Installation, commissioning and maintenance manual

IBC Agitators

Rev: 2023

Table of Contents

1. Introduction

To guarantee the perfect operation of the agitation group that you have acquired, read this manual thoroughly before its installation and follow the instructions described below.

If you have any doubts, please contact PIMEC, SL.

Warnings about this manual:

- ✓ The content of this manual is subject to changes without notice.
- ✓ All rights reserved. No part of this document may be reproduced or transmitted in any form or by any means without the written authorization of PIMEC, SL.

Warnings about safety and modification:

- ✓ For the security and safety of the user personnel, be sure to follow the instructions described in this man when operating the machine. If the equipment is operated in a way different from these instructions, Pimec, SL does not guarantee the user's safety or the equipment's proper functioning.
- ✓ If this equipment is used in a way not specified in this manual, the protection provided by the equipment could be affected.

Warranty:

- ✓ Pimec, SL is not responsible for breakdowns or deterioration caused by negligence during the mounting or by misuse of the equipment.
- ✓ All equipment provided by Pimec, SL has a 24-month warranty period from the date of delivery.
- ✓ Warranty of the device is in our repair shop in Centelles (Barcelona).
- ✓ All movements of Pimec, SL technical personnel shall be assumed by the client.

2. Safety

	**Danger to people in general and/or the equipment**
	**Electrical hazard**
	**Entrapment**
	**Manipulation prohibited**

	According to the tank model, there is a risk of splashes, so the equipment must be operated with the individual protection that the product demands.
	Repair or handling any component of the machine with voltage is prohibited
	Agitators must not operate with product level below the agitation element, nor emptying in operation if these are not designed for that end.
	Grounding systems must be checked regularly.
	The equipment must be handled with care because there are parts with electrical voltage and appropriate measures must be taken.
	While placing the IBC Agitator support, there should be no one close to avoid any type of entrapment.

3. Equipment Reception

Pimecsa cannot be made responsible for the deterioration of the material due to transport or unpacking. Check visually that the packing has not suffered damage.

If the agitator is provided without a drive or other elements, the buyer or user will take responsibility for the assembly, installation, commissioning and operation.

When receiving the agitator, check the packing and its content to ensure that is in accordance with the delivery note. Pimecsa packs the agitators fully assembled or disassembled as appropriate. Make sure that the agitator has not suffered any damage, in the case of not being in the correct condition and/or some parts are missing, the driver should contact con Pimecsa as soon as possible.

The following documentation is attached with the agitator:

- Installation, commissioning and maintenance manual
- CE Declaration
- Test Certificate
- Warranty Certificate

4. Agitator

4.1. Agitator Identification

The agitator identification is done by a rating plate fixed over the motor.
The plate indicates:

- Agitator model
- Speed in RPM
- Power in kW
- Serial number
- Date of manufacture
- TAG (if required)

Plate for an IBC Agitator

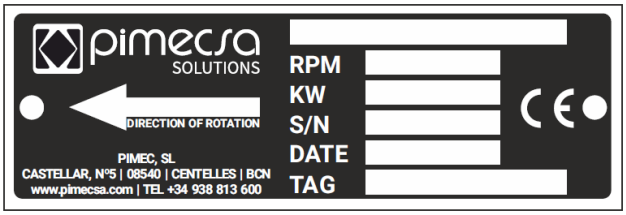
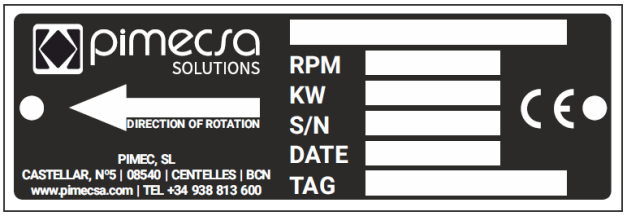
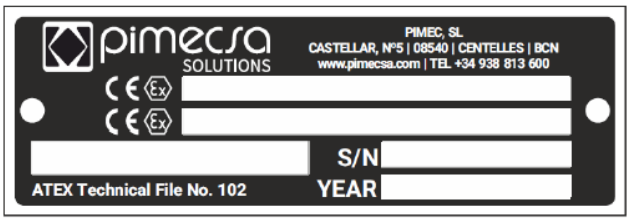


Plate for an ATEX IBC Agitator





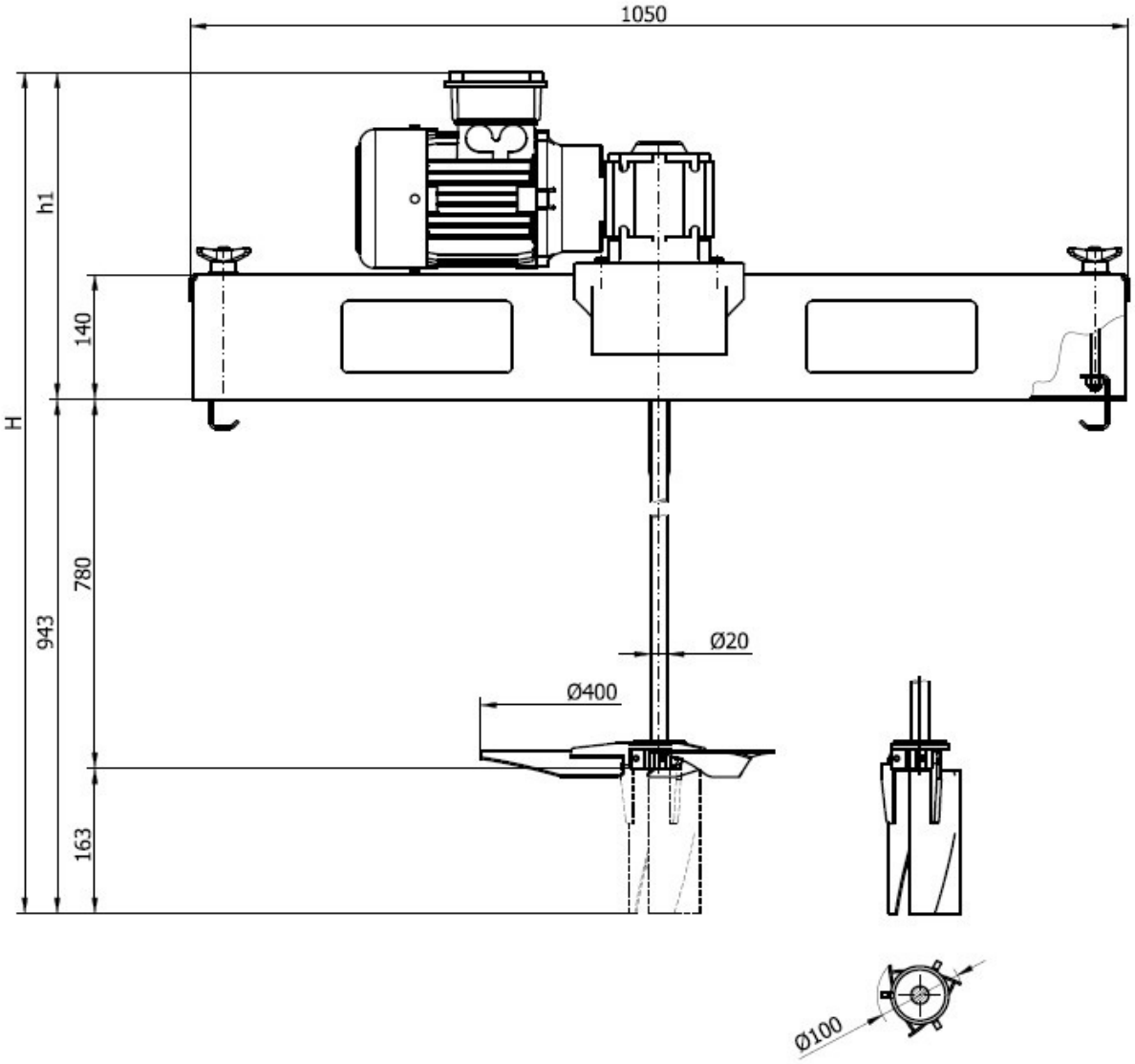
4.2. Agitator Models

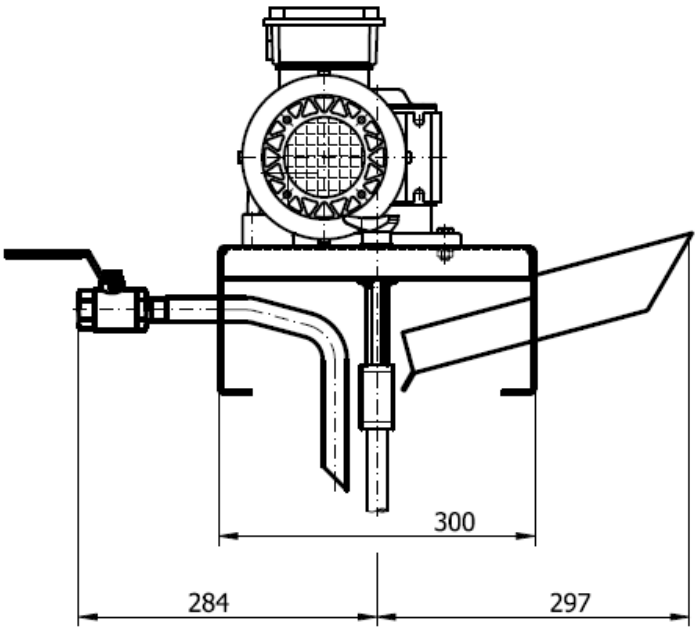
MODEL	RPM	kW	Turbine	Dimensions			Weight	Noise
				L	H	W		
ST-35 AR 100/0.25	**100**	0.25	1	1292	349	1050	34	45 dB(A)
ST-35 AR 200/0.55	**200**	0.55	1	1310	367	1050	39	47 dB(A)
ST-35 AR 200/0.75	**200**	0.75	1	1310	367	1050	40	47 dB(A)
ST-35 200/1.5	**200**	1.5	2	1333	416	1050	54	49 dB(A)
ST-35 AR 300/0.75	**300**	0.75	1	1310	367	1050	45	47 dB(A)
ST-35 AR 300/1.1	**300**	1.1	1	1327	384	1050	47	49 dB(A)
ST-35 AR 300/1.5	**300**	1.5	1	1333	390	1050	54	49 dB(A)
ST-50 AR 300/2.2	**300**	2.2	2	1359	416	1050	64	51 dB(A)
BF-100 1500/0.75	**1500**	0.75	1	2150	680	1050	48	49 dB(A)
BF-100 3000/1.5	**3000**	1.5	1	2150	680	1050	52	49 dB(A)

