

INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

## HELICOIDAL PUMP

# KIBER KTE



01.624.32.0023



## EC Declaration of Conformity

We,

**INOXPA, S.A.U.**

Telers, 60  
17820 – Banyoles (Spain)

Hereby declare under our sole responsibility that the machine

### **HELICOIDAL IMPELLER PUMP**

Designation

**KIBER KTE**

Type

**KIBER KTE-60, KIBER KTE-80, KIBER KTE-90, KIBER KTE-100**

From serial number **IXXXXXX** to **IXXXXXX** <sup>(1)</sup> / **XXXXXXXXXXIIN** to **XXXXXXXXXXIIN** <sup>(1)</sup>

Fulfills all the relevant provisions of the following directive:

**Machinery Directive 2006/42/EC**

**Machinery Safety Directive 2014/35/UE**

**Electromagnetic Compatibility Directive 2014/30/EU**

Applicable harmonized standards:

**EN ISO 12100:2010, EN ISO 13857:2008, CEI EN 60204-1:2016,  
CEI EN 61439-1:2012, CEI EN 61439-2:2012, EN 809:1998+A1:2009**

The technical file has been prepared by the signer of this document in INOXPA S.A.U.



David Reyero Brunet  
Technical Office Manager  
Banyoles, 3 de mayo de 2021

<sup>(1)</sup> The serial number may be preceded by a slash and by one or two alphanumeric characters

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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 KTE 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 [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 Specification 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 IP-55: 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 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

The Kiber KTE pumps, with a compact and robust design, form part of our range of positive-displacement pumps with a helical rotor, intended for the wine industry.

The hydraulic parts that form the pump are the rotor and the stator. Due to the friction between the rotor and the stator, a vacuum is created in the suction area that makes easier the entry of the product into the pump. When the rotor turns within the stator, the cavities that there are between the rotor and the stator move longitudinally transporting the product until the discharge nozzle. This type of pumps is appropriate for pressures of up to 6 bar.

All the pump parts in contact with the pumped product are made of stainless steel 1.4301 (AISI 304). The stator is made of NBR with a lower hardness to treat better the solids in suspension.

The most significant build details of this type of pump are as follows:

- pump mounted on a trolley,
- stainless steel hopper with drain,
- level sensor or product detector.

And, optionally:

- switchboard with stop/start, contactor and emergency stop,
- frequency converter.

The drive is composed of a worm gearbox with a bell and with an IEC adapter and IEC asynchronous motor, B5 flange and 4 poles.

## 4.2. APPLICATION

The Kiber KTE pumps are suitable for food processes and decanting of the viscous product, masses, pastes and liquids with solids in suspension. Its main application is for transferring whole or destemmed grapes. It also is used of the red wine devatting.

### 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. Misuse of the pump or its use beyond the operating limits may be dangerous or cause permanent damage to the equipment. 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



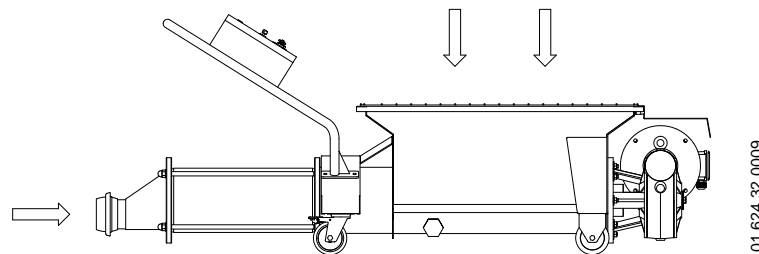
INOXPA cannot be held responsible for the damage sustained by the equipment during transport or unpacking. Please visually check that the packaging is not damaged.

The pump package includes the following documents:

- shipping documents,
- installation, service and maintenance instructions manual,
- instructions and service manual of the motor<sup>1</sup>.

