



INSTRUCTION MANUAL

DIAPHRAGM PUMP - MODEL PDM 1-175

Manual : 1009 573.034.112

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ORIGINAL MANUAL

IMPORTANT : Before assembly and start-up, please read and clearly understand all the documents relating to this equipment (professional use only).

THE PICTURES AND DRAWINGS ARE NON CONTRACTUAL. WE RESERVE THE RIGHT TO MAKE CHANGES WITHOUT PRIOR NOTICE.

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PARTS IDENTIFICATION LIST :	Bare pump	(Doc. 573.076.050)
	Equipments	(Doc. 573.077.050)
	Air regulator	(Doc. 573.288.040)

Dear customer,

We thank you very much for purchasing our PDM 1-175 pump. You are the owner of one of the most reliable pumping system available on the market.

Special care has been taken during all designing and manufacturing process to make sure your investment will provide full satisfaction.

To get the best result, safe and efficient operation of your equipment, we advise you to read and make yourself familiar with this instruction and service manual. Indeed, the non compliance with instructions and precautions stated in this manual could reduce the equipment working life, result in operating trouble and create unsafe conditions.

1. WARRANTY

We reserve the right to make changes; these changes may be carried out after the receipt of our order. No claim will be accepted as a consequence of any change carried out in the instruction manuals or in the selection guides.

Our equipment is checked and tested prior to shipment. In the case of a problem arising with the equipment, this must be in writing, within ten days from the delivery date.

KREMLIN REXSON warrants all equipment manufactured bearing its name, to be free from defect in material or workmanship for a period of 12 months (one shift per day or 1800 hours - 1 term reached) from the date of delivery. Work life is based on single shift working - 8 hours per day. Warranty claims for defective items will only be accepted in writing and will be verified and confirmed by us.

The warranty does not cover fair wear tear, damage or wear caused by misuse, improper maintenance or non-observance of our recommendations.

KREMLIN REXSON will repair or replace parts (carriage paid to our plant and accepted as defective by us). We shall not be liable for any losses, resulting from a production breakdown. Upon request, we can carry out service work at your premises; all expenses (travelling and accommodation) for KREMLIN REXSON technicians will be chargeable.

In the event that it is found that equipment has been tampered with, this will invalidate the warranty. Equipment that is bought in will be subject to the supplier's warranty.

2. SAFETY INSTRUCTIONS

GENERAL SAFETY INSTRUCTIONS



CAUTION : The equipment can be dangerous if you do not use it according to the rules mentioned in this instruction manual. Read carefully all the instructions hereafter before operating your equipment.

Only trained operators can use the equipment. (To acquire an essential training, please contact the "KREMLIN REXSON University" training center - Stains).

The foreman must ensure that the operator has perfectly taken in the safety instructions of this equipment as well as the instructions in the manuals of the different parts and accessories.

Read carefully all instruction manuals, label markings before operating the equipment.

Incorrect use may result in injury. This equipment is for professional use only. It must be used only for what it has been designed for.



















Guards (motor cover, coupling shields, connectors,...) have been designed for a safe use of the equipment.
The manufacturer will not be held responsible for bodily injury or failure and / or property damage due to destruction, the overshadowing or the partial or total removal of the guards.

Never modify the equipment. The parts and accessories supplied must be regularly inspected. Defective or worn parts must be replaced.

Never exceed the equipment components' maximum working pressure.

Comply with regulations concerning safety, fire risks, electricity in force in the country of final destination of the material. Use only products or solvent compatible with the parts in contact with the material (refer to data sheet of the material manufacturer).

PICTOGRAMS

					
NIP HAZARD	WARNING MOVING ELEVATOR	WARNING MOVING PARTS	WARNING MOVING SHOVEL	DO NOT EXCEED THIS PRESSURE	HIGH PRESSURE HAZARD
					
RELIEF OR DRAIN VALVE	WARNING HOSE UNDER PRESSURE	WEAR GLASSES OBLIGATORY	WEAR OF GLOVES IS OBLIGATORY	PRODUCT VAPOR HAZARDS	WARNING HOT PARTS OR AREAS
					
ELECTRICAL HAZARD	WARNING FIRE HAZARDS	EXPLOSION HAZARDS	GROUNDING	WARNING (USER)	WARNING SERIOUS INJURIES

PRESSURE HAZARDS



Current legislation requires that an **air relief** shut off valve is mounted on the supply circuit of the pump motor to let air off when closing the supply circuit. Without this precaution, the motor residual air of the motor may let the pump beat and cause a serious injury.

