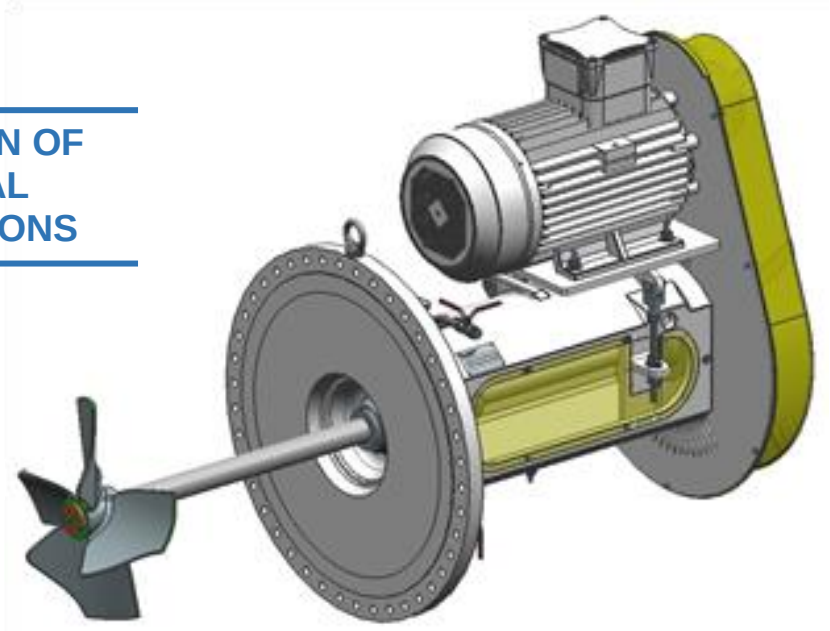
INSTRUCTION MANUAL

FOR INSTALLATION,
OPERATION,
MAINTENANCE.

SIDE ENTRY MIXERS
H SERIES

This manual is intended for the person responsible for the installation, operation and maintenance of this equipment.

TRANSLATION OF ORIGINAL INSTRUCTIONS



Milton Roy Europe – 10 Grande Rue – 27360 Pont-Saint-Pierre – France

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In the manual below, Milton Roy Europe may be mentioned using the abbreviation MRE.

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DECLARATION D'INCORPORATION

DECLARATION OF INCORPORATION

Nous MILTON ROY Europe déclarons sous notre propre responsabilité que les agitateurs des séries :
We MILTON ROY Europe declare under our own responsibility, that mixers of the following series:

- HELISEM
- HELIMIX
- HM
- ELAT type H et F
- ROBIN type A, B, C, D, E, F, G, H

Répondent aux exigences de l'annexe II 1.B de la Directive 2006/42/CE.
Comply *with requirements the annex II 1.B of the 2006/42/EC Directive.*

La mise en service est interdite avant que la machine, dans laquelle notre matériel doit être incorporé, soit déclarée conforme aux dispositions de la Directive 2006/42/CE.
The startup is prohibited before the machinery, in which our material is incorporated, complies with the requirements of the 2006/42/EC Directive.

MILTON ROY Europe s'engage, sur demande des autorités nationales, à leur transmettre la documentation technique concernant la quasi-machine qui a été constituée conformément à l'annexe VII-partie B.
MILTON ROY Europe undertakes, at the request of national authorities, to send the technical documentation regarding the partly completed machinery which has been established in accordance with the Annex VII part B.

Pont Saint Pierre

DEPARTMENT
18/02/2021
Manager

DEPARTEMENT QUALITE
QUALITY

Responsable Qualité / *Quality*

Emmanuel FONTAINE

MILTON ROY EUROPE
Responsable QEHS EMEA
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Société par Actions Simplifiée au capital de 2.400.000 Euros. SIREN 663 650 547 R.C.S. Evreux.

ABOUT THIS MANUAL

This user manual contains important information on the installation, assembly, operation, functioning, maintenance and servicing of the mixer.

Safety Standards

Persons responsible for the installation, operation and maintenance of this mixer must take into consideration the recommendations of this manual in order to avoid any risk or any environmental effects while ensuring that the equipment is used in the best possible way. Particular attention must be paid to the advice and instructions of this manual. Finally, any mixture of chemical products needs to be done after following the safety data sheets (SDS) of these products and site recommendations.

I – HEALTH AND SAFETY INSTRUCTIONS

I – 1: Safety Terms

Please be aware of the table below concerning the various terms used in this manual.

SAFETY TERMS	Consequences if the recommendations are ignored
ATTENTION	Risk of serious or fatal injury if the danger is not respected.
Warning	Risk incurred (minor injury) if the danger is not respected.
Caution	Risk of damage to the equipment if the danger is not respected.
Note	Remarks needed so that the mixer can be used better.
LOTO	“Lockout – Tagout” is a safety procedure in order to ensure that dangerous equipment is correctly stopped and made inoperative and is not restarted before the maintenance or servicing work is completed.

The person responsible for the installation, operation and maintenance must be aware of this manual and be familiar with its contents in order to:

- Prevent any risk to their person or a third person,
- Ensure the reliability of the equipment,
- Prevent any error or pollution due to improper handling.

ATTENTION :

- **Any work carried out on the equipment must be done while it is stopped. For the entire duration while work is being carried out, take the necessary precautions to prevent any accidental restarting (e.g.: locking the switch, removing the electrical power supply fuse).**
- **Any handling of the mixer or part of it must be done by a skilled and authorised person (example: CACES (Safety Conduct Aptitude Certificate), crane or sling operator, etc.)**
- **Any work carried out on the electrical part must be done by a skilled and authorised person (example: electrical authorisation, etc.)**

In any case, refer to the legislation in force, to the safety rules and best practice for handling loads and for electrical and mechanical work in the country of operation as well as on the site where the mixer is installed. Also refer to the usage rules for handling products filling the tank or coming into contact with the mixer (Wearing of Personal Protection Equipment, safety data sheet).

You must comply with the safety procedures of your company while performing maintenance on the equipment or repairing it. Ensure that you have understood all the procedures and instructions before starting work on the unit.

Check that the place where the mixer will be installed is not subject to any specific regulation. If so, adapt these specific regulations to the instructions in this manual in order to comply fully with local regulations for health and safety instructions.

I – 2: Health and Safety Risks

Gloves must be worn:
- During any handling to avoid any potential cut.
- While handling any chemical product in order to prevent any chemical attack and potential burns.

Wearing safety shoes is imperative during any handling to avoid any potential crushing.

Wearing safety goggles is imperative while carrying out any work on the mixer to prevent any projection of any type.

Wearing suitable work clothes (close-fitting) is compulsory while carrying out any work, to prevent cuts, burns, chemical attack, being drawn in by rotating parts.

While the installation is in operation, wearing a hard hat is compulsory during any work carried out, to avoid any head impact.

While the installation in in operation, wearing ear defenders is compulsory, in case the regulatory sound pressure threshold for your region is exceeded.

While the installation is in operation and products are used, wearing breathing apparatus is compulsory in case the regulatory limit threshold for exposure for your region is exceeded.

While the installation is in operation, wearing fall protection equipment is compulsory where there is the risk of fall from height may be present. The staff must be trained in working at height and made aware of the use of the harness.

I – 3: Fire-Fighting Measure

Appropriate means of extinction: use foam, dry powder or carbon dioxide (CO_2) to extinguish flames.
Staff must be trained in fire-fighting measures. There must a first aider or an authorised person on the staff, according to the standards for the country.

- **Inappropriate Means of Extinction: Direct Water Jet**

Fire-fighting instruction: evacuate the area. Prevent any fire-fighting products from running into the drinking water systems and the drains. Fire-fighters use suitable protection equipment and self-contained breathing apparatus in confined spaces.
A suitable extinction system is to be used by a trained member of staff following the standards and laws in force in the country where the equipment is installed.

I – 4: Environmental Risks

Packaging that is used to protect the mixer (box, stuffing, wood etc.) must be disposed of by following selective sorting in force in your region.

When emptying, the waste oil must be collected in a suitable container and disposed of in accordance with the regulations in force in your region.

Oil spills that may be produced must be cleared up using a degreaser appropriate to the conditions of operation.

Soiled cleaning rags must be thrown into suitable containers and disposed of in accordance with the regulations in force in your region.

Oil, degreaser or any other chemical product must be stored in accordance with the regulations in force in your region.

Outside the conditions of use (storage, maintenance, etc.), any part of the mixer having been in contact with chemical products must be decontaminated and the residues of this decontamination must be disposed of in accordance with the regulations in force in your region.

Any part of the mixer replaced must follow a reprocessing cycle in accordance with the regulations in force in your region.

It is recommended to keep close to the handling of chemical products an accidental spillage kit or an emergency intervention kit (with rollers, sand bags, protective gloves, pairs of protective goggles, recovery bag).

I – 5: Residual Risks

In spite of the fact that safety has been integrated into the design and protective and preventative measures have been taken, the following residual risks remain:

- Mechanical risks:
  - During any handling, it is compulsory that this is carried out by duly trained and qualified staff (e.g. CACES (Safety Conduct Aptitude Certificate), crane or sling operator, etc.)
  - While carrying out any work in the area surrounding a rotating part, it is compulsory that the mixer has been labelled to prevent accidentally restarting it.
  - While carrying out any work on a pressurised system, it is compulsory to isolate the pressure, to label the entry valve and purge the residual energy in order to prevent any accidental repressurisation.

- Electrical risks:

  - While carrying out any work in relation to the electrical energy power supply, this work must absolutely be carried out by trained and qualified staff, equipped with suitable protection equipment. (e.g.: electrical authorisation, etc.).
  - The signage on an electrical installation as well as the safety signs must be followed.
    Suitable personal protection equipment must be worn.

- Risks incurred by materials and products:
  - While carrying out any work on a pressurised system, it is compulsory to isolate the pressure, purge all the product, to label the entry valve and purge the residual energy in order to prevent any accidental repressurisation.
  - Before carrying out any work on a part of the machine having been in contact with dangerous products, undertake decontamination.
  - In case of preventive maintenance by Milton Roy Europe, contact the after-sales service department and send a decontamination form before sending the equipment for maintenance.

- Thermal risks:
  - If the machine operates abnormally, certain elements may get hot and initiate a risk of burning.

- Risks incurred by noise:
  - When the entire installation comprising our machine is operating, in case the authorised noise threshold is exceeded, make sure to wear ear defenders.

- Risks incurred by vibrations:
  - When the entire installation comprising our machine is operating, in case the authorised threshold is exceeded, make sure to wear suitable protection equipment.

I – 6: Precautions to be Followed

Milton Roy Europe mixers are designed to provide complete satisfaction to the customer regarding efficiency of mixing and mechanical reliability.
A mixer is subject to relatively high limits, for which it is designed, and generates large forces on its support and on the tank*. For example, it rotates a hundred tonnes of liquid for a* tank *of 100 m³. It is important to be aware of the forces when designing the support for the mixer as well as the* tank*, to take care of its installation and its maintenance according to the procedures described in this manual. The service life achieved will be able to be exceptional.*

1. Do not use the mixer under conditions not envisaged at the start.
2. Never perform work on a mixer that is rotating.
3. Do not carry or lift the mixer by the shaft or the impeller.
4. Do not install any mechanical fastenings other than the one provided or described in this manual.
5. Follow the installation instructions and the tightening torques.
6. Do not connect a variable frequency drive without contacting Milton Roy Europe (there are precautions to be taken and parameters to check: min. speed, max. speed, motor protection etc.)
7. Be sure to approach the agitator head only after checking that no abnormal movement occurs.
8. Scrupulously follow the agitator assembly procedure, particularly make sure you have an agitator support that accepts the static and dynamic forces generated by the agitation (see the agitator characteristics).
9. After disassembly, it is advisable to replace the bolts already used, as they may have been damaged.
10. Do not remove the protections from the rotating parts if they exist and depending on the configuration of the tank, if necessary, provide a device to prevent any possible contact with the rotating parts.
11. Do not attempt to deflect the flow of liquid when the agitator is in operation or to slow down the rotation of the propellers by any device.
12. Do not modify the characteristics of the agitated substances without notifying Milton Roy Europe in order to check the compatibility of the new mixture with the possibilities of the agitator (possible increase in power, effort which may reduce the service life or even damage the equipment.).
13. Do not change operating conditions such as temperature or pressure without checking that the agitator is designed for it.
14. Do not install the agitator in a tank not originally intended without consulting Milton Roy Europe, be sure to check that the two assemblies are suitable.
15. Do not run the agitator directly driven by the motor, when empty, during filling or emptying, or with a variable speed drive.
16. Stop the agitator in the event of abnormal vibration, electrical intensity higher than the original characteristics of the motor, suspicious noise or excessive temperature.
17. Regularly check the condition of the machine (traces of corrosion, loose parts, etc.) and stop the agitator for any observed anomaly.
18. Do not replace the original parts with other parts not supplied by Milton Roy Europe in order to ensure good compatibility between them and the reliability of the equipment.
19. Do not modify the propeller, nor add a propeller to the shaft.
20. Do not use the shaft or propeller on any other agitator.
21. Do not attempt to turn faster than rated speed as the influence on power and effort is considerable.

I – 7: Instructions on Noise and Vibration

A) Noise

The weighted acoustic emission pressure A at 1m from the mixers of the Side Entry® range is less than 85 dB(A).
This is unless other values are known specified in the MRE quotation.

In certain resonance configurations between the mixer and the installation, this acoustic pressure level may be amplified.
In this case, we recommend:

- Changing the natural resonance frequency of the installation (for example: stiffening the structure, moving an element of the structure, etc.), or
- Putting damping devices between the mixer and its support, or
- Undertaking capping to improve sound insulation.

B) Vibration

Mixers of the Side Entry® range generate vibrations. These vibrations are measured on the left side of the belt drive and compared to an internal MRE procedure. This is unless other values are known specified in the MRE quotation.

In certain resonance configurations between the mixer and the installation, this vibration level may be amplified.
In this case, we recommend:

- Changing the natural resonance frequency of the installation (for example: stiffening the structure, moving an element of the structure, etc.), or
- Putting damping devices between the mixer and its support. (Contact MRE)

I – 8: ATEX Certification

If the mixer ordered is ATEX certified (used in explosive area), the installation and maintenance must be done according to the legislation in force by skilled staff approved to carry out this type of work. Any work carried out on the equipment by a body that is not certified will cause the ATEX certification to be null and void.

It is necessary to check the conformity of ATEX marking of the equipment with the area of the installation.

II – GENERAL INFORMATION

II – 1: Proper Usage of the Machine

A) Conditions and Limits of Use

- Assemble all the tightening torques of the mixer in accordance with the assembly diagram and turn the lockplates.
- With the mixer fastened to the tank or to a support designed to resist static and dynamic loads.
- Electrical connection conforming with the rating plate of the motor and to the safety regulations.
- Shaft inside the tank
- Impeller inside the tank
- For mixers:
    - Max. density and viscosity of the product in accordance with the MRE quotation.
    - Max. T° of the product and pressure inside the tank in accordance with the MRE quotation.
    - Max. external T° in accordance with the MRE quotation.
    - Product to be mixed compatible with the material of the shaft and impeller.
- Rotation speed in accordance with the specifications of the MRE quotation.
- Mixing operation in accordance with the MRE quotation.
- Volume of product to be mixed in accordance with the MRE quotation.
- Safety or protection equipment in place and operational (closing plate, thermal relay (not supplied by MRE), etc.)

B) General Mode of Operation

1- Switch off the agitator
2- Add the product/s to be agitated up to the minimum agitation level
3- Turn on the agitator
4- Agitate

To drain off below the minimum agitation level:

5- Switch off the agitator
6- Drain off the product/s

The agitator can operate during filling and draining up to the minimum level indicated in the General Arrangement Drawing (See Vendor Book).

II – 2: Incorrect Usage and Advice Against Use

Attached are some of the incorrect usages reasonably foreseeable considered in the case of a mixer in operation.

Incorrect Usage Reasonably Foreseeable	CONSEQUENCE TO:		
	Equipment	**Personal Health/Safety**	**Environment**
Tightening torques not observed	- Generation of vibrations - Detachment of a component may cause significant damage	Detachment of a component may cause significant damage and may cause a serious accident leading to death.	Detachment of a component may cause significant damage
Mixer outside the tank		Risk of drawing in by the rotating shaft or impeller may cause a serious accident or even death.	
Mixer support too small	Oscillation of the mixer may cause the support or the mixer to fail	Risk associated with breakage	Risk associated with breakage
Unsuitable cabling equipment	- Partial damage to the electrical installation - Fire	Risk associated with fire	Risk associated with fire
Density and viscosity of the product above the value provided	- Mechanical failure - Overheating motor - Risk for the installation following the product and/or the process	Risk associated with breakage	- Over-consumption of electricity - Risk associated with breakage
T° of the product and/or pressure in the tank different from that provided	- Mechanical failure - Risk for the installation following the product and/or the process	Risk associated with breakage	Risk associated with breakage
Different exterior T° to that provided	- Motor/gearbox overheating - Partial damage to the electrical installation - Fire	Risk associated with fire	Risk associated with fire
Mixing operation different from that provided	- Reduced performance of the process - Mechanical failure - Risk to the equipment/installation	Risk associated with breakage	Risk associated with breakage
Product different from that provided	- Corrosion may cause significant damage	Risk associated with breakage	Risk associated with

	to the equipment/installation and/or product - Service life of the mixer - Breakage may cause significant damage to the equipment/installation		breakage
Use of different container than that provided	Breakage may cause significant damage to the equipment/installation	Risk associated with breakage	Risk associated with breakage
Volume of product to be mixed different from that provided.	Breakage may cause significant damage to the equipment/installation	Risk associated with breakage	Risk associated with breakage
Addition of a system that changes the rotation speed initially provided or not following the recommended speed level	Breakage may cause significant damage to the equipment/installation	Risk associated with breakage	Risk associated with breakage
Addition or modification of components of the mixer	Breakage may cause significant damage to the equipment / installation	Risk associated with breakage	Risk associated with breakage
Attempt to access/ carry work out on the inside of the tank (addition of product, removing a deposit, cleaning, etc.)		- Risk of drawing in by the rotating shaft or impeller may cause a serious accident or even death. - Risk of electrification or electrocution.	
Protection removed		- Risk of drawing in by the rotating shaft or impeller may cause a serious accident or even death. - Risk of electrification or electrocution.	