IBC ACCESSORIES
Tube for Liquids
Hopper for Solids
FDA (RVR + FKM(FDA) + Ra>0,5µm + Food Oil)
Mirror polishing Ra>0,5µm
Variable Speed Drive

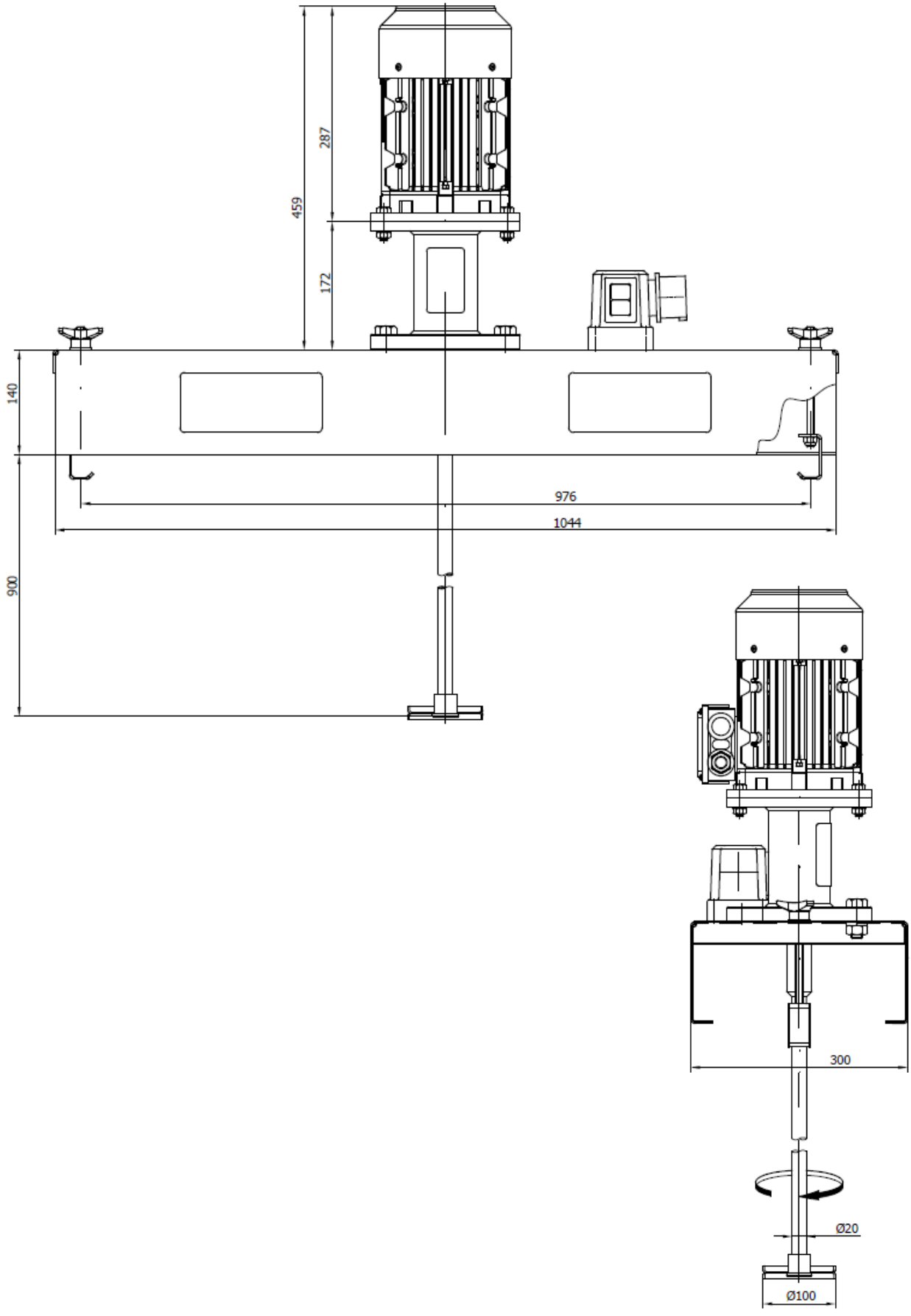
IBC ATEX ACCESSORIES
ATEX disconnector with 16A Cetac
10m armored cable with 16A Cetac plug

4.3. ST model Agitator dimensions

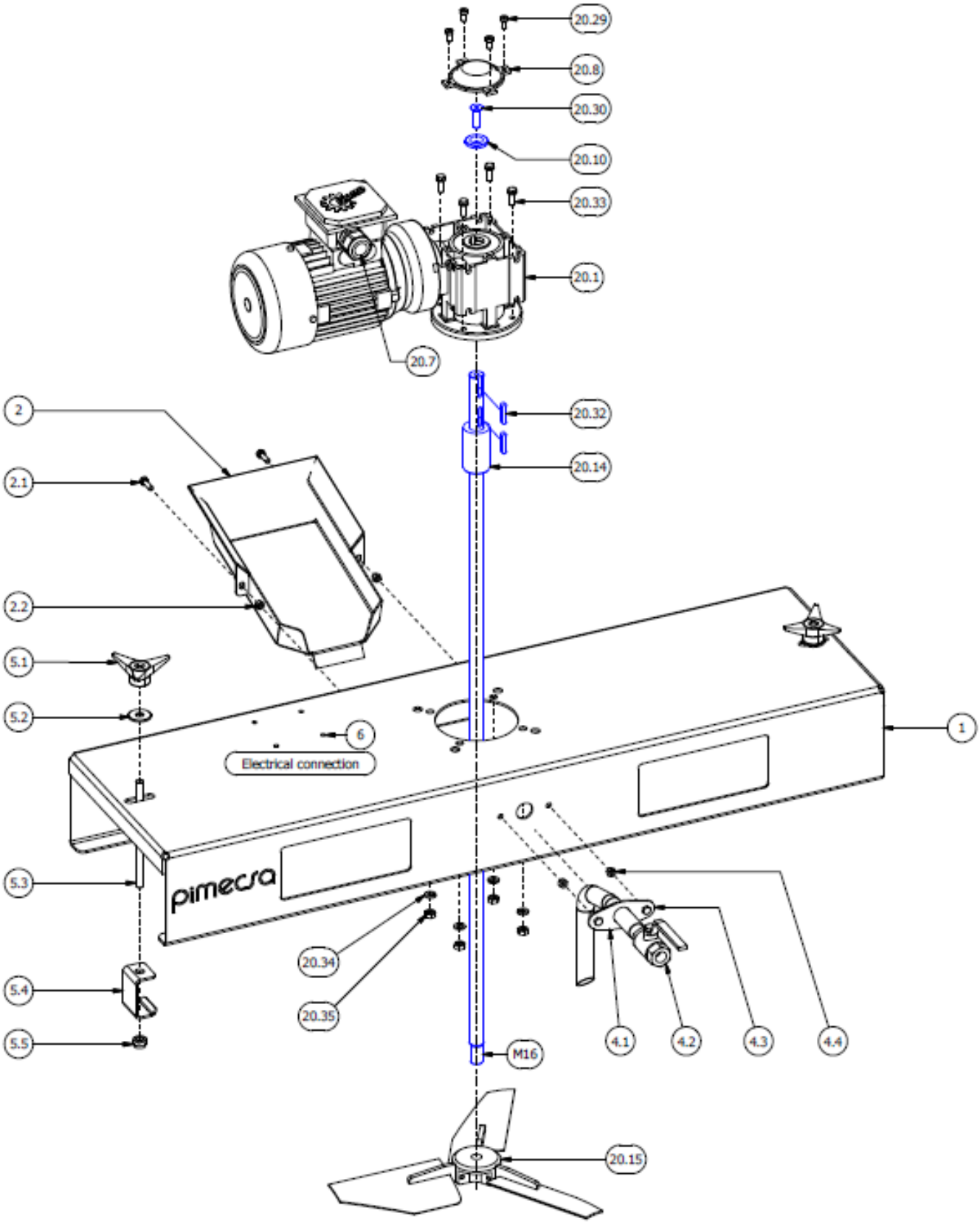




4.4. BF model Agitator dimensions



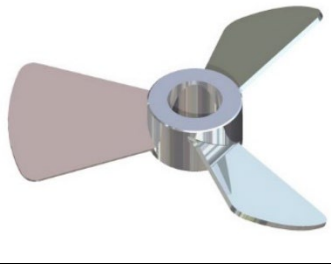
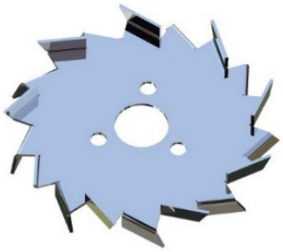
4.5. Exploded view of the agitator



