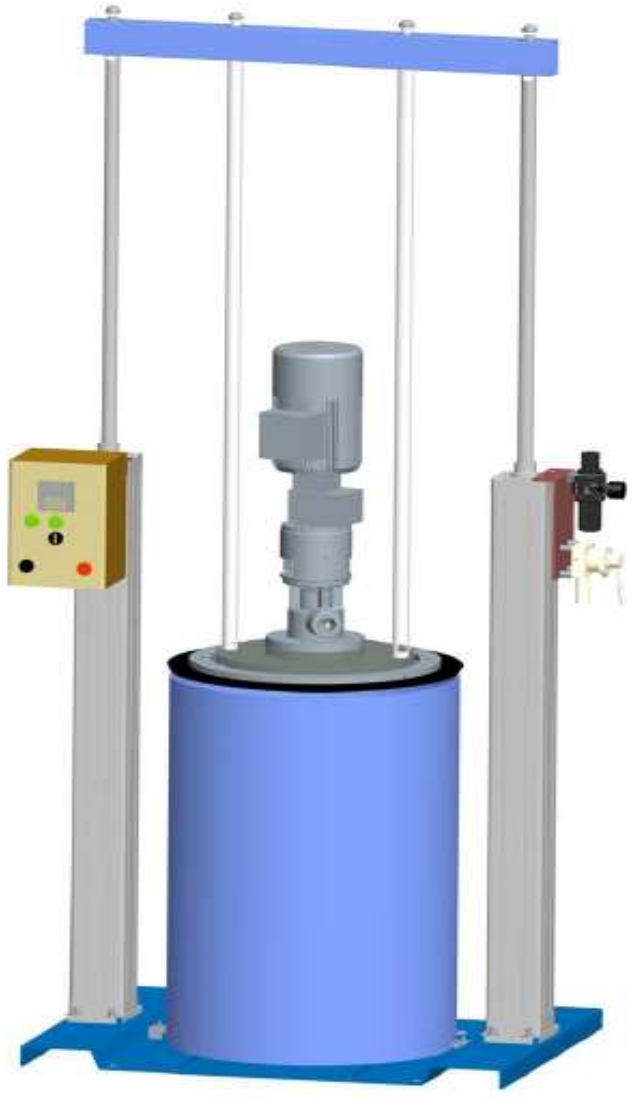
Instruction Manual
Pneumatic Drum Drainer



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INTRODUCTION

MUST BE IMPERATIVELY RED AND PRECIOUSLY KEPT

POMPES POLLARD has the right to modify this documentation. For further information, please contact our company.

Warranty

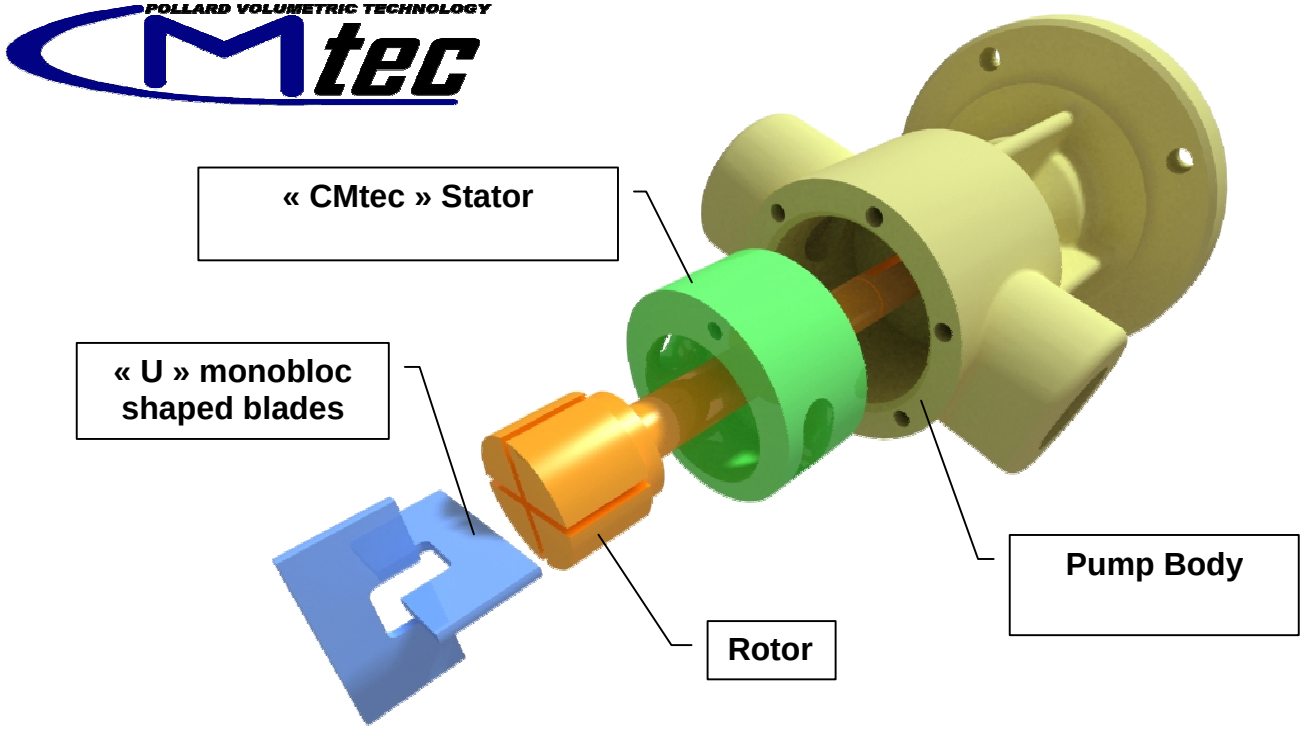
Warranty is void in following circumstances: installation, storage outside vendor facility or material use not according to proper operating rules or vendor instructions, deterioration or accident as a result of negligence, lack of supervision or maintenance, modification of working conditions.

