



PRODUCTION

OPERATION MANUAL

WRITTEN BY

Production Manager	Signature
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VERIFICATION

Production Supervisor	Signature
Safety	Signature.....

APPROVAL

Quality Assurance Manager	Signature.....
	Date 13/09/2013

Expiration Date



TABEL OF CONTENTS

0. REVISION MATRIX.....	4
1. TURNING SYSTEM, CONTROL LIST	5
1.1 Ignition system:	5
1.2 Turning off system :	7
1.3 Turn off the steam boiler.....	7
1.4 Turn off the Utilities	8
1.5 Turn off Outdoor Area	8
1.6 Technical Room Clean Rooms	8
2.1 Load water and / or glycol.....	9
2.2 Load Steam	10
2.3 Exhaust Water / Glycol	10
3. RECLAMATION OF OXEGYN REACTORS, BALLS, RELATED DRIPPERS.....	13
4. PROCEDURES FOR GROUNDING	13
5. LOAD NOT FLAMMABLE SOLVENT ON DRIPPE (ONLY WITH VACUUM).....	14
6. LOAD ON FLAMMABLE SOLVENTS DRIPPER (ONLY WITH AIR PUMP)	15
7. DRIP	16
8. TOOLS AND CONTAINER INTAKE / DRUMS FOR LOAD / UNLOAD SOLVENTS.....	17
8.1 LOAD	17
8.2 DRAIN.....	18
9. SOLVENT ON LOAD REACTOR (THROUGH AIR PUMP).....	18
10. VACUUM DISTILLATION	20
11. ATMOSPHERIC DISTILLATION	21
12. BUCKNER FILTRATION WITH COVER.....	21
13. COOLING THE MASS OF REACTION	23
14. EXHAUST SOLVENT IN TANK BALL COLLECTION OR OTHER CONTAINER.....	24
15. DISCHARGE FROM SOLVENT IN TANK REACTOR OR OTHER CONTAINER	24
16. TRANSFER BETWEEN TWO REACTORS WITH FILTRATION THROUGH FT02 WITH OR WITHOUT A FILTER CARTRIDGE	24
17. TRANSFER BETWEEN TWO REACTORS WITH FILTRATION THROUGH FT01 and / or CARTRIDGE FILTER.....	25
18. TRANSFER SOLVENTS, solutions or suspensions, OR BETWEEN TWO REACTORS REACTOR AND THROUGH EMPTY DRIP	26
19. USE OF HOPPER	26
20. LOADING SOLID / LIQUID FROM HATCH SPECIMEN	27



21. DRYING.....	29
22. MANAGEMENT OVER PRESSURE OF A REACTOR	30
23. STARTING SYSTEM SAFETY SUMMARY IN CASE OF EVACUATION	30
24. SHREDDER (MILL M001)	31
24.1 Grinder assembly and preparation pre-start.....	31
24.2 Mounting Shaft with auger and reel	34
24.3 Starting	36
24.4 Cleaning and recovery product	37



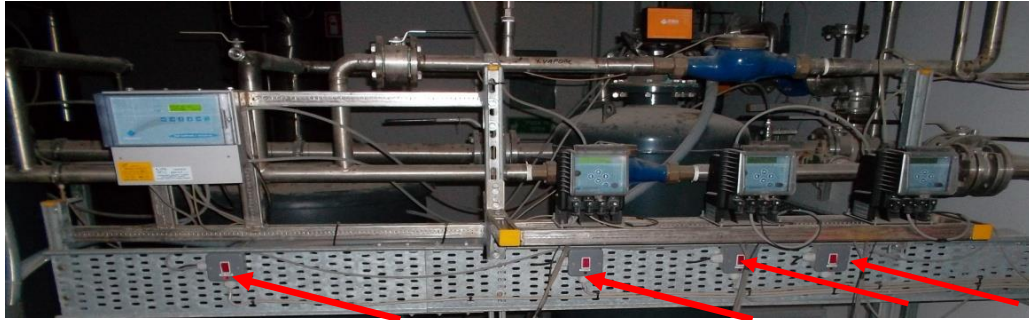
0. REVISION MATRIX

Review	Date	Purpose and Reason for Change
01		Rev. 00 Withdrawal Date
02		Rev. 01 Withdrawal Date
03		Rev. 02 Withdrawal Date
04		Rev. 03 Withdrawal Date
05		Rev. 04 Withdrawal Date
06		Rev. 05 Withdrawal Date
07		Rev. 06 Withdrawal Date
08		Rev. 07 Withdrawal Date
09		Rev. 08 Withdrawal Date

1. TURNING SYSTEM, CONTROL LIST

1.1 Ignition system:

- a. Turn on the 4 switches of the water softening system.



- b. Turn the compressor on the machine.



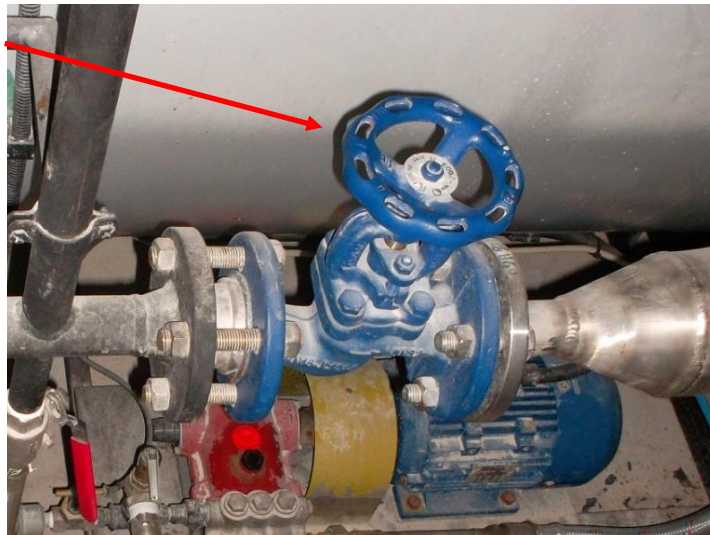
- c. Turn dryer from board machine.

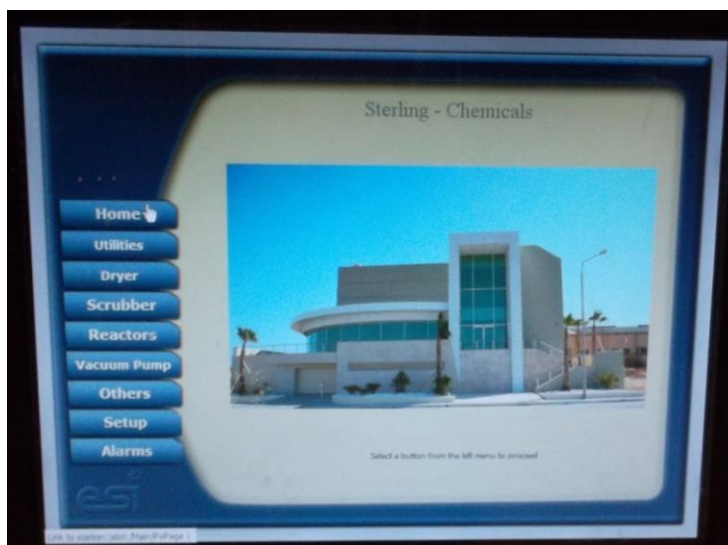


d. Turn on the steam boiler.



- ✓ From the display, press the 0/1 button to turn on the pump.
- ✓ Turning knob, from 0 to 1, for the burner ignition.
- ✓ Pass a few minutes until the display does not indicate that the water temperature is about 100 degrees.
- ✓ Modular steam exit opening (Blue Valve), simultaneously with the closing of the discharge of condensate. Until the full opening of the valve and the total closure of the blue discharge condensate.





- i. In the Touch Screen to go under : Utilities , Boilers , Hot Water Boilers and boiler switch on the B- 0301M and the pump P- 0301M .
- ii. In the Touch Screen to go to the Utilities section , -25 ° C Section and put the whole section to ON to turn on the fridge .
- iii. In the Touch Screen to go to the Utilities section , Section +5 ° C to ON and put the entire section .
- iv. Going under : Utilities, Chilled Water , Cooling Tower , and verify that the pump and fan are started. and . In Touch Screen go to the section Vacuum Pump and press Start Process.
- v. In the Touch Screen to go to the scrubber section and turn on the fan FC- 0701M Fan subfolder . Turn on the pump.

1.2 Turning off system :

1. In the Touch Screen to go to the Utilities section , -25 ° C Section and to put off the entire section . Will also turn off the refrigeration unit .
2. In the Touch Screen to go to the Utilities section , Section +5 ° C to OFF and put the entire section .
3. In the Touch Screen to go under : Utilities , Boilers , Hot Water Boilers and turn off the boiler and pump B- 0301M P- 0301M .
4. In Touch Screen go to the section Vacuum Pump and press Stop Process. and . In the Touch Screen to go to the scrubber section and turn off the fan FC- 0701M Fan subfolder . Turn off the pump .
5. Switch off the compressor to the machine.
6. Switch off dryer from board machine.

1.3 Turn off the steam boiler.

- ✓ Modular closing the output of steam (Valve Blue) , simultaneously with the opening of the discharge of condensate . Up to the total closure of the valve opening of the blue and the total discharge condensate .
- ✓ From the display, press the 0/1 button to turn off the pump.



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- ✓ Turn knob , 1 to 0 , to turn off the burner.

NB : The ride control system should be carried out at the beginning of round and half round .

1.4 Turn off the Utilities

- ✓ Look at the lights on the electrical panel in place the technical room .
- ✓ Check the general condition by touch screen (alarms and spy equipment operation) .
- ✓ Check visually , by touch screen all pumps in the system
- ✓ Check the presence of salt in water softener .
- ✓ Monitor often and possibly download the collection tank of the condensate of the vacuum pump .

