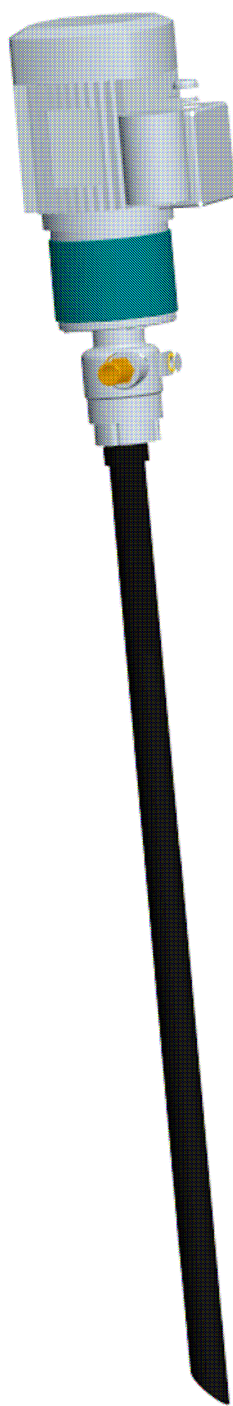




Instruction manual

VFF Pump



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INTRODUCTION

MUST BE READ IMPERATIVELY AND KEPT PRECIOUSLY

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

Warranty

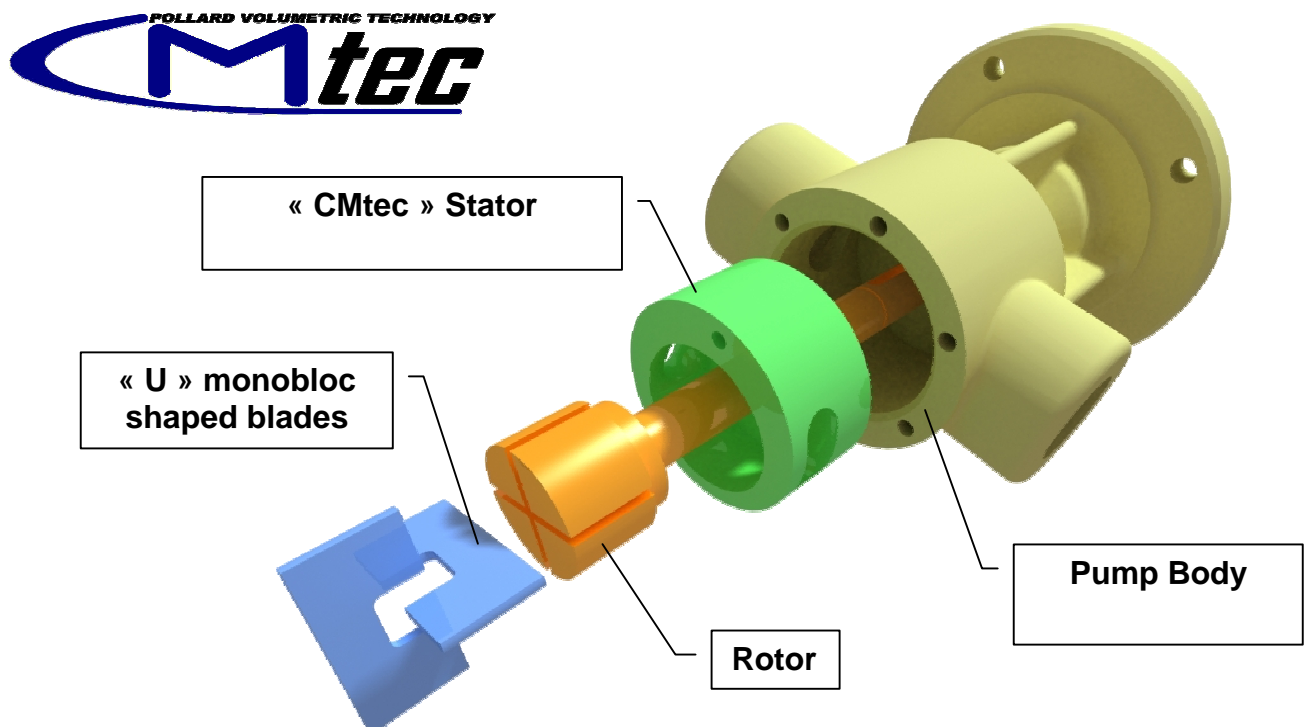
Warranty is void in the following circumstances: installation, storage outside vendor facility, or material installation not fitting its intended use, not according to vendor instructions or the rules, deterioration or accident as a result of negligence, lack of supervision or maintenance, modification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

