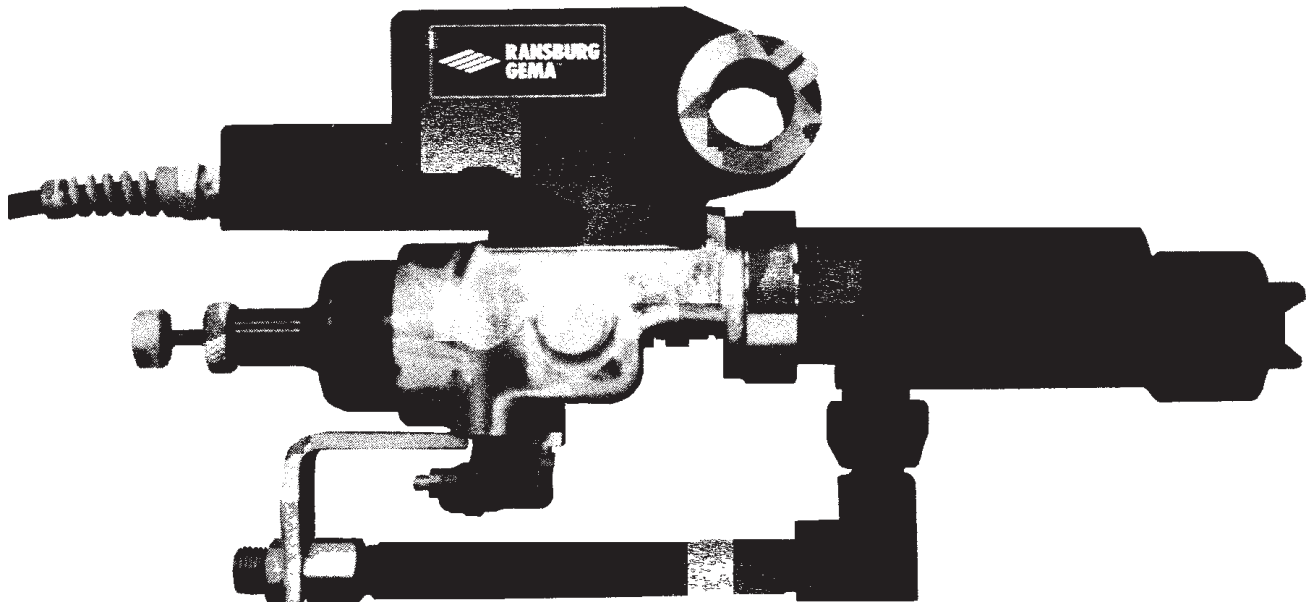
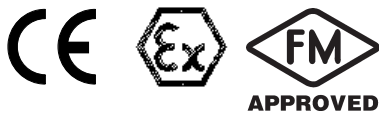

REM™ AUTOMATIC APPLICATOR



MODEL: 73499



IMPORTANT: Before using this equipment, carefully read **SAFETY PRECAUTIONS**, starting on page 1, and all instructions in this manual. Keep this Service Manual for future reference.

Service Manual Price: €15.00 (Euro)
\$20.00 (U.S.)

NOTE: This manual has been changed from **AA-87-02.2** to revision **AA-87-02.3**. Reasons for this change are noted under “Manual Change Summary” inside the back cover of this manual.

CONTENTS

| | PAGE |
|---|--------------|
| SAFETY: | 1 - 4 |
| SAFETY PRECAUTIONS..... | 1 |
| HAZARDS/SAFEGUARDS..... | 2-4 |
| ATEX | 5-6 |
| EUROPEAN ATEX DIRECTIVE..... | 5 |
| EUROPEAN ATEX LABELS..... | 6 |
| INTRODUCTION: | 7-8 |
| GENERAL DESCRIPTION..... | 7 |
| SPECIFICATIONS..... | 7 |
| REM PROCESS..... | 8 |
| INSTALLATION: | 9-10 |
| REM AUTOMATIC APPLICATOR INSTALLATION..... | 9 |
| OPERATION: | 11-14 |
| SAFE OPERATION..... | 11 |
| THE RIGHT TECHNIQUE..... | 11-12 |
| PREPARTION..... | 12-13 |
| NOZZLE SELECTION GUIDE..... | 14 |
| MAINTENANCE: | 13-28 |
| SAFE MAINTENANCE..... | 13-14 |
| ROUTINE MAINTENANCE SCHEDULE..... | 14 |
| PROCEDURES..... | 15-17 |
| TROUBLESHOOTING GUIDE..... | 18-19 |
| SERVICE..... | 20 |
| SERVICE PROCEDURES..... | 20-26 |
| TUBE AND LINE INSTALLATION / REPLACEMENT..... | 27-28 |
| PARTS IDENTIFICATION: | 29-32 |
| REM AUTOMATIC APPLICATOR EXPLODED VIEW / PARTS LIST..... | 29-31 |
| 72453-00 REPAIR KIT..... | 31 |
| CABLE ASSEMBLIES..... | 32 |
| PLUG ASSEMBLIES..... | 32 |
| WARRANTY POLICIES: | 33 |
| LIMITED WARRANTY..... | 33 |

SAFETY

SAFETY PRECAUTIONS

Before operating, maintaining or servicing any ITW Ransburg electrostatic coating system, read and understand all of the technical and safety literature for your ITW Ransburg products. This manual contains information that is important for you to know and understand. This information relates to **USER SAFETY** and **PREVENTING EQUIPMENT PROBLEMS**. To help you recognize this information, we use the following symbols. Please pay particular attention to these sections.

A WARNING! states information to alert you to a situation that might cause serious injury if instructions are not followed.

A CAUTION! states information that tells how to prevent damage to equipment or how to avoid a situation that might cause minor injury.

A NOTE is information relevant to the procedure in progress.

While this manual lists standard specifications and service procedures, some minor deviations may be found between this literature and your equipment. Differences in local codes and plant requirements, material delivery requirements, etc., make such variations inevitable. Compare this manual with your system installation drawings and appropriate ITW Ransburg equipment manuals to reconcile such differences.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting. If you do not have the manuals and safety literature for your Ransburg system, contact your local ITW Ransburg representative or ITW Ransburg.


WARNING




► The user **MUST** read and be familiar with the Safety Section in this manual and the ITW Ransburg safety literature therein identified.



► This manual **MUST** be read and thoroughly understood by **ALL** personnel who operate, clean or maintain this equipment! Special care should be taken to ensure that the **WARNINGS** and safety requirements for operating and servicing the equipment are followed. The user should be aware of and adhere to **ALL** local building and fire codes and ordinances as well as **NFPA-33 SAFETY STANDARD**, prior to installing, operating, and/or servicing this equipment.

WARNING

► The hazards shown on the following page may occur during the normal use of this equipment. Please read the hazard chart beginning on page 2.

| AREA Tells where hazards may occur. | HAZARD Tells what the hazard is. | SAFEGUARDS Tells how to avoid the hazard. |
|--|--|---|
| <p>Spray Area</p>  | <p>Fire Hazard</p> <p>Improper or inadequate operation and maintenance procedures will cause a fire hazard.</p> <p>Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent power supply shutdown indicates a problem in the system requiring correction.</p> | <p>Fire extinguishing equipment must be present in the spray area and tested periodically.</p> <p>Spray areas must be kept clean to prevent the accumulation of combustible residues.</p> <p>Smoking must never be allowed in the spray area.</p> <p>The high voltage supplied to the atomizer must be turned off prior to cleaning, flushing or maintenance.</p> <p>When using solvents for cleaning:</p> <p>Those used for equipment flushing should have flash points equal to or higher than those of the coating material.</p> <p>Those used for general cleaning must have flash points above 100°F (37.8°C).</p> <p>Spray booth ventilation must be kept at the rates required by NFPA-33, OSHA, and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents.</p> <p>Electrostatic arcing must be prevented.</p> <p>Test only in areas free of combustible material.</p> <p>Testing may require high voltage to be on, but only as instructed.</p> <p>Non-factory replacement parts or unauthorized equipment modifications may cause fire or injury.</p> <p>If used, the key switch bypass is intended for use only during set-up operations. Production should never be done with safety interlocks disabled.</p> <p>Never use equipment intended for use in waterborne installations to spray solvent based materials.</p> <p>The paint process and equipment should be set up and operated in accordance with NFPA-33, NEC, and OSHA requirements.</p> |

| AREA Tells where hazards may occur. | HAZARD Tells what the hazard is. | SAFEGUARDS Tells how to avoid the hazard. |
|---|--|---|
| General Use and Maintenance  | Improper operation or maintenance may create a hazard. Personnel must be properly trained in the use of this equipment. | Personnel must be given training in accordance with the requirements of NFPA-33. Instructions and safety precautions must be read and understood prior to using this equipment. Comply with appropriate local, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, and your insurance company requirements. |
| Electrical Equipment  | High voltage equipment is utilized. Arcing in areas of flammable or combustible materials may occur. Personnel are exposed to high voltage during operation and maintenance. Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation. Frequent power supply shutdown indicates a problem in the system which requires correction. An electrical arc can ignite coating materials and cause a fire or explosion. | The power supply, optional remote control cabinet, and all other electrical equipment must be located outside Class I or II, Division 1 and 2 hazardous areas. Refer to NFPA-33. Turn the power supply OFF before working on the equipment. Test only in areas free of flammable or combustible material. Testing may require high voltage to be on, but only as instructed. Production should never be done with the safety circuits disabled. Before turning the high voltage on, make sure no objects are within the sparking distance. |
| Toxic Substances  | Certain material may be harmful if inhaled, or if there is contact with the skin. | Follow the requirements of the Material Safety Data Sheet supplied by coating material manufacturer. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials. Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved. |

| AREA Tells where hazards may occur. | HAZARD Tells what the hazard is. | SAFEGUARDS Tells how to avoid the hazard. |
|---|---|---|
| <p>Explosion Hazard / Incompatible Materials</p>  | <p>Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1,-Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.</p> | <p>Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your material supplier. Any other type of solvent may be used with aluminum equipment.</p> |
| <p>Spray Area / High Voltage Equipment</p>  | <p>This is a high voltage device that can produce electrical arcs capable of igniting coating materials.</p> | <p>Parts being sprayed must be supported on conveyors or hangers and be grounded. The resistance between the part and ground must not exceed 1 megohm. (Reference NFPA-33.)</p> <p>A safe distance must be maintained between the parts being coated and the atomizer bell. A distance of at least 1 inch for each 10 kV of power supply output voltage is required at all times.</p> <p>Parts must be supported so that they will not swing and reduce the clearance specified above.</p> <p>All electrically conductive objects in the spray area, with the exception of those objects required by the process to be at high voltage, must be grounded.</p> <p>Unless specifically approved for use in hazardous locations, the power supply and other electrical equipment must not be used in Class I, Division 1 or 2 locations.</p> |
| <p>Personnel Safety</p> | <p>Skin puncturing by sharp electrode.</p> | <p>Take precautions to see that flesh is not punctured by sharp electrode.</p> |

