KREMLIN

INSTRUCTION MANUAL

AIRMIX ® PUMP and AIRSPRAY PUMP with differential air motor

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AIRMIX ® PUMP and AIRSPRAY PUMP with differential air motor

SUMMARY

The specifications of the pump - features and maintenance - are available in a documentation enclosed to the manual.

Dear Customer,

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

To make sure your investment will provide full satisfaction, special care has been taken by KREMLIN during all designing and manufacturing processes.

To obtain the best result, safe and efficient operation of your equipment, we advice 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. EC DECLARATION OF CONFORMITY

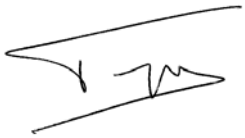
The manufacturer : **KREMLIN REXSON** with assets of 6 720 000 euros
Head office : 150, avenue de Stalingrad - 93 245 - STAINS CEDEX - FRANCE
Tel. 33 (0)1 49 40 25 25 - Fax : 33 (0)1 48 26 07 16

Herewith declares that : Pneumatic pump, is in conformity with the provisions of :

EC - Machinery Directive (Directive 98/37/EEC) as amended and with national implementing legislation

Ex - ATEX Directive (Directive 94/9/EEC) :  II 2 G (group II, class 2, gas).

Established in Stains, on March 1st 2003,



Daniel TRAGUS
President

2. 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.

3. 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. 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 GLOVE 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.
- use paint whose flash point is the highest possible to prevent from any formation of gas and inflammable vapours (refer to materials' safety instructions),
- install a cover on the drums to reduce the diffusion of gas and vapours in the spraybooth.

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, 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

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.

4. OPERATING PRINCIPLE

The pump (A) consists of :

- an alternating air motor (B).
- an hydraulic section (C) mechanically coupled to the air motor (B).

The air motor is supplied with compressed air by means of the regulator (D) (red knob). The pressure is read on the gauge (E).

During its alternating movement, the air motor drives the piston of the hydraulic section (C). The fluid is drawn in (L) and forced under pressure in (N). Due to its design, this pressure is always the one read on the gauge (E) x pump ratio.

The spray air pressure of the gun is adjusted by means of the regulator (grey knob) (F) and the pressure can be read on the gauge (G).

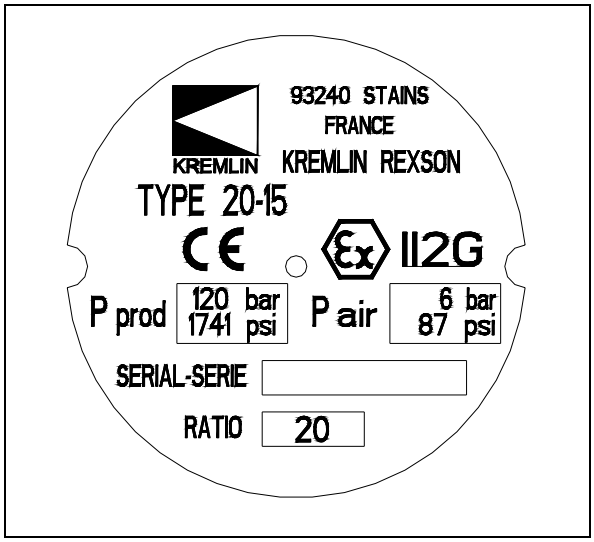
- To adjust the fluid flow rate, turn the red knob (D) - (Gauge E).
- To adjust the spray air, turn the grey knob (F) - (Gauge G).