Warranty is also void in the case of interference, repair or dismantle of the material by the buyer or by a third party without the 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 = Curved stator and Monoblock blades technology

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 :


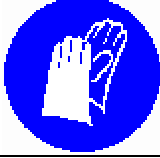

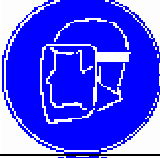

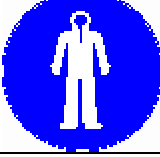



- **High reliability.**
- **Characteristic ability to handle viscous fluid.**
- **Volumetric pumping regardless of pump rotation speed and fluid viscosity.**
- **Fluid flow direction independent of spindle rotation direction**
(For Reverse Plus pumps)
- **Powerful suction.**
- **Security By-pass included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

Application-examples :

- **Transfer of chemicals.**
- **Transfer of fibre-lubricating products in the textile industry.**
- **Lubrication of machine tools.**
- **Lubrication of railway equipment.**
- **Transfer of products in oil-related industries.**
- **Lubrication of public works equipment.**
- **Re-conditioning of industrial drums.**
- **Transfer of feed for bee hives.**
- **Emptying of industrial friers.**
- **Transfer of glycol water in cooling installations.**
- **Cleaning and filtration of oil in closed circuits**

SAFETY

Icons used



	Danger		Hand protection is needed
	Electrical danger		Face protection is needed
	Don't touch		Body protection is needed
	Corrosive substances		
	Stumble risk		
	Explosion risk		







Work conditions

We remind you that you must brief your personnel on the following:

- utilisation and maintenance conditions of the material
- additional instructions regarding the material (if needed)
- way to act upon predictable abnormal
- additional safety information resulting from utilisation experience which may decrease the risk of accidents

Safety instructions

	<ul style="list-style-type: none"> • This pump must not be run 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 demanding a certain level of protection or an engine and electrically superior components is forbidden. Please use components meeting the environments security standard. • When a pump is bought without an engine, the coupling with the engine must respect the safety standards, providing appropriate protections for future couplings, transmission belts, ... • Before proceeding to any dismantlement of the pump (in case of inspection, cleaning, maintenance, etc.), one must : <ul style="list-style-type: none"> ○ Shut down the engine and unplug the electric wiring. ○ Close the valves of the aspiration and evacuation system as to avoid any risk of flooding. ○ Use appropriate protection for hands and face if the pump contains dangerous liquids (acids, solvents, ...) • An appropriate cooling ventilation and sufficient maintenance space is needed when installing the pump. • The motor pump has been designed so that during its functioning, the user may not interact with the turning elements.
	<ul style="list-style-type: none"> • Electrical components are under high voltage. • Operations on the electric parts have to be carried out by skilled personnel, according to technical directions and law, on authorization of the responsible installer.

 	<ul style="list-style-type: none"> The motor pump has been designed so that during its functioning, the user may not interact with the turning elements. The trundle must never be removed while the pump is working. The pump must never be started without this trundle. If the surface temperature of the system or parts of the system exceeds 60°C, these areas must be marked with warning text reading "Hot surface" to avoid burns.  <ul style="list-style-type: none"> Always wear suitable safety clothing when handling the pump. 
	<ul style="list-style-type: none"> The trundle is not to be used as a step or a support.
	<ul style="list-style-type: none"> The group equipped with an IP 55 electrical engine is never to be used in a classified area. The pump must always be used in areas fitting the engine protection level (check with the governmental agency responsible for such precautions). Improper installation can cause fatal injuries.