EUROPEAN ATEX DIRECTIVE 94/9/EC, ANNEX II, 1.0.6

The following instructions apply to equipment covered by certificate number Sira 08ATEX5040X:

1. The equipment may be used with flammable gases and vapors with apparatus groups II and with temperature class T6.
2. The equipment is only certified for use in ambient temperatures in the range +12.8°C to +40°C and should not be used outside this range.
3. Installation shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-14:1997.
4. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-17.
5. Repair of this equipment shall be carried out by suitable trained personnel in accordance with the applicable code of practice e.g. EN 60079-19.
6. Putting into service, use, assembling, and adjustment of the equipment shall be fitted by suitably trained personnel in accordance with the manufacturer's documentation.

Refer to the "Table of Contents" of this service manual.

- a. Installation
- b. Operation
- c. Maintenance
- d. Parts Identification

7. Components to be incorporated into or used as replacement parts of the equipment shall be fitted by suitably trained personnel in accordance with the manufacturer's documentation.

8. The certification of this equipment relies upon the following materials used in its construction:

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

Aggressive substances: e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

Suitable precautions: e.g. regular checks as part of routine inspections or establishing from the material's data sheets that it is resistant to specific chemicals.

Refer to "Specifications" in the "Introduction" section:

- a. All fluid passages contain stainless steel or nylon fittings.
- b. High voltage cascade is encapsulated with a solvent resistant epoxy.

9. A recapitulation of the certification marking is detailed in the "Atex" section, on the next page, drawing numbers: 72354, 72562, and 76859.

10. The characteristics of the equipment shall be detailed e.g. electrical, pressure, and voltage parameters.

The manufacturer should note that, on being put into service, the equipment must be accompanied by a translation of the instructions in the language or languages of the country in which the equipment is to be used and by the instructions in the original language.

REM Automatic Applicator 73499 ATEX Product Marking Definitions

Ex Certificate Number: Sira 08 ATEX 5040X

Sira = Notified Body performing EC-type examination

08 = Year of certification

ATEX = Reference to ATEX Directive

5 = Protection Concept Code (code 5 is titled Encapsulation)

040 = Document serial number

X = Special conditions for safe use apply

Special conditions for safe use: The REM Automatic Atomizer 73499 shall only be used with associated 76580-XX Control Unit.

Product Marking



Ex = Specific marking of explosive protection

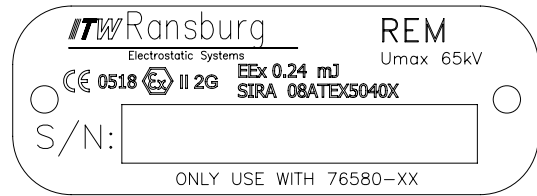
II = Equipment Group hazardous area characteristics

2 = Equipment Category

G = Type of explosive atmosphere (gases, vapors, or mists)

EEx 0.24mJ = The REM Automatic Applicator 73499 is suitable for use in automatic spraying installations complying with EN 50050 as they are a Type A class with a discharge energy limit of 0.24mJ.

Label 72354



Label 72562

ITW Ransburg, Angola, IN, USA

Electrostatic Systems

WARNING
FAILURE TO OBSERVE THE FOLLOWING PRECAUTIONS MAY RESULT IN AN ELECTRICAL DISCHARGE CAPABLE OF STARTING A FIRE.

1. THE ARTICLE BEING COATED MUST BE GROUNDED.
2. ALL OTHER ELECTRICALLY CONDUCTING OBJECTS WITHIN ABOUT TEN FEET OF THE OPERATING SPRAY GUN MUST BE GROUNDED.
3. THIS CONTROL UNIT/POWER SUPPLY MUST BE INTERLOCKED WITH THE SPRAY BOOTH VENTILATORS SO AS TO PREVENT OPERATION OF THE POWER SUPPLY UNLESS VENTILATING FANS ARE IN OPERATION.
4. SERVICE WARNING - ENCLOSURE PROTECTS AGAINST SHOCK AND INJURY. SERVICE TRAINING REQUIRED.
5. KEEP POWER SUPPLY OUTSIDE THE HAZARDOUS AREA.
6. DO NOT ATTEMPT OPERATION OR REPAIR BEFORE READING SERVICE MANUAL.
7. FOR ELECTROSTATIC PAINT FINISHING APPLICATIONS.

CONTROL UNIT/POWER SUPPLY

| | | | |
|----------------|---------|------------|----------------|
| PART No. | | SERIAL No. | |
| VOLTS | 115/220 | "C" | AMPERES |
| HERTZ | 50/60 | "D" | WATTS |
| OUTPUT VOLTAGE | "F" | "E" | OUTPUT CURRENT |

THIS POWER SUPPLY TO BE USED ONLY WITH THE FOLLOWING ITW RANSBURG SPRAY GUNS:

| | | | |
|-----------------------|--------|---------|-----------------|
| GUN MODEL | "A" | "B" | MAX PAINT PRESS |
| MAX APPROX CBL LENGTH | 100 FT | 100 PSI | MAX AIR PRESS |

FLOW SWITCH

| | |
|---------------|-----------------|
| MAX AIR PRESS | FLOW PRESS |
| 100 PSI | 25 CFM @ 20 PSI |

FM APPROVED

CE 0518 Ex II (2)G EN 50050 SIRA 08ATEX5040X

LABEL REMOVAL VOID WARRANTY

Label 76859

APPROVED FOR ELECTRO. FIN. APPL. CL. I, GP. D, SPRAY MATL. AIR ATOMIZING SYSTEM WHICH CONSISTS OF THE FOLLOWING:

REM AUTOMATIC
73499-36(50,75,100); 1(2,3,4) APPLICATOR
76580-4, 1(2), 0, 0(2), 1(2,3) LOW VOLTAGE POWER SUPPLY

OR
REM MANUAL
72364-36(50,75,99); 01(02) APPLICATOR
76580-2, 1(2), 0, 0(1), 1(2,3) LOW VOLTAGE POWER SUPPLY
74187-36(50,75,100) AIR HOSE

FOR USE WITH THE FOLLOWING:

7994-36(50,75,100) FLUID HOSE
78084-36(50,75,100) LOW VOLTAGE CABLE

FM APPROVED
SIRA 08ATEX5040X

INTRODUCTION

GENERAL DESCRIPTION

The REM™ Automatic Applicator applies an 85 kV DC charge to the coating materials at the point of atomization. This electrostatic charge allows a more efficient, uniform application of coating material to the front, edges, sides, and back of products, making it highly suitable for applying coatings to a variety of surface configurations, large targets, small parts, tubular wares, concave and recessed parts, etc. Because it is a grounded fluid system, it is highly suitable for applying a wide range of solvent reduced coatings such as enamels, lacquers, epoxies, etc.

One of the many features of the REM System is that the electrical discharge which is available from the resistive charging electrode is limited to the optimum level of safety and efficiency.

Paint consumption savings of 25% to 50% over conventional air spray are possible with the ITW Ransburg REM Applicator. Curved and recessed surfaces may be uniformly finished in fewer passes because combined air and electrostatic forces literally follow the shape of the work surface. Bounce losses from work are reduced by the proper use of electrostatic attraction.

The REM Automatic Applicator System includes the automatic applicator (with various nozzle selections), low voltage cable, air and fluid hoses and a control unit with an air and coating material filter assemblies.

SPECIFICATIONS

Environmental / Physical

| | |
|--------------------------------|---|
| Hose and Cable Lengths: | |
| Lengths: | 25 ft. (Optional: 36, 50, 75, and 100 ft.) |
| Assembly: | Multiple Fluid Nozzles (See "Nozzle Selection Guide" in the "Operation" section.) |
| Weight: | 3.2 lbs. |
| Length: | 12-inches |
| Cable Length: | 120 ft. maximum |

Electrical Requirements

| | |
|----------------------------|----------------------------|
| Output Voltage: | 85 kV (maximum) |
| Output Current: | 120 Microamperes (maximum) |
| Operating Pressure: | |
| Fluid: | 1000 psi |
| Air: | 0-100 psi |
| Consumption: | .5 CFM @ 30 psi |
| Fluid Flow Rate: | Variable to 1,000 cc/min. |

REM PROCESS

This is an air assisted method for electrostatically applying coatings to objects. The REM system applies a high voltage DC charge to the applicator nozzle electrode, creating an electrostatic field between the atomizer and the target object. The target is electrically grounded through its support which may be either stationary or moving.

A regulated pressure fluid system delivers coating material to the atomizer. There the coating material is atomized by passing through an orifice under pressure, the resulting spray mist under the influence of the electrostatic field, becomes electrically charged. The air supply to the applicator is adjustable at the rear of the applicator and aids in shaping the coating material into a desired pattern. The charged particles are attracted to and deposited on the target object. The forces between the charged particles and the grounded target are sufficient to turn most normal overspray around and deposit it on the back surface of the target. Therefore, most of the spray is deposited.