4.6. List of exploded view of the agitator

N.º	Description
1	IBC base
2	Solid product inlet assembly
2.1	Screw DIN-933 M6 x 20 A2
2.2	Self-locking nut. DIN-985 M6 A2
4	Liquid product inlet assembly
4.1	Liquid product inlet
4.2	Ball valve 1/2" G
4.3	Screw DIN-933 M6 x 20 A2
4.4	Self-locking nut. DIN-985 M6 A2
5	Fixing clamp assembly
5.1	Knob Ø85 3-point knob M10 female
5.2	Wide washer DIN-9021 M10 A2
5.3	Threaded rod M10 L=160
5.4	Fixing clamp
5.5	Self-locking nut. DIN-985 M10 A2
6	Fixing electrical connection Ø6
20	Agitator assembly
20.1	Geared motor
20.7	Cable gland
20.8	Reducer safety cover
20.10	**Clamping washer**
20.14	**Shaft**
20.15	Hinged impeller Ø400
20.29	Reducer cover screw
20.30	**Tightening washer screw**
20.32	**Reducer key**
20.33	Reducer fixing screw
20.34	Reducer fixing washer
20.35	Reducer fixing nut

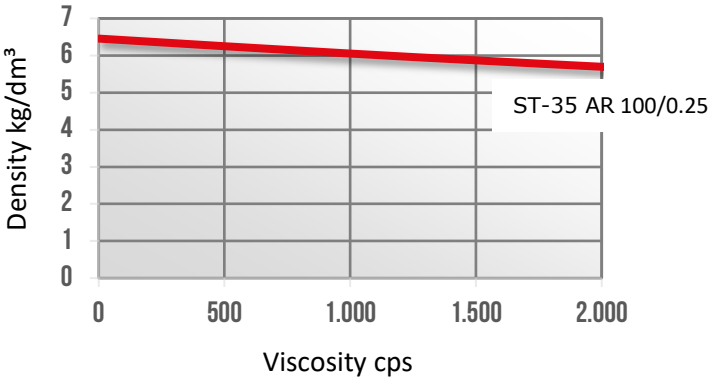
4.7. Mixing elements

Folding turbine	Marina Propeller	Cowles Disc
		
Suitable for geared motors	Suitable for direct motors	Suitable for direct motors
Speed from 100 to 300 rpm	Speed from 1.500 to 3.000 rpm	Speed from 1.500 to 3.000 rpm
Mixing Liquid+ Liquid	Mixing Liquid+ Liquid	Mixing Liquid + Solid

4.8. Charts according to Density and Viscosity

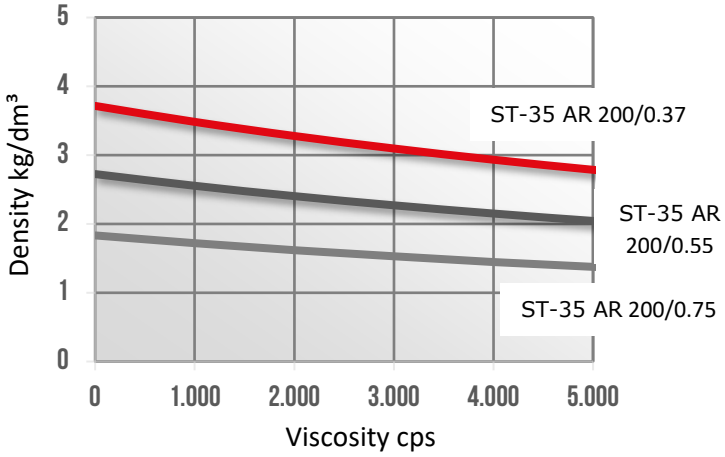
For a better selection of the Agitator, we have to consider the Density and Viscosity of the product, and know the type of agitation required so the mixing time is optimal.

100RPM



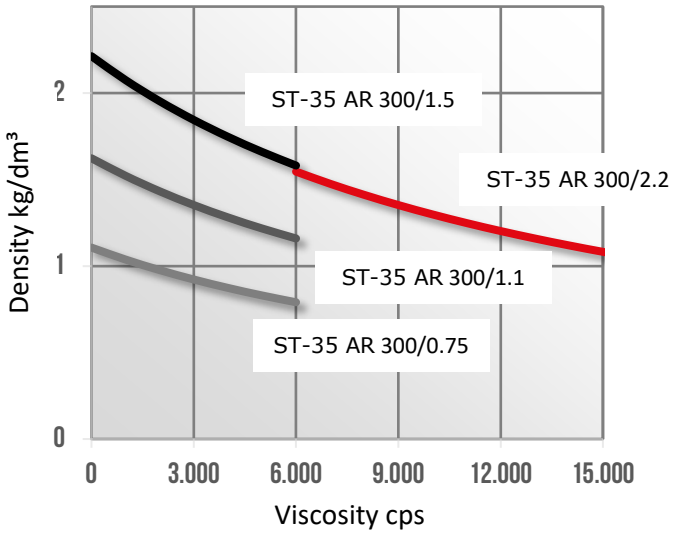
Agitation	Gentle
Maximum Viscosity	2.000cps
Mixture	Liquid + Liquid
Dissolution	Solid easily miscible in liquid
Mixing time	Longs (30-60 minutes)
Others	Do not generate foam

200RPM



Agitation	Strong
Maximum Viscosity	5.000cps
Mixture	Liquid + Liquid
Dissolution	Solid miscible in liquid at low and medium concentrations
Mixing time	Short (15-45 minutes)
Others	May generate foam

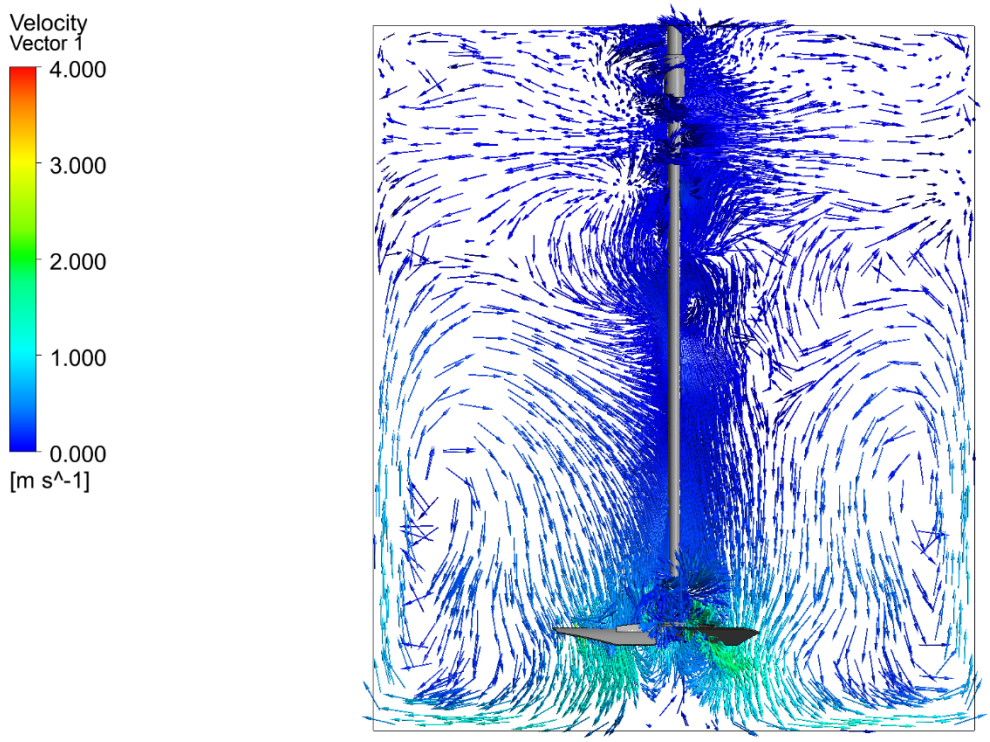
300RPM



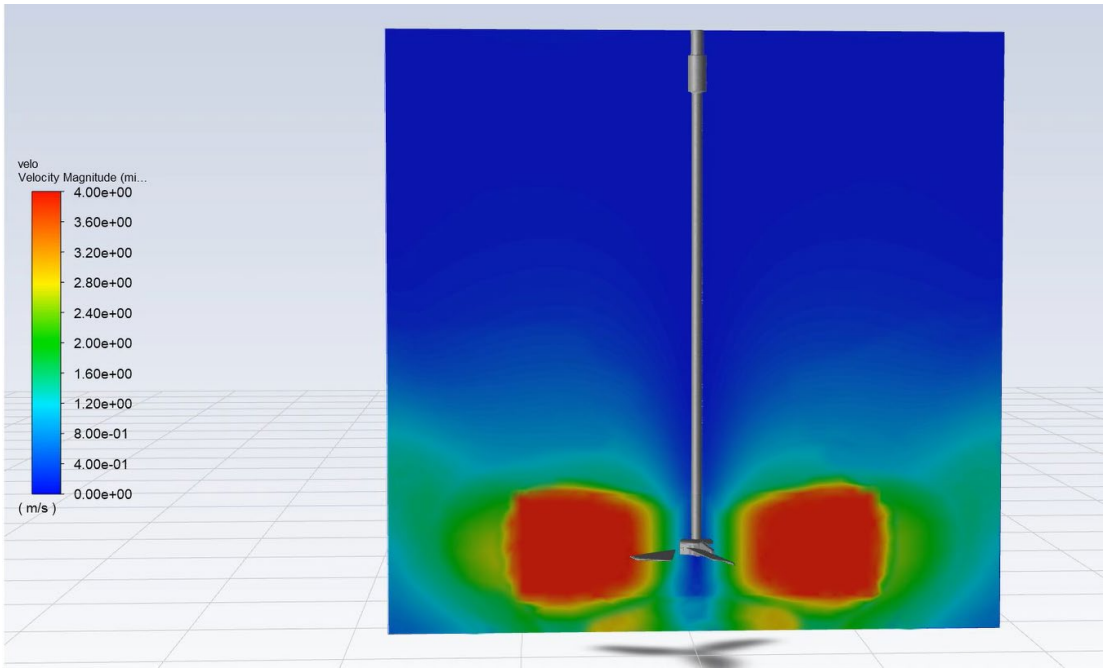
Agitation	Very strong
Maximum Viscosity	15.000cps
Mixture	Liquid + Liquid
Dissolution	Solid miscible in liquid at medium and high concentrations
Mixing time	Short (10-30 minutes)
Others	Generate foam