Please ensure that, a **material drain valve** is mounted on the material circuit to drain it (after shutting down air to the motor and the pressure relief) before any servicing on the equipment. These valves must be closed for air and opened for product when processing.

HIGH PRESSURE INJECTION HAZARDS

When working with high pressure equipment, special care is required. Fluid leaks can occur. Then there are injection risks in exposed parts of body that may cause severe injuries or amputations :



- Medical care must be handled immediately if product is injected under the skin or in other parts of the body (eyes, fingers).
- Never point the spray gun at any one. Never try to stop the spray with your hands or fingers nor with rags or similars.
- **Follow the shut down procedure and always depressurize air and fluid circuits** before carrying out any servicing on the gun (cleaning, checking, maintenance of the material or cleaning of the gun nozzles).
- For the guns equipped with a safety device, always lock the trigger when you do not start the gun.

FIRE - EXPLOSION - SPARKS - STATIC ELECTRICITY HAZARDS



A poor earth connection, inadequate ventilation, sparks or static electricity can cause an explosion or fire. to avoid these risks when using or servicing KREMLIN REXSON equipment, the following safety procedures must be followed :

- ensure a good earth connection and ground the parts to be handled i.e. solvents, materials, components and equipment,
- ensure adequate ventilation,
- keep working area clean and free from waste solvents, chemicals, or solid waste i.e. rags, paper and empty chemicals drums,
- never use electrical switches / power if in an atmosphere of volatile solvent vapour,
- stop working immediately in case of electrical arcs,
- never store chemicals and solvents in the working area.

TOXIC PRODUCT HAZARDS



Toxic products or vapours can cause severe injury not only though contact with the body, but also if the products are ingested or inhaled. It is imperative :

- to know the material products and their risks,
- notified or hazardous materials must be stored in accordance with the regulations,
- the material must be stored in an appropriate container, never place materials in a container where there is a risk o spillage or leakage,
- a procedure must be applied for the safe disposal of waste material. It must comply with all prevailing regulations and legislations of the country where the equipment is to be used,
- protective clothing should always be worn in compliance with the material manufacturers' recommendations,
- depending on the application and chemical safety instructions, safety glasses, hearing protective earplug, gloves, foot wear, protective masks and possible breathing equipment should be worn to comply with the regulations

(Refer to chapter "Safety equipment of KREMLIN selection guide).



CAUTION!

It is forbidden using any solvent or with halogenated hydrocarbon base and also products with these solvents facing **aluminium** or **zinc**. The non-compliance with the instructions may cause explosion hazards causing serious or fatal injuries.

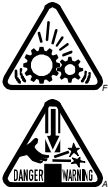
EQUIPMENT REQUIREMENTS

Guards (motor cover, coupling shields, connectors,...) have been designed for a safe use of the equipment.

The manufacturer will not be held responsible for bodily injury or failure and / or property damage due to destruction, the overshadowing or the partial or total removal of the guards.

PUMP

Before carrying out any work, it is imperative to get used with the compatibilities of motors with pumps before coupling. The operator shall understand the equipment and the safety instructions. These instructions are available in the manuals of the pumps.



The air motor is designed to be mounted with a pump. Never modify any components or couplings. Where operating, please keep hands away from moving parts. Before starting up the equipment, please read the PRESSURE RELIEF instructions. Please ensure that any relief or drain valves fitted are in good working order.

HOSES

- Keep hoses out of circulation areas, moving parts or hot surfaces,
- Never expose product hoses to temperature higher than + 60°C / 140° F or lower than 0°C / 32° F,
- Never pull or use the hoses to move the equipment,
- Tighten all fittings as well as the hoses before operating the equipment,
- Check the hoses regularly; change them if they are damaged,
- Never exceed the working pressure (WP) indicated on the hose.