A control unit provides either manual or automatic operation of the equipment. Controls normally include, but are not limited to atomizing, triggering, and shaping air, fan, and conveyor interlocks and a protective current overload device.

NOTES

INSTALLATION

REM AUTOMATIC APPLICATOR INSTALLATION

This information is intended ONLY to indicate the general installation parameters of this product and, where applicable, its working relationship to other ITW Ransburg system components in typical use. Each installation is unique and should be directed by an ITW Ransburg representative or made from the ITW Ransburg installation drawings provided for your particular installation.

Safe Installation

- Ground the spray booth, the paint supply, and the conveyor or work support.
- Ground all solvent and waste safety containers.
- Ground all work holders and hooks and keep them free of paint.
- Ground the target object to a structural ground and not back to the applicator system. See that all target objects have a resistance to ground of one megohm or LESS.
- See that all elements of the coating system are correctly grounded, connected, and located.
- Position all ancillary non-approved electrical apparatus, including but not limited to: high voltage power supplies, fluid pumps, air compressors, outside of the hazardous location. (See the appropriate NFPA and/or OSHA guidelines for your application and equipment.)
- Provide appropriate fire extinguishing equipment.
- Provide conductive flooring in all spray areas.

! WARNING

► Install and route the hoses and cable so they are **NOT** exposed to temperature in excess of 120° F and so that all hose and cable bends are **NOT LESS** than a 6-inch (15cm) radius. Failure to comply with these parameters could cause equipment malfunctions that might create **HAZARDOUS CONDITIONS!**

! WARNING

► The control unit **MUST** be located outside of the spray area. Install units in accordance with the requirements of local regulations.

Low Voltage Cable

Connect the low voltage cable to the control unit low voltage socket. Gently hand tighten the cable retaining nut. The control unit **MUST** be connected through conduit with an explosion-proof switch on or near the spray booth where it will be convenient to the operator.

NOTE

► Refer to the current “Low Voltage Control Unit” service manual for proper installation.

**CAUTION**

► An air filter **MUST** be installed to prevent contamination of the coating material by the shaping air.

Filters

Install an air filter assembly on the factory air regulator. Screw the fitting into the filter inlet. The filter **MUST** be installed with the arrow pointing in the direction of flow. (See the appropriate “Control Unit” service manual for installation details.)

Line Hose - Fluid

ITW Ransburg supplies a standard 36-foot hose. Optional hose lengths of 50, 75, and 100-feet are available. ITW Ransburg offers this hose **ONLY** as a complete assembly to ensure that the hose is properly grounded at each end fitting.

NOTES

OPERATION

These Operating Instructions indicate the general operating parameters for this product in a normal working relationship with other ITW Ransburg system components in typical use. Each user application is unique and operation should be initiated under the guidance of an ITW Ransburg representative and/or be based on carefully conducted tests and on careful observation of the initial production characteristics.

SAFE OPERATION

- Ground operators and all other persons in spray areas by requiring that they wear conductive soled shoes or grounding straps.
- Have exhaust fans operating while spraying.
- See that no more than 1-gallon of solvent per safety container per operator is inside of the hazard location.
- If ANY symptom of improper operation occurs, suspend use of the unit until the problem has been diagnosed and corrected. See the appropriate "Troubleshooting Guide" or contact your ITW Ransburg representative.
- Ground **MUST** be maintained during the addition of fluid to any supply container! Whenever transferring flammable fluid from one container to another, both containers **MUST** be properly connected to a proven ground first and then to each other. Personnel executing such a transfer **MUST** also be grounded.
- A chemical reaction, resulting in the possibility of a pressure **EXPLOSION**, may occur if 1,1,1-Trichloroethane, Methylene Chloride other Halogenated Hydrocarbon Solvents are used in pressurizable fluid systems having aluminum or galvanized wetted parts. Such an explosion could cause death, serious bodily injury and/or substantial property damage. Consult your fluid supplier to determine the chemical content of

your solvents. (See ITW Ransburg Safety Literature: *HHC Explosion Hazard Danger Sign, HHC Explosion Hazard Warning, and HHC Explosion Hazard Bulletin.*)

- In **NO** event should any flammable solvent or solvent reduced coating material be used in an electrostatic, waterborne applicator system!
Such use will create an ignition hazard!

THE RIGHT TECHNIQUE

Following are some basic electrostatic spray techniques. Depending on the spray target, it may be necessary to adjust the technique.

Fan Width Determination

The size of the object being coated is the determining factor in adjusting the fan pattern. The larger the object, the larger the required fan pattern. Fan width can range from approximately 6-inches (minimum) to approximately 14-inches (maximum). This is accomplished by nozzle selection. Air control adjustment is used to remove "tails" from the fan pattern.

NOTE

- ▶ The degree of atomization is dependent on the viscosity of the paint formulation, the applied fluid pressure, and nozzle selection. Actual fan size may vary from stated nozzle size depending on paint pressure and paint atomizing characteristics.

Assist Air Adjustment

Assist air can be adjusted either locally (at the applicator) or remotely (air regulator or analog function).

NOTE

- ▶ Use only enough assist air to remove the “tails”. Excessive assist air can decrease equipment efficiency.

! WARNING

- ▶ Clockwise adjust will decrease assist air.

Locally

Assist air is adjusted by turning the control knob [57] on right side of applicator (from rear of applicator). A counter-clockwise adjustment will increase assist air and reduce “tails” and generally increase pattern.

Remote

NOTE

- ▶ With remote assist air the control knob is replaced with a 1/4-inch NPT fitting.

Assist air is controlled remotely by the use of an air regulator or a programmable controlled analog function.

Applicator to Target Distance

The distance between the applicator and the target influences the appearance of the final finish coating of the object. If the applicator is held too close (under 4-inches), runs and sags with excessive “bounce-back” may occur. If the applicator is held too far from the object, the electrostatic attraction is decreased. Normally, the best spacing between applicator and target is in the 6 to 12-inch range.

Overlap

For the best “hiding” and uniformity of film thickness, the stroke overlap should be approximately 50%. There should be some Overlap at edges of the part to increase edge coverage. overlap requirements may vary widely with different paint formulations and different paint formulations and different compositions of objects being coated. Individual spray coating operational experience should provide the guide lines for efficiency in this instance.

Triggering

Applicator triggering (ON-OFF) depends largely on the desired results (the amount of wrap-around required, edge coating, etc.). If the front and back of the object are being coated, proper applicator technique can edge coat in some instances without making a specific pass for that purpose. Triggering the applicator before the target is directly in front of the applicator may cause heavy edge build-up on the leading edge of the target due to the electrostatic attraction.

PREPARATION

Paint

A selection of the proper paint mixture is essential to electrostatic operation. Paint test equipment may be obtained through your ITW Ransburg representative. Consult the following ITW Ransburg Literature: *Technical Supplement for All Products*. For further paint formulation and testing procedures, consult your ITW Ransburg representative and/or paint supplier.


Fluid Nozzle

Because of the REM applicators, fluid nozzles precision is paramount to prior functions. ITW Ransburg makes every effort to assure that all production of this part will meet the critical design standards necessary for all applications.

The selection of the best nozzle to apply a give coating to a specific article with maximum efficiency is not an exact science. Testing is usually necessary and wide experience with many types of coating applications helps. Your ITW Ransburg representative uses such experience and actual laboratory testing when recommending a nozzle for your application needs.

However, if parts, paints, or conveyor speeds are changed, a different nozzle may be required for best results. The following discussion and guide will assist the user in making his own nozzle selection whenever it becomes necessary. Selection should always be verified by actual tests to determine optimum efficiencies.

Refer to the “Nozzle Selection Guide” in this section for the choice of fan width and spray characteristics appropriate to the size and type of target. The maximum nozzle flow capacity depends on: the orifice size, the fluid pressure, the paint viscosity, and the spraying temperature. Always remember, for maximum paint economy, any nozzle selected should always be operated at the lowest fluid pressure which will give good atomization and the required flow rate.

| |
|--|
|  CAUTION |
| ▶ ITW Ransburg recommends the use of a fluid filter to reduce nozzle clogging. |

| NOZZLE SELECTION GUIDE | | | | | | | | |
|-------------------------------|-------------|--------------------------------|--------------------------|---|--------------------|------------------|-------------------------------|-------------------------|
| Production Requirements | | | Operating Parameters | | | | Nozzle Identification | |
| Production Level | Target Size | Coverage In Sq. Ft. Per Minute | Pattern Width at 10-inch | Paint Delivery In Fluid Ounces Per Minute, Etc. | | | Nozzle Orifice Size In Inches | REM Fluid Nozzle Part # |
| | | | | 300 psi (21 bar) | 500 psi (34.5 bar) | 700 psi (48 bar) | | |
| Low | Small | 705 to 9.5 | 6-inch | 3.9 | 5.0 | 6.0 | 0.009 | 71260-1515 |
| Low | Large | 9.5 to 15.5 | 6-inch | 5.2 | 6.8 | 8.1 | 0.011 | 71260-1520 |
| Low | Large | 9.5 to 15.5 | 8-inch | 5.2 | 6.8 | 8.1 | 0.011 | 71260-2020 |
| Low | Large | 9.5 to 15.5 | 10-inch | 5.2 | 6.8 | 8.1 | 0.011 | 71260-2520 |
| Medium | Small | 11.5 to 16.5 | 6-inch | 7.8 | 10.1 | 13.0 | 0.013 | 71260-1530 |
| Medium | Small | 11.5 to 16.5 | 8-inch | 7.8 | 10.1 | 13.0 | 0.013 | 71260-2030 |
| Medium | Small | 11.5 to 16.5 | 10-inch | 7.8 | 10.1 | 13.0 | 0.013 | 71260-2530 |
| Medium | Large | 11.5 to 16.5 | 12-inch | 7.8 | 10.1 | 13.0 | 0.013 | 71260-3030 |
| Medium | Large | 11.5 to 16.5 | 14-inch | 7.8 | 10.1 | 13.0 | 0.013 | 71260-3530 |
| Medium | Large | 14.5 to 20.5 | 10-inch | N/R | 13.5 | 17.3 | 0.015 | 71260-2540 |
| Medium | Large | 14.5 to 20.5 | 14-inch | N/R | 13.5 | 17.3 | 0.015 | 71260-3540 |
| Medium | Large | 14.5 to 20.5 | 12-inch | N/R | 13.5 | 17.3 | 0.015 | 71260-3040 |
| Medium | Large | 14.5 to 20.5 | 10-inch | N/R | 16.9 | 21.7 | 0.017 | 71260-2550 |
| Medium | Large | 14.5 to 20.5 | 12-inch | N/R | 16.9 | 21.7 | 0.017 | 71260-3050 |
| Medium | Large | 14.5 to 20.5 | 14-inch | N/R | 16.9 | 21.7 | 0.017 | 71260-3550 |
| High | Small | 15.5 to 21.5 | 10-inch | N/R | 20.3 | 26.0 | 0.018 | 71260-2560 |
| High | Large | 15.5 to 21.5 | 14-inch | N/R | 20.3 | 26.0 | 0.018 | 71260-3560 |
| High | Large | 19.5 to 21+ | 10-inch | N/R | 27.0 | 35.0 | 0.021 | 71260-2580 |

