



INSTRUCTION MANUAL

**MANUAL ELECTROSTATIC GUN
MODEL KM.3 H2O**

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Modif : § 1 & 4 (+ label plate)

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MANAUL ELECTROSTATIC GUN
MODEL KM.3 H2O

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PARTS IDENTIFICATION LIST :

KMP 3 H2O MANUAL ELECTROSTATIC GUN	(Doc. 573.312.050)
KMV 3 H2O MANUAL ELECTROSTATIC GUN	(Doc. 573.313.050)
KMX 3 H2O MANUAL ELECTROSTATIC GUN	(Doc. 573.311.050)
KMC 3 H2O MANUAL ELECTROSTATIC GUN	(Doc. 573.314.050)
EQUIPMENTS FOR WATER-BASED MATERIAL APPLICATIONS	(Doc. 573.304.050)

Dear Customer,

We would like to take this opportunity to thank you for buying a **new manual electrostatic gun**.

We have taken every care, from original design to final manufacture, to ensure that this product gives you complete satisfaction.

To obtain the best performance and reliability from this equipment, we would strongly advise you to read this instruction manual attentively before attempting to use the equipment.

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

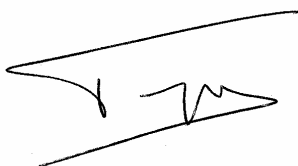
Herewith declares that : **Spray gun, model KM.3 H2O** is in conformity with the following provision :

- Machinery Directive (directive 98/37/EEC) and with national implementing legislation.
- Certificate of conformity for non-flammable water-based paint electrostatic spreading installation.

Test report : INERIS n° 90691/07

European Standard : EN 50059 : 1993

Established in Stains, on January 14th 2008



Daniel TRAGUS
President

2. GENERAL SAFETY INSTRUCTIONS

1 - **The non-compliance with the safety requirements and precautions stated in this manual could result in unsafe conditions.**

- 2 - The personnel involved in operating and servicing the electrostatic coating equipment must be fully aware of all the safety requirements stated in this manual.
- 3 - The workshop supervisor must be certain that the personnel has perfectly understood the safety instructions and complies with them. These instructions cover the precautions required for solvent-based paint spraying and the specific precautions in connection with the use of equipment requiring high voltage.

The electrostatic coating system shall be used by qualified personnel only. The personnel must also be familiar with the local safety instructions standards which can be in force in certain countries.

WARNING : failure to observe the safety precautions contained herein could result in operating troubles and create unsafe conditions (body injury, explosion fire or electric shock).

■ INSTALLATION

- ➔ **The KM.3 H2O gun and its associated material are designed only for the application of paints and water-based varnishes.**

The gun must be associated to a water-based bubble, to a supply power unit, to specific air and fluid hoses.

- 4 - Spraying, cleaning and servicing must be made in a ventilated area so that solvent vapours are properly drained.
- 5 - STD 9 power supply must be installed in a non-hazardous area. Moreover, it must be located 4 meters (13 ft) at least away from any flammable vapour emissions.
Ground the earth terminal.
- 6 - All metallic parts located within 3 meters (10 ft) around the gun (such as pumps, drums, conveyor, etc...) must be correctly grounded.
- 7 - Storage of paint and solvent drums near or inside the spraying area is prohibited. Keep all fluid containers properly closed in a non-hazardous area.

- ➔ **Use cleaning solvents with the highest flash point – If possible, higher than the ambient temperature.**

- 8 - Remove the useless parts from the spraying area and keep this area clean. Part holders and conveyor hooks must be removed and frequently cleaned.
- 9 - The floor must be electrically conductive and grounded. Maximum resistivity of the floor : 1 MΩ as per EN 50 053-7-2.
- 10 - The warning sign must be affixed in the spraying area and located where it can be easily seen and read by all operators.

**A typical installation designed to spray non-flammable conductive material (water-based paints) must not be used to handle material (solvent-based paints).
Do not use inflammable water-based materials when cleaning.
The risks are : explosion, fire, electric-shock hazard and serious body injury for the personnel.**

- 11 - Use **only** a specific fluid hose (insulating) to connect the pump to the gun.
- 12 - Use **only** a **conductor** air hose to connect the STD9 B power supply unit to the gun.

■ SPRAYING

- 13 - Never point the spray gun to anyone at any part of the body.
- 14 - Never throw or drop the electrostatic manual gun.
- 15 - The parts to be painted must be properly grounded. Any incorrect electrical continuity might result in stock hazard.
- 16 - Never operate the electrostatic spray gun if air leaks are detected on the gun. Never use air hoses on which air leaks can occur.
- 17 - Be sure that tip and air cap are in position and hand tightened with the retaining ring onto the gun before turning on the power supply.
- 18 - Verify that any person entering the spray area is correctly grounded with conductive sole shoes (in accordance with EN 50 053).

The operator must not wear gloves which insulate the hand from the conductive gun handle. If using gloves, check that they are conductive (in accordance with EN 50 053) or that a square has been cut-out in the glove palm.

■ SERVICING

- 19 - After any servicing or cleaning, never switch on the power supply tip and air cap are in position and secured with the retaining ring onto the gun.
- 20 - Never immerse the gun or plastic parts of the gun in solvent.
This could seriously damage the gun and cause fire, explosion or body injury. To clean the gun, use soft cloth or bristle brush with a moderate amount of non-conductive solvent, wipe the front of the gun at fluid nozzle with the gun pointed down to prevent from flowing back into the air passages.
- 21 - Before disconnecting the hose, check that they are no more under pressure and that the power supply is off.
- 22 - The personnel involved in the electrostatic coating system servicing must be trained and qualified. If you face any trouble which cannot be repaired, do not try to start up the equipment Consult immediately your local authorized KREMLIN distributor for assistance.