4.9. 3D Simulation

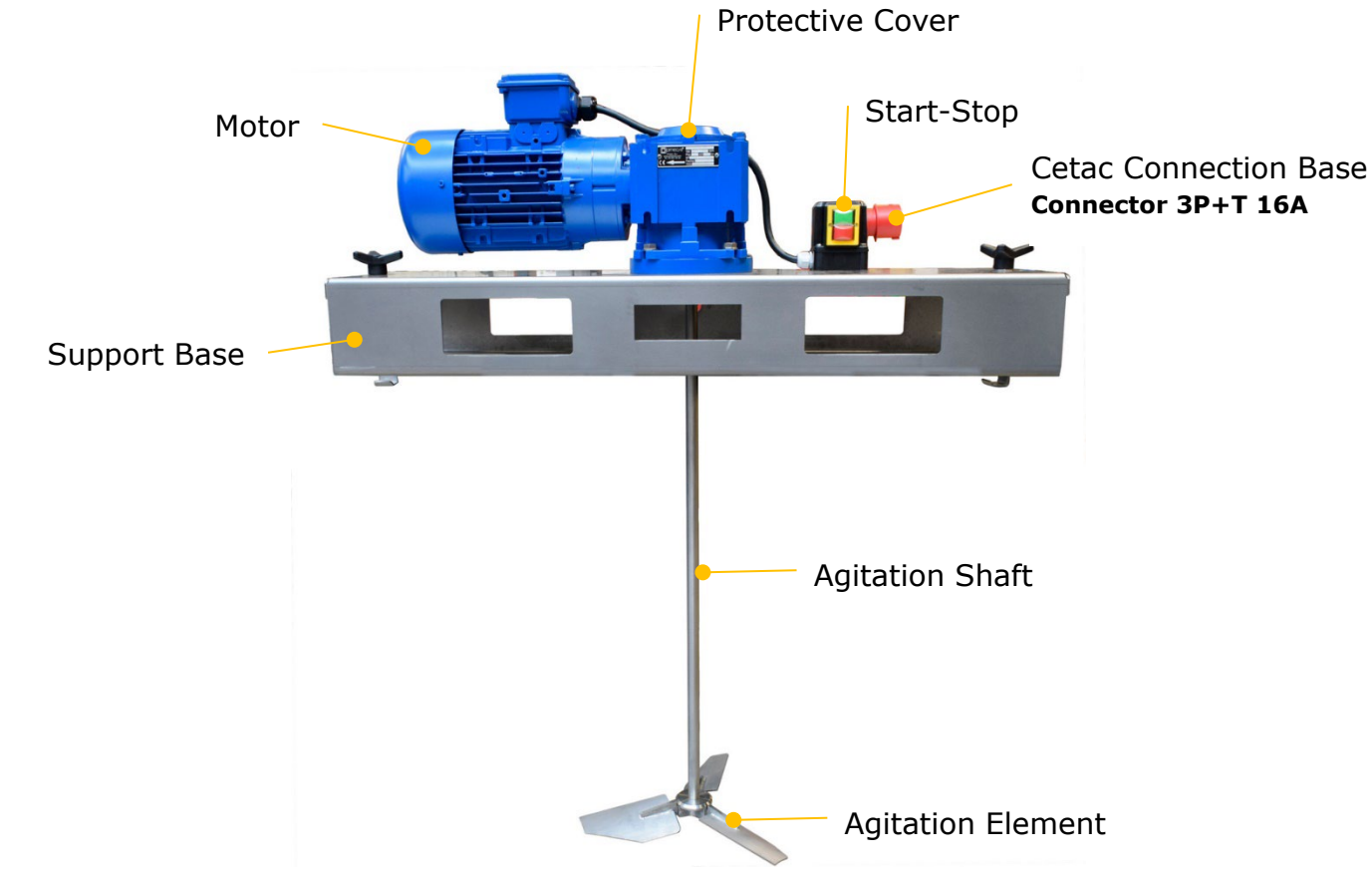
Vector velocity simulation

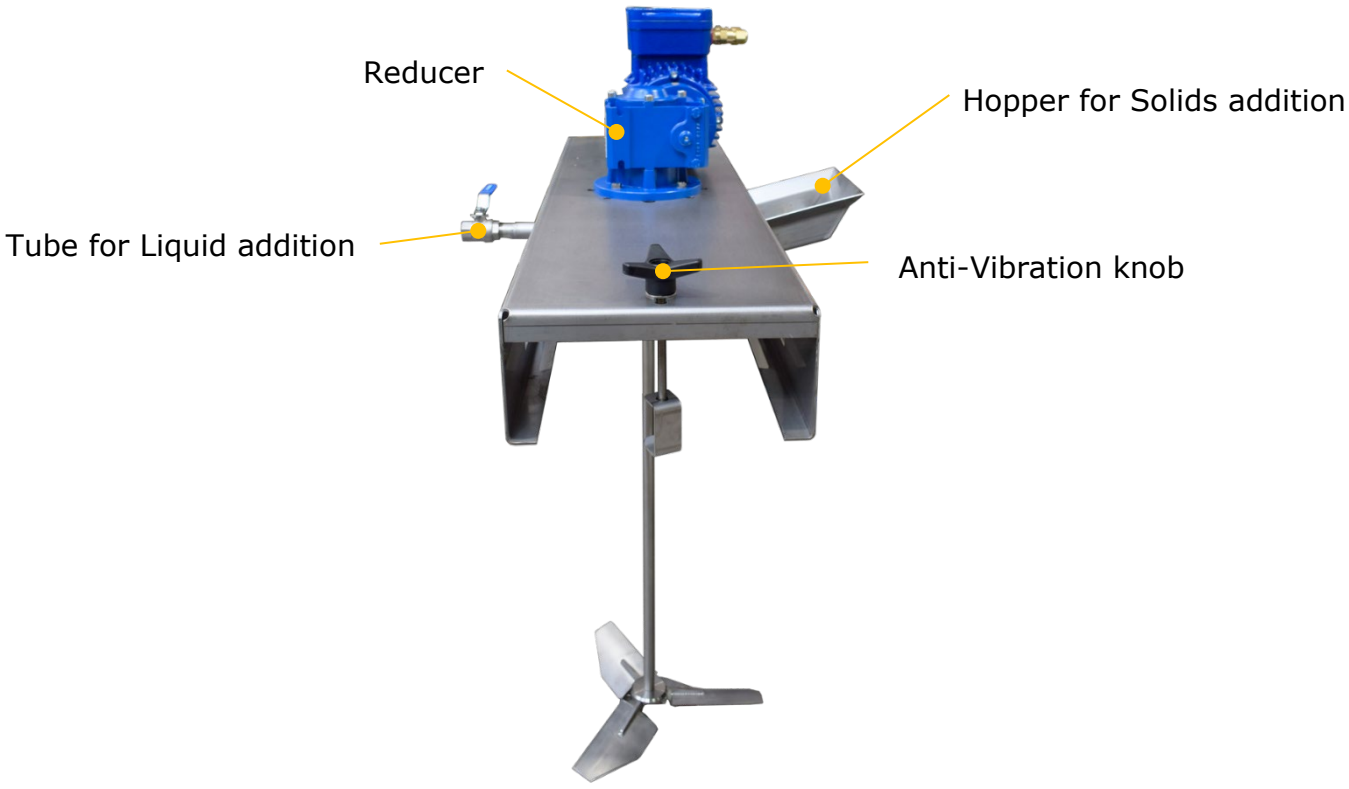


Simulation Speed contour

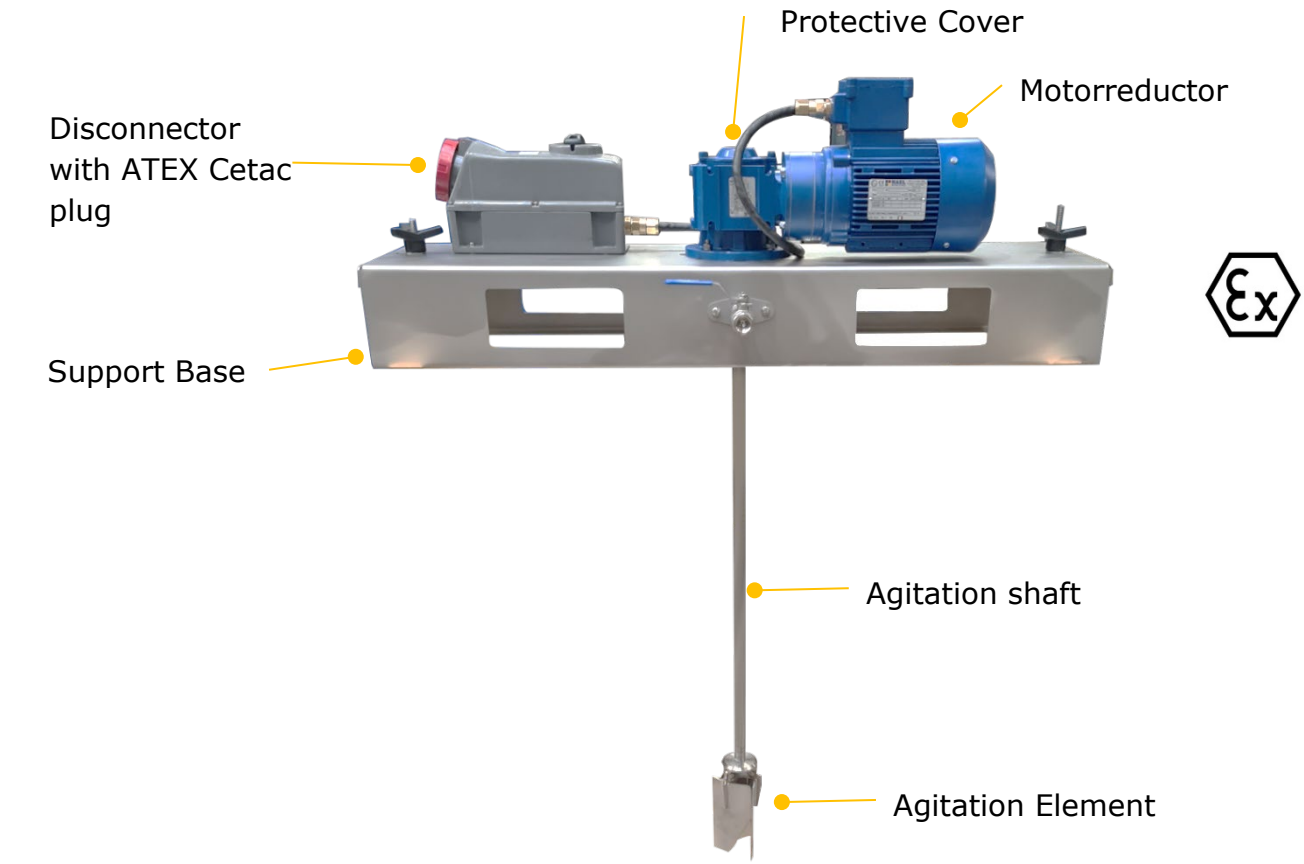


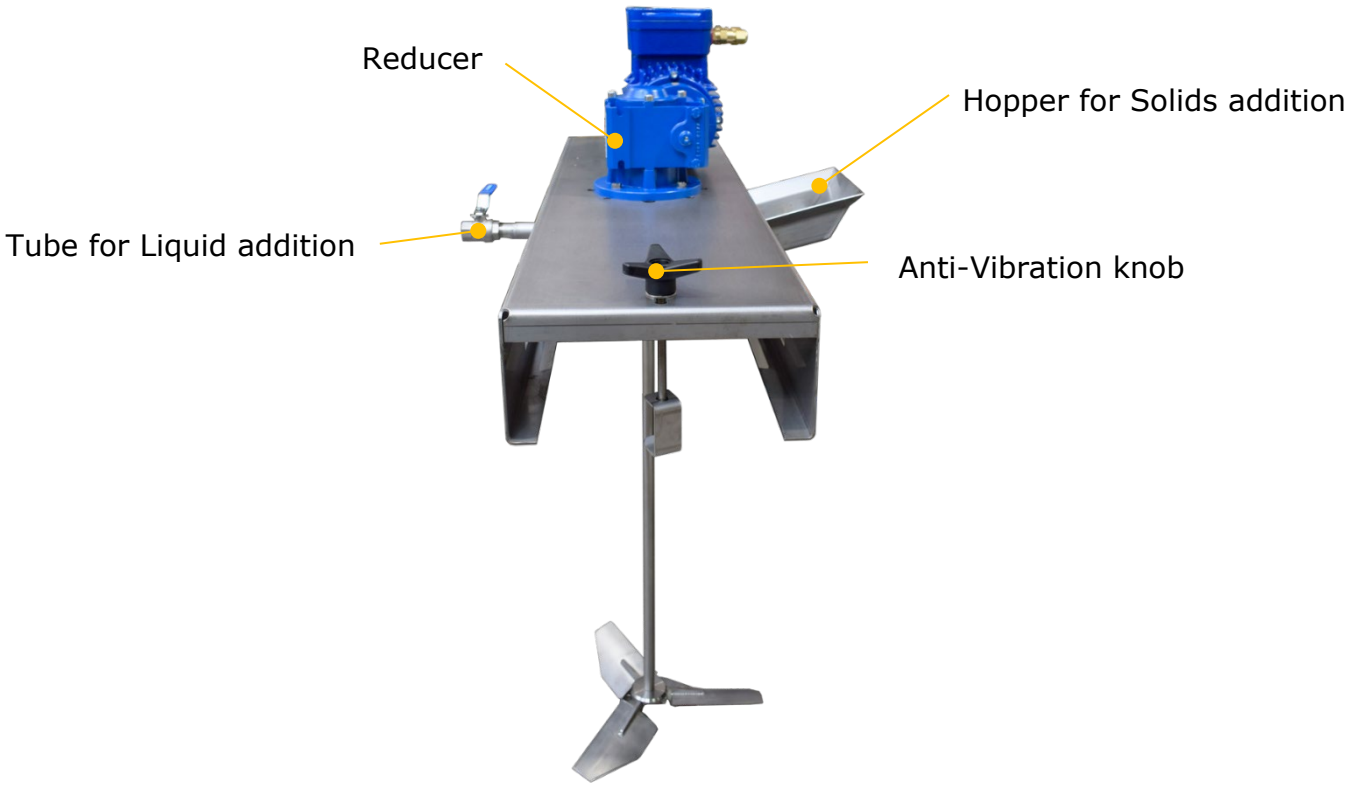
4.10. Parts of the Equipment - IBC Agitator





4.11. Parts of the Equipment - ATEX IBC Agitator





4.12. Equipment description

SUPPORT BASE

Support made completely in Stainless Steel, rectangular design of high stability and robustness that provides rigidity to the agitation shaft, as well as preserving the reducer from radial stress that generates during the product agitation.

Easy transport using a forklift.

DRIVING PART

Consist in an electrical motor and a reducer of 100, 200, or 300 RPM or even a variable speed drive when required.

AGITATION SHAFT

The shaft is the one responsible for transmitting the driving torque to the agitation elements.

AGITATION ELEMENT

They are the elements in charge of transforming the rotary motion of the shaft in the conveyance of the product to make the agitation process.

It can have 1 turbine o 2 turbines depending on the level of agitation required.

HOPPER FOR SOLIDS ADDITION

This accessory is suitable to incorporate solid products into the IBC during agitation. Improves the quality of the mixture by incorporating solids into the product. Reduces the formation of lumps and reduce manufacturing time.

TUBE FOR LIQUIDS ADDITION

This accessory is suitable to incorporate liquid products into the IBC during agitation. Improves the quality of the mixture by incorporating liquid into the product. The mixture is done instantly and the manufacturing time is reduced.

5. Precautions before the assembly

Before the IBC agitator commissioning, the following verifications described below must be done:

1- That the operating characteristics of the motor are compatible with your electrical grid.

2- That no damaged or deteriorated part exists due to transport.

3- That the oil level of the reducer (in case of having) is adequate according to the manufacturer's instructions.

4- That the anchor of the IBC tank where the IBC agitator support must be installed is designed to hold the total weight of the equipment, and that the dimensions correspond to the size and form of the support.

Fix the support Knob so the agitator does not move and avoid possible vibrations