Warranty is also void in case of interference, repair or dismantle of the material by the buyer or by a third party without vendor's approval.

Exclusive Technology

Developed in the mid 40's, the "CMtec" technology allowed to design a pump capable of providing the advantages of the gear pump and the vane pump in a single pump.

Today, more than 60 years after selling its first pump, POMPES POLLARD SA has built its reputation for reliability and performance on this innovation.



CM tec = **C**urved stator and **M**onoblock blades **tec**hnology

CM tec concept :

Unlike most of the other types of pump, the stator bore is not cylindrical but of special shape, calculated by a mathematical equation.
The gear train is replaced by two rigid U-shaped blades.

Main advantages of CM tec technology:

- ***High reliability.***
- ***Characteristic ability to handle viscous fluid.***
- ***Volumetric pumping regardless of pump rotation speed and fluid viscosity.***
- ***Fluid flow direction independent of spindle rotation direction (For Reverse Plus pumps)***
- ***Powerful suction.***
- ***Security By-pass included to provide pipe line protection.***
- ***Technical very simple.***
- ***Simple and fast maintenance***

Pneumatic technology

The CMtec pumps are self-priming but, for high viscos products, the pump must be boosted otherwise the product isn't sucked. In order to solve this problem, a pneumatic system like a piston is been used.
The pump is attached on the piston (named plate). While the pump sucks the product, the piston goes down ensuring the supercharging.

Metering technology (optional)

Optionally, HVDP can be equipped by an automat to perform metering.
CMtec permit to have a volumetric pump. Thus, a given volume corresponding to a number of rotates.
Please of a sensor-bearing inside the electrical motor, the automat can count the number of rotates. The sensor-bearing send pulsations corresponding to parts of a rotate (48 pulsations per a rotate).

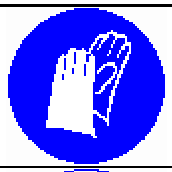
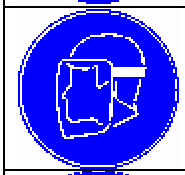
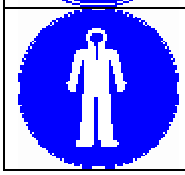
Technical data

- Delivery: 12 liters/minute (depends of the pumped fluid viscosity)
- Service pressure: 5 bars
- Fluid viscosity: up to 40,000 cSt
- Electrical power: 2 kW
- For barrel: 200L
- Sound level: 80dB
- Temperature: 0℃-40℃
- Maximal height: about 2.80m

SAFETY

Icons used

	Danger
	Electrical danger
	Do not touch
	Corrosive substances
	Stumbling risk
	Explosion risk

	Hand protection is needed
	Face protection is needed
	Body protection is needed

Working conditions

We do remind you that employer is compelled to inform employees dealing with that equipment to respect this instruction manual

We do remind you that you have to inform your staff about followings:

- Material working conditions and maintenance prescriptions
- additional instructions
- how to react to predictable abnormal situations
- additional safety information resulting from previous experiences which may decrease accident risk.

Safety instructions

- This pump can not operate dry. Dry running will create friction heat which will damage the pump.
- The body pump, the piping and junction areas are under internal pressure. One must never take off any security or protection, or unscrew any bolts, because it may induce damage to goods or persons.
- Insufficient control and maintenance may result in accidents to goods and persons, especially when toxic or dangerous liquids are being pumped.
- Using the pump in an environment requiring a certain level of protection or an engine and electrically superior components is forbidden. Please use components meeting environment security standards.
- When a pump is bought without its engine, the coupling with the engine must respect technical norms and safety rules, including providing appropriate protections for future couplings, transmission belts, …
- Before proceeding to any pump dismantling (in case of inspection, cleaning, maintenance, etc.), preliminary rules have to be taken :
  - Turn off the engine and unplug the electric wiring.
  - Close the aspiration and evacuation system valves in order to avoid any flood risk.
  - Use appropriate protection for hands and face in case the pump contains dangerous liquids (acids, solvents, …)
- The general installation requires an appropriate cooling ventilation and sufficient maintenance space
- The motor pump has been designed so that while operating the user can not interact with rotating components.