➔ **Never modify these equipments.**

Check them daily, keep them in a good condition and replace the worn parts **only with KREMLIN parts.**

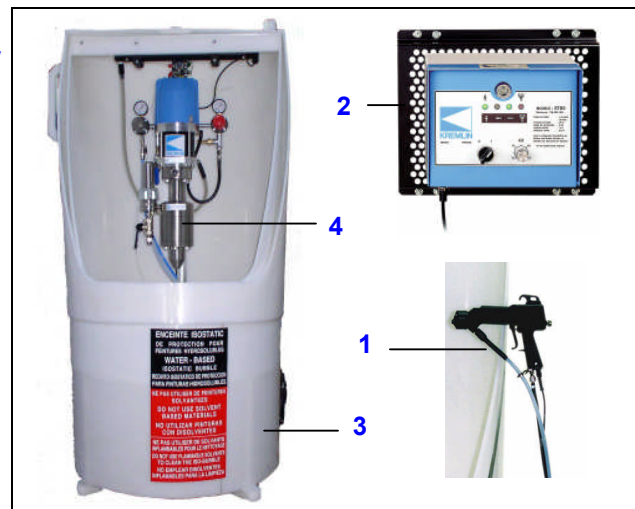
Before cleaning or removing components of the equipment, it is compulsory :

- 1 - to shut off the installation,**
- 2 - to shut off the compressed air supply,**
- 3 - to open the pump drain valve,**
- 4 - to press the gun trigger to depressurize the system.**

3. OPERATING PRINCIPLE

The water-based electrostatic spraying assembly consists of :

- a manual spray gun (1),
- a power supply unit (2),
- an iso bubble (3) with the HV generator,
- a pump (4),
- specific hoses.



■ STD 9 B POWER SUPPLY

The power supply transforms the network voltage into a low adjustable continuous voltage by means of an electronic regulator.

The electronic regulator built into the power supply unit automatically reduces the intensity and voltage when the electrode on the spray gun is close to a grounded object (less than 100 mm or 4 inches) thereby preventing any electric discharge.

➔ **The power supply unit includes a 3-pin plug and cable assembly so as guarantee a safe grounded AC input power system. Failure to ground the power supply may result in an electrical shock hazard.**

Interconnect the STD 9 power supply unit with the air pressure network (maximum pressure 6 bar / 87 psi). The STD 9 power supply incorporates a flow switch to ensure gun safety.

FLOW SWITCH :

A flow switch is an electropneumatic device detecting any downstream air consumption so that the power supply unit provides low voltage to the generator only when the atomizing air flows from the front of the gun.

For technical detail, refer to the STD 9 instruction manual.

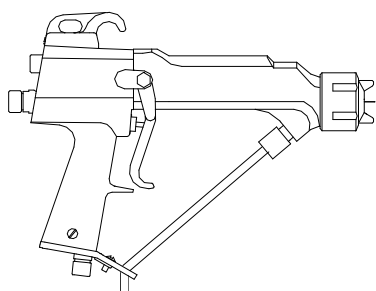
■ **KM.3 H2O MANUAL ELECTROSTATIC GUN**

The KM.3 H2O manual electrostatic gun is supplied with paint from the pump located in the bubble. The paint is electrically charge when circulating into the pump. The KM.3 H2O manual electrostatic gun is designed to negatively charge the material being sprayed, so that it is drawn to the positively grounded conductive object being coated.

As a result of the electrostatic charge of the paint particules, a more efficient and uniform application of the coating material is applied to the front but also on the sides, edges and back of the grounded workpieces.

4. SPECIFICATIONS

■ **COMMON FEATURES TO ALL KM.3 H2O GUNS**



The KM.3 H2O manual gun is supplied in a case with a complete range of accessories, electric cable, a gun cover, a detailed instruction manual and warning sign.

Weight (without hoses) : 620 g

Gun length : 285 mm / 11.2"

Opening of the fluid circuit : 'two-finger' trigger

Electric specifications

Type	without generator
Operating voltage (electrode)	adjustable between 20 kV to 50 kV (negative)
Maximum current at the electrode	100 µA
Low voltage display	by a red indicator LED on the STD 9B
Maximum current consumption	0.65 A at 8 V

Fluid specification

Fluid resistivity	0 MΩ (water-based materials)
Recommended fluid hose	insulating specific hose

Air specifications

Maximum operating air pressure	7 bar / 100 psi
Air inlet	M 1/4 NPS
Recommended air hose	conductive hose 8 mm / 5/16" diameter
Fan width adjustment	by a fan air control valve located on the gun itself