III – INSTALLATION

III – 1: Acceptance

Packages are adapted to the transportation standards according to the SEI (Industrial Packaging Union) standards. The packaging of mixers depends on their destination, they are negotiable and validated through the contract.

Packaging must be examined carefully on acceptance of the package in order to ensure that the contents have not incurred any apparent damage. Open the packaging carefully. Examine the contents and check that nothing is missing using the delivery slip. Check that the manufacturer's plates are the same as in the order.

If the package is in a bad condition, a declaration of damage must be compiled in the presence of the haulier, then advise Milton Roy Europe. Furthermore, if any parts are missing, please warn Milton Roy Europe **within 10 days**.

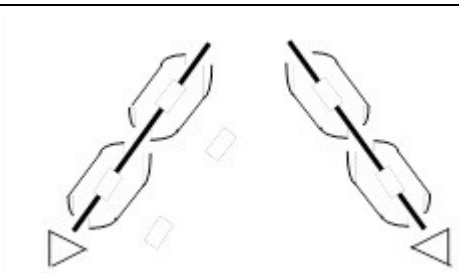
III – 2: Handling of the Packaged Equipment

For transporting before installation, refer to the markings on the boxes.

Means of lifting and slinging tools are checked and in accordance with the regulations in force. Choose means of lifting compatible with the weight of the parts to be handled.

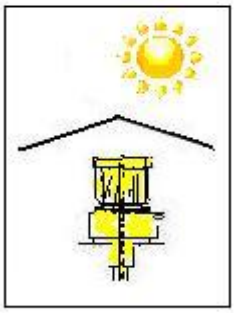
ATTENTION: Staff responsible for handling must wear suitable personal protection equipment. They must be qualified and competent according to local legislation and will use the appropriate handling resources on site.

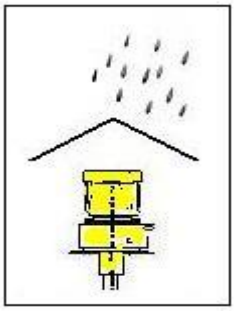
The packaging is identified and standardised with slinging sites. The direction of the boxes is in accordance with the SEI standard.

N°	Mark	Description	Colour
1		CENTRE OF GRAVITY	BLACK
2		SLINGS HERE	BLACK
3		UP / KEEP UPRIGHT	BLACK
4		FRAGILE / HANDLE WITH CARE	BLACK
5		KEEP DRY	BLACK

III – 3: Storage

On site, the storage of boxes is done sheltered from the weather, in a clean place, the authorized temperature range of which is: +5°C to +40°C.
Avoiding putting the equipment too close to vibrating equipment, compressors, combustion engines, reciprocating pumps.
The boxes will not be opened unless there is a need to check or work needs to be carried out while storing and if they have deteriorated during transportation or handling.
At this time, it is up to the recipient to ensure that the equipment is kept in perfect condition.





III – 4: Precaution for Storage for Less than or Equal to Six Months

Storage will preferably be done in the original packaging sheltered from the weather and impact, but not too close to vibrating equipment, because the vibrations of the latter may cause wear of the bearings and the mechanical seating.

The machined external parts are protected by applying a protection fluid.
The bearings are greased.

III – 5: Storage for More than Six Months

Storage for more than six months is to be indicated at the time of the order.

In case of long-term storage apply to your order, customer shall refer to the dedicated packing and preservation procedure of their project in which such storage conditions are described.

Note:

- The shaft must be stored horizontally (*see sketch in the manufacturer's folder*).
- Any extended storage before or after use under particular environmental conditions (humidity, direct contact with the sun, salinity, vibrations, corrosion) limits the application of the guarantee.

III – 6: Unpacking the Mixer

Warning: when unpacking the product, it is necessary to wear suitable personal protection equipment. Staff made aware of the operation will use suitable unpacking equipment. They are also qualified and skilled, in accordance with local legislation.

III – 7: Handling the Mixer

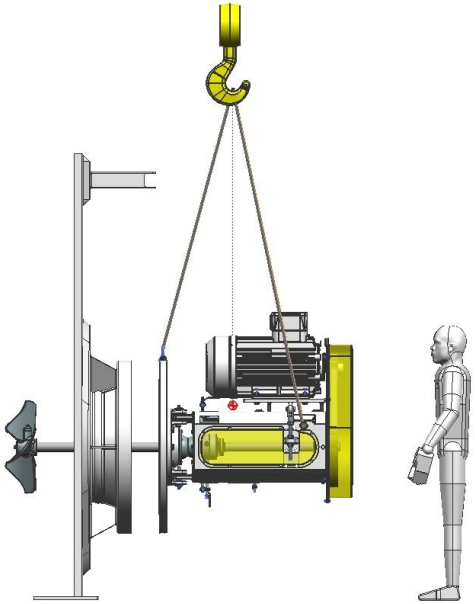
Warning: the handling means are suitable. The staff is equipped with suitable personal protection equipment.

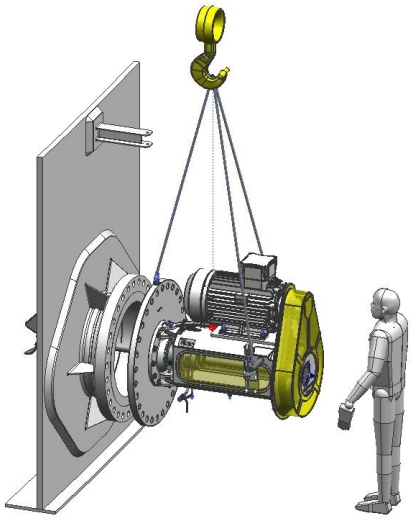
Means of lifting and slinging tools are checked and in accordance with the regulations in force. Choose means of lifting compatible with the weight of the parts to be handled.

Caution: make sure when handling not to damage to shaft, in particular not to deform it. Make sure not to damage the covering and paintwork! Mechanical (scratches), chemical (acids, cleaners) or thermal (sparks, welding beads, heat) damage causes a corrosion phenomenon and prevent the protection from playing its role. Any damage may cause the guarantee to be cancelled.

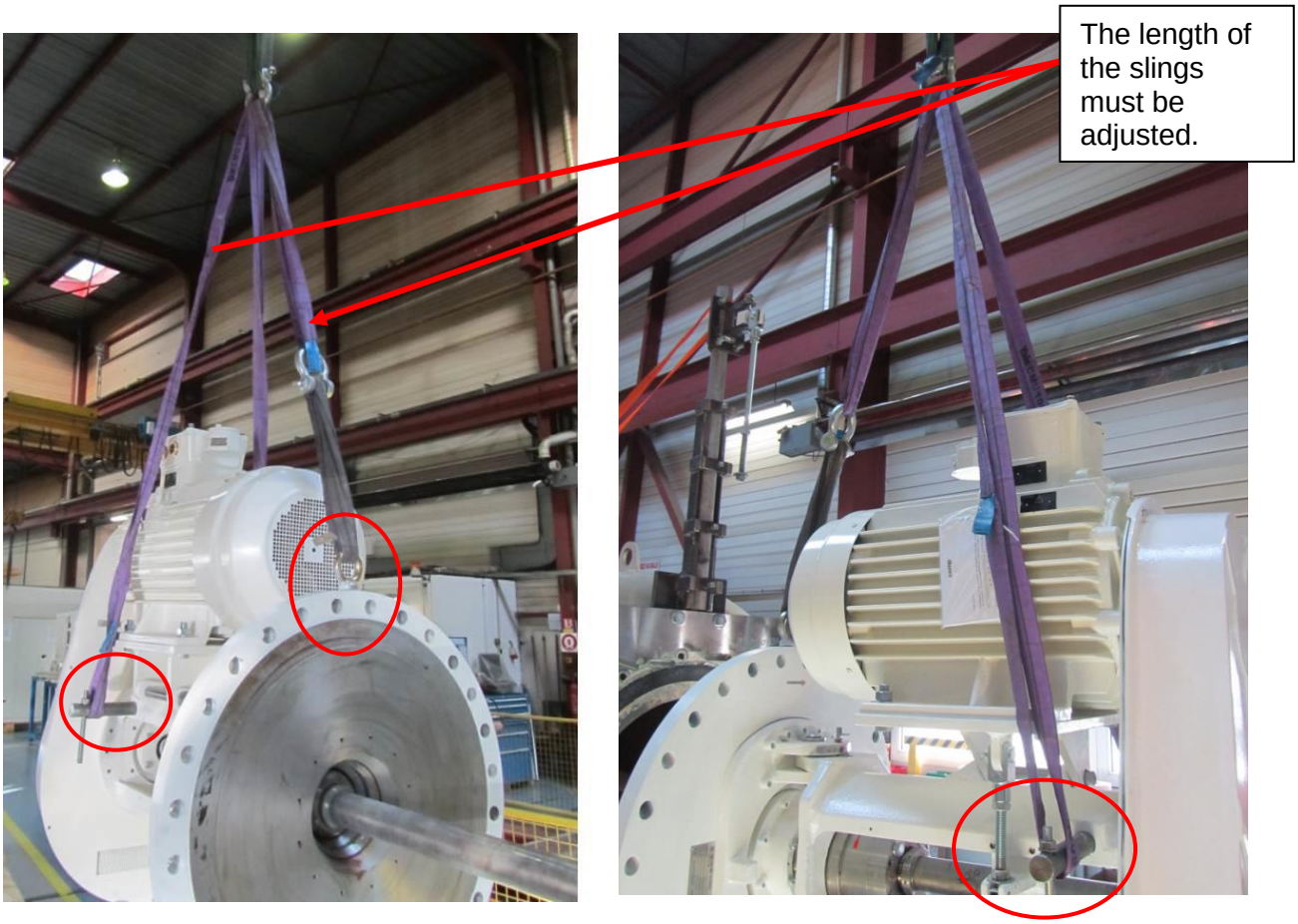
III – 8: Hoisting Procedures

The pre-setting of the load chains depends on the weight of the agitator.





Align the agitator in front of the flange of the tank.
Check that the flange seal is correctly positioned on the flange tank.
Caution: Do not damage the shaft or propeller while manoeuvring the agitator.



III – 9: Equipment Needed for Assembly

Warning: the tooling on site must be appropriate and comply with the legislation in place.

III – 10: Assembly

WARNING: during all operations, the staff responsible for handling and assembling must wear suitable personal protection equipment. The site must be equipped with suitable means of handling.
If staff have to enter into the tank, always ensure that the mixer is turned off and locked.
Make sure to respect the tightening torques, by using a torque wrench.
It is recommended to call the services of MRE for assembly assistance.

Follow the instructions on handling in paragraph III – 7.

IV – INSTRUCTIONS FOR REMOVING/FITTING THE MECHANICAL SEAL

IV – 1: Description

This chapter contains a step-by-step guide on how to remove the mechanical seal, with pictures and descriptions to help you locate the marks and understand the different steps.

IV – 2: Tools required for removing / mounting

Not included in the Milton Roy Europe supply:

- Slings, hooks, shackles and ropes adapted to the loads to be lifted.
- A full set of wrenches from 8 to 30 mm.
- Grease compatible with the liquid stocked in the tank: PTFE.

Make sure to have all the tools you need for the bolts used on your mixer.
See the bill of materials to check the sizes to be used to disassemble or assemble the mechanical seal.

- A torque wrench and a set of for tightening the screws.
- A hammer
- Circlip pliers
- A straight screwdriver
- A bucket for collecting the drained liquids (approx. 5L)
- A piece of wood board (approx. 500x250x15mm)

Included in the Milton Roy Europe supply:
The supplied tools for the maintenance of the mechanical seal are part of the parts list.

IV – 3: Removing the mechanical seal housing

Step 1:

Switch off the power to the agitator and isolate the electrical supply.

Step 2:

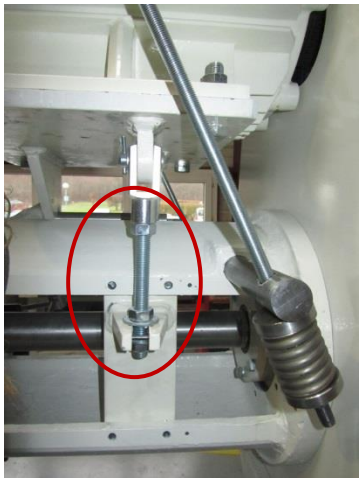
Remove the transmission cover and protective plates.

Step 3 MS assembly fixtures (if applicable):

IMPORTANT: Insert the assembly fixtures of the mechanical seal into the groove of the shaft sleeve and fasten them.

Step 4:

Note: Measure the tension of the belt before removing it.
Use a tensiometer to check the belt tension.
Release the tension system.

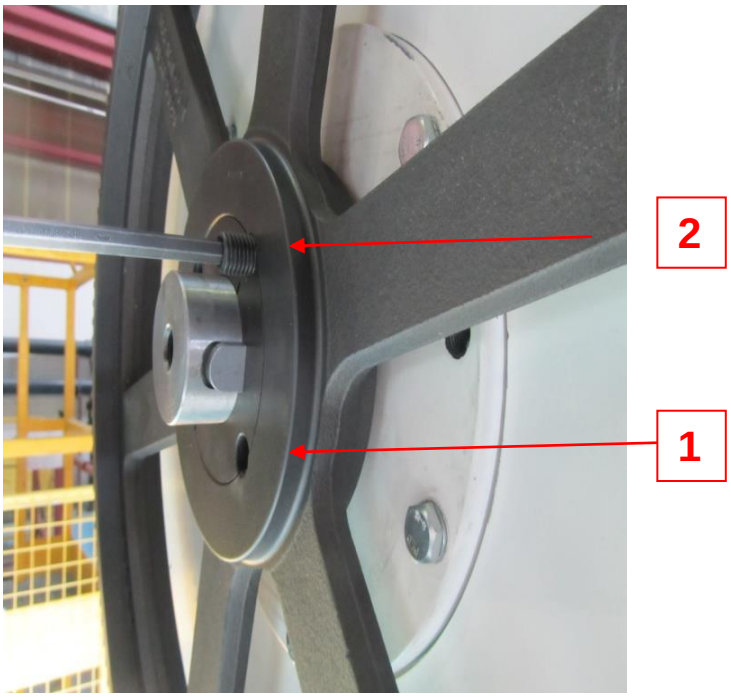


Step 5:

Remove the belt.

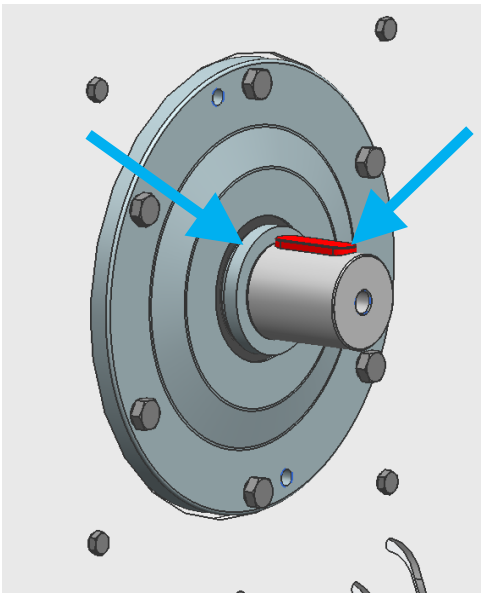
Step 6:

Unscrew the fixing screws of the pulley hub (1) and insert one screw in the extraction hole (2). Release the sleeve of the driven pulley and remove the pulley.



Step 7:

Remove the key and then the spacer (conical washer).

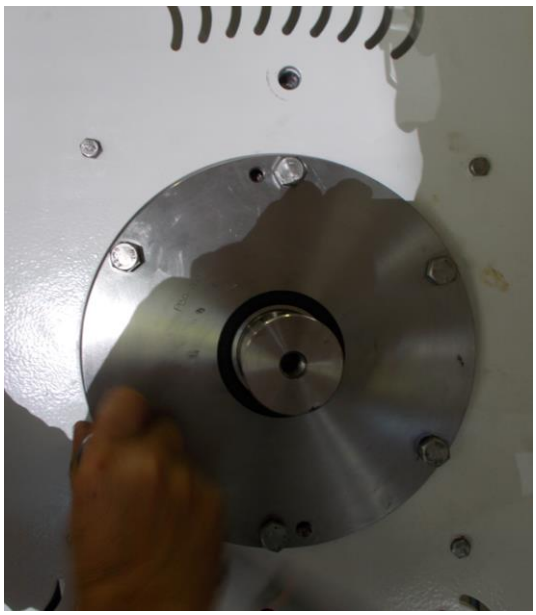


Step 8:

Release the clamp ring of the mechanical seal. Put a mark on the shaft showing the position of the sleeve. This will help to check whether the shaft is moving sufficiently during the following steps.

Step 9:

Unscrew the fixing screws of the rear bearing housing without removing them.



Step 10:

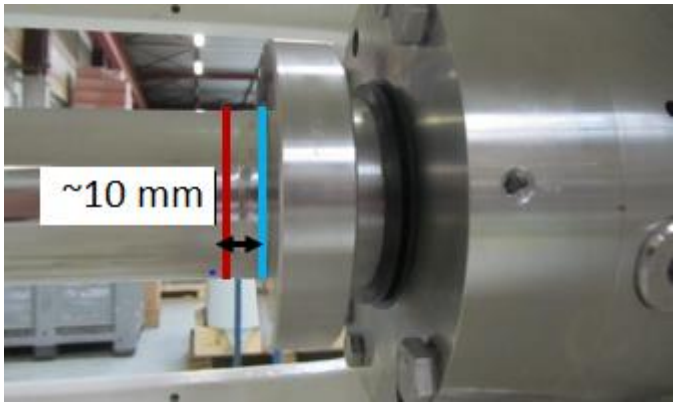
Take two of the six screws from the rear bearing housing. Place them in the extraction holes and tighten them. A gap (approx. 10 mm) must be visible between the plate and the rear bearing housing.