- Electrical components are under high voltage.
- Operations on electrical parts have to be carried out by qualified staff, trained to respect technical instructions and in use rules and only after allowance from the equipment responsible.

- The motor pump has been designed so that while operating the user can not interact with rotating components. The trundle must not be removed while the pump is in use. The pump must not be started without this trundle.

- In cases liquids with temperature exceeding 60℃ ar e pumped, appropriate protections have to be used and these areas must be marked with warning text reading ”Hot surface” to avoid burns.

- Always wear suitable safety clothing when handling the pump.

- The trundle is can not be used in any case as a step or a support.

- The group equipped with an IP 55 electrical engine is can not be used in any case in a classified area.

- The pump must always be used in areas according the engine protection level (check with the governmental agency responsible for such precautions).

- Improper installation can cause fatal injuries.

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Transportation, Storage

Transportation

Unless prior arrangements are given, goods will be packed only for transit conditions and not for long-term storage; in case it should be necessary to store the pumps outside, you are requested to cover the pumps appropriately in order to protect the electrical parts (motor) from rain, dust, humidity etc.

Receipt

Upon receipt of goods the integrity of the packaging must be verified in order to identify possible damages to the content during transfer; and to claim immediately from the carrier. Should any damage be ascertained, the following procedure must be observed.

- Collect the goods with receipt.
- Take the necessary pictures showing the damages.
- Notify the carrier of the suffered damages, by registered airmail – including the pictures taken.

Storage

A pump which is not installed immediately should be stored in a cool and dark room. The storage should not exceed 2 years. If the pump has been out of operation for a longer period of time, the vanes should be greased before use to receive optimal suction ability.

Transferring

Carry the packed pumps as close as possible to the place of installation by means of appropriate lifting devices and unpack them. During this operation take care, as unsteady parts could fall down.

Extended stop

When stopping the pump for a longer time, empty the pump completely and wash it thoroughly in order to avoid the formation of scales and/or encrustations.
This will ensure durability of the seal and of the pump itself.
It is the user's responsibility to ensure that the washing liquids are compatible with the process liquid and the pump.
For CMtech pump use water with soap. If the pump has been out of operation for a longer period of time, the vanes should be greased before use to receive optimal suction ability.

Installation

Carry the HVDP as close as possible to the place of installation by means of appropriate lifting devices. During this operation take care, as unsteady parts could fall down. The HVDP must be connected to your plant air system and your electric network (3 phases +neutral conductor +earth).
Adjust the air flow control valve (FIR0001 see bellow picture) to 1 bar.

Operations

Before executing any operations, take care to the safety instructions on safety parts of this sheet.

Overview

On HVDP, there are two consoles:

Pneumatic console

flow control valve (FIR0001)

Pneumatic switch (DIS0008) (in left position)

When the pneumatic switch DIS0008 is turned:

- On the left, the plate goes up.
- On the right, the plate goes down.
- On the neutral position, the plate is stopped.