1.5 Turn off Outdoor Area

- ✓ Check the tank for collection of the exhaust duct opening the yellow lid of the manhole .
- ✓ Check the tank exhaust steam boiler
- ✓ Check the level of the scrubber tank .
- ✓ Check fan of the scrubber .

1.6 Technical Room Clean Rooms

- ✓ Download the condensate collection tank of the dryer during the drying ` , when necessary, and at the end of the same.



2. LOADING AND DISCHARGE REACTORS SHIRTS

2.1 Load water and / or glycol

1. Check that the valve of the water recirculation / glycol shirt, present behind each reactor, the upper floor, is open, and that the 2 compressed air valves are closed (see photo).



Compressed air valves

Recirculation Valve

2. Get down on the ground floor. Make sure the return valve on the pipe is open vertical and horizontal closed.

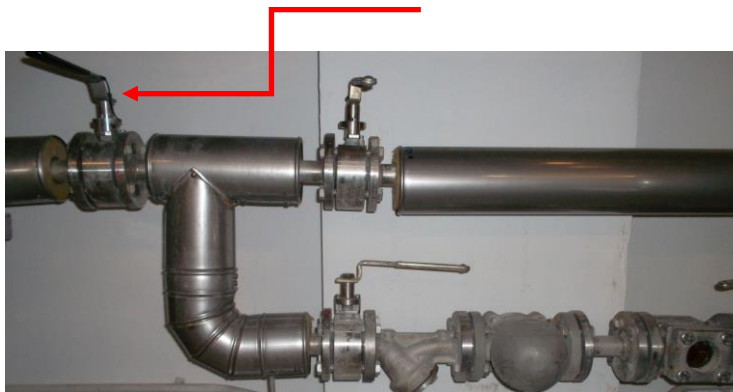


3. Open the valve and then return the desired flow: Hot water, glycol and glycol -25 to +5. Adjust according to the necessary temperature, the opening of the outlet.

Note: 'You can go from +5 to -25 and vice versa without having to download the shirt, but never move from glycol to water or vice versa. It is necessary when changing the fluids in the shirt always follow the order-STEAM HOT WATER-GLYCOL-GLYCOL +5 ° C -25 ° C and vice versa in order to avoid thermal shock to the reactor.'

2.2 Load Steam

1. Check that the boiler of the steam is active and under pressure.
2. Make sure the return valve is open vertical and horizontal closed.
3. Open the valve of the pressure present in the room Utilities.
4. Close the valve on the recirculation of water / glycol shirt, this behind the reactors upstairs.
5. Be sure to close all valves and return flow (Hot Water, +5 and -25) of the reactor and that the shirt is blank.
6. Get down on the ground floor. Open the valve chrome exhaust condensate.

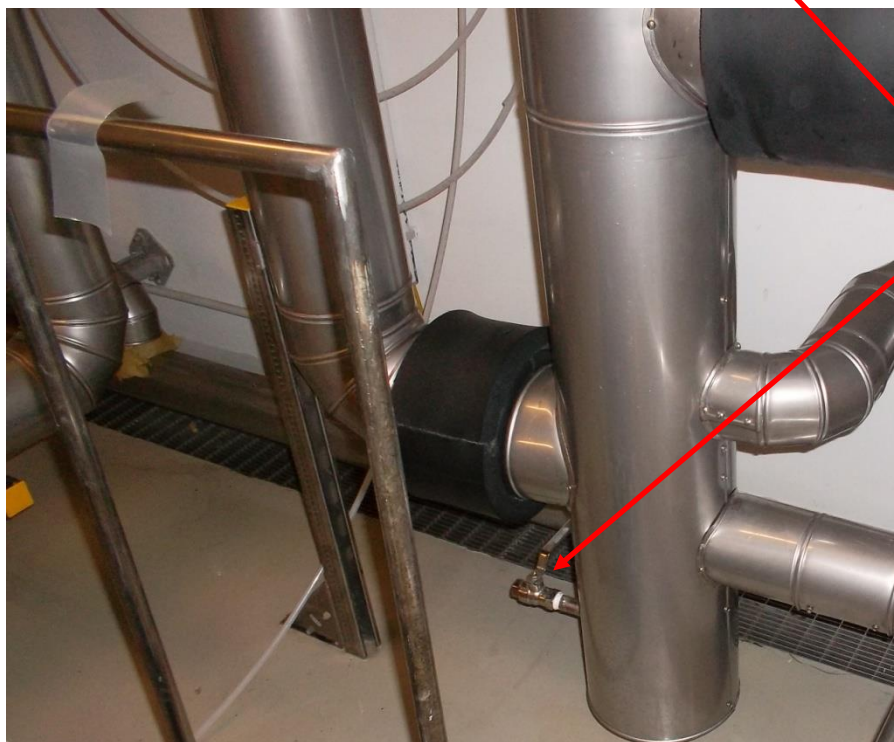


7. Open the steam valve (red) present on the upper level behind the reactor.
8. Adjust the pressure in shirt and consequently the temperature by means of pressure switch placed in the technical room.

Note: Please open the drain valve of the condensate only for the duration of the use of steam. After use, close it immediately.

2.3 Exhaust Water / Glycol

1. Close the discharge valve of the water / glycol and leave open the valve back.
2. Make sure the return valve is open vertical and horizontal closed.
3. Going upstairs. Close the valve on the recirculation of water / glycol shirt.
4. Open the compressed air valve on the right, less than half of its travel . Check the sight glass under the present valve vertical return , that the pipeline will be emptied , and then close the valve of the compressed air .
5. Close the return valve vertical and horizontal open .
6. Going upstairs. Open the compressed air valve on the left, less than half of its travel . Check the sight glass , this side of the valve horizontal return , that the shirt is empty , close the valve and compressed air .
7. Close the return valve of the reactor.
8. Drain the pipe respectively before opening the valve at the bottom right and then the lower left . Anything to avoid mixing the water with glycol.



Drain valves shirt

9. Close the return valve open horizontal and the vertical. Re-open the recirculation of the water / glycol present behind the reactors.

Note: And 'advisable to do this with 2 operators which coordinate with each other. One upstairs and one downstairs.





3. RECLAMATION OF OXEGYN REACTORS, BALLS, RELATED DRIPPERS

Before introducing flammable material inside the reactors, balls, or drippers, it is necessary to reclaim oxygen equipment, in order to eliminate the risk fire or explosion. This procedure also applies in the case of certain reactions require the removal of oxygen for qualitative purposes.

Proceed as follows:

- isolating the equipment involved in the clean from the outside , closing any valves open earlier.
- verify the opening of the valve of the equipment concerned fluxing nitrogen (opening 0.080 / 0.090 bar with scrubber on). Higher pressures could break the rupture disc on the set (0.49 bar) .
- the first cycle. Place the equipment under vacuum until reaching a vacuum of at least -0.85 bar . If you fail to obtain such vacancy , notify the Supervisor and not go any further.
- Close the valves of the vacuum and introduce nitrogen taking care towards the achievement of 0 bar using the low pressure nitrogen 0.5 bar or reduce the opening of the valve for the high pressure line passing slightly 0 bar pressure .
- second cycle . Repeating in sequence the steps b and c to perform a second cycle of reclamation. At the end , consider cleaning up the oxygen that is always carried out successfully reached the vacuum of at least -0.85 bar for both cycles.

Note: In the case of finished products only use nitrogen at low pressure (0.5 bar) and possibly not directly on the reactor , but on the collection of balloons (precaution to prevent small mechanical impurities that may be present in the line of nitrogen , end up in the reactor).

4. PROCEDURES FOR GROUNDING

- Cable 1:



- Cable 2:



- Cable 3: as Cable 2.

During the handling of solvents and flammable materials, such:

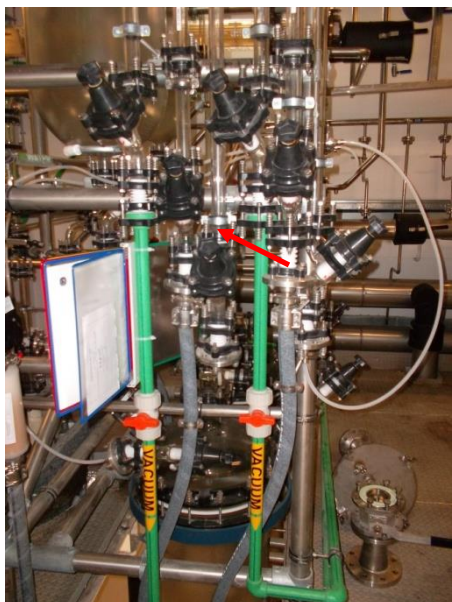
- ✓ Load from solvent drum or tank
- ✓ Discharge distillate tank

✓ Operations filtration Buckner, sparkler, filter or lens

You need the grounding of the container or filter, in order to avoid the possible build-up of electrostatic charges that can generate sparks that could cause ignition. To do this there is a cable (1), fitted at one end with an eyelet that adapts to the appropriate pin present in different points of the installation (columns of the loft), and a clamp on the opposite side, to be hooked on the metal cage of the tank or on the filter. In case you are using a line load of plastic material, is also used in the cable (2), equipped with a double gripper, so as to connect the metal part already on the ground with the float used in the operation.

5. LOAD NOT FLAMMABLE SOLVENT ON DRIPPE (ONLY WITH VACUUM)

Isolate the dripper from the outside (close all vents). Open the valve on the drip line of cargo on board.