* The first two digits of the nozzle dash number indicate the spray pattern width in centimeters at a distance of 10-inches from the target. The second two digits indicate the flow rate in cc/min., divided by 10, at a pressure of 500 psi. For example: 41260-2540 has a 25cm fan pattern width and delivery of 400 cc/min.
 N/R = Not Recommended
 To convert fluid ounces to cc's, multiply by 2959.
 Lower viscosity (lower solids, higher temperature) paints will have higher flow rates. Higher viscosity paints will have lower flow rates.

MAINTENANCE

Good maintenance is essential to safe and productive operation. Schedules should be established by the user, based on the following general information and observations of the initial production requirements. The ITW Ransburg maintenance and safety information should be made available to each operator.

Normal fire protection measures are necessary, including proper storage of paints and solvents and the proper disposal of waste. Ready access to appropriate fire extinguishing equipment is required. For details, consult the appropriate ITW Ransburg and NFPA safety information, your local fire codes, local painting equipment standards, and the OSHA Act of 1970, as well as your insurance carrier's recommendations.

You don't have to maintain all of your equipment, only those items that you want to continue to operate.

SAFE MAINTENANCE

- The user **MUST** read and be familiar with the Safety Section in this manual and the ITW Ransburg safety literature therein identified.
- See that good housekeeping is maintained at all times. Good housekeeping is always necessary to ensure quality finishes, eliminate rejects, and reduce service requirements.
- Turn the control unit power off prior to cleaning or working on the equipment.
- Using applicators as solvent spray nozzles to clean other equipment or products, even without high voltage present, creates a fire or explosion hazard if ground integrity is broken. **NEVER** use an electrostatic applicator to spray solvent for any reason except to flush the applicator and **ONLY WHEN THE HIGH VOLTAGE IS OFF!**

Always use the minimum amount of solvent to flush an applicator. Always flush into an approved, grounded container and be sure that both the applicator and the operator are securely grounded.

- Never immerse any part of, or all of an assembled applicator in any liquid.
- Periodically strip all workholders to maintain proper grounding of parts.
- Establish adequate cleaning and maintenance schedules based on observation of the initial production characteristics.
- Employ fire protection measures, including proper storage of paints, solvents, and waste.
- If compressed air is used in cleaning, **REMEMBER THAT HIGH PRESSURE AIR CAN BE DANGEROUS AND SHOULD NEVER BE USED AGAINST THE BODY.** It can blind, deafen, and may even penetrate the skin. If used for cleaning equipment, the user should wear safety glasses.
- The integrity of the system ground **MUST** be inspected regularly and maintained. (See ITW Ransburg Literature *Equipment Grounding*.)
- There is an **INJECTION HAZARD** with ALL hydraulically fed applicators, such as the REH and REM applicators. They will cause serious injury if the fluid penetrates the skin.

DO NOT PLACE ANY PART OF THE BODY IN THE PATH OF THE SPRAY!

DO NOT POINT THE APPLICATOR AT ANY PERSON!

NEVER LOOK AT THE APPLICATOR FROM THE NOZZLE END!

TREAT THIS APPLICATOR AS YOU WOULD A LOADED WEAPON!

This system is capable of producing fluid pressure up to 1000 psi. **THIS IS ENOUGH TO PRODUCE A LETHAL INJECTION!**

ROUTINE MAINTENANCE SCHEDULE

Follow these maintenance steps to extend the life of the applicator and ensure efficient operation:

Several Times Daily

1. Turn the control unit power OFF.
2. Inspect the fluid nozzle and electrode wire for paint accumulation. Clean as frequently as necessary. (See "Procedures" in this section.)

Daily (or at shift start)

1. Turn the control unit power ON. Its green pilot should light.
2. Run a current output test. (See "Procedures" in this section.)
3. Turn the control unit power OFF and:
 - Verify that ALL solvent safety containers are grounded.
 - Check within 20-feet of the point of operation (of the applicator) and remove or ground ALL loose or ungrounded objects.
 - Inspect workholders for accumulated coating materials (and remove such accumulations if present).
 - Check that nozzle assembly is clean and undamaged.
 - Straighten the applicator electrode if necessary.
 - Clean the fluid filter, if necessary.

Shut-Down (or at shift end)

1. Turn the control unit power OFF.
2. Turn the assist air OFF.
3. Turn the paint supply OFF.
4. Wipe the applicator, cable, and hoses with a rag and a suitable, clean solvent.
5. Flush the lines and allow the solvent to remain in the lines. (See "Procedures" in this section.)

NOTE

- If the shut-down time is to be short, the lines may not require flushing, depending on the coating material being used. If the solids in the material settle slowly, the lines will not need to be flushed as soon after shut-down as with fast setting solids. The paint being used and the length of time that the lines will be shut-down will determine the need for flushing. Metallic paint and primer will require flushing sooner than some other kinds.

CAUTION

- If the coating material is fast settling and if the lines are not flushed soon enough, the applicator's fluid passages as well as the lines may become clogged and cause excessive down-time and/or service and repair.

Weekly

- Check the entire system for damage, leaks, and paint accumulation.
- Clean the atomizer assembly.

PROCEDURES

Current Output Test

1. Turn the paint supply OFF. Flush applicator with non-conductive solvent.
2. Turn the control unit power ON.
3. Slowly approach the applicator electrode with ground hook or wire.
4. Monitor current meter on control unit. Current should rise as ground approaches. At approximately 100 microamps overload circuit should “trip” shutting “off” high voltage. Overload indicator should come on.

NOTE

- ▶ High voltage overload “trip” point is adjustable. (See current “Control Unit” service manual.)

If the reading is outside of the acceptable range, DO NOT use the applicator until the problem has been corrected. (See “Troubleshooting Guide” in the “Maintenance” section.)



WARNING

- ▶ DO NOT USE A FAULTY APPLICATOR!

Control Panel

See “Automatic Applicator Control Unit” service manual” for proper testing and procedures. Testing should be performed on the control unit to ensure proper performance prior to testing the cascade and/or transformer.

Transformer Output Test

Use Transformer Test Assembly 74195-00.

NOTE

- ▶ This test should be performed before the “Gun Output Test”.

1. Turn high voltage “OFF”. Turn power “OFF” to control unit.
2. Remove the barrel assembly [18] from the body [25] (see “Service - Barrel/Cascade Disassembly” in this section).
3. Insert the Transformer Test Assembly into chamber [100].
4. Turn power “ON” to Control Unit, and trigger high voltage to the applicator. Adjust kV output to 80.
5. Monitor the meter on the Transformer Test Assembly. At 80 kV the meter should read .8 ($\pm 10\%$) milliamps.
6. Replace transformer if proper readings are not obtained. (See “Transformer Assembly Replacement” in this section.)

Gun Output Test (Cascade)

Use High Voltage Output Test Assembly 74150-02.

NOTE

- ▶ Test Transformer before performing this test. Using Transformer Test Assembly 74195-00.

1. Turn high voltage “OFF”. Turn power “OFF” to Control Unit.
2. Remove the nozzle nut [1], air nozzle [2], fluid nozzle [3], and seal [4].

3. Thread High Voltage Test Assembly to barrel of the applicator.
4. Attach ground clip to a ground source.

⚠ WARNING

► Injury to personnel and damage to equipment is probable if the ground clip is NOT ATTACHED. Voltage is present at the clip. This step MUST be accomplished before voltage is applied.

5. Turn power “ON” at Control Unit and trigger high voltage to the applicator. Adjust kV output of 80.
6. Monitor the meter on the High Voltage Output Test assembly. At 80 kV the meter should read 35 (±10%) microamps.
7. Replace cascade/barrel if proper readings are not obtained.
8. If proper readings are obtained, the problem is not in the applicator. Check paint, solvent, ground, etc.

Atomizer Assembly Cleaning

Equipment needed:

- Appropriate solvent
- Solvent safety container (grounded)
- Small soft-bristled brush

1. Unscrew nozzle nut [1] from barrel [18].
2. Remove air [2] and fluid [3] nozzles.
3. Clean all parts in a compatible solvent and examine for wear and damage. To clear orifices, blow compressed air through the fluid nozzle assembly in the opposite direction from the fluid flow. Soaking in solvent and/or brushing may also be necessary to clean the orifice. Replace as necessary.

NOTE

- It may be necessary to soak some parts in solvent and a soft bristle brush to clean. Never use metal tools or wires or metal bristle brushes to clean or unclog nozzle assemblies.