TRANSPORTATION AND STORAGE

Transportation

When receiving the pump, please check the state of the container.

If you observe obvious damage, please proceed in the following manner:

- Receive the product and mention the observed defaults on the delivering papers.
- Photograph the observed damage
- Inform the transporter by registered letter with acknowledgment of receipt, joining the pictures taken earlier.

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.

Handling

The motor pump dimension does not need special handling procedures. However, if the group exceeds 20kg, a lifting equipment is needed.

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.

Warning: Before using the pump for different liquids than those specified upon buying, please verify that the joints and the mechanical seal material are compatible with the new product (please contact the company if otherwise).

ASSEMBLING AND INSTALLATION



Please read imperatively Safety chapter

Group deployment

The pump and its engine must not undergo any constraints (ex.: heavy pipes supported by the pump).

Do not remove the plugs from the orifices of the junctions unless when installing the pipes, this is to avoid the access of any foreign body to the interior of the pump.

Engine plugging



The wiring must be done by qualified personnel.

Cables and stuffing box must be of compatible diameter.

Electrical protections must be provided according to the standard.

Using a phase indicator ahead of the section switch allows to identify the colours of the wires and the junctions which will permit the engine to turn in the right way. One must imperatively respect the rotation direction, indicated on the pump and the trundle, to avoid deterioration of the mechanical seal and by-pass.

Pipe line installation

Always clean the piping before installing it. Remove the welding chips, flashes, carbon deposits and rust particles, in the case of rigid pipes.

Avoid the formation of air pockets in the alimentation pipes by using a steady slope. Motor pumps can be installed in any position, however engines are designed for horizontal use (if otherwise please contact the company).

The hydraulic junctions should be made with flexible and rotating junctions. Their interior diameter must be compatible with the pump flow, the viscosity and the pressure of the product being pumped (to avoid cavitations and over pressure).

On the aspiration side, install a straight pipe of 0.6m long without diameter variation (flow tranquilisation area).

On the lift of the pump, install a nonreturn valve.


These junctions must be done without constraints or charges to the pump. Check that the joints or seals do not run over pipes.

IMPORTANT: we advise you to use supervising equipment on the lift of the pump: flow control, pressure indicator, etc. to be able to avoid an unexpected lack of lubricant.

WARNING: The pump must not undergo water hammer.
If the circuit is provided with a fast or ultra rapid closing valve (less than a second), use an anti water hammer system on the aspiration pipe.

Generally, the pump is equipped with a security by-pass set to 5 bars full flow (this setting may be modified on demand). This by-pass must never be used as a pressure flow controller.

Commissioning

	<ul style="list-style-type: none">• Before starting the pump, make sure that nobody could be hurt by this operation.• Before commissioning, verify the seal of the pipes.
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SUPPORT AND MAINTENANCE


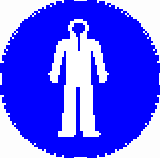
Output spindle seal must be assured by lip seals or mechanical seals made from Nitril or Viton elastomer. One must verify that the pumped product is compatible with these materials, if you have any doubts please contact the producer or our society.

After about 1500 hours of functioning, or after maximum 2 years, dismantle the mechanical seal and change it.

The engine is equipped with bearings lubricated for life.

While the pump is running, supervise the rotation speed and the pressure at the lift of the pump. Make sure that the pump turns regularly without jerks or strange noises.

Warnings

	<ul style="list-style-type: none">• Any error in assembling or dismantling may result in the pump malfunctioning.• POMPE POLLARD is not responsible for the accidents or damage resulting from the lack of respect of these rules.• Never work on the pump while it is running.• Assembling and dismantling must only be done by experienced personnel who have the necessary hydraulic knowledge. These personnel must always wear appropriate protection equipment. 
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Please work in a clean environment. Keep all the fragile parts preciously in their original packaging. The spare parts must be according to the technical specifications of the producer, which is always guarantied for original spare parts.