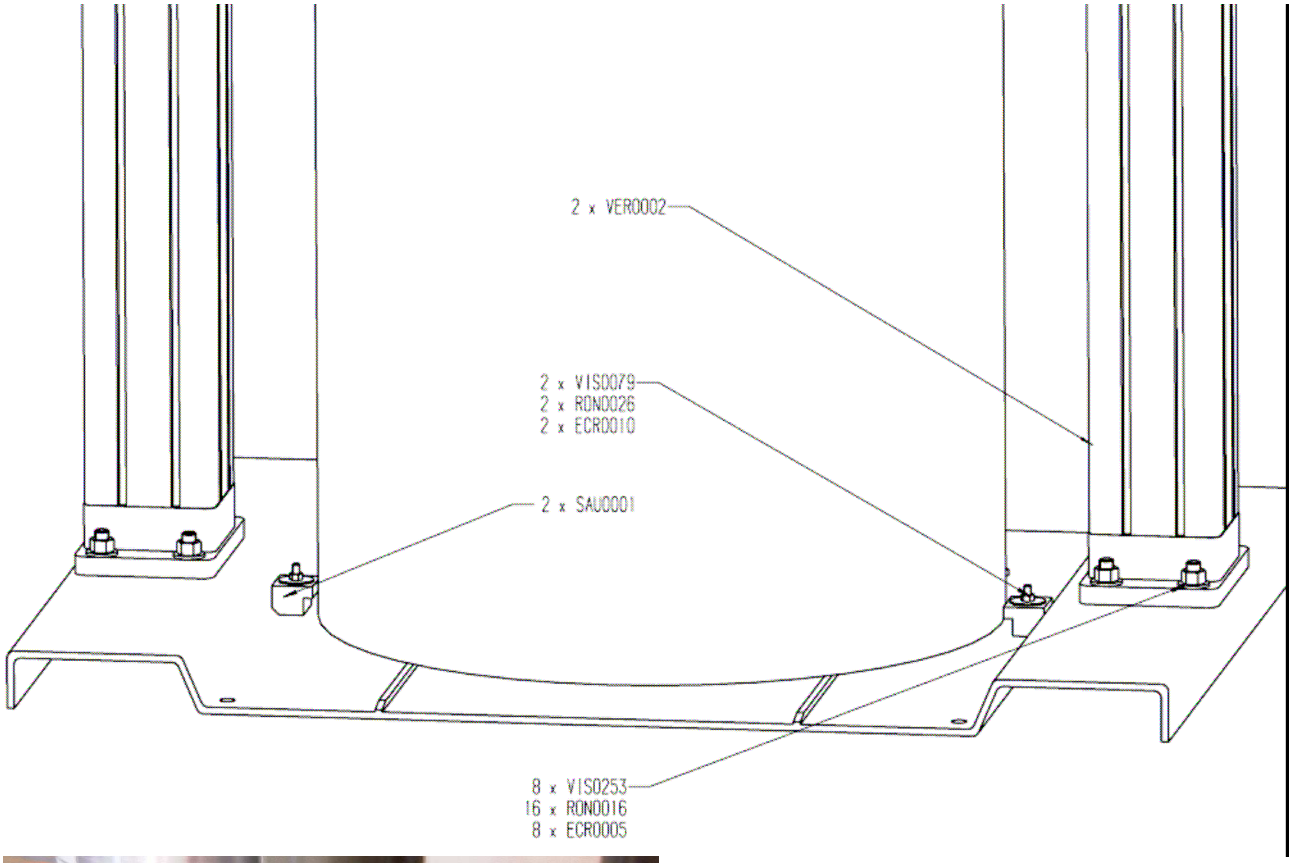
Electrical console

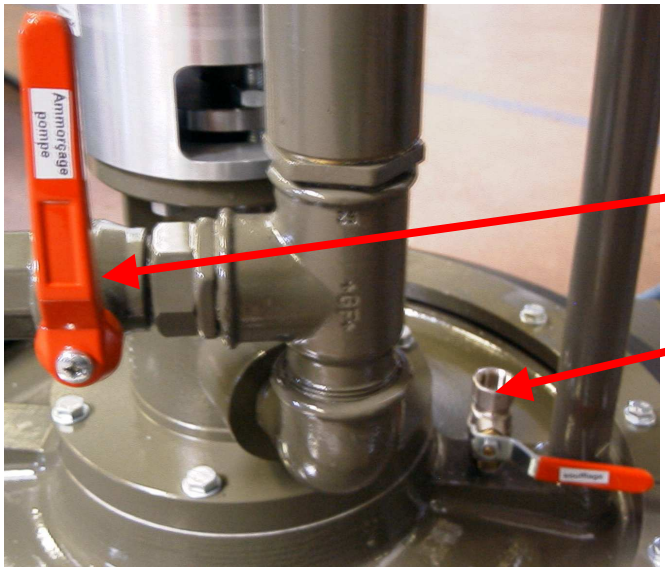
When the switch CON0008 is:

- On 0 position, The pump is stopped.
- On I position, the pump is in metering mode
- On II position, the pump is in continuous transfer mode

Drum installation

Before executing any operations, take care to the safety instructions on safety parts of this sheet.





Priming valve VAN0003(locked position on the picture)

Purge valve VAN0016 (locked position on the picture)

Place a drum

1. Unscrew the nuts ECR0010 with a suitable key
2. Lift a drum on the drum pump by using a suitable device (overhead crane or industrial truck) and place it (centring) bellow the plate
3. Place the clamping plate SAU0001 and lock the nuts ECR0010 with a suitable key
4. Open the valve VAN0016 on the plate
5. Go down the plate turning the pneumatic switch DIS0008 on the right
6. As soon as the plate is on the drum stop the down repositioning the switch on the neutral position.
7. Check that the drum is centring with the plate to avoid leakage
8. If not the case redo from the step 1
9. Next, on the electrical cabinet, put the switch button CON0008 on the II position
10. Push the BOP0002 button, the pump is running continuously
11. Go down the plate turning the pneumatic switch DIS0008 on the right
12. The plate goes down in the drum (if it is not the case open the valve VAN0003 to evacuate the air. Close it as soon as the product goes out)
13. As soon as the pumping product goes out from the outlet, stop the operation by turning switch CON0008 on the 0 position.