5- That no element inside the reactor or tank can interfere with the shaft movement and agitation elements of the agitator.

6- That the material of the parts intended to be in contact with your product are from the appropriate material and compatible with it, avoiding chemical attacks and/or corrosions.

Remember that during the assembly process, the occupational risk prevention rules must be followed rigorously.

6. Handling and transport of the equipment

For the transport of the agitator, once unpacked, you must have a forklift that supports safely the weight of the equipment considering the center of gravity because otherwise,a risk of rollover exists.

If you do not have a forklift, the agitator must be clutched by the motor and/or reducer.

Take into account the sufficient space for maneuverability of all parts, because depending on the model there are long and indivisible elements and accessories.

While placing the IBC Agitator support into the IBC tank, there must be no one near to avoid any type of entrapment.

Do not hold or handle the equipment by the agitation shaft or semi-shaft.

Handle the equipment with a forklift trying not to hit the shaft because it depends from that that the agitator shaft turns centered, without jumps or imbalances.

Exercise caution in the unloading and handling, because there are parts in it sensitive to impacts.

7. Proper operation of the equipment

The agitator is a piece of equipment that transmits a rotary motion through a shaft and some elements attached to it, in order to obtain:

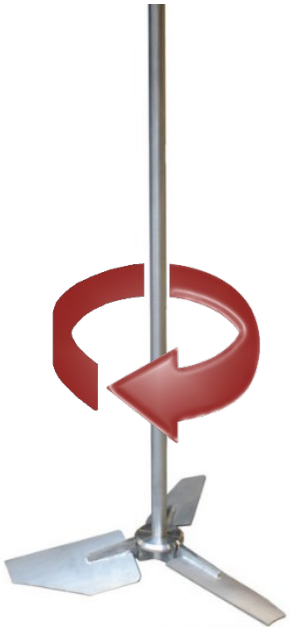
- Solids dispersion
- Homogenization
- Emulsion
- Temperature transfer

And it must not be used in the case the IBC container or tank is empty, nor in the case that it contains a product whose characteristics are not the ones was designed for.

Neither must it be turned on if you observe any flaw in its components or if the agitation elements are not well attached.

The agitator is designed according to the characteristics of the IBC container, product and area where it is installed, **so it is NOT allowed to:**

- Change the agitation element(s) without consulting before with Pimec, S.L. because it can vary the consumption, critical speed, etc.
- Operate in the opposite direction of rotation to the one indicated on the rating plate: some parts of the equipment may be affected or the agitation elements could decouple, producing material and/or personal damages.