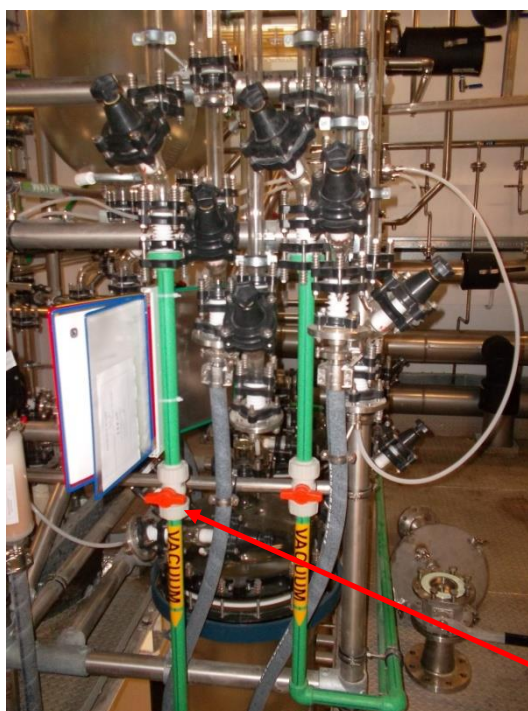
- Open the vacuum valve.
- Use appropriate PPE appropriate for the substance (goggles, mask, clothing ...)
- For handling and equipping small tank / drum see chapter 4.



- a. A load is completed, close the inlet valve on the ground floor, and the valve to drip edge.
- b. Restore atmospheric pressure on the dripper closing the vacuum, and restoring with low pressure nitrogen.
- c. Please cross out (adding the signature and date) the labels of empty containers used and provide for them in special housings (for disposal) as soon as possible.

6. LOAD ON FLAMMABLE SOLVENTS DRIPPER (ONLY WITH AIR PUMP)

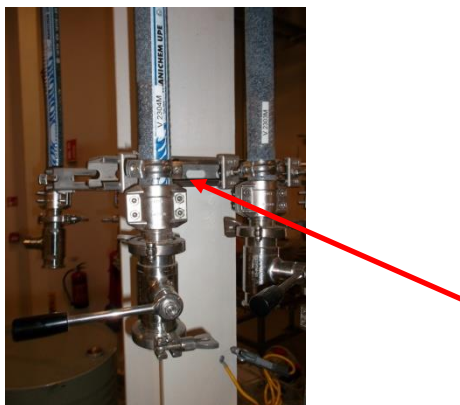
1. Close all valves on the dripper and make sure the vent is open slaughter
2. Reclaim the dripper oxygen as described Chapter 19.
3. Open the valve on the drip line of cargo on board.



4. Use appropriate PPE appropriate for the substance (goggles, mask, clothing ...)
5. For handling and equipping small tank / drum see chapter 4.



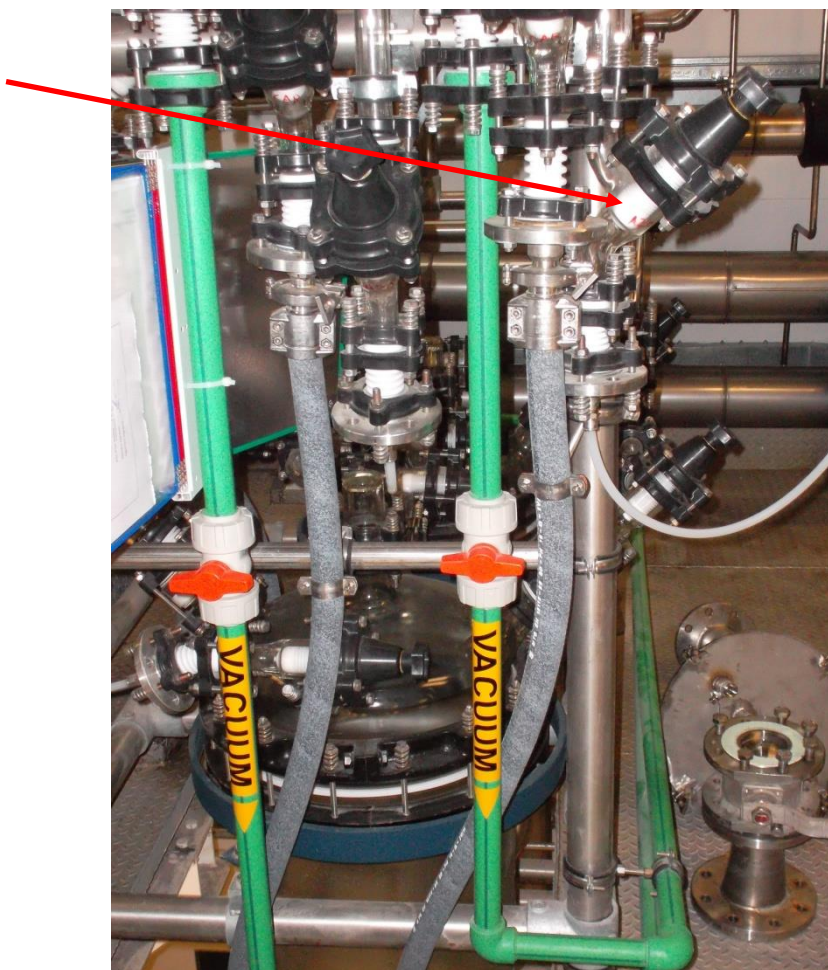
6. Insert the material by pneumatic pump:



- a. A load is completed, close the inlet valve on the ground floor, and the valve to drip edge.
- b. Please cross out (adding the signature and date) the labels of empty containers used and provide for them in special housings (for disposal) as soon as possible.

7. DRIP

- a. Open the valve on the nitrogen dripper and ensure the operation of the relief valve, the characteristic noise during its opening.



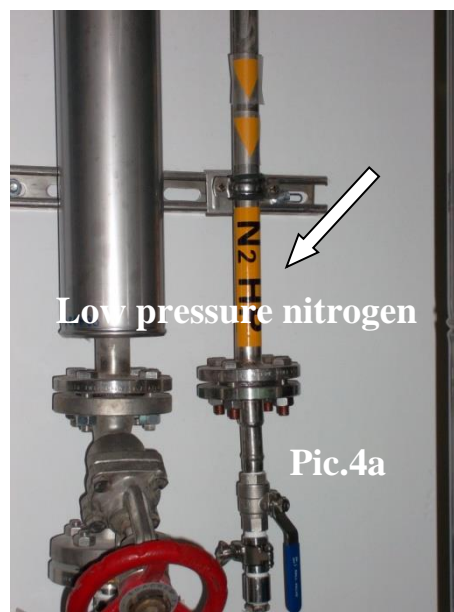
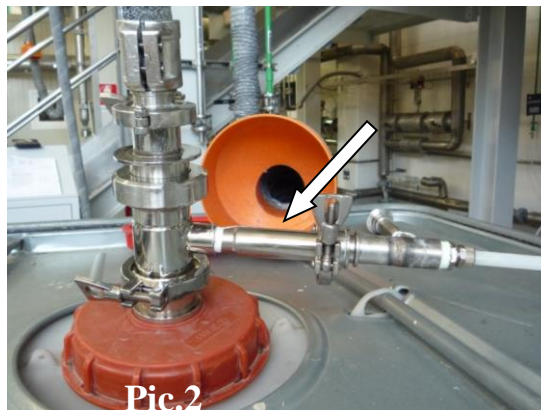
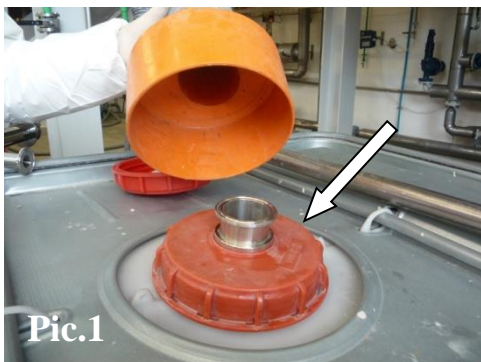
- b. Open the drain valve located under the drip emitter itself and adjust according to desired flow.

- c. At the end of the dripper and close the valve for nitrogen.

8. TOOLS AND CONTAINER INTAKE / DRUMS FOR LOAD / UNLOAD SOLVENTS

8.1 LOAD

1. Place the suction nozzle near the top of the barrel or cistern.
2. Ground the tank / barrel, if the load line is made of plastic connecting the float to the ground also.
3. Replace the cap of the barrel or tank fitted with one hole for the dip-tube (Pics. 1)
4. Insert the suction tube fitted with tri-clamp connection and attach it to the cap (Pics 2).
5. Connect a hose with the suction tube with the air pump and that the load line reactor or dripper (Pics. 3).
6. Connect with Rilsan tube, the detachment side of the float, the valve of the nitrogen at low pressure wall (Pics.4a).



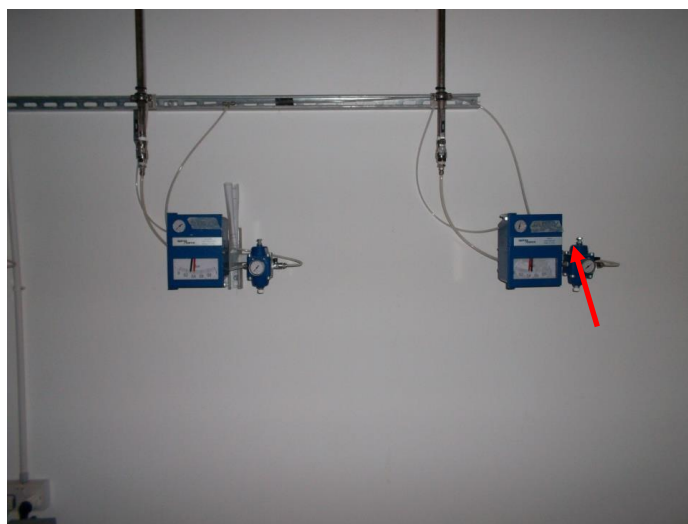
8.2 DRAIN

As so far described is valid for the load of the solvent in the reactor or dripper. When you must download solvent from the reactor or flask, or barrel of the centrifuge, it equips the tank in exactly the same way, with the difference that the hose must be connected to the discharge of the reactor or flask, and the detachment of the suction side is connected by means Rilsan to the vent valve wall.