USED PRODUCTS

Considering the variety of products that may be used by the users and the impossibility to check off all chemical data, of possible reactions of chemicals to each other and their long term evolution, KREMLIN REXSON can not be considered as liable for :

- the bad compatibility of wetted parts,
- risks for staff and surroundings,
- for worn or out of order parts, for wrong working of equipments or units, as well as for the qualities of final product.

The user must know and prevent the possible risks as toxic vapours, fires or explosions due to used products. He shall determine the risks of immediate reactions or pursuant to repeated exposures of the staff.

KREMLIN REXSON shall not be liable for psychic injuries, direct or indirect material damages further to the use of chemicals.

3. TECHNICAL FEATURES

- Pneumatic dual diaphragm pump.
- Low maintenance and ease of use.
- No fluid packing.
- Easy flushing.

Recommended for :

- supplying several spray guns or circulating.
- the following materials :
 Paints and inks
 Epoxy.
 Adhesives.

Fluid pressure ratio	1/1	1/1
Capacity	175 cc	6.17 oz
Delivery per cycle	350 cc	12.34 oz
Number of cycles	3 par liter	11 per gal
Fluid delivery (30 cycles)	10.5 l/mn	2.8 US gal
Air pressure operating range.	0 - 6 bar	0 - 87 PSI
Maximum discharge pressure.	4 bar	58 PSI
Sound level.	< 70 dBa	< 70 dBa
Maxi. operating temperature.	50° C	122° F
Air supply hose (minimum ID for a 5m / 16.5 ft length)	10 mm	3/8"

Metals in contact with the material :

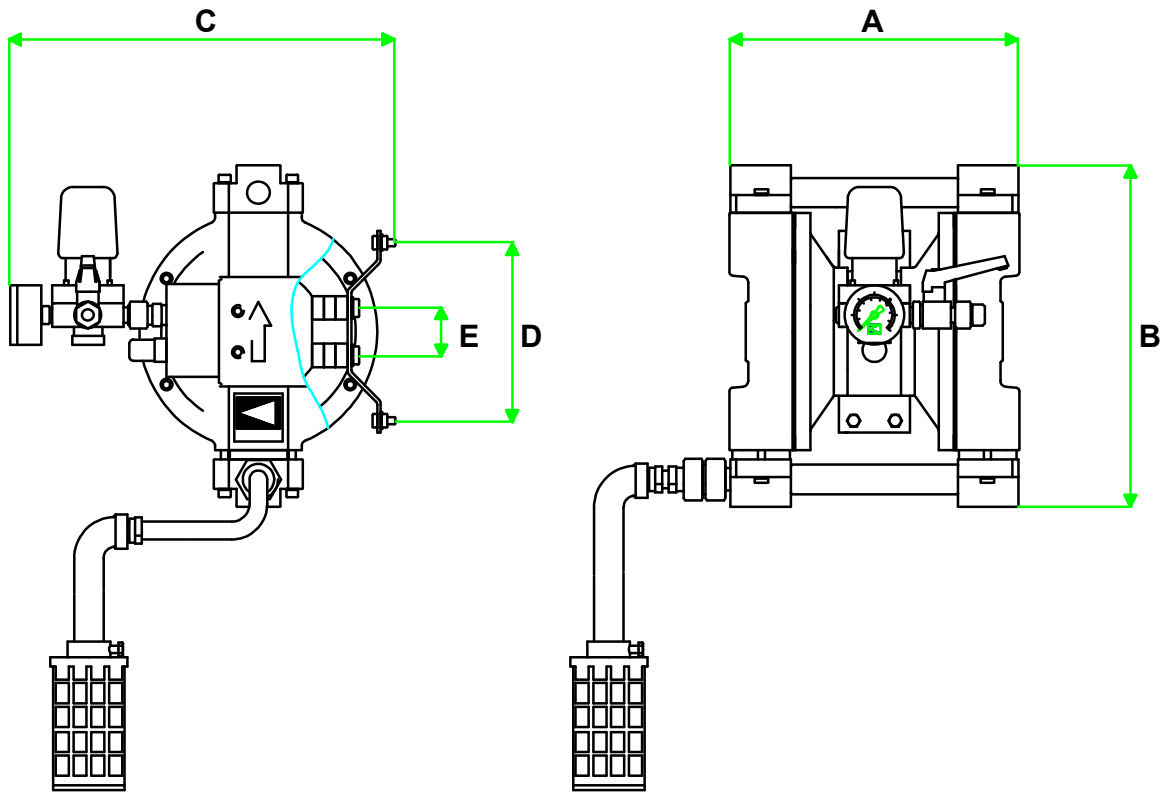
- **Diaphragms** PTFE
- **Valves** Stainless steel
- **Collectors and flanges** Aluminium