Unpack the pump and check the following:

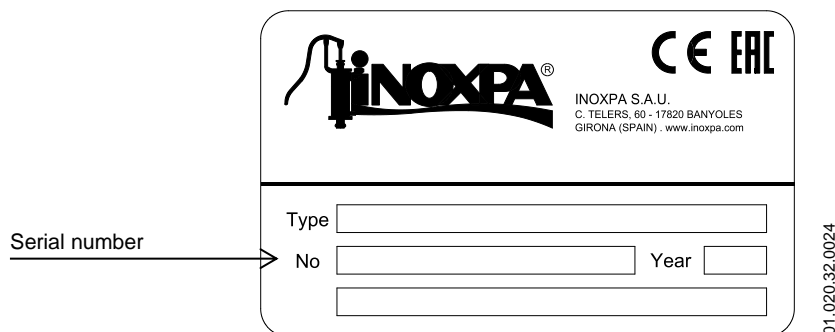
- The suction and discharge connections of the pump, removing any rest of packaging materials,



- 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.



<sup>1</sup> If the pump has been supplied with a motor from INOXPA

### 5.3. TRANSPORT AND STORAGE

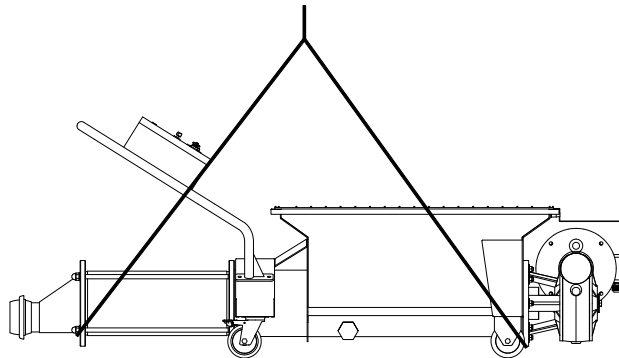
#### ATTENTION



The Kiber KTE 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 heavy loads.

Lift the pump as indicated below:

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



01.624.32.0010

- Secure the supports so that they will not move.

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

#### 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 it is 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 KTE 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. 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.

### 5.5.1. 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.



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

## 5.6. 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 in 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

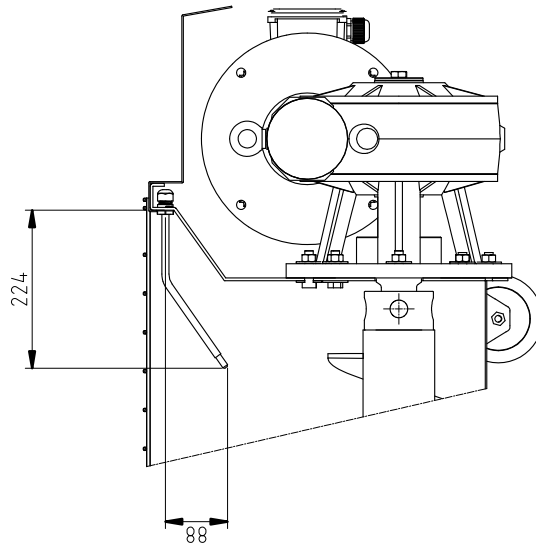
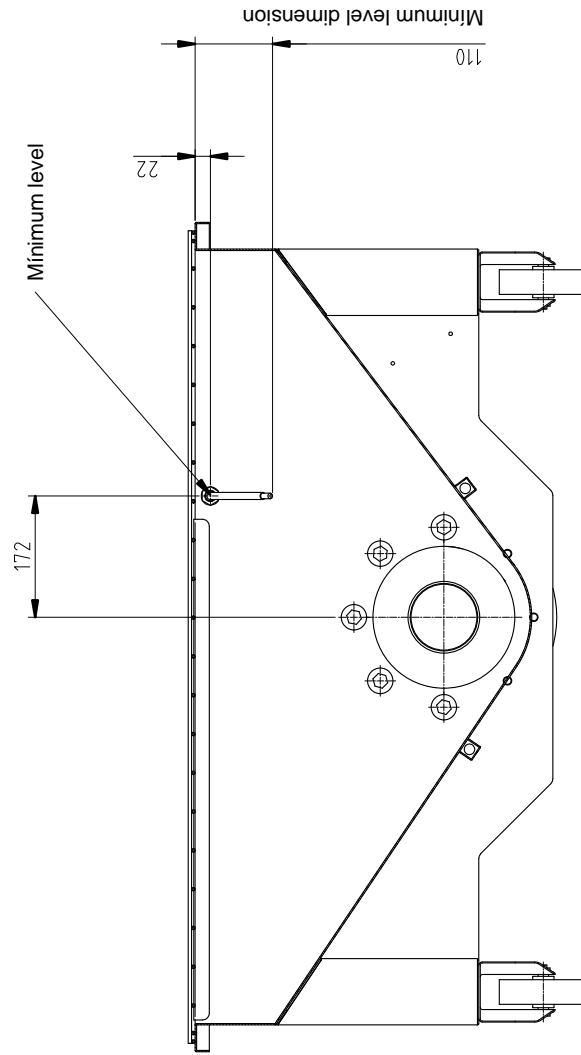


ALWAYS check the direction of rotation of the motor with liquid inside the pump.