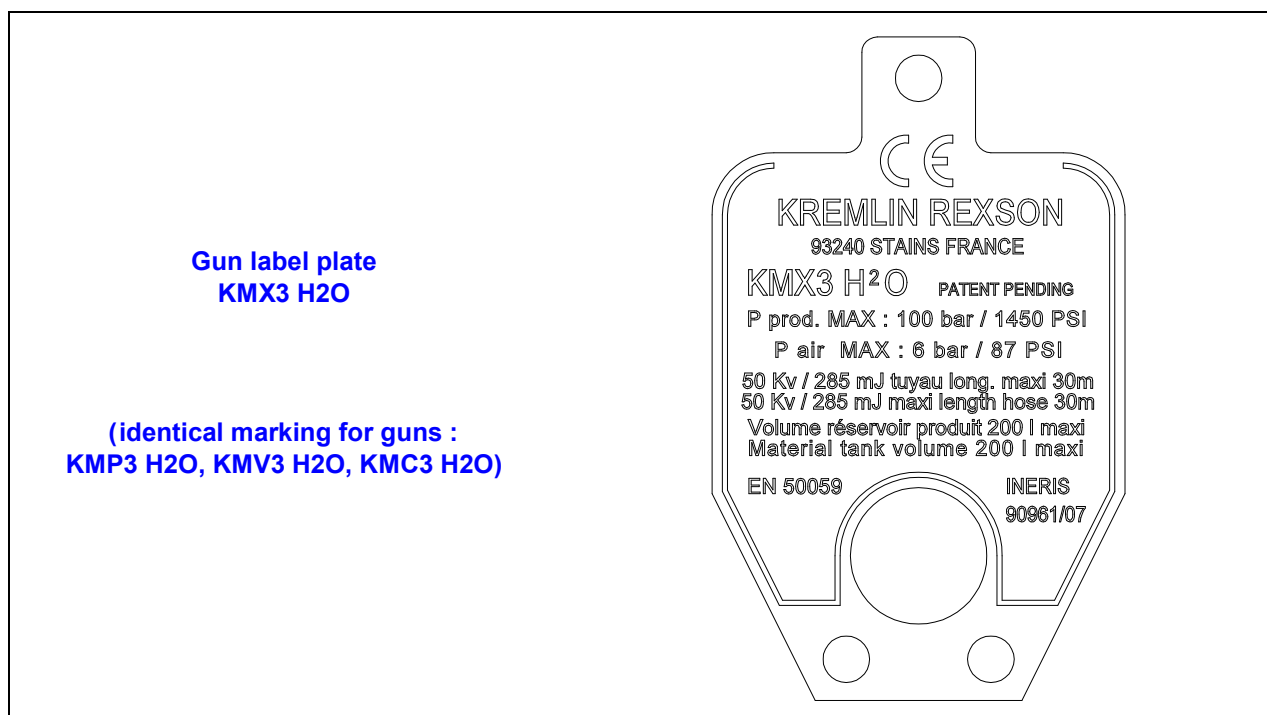


Gun operating temperature range....	From 0 to 40° C / from 32° to 104° F
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■ SPECIFIC FEATURES OF THE KM.3 EX GUNS

	AIRMIX® GUNS		PNEUMATIC GUNS	
	KMX 3 H2O	KMC 3 H2O	KMP 3 H2O	KMV 3 H2O
Gun assembly with air cap and nozzle	<i>KX 16 air cap or KVX 14</i> <i>09/135 nozzle</i>	<i>KXC 5 air cap</i> <i>K 30 nozzle</i>	<i>KP 3 air cap</i> <i>Ø 1,2 nozzle</i>	<i>KMV air cap</i> <i>Swirling fan nozzle</i>
Fluid specifications				
Fan pattern	Airmix® - Adjustable flat pattern	Airmix® - Round hollow spray	Pneumatic - Flat pattern	Pneumatic - round patern
Maximum viscosity	40 s CA 4 - For upper viscosity, please contact KREMLIN REXSON	40 s CA 4 - For upper viscosity, please contact KREMLIN REXSON	40 s CA 4 - For upper viscosity, please contact KREMLIN REXSON	40 s CA 4 - For upper viscosity, please contact KREMLIN REXSON
Maximum fluid pressure	100 bar / 1450 psi	100 bar / 1450 psi	10 bar / 145 psi	10 bar / 145 psi
Fluid flow rate and fan width	Adjustable by air flow rate variation on the air cap - Refer to AIRMIX® nozzle chart - Doc. 573.311.050.	Refer to AIRMIX® nozzle chart - Doc. 573.314.050.	Maxi 1 litre/minute Fan width at 25 cm : 30 cm	Maxi 1 litre/minute Fan width at 25 cm : 20 cm
Maximum fluid temperature	60° C / 140°F	60° C / 140°F	60° C / 140°F	60° C / 140°F
Wetted parts	Stainless steel - Polyamide - PETP - Nickel-plated brass - PTFE elastomer - Tungsten carbide - Polyacetale	Stainless steel - Polyamide - PETP - Nickel-plated brass - PTFE elastomer - Tungsten carbide - Polyacetale	Stainless steel - Polyamide - PETP - Nickel-plated brass - PTFE elastomer - Polyacetale - Polyethylene	Stainless steel - Polyamide - PETP - Nickel-plated brass - PTFE elastomer - Polyacetale - Polyethylene
Air specification	KX 16 air cap flow rate: 8 Nm3/h.	KXC 5 air cap flow rate: 8 Nm3/h.	KP 3 air cap flow rate : maxi 20 Nm3/h at 4 bar (58 psi)	KMV air cap flow rate: 16 Nm3/h at 4 bar (58 psi)