<u>Fittings :</u>	Bare pump	Pump assembly
Air inlet	Female 3/8 BSP	Valve, F 3/8 BSP
Material inlet	Female 1/2 BSP	Fitting, male 26 X 125 + suction rod
Material outlet	Female 1/2 BSP	Female 1/2 BSP

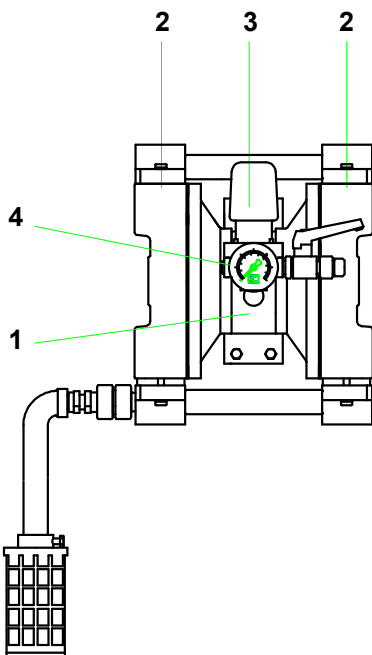
Weight 13 kg / 28.6 Lbs

Dimensions

Rep.	mm	Inch.	Rep.	mm	Inch.	Rep.	mm	Inch.	Rep.	mm	Inch.	Rep.	mm	Inch.
A	245	9.65	B	290	11.42	C	315	12.40	D	150	5.9	E	40	1.57



4. OPERATING PRINCIPLE



The pump consists of :

- a central air motor (1),
- two identical fluid chambers (2) located on either side of the motor.

The motor is directly supplied with compressed air by means of regulator (3). The pressure is read on the gauge (4).

An air chamber is alternatively supplied by an air distributor, thus causing the motion of the diaphragms. Each of the two fluid chambers includes a suction valve and an exhaust valve. Alternatively material is siphoned and exhausted by each chamber.

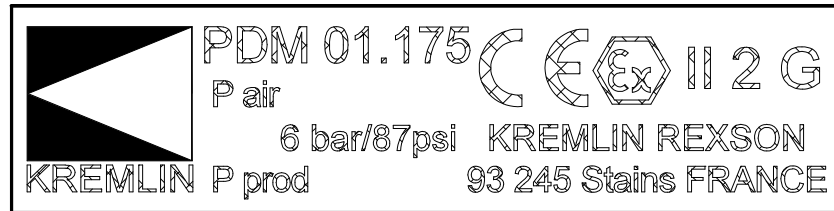
The fluid pressure at the pump outlet is equal to the pressure read on the gauge (4).

5. INSTALLATION

The pumps are designed to be installed in a spray booth.