Note: When downloading, the fitting to screw on the cap of the tank does not need to float

9. SOLVENT ON LOAD REACTOR (THROUGH AIR PUMP)

1. Isolate the reactor from the outside (close the hatch and the bottom valve). Leave valve open line of cargo on board the reactor.
2. Purge system with oxygen (see section 3). In the case of finished products to restore atmospheric pressure, using nitrogen lines at low pressure balloons collection (precaution to prevent small mechanical impurities that may be present in the nitrogen line, ending up in the reactor).
3. Open the valve glycol (+5 ° C) on the tube bundles.



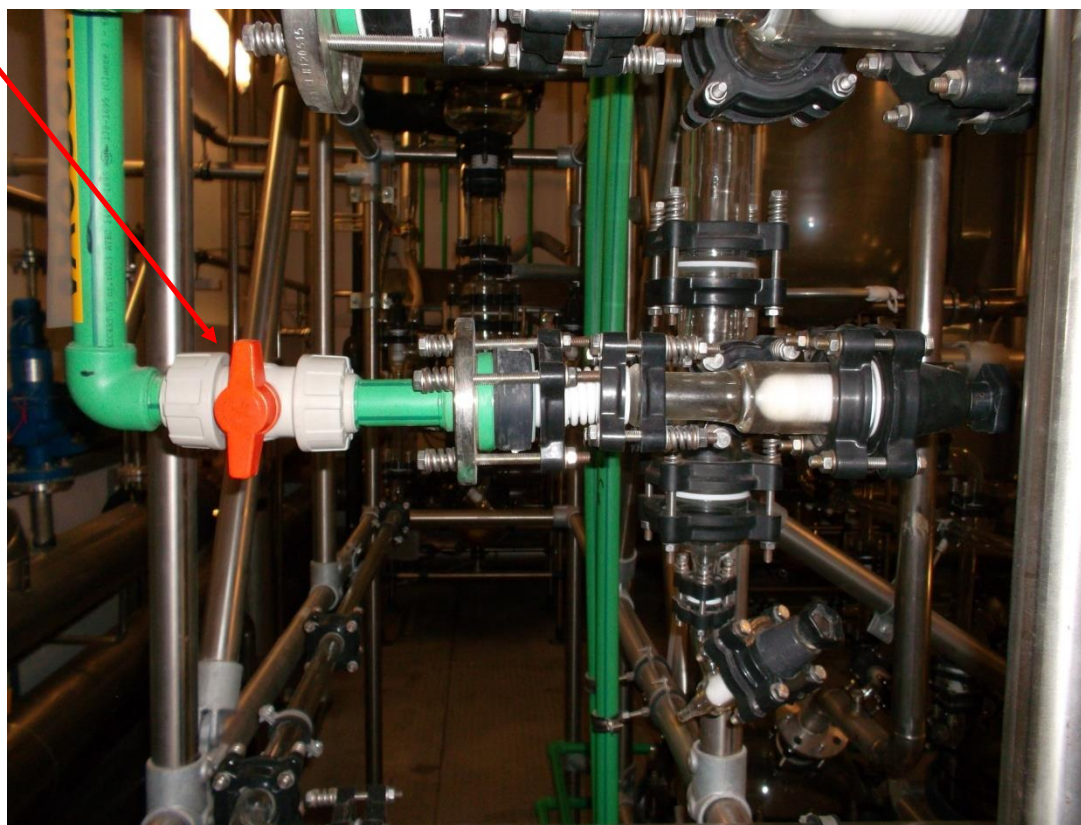
4. Put the loop reactor unless it is the finished product.
5. Use appropriate PPE appropriate for the substance (goggles, mask, clothing ...)
6. For handling and equipping small tank / drum, see Section 8.
7. Use, to the load, the specific air pump.
8. and. Turn on the pump, check the flow, and wait for all the liquid is loaded on the reactor, and this we can verify the absence of flow on the glass part of the load line.
9. Do a little 'vacuum in the reactor in order to empty the pipeline load, or if this is not possible (eg, reaction to reflux), empty the line with high pressure nitrogen to be connected between the pump and the load line.



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10. Turn off the pump and at the same time close the discharge valve on the load line, and the edge of the reactor.
 11. Do not disconnect.

10. VACUUM DISTILLATION

- a. Make sure that the reactor is isolated from the outside (all valves closed).
- b. Make sure the opening of the outlet of the glycol (+5) on the tube bundles, can be opened by pressure reducers.
- c. Make sure the opening of the outlet of the traps to "glycol" reactors, opened by pressure reducers.
- d. Put the reactor collection. Proceed to open the valve to the root of the void to bring the vacuum system, eventually choking the valve.



- e. At this point, proceed with the heating of the reaction mass by circulating hot water jacket (set as reported on the sheet before processing and to circulate it in his shirt to check that the water temperature matches the set).
- f. Joints scheme , to proceed with the choking of the valve stem of the vacuum so as to provide the system with the proper power needed to maintain the boil and concentrate up to volume expected from the sheet processing .
- g. During the vacuum distillation , to break the foam , enter nitrogen from line board machine .
- h. Getting control of the balloon filling collection that should be periodically emptied. During this operation it is necessary to isolate the ball from the reactor by closing the valve passage of the solvent and the communication of the balloons . Restore atmospheric pressure using nitrogen at low pressure. Connect the exhaust valve of the balls with a waste water tank



- i. Open the drain valve on the ground floor and then one under the ball. When all the solvent has been downloaded close both the exhaust valves . Close the nitrogen on the ball and gradually open the valve balls to restore communication between the vacuum.
- j. At the end of distillation to cool the earth by circulating cold water in his shirt, then proceed to the restoration of atmospheric pressure nitrogen entering after closing the vacuum valve . Be careful not to pressurize the reactor.
- k. During the cooling of the mass , cater to compensate for the decreasing tendency of the pressure , opening the valve of the nitrogen from the reactor.

11. ATMOSPHERIC DISTILLATION

- a. Make sure that the reactor is isolated from the outside (all valves closed).
- b. Make sure the opening of the outlet of the glycol (+5) on the tube bundles, can be opened by pressure reducers.
- c. Make sure the opening of the outlet of the traps to "glycol" reactors, opened by pressure reducers
- d. Put in collecting the reactor.
- e. Reclaim oxygen, if any flammable material, as described in paragraph 3.
- f. At this point, proceed with the heating of the reaction mass up to the boiling point of putting hot water into the jacket (set as reported on the sheet of processing and prior to circulate it in shirt check that the temperature of the water corresponds to the set).
- g. Once fully operational focus to the expected volume from the sheet processing.
- h. When you need to download the balloons collection follow the instructions in paragraph 14.

12. BUCKNER FILTRATION WITH COVER

- a. In the hall 12C (room filtration / centrifugal) , insert the special filter paper inside the equipment .
- b . Fit the lid and close it tightly clutching all the hooks .
- c . Connect the bottom valve of the reactor at the entrance of the lid of the Buckner with a pipe of appropriate length .
- d. Make the connection to the ground.
- e. Create a vacuum inside the filter by opening the valve of the charging line dripper on the ground floor or the root valve to the vacuum wall.
- f . Immediately open the ball valve on the discharge line of the reactor and finally that of the bottom.
- g . At the end of filtration , for the " wringing " panel close the bottom valve of the reactor and purge nitrogen from its valve on the discharge pipe of the reactor , inside the filter.
- h . To download the mother liquors , connect the valve to the bottom of the Buckner booster pump and then to the storage tank (make sure before removing the vacuum and open the vent or purge nitrogen) .
- i. To wash the panel to wait before that there is no longer dripping of the mother liquors , remove the cover , if necessary pave the panel by a bailer , then pour the washing solvent (previously loaded on a reactor and brought to the temperature required by machining) .

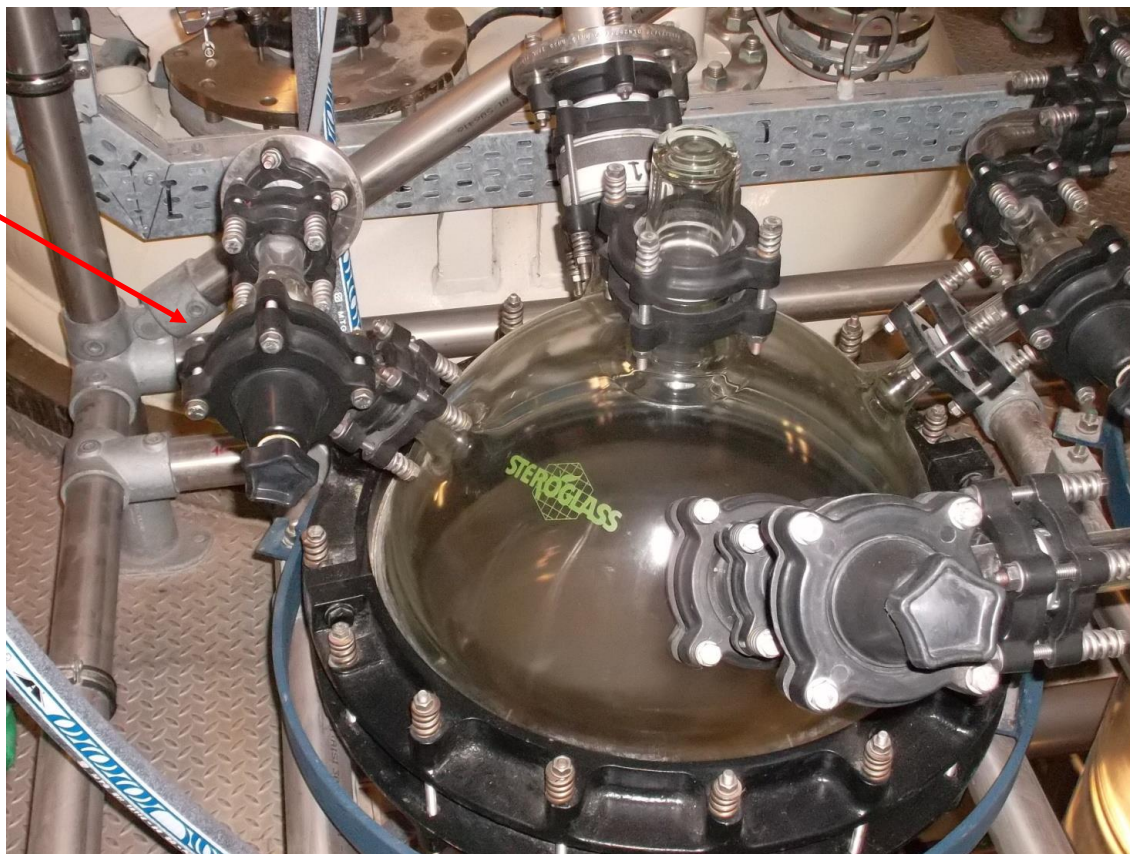


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- Slowly reopen the vacuum valve , and leave in these conditions until there is no more drip of solvent from the bottom of the basket , or however this must be negligible.
- j . Download the product.