Step 11:

Use the bottom tap and a bucket to drain the shut-off device (drainage approx. 1 litre).

Step 12:

Check that the gap between the mark and the sleeve of the mechanical seal measures 10mm and check that the fluid has stopped flowing, if not repeat from step 10.

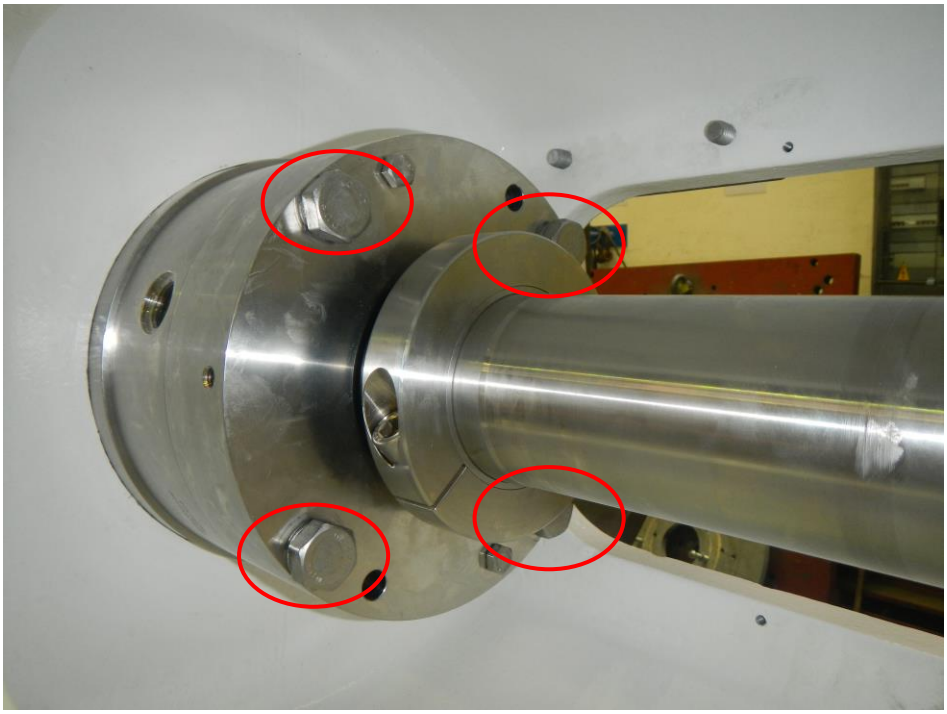


Step 13:

Remove the top and bottom pipe.

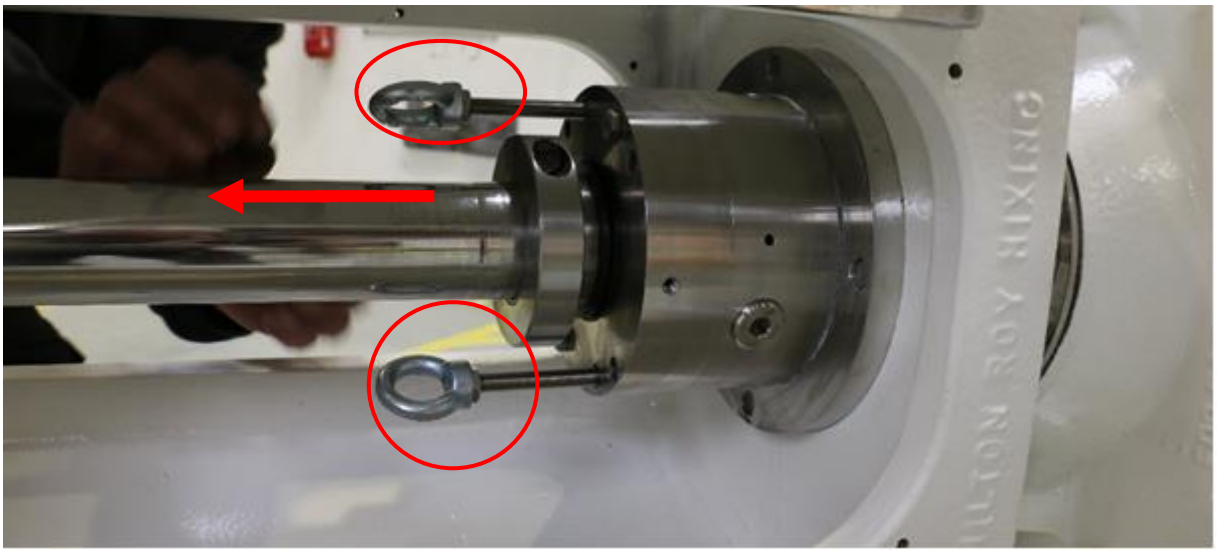
Step 14:

Remove the fixing screws from the mechanical seal housing.



Step 15:

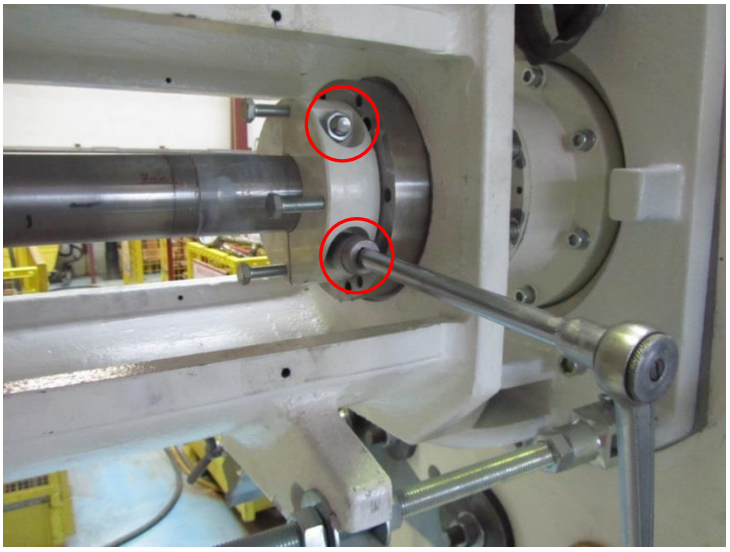
Screw the two threaded rods and, using the round ends, and pull axially the mechanical seal. The threaded rods may be used as extraction screws, by tightening them.

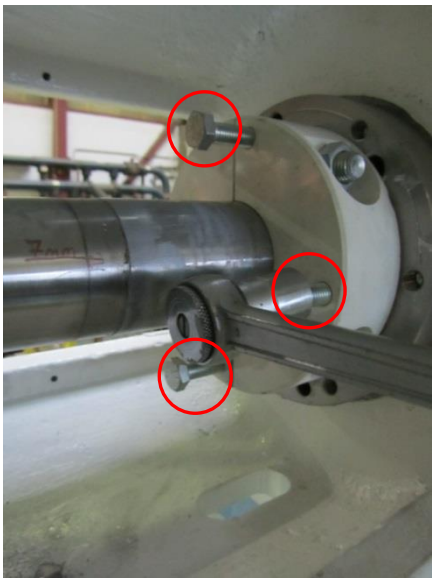


Step 16:

Fit the dismantling flange. Insert the 2 CHC screws and tighten them. Place the 4 HM screws in contact with the mechanical seal support and tighten them. The 4 screws must be evenly tightened (crosswise).

See tightening torque in General Arrangement Drawing.



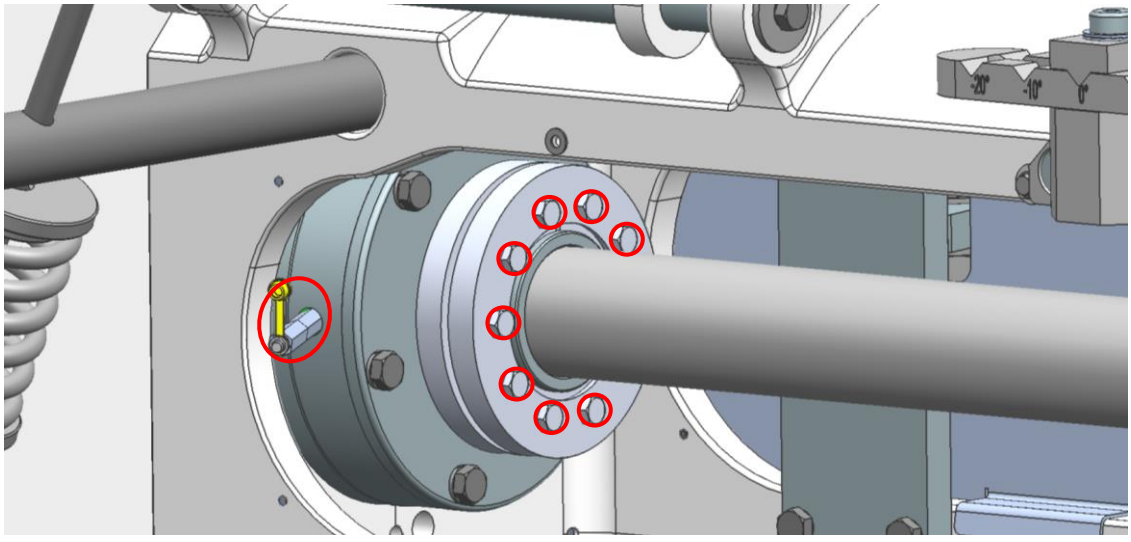


Step 17:

Slightly loosen the screws referred to in Step 10.

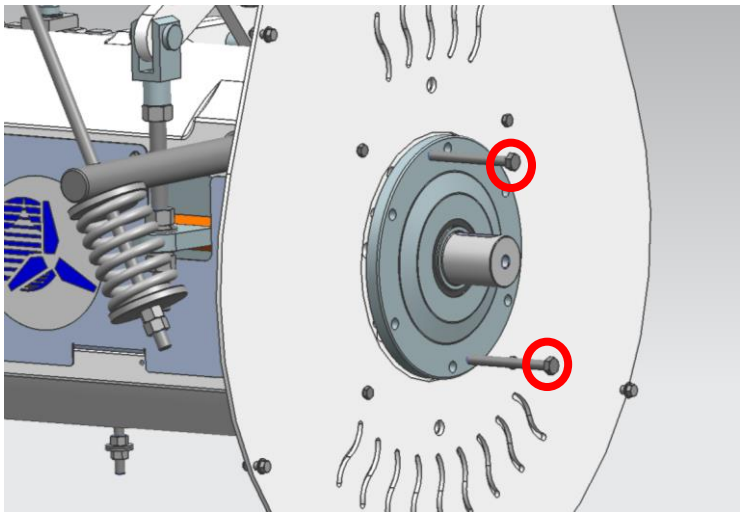
Step 18:

Loosen the screw on the expendable coupling without removing them. Remove the greasing connector.



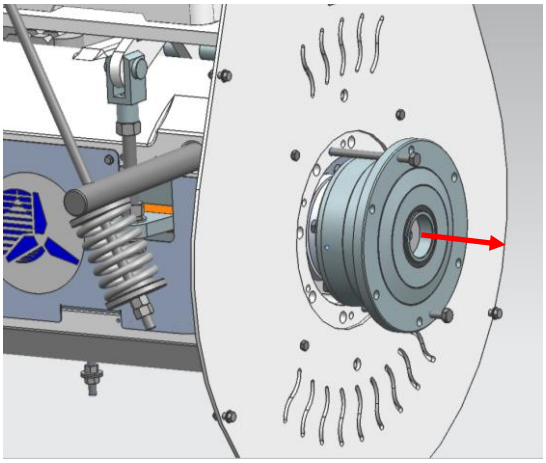
Step 19:

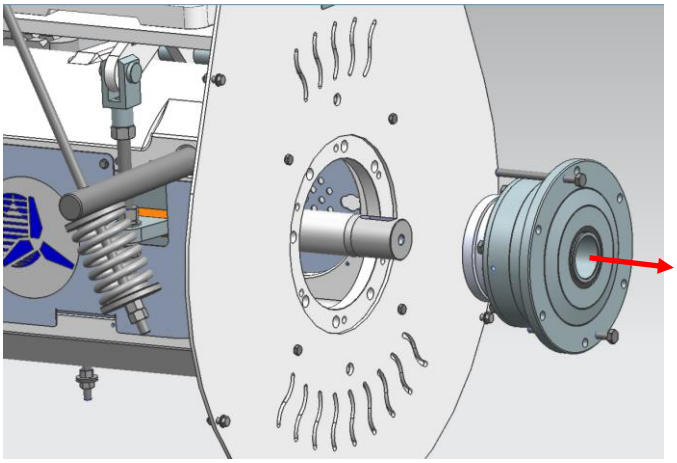
Remove all the screws from the bearing body. Mount the long screw M12X140 in the two tapered holes.



Step 20:

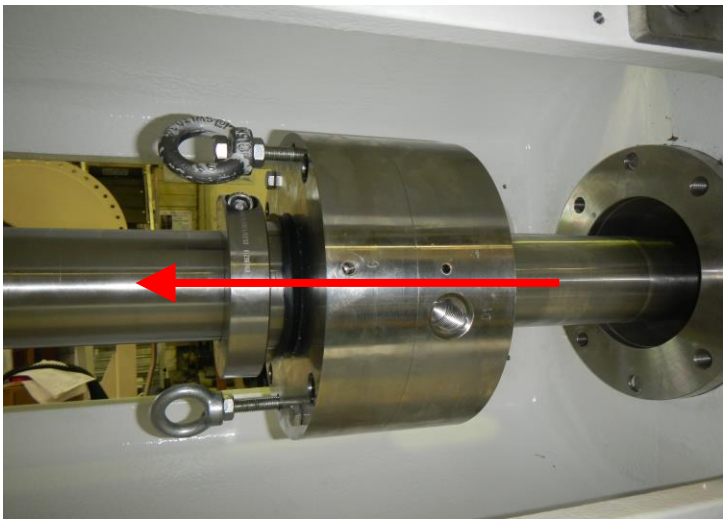
Gradually tighten the two screws in order to move the bearing housing back and then remove the bearing housing.
Warning: The weight of the bearing body is around 30 kg.





Step 21:

If the shaft is dirty or rusted, it must be cleaned before removing the mechanical seal housing with ”Biosane” or equivalent degreaser.
Apply grease to help the mechanical seal slide off.
A mechanical seal weighs is about 20 kg.
Slide the mechanical seal off the shaft and remove it.



IV – 4: Mounting of the mechanical seal

Firstly, remember that the mechanical seal must be clean and free of any contamination, otherwise the sealing faces and consequently, the sealing ability of the mechanical seal will be compromised.

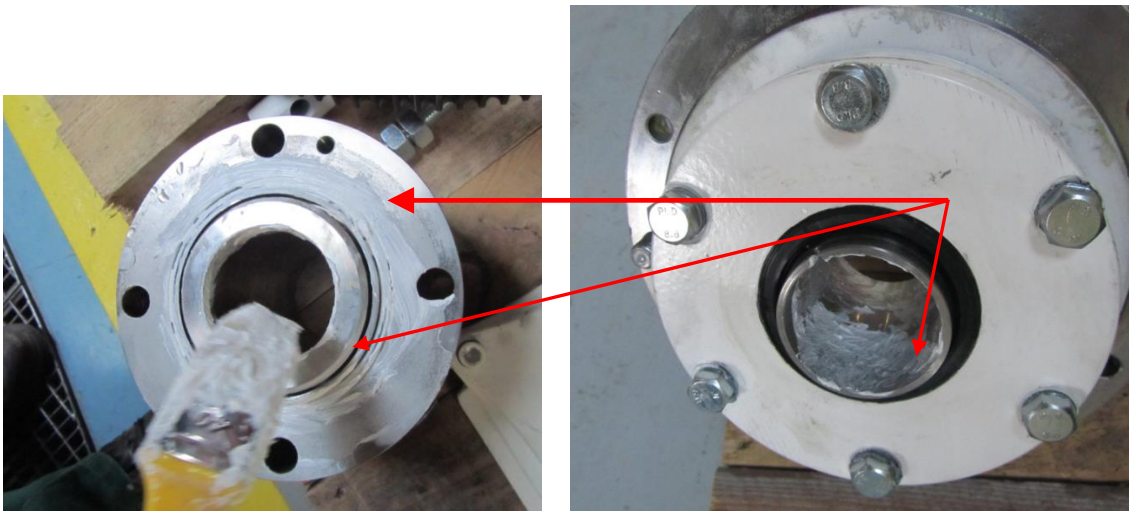
Note: ensure that the belt tension is correct and that all the nuts and bolts are tightened to the tightening torques shown in the General Arrangement Drawing.

Step 1:

Use a board to assist when fitting the mechanical seal housing.

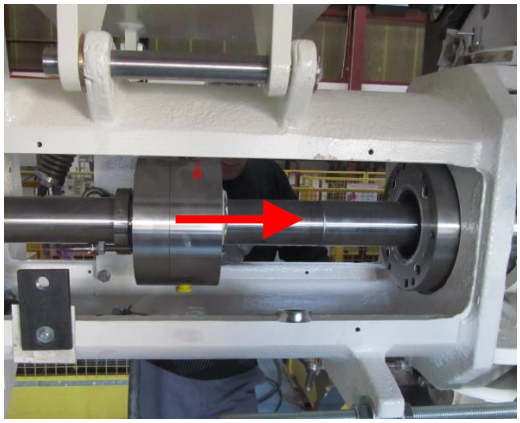
Check that the assembly is clean (no sand or rust).

Apply grease to the shaft and the new housing of the mechanical seal and guide bearing to make it easier to fit the mechanical seal housing. Check the position of the O-ring in the groove in the mechanical seal housing. Slide the mechanical seal housing onto the shaft.