The system is ready to use.

In case of emergency: Press the emergency push button ARU0001

Cautions:
When you finish pumping operation series for a long period, the pneumatic switch DIS0008 must be turned on the neutral position (thus the plate doesn't press the drum unnecessarily).

Remove a drum

When the drum is empty:

1. The pump is stopped, the switch CON0008 is on the 0 position
2. Go up the plate turning the pneumatic switch DIS0008 on the left
3. When the plate goes out from the drum, close the valve VAN0016 (the plate goes up faster)
4. As soon as the plate is in up position, turn the pneumatic switch DIS0008 on the neutral position
5. Unscrew the nuts ECR0010 with a suitable key
6. Remove the drum

Start the pump

Before executing any operations, take care with safety instructions on safety parts of this sheet.

In case of emergency: Press the emergency push button ARU0001

When expected by the European Machine directive, the pump doesn't start after unlocking the emergency push button.

Cautions:
When you finish pumping operation series for a long period, the pneumatic switch DIS0008 must be turned on the neutral position (thus the plate doesn't press the drum unnecessarily).

Transfer mode

When you start pumping operation series, the pneumatic switch DIS0008 must be turned on the right (in order to the plate press on the drum). Verify the emergency push button is unlocked (turn it on the right to unlock it).

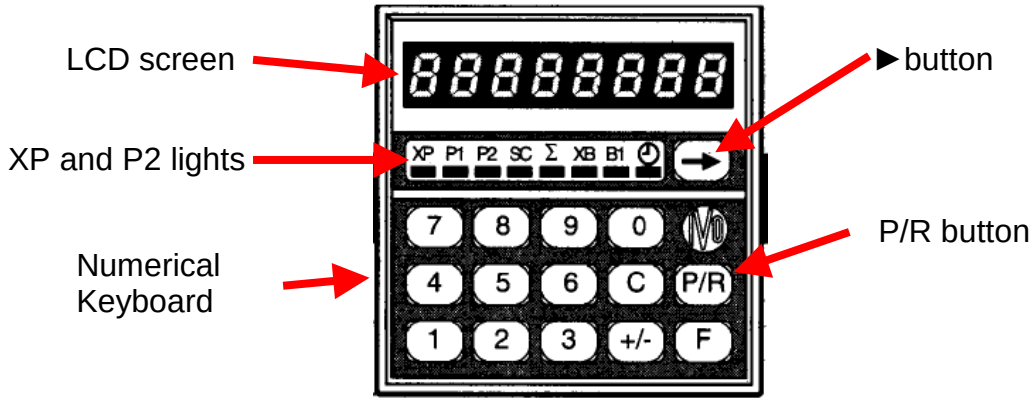
- Put the switch CON0008 on II position
- Press the push button BOP0002
- The pump is running and the green light VOY0006 is lighting
- To stop pumping, put the switch CON0008 on 0 position

Metering mode

When you start pumping operation series, the pneumatic switch DIS0008 must be turned on the right (in order to the plate press on the drum). Verify the emergency push button is unlocked (turn it on the right to unlock it).

On the automat screen, there is an indicative number which represents a quantity in volume. So what you see on the automat screen is not what you measure because it's depending on the nature of the pumped product. You may find the correct number by experiment the dose. When you find the good number, the automat will keep a good repeatability. **Don't put a number bellow 100**.