5. INSTALLATION

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

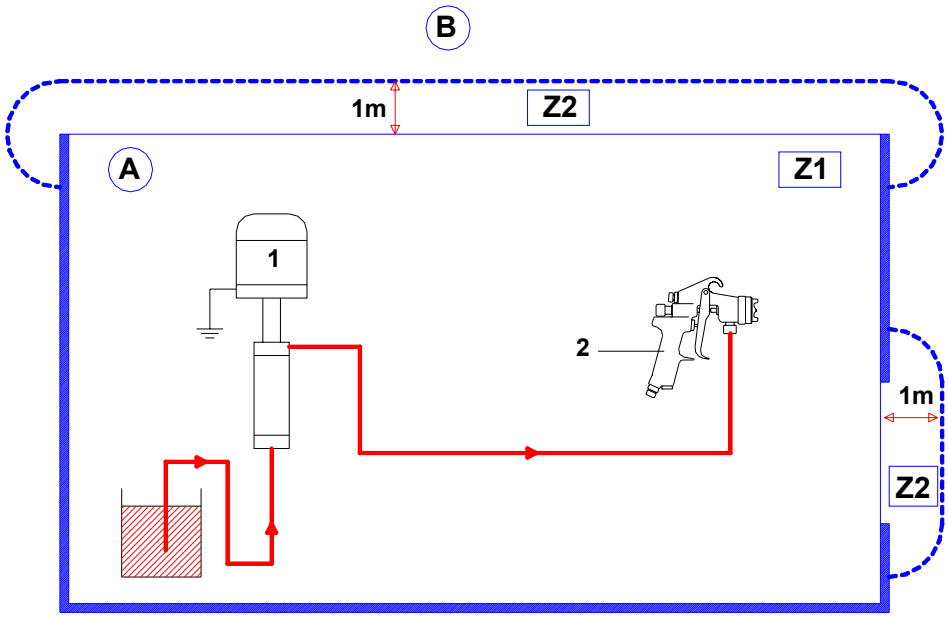
■ DESCRIPTION OF THE LABEL MARKING (EG : PUMP, MODEL 20-15)

Marking in accordance with the ATEX directive.



KREMLIN Logo	Manufacturer label
KREMLIN REXSON 93240 STAINS FRANCE	Name and address of the manufacturer
TYPE 20-15	Pump model
II 2 G	**II** : group II **2** : class 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 prod 120 bar/1741 psi	Maximum fluid pressure at the pump outlet
P air : 6 bar / 87 psi	Air supply maximum pressure of the pump motor
N° Serie /Serial Nb	Number given by KREMLIN REXSON
RATIO 20	Pump pressure ratio

■ INSTALLATION DIAGRAM



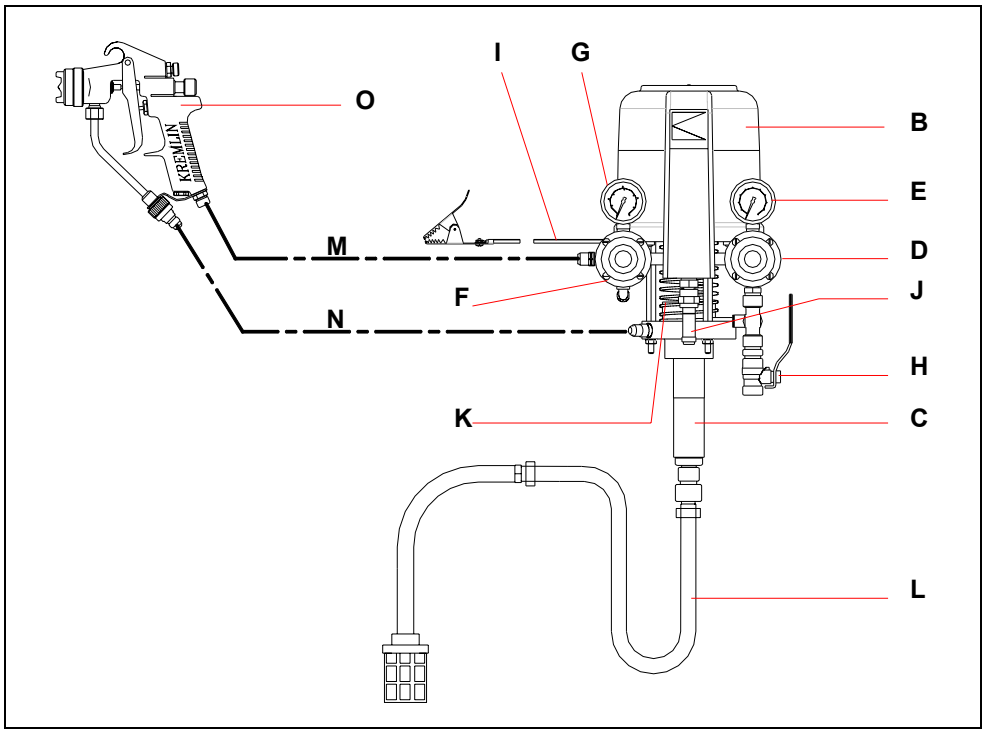
Rep.	Description
A	Explosive area area 1 (Z1) or area 2 (Z2) : spray booth
B	Non explosive area