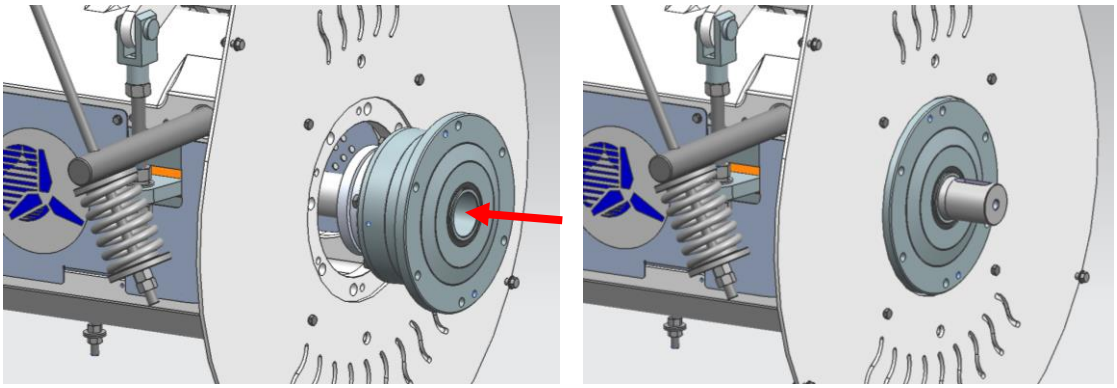
Step 2:

Install the new mechanical seal housing, slide it onto the agitation shaft, relieving it up to avoid damaging the seals.



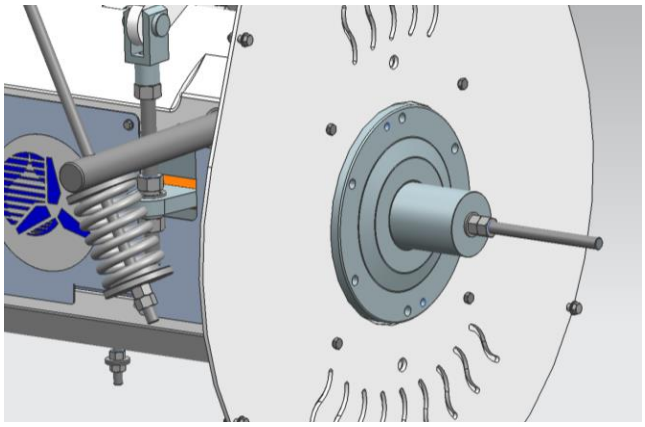
Step 3 :

Put the rear bearing housing in place, taking care of not destroying the lip seals.
Pay attention of the orientation. (refer to the greasing ports).



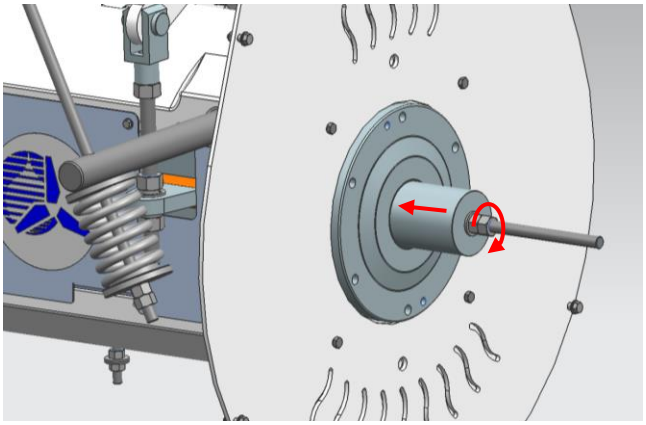
Step 4 :

Screw the threaded rod in the end of the shaft. Install the tool OUD-00104, washer and nut.



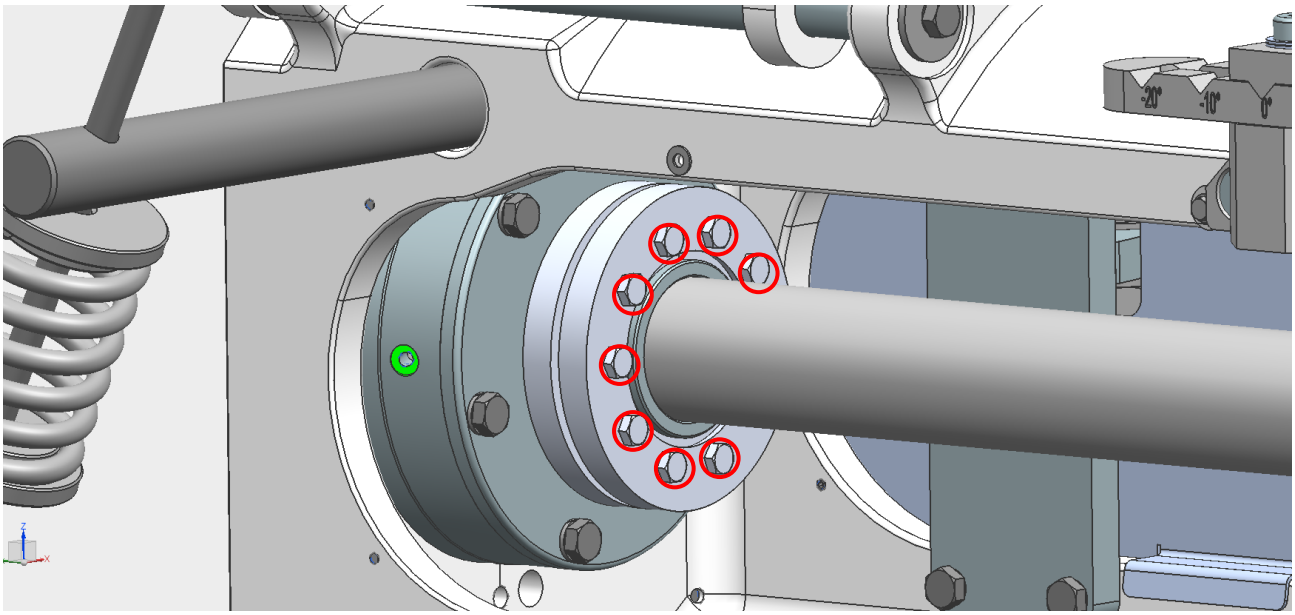
Step 5 :

Screw the nut in order to move the bearing housing on the shaft until it stops.



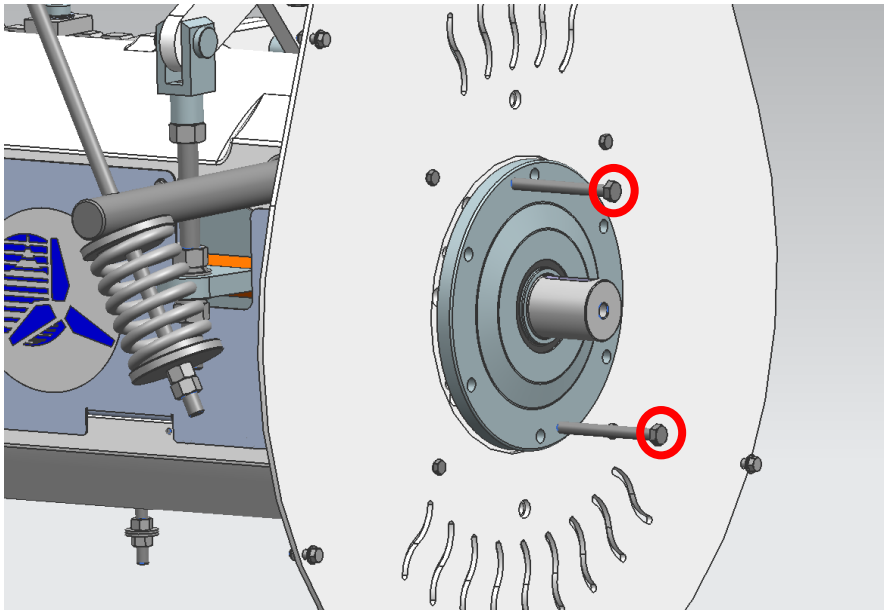
Step 6 :

Tighten the expendable coupling screw crosswise (torque max : 30 N.m).



Step 7 :

Mount and tighten the two screws to hold the shaft in the sealed position (shut off).

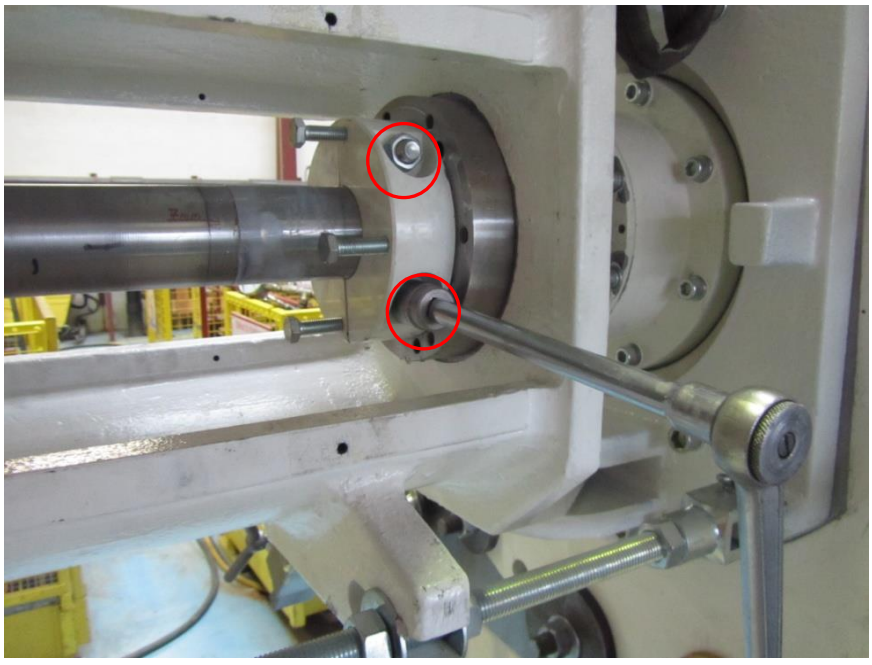


Step 8 :

Unscrew the four clamp ring screws.

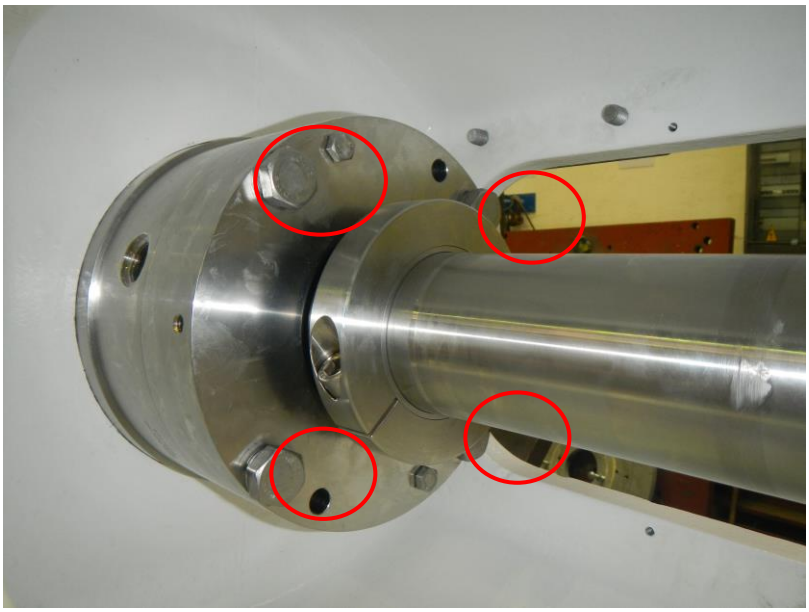
Step 9 :

Remove the 2 retaining screws and remove the clamp ring.



Step 10 :

Push on the mechanical seal housing.
Ensure that the vent hole, marked “V”, is upward.
Tighten the 4 screws.
Note the general layout and apply the tightening torques indicated in the General Layout Drawing.

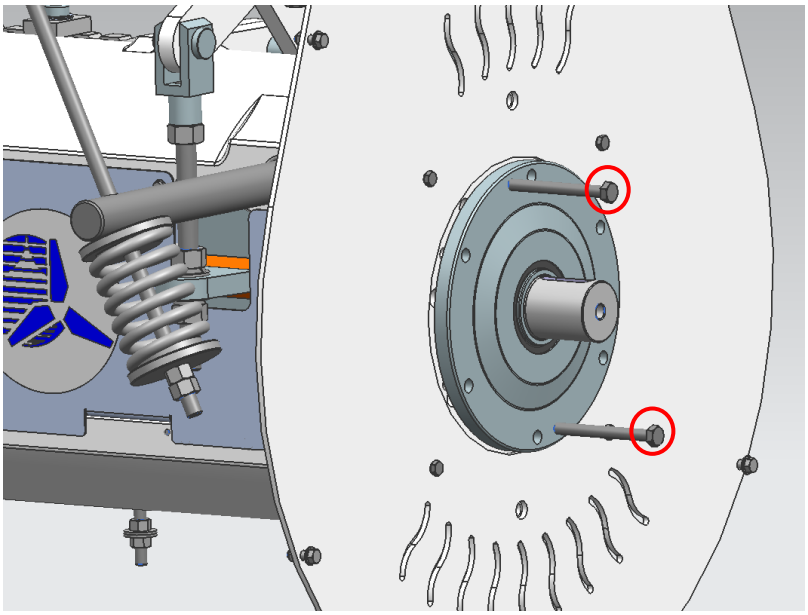


Step 11 :

Remount the auxiliary pipe. If necessary, use a seal.

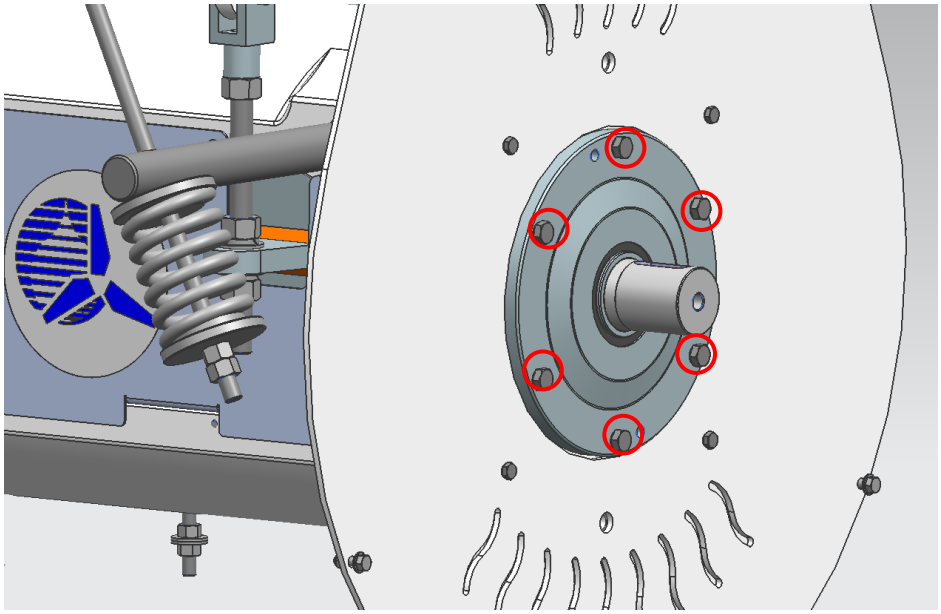
Step 12 :

Remove the twoscrews.



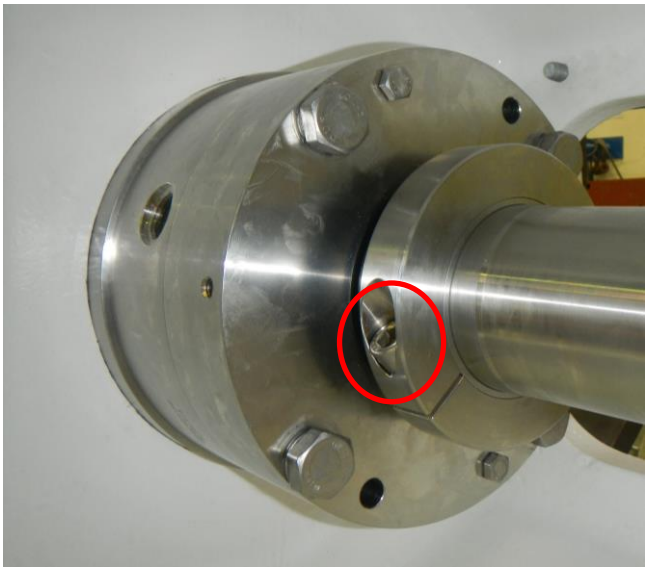
Step 13 :

Fit and tighten the guide bearing fixing screws crosswise (see the General Arrangement Drawing for tightening torque values).



Step 14 :

Tighten the drive flange of the mechanical seal. It must be tightened to the tightening torque indicated in the General Arrangement Drawing and must, without fail, be tightened using a wrench.



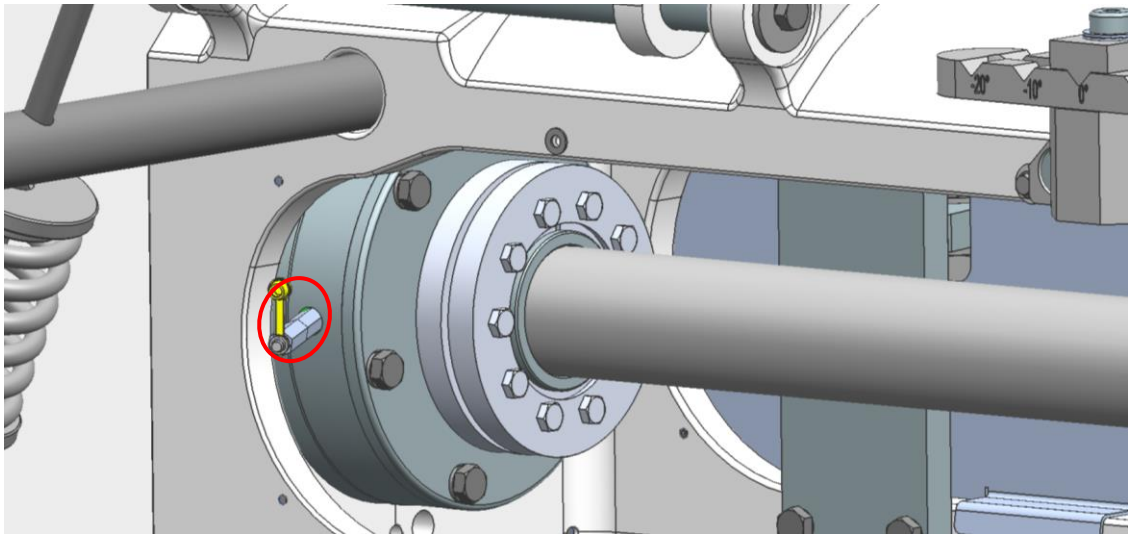
This is a critical operation. Failure to perform this procedure may cause serious damages to the equipment.