Please check that none of the parts have been damaged during the transportation.

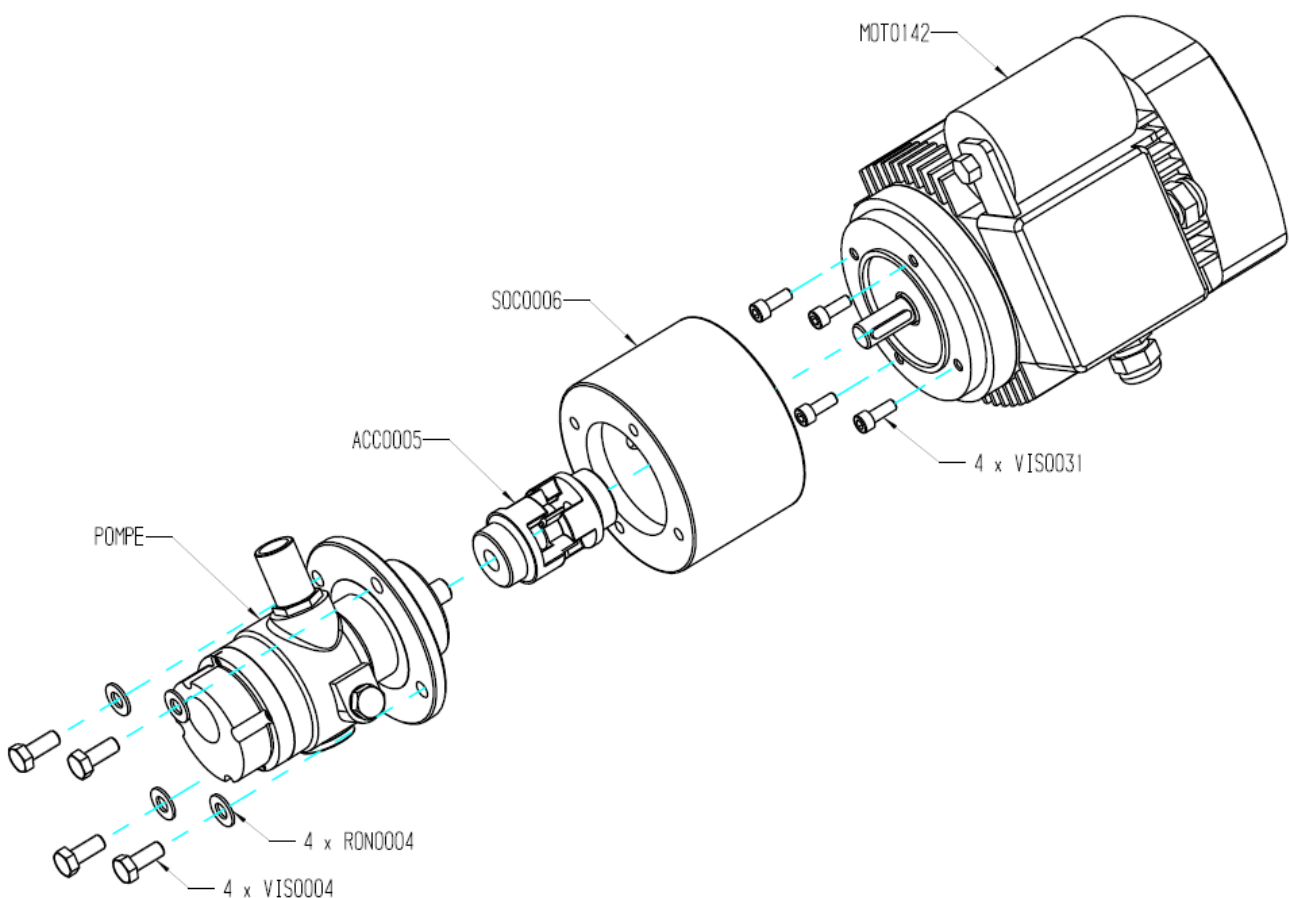
While using joints, make sure that you do not damage them by passing over sharp edges, screwing, etc. Make sure that they are not bent in their slots when being installed.