■ DESCRIPTION OF THE LABEL PLATE MARKING



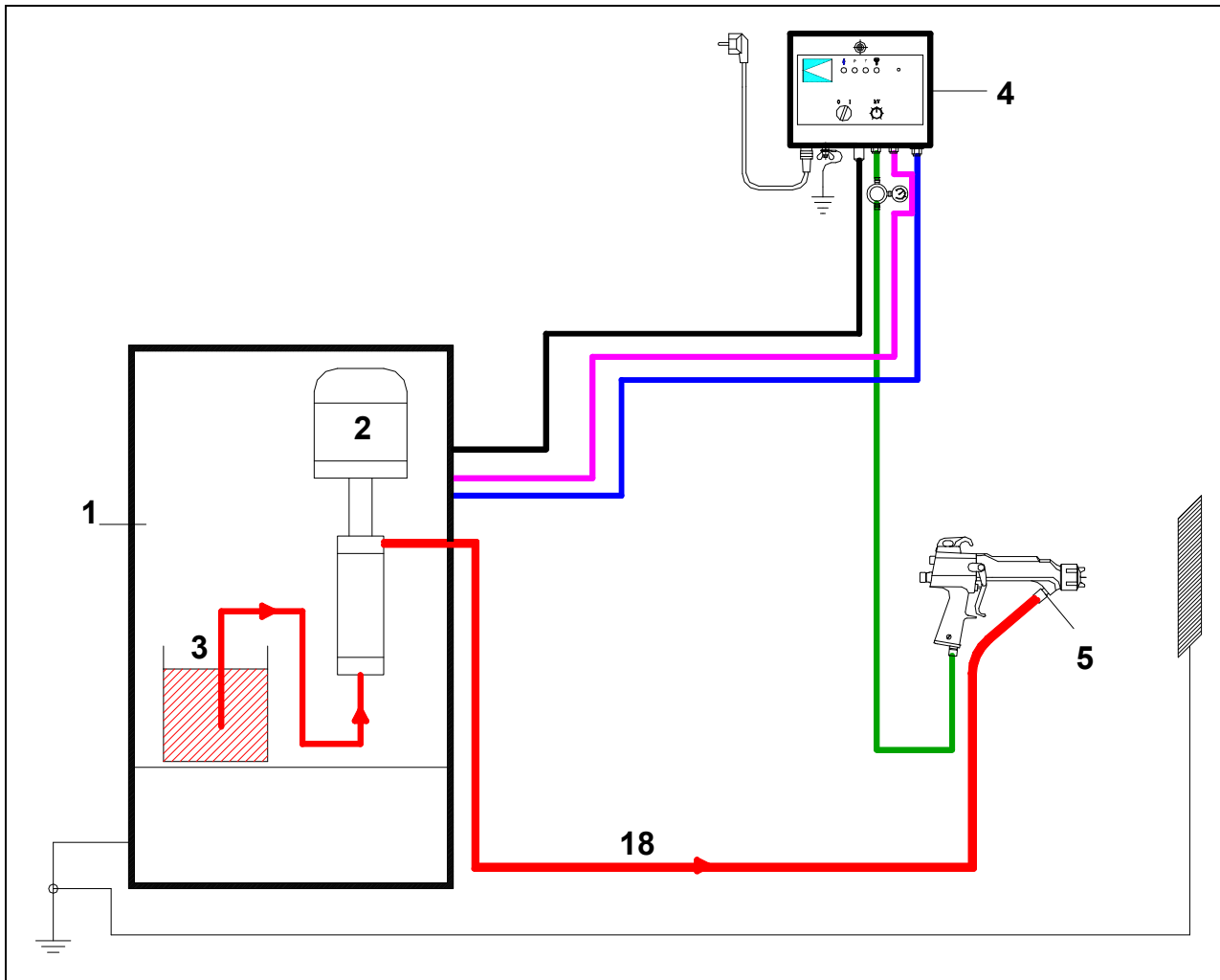
COMMON MARKING FOR THE GUNS	DESCRIPTION
CE	Marking : conformity to the european directives
KREMLIN REXSON 93240 STAINS FRANCE	Name and adress of the manufacturer
KMP3 H2O or KMV3 H2O or KMX3 H2O or KMC3 H2O	Gun version
PATENT PENDING	Patent pending
P prod. MAX : xxx bar / xxx psi	Maximum fluid pressure (depending upon version : 100 bar / 1450 psi for the KMX3 H2O and the KMC3 H2O 10 bar / 145 psi for the KMP3 H2O and KMV3 H2O)
P air MAX : 6 bar / 87 PSI	Maximum air supply pressure
50 kV / 285 mJ tuyau long. maxi 30m 50 kV / 285 mJ maxi length hose 30m	Insulated hose maximum length authorized between the insulating bubble and the gun with a supply of 50 kV
Volume réservoir produit 200l max Material tank volume 200 l maxi	Material tank maximum volume authorized by the certificate of conformity
EN 50059	Standard part number that specifies the requirements to get the certificate
INERIS 90691/07	N° de of the certificate given by INERIS

5. INSTALLATION

➔ REFER TO GENERAL SAFETY INSTRUCTIONS

A safe electrostatic system installation requires compliance with all applicable safety standards and requirements outlined in this manual. Any improper installation or misuse of the electrostatic coating system can cause serious body injury, fire, explosion or electric shock hazard.

■ INSTALLATION DIAGRAM



1	Bubble
2	Pump
3	Paint container

4	STD 9 B power supply unit
5	K3 H2O gun
18	Insulating specific hose

WARNING : Supply only one manual gun at the outlet of the pump.

The water-based equipment must not be located near a solvent installation.

The bubble must be inspected frequently and cleaned (inside and outside) to keep it free of coating material deposits.

Install the coating material supply equipment (pump or pressure tank) inside bubble. Connect all the hoses.



Ground the bubble earth cable to a real earth connection.

The parts located inside the bubble must not be grounded.

Compressed air supply to the electrostatic coating system must be **absolutely** dry and clean. To assure a proper operating of the equipment an air pressure of **6 bar / 87 psi** is required.

Close the bubble door. The gun operating depends on the door switch position.

- Switch off → Installation in operation.
- Switch on → Installation not in operation.

It is **compulsory** to connect the HV generator to a power supply model **STD 9 B**.