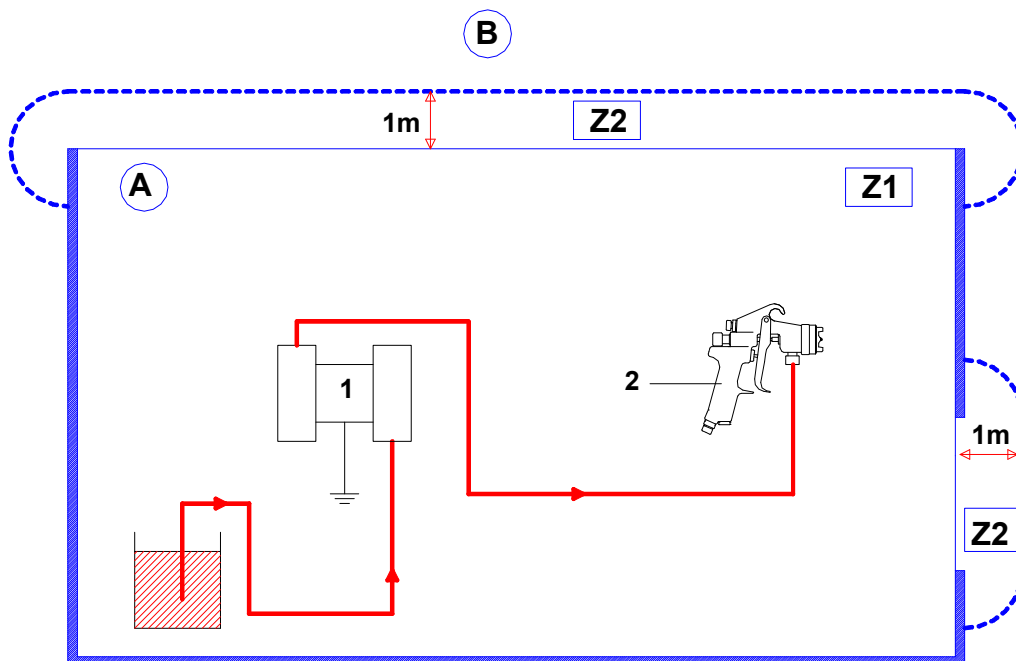
■ DESCRIPTION OF THE LABEL MARKING

Marking in accordance with the ATEX directive



Sigle KREMLIN	Manufacturer label
KREMLIN REXSON 93 245 STAINS FRANCE	Name and address of the manufacturer
PDM 01.175	Pump model
CE ■ II 2 G	II : groupe II 2 : catégorie 2 Surface equipment meant to area where explosive atmospheres due to gas, vapours, mists are liable to appear from time to time in usual operating. G : gas
P air P prod 6bar / 87 psi	Air and fluid supply maximum pressure

■ INSTALLATION INSTRUCTIONS



Ind.	Description
A	Explosive area area 1 (Z1) or area 2 (Z2) : spray booth
B	Non explosive area

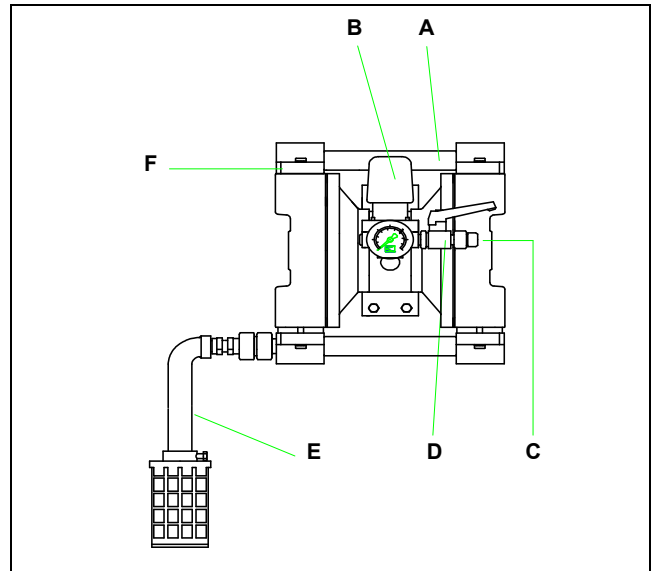
Ind.	Description
1	Pump
2	Spray gun

6. START UP

Legend :

- A - Pump.
- B - Air regulator.
- C - Air inlet.
- D - Air shut off valve.
- E - Suction rod.
- F - Fluid outlet

(For specific installation, please contact your KREMLIN REXSON representative)



Start up procedure :

- 1 - Unscrew the air regulator (B).
- 2 - Interconnect the equipment with the air pressure network (clean air - 6 bar / 87 PSI maxi). Install a water drop, model 3/8, if necessary.
- 3 - Connect all the hoses as well as the spray guns or circulating.
- 4 - Immerse suction rod (E) into material container.
- 5 - Open pump air pressure valve (D)
- 6 - Screw air regulator (B) so that the pump runs slowly.
- 7 - Open fluid circuit or drain valve fitted at the pump outlet.
- 8 - Gradually screw air regulator (B) so that the material flows out regularly.
- 10 - Adjust air regulator (B) to get the appropriate material pressure and flow rate.