Rep.	Description
1	Pump
2	Spray gun

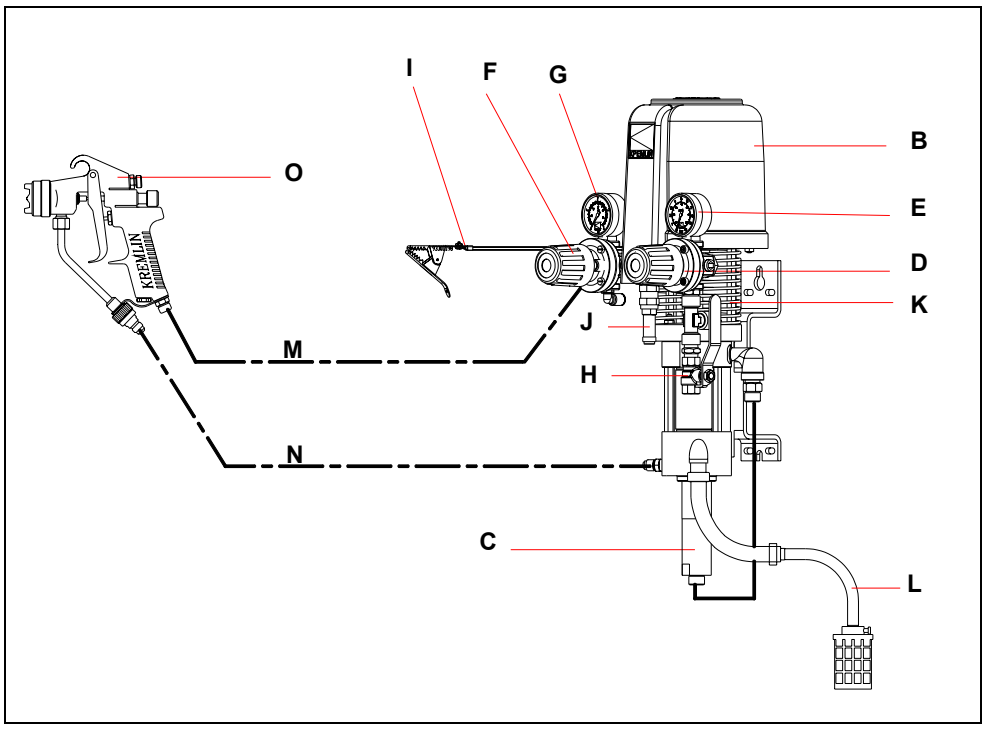
6. START UP

6-1 FILLING

STANDARD PUMP



FLOWMAX ® PUMP



Captions :

A	Standard or FLOWMAX ® pump (B + C)	J	Relief valve (depending on version)
B	Air motor	K	Protection spring
C	Fluid section	L	Suction rod
D	"MOTOR AIR" regulator	M	Air hose (static conductor)
E	Gauge	N	HP fluid hose
F	"GUN AIR" regulator	O	AIRMIX ® gun or aispray gun
G	Gauge	P	T lubricant (1/4 l / 0.07 Us gal) (only for standard pump)
H	Air inlet valve		
I	Ground		

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

Start up procedure :

1 - Ground the pump.

2 - **If the pump is a standard one, fill the wetting cup (S) with T lubricant (R) or with an appropriate cleaning solvent.**

3 - Unscrew the air regulators (D and F).

4 - Interconnect the equipment with the air pressure network (clean air - P < 6 bar / 87 psi). Install a water drop, model 3/8 if it is necessary.

5 - Connect all the hoses (air hose and fluid hose) as well as the gun (O).

6 - Remove gun air cap by unscrewing the cap ring.

■ FLUSHING WITH SOLVENT

7 - Immerse suction rod (L) into material container.

8 - Open pump air pressure valve (H).

9 - Point the spray gun, not supplied with air, towards the material container and press the trigger.

10 - Increase **gradually** the air regulator (D) so that the pump runs slowly (Pressure between 0,5 and 1 bar / 7.25 to 14.5 psi). When material flows out regularly, release the trigger.

■ PRIMING WITH MATERIAL

11 - Remove suction rod (L) from material container and immerse it in a solvent-filled container (take all appropriate precautions in the presence of flammable solvents).

12 - Point the spray gun, not supplied with air, towards the material container and trigger the gun until the material flows out regularly.