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

### 5.7. LEVEL SENSOR

The level sensor of the KTE pump is resistive type. Mount the level sensor as indicated in the next figure to sure the good functioning of the pump.



## 6. Start-up



Prior to 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 motor is the right one.

### 6.2. CHECKS WHEN STARTING THE PUMP

- Check that the pump is not making any strange noises.
- 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.



Place a device that limits the pressure to 7 bar.



The hopper show caution signs to symbolise the danger of removing any residue inside the hopper. These signs must be situated where the operators handling these residues can see them.

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



# 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 carrying 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 OBTURATION

Periodically check that there are no leaks around the shaft. If leakage is detected through the obturation, replace the double lip seals of the obturation following the instructions in the chapter [8.8. Disassembly and assembly of the pump](#).

## 8.3. MAINTENANCE OF THE SEALS

SEALS REPLACEMENT	
Preventive maintenance	Replace after twelve (12) months. We also recommend replacing the gaskets during obturation or pump shaft replacement.
Maintenance after a leak	Replace at the end of the process. If the impeller nut gasket fails, the threaded hole on the impeller and the threads on the end shaft have to be cleaned. Follow the instructions given in <a href="#">8.6. Cleaning</a> .
Scheduled maintenance	Regularly check that there are no leaks and that the pump is operating correctly. Keep a record of the pump. Use statistics to plan inspections.
Lubrication	During assembly, use soapy water 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 pump: temperatures, flow, number of operating hours, cleaning solutions used, etc.

## 8.4. LUBRICATION

The Kiber KTE pumps use a bearing which is lubricated for life therefore it is not needed re-lubricated.



## 8.8. 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 in the pump's operation and lead to high repair costs and a long period of down time.

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.

#### 8.8.1. Disassembly of the Kiber KTE pump

1. Loosen the nuts (54A) and the washers (53A).
2. Remove the discharge nozzle (34).
3. Remove the stator (22).
4. Remove the protection grid (46) of the hopper (01) removing the screws (52G) with their washers (53G).
5. Remove the protector of the motor (47) loosening the screws (52F) with their washers (53F).
6. In models KTE-60, KTE-80 and KTE-90 separate the gear motor (93) removing the nuts (54) and the washers (53). In the model KTE-100 separate it removing the screws (52A) with their washers (53).
7. Remove the screw (52E) and its washer (53B).
8. Separate the gear motor (93) from the hopper.
9. Remove the screws (52B) and their washers (35) which join the bolt (27) of the shaft motor with the continuous bar (24) and retire the bolt (27).
10. Remove the seal cover (09) together with the shaft (05) of the motor removing the screws (52D), the washers (53D) and the nuts (54C).
11. Push the continuous bar (24) that is joined to the rotor (21), towards the discharge nozzle until it stops and turn it clockwise until the bolt (27) of the rotor is viewable.
12. Remove the rotor (21) loosening the screws (52B) and their washers (35).
13. Turn the continuous bar (24) counterclockwise until it is inside the hopper (01) and remove it through the interior of the hopper (01).

#### 8.8.2. Assembly of the Kiber KTE pump

1. Place the continuous bar (24) in the interior of the hopper (01) and turn it clockwise until it is viewable the part that houses the bolt (27) of the rotor (21) to join the bolt (27) with the continuous bar (24).
2. Join the rotor (21) to the continuous bar (24) with the bolt (27). Tighten the bolt (27) with the screws (52B) and the bolt washers (35).
3. Turn the rotor-continuous bar assembly counterclockwise until the continuous bar is inside the hopper (01).
4. Mount the seal cover (09) with the shaft (05) of the gear motor (93) tightening the screws (52D), the washers (53D) and the nuts (54C).