7. SHUTDOWN AT END OF WORK

- 1 - Unscrew the air regulator (B) until to obtain a 1 to 2 bar reading on the gauge (14.50 to 29 psi).
- 2 - Remove suction rod from the material container and immerse it in a solvent-filled container. (Take all appropriate precautions in the presence of flammable solvents).
- 3 - Open the fluid circuit or the drain valve.
- 4 - When the solvent flows out, point the gun into a recovery container.
- 5 - When the solvent flows out clear and clean, fully unscrew air regulator (B) and shut off the main compressed air valve.
- 6 - The pump and the hoses remain filled with solvent at the atmospheric pressure.

8. DAILY CARE

■ SPRAY GUN

Comply with the usual instruction of spray gun servicing (refer to spray gun manual).

■ PUMP

**Guards (motor cover, coupling shields, connectors,...) have been designed for a safe use of the equipment.
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Make sure that the suction strainer is clean and in good condition.

Flush the pump as often as necessary, specially when spraying pigment-filled material.

Whatever the case, when stopping the pump always leave it filled up with :

- **for a short duration, if the flushing has not been carried out, leave the pump filled up with material,**
- **for a long duration, after flushing the pump, leave it filled up with clean solvent.**

9. TROUBLESHOOTING CHART

TROUBLE	SOLUTION
Pump does not start.	Check the pump air supply.
Priming trouble : → Air is always coming out from the drain valve or the spray gun. → When priming, air or material do not come out from the drain valve or the spray gun.	Be sure the drain valve (or the spray gun) is fully opened and air is evacuated through the circuit. Air intake at the fitting or at the suction rod. Air intake at the suction valve level on the collector. Make sure the pressure read at the regulator is equal to 1 or 2 bar / 14.5 or 29 psi (minimum).
Air bubble in material.	Check tightening of the 2 nuts (Ind. 27) and if seals (Ind. 25) are not damaged.
Pump does not stop when drain valve is closed or gun trigger is released.	Check suction and exhaust valves.
Spraying troubles.	Refer to spray gun manual.

10. SERVICING

The pump is manufactured under the ATEX agreement and can not be modified. KREMLIN REXSON will not be held responsible for any failure to comply with that instruction.

**Guards (motor cover, coupling shields, connectors,...) have been designed for a safe use of the equipment.
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■ SUCTION VALVE

Unscrew the four screws (32) to disassemble the two collectors (12) and the collector tube (11) located at the lower part.

Remove seat (14), ball (19) and ball cage (13).

Clean the parts. Before reinstalling them, replace seals (15) and (18) if necessary.

■ EXHAUST VALVE

Unscrew the four screws (34) to disassemble the two collectors (12) and the collector tube (11) located at the upper part.

Remove ball (20) and seat (16).

Clean the parts. Before reinstalling them, replace seals (17) and (18) if necessary.

■ DIAPHRAGMS

Remove collectors (12) by unscrewing screws (32 and 34).

Remove each fluid flange (30) by unscrewing screws (31).

Unscrew nuts (27), washers (26) and fluid washers (29).

Remove fluid diaphragms (23) and air diaphragms (24).

Be certain seal (25) is installed and not damaged. If required change it.

Reinstall new diaphragms (white PTFE diaphragm on fluid side)

Make sure washer (28) is installed on air diaphragm side.

Tighten diaphragms by screwing simultaneously both screw (27) (torque 10 Nm).

Reinstall flanges (30) and screws (31).

Reinstall collectors (12) and tubes (11).