Motor pump dismantling

- Unscrew the 4 screws H M8 et washers M8 (rep. VIS0004 and RON0004)
- Remove the pump (rep. POMPE)
- Unscrew the 4 screws CHC M6 (rep. VIS0031)
- Remove the trundle (rep. SOC0006)
- Dismantle the coupling (rep. ACC0005) on the pump side : 2 screws SHC M5x6, 1 wedge

NOTE: It is useless to dismantle the coupling on the engine side.

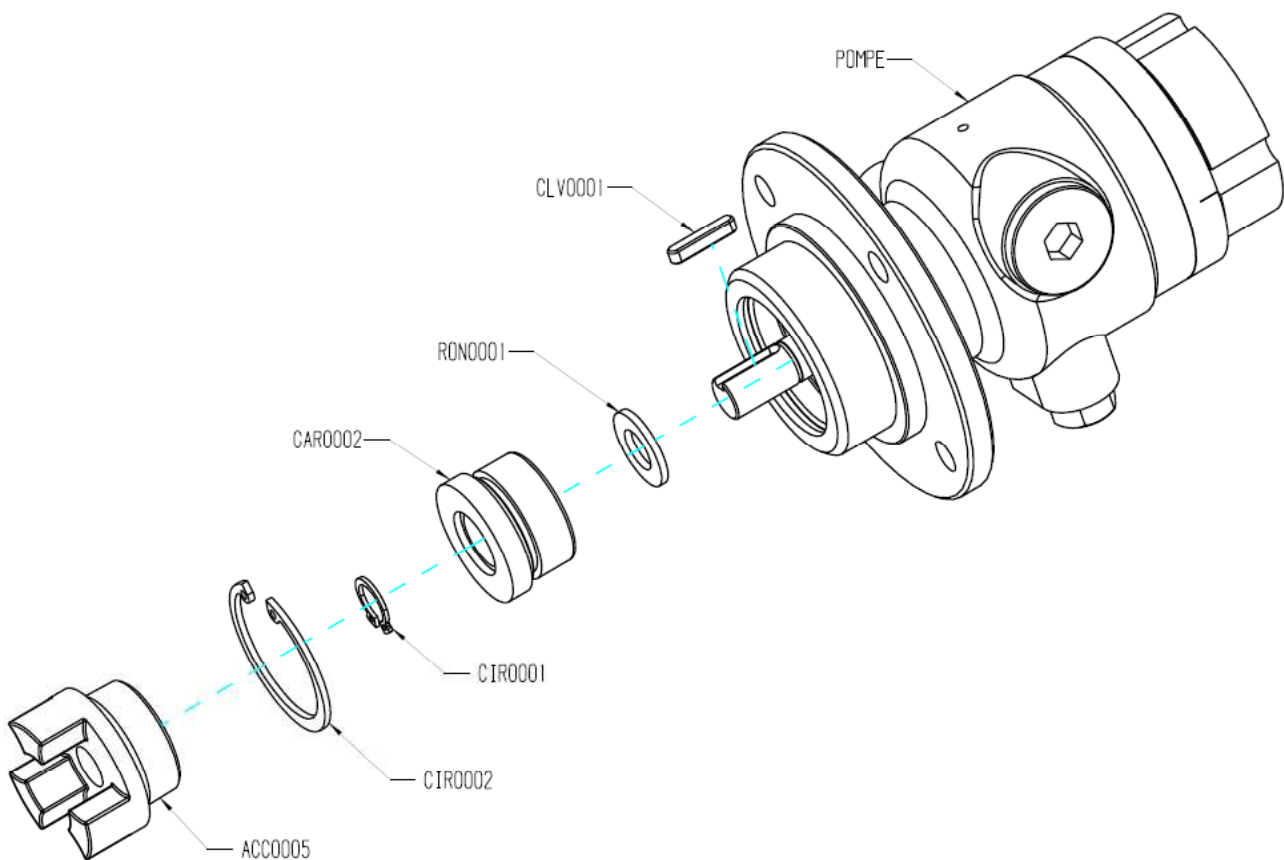
Motor pump reassembling should be made in the opposite order.