Step 15 :

WARNING : Remove the **assembly fixtures of the mechanical seal** (if applicable) and keep them by all means for a later removal of the seal.

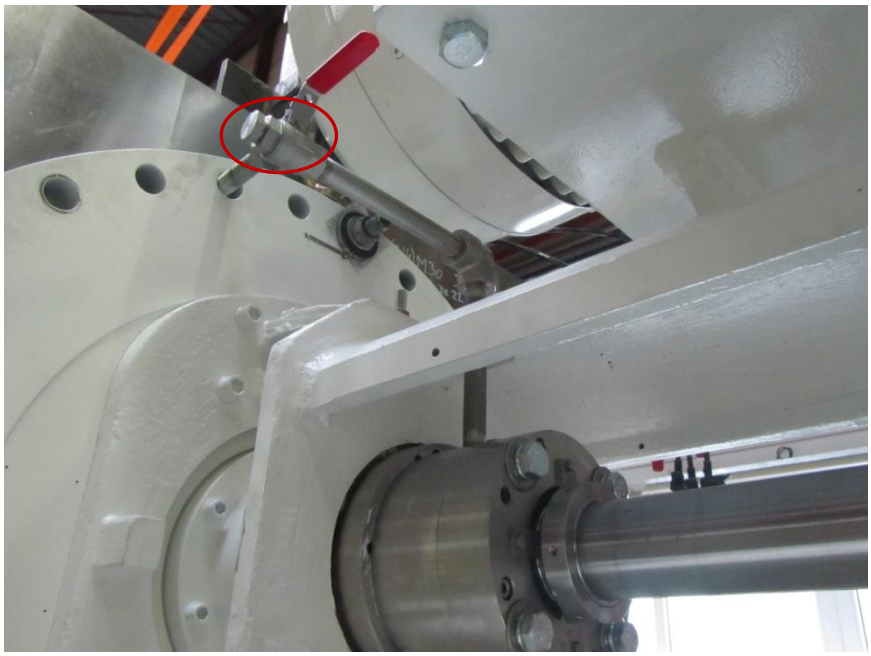
Step 16 :

Mount and tight the greasing connector if needed.
Remove the tool OUD-00104, the nut, the washer and the threaded rod from the saft end.



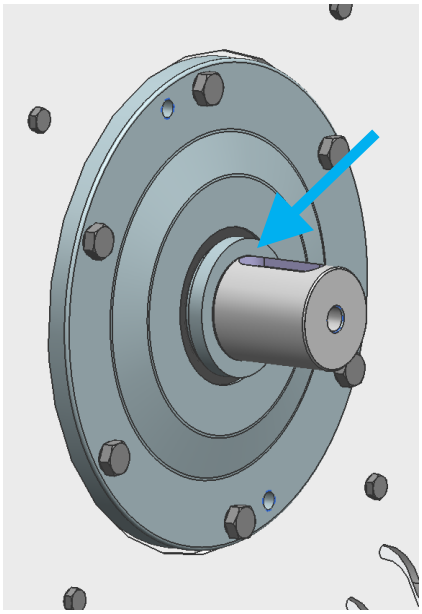
Step 17 :

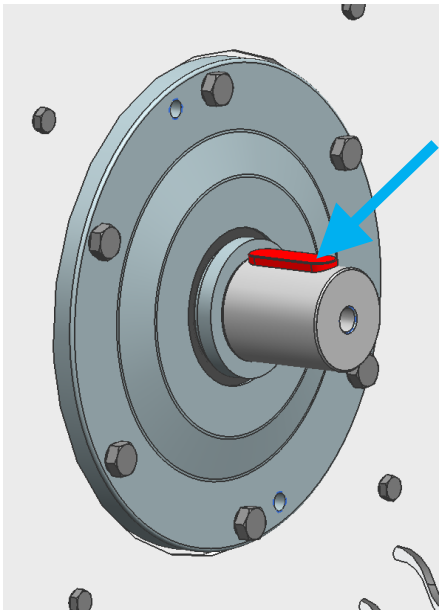
Remove the plug then open the drainage valve to vent the air inside the mechanical seal housing, the liquid must drain out from the tank. Then turn off the drainage valve and fit the safety plug.



Step 18 :

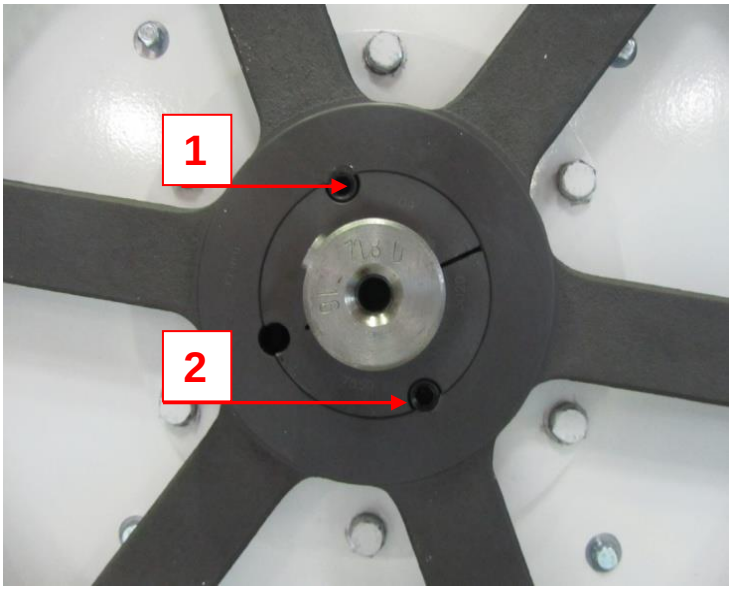
Remove the spacer (conical washer) and mount the key in its slot.





Step 19 :

Mount the pulley and its sleeve. Gradually tighten screws 1 and 2.
See the General Layout Drawing for the tightening torque.



Step 20 :

Place the belt on the pulleys.
Check the belt tension by using a tensiometer, matching the value indicated in the General Arrangement Drawing.

Step 21 :

Screw the threaded shaft to adjust the belt tension.
See General Arrangement Drawing for the tension value.

Step 22 :

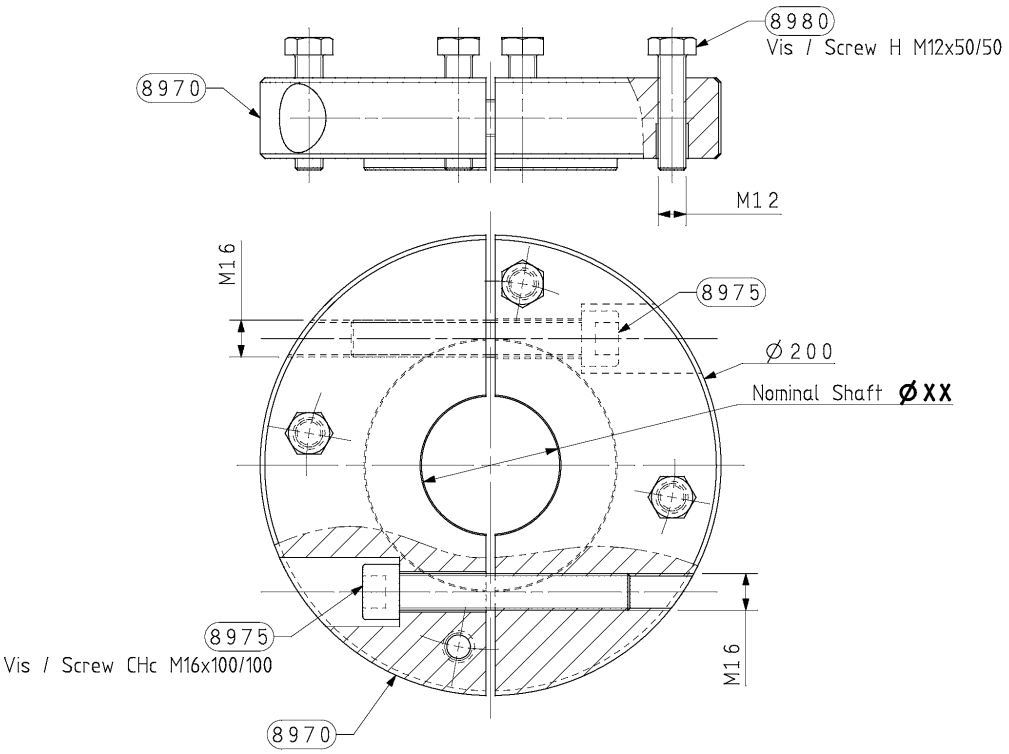
Fit the protective guards, transmission cover and the 2 protective plates.

Refer to the chapter entitled “START UP” to restart the agitator.

Special dismantling tool

ITEM	QTY	DESCRIPTION	DRAWING N° / CODIFICATION	MATERIAL	WEIGHT in kg
8980	4	Vis / Screw H	VIS-0107-1900-VB-A0	Cl. 8.8	0.06
8975	2	Vis / Screw CHc	VIS-0209-2900-VB-A0	Cl. 8.8	0.20
8970	1	Bride de démontage/Dismounting Flange	According to Shaft Ø-see below	C35E/AISI_1035	7.00

ITEM	Nominal Shaft ØXX	DRAWING N° / CODIFICATION
8970	50	BRM-00053
	60	BRM-00052
	70	BRM-00050
	75	BRM-00051
	80	BRM-00054



Issue	Date	Modifications	Author	Checked	Approuved
B	23/03/2015	Update drawing codes, suppress N.S. 65	LI	SB	
A	03/01/2014	First Issue / Première Emission	LI	SB	

Material: Matière : Voir nomenclature / see BOM — Masse/Weight 7.6 kg

Painting according to specification: Peinture suivant spécification: NA — Final colour: RAL Teinte finale: RAL NA — Zone not to be painted / Zone à ne pas peindre

Machined parts : General tolerances following / Parties usinées : tolérances générales suivant : ISO 2768 mK
Unless otherwise / Rugosité non spécifiée Ra=6,3 Deburr all the Sharp Edges / Ebavurer tous les angles vifs

Fabricated parts : General tolerances following / Parties chaudronnées : tolérances générales suivant ISO 2768 cL
Unless otherwise / Rugosité non spécifiée Ra=12,5 Deburr all the Sharp Edges / Ebavurer tous les angles vifs

MILTON ROY Mixing
10, rue du bois Gasseau
77212 AVON Cedex-FRANCE
Tel: 33.(0)1.60.74.95.20
Fax: 33.(0)1.60.74.61.23
www.miltonroymixing.com

Scale Echelle 0,4

Outillage démontage/Shut off device

–

FORMAT A4

ENS-TOOL-BRM-00016

V - STARTING UP

ATTENTION: throughout all the starting up phases, staff must be equipped with suitable personal protection equipment. It is recommended to call on the on-site assembly assistance by representatives of Milton Roy Europe.
If staff have to enter into the tank, always ensure that the mixer is turned off and locked.
Only start up with the mixer in the tank and the scaffolding removed.

The staff conducting electrical operations must be in possession of authorisation.

Follow the safety signs on site and the requirements associated with mixing.

It is recommended to call on the on-site assembly provided by Milton Roy Europe.

V – 1: Preparation

- Safety checks before start-up: Assembly fixtures of the mechanical seal removed (if applicable)

- In the case of the ATEX mixer: all the installations of equipment will have to be made following standard NFEN 60079-14.

Check whether there are any obstacles to the proper operation of the machine (tank free from obstacles and people).

Check the tension of the transmission belts and fit the protective cover.

Check that all of the nuts and bolts are correctly tightened (see General Arrangement Drawing).

Turn the agitator shaft by hand to check that the lower shaft turns freely without blocking.

Note: The end user must place a protective cover around hot parts of the agitator before commissioning. See the manuals of the manufacturers of each component (motor, reducer, etc.).

If necessary, fit a connection pipe and valve to the vents of the mechanical seal housing. Seal the valves with a plug (see General Layout Drawing).

Connect the electric motor and if applicable, the PTC sensor and motor overheat sensor (see motor's manual). Fit a thermal protection relay, not supplied by Milton Roy Europe, to protect the motor against overloading.

The motor and agitator must be earthed. Check the electrical continuity between all of the assembled parts. A conductive path of less than 10 Ohms is recommended.

CAUTION: Shut off the power supply if working on the terminal box. Pay particular attention to residual energy.

V – 2: Starting Up

Follow internal instructions for your starting procedure.

WARNING: HANDLING THE MIXER UNDER POWER
Shut off the power supply if working on the terminal box. Pay particular attention to residual energy.

WARNING: avoid long time contact with the surface of the motor. (Risk of burning).

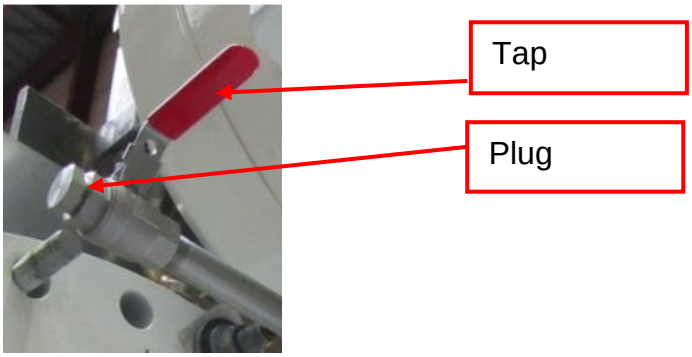
WARNING: The agitator must not operate without a minimum level of liquid in the tank. The minimum filling level is stated in the General Arrangement Drawing.

Before starting up the mixer, make sure to put the protection covers back in place and all the parts composing the mixer.

A) Starting with Water

Fill the tank with water up to the minimum level.

Drain the mechanical seal housing several times: open the valve connected to the vent at the top of the mechanical seal housing, when the liquid has drained out, turn off the tap and refit the plug.



Check the mechanical seal housing for leaks and ensure that all of the nuts and bolts are correctly tightened.

IF YOUR AGITATOR IS ORIENTABLE:

Warning: Before repositioning the mixer shaft (from -30 ° to + 30 °), all of the agitators in the tank must be switched off. All of the agitators must be facing in the same direction and at the same angle before start-up. (see chapter IX – 3)

Check that all of the nuts and bolts are tight and, in the case of an adjustable agitator in particular, that the lock nuts are tightened to the correct tightening torque (see General Layout Drawing).

Before commissioning the agitator, consult the various Manufacturers' Manuals.

Apply a short electrical pulse to check the direction of rotation.
See General Arrangement Drawing for the applicable direction of rotation.
Confirm the direction of rotation.
Then switch off the agitator.

Start up the agitator.

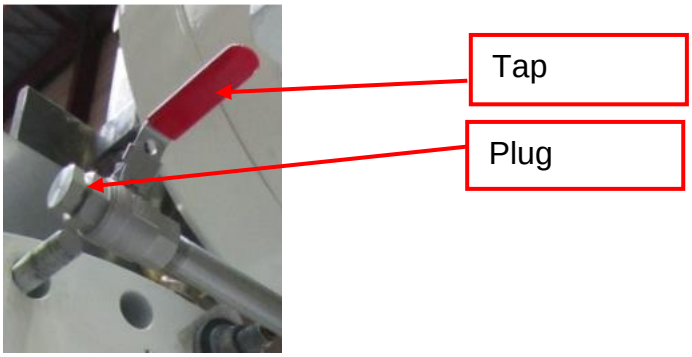
Check:
- for leaks round the ball joint,
- the temperature of the motor,
- for leaks from the mechanical seal housing,
- the speed of rotation,
- the absorbed power.

Once these checks have been passed, switch off the agitator and drain the tank.

B) Production Start-up

Fill the tank with the production liquid up to the minimum level.

Drain the mechanical seal housing several times: open the valve connected to the vent at the top of the mechanical seal housing, when the liquid has drained out, turn off the tap and refit the plug.



Check the mechanical seal housing for leaks and ensure that all of the nuts and bolts are correctly tightened.

IF YOUR AGITATOR IS ORIENTABLE:

Warning: Before repositioning the mixer shaft (from -30 ° to + 30 °), all of the agitators in the tank must be switched off. All of the agitators must be facing in the same direction and at the same angle before start-up. (see chapter IX – 3)

Check that all of the nuts and bolts are tight and, in the case of an adjustable agitator in particular, that the lock nuts are tightened to the correct tightening torque (see General Layout Drawing).

Before commissioning the agitator, consult the various Manufacturers' Manuals.

Start up the agitator.

Check:
- for leaks round the ball joint,
- the temperature of the motor,
- for leaks from the mechanical seal housing,
- the speed of rotation,
- the absorbed power.

Once these checks performed in water and with product in the tank have been passed, the agitator can begin production.

VI – FUNCTIONING

Before any change of operating parameters of the mixer, contact MRE to check the mixer is suitable for the parameters previously mentioned in chapter II “General Information”.

This agitator is not designed to operate below the minimum level indicated in the General Arrangement Drawing. Operating the machine below this level could damage the equipment and the tank.

The mechanical seal must never operate dry.

VII – MAINTENANCE / SERVICING

WARNING: the maintenance and servicing activities must be done by staff wearing suitable personal protection equipment. For electrical operations, the staff must be authorised and trained.
Before entering into the tank, always ensure that the mixer is shut off.

WARNING: any work carried out on the mixer must be done by the manufacturer, or an approved company.

Warning: The power supply to the agitator must be switched off before any protective elements (protective cover or protective plates) are removed.

Note: without the specific authorisation of the manufacturer, any repair made by the operator cancels the conformity commitment of the manufacturer.