1. Put the switch CON0008 on I position (IVO automat light)



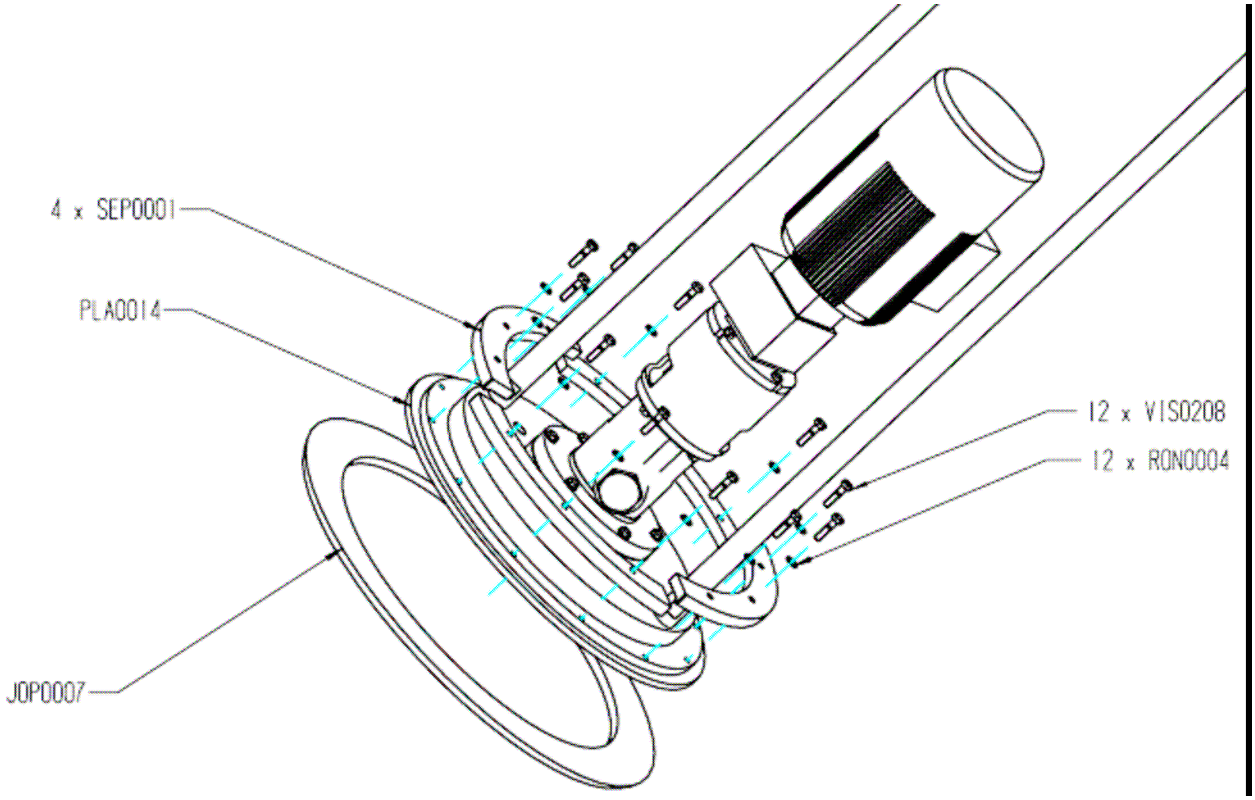
2. Select the P2 Light by pressing on ►button (the dose is shown)
3. To change the dose press P/R button (P2 light blink)
4. Enter the dose pressing the numerical keyboard
5. Press P/R button (P2 light doesn't blink)
6. To start the pump press the start push button BOP0002
7. The pump stop automatically when the dose is done
8. If the dose is bad restart the step 2
9. To redo the dose press only the start push button BOP0002

When then emergency push button is pressed, the IVO automat is switch off but keep your dose in memory. After unlocking the button, metering process can be done running step 9.

Maintenance

Before executing any operations, take care with safety instructions on safety parts of this sheet. All operations must be carried out by skilled personnel.