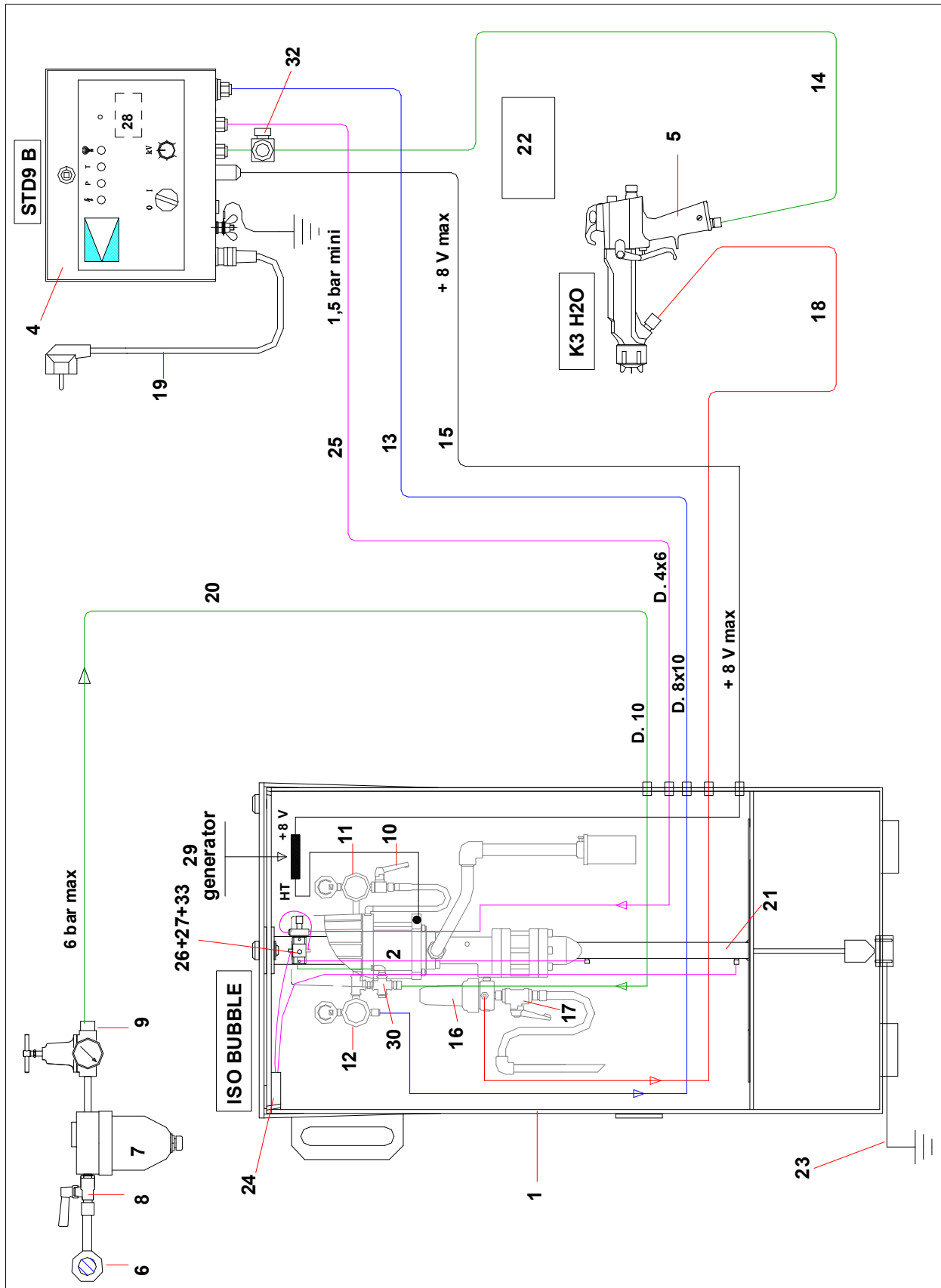


**Do not open the door of the bubble during the operating of the gun.
Wait for 3 seconds between the stopping of the gun and the opening of the bubble door to evacuate the electrical charge of the parts located inside the bubble.**

■ DIAGRAMS OF A TYPICAL INSTALLATION

Captions of the diagram hereafter

Ind	Description	Ind	Description
1	Bubble	17	Drain valve
2	Pump	18	Gun fluid supply hose (insulating specific hose)
4	STD9B power supply unit	19	Wire cable (230V + ground) or (115V + ground)
5	Gun	20	Insulating air hose (pump), Ø 10 / 3/8" dia , hoses 3/8 NPS
6	Main air supply	21	Ground connection single acting cylinder
7	Air and water separator	22	Safety warning sign
8	Main air valve	23	Earth cable
9	Main air regulator	24	Door switch
10	Air supply shut off valve	25	Connecting air pilot line (4 x 6)
11	Air regulator (fluid pressure)	26	Cell
12	Spraying air regulator	27	Air flow rate adjuster
13	Flowmeter air supply hose (8x10 / 5/16 x 3/8)	28	Flowmeter
14	Gun air supply hose (conductive) Ø 8 / 5/16" dia , hoses 1/4 NPS	29	Ex generator barrel (with cable ind. 15)
15	BG Ex low voltage cable (+ 8V max)	30	Air intake assembly
16	Fluid filter	32	Air regulator (STD9B power unit air outlet)



■ COMPRESSED AIR SUPPLY CONNECTION

Compressed air supply to the electrostatic coating system must be dry and clean. Dirt or moisture can ruin the quality of your finished workpiece and can cause the gun to malfunction.

To obtain the electrostatic wrap effect, you must supply the flow switch located in the power supply. Interconnect the hose (20) between the air pressure/air filter regulator (9) and the pump air supply (2). **The hose must be insulating.**

Interconnect the hose (13) between the pump air regulator (12) of the pump and the power supply air inlet (4).

Interconnect the hose (25) between the air flow rate adjuster (27) and the power supply (4).

The hoses (13 and 25) are non-conductor.

Interconnect the hose (14) between the regulator (32) mounted at the power supply air outlet (4) and the gun air inlet (5).

The regulator (32) enables to adjust the air pressure at the gun, especially when using an AIRMIX[®] gun.

The hose must be conductive.

■ PRODUCT SUPPLY CONNECTION

Never use damaged fluid hoses. Use only KREMLIN fluid hose designed for the resistivity range of the fluid to be sprayed.

Connect the fluid filter (16) onto the pump fluid outlet (2).

Connect the fluid drain valve (17) onto the fluid filter outlet (16).

Interconnect the fluid filter outlet (18) and the gun (5) with a fluid hose (18). **The hose is an insulating hose, specific for the use with a KM.3 H2O gun.**

■ VENTILATE THE SPRAY BOOTH

To prevent hazardous concentrations of toxic vapors, spray only in a correctly ventilated spray booth.