■ DISTRIBUTOR

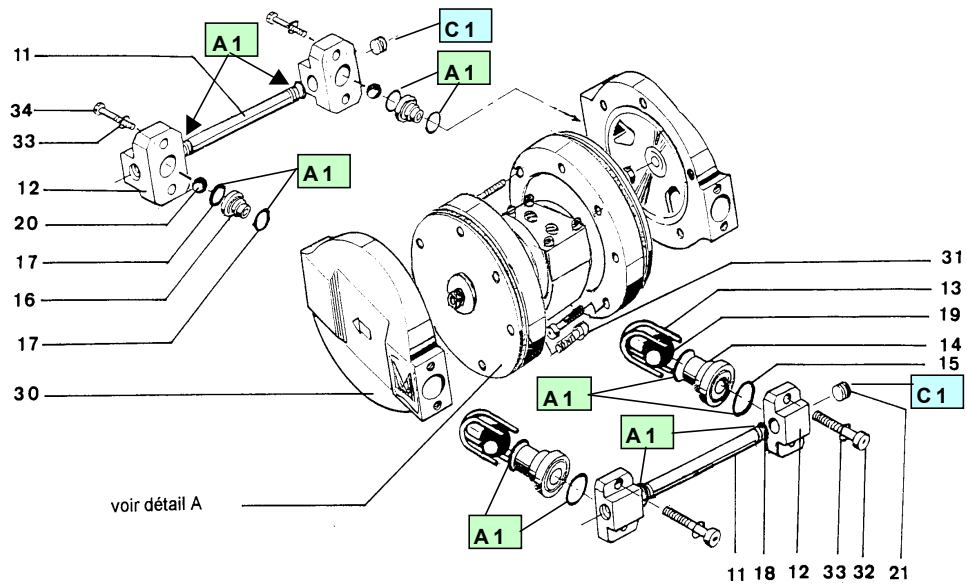
Remove the four screws (36) to dissociate distributor (40) from motor body (9).

Remove plugs (41) by blowing compressed air (**maxi 1 bar**) through distributor air supply hole (P engraved on the opening).

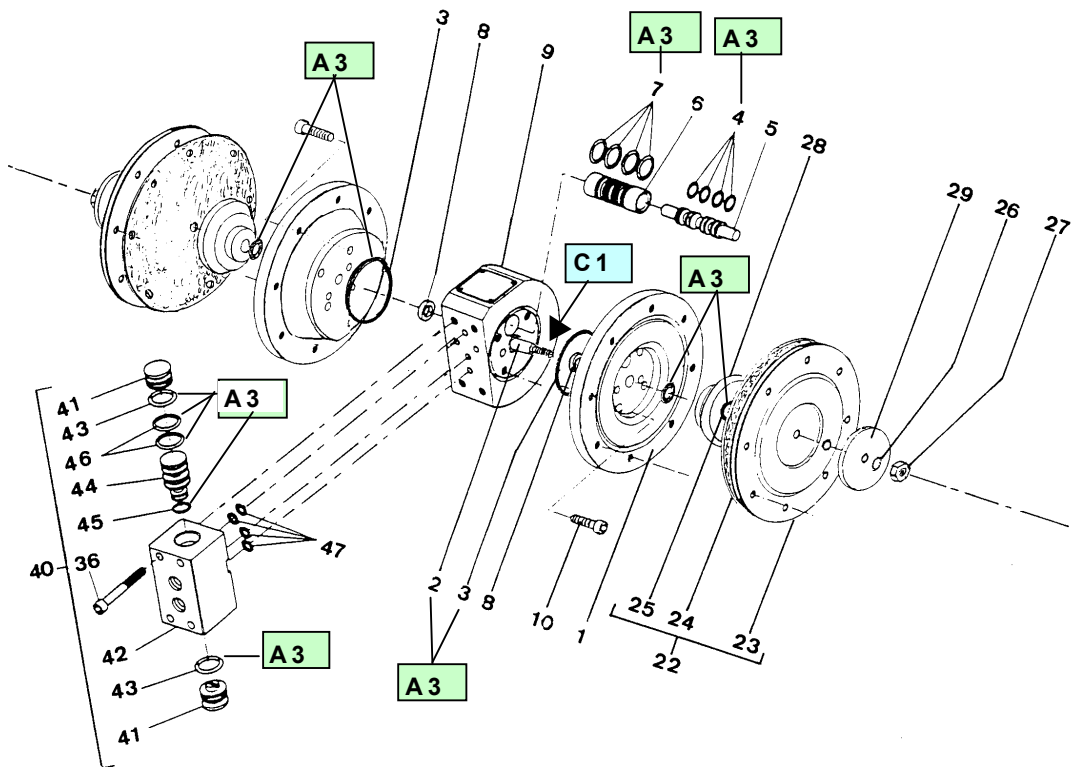
Remove air valve spool.

Clean or replace the seals if necessary. When remounting be certain seals (47) are installed.

■ ASSEMBLY INSTRUCTIONS



Detail A



Index	Instructions
A1	PTFE grease
A3	Pure vaseline
C1	High strength - Aerobic pipe Sealant - Loctite 577