Before starting up the mixer, make sure to put the protection covers back in place and all the parts composing the mixer.

VII – 1: Preventive Maintenance

CAUTION: IT IS ESSENTIAL TO STOP THE ROTATION OF THE AGITATOR AND TO MAKE THE MOTOR ELECTRICAL LOCKOUT BEFORE REMOVING THE PROTECTION SHEETS, PROTECTIVE HOUSING AND ANY OTHER PROTECTION OF ROTATING ELEMENTS.

CAUTION: Disconnect the power supply before carrying out any work on the terminal box and pay particular attention to residual energy.

Accumulation of dust:
Check the clean condition of the mixer before putting it into operation.
Regularly check the cleanliness of the mixer every month, as well as all the components (motor, gearbox, dust etc.).

Motor:
Regularly check its proper operation. (Refer to the instruction manual of the motor in the Installation Manuals Folder and Maintenance and Repairs Folders of the Manufacturer's Folder).

Mixing system:
ATTENTION: before carrying out any work on the mixer, ensure that the energy supplies cannot be turned back on and pay attention to residual energy.
The propeller is a single-piece unit; only the tightness and direction of assembly on the shaft need to be checked before it is put back into service.
Check the tightness of the propeller on the shaft at least once a year and the condition of the blades (preferably during annual maintenance).
Anticipate a preventive change in coordination with the Milton Roy Europe After Sales Service.

Regularly check proper operation of the following (according to the corresponding instruction manual in the Installation, Maintenance and servicing Manuals Folder of the Manufacturer's Folder):

- Transmission
- Belt tension
- The clamp ring of the mechanical seal.

Regarding the belt transmission system, check the noise, vibrations and tension of the belt every 6 months and replace it if necessary. See the manufacturer’s operating manual

As an option, depending on the model: motor and/or mechanical seal housing and/or agitator bearing:
Grease with a suitable bearing grease, such as MOBILUX EP 2, approx. every 4,000 hours. Comply with the safety sheet supplied with the grease as well as with the precautions and rules governing its use.

Before starting up the agitator, ensure that the protective covers and all the components of the agitator are refitted. Grease the surfaces subject to corrosion.

If the agitator requires the use of the heating or sealing sweeping jacket, check the compliance of the outlet flows and the inlet pressure every 6 months.

Every 12 months:
Check for leaks, noise and any abnormal overheating.
Check the tightening torque of all the nuts and bolts.

Every 5 years:
Replace all the bearings: electric motor, mechanical seal housing and agitator thrust bearing.

VII – 2: Corrective Maintenance

WARNING: Disconnect the power supply before carrying out any work on the terminal box and pay particular attention to residual energy.

Excessive heating of the mixer components:
- Check the conditions of operation of the mixer
- Check the condition of the equipment
- Contact the Milton Roy Europe After Sales Service

Dysfunction of the motor which needs the terminal box to be opened.

Noise / vibration / excessive heat of the mixer mechanics:
- Observe the minimum safety distance (applicable in case of abnormal vibrations)
- Check the operation conditions and the condition of the equipment
- First level maintenance
- Contact the Milton Roy Europe After Sales Service

Electrical cabling problem:
- Check normal operation
- Perform a no-load test on the mixer

VII – 3 : Troubleshooting

Motor Problems

➢ **The motor does not turn**

- The thermal protection has triggered. Too much intensity, possible causes:
  - Tangled mass (water treatment), foreign bodies blocking the free rotation of the propeller.
  - Viscosity, density of the mixed liquid greater than expected
- The motor is defective
- The cabling is defective
- The electrical connection is incorrect

➢ **The motor has difficulty for starting or turning**

- The electrical connection is incorrect
- The belt drive is too tight or misaligned.

➢ **The heating of the motor is abnormal**

- The motor fan is dirty or damaged.
- The belt drive is too tight or misaligned.
- The mixer is used under different conditions from those provided (e.g.: viscosity or density too high etc.).

Problems of noisy mechanics

- The bearing mounting clearance is too large, or the bearings are worn (motor, guide or thrust bearing).
- The drive belt is too damaged.
- The mechanical seal or bearing housing clamp is loose.
- The propeller is made in one piece and is secured to the shaft to prevent accidental loosening. If the shaft behaves abnormally in rotation, check that the braking device of the screws that clamp the propeller to the shaft is not damaged and no longer performs its function of absolute safety.

Sealing Problems

- Leak from the mechanical seal. Causes:
  - Faces of mechanical seal worn
  - Mechanical seal broken
  - Mechanical seal O-rings worn
  - Mechanical seal clamp ring loose.

VII – 4 : Dismounting of the mixing shaft

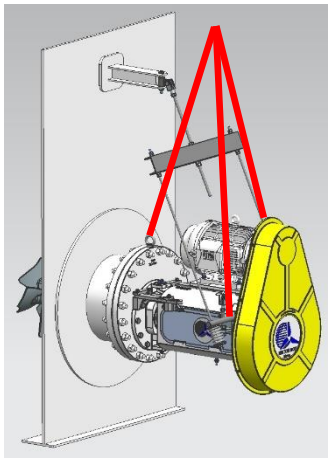
CAUTION :

- **Any work carried out on the equipment must be done while it is stopped. For the entire duration while work is being carried out, take the necessary precautions to prevent any accidental restarting (e.g.: locking the switch, removing the electrical power supply fuse).**
- **Any handling of the mixer or part of it must be done by a skilled and authorised person (example: CACES (Safety Conduct Aptitude Certificate), crane or sling operator, etc.)**
- **Any work carried out on the electrical part must be done by a skilled and authorised person (example: electrical authorisation, etc.)**
- **These operations must be done after emptying the tank and shutting down the mixer.**

Step 1 :
Electrically isolate the agitator then disconnect the power cable.

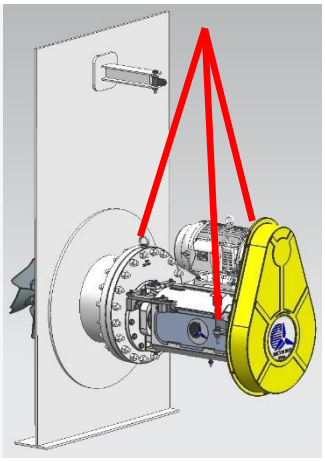
Step 2 :
Disconnect all other connections like hydraulic, pneumatic, electric, steam, earth…

Step 3 :
Sling and lift the agitator by following the explanations in chapter " III – 8: Hoisting Procedures".



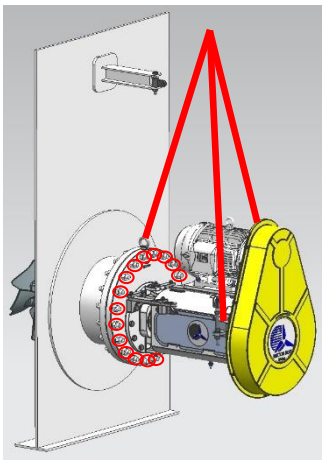
Step 4 :

If the machine is equipped with a tie-rod, loosen the bolts on the threaded rods and remove the tie-rod system between the machine and the tank.
If the machine is equipped with a foot which rests on the ground, remove the two screw which connect the foot to the machine.



Step 5 :

Refer to the instructions in chapter “IV – 2: Tools required for removing / mounting”.
Loosen the bolts that hold the agitator flange of the tank, then remove all the bolts.



CAUTION :

At this step, the mixer is only hold by the slings, be careful to not be crushed when it is moving.

Step 6 :

Install the agitator on a solid and stable support making safe the work on the machine.

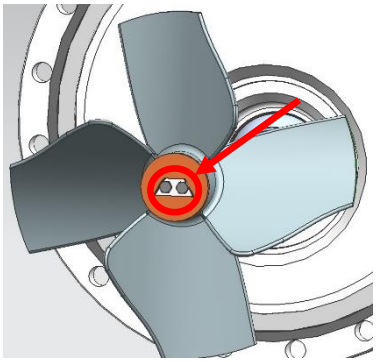
Step 7 :

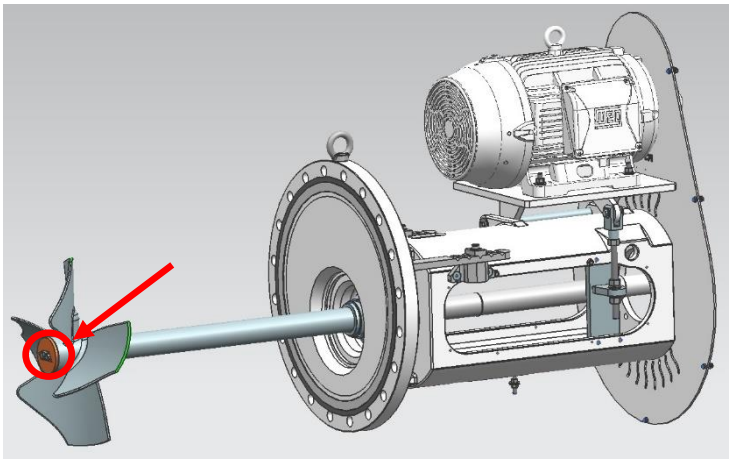
Remove the rear bearing and the mechanical seal by following chapter “IV – 3: Removing the mechanical seal housing”.

Step 8 :

Remove the propeller by loosening the two screws at the end of the shaft.

Warning: The propeller requires handling by several people or with a hoist

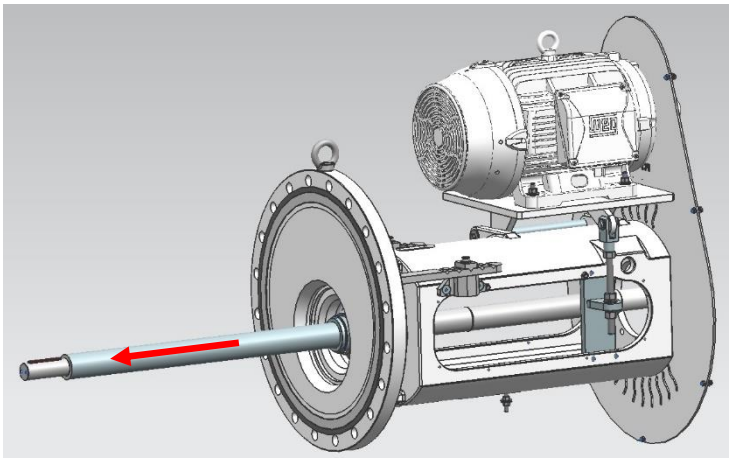




Step 9 :

Remove the agitator shaft by pulling it axially out of the machine.

Warning: The shaft requires handling by several people or with a hoist



Step 10 :

Proceed with a thorough cleaning followed by a visual inspection of the parts, particularly at the bearing and seal seating areas as well as the shutdown conical contact areas. Replace any damaged part.

Step 11 :

From this step, place the new shaft and follow the previous procedure in reverse order to reassemble the shaft and reinstall the agitator on the tank.

VIII – AFTER SALES SERVICE

See the contact list to find out the particulars of the After Sales Service.

VIII – 1: Spare Parts Order

To make registration easier and to ensure your spare parts order is delivered in the best possible time, we ask you to let us know:

- The information on the mixer: type and case number. These two elements appear on the marking plate on to the drive system. (*See diagram of the rating plate in the Manufacturer's Folder*.)
- Information relating to the spare part: reference, description and quantity. These elements appear on the lists of spare parts.

Contact Milton Roy Europe to obtain the list of spare parts

VIII – 2: After Sales Return

Return the equipment by filling in the form provided in the manufacturer's folder:
Equipment Return Form.
Before sending to After Sales, provide MRE with the decontamination form.

IX – INSTRUCTIONS SPECIFIC TO YOUR EQUIPMENT

IX – 1 : Equipment Needed for Assembly

Warning: the tooling on site must be appropriate and comply with the local regulations.

Here is list of the equipment that may be necessary for assembly.
(Not supplied by Milton Roy Europe).

- Slings, hooks, shackles and ropes adapted to the loads indicated on the parts list and the reach of which corresponds to the closest possible access to the tank.

- In any case, refer to the local regulations, to the safety rules and good practice for handling loads and for electrical and mechanical work in the country of operation as well as on the site where the mixer is installed.

- Slings, hooks, shackles, ropes for masses indicated on the parts list (*see the overall diagram in the manufacturer's folder).*

- A box of standard tools with wrenches corresponding to the sizes of nuts and bolts indicated in the General Arrangement Drawing.

- PTFE spray or molybdenum bisulphide grease if compatible with liquid in the tank for stainless steel fastenings.

- An appropriate torque wrench, adjusted with corresponding sockets that can handle the tightening torques indicated on the assembly diagram.

- A tension meter to check the control of the belt tension (natural frequency measurement).

- An ohmmeter.

IX – 2 : Assembly

WARNING: during all the operations, the staff responsible for handling and assembly must wear suitable personal protection equipment. The site must be equipped with suitable means of handling.
If staff have to enter into the tank, always ensure that the mixer is shut off.
Make sure to respect the tightening torques, undertaken with a torque wrench.
It is recommended to call on the services of MRE for assembly assistance.

Follow the instructions on handling in paragraph III – 7.

Note: The agitator head is delivered pre-fitted.
Spray PFTE onto the stainless steel bolt threads to prevent them from seizing.

Connect the parts to be assembled and check with the parts list in order to avoid any part being missing during assembly.

Check the good condition of these parts and clean them.

Prepare the equipment needed for assembly.

If applicable, mount the propeller onto the shaft by fitting the lock washer, screws and brake plates. Fully tighten them (see General Arrangement Drawing).

If applicable, secure the heads and nuts with the double brake plate of the propeller.

Place the agitator in its operating position.

Carefully clean the side of the flange.

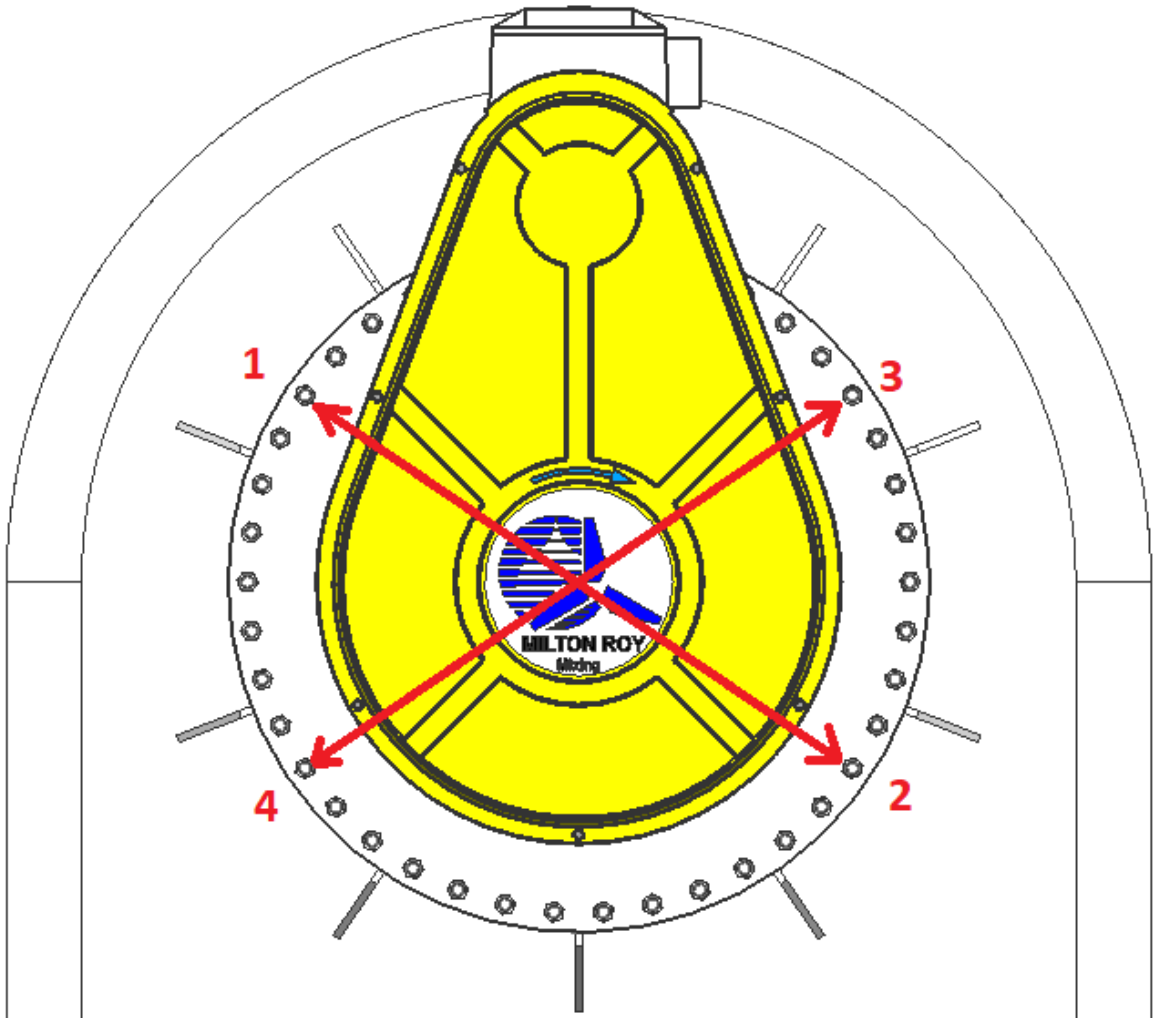
Fit the tank seal.

CAUTION: Do not damage the shaft and propeller when inserting them into the reservoir flange.

Fix the mixer flange on the tank nozzle flange using bolts (not included in the Milton Roy Europe supply unless indicated in the parts list).

Gradually tighten the bolts diagonally while maintaining the agitator support with slings.

CAUTION: Release the agitator support only after the installation of the tie rod or supporting foot. (depending on your agitator)



Turn the agitator shaft by hand to check that the bottom shaft turns easily without blocking.

Fit the motor (if delivered unfitted), position the bottom of the protective case and install the drive pulley.
Fit the belt and adjust the tension as shown in the chapter on removing/fitting the mechanical seal.