⚠ WARNING

- If the nozzle is completely clogged, triggering the applicator will not release the pressure. Cover the end of the applicator with a heavy rag and loosen the retaining cap slowly into a catch container.

⚠ WARNING

- Do NOT soak or submerge the applicator. Soaking may cause permanent damage to the applicator and result in unsafe operating conditions.

4. Reassemble the parts in reverse order of disassembly. When reassembling the seal, be sure that the 45° chamfered portion is properly seated in the nozzle assembly before reattaching the nozzle.

Flushing Fluid Hose and Applicator

The fluid system should be thoroughly cleaned by flushing with a clean compatible solvent whenever a color change is made, or when the applicator will not be used for any extended period, for example, a weekend or longer. Proceed as follows:

1. Turn control unit OFF.
2. Turn off pump air supply. trigger applicator until fluid flow ceases. Turn off shaping air supply.
3. Remove nozzle nut [1], air [2], and fluid nozzles [3].

4. Remove pump inlet from paint supply. Set pump air pressure at about 20 psi. Direct applicator into grounded paint container until all paint is forced from the applicator and hose.

5. Place pump inlet in a container of suitable solvent (1 gallon or enough to fill the system). Pump solvent through the hose and applicator until solvent runs clean from the applicator. Then adjust air regulator to increase the pump speed. Pump solvent at high speed for several minutes into the grounded solvent container.

6. For a color change, remove pump inlet from solvent container and pump system dry. If the new paint uses a different, non-compatible solvent, it is advisable to reflush with the new solvent. Insert pump inlet in new paint. Start pump. Replace air and fluid nozzles, seal, and nut.

7. When the REM applicator is not to be reused immediately, allow clean solvent to remain in the fluid system. This will prevent any residual paint from drying in the system. When the solvent is to be left in the fluid system for some time, fill applicator and lines with solvent as indicated previously. Shut off pump petcock and trigger applicator to release pressure in system.

NOTES

WARNING

► **DO NOT SOAK APPLICATOR.** This may cause **PERMANENT DAMAGE** to the applicator and result in **UNSAFE OPERATING CONDITIONS.**

TROUBLESHOOTING GUIDE

| General Problem | Possible Causes | Corrective Action |
|--|--|--|
| Poor Atomization and Distribution | 1. Partially clogged nozzle 2. Low fluid pressure 3. Viscosity too high 4. Improper nozzle 5. Badly worn nozzle 6. High voltage electrode bent 7. Low shaping air pressure | 1. Clean out. 2. Increase pump air pressure. 3. Try nozzle with narrower fan or smaller orifice. 4. Try nozzle with narrower fan or smaller orifice. 5. Replace. 6. Straighten electrode or replace nozzle assembly. 7. Readjust shaping air pressure. |
| Poor Wrap-Around | 1. Poor atomization 2. Excessive exhaust velocity 3. Excessive fluid pressure 4. Applicator too close to target 5. Paint too conductive 6. Poor target ground | 1. See above. 2. Reduce (within code limits). 3. Reduce air pressure to pump. 4. Move applicator further back. 5. Consult ITW Ransburg for technical assistance. 6. Check ground integrity from target through support to ground. |
| Paint Wraps Back On Applicator and Mounting (Machine) | 1. Poor ground on parts 2. Applicator too far from parts 3. Booth exhaust insufficient or improperly routed 4. Improper spray technique | 1. Check that parts are fully grounded, strip workholders. 2. Move applicator closer. 3. Increase or adjust direction. Change booth filter. 4. Keep applicator directed at work. |
| No Paint Delivery | 1. Clogged nozzle 2. Clogged hose or filters 3. No pressure at paint pump | 1. Blow out nozzle. 2. Clean. 3. If pump air supply OK, consult pump manual. |

Troubleshooting Guide (Cont.)

| General Problem | Possible Causes | Corrective Action |
|---|--|--|
| Excessive Surging | <ol style="list-style-type: none"> 1. Restriction in pump air line 2. Insufficient pump capacity 3. Clogged paint filter 4. Low air volume capacity 5. Nozzle too large 6. Discharge lines too short to dampen surging | <ol style="list-style-type: none"> 1. Remove restriction. 2. Secure larger pump or reduce output. 3. Service or replace. 4. Check factory air capacity. 5. Replace with correct nozzle. 6. Install surge suppressor. |
| Persistent Nozzle Clogging | <ol style="list-style-type: none"> 1. Paint allowed to dry in nozzle or line 2. Paint applicator filter too coarse or damaged 3. Paint pigments too coarse | <ol style="list-style-type: none"> 1. Flush lines with solvent after each use. 2. Replace or change to finer screen paint filter. 3. Pre-filter paint and/or use larger nozzle orifice. |
| Paint Leaks through Center of Nozzle (Failure to Shut Off) | <ol style="list-style-type: none"> 1. Packing too tight 2. Improper trigger adjustment 3. Defective or dirty valve seat | <ol style="list-style-type: none"> 1. Back off on packing nut. 2. Readjust. 3. Flush out or replace as necessary. |
| Paint leaks Around the Nozzle Cap | <ol style="list-style-type: none"> 1. Loose nut 2. Seals worn | <ol style="list-style-type: none"> 1. Clean paint from needle shat and tighten nut. 2. Replace seals. |
| Paint Leaks at Applicator Fluid Inlet | <ol style="list-style-type: none"> 1. Thread leaks at high pressure | <ol style="list-style-type: none"> 1. Tighten nut. |
| Orange Peel or Rough Finish | <ol style="list-style-type: none"> 1. Evaporation rate too fast 2. Poor atomization 3. Viscosity too high | <ol style="list-style-type: none"> 1. Use slower evaporating solvent. 2. See "Poor Atomization". 3. Add solvent or heat. |
| Paint Runs or has Poor Hiding Qualities | <ol style="list-style-type: none"> 1. Low solids paint 2. Low viscosity 3. Excessive delivery | <ol style="list-style-type: none"> 1. Use less solvent. 2. Use less solvent. 3. Use smaller nozzle, wider fan angle, lower pump pressure. |

SERVICE

Because we want to provide our users with the most up-to-date technology possible, we are constantly seeking to improve products. If a change in product configuration occurs after it is on the market, we will implement that technology in future production and if practical, make it available to current users. The following service information is based on standard specifications and procedures for this product. If you find some minor deviations between this information and your equipment because of design or manufacturing changes, contact your ITW Ransburg representative to resolve the differences.

SERVICE PROCEDURES

All repairs should be made on a clean, flat surface. If a vise is used to hold parts during service or repair, **DO NOT** clamp onto plastic parts and always pad the vise jaws!

Apply a heavy coat of 59972-00 Dielectric grease to the following parts when assembling:

- Needle Shaft Assembly [7 - 15] External
- Tube, Packing Internal [12]
- Transformer Assembly [44] connection to Body Assembly [25]
- Externally to contact surface of Low Voltage Cable and Transformer

Apply 7969-00 Sealant to the following parts when assembling:

- External to contact surface of Piston/Valve and Body Assembly [25]
- External to threads of Piston Housing [39]
- Set Screws [43]

| |
|---|
|  CAUTION |
| ▶ ALWAYS remove the applicator from the work site for service or repair. |

| |
|---|
|  CAUTION |
| ▶ DO NOT USE any silicone lubrication in this system. |

Equipment Required:

- Gun Spanner (3 in 1 Nozzle Wrench) * for Barrel Nut [19] and Packing Nut [16]
- Nozzle Tool * for Fluid Nozzle [3]
- 3/16" Allen Wrench for Hose Fittings
- Open End Wrenches: 9mm (2 Required), 15/16", 7/8", 11/16", 9/16", 7/16", 3/4", 3/8" (2 Required), and 1/4"
- Screwdriver (broad)
- Dielectric Grease *
- Sealant *
- Plastic or Wood Dowel Rod, 5/16-inch diameter
- 3/8" Nut Driver
- Hook Tool (Dental Pick)
- T-Handle Tool (for Valve Body Service) [33]
- 3/32" Allen Wrench for Set Screws

* See "Parts Identification" section for part number.

To Remove the Applicator from the Work Site

1. Turn the control unit power OFF.
2. Turn OFF pump air supply.
3. Turn the assist air supply OFF.
4. Trigger the applicator until fluid flow ceases.
5. Connect the solvent supply.
6. Turn on air supply to pump. Adjust for low pressure and slow cycling of pump.
7. Run solvent through the system until it runs clear.
8. Disconnect the solvent supply.
9. Trigger the applicator until it is clear of solvent.
10. Detach fluid line from fluid tube fitting [70].
11. Following removal of the fluid line, hold the barrel up 45° from horizontal and trigger the applicator to remove solvent remaining in the barrel and nozzle passage ways.
12. Detach the air line assembly from applicator air fittings [50] and [51].
13. Remove the plastic cable retaining screw [72] on the back of the transformer [44] and pull the cable out of the transformer.

NOTE

- ▶ If the low voltage cord is to be replaced, see “Low Voltage Cable Replacement” in this section.

14. Loosen Socket Head Cap Screws [47] and remove the applicator from the work site.

Nozzle / Electrode / Seal / Seat Replacement

CAUTION

- ▶ NEVER BEND THE ELECTRODE!

CAUTION

- ▶ Prior to disassembly of any portion of the applicator, ensure the procedure for “Removing the Applicator from the Work Site” has been completed.

1. Unscrew nozzle nut [1] from barrel [18].
2. Remove the air [2] and fluid [3] nozzles from the front of applicator by pulling straight out. Fluid nozzle seal [4] can now be removed from the fluid nozzle.
3. Remove valve body [5] with a blade type screw driver wide enough to engage both slots of the valve screw. Remove valve body seal [6] with small hooked tool.
4. Clean the removed parts in a suitable solvent. Examine the cleaned parts for excessive wear and damage. Replace as necessary.
5. It may be necessary to soak some parts in solvent and brush to clean. Blowing compressed air through the nozzle in the opposite direction from fluid flow may also be helpful.