13. COOLING THE MASS OF REACTION

When it cools a reaction mass, to avoid creating a vacuum in the reactor, open the valves placed on the nitrogen balloons collection. Always check that the exhaust of the reactor is open and running. Remember to close them once the mass has reached the desired temperature.





14. EXHAUST SOLVENT IN TANK BALL COLLECTION OR OTHER CONTAINER

- a. Equipping the collection container as described in chapter 8;
- b. Use appropriate PPE appropriate for the substance (goggles, mask, clothing ...);
- c. Connect the discharge line of the flask to the cistern using a flexible hose;
- d. Open the nitrogen at low pressure on the ball so as to compensate the depression that will create in emptying;
- e. Open the valves on the bottom line of the ball and draining into the tank;
- f. A drain finished, close the bottom valve of the ball and the line on the ground floor.

15. DISCHARGE FROM SOLVENT IN TANK REACTOR OR OTHER CONTAINER

- a. Equipping the collection container as described in Chapter 8 .
- b. Connect the bottom valve of the reactor to the tank using a flexible hose.
- c. Use appropriate PPE appropriate for the substance (goggles, mask, clothing...)
- d. Open the low pressure nitrogen to compensate on the reactor.
- e. Open the bottom valve of the reactor and draining into the tank.
- f. A drain finished, close the bottom valve of the reactor and nitrogen at low pressure.
- g. Proceed with the disconnection of the container.

16. TRANSFER BETWEEN TWO REACTORS WITH FILTRATION THROUGH FT02 WITH OR WITHOUT A FILTER CARTRIDGE

- a. Make sure the opening of the outlet of the glycol (+5 ° C) on the tube bundles , can be opened by pressure reducers .
- b. Make sure the opening of the outlet of the glycol (-25 ° C) to traps reactor , opened by pressure reducers .
- c. Connect via a flexible , the bottom valve of the reactor starting , with the suction of the pump, the pump flow to the input of the filter and the filter output with the load line of the reactor of arrival and departure for the recycling early .
- d. Ground the pump and filter.
- e. Open the valve on the load line on the ground floor and one on the board of both reactors .
For the operation of the filter see separate manual.
- f. If it is necessary to filter a flammable solvent to perform the reclamation oxygen see chapter 19 (for both reactors , if not done previously) , and keep under nitrogen including the transfer line .
- g. So an operator will open the valve of the nitrogen during the transfer, in the reactor to compensate for departure , checking the pressure from the pressure gauge.



- h. Open the bottom valve of the reactor and starting up the pump to start the transfer / filtration . Make sure the opening of the vent valve of the reactor (+0.80 / + 0.90 bar) to avoid rupture disk burst (0.49 bar) .
- i. The transfer is complete , turn off the pump , close the valve located between the pump and filter, put pressure equipment with nitrogen up to completely empty the filter.
- j. Close the valve on the line of cargo on board reactor arrival.
- k. Close the inlet valve on the ground floor of the reactor arrival and the bottom valve of the departure.
- l. Disconnect the hoses , draining the small amount of solvent possibly remaining in the pipes , using a metal bucket .
- m. Immediately dispose of the waste in the tank according to the type of waste .

17. TRANSFER BETWEEN TWO REACTORS WITH FILTRATION THROUGH FT01 and / or CARTRIDGE FILTER

- a. Make sure the opening of the outlet of the glycol (+5 ° C) on the tube bundles , can be opened by pressure reducers .
- b. Make sure the opening of the outlet of the glycol (-25 ° C) to traps reactor , opened by pressure reducers .
- c. Connect , through flexible pipes , the bottom valve of the reactor starting , with the input of the filter (if provided) , and the output of the latter with the load line of the reactor (if using both FT01 that the cartridge filter they should be placed in series : FT01 then the filter cartridge) .
- d. Ground the / filters / o.
- e. Open the valve of the load line on the ground and on board the reactor , in most of those input and output of the filter.
- f. If it is necessary to filter a flammable solvent to perform the reclamation oxygen see chapter 3 (for both reactors) if not done previously and maintained under nitrogen including the transfer line and filters.
- g. Open the vacuum valve in the reactor of arrival.
- h. Open the bottom valve of the reactor and starting up the pump to start the transfer / filtration
- i. Compensate with nitrogen up to 0 bar pressure in the reactor starting
- j. The transfer is complete , close the valve on the line of cargo on board reactor arrival.
- k. Close the inlet valve on the ground floor of the reactor arrival and the bottom valve of the departure.
- l. Restore atmospheric pressure with nitrogen, the reactor destination.
- m. Disconnect the hoses , draining the small amount of solvent possibly remaining in the pipes , using a metal bucket .
- n. Immediately dispose of the waste in the tank according to the type of waste .

18. TRANSFER SOLVENTS, solutions or suspensions, OR BETWEEN TWO REACTORS REACTOR AND THROUGH EMPTY DRIP

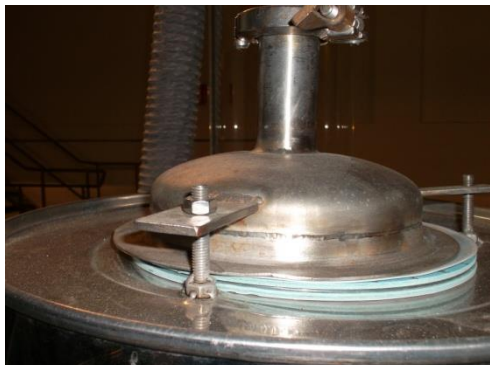
- a. Make sure the opening of the outlet of the glycol (+5 ° C) on the tube bundles , can be opened by pressure reducers .
- b. Make sure the opening of the outlet of the glycol (-25 ° C) to traps reactor , opened by pressure reducers .
- c. Connect via a flexible , the bottom valve of the reactor starting with the load line of the reactor / dripper of arrival.
- d. Verify that the reactor / dripper arrival is isolated from the outside. If no inflammable material carry out the remediation oxygen as Chapter 3 .
- e. Open the vacuum on the reactor / target emitter , and soon reached a value of at least 0.5 barg , open the bottom valve of the reactor from which to start the transfer , compensating for the decrease in pressure with nitrogen.
- f. The transfer is complete , leave flush with nitrogen for draining the line and close order , the nitrogen , the bottom valve of the reactor , the load line of the reactor / dripper target and close the gap on the reactor / dripper arrival
- g. Continuing to wear safety glasses , carefully remove the hoses used by draining a small amount of solvent remaining in the pipes if necessary , by means of a metal bucket .
- h. Restore atmospheric pressure with nitrogen, the reactor / dripper of arrival.

19. USE OF HOPPER

The addition of reagents to a reaction mixture, whether solid or liquid, and the taking of samples from a reactor, must be carried out through a special feed hopper, to fit to the need, on a free flange of the reactor in question.



- The hopper is equipped, on the bottom of a ball valve, you need to download the content within the reactor. In the upper part there is a lid, equipped with gasket, which closes hermetically through of the screws. In the central part of the lid, there is a detachment equipped with tri-clamp connection, to which, depending on the case, is fixed to the Rilsan Inerting with nitrogen or driving of steel to take samples. The equipment is fitted with a pressure gauge and a vent valve.