- Change the agitator to any different location for it has been designed, side, bottom openings, or other tanks, without consulting first with Pimec, S.L.

- Neutralize the security (in case of having them) with external elements.

7.1. Use of Agitator by operators

Specific training of the operators is not necessary.

The machine must be handled by a single operator, avoiding that other people remain close to the equipment while is being handled.

The operator must remain close to the control panel while the equipment is operational.

Remember that during the handling process occupational risk prevention rules must be followed rigorously, avoiding postural risks.

The operator must work with specific individual protection, depending on our product, because the agitator equipment does not need it.

8. Electric connection of the equipment

8.1. Connection of the electric motor

To operate the equipment, first, you have to connect the electric motor according to the motor characteristics described in the rating plate and the attached manual.

- Connect the terminals of the CETAC connector provided.
- Do the ground connection of the motor as indicated by the manufacturer.

- Use cables that have enough sections to withstand the maximum current absorbed by the motor. **Minimum section of 1.5mm2.**

The direction of rotation is marked with an arrow in the equipment's rating plate and must be clockwise seen from the top.

Once the CETAC connector is connected to the electrical panel, this must have **AT LEAST** the following components and safety devices according to the attached diagram (page 18):

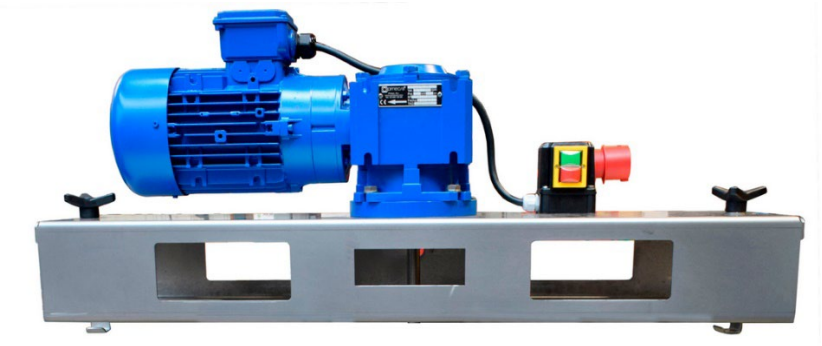
- A general voltage switch.

- The line must be protected and have a thermal-magnetic and residual current circuit breaker according to the characteristics of the electric motor.

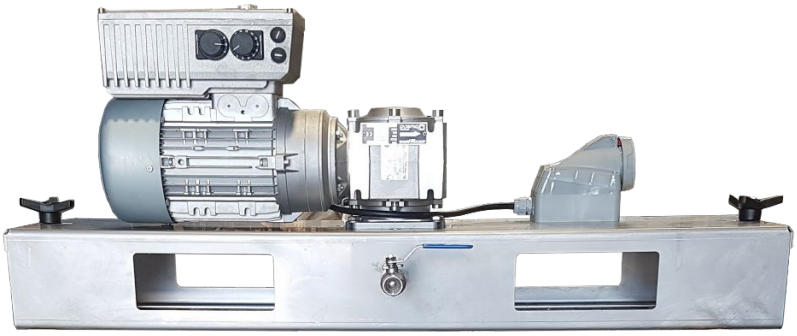
- And an emergency shutdown according to regulations, that when activated deactivates the power supply and stops the operation.

Once connected to the electrical grid and the support installed over the IBC container, it is in condition to turn it on and perform the first tests with water. In case any problem arises, please contact PIMEC, S.L.

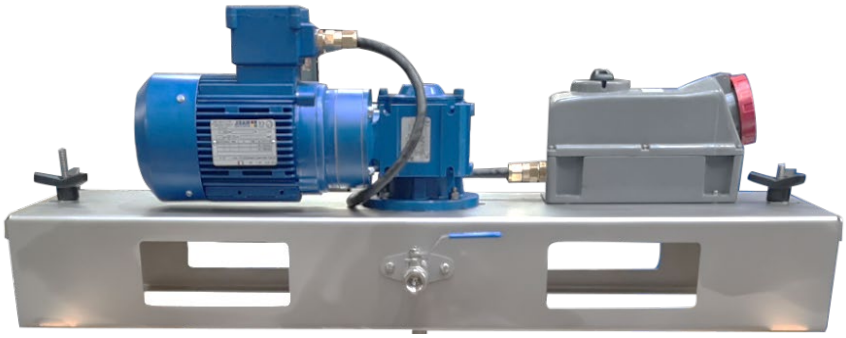
Start-Stop Built-in in the Agitator
Male CETAC 3P+Ground, 380V, 16A.



Variable Frequency Drive Built-in in the Agitator (optional)
Female CETAC 3P+Ground, 380V, 16A.



ATEX disconnector (optional)
Male CETAC 3P+Ground, 380V, 16A.

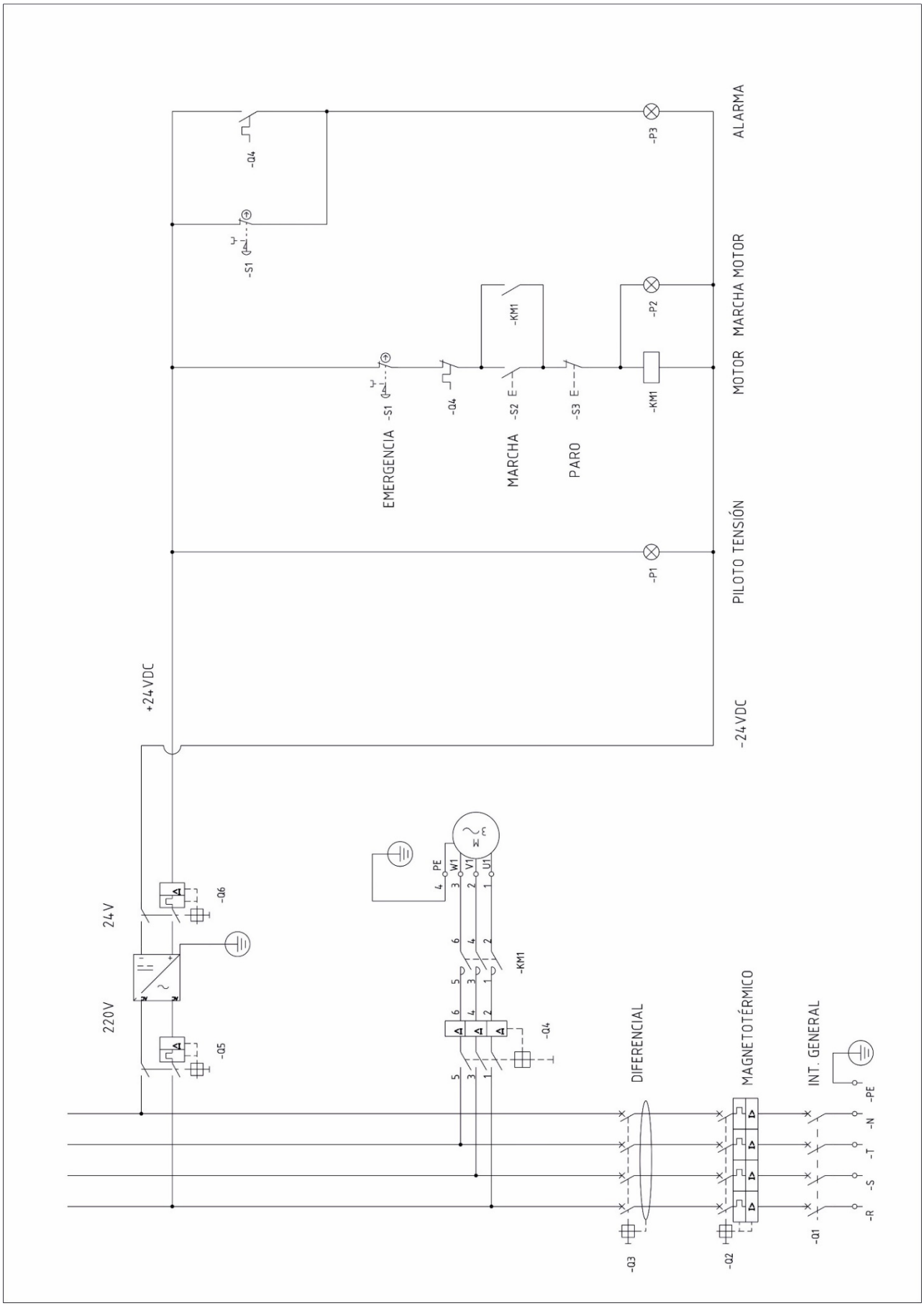


10m Armored cable (optional)
Female CETAC 3P+Ground, 380V, 16A.

Remember to always follow the instructions of the motor manufacturer attached to this manual.

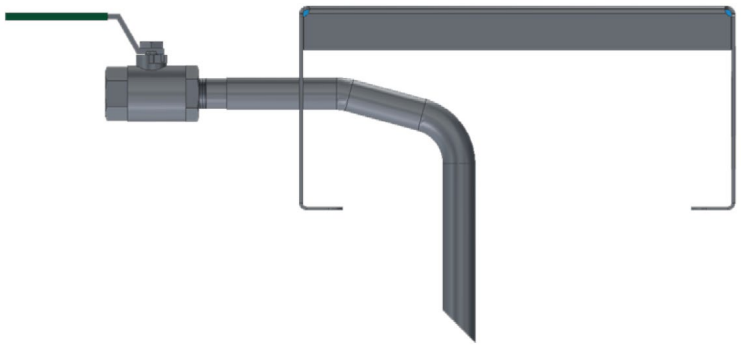
- **All electrical Works must carried out by specialized personnel.**
- **Take the necessary measures to prevent any breakdown.**
- **The motor must be protected with protection devices against surcharges and short-circuits.**
- **The agitator cannot be used in fire or explosion risk areas if this has not been planned in the order.**

8.2. Wiring diagram

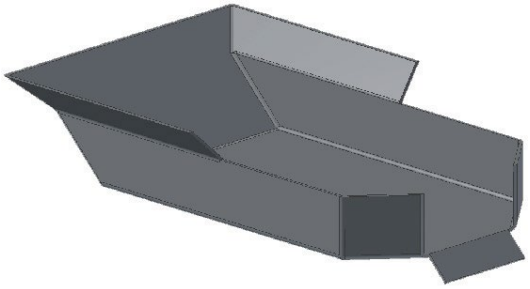


9. Accessories and components

TUBE FOR LIQUIDS ADDITION:
This accessory is suitable to incorporate liquid products into the IBC during agitation, improving the mixture quality when incorporating liquid into the product. The mixing is done instantly and reduces the manufacturing time.