Change of the flat gasket JOP0007

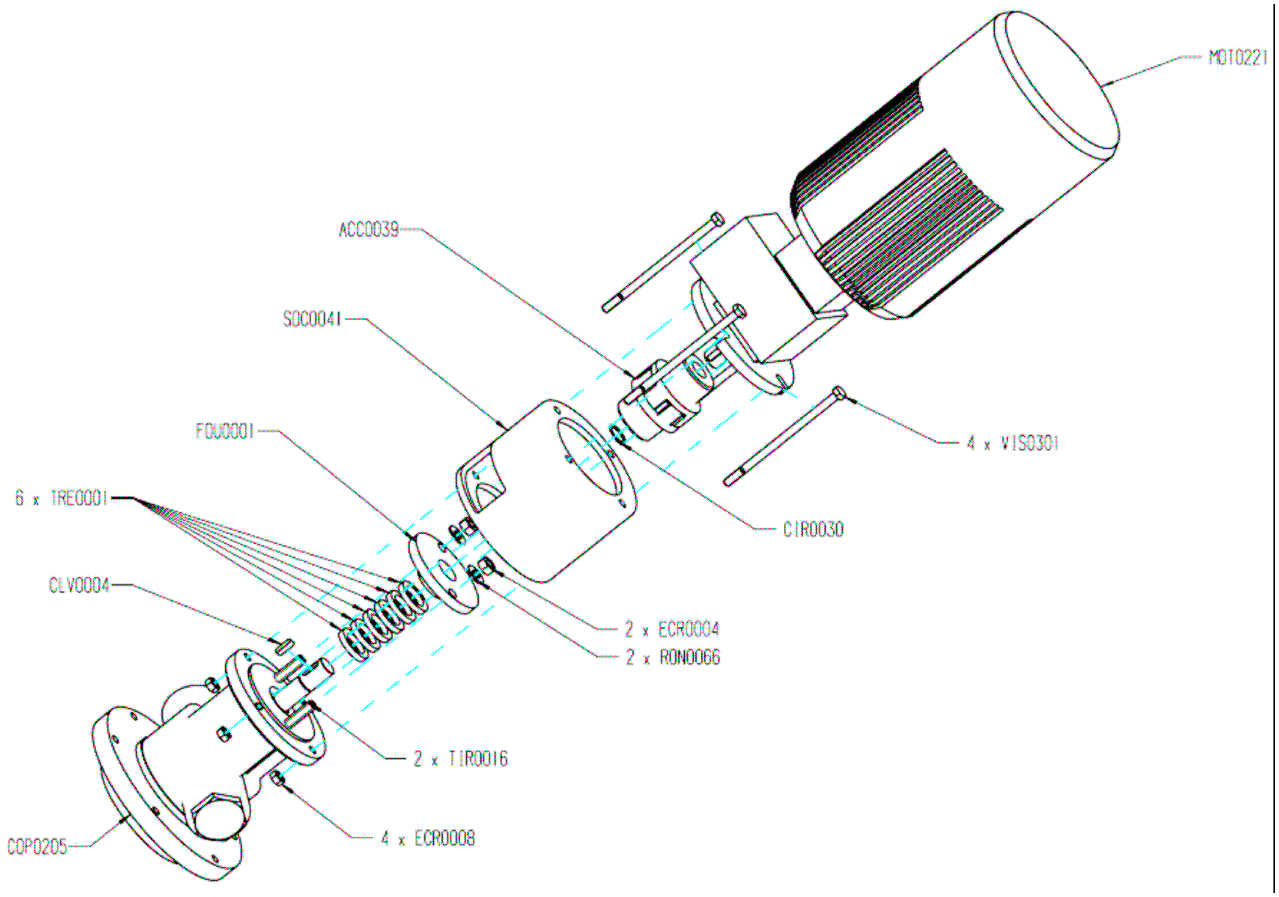


The plate PLA0014 must be in up position with the pneumatic switch DIS0008 on the neutral position

1. untighten the 12 screws VIS0208 and remove washers RON0004
2. remove the 4 clamping plates SEP0001
3. remove the flat gasket JOP0007 and change it