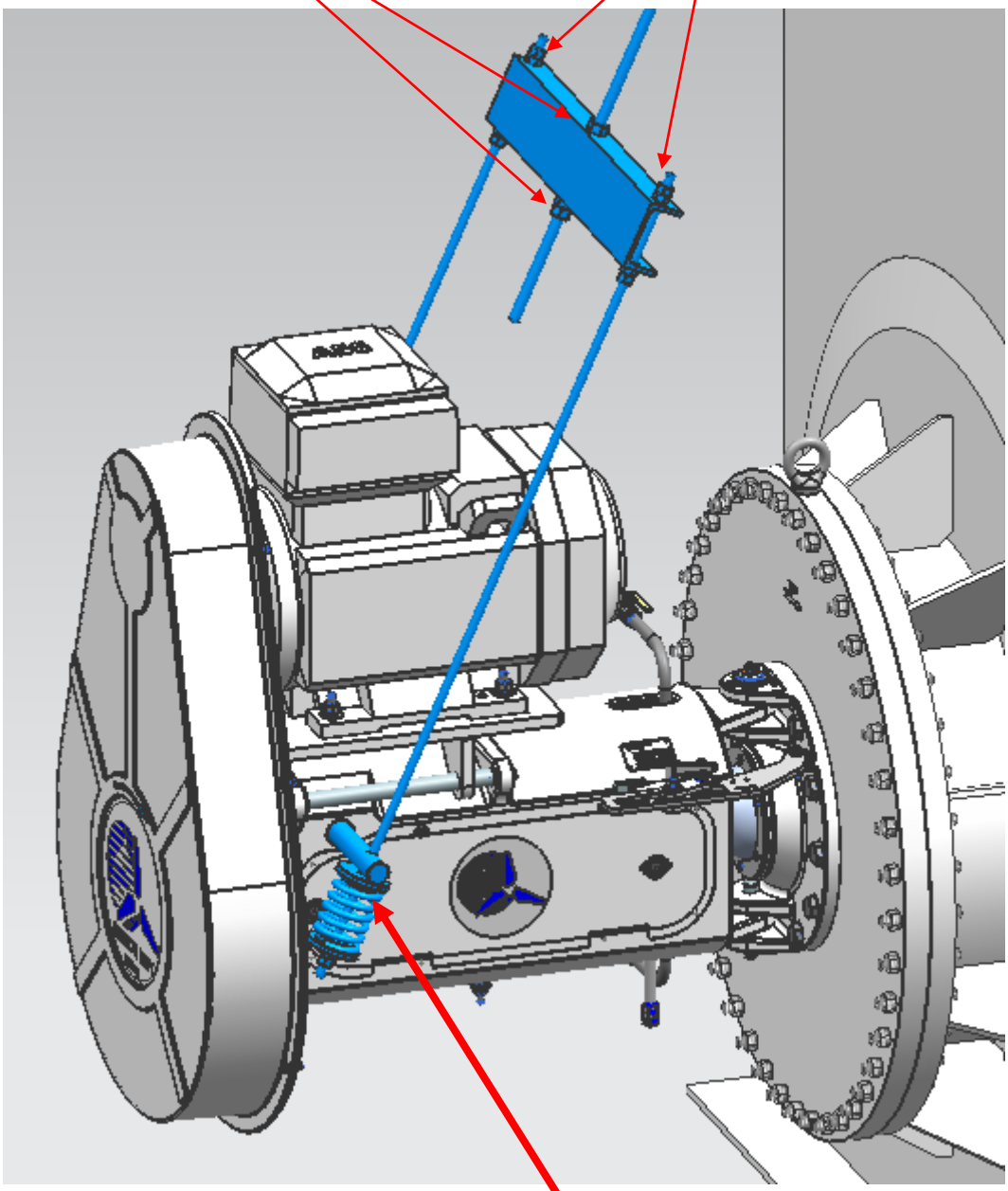
Once the pulley/belt transmission system is installed, place the protective cover over the transmission system.

If all the preceding points have been successfully completed, fit the side protective plates.

If applicable, fix the tie-rod.

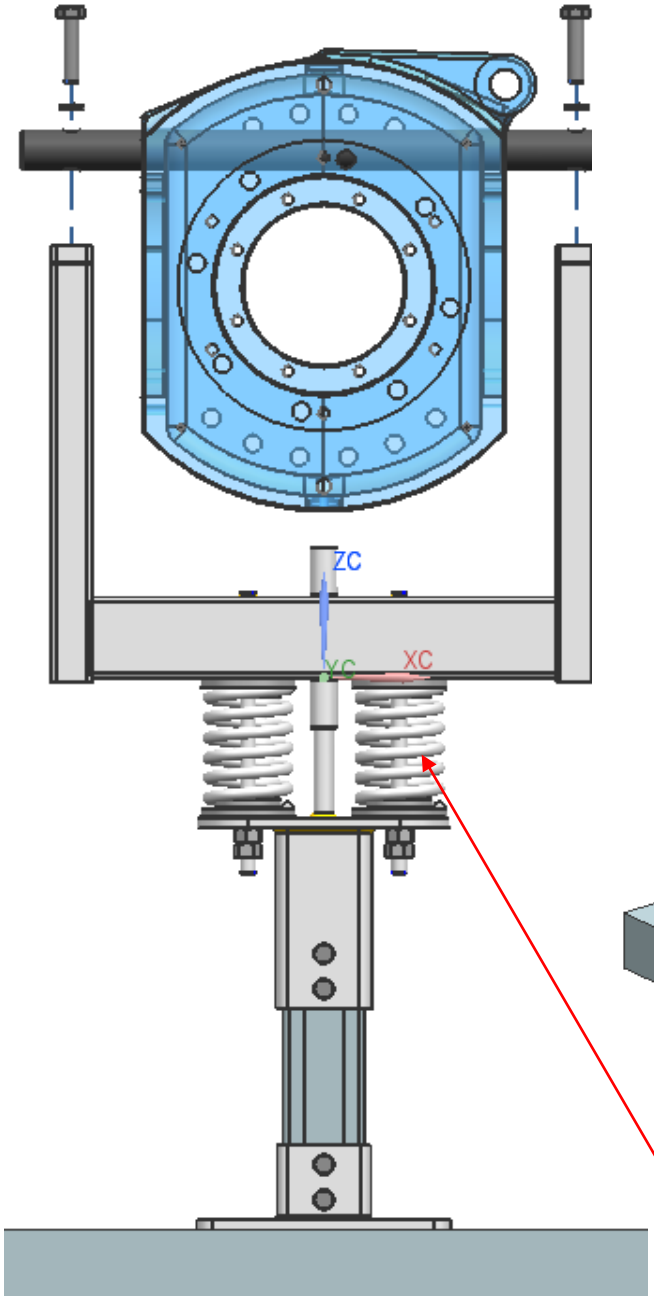
20 HM Nut
30mm Wrenc

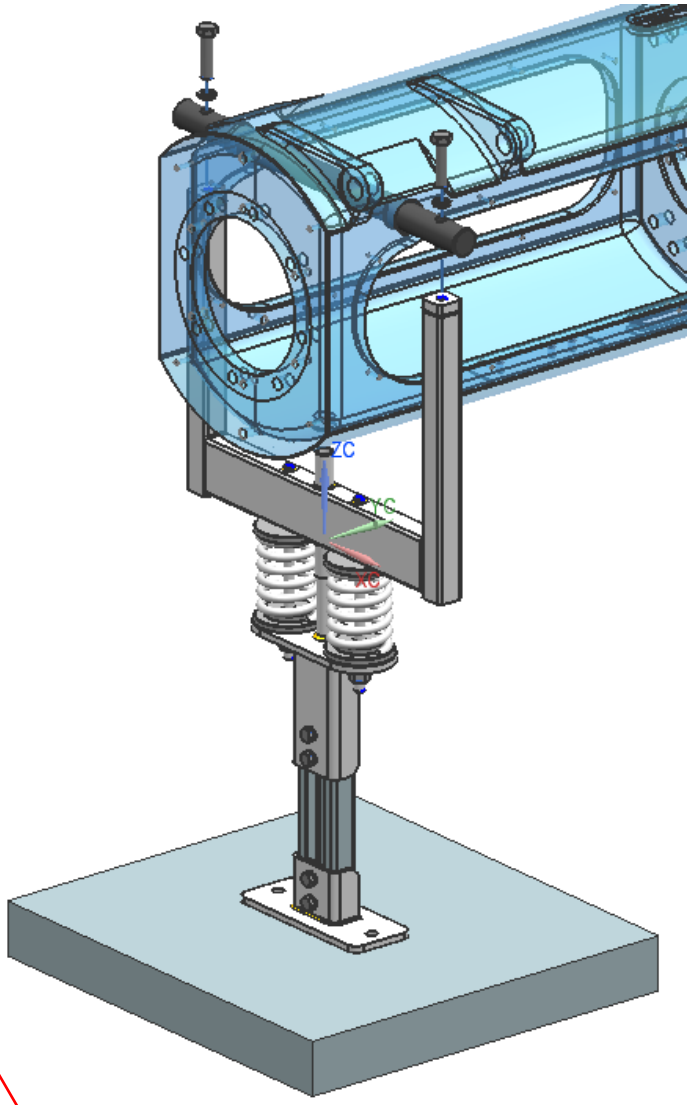
16 HM Nut
24mm Wrench



Adjustment of the compensating springs
(see cross sectional drawing)

If applicable, place the supporting foot under the agitator to hold it.





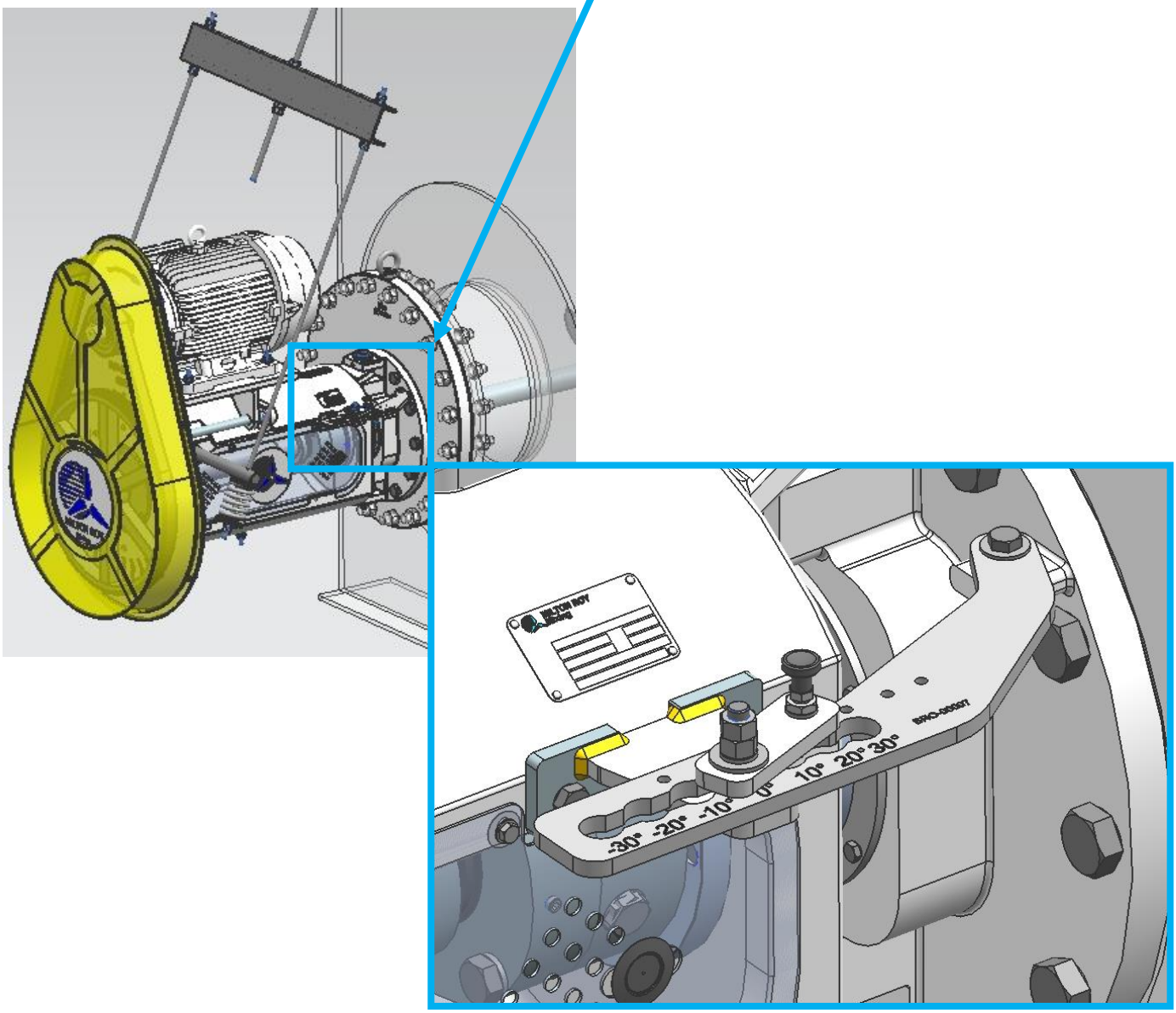
Adjustment of the compensating springs (see cross sectional drawing)

IX – 3 : Orientation setting procedure (indexable version)

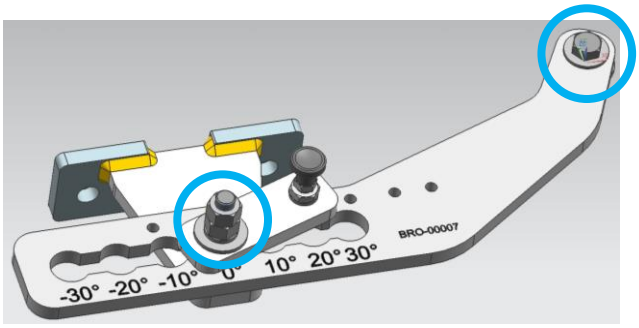
This procedure describes the steps to follow in order to adjust the orientation of the machine when it is equipped with a indexable setting device as shown in the picture below.
The agitator can be set to an orientation of -30 °to 30 ° by 10 °steps.

WARNING : Before working, the machine has to be stopped.

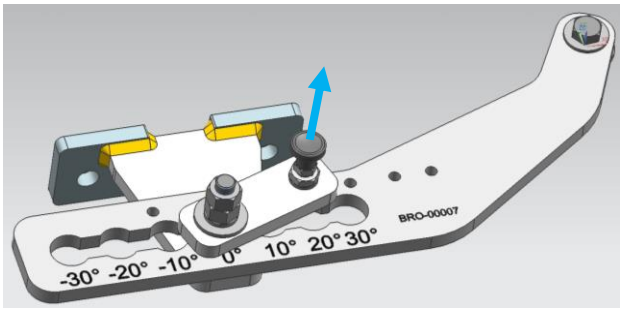
Location of the setting device



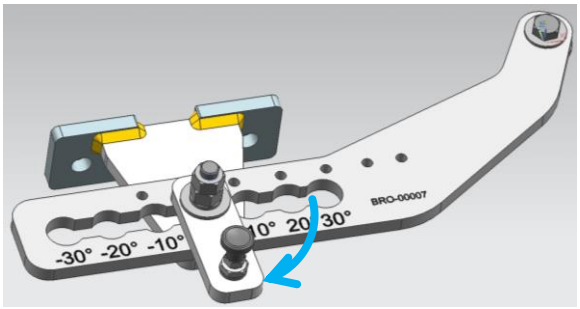
1. Untight lightly the bolts if needed



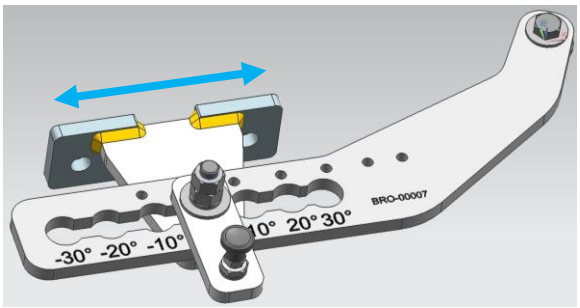
2. Lift the indexing lever



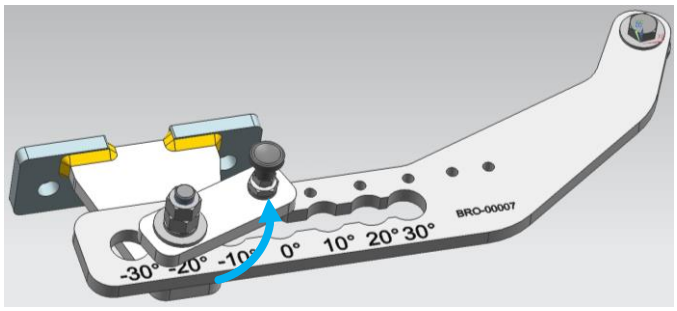
3. Rotate the lever



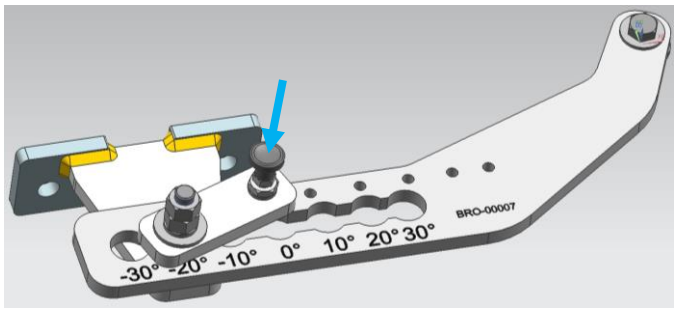
4. Place the machine at the requested orientation using the marking