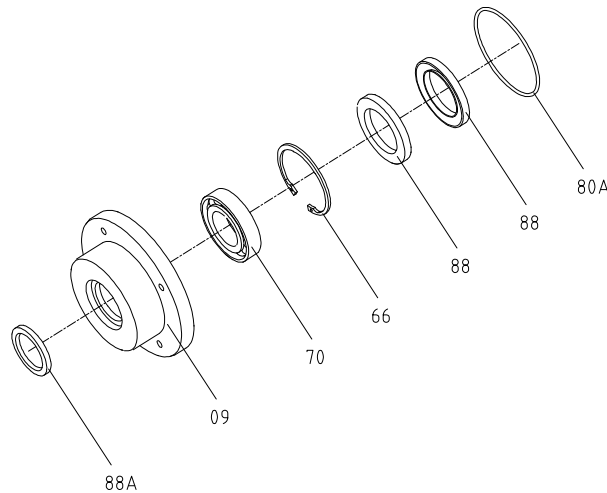
5. Joint the continuous bar (24) to the motor shaft (05) with the bolt (27). Tight the bolt (27) with the screws (52B) and the washers (35).
6. Place the gear motor (93). In the models KTE-60, KTE-80 and KTE-90 tightening the nuts (54) and the washers (53). In the model KTE-100 tightening the screws (52A) with their washers (53).
7. Place the protector of the motor (47) tightening the screws (52F) and their washers (53F).
8. Place the protection grid (46) of the hopper (01) tightening the screws (52G) and the washers (53G).
9. Introduce the stator (22).
10. Place the discharge nozzle (34) tightening the nuts (54A) and the washers (53A).

### 8.8.3. Disassembly of the obturation

1. Perform steps 4 to 10 of chapter [8.8.1 Disassembly of the Kiber KTE pump](#).
2. Remove the shaft motor (05).
3. Remove the two double lip seals (88) which take part in the seal and bearing (70).
4. Remove the last seal towards the opposite direction.

### 8.8.4. Assembly of the obturation

1. Place the bearing (70).
2. Place the two double lip seals (88) according to figure 01.624.32.0014.
3. Place the seal of the part of the motor.
4. Place the assembly on the shaft (05) motor.



#### ATTENTION



Use soapy water when fitting the different parts and seals to allow them to slide better.



# 9. Technical Specifications

Maximum operating pressure	600 kPa (6 bar)
Maximum temperature	85°C
Noise level	60 – 80 dB(A)
Impulse connections	spherical coupling



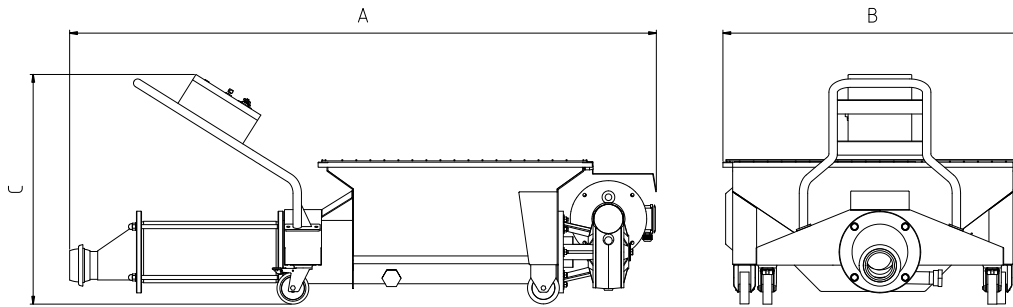
Use special protection when the sound pressure in the operation area exceeds 85 dB(A)

Pump type	Caudal (m <sup>3</sup> /h)	Speed (rpm)	Power (kW)
<b>KTE-60</b>	10/12	200	3
<b>KTE-80</b>	20/25	200	5,5
<b>KTE-90</b>	30/40	200	7,5
<b>KTE-100</b>	45/55	200	9,2

## Materials

Parts in contact with the product	1.4301 (AISI 304)
Stator	NBR
Other materials options of the stator	consult with INOXPA
Surface finish	matt
Obturation	NBR