NOTE

- ▶ Never use metal tools or wires or metal bristle brushes to clean or unclog nozzle assemblies. Use only soft bristle brushes.

6. Reassemble the cleaned or replaced parts in reverse order of disassembly. Be sure the applicator is triggered when the valve seat and screw are assembled to the barrel. When inserting the seal in the fluid nozzle, make sure the 45° chamfered end is inserted first and points in the direction of the front of the applicator.

Barrel / Cascade Disassembly

CAUTION

► Prior to disassembly of the applicator ensure the procedure for “Removing the Applicator from the Work Site” has been completed.

1. Loosen barrel nut [19] with the spanner wrench.
2. Disengage fluid tube nut [67] from barrel [18].
3. Remove piston housing [39], springs [37] and [38], adjusting nut [36], and jam nut [35].
4. Pull barrel [18] and body [25] straight apart.

NOTE

► There is no need to remove retaining ring [20] or barrel nut [19] from barrel [18] unless they are damaged. If they are to be removed, lift one end of ring [20] over the “captive ridge” and spiral it off of the end of the barrel. Then nut [19] can be removed. To replace them on the barrel, slide nut [19] onto the barrel, place ring [20] against the back of the barrel, lift one end of it onto the barrel and spiral it on and into its groove.

5. Remove the air and fluid nozzles, seal, and valve screw and seat as described in the previous step.
6. Remove valve rod extension [22] from end of shaft assembly [11] using two 9mm wrenches.

7. Remove packing nut [16] from chamber [104] with spanner wrench.
8. With a firm pull, remove needle shaft assembly and seals from chamber [103].

NOTE

► During this operation be careful that the interior surface of chamber [103] is not damaged, marred, or scratched. The bottom of this chamber is a seal area and the barrel/cascade assembly will have to be replaced if it is damaged.

9. Remove the trigger adjusting nut [17] from end of needle shaft assembly [11].
10. To remove the front u-cup seal [9] from the needle shaft assembly [11] place in padded vise, gripping the center portion of the shaft with two 2.5mm wrenches. Unlock the ball valve needle [7] from the jam nut [7A] using the flats on both. The front u-cup seal [9], spreader seal [8], and pusher seal [10] can now be removed.
11. The valve seal [6] and fluid tube seal [64] can now be removed from the barrel.

Barrel / Cascade Assembly

- Clean all disassembled parts with a suitable clean solvent.
- If the electrode is bent, straighten it carefully by hand.
- Check all parts for damage or wear. Replace those that are damaged or worn with new parts.
- Replace front u-cup seal [9] fluid line seal [64] and valve seal [6] with new parts.
- Inspect the needle shaft [11] sealing surface for wear. If it is rough or uneven, replace it as follows:
 1. Place pusher seal [10] onto the front of needle shaft assembly [11] with the flat side toward the front.

2. Push front u-cup seal [9] on the needle shaft [11] with the dished outside to the front of the needle shaft [11].

3. Place spreader seal [8] on needle shaft [11] with flatest side toward the front of the needle shaft [11].

4. Place jam nut [7A] on the threads of the needle shaft [11] and tighten until it reaches the bottom of the threads. Place ball valve needle [7] on shaft and finger tighten it until the threads bottom out. then with the two 2.5mm wrenches, tighten the jam nut [7A] against the ball valve needle [7].

NOTE

► Apply a heavy coating of dielectric grease to the seals.

5. Insert the valve seal [6] and valve seat body [5] into the front of the barrel [18], chamber [102] and tighten snugly.

6. Coat the plastic portion of the needle shaft [11] with dielectric grease and slide the packing tube [12] over the plastic portion of the needle shaft [11].

7. Slide the rear seal container [13], with the o-ring gland on the outside, toward the front of the needle shaft [11].

8. Install the o-ring [13A] onto the outside of the rear seal container [13].

9. Carefully put rear u-cup seal [14] with the o-ring to the rear of the needle shaft [11].

10. Put the rear seal retainer [15] onto the needle shaft [11]. Grease the full assembly.

11. Place the packing nut [16] on the rear threads of the needle shaft [11]. Insert the full assembly into the barrel [103] and tighten Item 16 with the spanner wrench.

NOTE

► The packing nut should be just tight enough that shaft [11] slides in and out with firm resistance.

12. Screw the trigger adjusting nut [17] and extension valve rod [22] onto shaft [11] with the hexagonal flange or nut facing each other.

13. To adjust nuts [17]:
 a. Push needle shaft assembly [11] fully forward until ball end [7] on shaft [11] seats in valve seat [5].
 b. Measure 11/16-inch from rear lip of barrel/cascade chamber [103] to the rear face of the hexagonal flange of the nut on the extension rod [22].

NOTE

► The 11/16-inch dimension is a starting point. Because of component stack-up, wear and other variables, a slight increase or decrease in this setting may be needed.

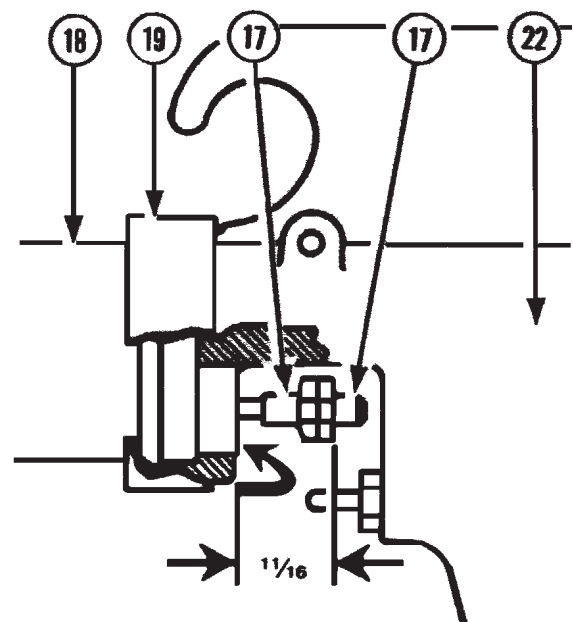


Figure 1: Nut Adjustment

- c. Secure the two (2) nuts together at that dimension by rotating the nut next to barrel rearward until the two (2) nuts will not turn on the shaft.
- d. Tighten the two (2) nuts by holding each with a 9mm wrench and rotating wrenches in opposite directions.

14. Place gasket [21] into chamber [100] of body assembly [25].

NOTE

- ▶ Secure the new gasket in place with the large hole at the bottom.

15. Slide barrel assembly into the body chamber [104] while aligning the transformer/barrel electrical contacts.

16. Secure the barrel/cascade assembly [18] to body assembly with nut [19] and tighten.

CAUTION

- ▶ Nut [19] should be secured hand tight only with spanner wrench. Never apply more than 10 lb•ft torque.

17. With the needle valve assembly and piston shaft [30] fully forward, secure lock nuts [35] and [36] onto extension [22]. Allow 1/8-inch gap between nut [35] and shaft [30].

NOTE

- ▶ Projection on nut [36] must face the rear of applicator.

CAUTION

- ▶ The need shaft assembly travel must be adjusted so that the air valve is always triggered first. If the air does not turn on before the fluid, readjust nut [17] and [22].

18. Place spring [38] on nut [36].

19. Place spring [37] into piston housing [39], and secure housing onto body assembly [25].

NOTE

- ▶ Ensure plug [40] is inserted into piston housing.

20. Insert fluid line seal [64] into barrel chamber [101].

21. Insert connector [65] into barrel chamber [101] and secure in place with retainer nut [67].

Transformer Assembly

CAUTION

- ▶ The low voltage cable **MUST** be removed before removing the transformer/hook assembly.

Replacement

1. Remove the low voltage cable. (See “Low Voltage Cable Replacement” in this section.)

CAUTION

- ▶ When removing or installing the low voltage cable. **DO NOT** rotate the assembly. This can cause damage to the contact pins or to the bottom of the transformer/hook assembly.

NOTE

- ▶ Transformer assemblies manufactured in late 1986 or later have a screwed in removable glass lense. The lense has pin holes for an adjustable spanner wrench with 18mm (.126-inch) pins. Earlier models have a glass lense epoxied in place which can also be replaced.

2. Remove the barrel cascade assembly. (See “Barrel/Cascade Assembly Replacement” in this section.)
3. Remove gasket [21].
4. Slide transformer [44] toward and out of channel [106].
5. Slide replacement transformer [44] into channel [106].
6. Place gasket [21] in position.
7. Install the barrel/cascade assembly. (See “Barrel Assembly” in this section.)
8. Install low voltage cable. (See “Low Voltage Cable Replacement” in this section.)

Body Assembly Service

When service is performed on any of the handle elements, it is best to remove the barrel/cascade and hook/transformer assemblies, (see “Transformer/Assembly Replacement” in this section) in order to avoid damage to the nozzle, needle/electrode or any of the plastic parts. After disassembly of any handle element:

- Clean all parts with a suitable, clean solvent.
- Check all parts for damage or wear. Replace those that are damaged or worn with new parts.
- Replace and lubricate all seals and o-rings.

Assist Air Valve

Disassembly:

1. Turn adjustment knob [58] to the open position (fully extended), to accommodate Step 2.
2. With a 9/16” wrench, unscrew valve housing [59] and remove the entire assembly from chamber [107].
3. Return the control knob to the closed position.
4. Secure adjustment knob [58] in a bench vise and, with a 1/4” wrench on wrench flats [108], free needle [63] and remove it from the assembly.

NOTE

- ▶ The needle/control knob is secured with Lock-Tite.

5. Remove spring [62].
6. Unscrew adjustment knob [59] from housing [59].
7. With a 1/4-inch rod or other small diameter tool, force washers [61] and o-ring [60] out of the housing [59].