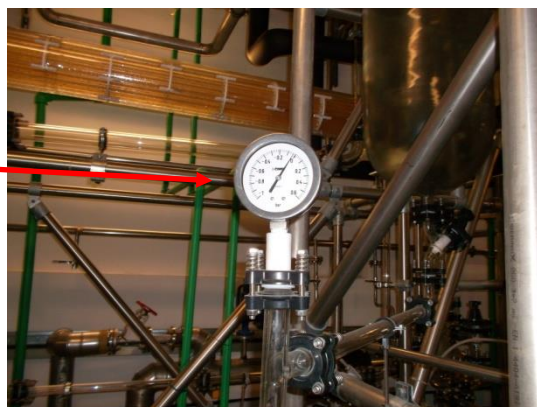
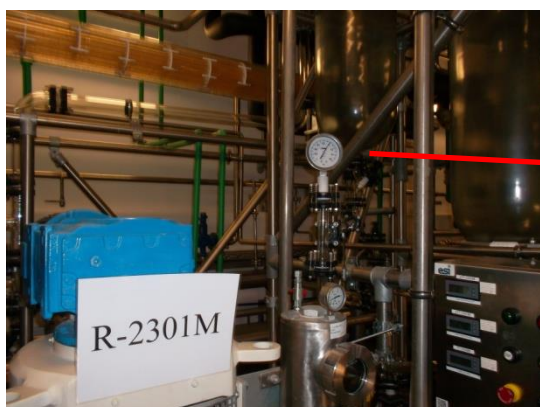


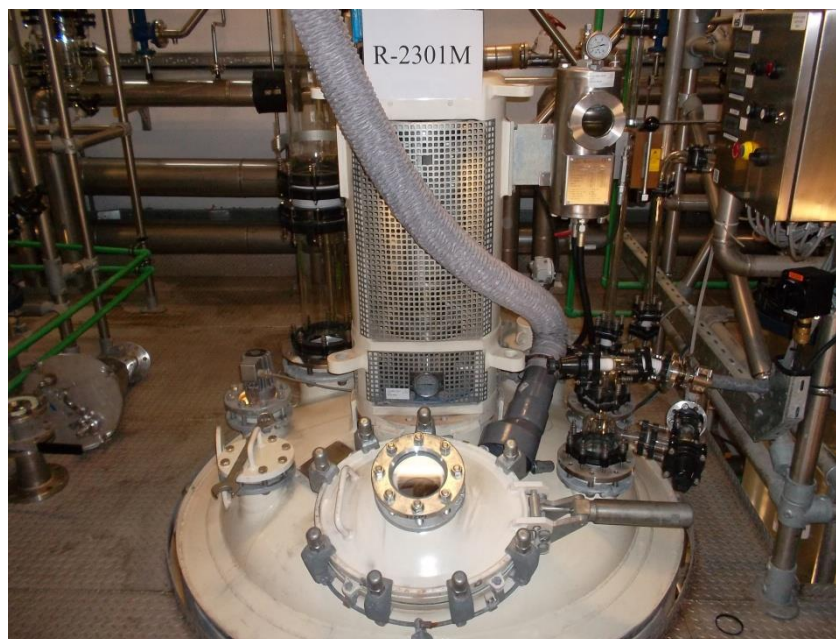
- **LOAD** : After confirming that the valve is closed , and the pressure gauge, the pressure inside the hopper is the atmospheric pressure , open the lid and pour the raw material inside the container (keep the air intake near the opening of the hopper) . Carefully close the lid. Open the nitrogen connected to the low pressure line , and after verifying that the reactor is not in depression (otherwise there is a crumpling of the container) , open the valve on the bottom to download the contents of the hopper inside the reactor.
- If we have uploaded a solid material , you will need to knock on the walls of the container , with the bat to ensure proper drainage . Close the bottom valve , shut off the flow of nitrogen , vent the hopper before you can reopen the hopper channeling local aspiration to ensure complete emptying .

20. LOADING SOLID / LIQUID FROM HATCH SPECIMEN

The addition of substances to a mass, in a reactor, it should be made through the loading hopper (See chapter n. 19). Only in special cases approved by the supervisor, you can make additions or sampling directly from the hatch of the reactor.

- Before you begin this task in addition to wear overalls and disposable latex gloves, semi-facial mask and goggles or full face mask, depending on the machining process (ask your supervisor).
- Make sure that the reactor is at atmospheric pressure from special gauge.



1. Place the suction above the hatch.

1. Loosen the bolts and remove the latches to the hatch.
2. Open a gentle flow of nitrogen from the valve dedicated to the reactor.



3. Open the hatch and in the case in which flammable substances are present , set up a system of positioning a containment envelope antistatic above the hatch itself , and proceed to the load or to draw a sample .
 - The load of a liquid from the hatch , must be made , carefully pouring the contents of one or more bottles or liter container directly on the mass contained in the reactor . Be careful to remove from the container in question beforehand , any rings or seals off the cap. Make sure that the mass is stirred and close the hatch as soon as possible .



- The load of a solid from the hatch , must be made , carefully pouring the contents of the container directly on the mass contained in the reactor . Be careful to remove from the container in question beforehand , any clamps closing cap or envelope. In the case in which provision is an addition in a certain interval of time or in case this is exothermic (see sheet processing) , cater to load the material by means of a scoop so as to better dosing the amount added . Make sure that the mass is stirred and close the hatch as soon as possible .
 - The removal of a sample should be carried out using the instrument . Make sure that both the glass rod jack- samples are perfectly clean and then soak in the mass to be sampled , with good stirring (be careful with agitator blades) to ensure homogeneity of the sample , and withdraw the required amount . Extemporaneously transfer the sample into a previously labelled cap bottle. Close the hatch as soon as possible .
4. Pull the hatch , close the nitrogen in the reactor and on the line, tighten the hatch .

Note. : Keep the open hatch the shortest possible time and aspiration as close as possible to the hatch itself. The operation is to be carried out in the presence of two operators .

21. DRYING

- a. Envelop the basins necessary with polyethylene bags .
- b. Load the product on trays
- c. Introduce them in the dryer starting from the top and going down
- d. After loading of products or sampling the tailgate must be closed using all closures folding of which is provided , making sure its perfect seal , but avoiding over-tighten to prevent damage to the gasket. Also, when the dryer is placed under vacuum, the lid tends to further seal, making the closures be slow , which , however , should not be tightened further , in order to avoid problems in the recovery phase of the atmospheric pressure inside the dryer .
- e. Leakage from the seal of the hatch , in addition to problems of environmental hygiene and safety for the operators , can cause a deterioration of the drying process is to heat losses , both for a possible reduction of the degree of internal vacuum which increases the voltage of steam to vaporize the solvent . Before vacuum dryer , and periodically thereafter , check , and if necessary empty the barrel collection solvent in the vicinity of the dryer itself and one in the technical room . (the frequency must be assessed based on the amount of product, as it is wet and the type of solvent) .
- f. Turn on the vacuum pump from the display in the hall technique .
- g. Climb in the technical room (upstairs), to set up, by the display, the drying parameters , under the sheet processing .
- h. Start thermostat control and empty.
- i. Make sure the display is , that the gauge on the board that there is good vacuum dryer at least as required by the BPR .



- j. When opening the dryer , from the display , select " Stop Process" of vacuum, automatically activating the release of ' nitrogen checking that the pressure on the pressure gauge reaches zero .
- k. Open the tailgate , keeping away from the dryer for at least 10 seconds , in order to allow the plant to eliminate the nitrogen intake leaked .

22. MANAGEMENT OVER PRESSURE OF A REACTOR

In case of increase of the pressure inside the reactor to proceed in the following way :

- ✓ Please immediately discontinue the addition of any reactive
- ✓ Stop heating or cooling put under the basis of need
- ✓ Report the pressure increase across the Supervisor

Since each reactor is provided with suitable safety systems , the increase of pressure inside a reactor should not generate alarmism while that will work on a "closed" system (any valve of the reactor , in communication with the environment work, must be and remain closed). The presence of vent valves of all the reactors keep the internal pressure near atmospheric . If there is a development of gas and / or vapor , which cannot drain completely from the vent , the presence of rupture discs , placed on each device, and will break if the pressure exceeds that of 0.5 bar , guarantee however, the vent and therefore the decrease of the pressure of the apparatus , thus avoiding any possible danger for the health of staff and to the surrounding environment .

23. STARTING SYSTEM SAFETY SUMMARY IN CASE OF EVACUATION

At the evacuation signal of the department and / or establishment , operators and supervisors before leaving their place of work , they have to secure the facilities without putting at risk their own safety, in the following manner :

REACTORS

- a. suspend any additions of reactive drippers by closing the valve draining and venting may be open to the ward;
- b. put under cooling the reactors in use leaving the agitation working for optimize cooling;
- c. placing the reactors in use under a slight nitrogen flow with the exhaust chiller
- d. placing at reflux the discharge of the condensate
- e. verify that the load lines and drains are closed
- f. close any open containers of reagents or solvents
- g. removing the flammable material from the department, or at least from any heat sources

DRYING

Close the heating and cooling stoves put under any operating



GENERAL

Stop the vacuum pumps and verify the operation of those that are cooling down.

-Do not obstruct exit routes leaving materials or things in front of doors or stairs !

24. SHREDDER (MILL M001)

24.1 Grinder assembly and preparation pre-start

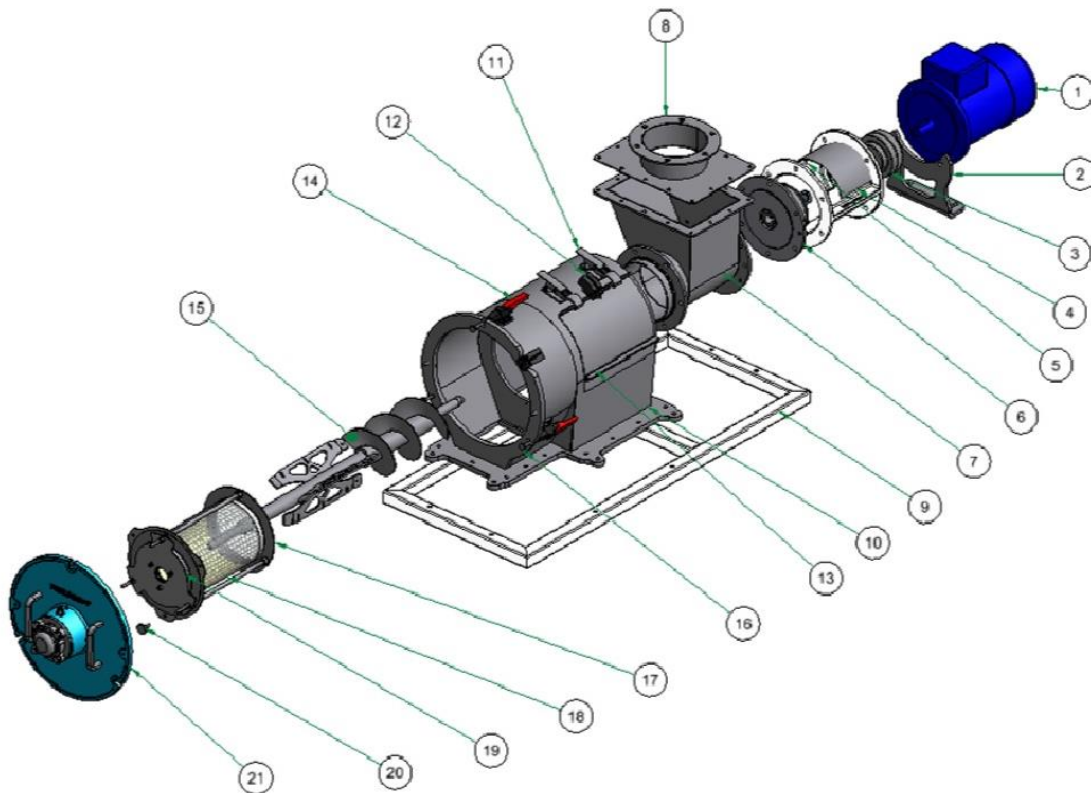


Grinder Disassembled

Principles of Operation

The System is a sieve with turbulence, the purpose of which is the sieving of powders or granules of a different nature. The sieving chamber is constituted by a cylinder constituted by a metal mesh, in which the product to be processed is pushed inside by an auger. The reels of the sifting chamber, on which are mounted the blades, rotating move the product allowing the sieving of the same.