Mechanical seal dismantling

- At first realize the *Motor pump dismantling* operation (see above)
- Remove the wedge (rep. CLV0001)
- Remove the circlip for bores (rep. CIR0002)
- Remove the circlip for shafts (rep. CIR0001)
- Remove the mechanical seal (rep. GAR0002) and replace it when reassembling
- Remove the support washer (rep. RON0001)

Mechanical seal reassembling should be made in the opposite order.

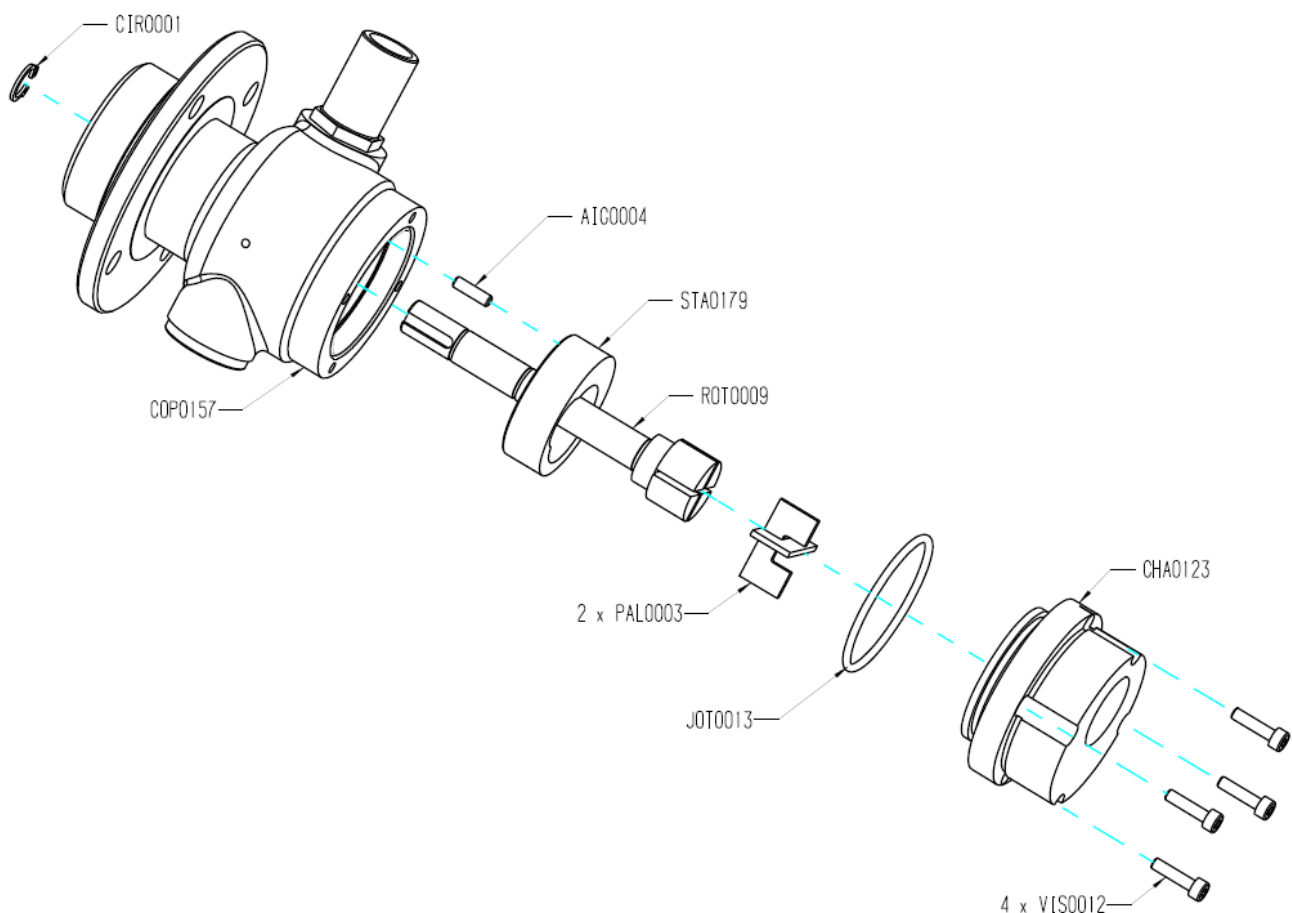


Pump dismantling

- At first realize the *Mechanical seal dismantling* operation (see above)
- Remove the circlip for shafts (rep. CIR0001)
- Unscrew the 4 screws CHC M4 (rep. VIS0012)
- Remove the cap (rep. CHA0123)
- Remove the O-ring seal (rep. JOT0013)
- Remove the 2 blades (rep. PAL0003) and replace it when reassembling
- Remove the rotor (rep. ROT0009) and replace it
- Remove the stator (rep. STA0179) and replace it too

IMPORTANT: While dismantling the stator (rep. STA0179), make sure you have recovered the needle (rep. AIG0004) which assures the stator (rep. STA0179) positioning with the pump body (rep. COP0157).