Assist Air Valve

Assembly:

1. Screw adjustment knob [58] completely into housing [59].

NOTE

- ▶ Apply a light coating of dielectric grease to the control knob threads [109].

2. Place one (1) washer [61], o-ring [60], and the other washer [61] onto the shaft of adjustment knob [58].
3. Use the flat end of the tubular spanner tool to seat [61], [60], and [61] in the bore of the housing [59].
4. Place spring [62] onto the shaft of adjustment knob [58].
5. Secure adjustment knob [58] in the bench vise and put a small amount of 7969-00 medium strength sealant on the shaft threads [114].
6. With a 1/4" wrench on wrench flats [108], screw needle [63] onto the control knob shaft. Remove the assembly from the vise.
7. Unscrew adjustment knob [58] to its open position.
8. Screw housing [59] into valve chamber [107] with a 9/16" wrench.

NOTE

- ▶ Apply a light coating of dielectric grease to the housing threads.

9. Screw the adjustment knob down to the closed position.

Low Voltage Cable Replacement**Disassembly:**

1. Follow the procedures in "To Remove the Applicator from the Work Site" in this section.
2. Loosen (but do NOT remove) set screw [72] with a 3/32" Allen wrench.
3. Pull low voltage cable [43] **STRAIGHT OUT OF CHAMBER** [118].

Assembly:

1. Start low voltage cable [43] into chamber [118] so the set screw indent is to the front of the applicator.
2. Secure the low voltage cable [43] with front set screw [72] using a 3/32" Allen wrench.

NOTE

- ▶ This step secures the grounding bracket, air and fluid lines, and the cable to the applicator handles.

CAUTION

- ▶ When removing or installing the low voltage cable, **DO NOT** rotate the assembly. This can cause damage to the contact pins or to the bottom of the transformer/hook assembly.

TUBE AND LINE INSTALLATION / REPLACEMENT

WARNING

- ▶ Turn **OFF** all power, air, and fluid at the source.

The fluid tube (from barrel to support bracket) is a special machined and formed part which is separated from the fluid line (from support bracket to paint supply) by fitting [70] and locking nut [71] which grounds the fluid at the handle through support and bracket [52] and [55].

Valve Body Service

When service is performed on any of the body elements, it is best to remove the barrel and transformer assemblies to avoid damage to the nozzle, electrode, or any of the plastic parts.

After disassembly of the body element:

- Clean all parts with a suitable clean solvent.
- Check all parts for damage or wear. Replace those that are damaged or worn with new parts.
- Replace all seals and o-rings.

Disassembly

1. Rotate piston housing [39] to remove it from the body [25].

CAUTION

- ▶ The piston housing is spring loaded. Use care in disassembly.

2. Remove springs [37] and [38].

3. Using two 3/8" wrenches, turn nut [36] away from nut [35]. Remove both nuts from valve rod extensions [22].

4. Remove barrel/cascade assembly (see "Barrel/Cascade Assembly" in this section).

5. Remove transformer assembly (see "Transformer Assembly" in this section).

6. Remove valve seal retaining nut [23] and o-ring [24] from front of valve body chamber [105] using a 3/8" nut driver.

7. With a flat tipped wood or plastic dowel rod inserted into the front of the valve body chamber [105], push piston assembly [30] through [34] out of the rear of the valve body [22], chamber [104].

8. Secure piston shaft [30] in a 3/8" wrench (on the wrench flats) and remove nut [34] with a 9/16" socket wrench.

9. Slide piston assembly {31}, [32], and [33] from shaft [30] and disassemble components by hand.

10. Remove bushing assembly [26], [27], [28], and [29] from the valve chamber with a 20049 wrench.

Assembly:

NOTE

- ▶ Replace all o-rings. Replace packing cup [32] if it is worn.

1. Secure retaining nut [23] and o-ring [24] in the front of the valve chamber using a 3/8" nut driver.

2. Secure bushing assembly, [26], [27], [28], and [29] in the valve chamber using a 20049 wrench.

3. Secure shaft [30] in wrench (on 3/8" wrench flats) and assemble washer [31], cup [32], and piston [33] on the rear with nut [34] using a 9/16" socket.

4. Place the piston assembly [30] through [34] into the valve chamber through bushing [28] and press into place.

NOTE

- ▶ Be sure that o-ring [29] is in bushing [28].

5. Replace the barrel/cascade assembly (see “Barrel/Cascade Assembly” in this section).

6. Replace the transformer assembly (see “Transformer Assembly” in this section).

7. Place nut [34] on rod extension [22] 1/16-inch from piston shaft [30].

8. Place nut [36] on rod extension [22] and secure against nut [35] using appropriate wrenches. Be sure to maintain the 1/16-inch spacing between nut [35] and piston shaft [30].

9. Place springs [37] and [38] against piston [33] and nut [36] and secure in place by screwing piston housing [39] into the rear of the valve housing.

Fluid Tube Removal

1. Remove fluid line and fluid filter [74] from fitting [70].

2. Remove nut [71] from fitting [70].

3. Remove screw [56] from support bracket [52] and [56] using 2.5mm Allen wrench.

4. Loosen nut [67] with an adjustable wrench. Grip elbow connection [68] and pull straight down to remove connector [67] from barrel [18] at [101].

5. Remove bracket [55] and [70] from fluid tube [69].

6. Remove fluid tube [89] from elbow connector [88].

7. Using fluid fitting tool [75], place over fluid connector [85] and remove from elbow connection [66]. Nut [67] will come off when fluid connector [65] is removed from elbow connection [68].

NOTE

- ▶ This step may be eliminated if the Fluid Connector [65] is **NOT** damaged.

8. Replace o-rings [66], gasket [64] on any worn or broken parts if required.

CAUTION

- ▶ Removing the connector [67] other than straight down from barrel [18] may damage or breach the connector [67]