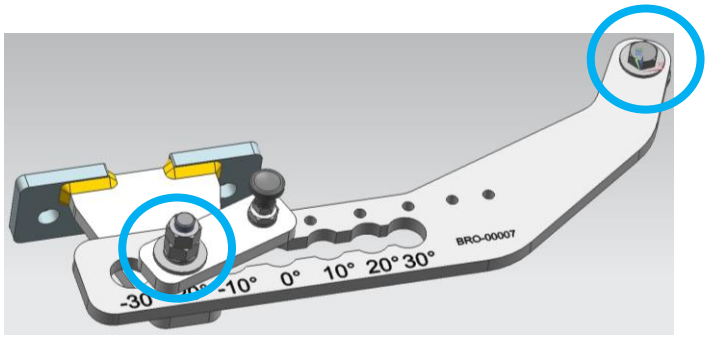
5. Rotate the lever back



6. Replace the indexing lever



7. Retight the bolts if needed

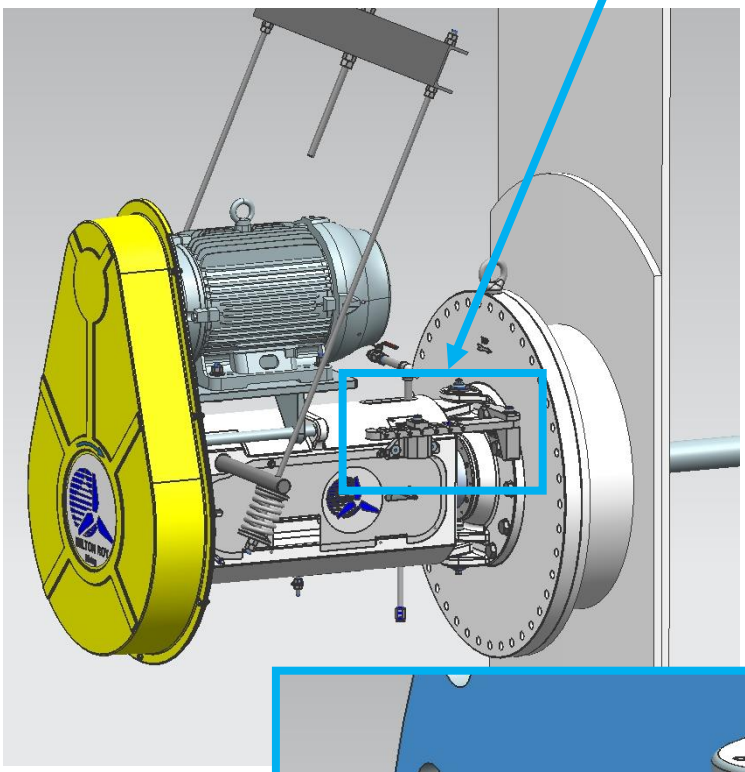


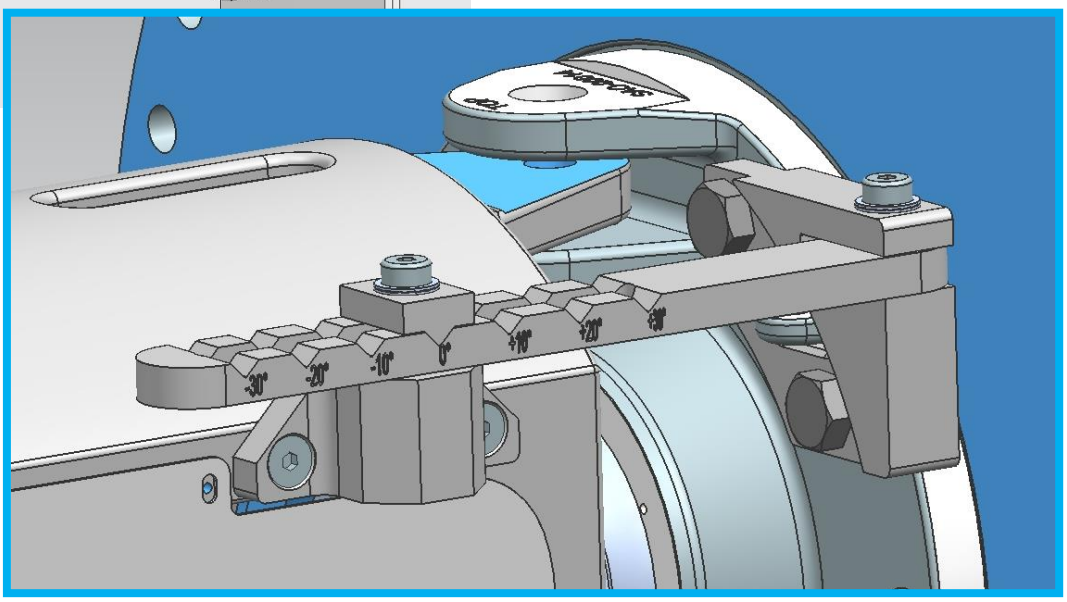
IX – 4 : Orientation setting procedure (serrated version)

This procedure describes the steps to follow in order to adjust the orientation of the machine when it is equipped with a serrated setting device as shown in the picture below.
The agitator can be set to an orientation of -30 °to 30 ° by 10 °steps.
In some specific cases, the range of orientation can be reduced to -20 °to 20 °.

WARNING : Before working, the machine has to be stopped.

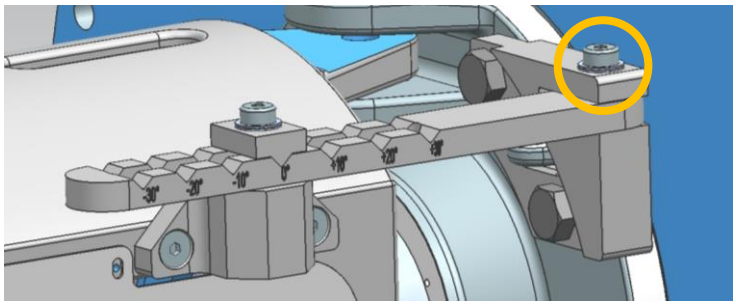
Location of the setting device



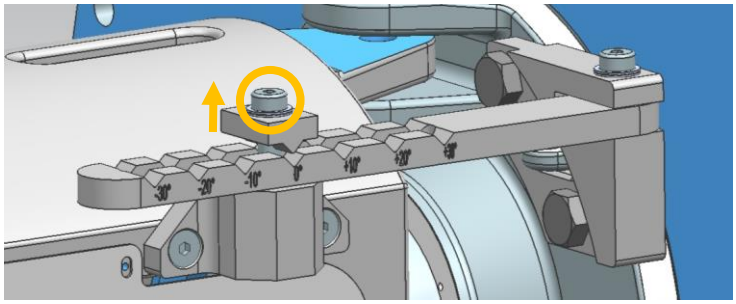


IF THE MACHINE IS EQUIPPED WITH SEVERAL ORIENTATION ARMS, THE OPERATIONS BELOW MUST BE DONE SIMULTANEOUSLY ON EACH ARM.

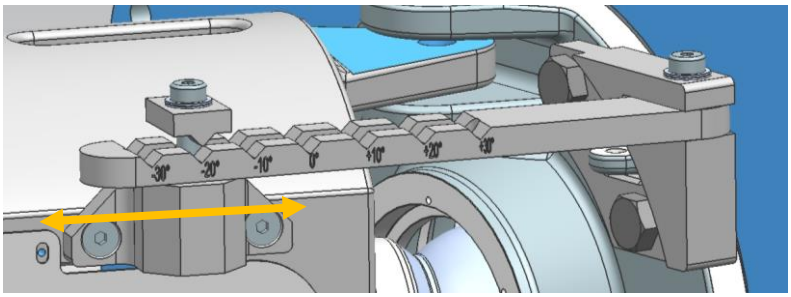
1. Untight lightly the screw (quarter turn)



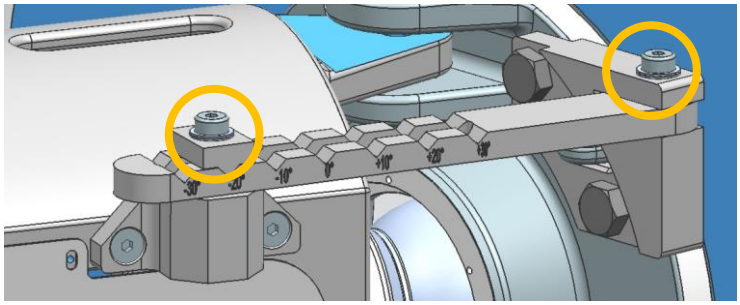
2. Unscrew the screw allowing the index to be lifted up (do not remove the screw)



3. Place the machine at the requested orientation using the marking



4. Retight the two scews



IX – 5: Checklist

Checklist to be created before starting to control risks and ensure that the mixer is working properly.

BEFORE STARTING UP:

- ☐ **Make yourself aware of the manufacturer's folder**
- ☐ **Check the equipment on acceptance**
- ☐ **Check that the nozzle flange is in a proper condition and good verticality**
- ☐ **Make sure of the installation direction of the impeller on the shaft (blowing or sucking position)**
- ☐ **Make sure that the impeller is in the correct position on the shaft**
- ☐ **Make sure that the lock nuts or lockplates are installed**
- ☐ **Check that the fastenings have been done correctly:**
    - ☐ **Of the mixer on its support**
    - ☐ **Of the lower shaft with connection or with the upper shaft**
    - ☐ **Of the impeller or impellers on the shaft**
- ☐ **Check the tightening torques**
- ☐ **Check that the lockplates have been properly turned**
- ☐ **Check the mechanical seal for leaks**
- ☐ **Assembly fixtures of the mechanical seal removed (if applicable)**
- ☐ **Make sure that the voltage conforms correctly (connection of the motor in Y or Δ)**
- ☐ **Check the water-tightness of the inputs of electrical cables that are not used**
- ☐ **Check the electrical connections**

Undertaken by:	**Checked by:**	**Date :**
Authorisation to start the equipment:		
☐ **YES**		☐ **NO**

STARTING UP

☐ **Checking the direction of rotation of the mixer**

☐ **Checking the electrical current**

☐ **Making sure that the mixer does not give off any abnormal noise or heating**

Undertaken by:	**Checked by:**	**Date:**
Authorisation to start the equipment:		
☐ **YES** ☐ **NO**		

X – DECOMMISSIONING AND DISPOSAL

The directive on waste electrical and electronic equipment (WEEE - 2002/96/EC) came into force throughout Europe on 13 August 2005. Its aim is to avoid waste from the disposal of electrical or electronic equipment and to favour their reuse, their recycling or other forms of recovery. When you no longer need this product, follow the local specifications for the removal of waste. Do not fly-tip, but return it to the collection centre specialising in electrical and electronic waste and/or contact your reseller.

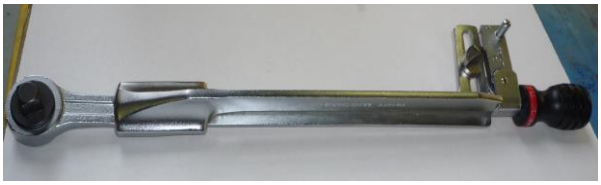
TRANSLATION

	Français	English	Deutsch	Espagnol
A	Hauteur tête	Drive height	Höhe der Antriebseinheit	Altura de la "cadeza"
ØD	Diamètre hélice	Impeller diameter	Durchmesser der Rührflügel	Diámetro hélice
Da	Diamètre accouplement	Coupling diameter	Durchmesser der Kupplung	Diámetro del acoplamiento
FA	Force axiale	Axial load	Axialkraft	Fuerza axial
FR	Force radiale	Radial load	Radialkraft	Fuerza radial
H	Position hélice	impeller position	Lage der Rührflügel	Sitio del hélice
HD	Hauteur hélice	impeller height	Höhe der Rührflügel	Altura del hélice
IM	Immersion minimum	Minimum imersion	Min Eintauchen	Min imersión
IT	Niveau de liquide max	Max liquid level	Höchstand der Flussigkeit	Nivel máx del liquido
P	Puissance moteur	Rated power	Motorleistung	Potencia del motor
Q	Débit	Pumping flow rate	Durchfluss	Caudal
TH	Diamètre de passage	Man hole	Durchmesser der Montage	Mín. Paso montaje
	Vitesse	Rotation speed	Drehzahl	Velocidad
	Entraînement	Drive	Antrieb	Arraste
	Poids	Weight	Gewicht	Peso
	Diamètre centrage	Centrering diameter	Durchmesser der Zentrierung	Diámetro del centrado
	4 trous sur diamètre	4 holes on diameter	4 Löcher auf dem Durchmesser	4 agujeros
	Diamètre extérieur bride	Outside diam of flange	Außendurchmesser der Flansch	Diámetro exterior de la brida
	Epaisseur bride	Flange thickness	Dicke der Flansch	Grossor de la brida
	Longueur d'arbre max	Maxi shaft length	Max Länge der Welle	Longitud máx del eje
M	Moteur	Motor	Motor	Motor
C	Accouplement	Coupling	Kupplung	Acoplamientos
S	Arbre	Shaft	Welle	Eje
E	Hélice	Impeller	Drehkörper	Roteres

GLOSSARY

Vent plug: a vent plug is a mechanical device which controls the flow of fluids and which allows air to leave when overheating and return when cooling.

Torque wrench: a torque wrench is a tool allowing the tightening torque of screws and nuts to be limited in order that they are tightened optimally.



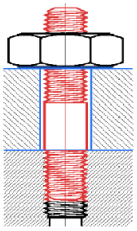
Vortex: turbulent flow where the fluid particles flow about an axis.

Mixing head: drive assembly situated outside the tank (motor, gearbox, trundle etc.)

Tangled mass: tangled mass is the common name given to fibres that wrap around each other around the hub of the impeller to form a “ball” which causes an increase in power or an out-of-balance.

Battens: pieces of wood used to support the shaft for the installation of the mixer. They have the same function as U channels but are less effective.

Pin: part-threaded metal rod enabling a connection “complete, rigid, removable” to be made between two parts. For example, one side may be sealed in the concrete and the other used to screw or lock parts. See diagram below.



GUARANTEE

The Seller guarantees the Goods for twenty-four (24) months following delivery date, except for agitators and spare parts thereof for which warranty period is twelve (12) months. Any claim shall be raised to the Seller's in writing within ten (10) working days of becoming aware of the same and shall enclose the corresponding purchase invoice. Failing that, the Purchaser implicitly waives all right of recourse regarding warranty.

The Seller's warranty covers replacement or repair of proven defective parts or Goods at its sole option:

(a) returned to its workshops; or (b) returned to its distributor or authorized service center workshop; or (c) or in case the Goods could not be returned for financial or practical reasons, default or defect shall be assessed on-site. In case of absence of Seller's responsibility, the Purchaser will bear the costs incurred by the Seller to cover report fees for an amount determined on a case-by-case basis.

If the Seller's responsibility is established under the warranty, the Seller shall replace or repair the defective parts at its own expense, excluding any other costs (such as, without limitation dismantling, reassembling and approach (including emptying of the tanks)).

The Seller shall reserve the right to modify all or part of its Goods to comply with its warranty obligations.

The replacement or the repair of one or more parts for whatever reason shall extend the warranty period for twelve (12) months or till the end of the warranty period whichever occurs first.

The warranty shall not apply in the following circumstances: fair wear and tear, installation not compliant with Industry Practice and/or the Seller's instruction manual, lack of monitoring or maintenance, willful act on the part of the Purchaser, its employees or Third Parties, accident, any modification to the operating conditions, chemical attack, corrosion or erosion, solidified particle deposits on the sealing parts.

All Seller's information and recommendations are subject in all cases to the verification and acceptance of the Purchaser, whose liability in this respect cannot be excluded, whether in whole or in part and shall not provide any warranty against wear and tear or chemical action.

The warranty shall automatically end: (a) if the storage of the Goods by the Purchaser fails to comply with the Seller's recommendations and with Industry Practices or maintenance manuals; (b) in the event of the Goods being worked on or dismantled without the express written agreement of the Seller or in the event of such work being carried out by a person not approved in writing by the Seller; (c) if original parts have been replaced by other parts non-supplied by the Seller.

Warranty claim shall not affect payment terms.

INDUSTRIAL PROPERTY

Notwithstanding anything to the contrary and except an express license is granted, each Party shall remain the exclusive owner of the Intellectual Property Rights it owns, develops or uses, whether such ownership, development or usage arises before, during or after the Agreement.
The Seller warrants to the Purchaser that the Goods do not constitute a breach of any pre-existing rights nor any other form of infringement of Intellectual Property Rights, and indemnifies it against any action or claim in this respect, provided that: (a) Seller has been informed in advance and in writing of the existence of such a claim and within a reasonable timeframe for it to be able to prepare its defense, (b) payment has been received for the Goods, and (c) the Purchaser provides the Seller with the necessary opportunity, authority, information and assistance for it to be able to take on exclusive control of the defense against such claims or legal action, including arbitration, mediation, settlements and appeals. This obligation does not apply in respect of any claims/infringement action or any other Intellectual Property Rights resulting from the use of the specifications provided by the Purchaser or derived from the design created by the latter, or from changes or modifications to the equipment imposed by it.
Should the liability of the Seller be recognized by any jurisdiction, the Seller shall at its sole option: (1) obtain from the Purchaser the right to use the Goods under the conditions defined by the Agreement; or (2) replace it with a reasonably equivalent Good; or (3) modify it to make it usable without contravening any Third Party rights and in compliance with the Agreement; or (4) recall the Goods, refund the Order Price to the Purchaser less an obsolescence discount.
Should the Goods supplied by the Seller for the Purchaser be produced in accordance with the Purchaser's designs, samples or instructions, or were been designed exclusively by the Seller, or were combined with other Goods not supplied by the Seller, the Purchaser will have to defend, guarantee and indemnify the Seller under equivalent conditions to the aforementioned obligation placed upon the Seller.

CONTACT LIST

For more information:

MILTON ROY MIXING
49bis, Avenue Franklin Roosevelt
77210 AVON
FRANCE

Tel : +33 (0)2 32 68 30 00

For a problem:

Ask for the After Sales Service department

+33 (0)2 32 68 30 00
mr18.aftersales@miltonroy.com

For spare parts:

Ask for the After Sales Service department

+33 (0)1 60 74 99 57
+33 (0)1 60 74 95 33

OTHER COUNTRIES:

Please consult our website to find out who are our local representatives.

www.miltonroymixing.com