HOPPER FOR SOLIDS ADDITION:
This accessory is suitable to incorporate solid products into the IBC during agitation, improving the mixture quality when incorporating solid into the product. Reduces the formation of lumps and reduces the manufacturing time

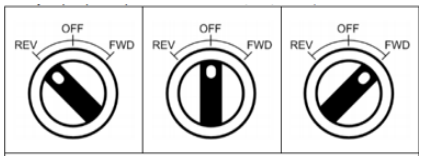


The agitator is made up of different components or elements that, in case of breakdown, maintenance or substitution you must refer to the specific documentation attached to this manual.

Any component or accessory that is added to the equipment must comply with the machine's CE standards.

9.1. Variable speed drive

Selector Start / Stop

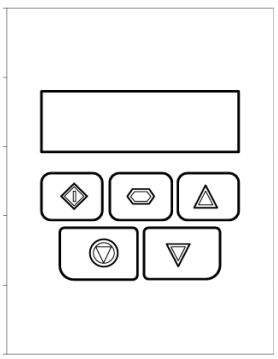


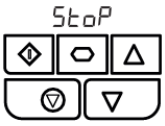
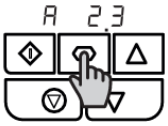
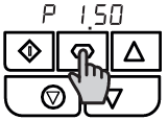
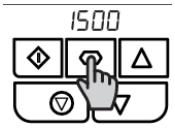
STOP **STOP** **START**

Potentiometer

Sets the output frequency

The agitator must always rotate clockwise, otherwise, 1 phase must be reversed.

keyword			
	Browse	Used to display real-time information, to enter and exit parameter editing mode, and to save parameter changes.	
	Up	It is used to increase speed in real-time or to increase parameter values in edit mode.	
	Down	Used to decrease speed in real-time or to decrease parameter values in edit mode.	
	Reset/stop	Used to reset the drive when 1 emergency stop has been made. It is also used to stop the drive when it is running.	
	Home	Used to start the converter when it is off.	

Screen operation				
				
Converter OFF	Converter on, the display shows output frequency (Hz)	Press the Navigate button for 1s. The display will show the motor current (A).	Press the Browse button for 1s. The display will show the engine power (kW).	Si P-10=0, when pressing Navigate for 1s. The display will show the engine speed (RPM).

To start up:

Voltage ON	Gear Selector	Emergency stop pressed	Unlock emergency shutdown
			
	The agitator must always rotate clockwise, otherwise, 1 phase must be reversed.	**E-trip** display indicates that the emergency stop is activated.	Pull back the emergency stop button + reset/stop but

10. ATEX

10.1. ATEX Motors

ATEX motors considerations

FOR MOTORS WITH PROTECTION MODE EEx d (AREA 1)

- Must have the means for the direct control of the temperature using built-in temperature sensors indicated in the motor documentation or other effective means to limit the surface temperature of the motor housing. The action of the protection device is to cause the electrical disconnection of the motor.

FOR MOTORS WITH PROTECTION MODE EEx e (AREA 1)

- Type tests for this service have been conducted on the motors supplied to different frequencies and voltages by a converter as an associated unit with the converter and the protection device.

FOR MOTORS WITH PROTECTION MODE EEx nA (AREA 2)

- The motor documentation must include the parameters and conditions required to use it with a converter.

- Must have the means for the direct control of the temperature using built-in temperature sensors indicated in the motor documentation or other effective means to limit the surface temperature of the motor housing. The action of the protection device is to cause the electrical disconnection of the motor

10.2. Electrical operation

To perform the equipment operation and control, an electrical part is provided that can be of two types:

- Direct motor
- Disconnector with mechanical interlocking
- 10m armored cable with male CETAC

10.2.1. Direct motor

It is when the equipment is provided without any type of control.

10.2.2. Disconnector with mechanical interlocking

Includes:

- Disconnector with mechanical interlocking
- Female CETAC input in base
- Aerial male CETAC connector

10.2.3. Armored cable

Includes:

- 10m armored cable
- Aerial male CETAC connector

In the different options described above, you must connect the agitator to the electrical panel and this must have **AT LEAST** the following components and safety devices according to the attached diagram (page 18):

- A general voltage switch.

- The line must be protected and have a thermal-magnetic and residual current circuit breaker according to the characteristics of the electric motor.

- And an emergency shutdown according to regulations, that when activated deactivates the power supply and stops the operation.

Once connected to the electrical grid and the support installed over the IBC container, it is in condition to turn it on and perform the first tests with water. In case any problem arises, please contact PIMEC, S.L.

10.3. Safety instructions against explosion risk

10.3.1. Intended use

The equipment is an agitator suitable to work in classified areas for flammable gases and vapors classified as **AREA 1 and 2**, and for combustible dust as **AREA 21 and 22**.

Thus, the marking of the set has been done:

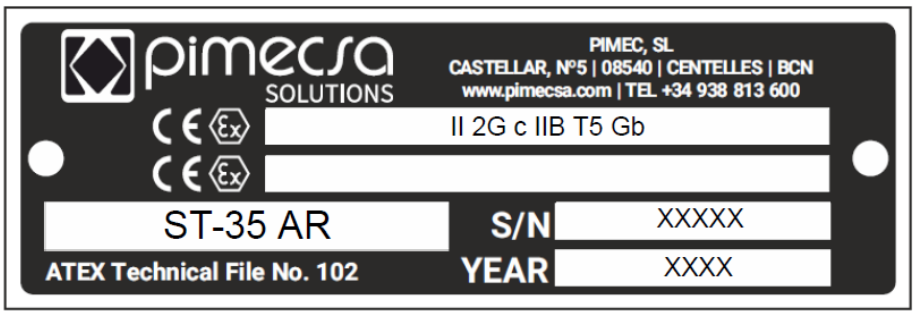
II 2G c IIB T5 Gb

Group II, Category 2, Temperature class T5, EPL: Gb, Db

According to the requirement of Category 2, in the ignition risk assessment we ,have taken into account the ignition sources that can occur in theagitator'sr normal operation and foreseeable dysfunction.

Even though the agitator does not intend to comply with the requirements for Category 1, in the face of the ignition risk assessment, there is a part of itself (tank interior) that could b the area 0 or area 20, so ignition sources have been assessed considering the rare dysfunction, being necessary that the final user follows and complies with the instructions given in this manual to ensure the safety.

NOTE: This manual's dispositions concerning the explosion risk are completed with the use and installation manuals supplied by the manufacturers of each piece of equipment.



10.3.2. Special conditions of use

It presents the symbol "X" in the marking plate. In case that the room temperature is different to the standard one, it will be described in the Appendix I.

10.3.3. Electrical equipment incorporate to set with ATEX marking

In the installation and maintenance, the use and installation manuals of each piece of equipment certified with ATEX must be followed.

The description of each piece of equipment is specified in the Appendix I.

For the electrical equipment maintenance, the **EN 60079-17:2008** standard must be followed.

For the repair of electrical equipment, the **EN 600079-19:2010** standard must be followed.

10.3.4. Electrostatic discharges

The transmission belt is from an antistatic material avoiding static electricity discharges. The replacement must be an identical part or of equivalent characteristics to the ones given.

To avoid the formation of electrostatic sparks, the agitator must be grounded and equipotentially united to the tank reactor where is inserted. You must check regularly the grounding and the existence of equipotential bonding between the masses and the grounding. Earth resistance values of 10^6 Ω or inferior guarantees an efficient connection from the point of view of static electricity.

Bearing cap (in the case of agitators with direct motors and provided with a turret bearing) is designed in a non-conducting material, during the cleaning or maintenance processes must be cleaned with a moist cloth to avoid accumulates electrostatic charge.

General considerations to keep in mind during the handling of flammable liquids.

During the handling of flammable liquids you must take into account the following considerations to avoid or control the generation of electrostatic charge:

- Limit the flow in the feeding of the tank by limiting the pump rate or increasing the feeding diameter.

- Avoid a second immiscible phase in the liquid.

- Avoid splashing during the filling by using an input for the bottom or using a filling pipe that goes near the bottom of the tank. It must be avoid the filling of flammable liquid while producing agitation.

- If short pipes are used in presence of potentially explosives atmospheres, the maximum flow allowed will be reduced significantly and you have to ensure that:
    - The fall does not exceeds 3 meters and

    - The distance from the final pipe to the maximum level of liquid is big enough for those discharges to be unlikely to happen.

You must not take samples nor perform measurements by means of the insertion of probes while the agitation processes last; being advisable to wait for a moment once such process is finalized to allow the charge generation to dissipate.

As a general rule, non-conducting material tanks and tanks with non-conducting layers bigger than 2 mm (gases subgroups IIA and IIB) and 0.2 mm (IIC) must be avoided.