PARTS IDENTIFICATION

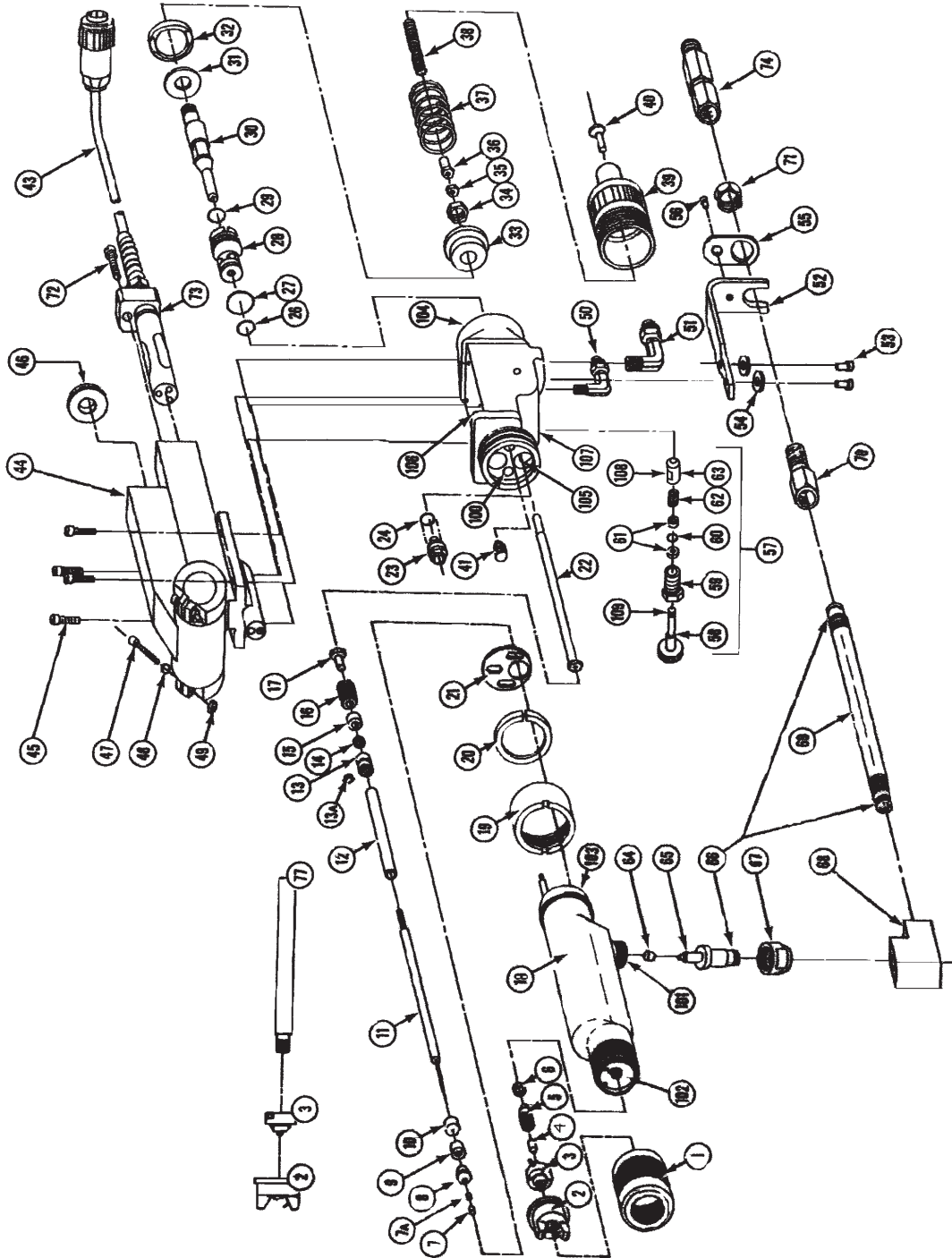


Figure 2: REM Automatic Applicator Exploded View

| REM AUTOMATIC APPLICATOR - PARTS LIST (Figure 2) | | |
|---|--|---------------|
| Item # | Description | Part # |
| | Assembly Complete | 73499-XX |
| 1 | Nut, Nozzle | 72353-00 |
| 2 | Nozzle, Air ** | 72371-00 |
| 3 | Nozzle, Fluid ** | 71260-XXXX |
| | Barrel Cascade Assembly: | |
| 4 | Seal, Fluid Nozzle * | 72327-00 |
| 5 | Valve Seat Body Assembly * | 73355-00 |
| 6 | Seal, Valve Seat Body * | 72375-03 |
| 7 | Needle, Valve Ball * | 73350-00 |
| 7A | Nut, Jam * | 73351-00 |
| 8 | Spreader, Seal * | 73344-00 |
| 9 | Seal, U-Cup Front * | 73345-00 |
| 10 | Pusher Seal * | 73346-00 |
| 11 | Needle/Shaft Assembly | 73352-00 |
| 12 | Tube, Packing * | 72378-00 |
| 13 | Container Ring Seal * | 73347-00 |
| 13A | O-Ring * | 72209-05 |
| 14 | U-Cup Seal * | 73349-00 |
| 15 | Retainer, Rear Seal * | 73348-00 |
| 16 | Nut, Packing * | 73354-00 |
| 17 | Nut, Trigger Adjusting | 72374-00 |
| 18 | Barrel Assembly W/HighVoltage Cascade | 72362-00 |
| 19 | Nut, Barrel Retainer | 72493-00 |
| 20 | Retaining Ring, Barrel | 72494-00 |
| 21 | Gasket * | 72360-00 |
| 22 | Extension, Valve Rod * | 74192-00 |
| 23 | Nut, Valve Seal Retainer | 20053-00 |
| 24 | O-Ring * | 13076-10 |
| 25 | Body Assembly Non-Bleed | 74092-01 |
| 26 | O-Ring, Teflon * | 13076-13 |
| 27 | O-Ring, Viton * | 7554-33 |
| 28 | Bushing, Air Valve | 20054-00 |
| 29 | O-Ring, Viton * | 7554-28 |
| 30 | Shaft, Valve and Piston | 20055-00 |
| 31 | Washer, Piston | 20057-00 |
| 32 | U-Cup Piston, Teflon | 7723-06 |
| 33 | Piston | 20056-00 |
| 34 | Nut, Piston Lock | 7733-44 |
| 35 | Nut, Air Valve Lock | 7733-07 |
| 36 | Nut, Air Valve Adjustment | 20942-00 |
| 37 | Spring, Piston Return | 9334-00 |
| 38 | Spring, Fluid Valve Return | 17615-00 |
| 39 | Housing Piston | 20943-00 |
| 40 | Screw | 7730-08F |
| 41 | Screw Set | 9937-12C |
| 42 | ---- | ---- |
| 43 | Low Voltage Cable Assembly | 78084-XXX |
| 44 | Transformer Assembly | 73488-00 |
| 45 | Cap, Screw, Socket Head (4 Required) | 8212-20C |
| 46 | Lense, Sight | 72532-00 |
| 47 | Cap, Screw Socket Hd., M4 (2 Required) | 72543-01 |
| 48 | Lock Washer, M4 (2 Required) | 72544-01 |
| 49 | Nut, M4 (2 Required) | 72544-01 |

(Continued On Next Page)

| REM AUTOMATIC APPLICATOR - PARTS LIST (Figure 2) | | |
|---|--|---------------|
| Item # | Description | Part # |
| 50 | Fitting, 1/4" Tube X 1/8" NPT, Trigger | 7884-02 |
| 51 | Fitting, 3/8" Tube X 1/4" NPT, Assist Air | 7884-03 |
| 52 | Bracket, Fluid Line | 74088-00 |
| 53 | Screw, Socket Head (2 Required) | 8212-16F |
| 54 | Lock Washer (2 Required) | 7734-04 |
| 55 | Fluid Line Support | 72367-00 |
| 56 | Screw Pan Head | 72406-04 |
| 57 | Valve Assembly, Air Assist Complete (Includes Items 58 - 62) | 18851-00 |
| 58 | Knob, Control | 18840-00 |
| 59 | Nut Retaining | 18853-00 |
| 60 * | O-Ring | 13076-08 |
| 61 | Washer (2 Required) | 18833-00 |
| 62 | Spring | 18829-00 |
| 63 | Needle | 18852-00 |
| 64 * | Gasket | 72375-02 |
| 65 | Connector, Fluid | 74085-00 |
| 66 * | O-Ring | 72209-02 |
| 67 | Nut, Union | 72357-01 |
| 68 | Elbow Connection | 74086-00 |
| 69 | Fluid Tube | 74087-00 |
| 70 | Fitting, Fluid | 72381-01 |
| 71 | Nut, Fitting Fluid | 72382-01 |
| 72 | Screw, Pan Head | 73490-01 |
| 73 * | O-Ring | 7554-12 |
| 74 *** | Fluid Filter | 72400-00 |
| 75 | Fluid Connection Tool | 74258-001 |
| 76 | T-Handle Tool | 20049-00 |
| 77 | Nozzle Tool | 72468-00 |

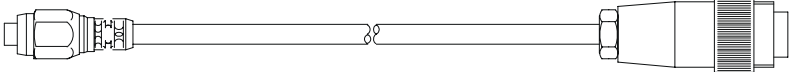
** Dash number (-XX) reads in feet except 99 which = 100 feet (i.e. -36 = 36 feet). These items are available in standard lengths of 36, 50, 75, and 100 feet. When ordering High Voltage Cable, use footage for -xx.

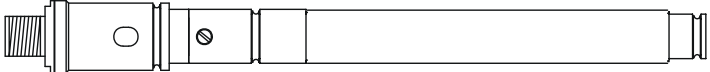
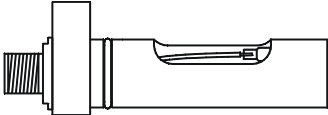
*** Dash number (-XXXX) indicates Fluid Nozzle configuration. See "Nozzle Selection Chart" in the "Operation" section for Nozzle Specifications and Order Number Identification.

**** The configuration and number identification of this filter may change. When you order a 72400 Filter, your ITW Ransburg distributor will provide the current configuration.

| 72453-00 REPAIR KIT | |
|----------------------------|--|
| Part # | Description |
| 74150-02 | High Voltage Test Assembly Applicator Output |
| 74195-00 | Tester Transformer Output |

Note: Includes items indicated * on the "REM Automatic Applicator Exploded View Parts List".

| CABLE ASSEMBLIES | | |
|--|--------------------------|--|
| Part # | Replaces | Description |
| 78084-36, -50, -75, -100 | 76876-36, -50, -75, -100 | New Low Voltage Cable Assembly with new connector. Used on all hand, auto, solvent, and water applicators, except AVIATOR. |
|  | | |

| PLUG ASSEMBLIES | | |
|---|-----------------|---|
| Part # | Replaces | Description |
| 76875-11 | 76875-01 | REM/MGS applicator reed switch plug assembly with new receptacle. |
| 76875-14 | 76875-04 | REM/MGS applicator reed switch plug assembly with solvent proof o-rings and new receptacle. |
|  | | |
| 74191-01 | 74191-00 | Plug assembly for all automatic applicators, except REA9000R. |
|  | | |

WARRANTY POLICIES

LIMITED WARRANTY

ITW Ransburg will replace or repair without charge any part and/or equipment that falls within the specified time (see below) because of faulty workmanship or material, provided that the equipment has been used and maintained in accordance with ITW Ransburg's written safety and operating instructions, and has been used under normal operating conditions. Normal wear items are excluded.

THE USE OF OTHER THAN ITW RANSBURG APPROVED PARTS, VOID ALL WARRANTIES.

SPARE PARTS: One hundred and eighty (180) days from date of purchase, except for rebuilt parts (any part number ending in "R") for which the warranty period is ninety (90) days.

EQUIPMENT: When purchased as a complete unit, (i.e., guns, power supplies, control units, etc.), is one (1) year from date of purchase. **WRAPPING THE APPLICATOR IN PLASTIC, ASSOCIATED VALVES AND TUBING, AND SUPPORTING HARDWARE IN PLASTIC, SHRINK-WRAP, OR ANY OTHER NON-APPROVED COVERING, WILL VOID THIS WARRANTY.**

ITW RANSBURG'S ONLY OBLIGATION UNDER THIS WARRANTY IS TO REPLACE PARTS THAT HAVE FAILED BECAUSE OF FAULTY WORKMANSHIP OR MATERIALS. THERE ARE NO IMPLIED WARRANTIES NOR WARRANTIES OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ITW RANSBURG ASSUMES NO LIABILITY FOR INJURY, DAMAGE TO PROPERTY OR FOR CONSEQUENTIAL DAMAGES FOR LOSS OF GOODWILL OR PRODUCTION OR INCOME, WHICH RESULT FROM USE OR MISUSE OF THE EQUIPMENT BY PURCHASER OR OTHERS.

EXCLUSIONS:

If, in ITW Ransburg's opinion the warranty item in question, or other items damaged by this part was improperly installed, operated or maintained, ITW Ransburg will assume no responsibility for repair or replacement of the item or items. The purchaser, therefore will assume all responsibility for any cost of repair or replacement and service related costs if applicable.

MANUAL CHANGE SUMMARY

This manual was published to replace Service Manual **AA-87-02.2**, *REM™* Automatic Applicator, to make the following changes:

1. Replaced “ Label“ on the “Front Cover”.
2. Replaced “Labels 72354, 72562, and 76859” in the “Atex” section.

Service Manual Price: €15.00 (Euro)
\$20.00(U.S.)

Manufacturing

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Fax: 260/665-8516

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Industrial Systems
Ransburg Guns
www.itwransburg.com

Telephone: 800/ 626-3565 Fax: 419/ 470-2040
Telephone: 800/ 233-3366 Fax: 419/ 470-2071
Telephone: 800/ 233-3366 Fax: 419/ 470-2071

Technical Support Representative will direct you to the appropriate telephone number for ordering Spare Parts.

