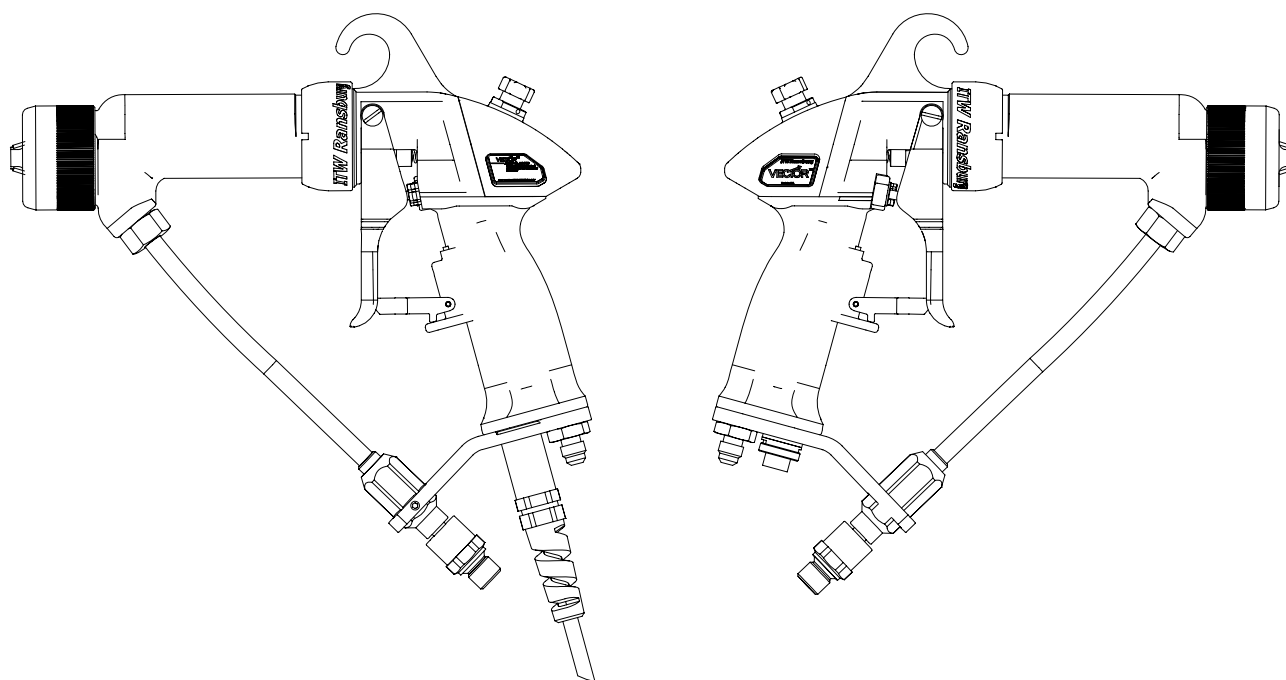
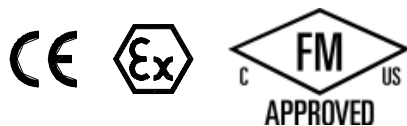

VECTOR AA90 APPLICATORS



MODELS: 79580 VECTOR CASCADE
79581 VECTOR CLASSIC



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: **€40.00 (Euro)**
\$50.00 (U.S.)

NOTE: This manual has been changed from revision **AH-07-01.7** to revision **AH-07-01.8**. Reasons for this change are noted under “Manual Change Summary” inside the back cover of this manual.

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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 any applicable country codes (example: NFPA-33 for USA) 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.
Spray Area 	<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 any country or local safety 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 setup operations. Production should never be done with safety interlocks disabled.</p> <p>Never use equipment intended for use in waterborn installations to spray solvent based materials.</p> <p>The paint process and equipment should be set up and operated in accordance with all applicable country safety codes.</p>

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Toxic Substances 	Certain material may be harmful if inhaled, or if there is contact with the skin.	<p>Follow the requirements of the Material Safety Data Sheet supplied by coating material manufacturer.</p> <p>Adequate exhaust must be provided to keep the air free of accumulations of toxic materials.</p> <p>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.</p>
Explosion Hazard / Incompatible Materials 	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.	Aluminum is widely used in other spray application equipment - such as material pumps, regulators, valves, etc. Check all other equipment items before use and make sure they can also be used safely with these solvents. 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.
Electrical Equipment 	<p>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.</p> <p>Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation.</p> <p>Frequent power supply shutdown indicates a problem in the system which requires correction.</p> <p>An electrical arc can ignite coating materials and cause a fire or explosion.</p>	<p>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 appropriate country safety codes.</p> <p>Turn the power supply OFF before working on the equipment.</p> <p>Test only in areas free of flammable or combustible material.</p> <p>Testing may require high voltage to be on, but only as instructed.</p> <p>Production should never be done with the safety circuits disabled.</p> <p>Before turning the high voltage on, make sure no objects are within the sparking distance.</p>