■ WORK

13 - Reinstall the ring and the aircap on gun.

14 - Adjust air regulator (D) to get the appropriate material pressure and flow rate.

15 - **Gradually** open air regulator (F) to adjust spraying air to obtain the required spray pattern.

6-2 PUMP SUPPLIED IN GRAVITY

➲ CAUTION: The pumps can be supplied in gravity bu not in filling.

Interconnect the pump fluid inlet with the gravity cup supply hose and start up the pump as previously indicated.

If the pump is a FLOWMAX ® one :

WARNING ;

→ **WARNING : Do not create overpressure.**

→ **Never use** the pump when **an isolating gate on the supply circuit** (upstream from the FLOWMAX ® fluid section) is shut : **it would damage the bellows**.

→ **Do not install** any arrangement that could perform as a non-return valve on the supply circuit.

7. SHUTDOWN AT THE END OF THE WORK

■ SHORT DURATION SHUTDOWN

1 - Decrease the material pressure of air regulator (D) until reading **0 bar / 0 psi** on gauge (E).

2 - Trigger the gun to depressurize the system.

3 - Remove the nozzle of the spray gun and soak it into solvent.

■ LONG DURATION SHUTDOWN

1 - Decrease the material pressure of air regulator (D) until reading **1 bar / 14.503 psi** on gauge (E).

2 - Remove the nozzle from the spray gun and soak it into solvent.

3 - Open the drain valve. The pump must operate at low speed. If the speed is too high, decrease the pump air pressure (D).

4 - Remove the suction rod and the drain rod from the material container and immerse it in a solvent-filled container. Take all the appropriate precautions in the presence of flammable solvents.

5 - Point the gun towards the container and trigger the gun. When the solvent flows out, point the gun towards the recovery container.

6 - When the solvent flows out clean, release the gun trigger.

Nota : If the pump is a standard one, release the spray gun trigger when the pump piston is in a low position. To prevent from damaging the seals when starting once again the pump, the piston must be immersed into solvent.

7 - Fully unscrew the air regulator (D) and shut off the compressed air valve (valve H).

8 - Trigger the spary gun to decompress the hoses. Therefore, the pump and the hose remain filled with solvent at the atmospheric pressure.

8. MAINTENANCE

■ PUMP

Make sure that the pump is clean and in good condition to increase equipment working life.

If the pump is a standard one :

- Make sure the pump fluid outlet flange is always filled up with T lubricant (this T lubricant will normally be coloured by the paint).
- Regularly clean the wetting-cup with solvent after having drained the lubricant (Unscrew the plug placed at the upper flange).

Make sure that the suction strainer is clean and in good condition. Clean it regularly and replace it if it is necessary.

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

Whatever the case, when stopping the pump, always leave it filled with material :
For a short duration shutdown, if the flushing has not been carried out, leave the pump filled with material.
For a long duration shutdown, after flushing, leave it filled with solvent.

■ SPRAY GUN

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

■ FILTER

If the pump is equipped with a filter at the fluid outlet, comply with the usual instructions of filter servicing (refer to filter manual).

9. SAFETY DEVICE

A relief-valve (setting : 6.5 bar / 94 psi) is fitted on the pump air motor – thus protecting this one from an overpressure which could damage it.

If the pump is a standard one, a protection spring, mounted between the air motor and the fluid section, protects the operator during the pump piston motion (on standard pump).

10. TROUBLESHOOTING CHART

CAUSE	SOLUTION
The pump does not start.	Check the pump air supply.
Priming trouble : ➔ Air is always coming out from the spray gun. ➔ When priming, air (or material) does not come out from the spray gun.	Be sure that the spray gun is fully opened and air evacuated through this one. Air intake at the fitting or at the suction rod. Check the pump valves. If a valve is sticked by dry paint, it can be unsticked without disassemblying it. Blow air pressure directly by suction fitting.
The pump does not stop at once when shutting off the spray gun : ➔ The pump stops only on down stroke. ➔ The pump stops only on up stroke.	 Check exhaust valve or valve seal. Check suction valve or upper cartridge.
The pump locks with an air leakage to the motor	Check the motor valve under the cover.
On standard pump, the lubricant into the cup is fastly coloured.	Check the upper packing (tighten the cup or change seals if it is necessary).
On FLOWMAX ® pump, leakage of fluid at the bottom of the air motor.	Check bellow.
Spraying trouble.	Refer to spray gun manual.