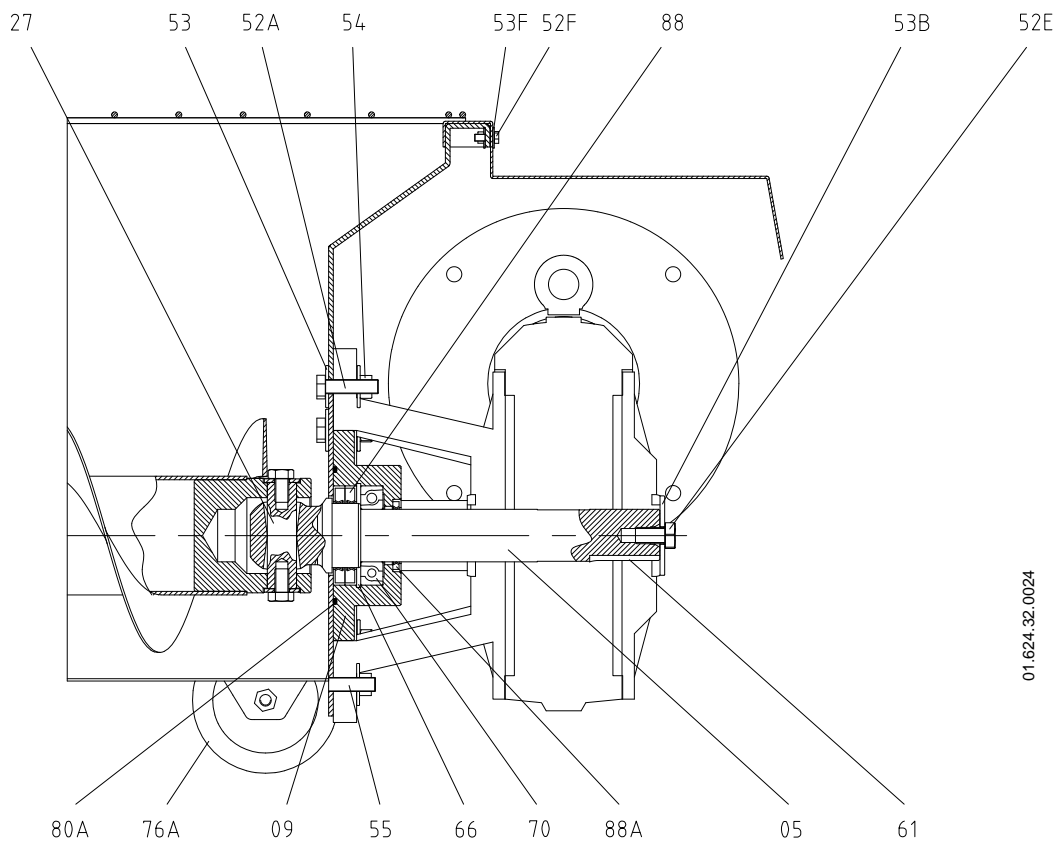
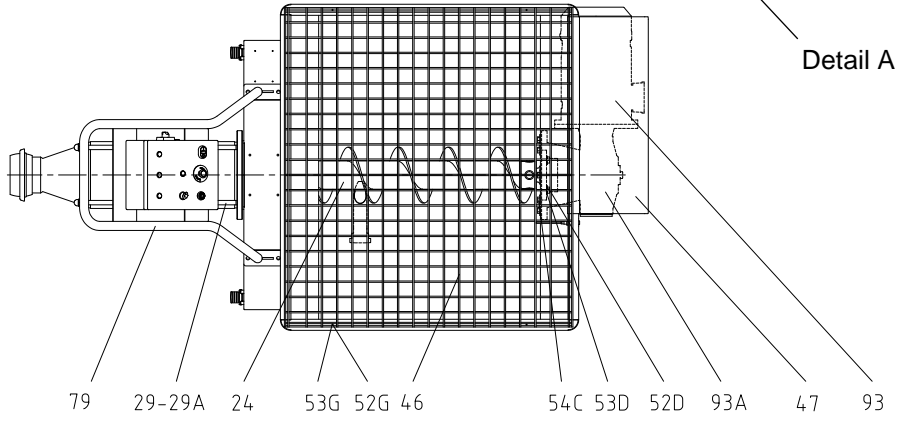
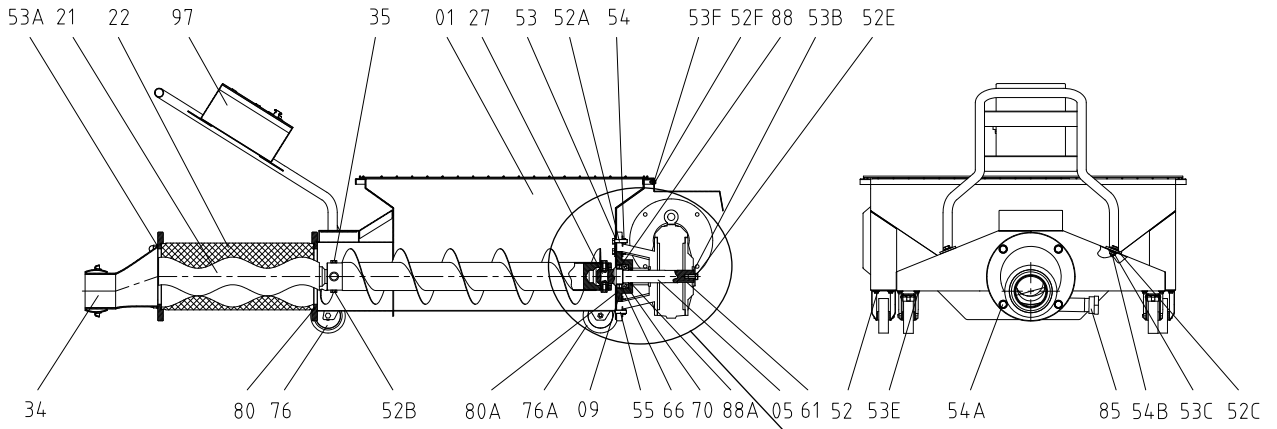
## 9.1. DIMENSIONS ANS WEIGHTS