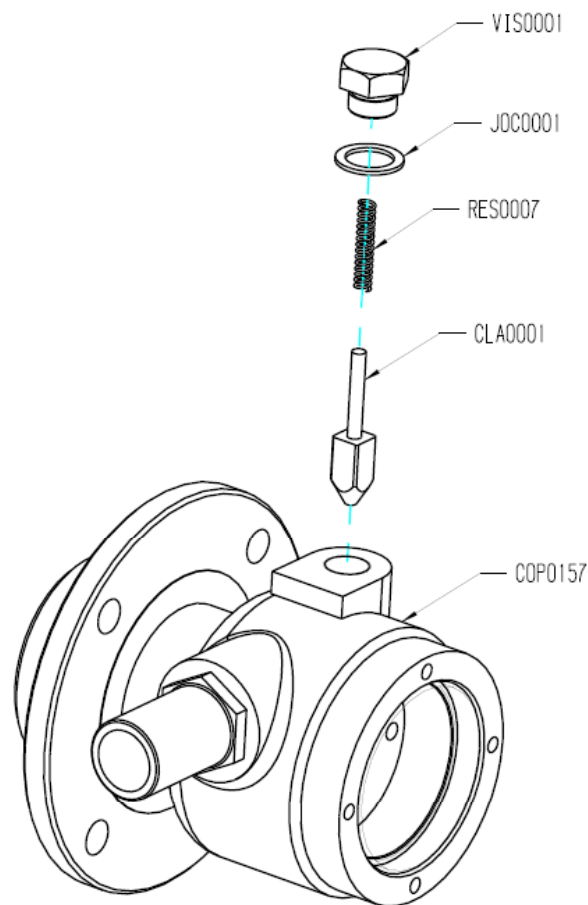
Pump reassembling should be made in the opposite order.



By-pass dismantling and control

By-pass calibration has already been done by means of the VIS0001. While dismantling it, it is important to keep track of the number of turns to unscrew in order to reassemble it correctly.

- Unscrew the screw (rep. VIS0001) and keep track of the number of turns to unscrew
- Remove its copper joint (rep. JOC0001)
- Remove the spring (rep. RES0007)
- Remove the flap (rep. CLA0001)



By-pass assembling

It should be done in the opposite order:

Check the good state of the flap and its seat. Screw the VIS0001 with the same number of turns used while dismantling it.

This by-pass is designed as a security, it must be used only in case of an incident or a cold start, but it must never be used as a flow regulator.

If you notice any deterioration of the flap or its seat, one must control the instant pressure, change the flap and reset the seat.