Do the reverse operation to assemble the new flat gasket

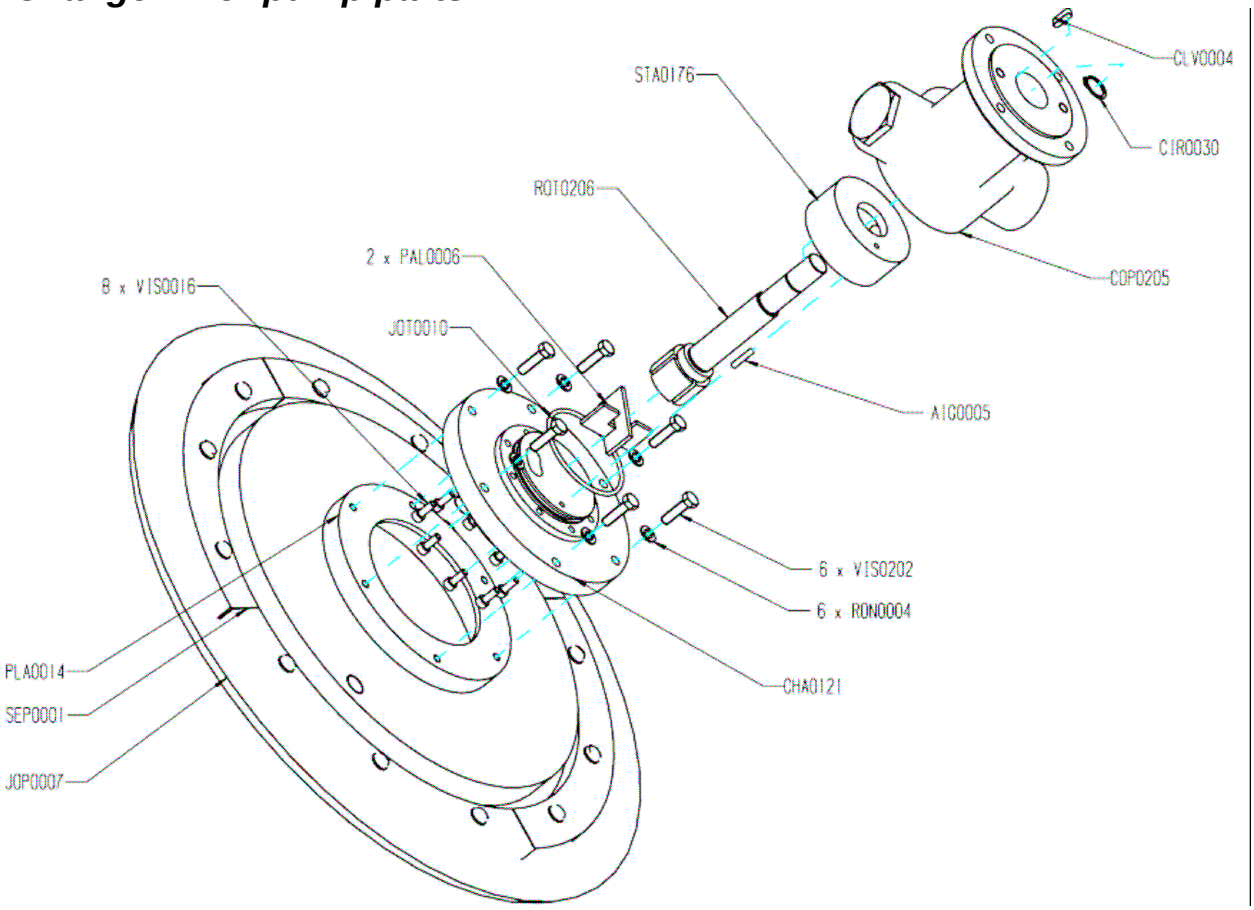
Change the gland gaskets TRE0001



1. Untighten the 4 screws VIS0301and the 4 nuts ECR0008
2. Remove the electrical motor MOT0221 (take care of the electrical lines)
3. Remove the lantern bracket SOC0041
4. Remove the coupling ACC0039 (untighten the hex screw)
5. Remove the key CLV0004
6. Remove the external retaining ring CIR0030
7. Unscrew the 2 gland nuts ECR0004 and remove the 2 washers RON0066
8. Remove the gland FOU0001
9. Remove the 6 packing rings TRE0001 and change it

Do the reverse operation to assemble the pump

Change inner pump parts



1. Remove motor, gland packing following the instructions in “change the gland gasket” section
2. Untighten the 6 screws VIS0202 and remove the 6 washers RON0004
3. Remove the body pump from the plate PLA0014
4. Untighten the 8 screws VIS0016 from the flange CHA0121
5. Remove the flange CHA0121 and replace it
6. Remove the O-ring JOT0010 and replace it
7. Remove the pin AIG0005
8. Remove the rotor ROT0206 + the stator STA0176 + vanes PAL0006
9. Replace the vanes PAL0006 + stator STA0176

Do the reverse operation to assemble the pump

Trouble shooting chart

Causes	Corrections	Failure										
		The pump doesn't run	The delivery is not sufficient	The pressure is not sufficient	The pump stop priming	Excessive power consumption	Leakage from the stuffing box	Short life of the gland packing	Anormalous vibrations or noise	The electrical motor doesn't run	Short life of bearings
Air entering from suction connections	Check the lock	■	■		■						
Air entering from the stuffing box	Tighten the gland nuts	■	■		■				■		
Obstructions present along suction pipes or valves closed along pipes	Verify and remove all foreign matters from pipes and finally verify valves status (if closed, open them).	■	■	■	■				■		
NPSH available in the plant is lower than NPSH needed by the delivery point	Reduce the friction loss or adjust the pump at a lower	■			■				■		
Plant friction losses higher than pump performances.	Reduce friction losses or replace the pump with a most suitable one for requested performances	■	■	■					■		
Opposite direction of rotation or too low velocity (in case of a pump operated by an inverter).	Restore the correct sense of rotation; increase the motor speed	■	■	■					■		
Worn gasket rings	Replace worn parts		■	■							
Pumped fluid too viscous.	Verify the pump size		■	■		■					
Fluid specific gravity higher than forseen one	Increase the installed motor power					■					
Pumped fluid too viscous	Verify the pump size					■					
Rotation speed too high (when pump is controlled by an inverter)	Reduce the velocity					■					
Misalignment of pump-motor or distorted shaft.	Restore the correct alignment between pump and motor; replace the shaft with a new one.					■		■			■
Worn bearings of pump or motor	Replace the bearings								■		
Electric misconnection	Modify the electric connection by strictly following ratings written on the motorplate according to the available voltage.		■	■							
Voltage not suitable for the installed motor.	Replace the motor with one having a suitable voltage		■	■							
worn gland gaskets	Replace the gland gaskets						■	■			
Pump fluid or temperature not suitable for the assembled gland packing or its parts.	Verify the gasket rings selection						■	■			
Non-cleaning when using fluids which tend to crystallize	Increase washing cycles and don't leave the product laying inside the pump for a long time.						■	■			
Incorrect assembly of the gland gaskets	Assemble the gland gaskets again with attention						■	■			
Dry operation of the pump	Arrange the proper dry-running protection in order to avoid the problem										
Oscillations on the shaft due to a too high assembly allowance, worn bearings, etc	Restore normal assembly conditions by replacing the worn pieces.										
Emergency push button locked	Unlocked the emergency push button by turning it on the right									■	
The circuit breaker is off	Switch on the circuit breaker in the electrical cabinet									■	
Pump and/or pipes are not properly anchored	Verify and adjust anchorage of the involved parts.								■		