Never use damaged fluid hoses. Use only KREMLIN fluid hose designed for the resistivity range of the fluid to be sprayed.

High velocity air exhaust will decrease the operating efficiency of the electrostatic system (air exhaust velocity of 30 meters (98.5 ft)/minute should be sufficient).

Nevertheless, before operating the electrostatic coating system, make sure that the air velocity of the spray booth complies with the local regulations.

■ ELECTRICAL CHECKS

Before connecting the power supply unit on the main power source, be sure is compatible with the local voltage source.

With a megohmmeter, check the electrical grounding continuity between the ground connection of the power supply and the grounded AC Input power source (real earth connection).

With a megohmmeter, check the electrical grounding continuity between the conductive gun handle and this grounded AC Input power source (real earth connection) (1 M Ω maxi).

Do not attempt to by-pass or defeat the ground interconnections.

■ ELECTRICAL SUPPLY CONNECTION

Interconnect the low voltage cable (15) of the generator barrel (29) to the low voltage outlet of the power supply unit (4).

Interconnect the HV cable between the generator barrel (29) outlet and the pump (2) earth terminal.

6. STARTING UP

➤ REFER TO GENERAL SAFETY INSTRUCTIONS

■ SAFETY REQUIREMENTS

Before using the electrostatic coating system :

Check that the operators have fully understood the safety instructions stated in this manual.

The operators must not wear gloves which could insulate the hand from the conductive gun handle. If using gloves, check that they are conductive (in accordance with EN 50 053) or that a square has been cut out in the glove palm.

Be sure that the personnel entering the spraying area has read and understood the safety requirements stated in this manual and/or on the warning sign. Verify that any person entering the spray area is correctly grounded with conductive sole shoes or personal grounding straps.

Check that fans are in good operating condition.

Remove any useless parts from the spraying area and keep this area clean. Part holders and conveyor hooks must be cleaned frequently. All conductive objects must be electrically grounded as well.

■ PROCEDURE

To prime the pump and the connecting fluid line :

- Set the air pressure regulator (11) to 0 bar / 0 psi.
- Open the fluid drain valve (17).
- Immerse the suction and discharge hoses into the paint drum.
- Open the main air valve (8) and set the air regulator (9) to read 6 bar / 87 psi on the gauge.
- Open the air supply shut off valve (10) to supply air to pump.
- Increase the air pressure by opening the air pressure regulator (11) so that the pump runs slowly.
- When the fluid begins to flow regularly from the discharge hose, close the fluid drain valve (17).

Unscrew air cap retaining ring and remove retaining ring, air cap and tip from the Airmix ® gun.

Turn off the atomizing air.

Trigger the gun to dispense fluid into the fluid container.

If necessary turn on the knob assembly at the rear of the gun (5) counterclockwise to open the gun needle valve.

If necessary, increase the fluid pump air pressure.

Release gun trigger when the fluid flows regularly from the gun nozzle.

If necessary install a clean tip into the air cap. Position the air cap assembly over the needle seat or tip and secure in position with the retaining ring hand tightened onto the gun.

Adjust the atomizing air pressure on the air pressure regulator.

Caution : Be certain there is no air leak between power supply air outlet (4) and gun air inlet (5).

Turn on the fan air control valve located on the gun.

Trigger the gun to dispense spray coating material out of the gun air cap.

Release the trigger.

Close the door of the bubble.

Turn the ON / OFF power supply (4) switch to "I" :

The green indicator LED (VOLTAGE) illuminates.

The green indicator LED (TEST) illuminates.

Set up the high voltage knob fully clockwise to 85 kV.

Trigger the gun toward the grounded part to be coated.

When spraying :

The red and yellow indicator LEDs should illuminate.

The green indicator LED (TEST) should be off.

Adjust the following parameters :

Fluid flow rate :

Adjust the fluid flow rate using the knob assembly at the rear of the gun (5) (turn it counterclockwise to increase the flow rate or clockwise to decrease the flow rate).

Atomizing air :

Use the air pressure regulator (12) to adjust the atomizing air pressure.

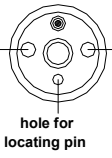
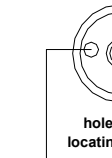
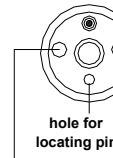
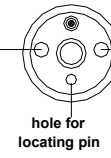




Caution : The air supply pressure of the power supply must be enough to have a connecting air pilot line (25) air pressure of at least from 1,5 to 2 bar / 21.3 to 29 psi.

Electrostatic effect :

Set up the electrostatic wrap-around effect with the high voltage adjustment knob (from 20 to 85 kV).

Caution : the fluid and air hoses and the gun must remain clean. The electrostatic wrap effect efficiency decreases quickly when gun and hoses are dirty.

■ **FAN PATTERN ADJUSTMENTS (KM.3 H2O GUNS)**

	KMP H2O	KMV H2O	KMX H2O	KMC H2O
AIR CAP ADAPTER	black	white	black	white
FRONT VIEW				
SPRAY FAN	atomization fan width	wide fan narrow fan	atomization narrow fan	wide fan narrow fan
ADJUSTED BY	general air supply air adjust. knob	air adjust. knob general air supply	general air supply air adjust. knob	air adjust. knob general air supply
FAN PATTERN				

7. DAILY CARE AND CLEANING

➤ **REFER TO GENERAL SAFETY INSTRUCTIONS**

Cleaning and flushing of the electrostatic coating system must be carried out in a ventilated area. The ON/OFF switches on the power supply and gun must be OFF before starting cleaning operation

■ **FLUID NETWORK CLEANING METHOD**

Important recommendations

All metallic parts located within 4 m / 13 ft around the gun must be correctly connected to the ground. The floor must be electrically conductive and grounded.

Flush the system with water or with the appropriate cleaning solvent.