On the other hand the direct load of dust over flammable liquid must be avoided by means of either a previous inertization or loading the dust before the filling of liquid is done, avoiding that the dust is highly charged due to pneumatic transport, micronizing processes, etc. or introducing a waiting time before loading the flammable liquid.

If this is not possible for the dust loading over flammable liquids, you must take into account the following:

- Overall, suitable containers or dissipative or grounding paper sacks must be used. Shake the sacks repeatedly must be avoided as it can generate electrostatic charge.

You could use as well metal or dissipative containers with layers or non-conducting material coating as long as this coating does not have a thickness of more than 2 mm (IIA, IIB) and 0.2 mm (IIC) ensuring that such coating cannot be detached during the emptying and that the container can be grounded.

Another way would be to use a receiver container and a metal or grounded conductor unloading ramp and equipotentionally united to the tank. Overall, the risk cannot be exactly defined nevertheless it is consider that the risk is low except if the unloading ramp exceeds 3 meters in length or if the dust involved is non-conducting dust.

In both cases, the risk can be reduced by limiting the filling speed to 1 kg/s.

We have to bear in mind that handling of flammable liquids of low conductivity < 50 pS/m is especially prone to risks derived from static electricity sparks.
It is advised to follow the **CLC/TR 50404 guide** to avoid risks derived from static electricity.

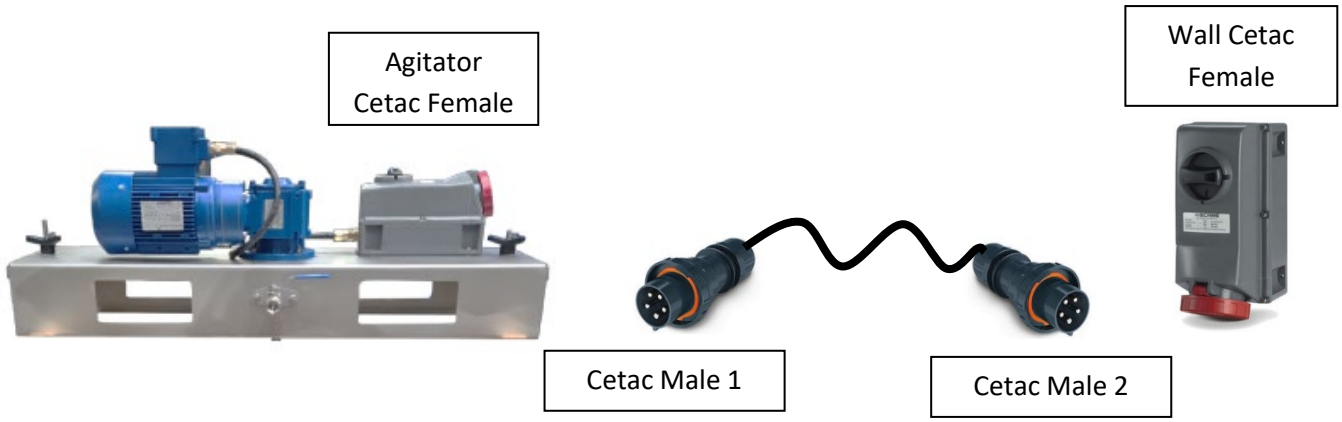
10.3.4. ATEX Components

Equipment description	Model	Manufacturer	ATEX Marking
Motor	RL	RAEL	II 2G Exd IIC T5 Gb
Reducer	SK	NORD	II 2G Ex h IIC T4 Gb
EExd cable gland	E1WBF/20S/20M o similar	BARTEC	Ex d IIC/Ex e II/Ex tD A21
Disconnector	503.1687	SCAME	Ex tb IIIC T90°C Db IP66
Aerial CETAC plug	218.EX1637	SCAME	Ex tb IIIC T90°C Db IP66
Armored cable	RVMV-K FB RH 0.6/1kV	SUMCAB	

11. ATEX Connections

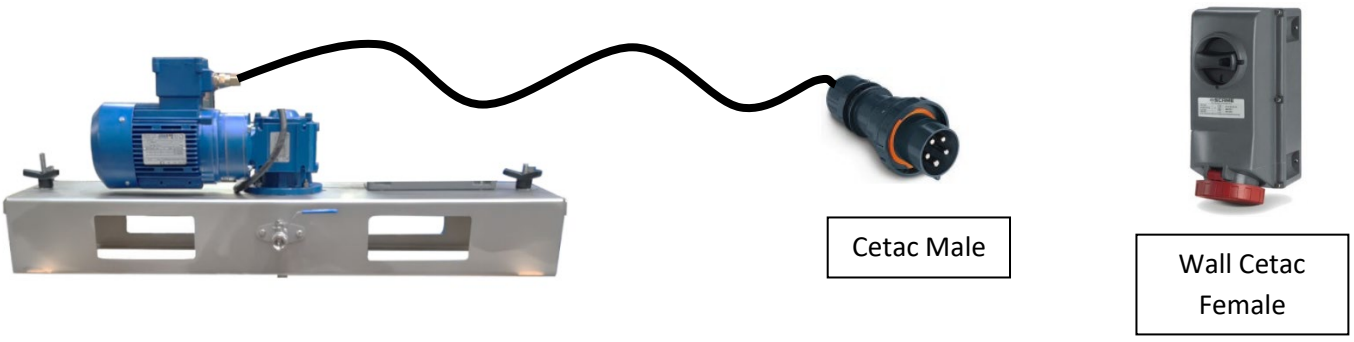
Safe connections for IBC ATEX mixers.
There are 2 different types of connections, depending on whether the IBC ATEX Shaker is supplied with Cetac connection or directly with 10m of armoured cable with Cetac male connector.

CONNECTION OPTION 1:
1st - Connect Cetac Male 1 to Agitator Cetac Female
2nd - Connect Cetac Male 2 to Wall Cetac Female



NEVER handle the CETAC male 1 with electrical voltage as this may cause damage Danger to persons and/or equipment.

CONNECTION OPTION 2:
1st - Connect Cetac Male to Wall Cetac Female



12. Noises and vibrations

Airborne noise of the equipment working without load will be indicated in the motor manual, so the **user must do a noise measurement of the actual work conditions,** because the noise can vary depending of the tank deposit and product type.

To avoid noises and vibrations, it must be ensure that the support knobs have the appropriate tightening and that none is loose.

In the rating plate is indicated the maximum speed at which the agitator can work, which can never be exceed, in order to avoid possible vibrations. In case of having a variable speed drive, see APPENDIX I.

13. Cleaning

You must pay especial attention if cleaning is done with flammable liquids: gasoline, alcohol, etc. In those cases, a renovation of the atmosphere must be done and avoid the potentials ignition sources during the operation (The agitator must always work with product above the bending limiter tripod.

If there is a lubricant spilling, the excess must be clean avoiding the contact with moving parts.

In case the tank or reactor does not have a cover, there may be splashes, so it is advisable to clean the area properly once the agitation is finished.

14. Maintenance

Always keep the machine and its different accessories in perfect condition for a proper functioning of the equipment.

The instructions have been written for the maintenance staff and for the persons responsible of changing the spare parts.

Maintenance and cleaning jobs of the equipment must only be carried out if the engine is stopped and the tank is empty.

ALWAYS unplug the agitator before starting the maintenance jobs

MAINTENANCE ACTIONS:

- Inspect the agitator regularly.
- Do not neglect the cleaning of the agitator.
- Check the status of the motor or geared motor.
- Check the status of the bearings.
- Verify the shaft seal.

Maintenance of the motor and geared motor will be done according to the manufacturer indications.

LUBRICATION

IBC agitators go mounted with permanently greased bearings, with which they do not need maintenance.

SPARE PARTS

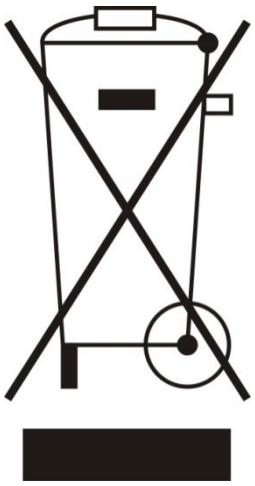
To order spare parts is necessary to indicate the type and serial number that is written down in the rating plate of the agitator, as well as the position and description of the part.

CONSERVATION

As a safety precaution, in case of no using the equipment for a long period of time let the emergency shutdown pressed and remove the voltage from the control panel, to avoid possible unwanted startups.

If the equipment has remained inactive for a long period of time, before putting it back in operation, it is recommended to do a general inspection of the components (screws, agitation elements, shaft-reducer-motor union, etc.), and in case of having automatisms, check its proper functioning.

15. Waste management



The equipment is composed in its majority by metal material, but also can contain other types of materials as plastics, rubbers, ceramic, etc. so in case of wanting to dispose of the equipment, it must be dismantled classifying the parts and components by materials, which has to be treated through the authorized waste manager that corresponds to each case.

To avoid possible damage to the environment or human health, the equipment must be recycled in a respectful way.

16. Risks during the handling and use of the equipment

Risks of all agitators:

- Agitators are heavy equipment, so they must be transported taking the necessary precautions to avoid personal and material damages during the assembly and moving.

- Electrical and/or power panel have electrical voltage so there is a risk of electrocution.

17. Troubleshooting

Possible breakdowns:

The agitator motor does not start:

- Check that Emergency Shutdown push button is unlocked.
- Check that the control panel thermal-magnetic circuit breaker had not jumped.
- Check that the electric motor is receiving current.

The motor works, but it does not transmit movement to the agitation shaft:

- Check that the equipment is properly connected to the electrical grid and according to the characteristics described in the rating plate of the motor.
- Check that the coupling between the motor and the reducer or between the motor and the agitator is not deteriorated.
- That the product is suitable to the characteristics of the agitator.

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