Pic.4 diagram

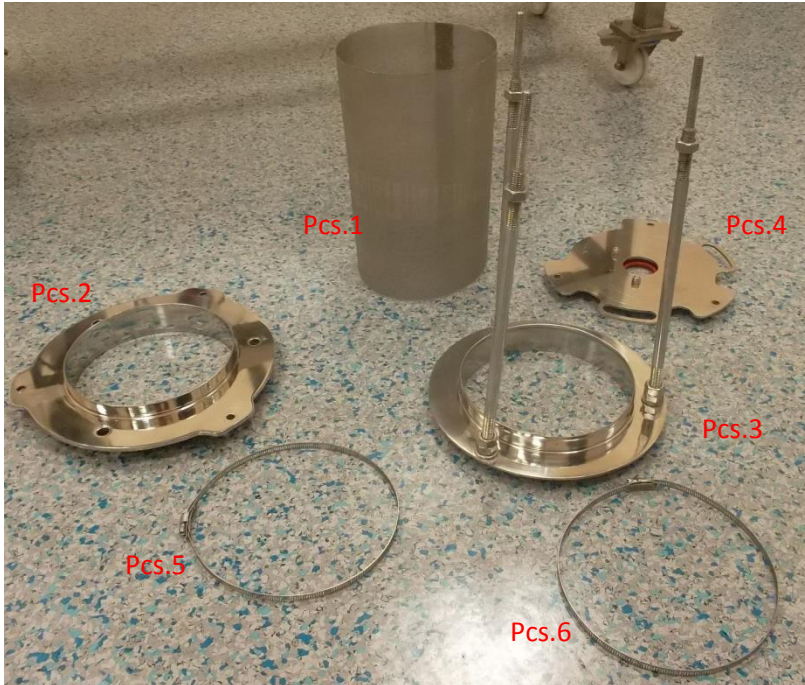


Ref.	Description	Ref.	Description
01	Electric Motor	12	Safety microswitch
02	Support Bracket	13	Inspection Panel
03	Elastic Coupling	14	Locking cover hand lever
04	Elastic Coupling carter	15	Shaft with screw and reel
05	Bell Spacer	16	Locking plate
06	Front Bearing	17	Basket
07	Loading Bin	18	Grid
08	Loading Bin Cover	19	Flow adjustment baffle
09	Support Structure	20	Locking wheel



10	Machine Body	21	Locking cover
11	Inspection panel hand lever		

- **Mounting Basket**



- Mount interlocking the "Network" (pz.1) on his cover (2 Pcs) and tighten with metal clamp (5 Pcs.)
- Insert the interlocking network, previously attached to the cover, the second cover (pcs.3) with a second metal clamp (Pcs.6). *Note: Moderately tighten the 2 clamps so that the grid is not deformed.*
- Insert the baffle flow rule (Pcs.4) to joint and tighten the bolts dedicated.



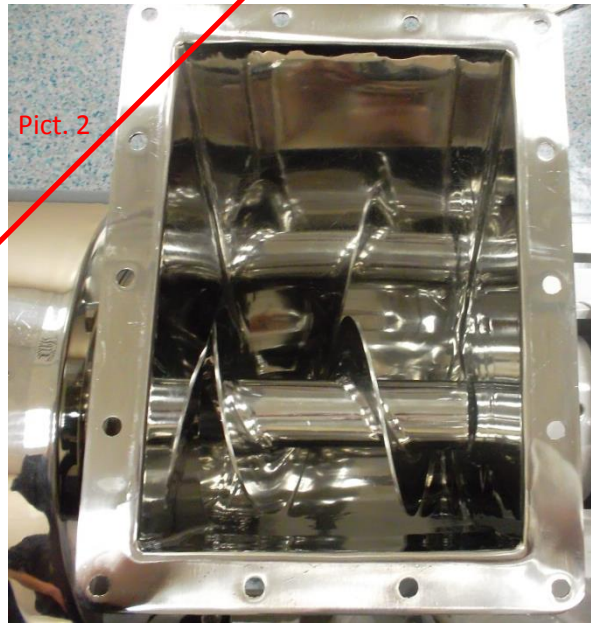
Mounted rack

24.2 Mounting Shaft with auger and reel

- a. Take the screw (*Picture 1*) and insert the part of the spiral, to the entrance the product of the 'Body Machine' (*Picture 2*), framing the 2 clips in the appropriate cracks.



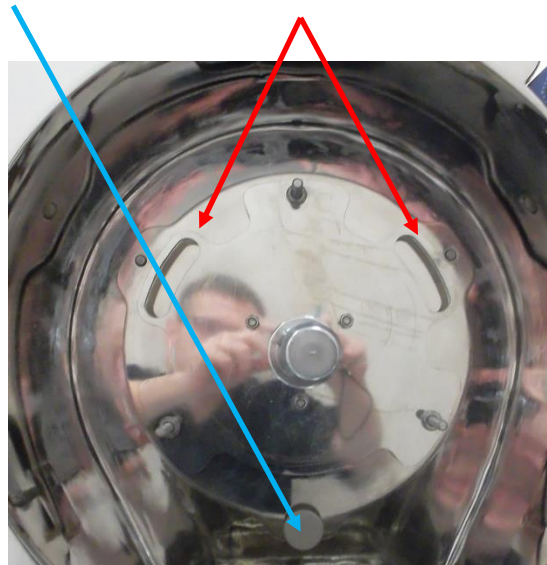
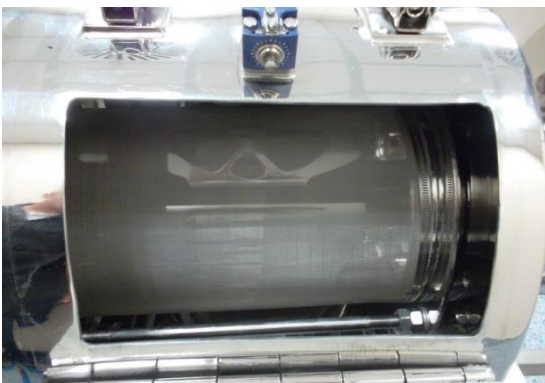
Picture 1



Pict. 2

- b. Place the basket on the Tree auger and reel (*Picture 3*), interlocking, holding the two handles rear upward and by matching the whole; finally mount the lower screw. (*Picture 4*)

Picture 3

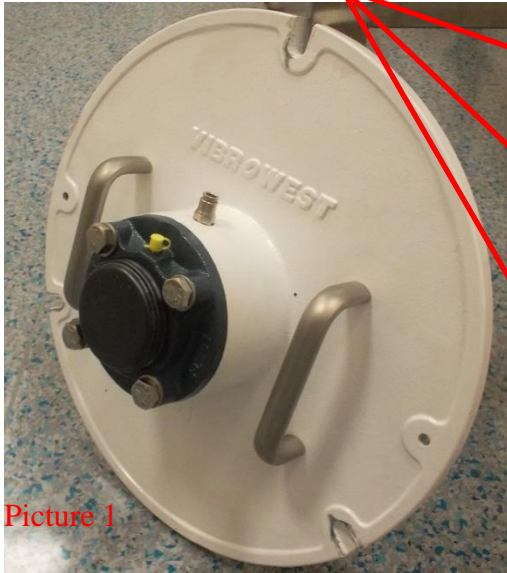


Picture 4

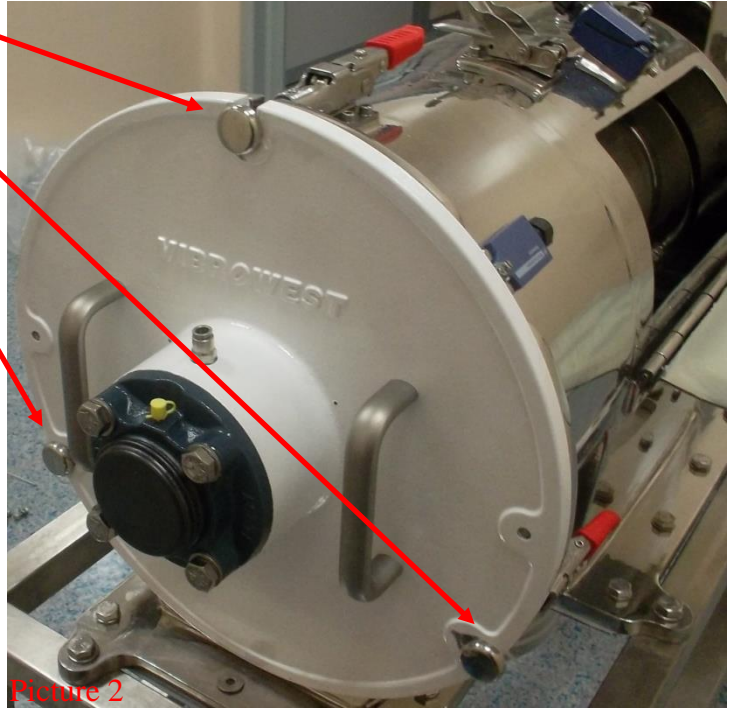


c. Take the closing inspection panel (Photo 1) and mount, making it match the second retainer portion of the handle and screw reel Tree. (Written Vibrowest facing upward)

d. Close with 3 catches. (*Picture 2*)