Nomenclature

Component	Naming	Qt
JOTxxxx *	O-RING SEAL 52.07X2.62	1
GARxxxx *	MECHANICAL SEAL DIA 12	1
STAxxxx *	STATOR	1
RES0007	SPRING RSV 13352 7/10 5 bars 06	1
ACC0005	ROTEX COUPLING R19 12CX14C L18	1
VIS0004	SCREW ZN H 8X20	4
RON0004	WASHER DIA8 ZN	4
VIS0031	SCREW CHC 6X16	4
MOTxxxx *	ENGINE	1
SOC0006	TRUNDLE MP 02 06	1
COP0157	PUMP BODY UTHP2	1
CHA0123	CAP UTHP2	1
JOT0013	O-RING SEAL 44,12X2,62N	1
VIS0012	SCREW CHC 4X16	4
ROT0009	ROTOR P06 117 CGMP PROCESS.	1
PAL0003	BLADE 3015 SHAPED	2
VIS0001	BY-PASS PLUG 40	1
JOC0001	COPPER JOINT 12.2X17X1	1
CLA0001	FLAP 6808L	1
AIG0004	NEEDLE 4X13.8 BR	1
CIR0001	CIRCLIP FOR SHAFTS E12	2
CIR0002	CIRCLIP FOR BORES I40	1
RON0001	SUPPORT WASHER 12X22X2	1
CLV0001	WEDGE BA 4x4x20	1
AIG0002	NEEDLE 3x7.8 BR	1
BOU0009	OILPAN DRAIN PLUG 1/2"	1
CAN0002	ASPIRATION PIPE UTHP2 CASK 60L	1
CAN0003	CANNE ASPIRATION UTHP2 CASK 200L	1
PIS0013	METAL PISTOL	1
FLE0034	LIFT OF THE PUMP FLEXIBLE 1/2"	5
RAC0130	JUNCTION SHAPED 1/2"	2
RAC0126	NIPPLE 1" 1/2" LT	1
RAC0129	NIPPLE 1/2"	1
CAB0001	ELCTRICAL WIRE 5 X 1,5 mm ²	5
COL0010	FLEXIBLE COLLAR 1"1/2	2
JOF0005	FIBRE JOINT 6,5X18X1,5	1
PRI0001	MALE TAP 16A	1
FLE0034	FIBRE JOINT 9X14,5X1,5 (3/8 F)	2

N.B.: * For any part replacement, please contact our company.

TROUBLE SHOOTING CHART

		Failures											
		The pump does not run	The delivery is not sufficient	The pressure is not sufficient	The pump stops priming	Power absorption too higher	Leakages from the mechanical seal	Short life of the mechanical seal	Failure of the mechanical seal	Anomalous vibrations and/or noise	Short life of bearings	causes	corrections
												Air entering from the mechanical seal.	Replace the mechanical seal or arrange a solution with a vacuum spring in case of vacuum suction operation.
												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 pump.	Reduce the friction loss or adjust the pump at a lower delivery point.
												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 mechanical seals.	Replace worn parts.
												Pumped fluid too viscous.	Verify the pump size.
												Presence of too much gas in the fluid	Fit an air relief valve.
												Plant friction losses lower than foreseen ones.	Increase friction losses or adjust the pump at a higher working point.
												Fluid specific gravity higher than foreseen one.	Increase the installed motor power.
												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.
												Mechanical seal worn	Replace the mechanical seal.
												Pump fluid or temperature not suitable for the assembled mechanical seal or its parts.	Verify the mechanical seal selection.
												Non-cleaning when using fluids which tend to crystallize.	Increase washing cycles and don't leave the product staying inside the pump for a long time.
												Incorrect assembly of the mechanical seal.	Assemble the mechanical seal 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.
												Suspended solid parts in the fluid.	Verify the mechanical seal selection.
												Too high temperature or thermic shock.	Increase gradually the fluid temperature by avoiding instantaneous thermic amplitudes, prevent the pump from dry-running.
												Pump and/or pipes are not properly anchored	Verify and adjust anchorage of the involved parts.
												Water seepage due to worn oil retainers.	Replace worn parts.