Before switching on the electrostatic effect :

- Install the air cap assembly over the needle seat or tip and secure in position with retaining ring onto the gun.
- Check that the cleaning material is totally evacuated from the gun hoses.

Procedure

Turn the ON / OFF switch on the power supply (**All indicator lights switch off**).

Turn off the atomizing air shut off valve (10).

Fully screw clockwise the needle stop at the rear of the gun.

Trigger the gun until the atomizing air stops flowing from the front of the gun.

Empty all material from the container, then fill material container with a cleaning material compatible with the material just emptied.

Remove air cap and tip from gun.

Fully unscrew counterclockwise the needle stop at the rear of the gun (fluid passage open).

Decrease air pressure (air regulator - ind. 11) on pump air motor (KMX 3 H₂O, KMC 3 H₂O guns).

Turn on the atomizing air shut off valve (10).

Trigger the gun to dispense solvent into a grounded waste container until the solvent is clean. If necessary, increase the fluid pump air pressure.

When clear cleaning material flows from the gun, stop the pump and depressurize the fluid hoses.

Blow up the fluid hose with compressed air.

Reassemble the air cap and tip onto the spray gun.

■ GUN CLEANING METHOD RECOMMENDED

Never immerse the gun in solvent.

Do not use tools to clean the gun on the air holes, as they scratch them and create a distortion of the spray pattern.

Only use soft cloth or brittle brush.

Clean the front of the gun and the fluid nozzle with the gun pointed down.

■ AIR CAP CLEANING METHOD RECOMMENDED

Make sure that the fluid pressure has been released in fluid hose.

Remove the air cap ring and air cap from the spray gun.

Clean them with a soft brush and some solvent (do not leave these items immersed in solvent).

Blow up the air cap and air cap ring with compressed air.

On KMX3 H₂O and KMC3 H₂O guns, check the electrode wire :

the wire is bent : straighten it;

the wire is broken or damaged : replace it,

never start up a gun whose electrode wire is damaged or broken.

8. TROUBLESHOOTING CHART AND ELECTRICAL TESTS

■ GUN OPERATION TROUBLESHOOTING CHART

TROUBLE	PROBABLE CAUSE	SOLUTION
Jerking or spitting spray.	Air is being suctioned into material stream.	Check pump suction hose for leaks and tighten fittings. If necessary, use thread sealant on male thread.
	Unsufficient fluid pressure	Increase pump air pressure and / or clean fluid filter.
	Dirt in the fluid line.	Clean fluid line, clean fluid filter.
	Not enough fluid in the fluid container.	Fill fluid container.

■ GUN OPERATION TROUBLESHOOTING CHART (CONT'D)

No fluid output.	Tip blocked. Dirt in the fluid being applied. Fluid passage in gun obstructed. Fluid filter clogged. Low fluid filter.	Clean air cap and tip. Use a finer fluid filter or replace a damaged filter. Clean fluid passage and check for obstructed needle valve. If necessary use an inline fluid filter. Clean fluid filter. Increase pump air pressure / check fluid filter.
Fluid continuously leaking from gun tip.	Needle tip or seat worn. Needle tip not fully seated.	Replace needle tip and seat. Replace a weak or damaged needle spring.
Fluid leaks above the gun trigger.	Worn cartridge.	Replace cartridge assembly.
Fluid leaks through holes in air cap.	Loose air cap Improper position of tip over the needle seat (KMX3 H2O, KMC3 H2O). O Ring on seat worn or damaged.	Tighten air cap retaining ring; do not overtighten. Clean air cap and tip. Check that fluid did not flow back in the air passages Replace O Ring or if necessary replace seat (assembly).
Poor atomization	Tip obstructed / Tip clogged (KMX3 H2O - KMC3 H2O). Low fluid pressure (KMX3 H2O - KMC3 H2O). Fluid viscosity too high Atomizing air pressure too low. Fluid flow rate too high (KMV3 H2O - KMP3 H2O).	Clean tip or replace tip. Increase pump air pressure and / or clean fluid filter. Reduce viscosity adding compatible solvent (or heating material where appropriate). Increase atomizing air pressure. Decrease fluid flow rate (decrease pump air pressure).
"Orange peel" finish	Improper distance between gun and work part. Improper thinner of fluid being sprayed. Poor atomization	Adjust spraying distance and work closer. Dilute fluid with solvent. Increase air atomization pressure (KMX3 H2O - KMC3 H2O). Increase pump air pressure. Use smaller tip size.
Fluid runs	Low solids material or low viscosity.	Spray at a greater distance. Reduce pump air pressure. Use smaller tip size (KMX3 H2O - KMC3 H2O). Increase air atomization pressure.
Excessive delivery in middle of spray (non homogeneous spraying)	Excessive fluid flow rate (KMP3 H2O - KMV3 H2O). Improper tip size (KMX3 H2O). Improper fluid thinner. Air holes in air cap obstructed	Reduce fluid flow rate. Increase air atomization pressure. Use a smaller tip. Dilute fluid with solvent or heating fluid where appropriate. Clean air cap thoroughly with solvent. Blow air holes clean with compressed air.