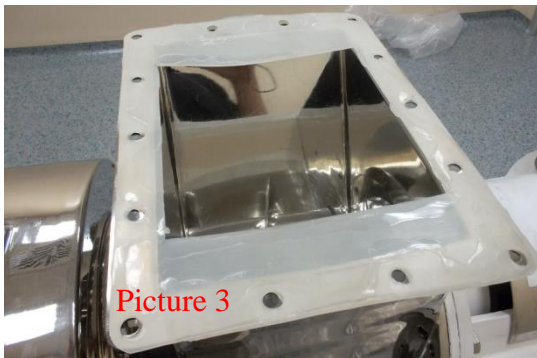


Picture 1

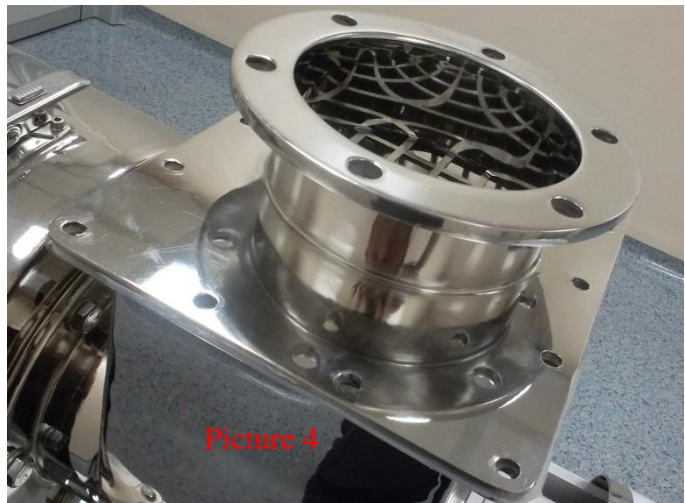


Picture 2

e. Riding on top, before putting the gasket (*Picture 3*), the cover of Load Pipa (the grid facing down) and tighten the 4 screws at the 4 corners; tighten. (*Picture 4*)



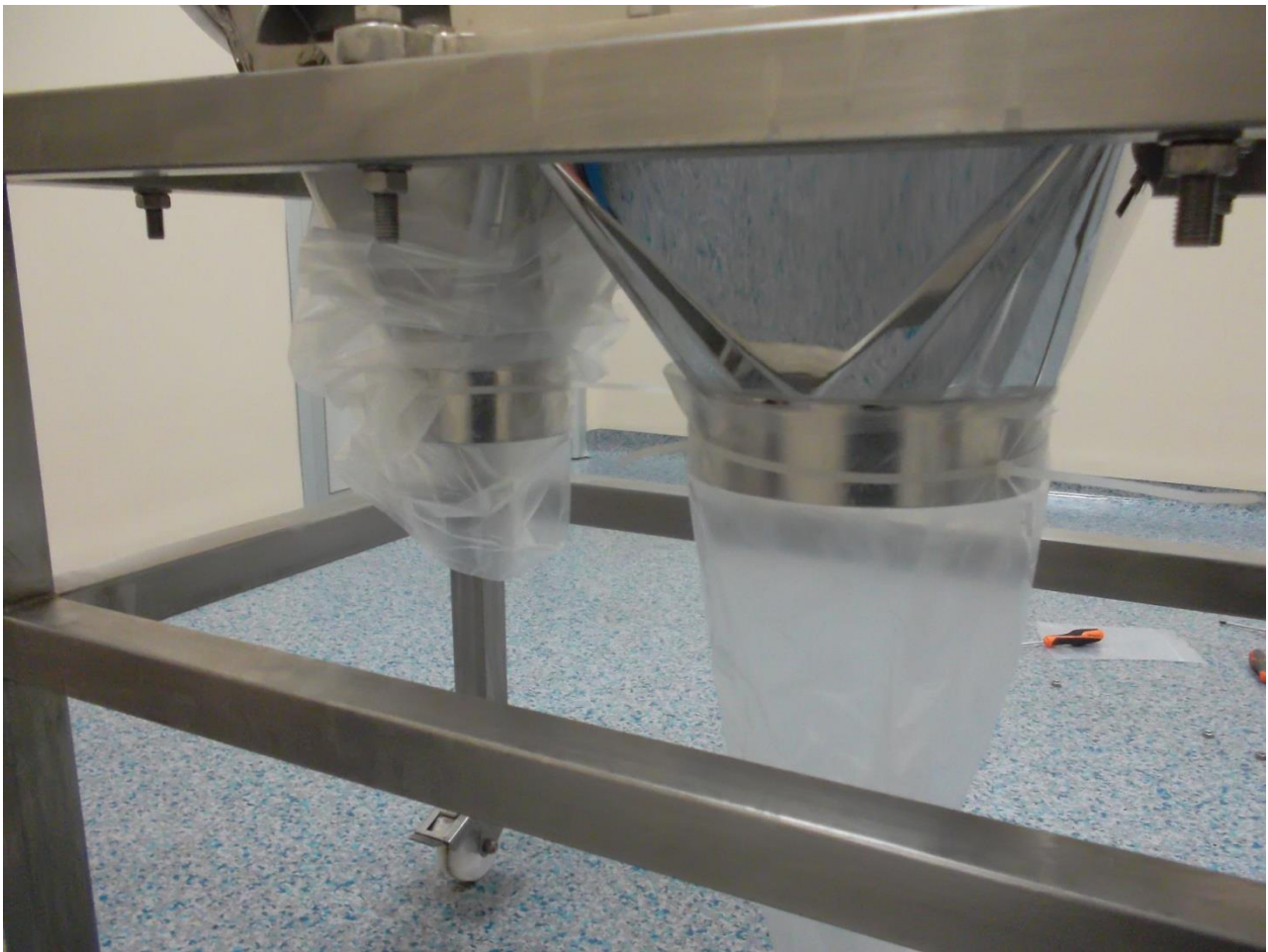
Picture 3



Picture 4



f. After tightening all the screws, put two envelopes with ties to the two respective discharges of product, clean, and if they were not present at the end of manufacture. *(Picture 1)*



Picture 1

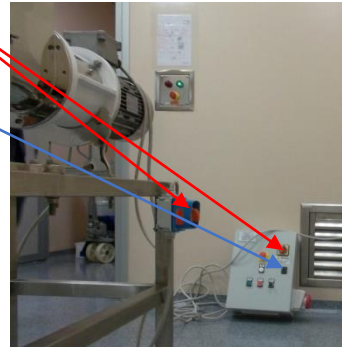
g. Then connect the power source of the machine to its inverter, which is connected to the electrical outlet industry-

24.3 Starting

- a. Dressing up with the appropriate PPE and ensure everything is ready to go with the workmanship.
- b. Load the product to be ground in portions and close the lid with a bag and strap, so that during processing, the product comes out.

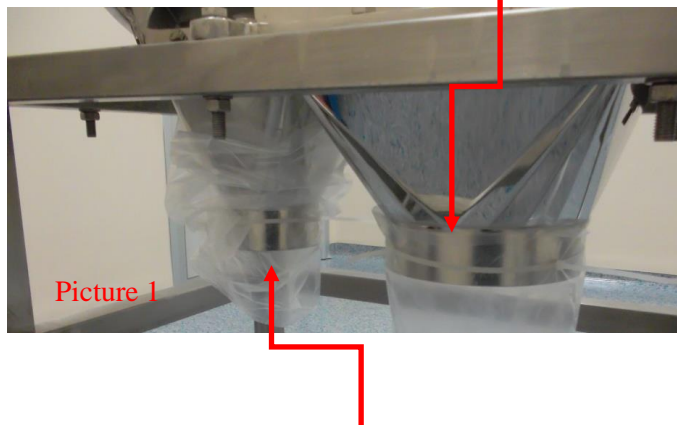


- c. Turning the switches from 0 to 1 of the machine and the inverter.
The machine part.
- d. Turn the knob to calibrate the speed according to the job card.



- e. Let the machine run for about 30 minutes, so as to bring down all the product in the envelope dedicated.
- f. Turn off the machine and start over from step (b) until the complete grinding of the starting product.

Note: Empty the bag of ground product (Picture 1) it is full and insert another new machine is switched off.



Note 2: The envelope of the left (Picture 1) Collect any remaining product is not sifted, to be recovered during cleaning and store separately.

24.4 Cleaning and recovery product

- a. Remove the Closing inspection panel (labeled Vibrowest) and swallow in the envelope of recoveries any remaining product, and clean it.
- b. Remove the "basket" and send down in the envelope of recoveries any remaining product, removing it and clean it piece by piece.
- c. Pull out the shaft auger and reel, and swallow in the envelope of recoveries any remaining product, and clean it.
- d. Remove the lid Pipe Load and recover more possible product with the spatula, drop it in the envelope of recoveries.
- e. Remove the bag with product residues, weigh them, put them by labeling them as grinding residues.
- f. Clean the entire machine according to the board.



-
- g. After cleaning everything and packed everything, put new envelopes with ties in the various inputs and outputs remain open.
 - h. Draw buffers for the analysis of Cleaning.
 - i. Thoroughly clean the room and fill 12W sheets for adequate cleaning.