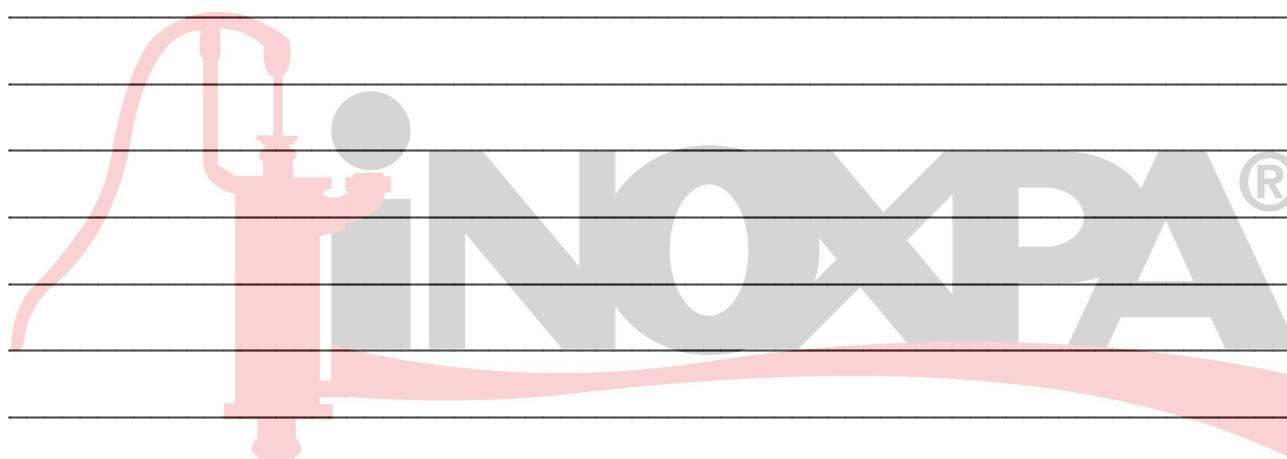
1) recommended spare parts

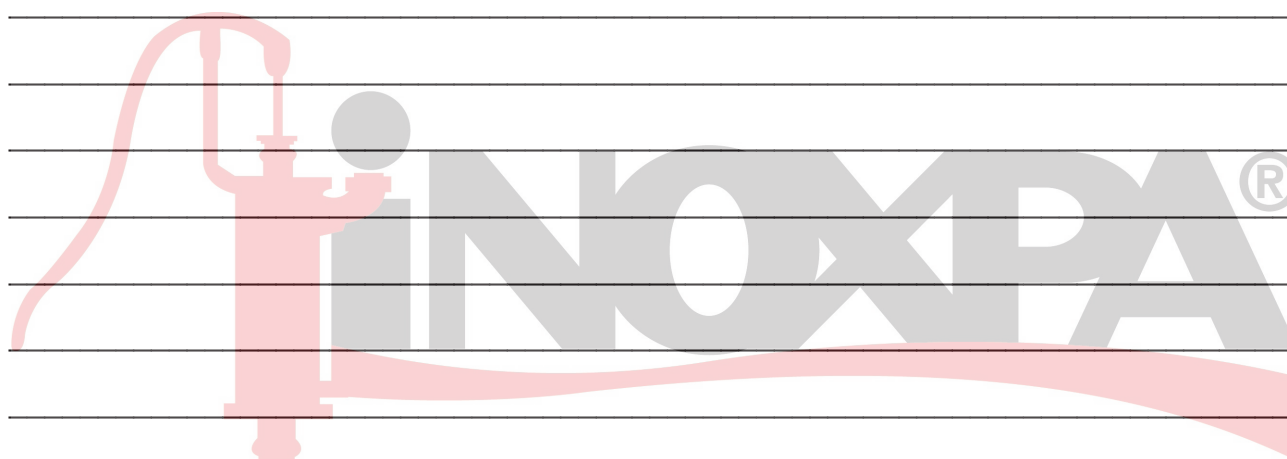
9.10. COOLED MECHANICAL SEAL OF M-440 BLENDER

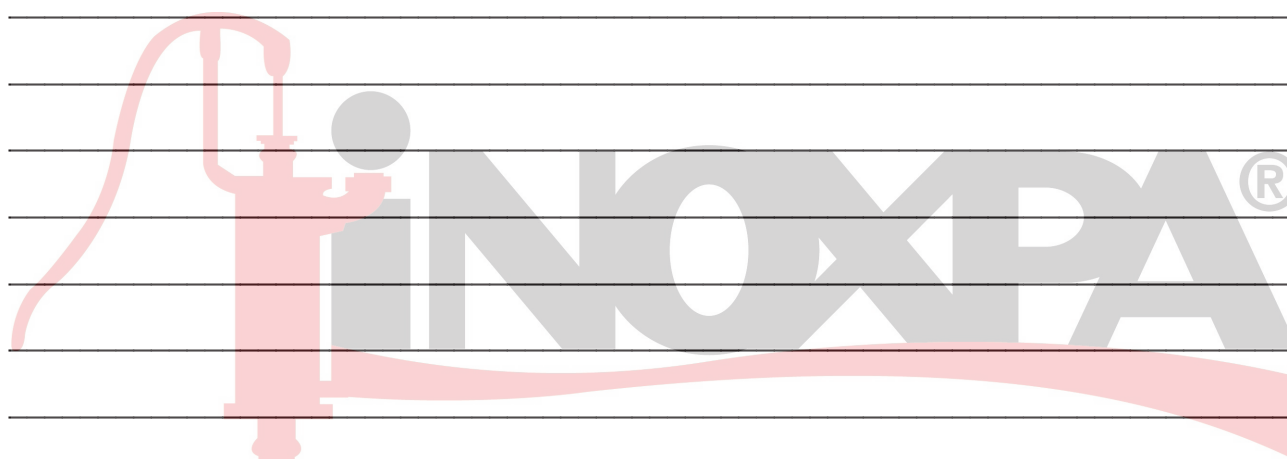


Position	Description	Quantity	Material
08A	mechanical seal ¹	1	-
10	cap	1	1.4404 (AISI 316L)
52	hexagonal screw	4	A2
53	flat washer	4	A2
80C	O-ring	1	A2

1) recommended spare parts

The image features the INOXPA logo in a bold, grey, sans-serif font. To the left of the text is a red illustration of an industrial pump or sprayer. A red hose is connected to the top of the pump, loops upwards and to the left, and then extends horizontally to the right, ending in a spray nozzle. The pump itself has a vertical cylindrical body with various fittings and a handle on top. The entire logo and illustration are set against a background of horizontal grey lines.

The logo for INOXPA features a stylized red industrial pump or valve on the left, with a red hose extending from it. To the right of the pump is the word "INOXPA" in a large, bold, grey sans-serif font, followed by a registered trademark symbol (®). The entire logo is set against a background of horizontal grey lines.

The logo for INOXPA features a stylized red industrial pump or valve on the left, with a red hose extending from it. To the right of the pump is the word "INOXPA" in a large, bold, grey sans-serif font, followed by a registered trademark symbol (®). The entire logo is set against a background of horizontal grey lines.

How to contact INOXPA S.A.U.:

Contact details for all countries are continually updated
on our website

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



INOXPA S.A.U.
Telers, 60 - 17820 - Banyoles - Spain