01.624.32.0004

Size	A	B	C	Weight (kg)
<b>KTE-60</b>	1685	880	830	150
<b>KTE-80</b>	2032	980	848	200
<b>KTE-90</b>	2172	980	853	280
<b>KTE-100</b>	2302	1176	901	400





Detail A

01.624.32.0020

01.624.32.0024

Position	Description	Quantity	Material
01	Hopper	1	1.4301 (AISI 304)
05	Drive shaft	1	1.4460 (AISI 329)
09	Seal cover	1	1.4301 (AISI 304)
21	Rotor	1	1.4301 (AISI 304)
22	Stator	1	NBR
24	Continuous bar	1	1.4301 (AISI 304)
27	Bolt	2	1.4460 (AISI 329)
29	Upper tie bar	2	1.4301 (AISI 304)
29A	Lower tie bar	2	1.4301 (AISI 304)
34	Discharge nozzle	1	1.4301 (AISI 304)
35	Washer bolt	4	1.4301 (AISI 304)
46	Protection grid	1	1.4301 (AISI 304)
47	Protector motor	1	1.4301 (AISI 304)
52	Hexagonal screw	16	A2
52A	Hexagonal screw	5	A2
52B	Hexagonal screw	4	A2
52C	Hexagonal screw	4	A2
52D	Hexagonal screw	4	A2
52E	Hexagonal screw	1	A2
52F	Hexagonal screw	4	A2
52G	Hexagonal screw	2	A2
53	Washer	5	A2
53A	Washer	4	A2
53B	Washer	1	A2
53C	Washer	4	A2
53D	Washer	4	A2
53E	Washer	16	A2
53F	Washer	4	A2
53G	Washer	2	A2
54	Hexagonal nut	8	A2
54A	Hexagonal nut	4	A2
54B	Hexagonal nut	4	A2
55	Stud	3	1.4301 (AISI 304)
70	Bearing	1	Stainless steel
76	Fixed wheel	2	Polyurethane
76A	Rotary wheel	2	Polyurethane
79	Trolley handle	1	1.4301 (AISI 304)
80	O-ring	2	NBR
80A	O-ring	1	NBR
81	Plug seal	1	NBR
85	Plug	1	1.4301 (AISI 304)
88	Double lip seal	2	NBR
88A	Seal	1	NBR
93	Motor	1	-
93A	Gear	1	-
97	Electrical control	1	Plastic or stainless steel







**How to contact INOXPA S.A.U.:**

contact details for all countries are continually updated on our website.

Please visit [www.inoxpa.com](http://www.inoxpa.com) to access the information.



**INOXPA S.A.U.**

Telers, 60 – 17820 – Banyoles – Spain

Tel.: +972 575 200 – Fax.: +34 972 575 502