■ ELECTRICAL TROUBLESHOOTING CHART

TROUBLE	PROBABLE CAUSE	SOLUTION
No electrostatic effect (no wrap around)	<p>No high voltage.</p> <p>Improper distance between gun and work part.</p> <p>Poorly grounded parts.</p> <p>High exhaust velocity in booth.</p> <p>Excessive fluid pressure.</p> <p>Atomizing air pressure too high (KMP3 H2O - KMV3 H2O).</p> <p>Improper fluid viscosity.</p> <p><u>Short circuit between the gun electrode and the grounded handle through :</u></p> <ul style="list-style-type: none"> - the outside of the gun, - the fluid needle, - the air channel, - the fluid hose. 	<p>Check for low voltage from power supply, check power supply manual, troubleshooting. Check the electrical interconnection.</p> <p>Adjust spraying distance between 200 and 300 mm (8" to 12").</p> <p>Check that parts, holder and conveyors are correctly grounded. Clean where necessary.</p> <p>Reduce exhaust velocity (within standard limit).</p> <p>Reduce pump air pressure.</p> <p>Reduce air atomization pressure.</p> <p>Check with supplier for proper fluid for electrostatic spraying.</p> <p>Clean and dry the outside of the gun. Install a new clean and dry gun cover.</p> <p>Replace worn cartridge as well as needle. Clean and dry needle pipe</p> <p>Replace tip and seat O Rings. Supply gun with dry compressed air.</p> <p>Be certain that there is an insulating specific hose.</p>
Operator receives mild shocks.	Operator not properly grounded or in contact with a non-grounded object.	<p>Be certain that floor is properly grounded. Wear shoes with conductive soles and wear personal grounding strap. Be sure the operator is in contact with metallic parts on the gunhandle. If wearing gloves they must be conductive or modified (as explained chapters 2 and 6).</p> <p>Be sure that the operator is not in contact with any metallic items which could build up electrical charge.</p> <p>Check cartridge tightness.</p>
Operator receives mild shocks when touching the work part.	Gun and work part not properly grounded.	Check the parts, hook and conveyor systems are properly grounded. Clean holders and conveyor systems, scape if necessary.

■ ELECTRICAL TEST

The following electrical test must only be carried out by qualified electricians; these tests must not be carried out when the electrostatic coating system is working.

Check the electrical grounding

Use a megohmmeter to check that all metallic parts located in the spraying area are properly grounded.

With a megohmmeter, check the electrical grounding continuity between the ground connection of the power supply and :

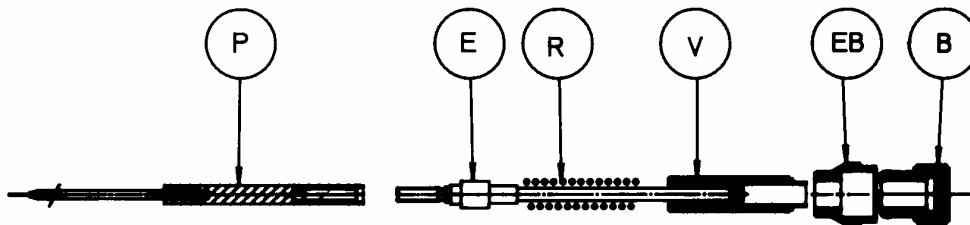
- metallic parts on gun handle,
- air fittings on the gun handle and the grounded air hose,
- the needle stop at the rear of the gun.

If you notice an improper electrical grounding continuity on the gun, consult immediately your local authorized KREMLIN distributor for assistance.

9. MAINTENANCE

➔ REFER TO GENERAL SAFETY INSTRUCTIONS

■ REPLACEMENT OF NEEDLE



Removal

Unscrew needle stop (B).

Unscrew stop nut (EB) using KREMLIN wrench.

Unscrew screw (V) using the small wrench.

Take care to spring (R) release.

Remove spring (R).

Pull metallic carrier (E).

Unscrew assembled needle (P) (plastic section) from metallic carrier (E) to remove the needle.

Installation

Screw the new assembled needle on carrier (E).

Grease the needle - Insert needle line.

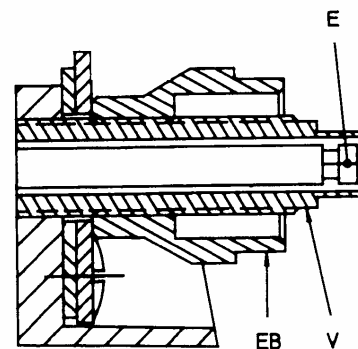
Position spring.

Retighten screw (V).

Important : carrier (E) must be flush with screw end (V) (as shown on the opposite drawing).

Block with lock nut (EB).

Re-screw needle stop (B).



■ SEAT REPLACEMENT

Nota important :

The KM.3 H2O guns are supplied with seat seals made of special quality material (Polyfluid) – To maximize fluid proofness, we recommend the replacement with seals of same quality. Refer to part breakdown and list for part numbers.

Removal

Check the fluid pressure has been relieve in the paint circuit.
Remove the air cap and retaining ring.
Unscrew needle seat with the supplied KREMLIN wrench.

Installation

Before installing the new seat, check that the needle stop (B) at the back is fully unscrewed.
Grease seal of new seat using insulating grease.
Screw and slightly block the seat.
Install the cap and retaining ring.
Pressurize.

■ **CARTRIDGE REPLACEMENT**

Removal

Proceed as above indicated for needle line and seat removal.
Insert the screwdriver supplied with the equipment at the back of the gun. Turn the screwdriver clockwise for unscrewing the cartridge.
When the cartridge is unscrewed, psuh it with the screwdriver and remove it from the front.

Installation

Lubricate the new cartridge using insulating grease. **Insert it at the front part** of the gun.
Screw it at the back part of the gun using the screwdriver.
Install needle line as previously indicated.
Pressurize.
If you notice a light leak at the cartridge, tighten it slightly **round the front**.

■ **TRIGGER REPLACEMENT**

Unscrew on 5 mm lengthy the two screws retaining the trigger. Pull on trigger.
Install new trigger.
Re-tighten (by hand) until trigger easily turns on the axis of the screws.

■ **AIR VALVE REPLACEMENT**

Switch off air pressure to gun.
Trigger the gun to de-pressurize the hoses.
Remove the trigger.
Unscrew valve with the hexagon key supplied.
Grease seals of new valve.
Screw new valve to stop, slightly block.
Install trigger and pressurize.

■ **HOOK REPLACEMENT**

Unscrew nut located at the back using the screwdriver supplied.
Slide the hook to the front.
Install new hook. Slightly tighten the screw at the back of gun to block the hook.