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
<p>Spray Area</p> 	<p>Electrostatic Arcing</p>	<p>Never operate the applicator without properly grounding the following.</p> <p>A. Operators</p> <p>Operators must be grounded. Rubber soled insulating shoes should not be worn. Grounding leg straps may be used.</p> <p>Operators must maintain contact with the handle of the applicator. If work gloves are used, the palm section should be cut out.</p> <p>Operators must remove from themselves all metal objects that are not grounded.</p> <p>NOTE: REFER TO APPLICABLE COUNTRY GROUNDING CODES.</p> <p>B. Parts being sprayed. Resistance between the part and a grounded conveyor must not exceed 1 megohm.</p> <p>C. Every metal and conductive object in the spray area. This includes the booth, parts hangers, fire extinguishers, conductive flooring, etc.</p> <p>Grounded conductive flooring must be provided in the spray area.</p> <p>Turn off voltage at the power supply before flushing out, cleaning, or removing any parts from the applicator.</p> <p>Never install an applicator into a fluid system using an isolated solvent supply.</p> <p>Do not touch applicator electrode while applicator is energized.</p>

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
General Use and Maintenance 	<p>Improper operation or maintenance may create a hazard.</p> <p>Personnel must be properly trained in the use of this equipment.</p>	<p>Personnel must be given training in accordance with the requirements of NFPA-33.</p> <p>Instructions and safety precautions must be read and understood prior to using this equipment.</p> <p>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.</p> <p>Always turn power to the power supply OFF, unplug the electrical cord from its outlet, and remove the front panel fuse, before opening the power supply door. If necessary, lock the power supply out so that it cannot be turned ON until the work is finished.</p> <p>Whenever removing high voltage cables from equipment, ground the contact end of the cable by holding the cable such that the contact touches earth ground for several seconds. Do not touch the contact until it has been grounded. This will reduce the possibility of residual charge causing electrical shock.</p> <p>The High Voltage Multiplier Assembly contains energy storage components that can cause serious shock injury, and therefore is not field repairable. Warranty will be voided if the High Voltage Multiplier seal is broken. If the High Voltage Multiplier is defective contact your authorized ITW Ransburg representative for exchange or repair.</p> <p>The High Voltage Multiplier and high voltage cable contain significant capacitance that will store charge. Allow approximately 10 seconds for this charge to bleed off before opening the cabinet door or removing the high voltage cable from the power supply or spray applicator.</p>

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
General Use and Maintenance 	<p>Use of hand tools may cause cumulative trauma disorders (CTD's). CTD's or musculoskeletal disorders, involve damage to the hands, wrists, elbows, shoulders, neck and back. Carpal tunnel syndrome and tendinitis (such as tennis elbow or rotator cuff syndrome) are examples of CTD's.</p> <p>CTD's when using hand tools, tend to affect the upper extremities. Factors which may increase the risk of developing a CTD include:</p> <ol style="list-style-type: none"> 1. High frequency of the activity. 2. Excessive force, such as gripping, pinching or pressing with the hands and fingers. 3. Extreme or awkward finger, wrist or arm positions. 4. Excessive duration of the activity. 5. Tool vibration. 6. Repeated pressure on a body part. 7. Working in cold temperatures. 	<p>Risk is reduced by avoiding or lessening the listed hazards.</p> <p>CTD's can also be caused by such activities as sewing, golf, tennis and bowling, to name a few.</p> <p>Pain, tingling, or numbness in the shoulder, forearm, wrists, hands, or fingers, especially during the night, may be early symptoms of a CTD. Do not ignore them. Should you experience any such symptoms, see a physician immediately. Other early symptoms may include vague discomfort in the hand, loss of manual dexterity, and nonspecific pain in the arm. Ignoring early symptoms and continued repetitive use of the arm, wrist and hand can lead to serious disability.</p>
Personnel Safety/ Fluid Injection Hazard (High Pressure Equipment) 	<p>Fluid Injection Injury</p>	<p>Never let any part of the body come in direct contact with the fluid stream exiting from the nozzle. If fluid leaks occur in the applicator or in the fluid delivery components, depressurize fluid system before servicing.</p> <p>Never aim the applicator at any part of the body under any circumstances.</p> <p>If you are injured by high pressure fluid injection, immediate medical treatment must be sought.</p>

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

The following instructions apply to equipment covered by certificate number Sira 06ATEX5282X:

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, label numbers: 79496, 79515, and 79612.

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.

Vector AA90 79580 and 79581 ATEX Product Marking Definitions

Ex Certificate Number: Sira 06ATEX5282X

Sira = Notified Body performing EC-type examination

06 = Year of certification

ATEX = Reference to ATEX Directive

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

282 = Document serial number

X = Special conditions for safe use apply

Special conditions for safe use:

The Vector 79581 AA90 Classic Series Applicator shall only be used with associated 79344 Series Power Supply.

The Vector 79580 AA90 Cascade Series Applicator shall only be used with associated 79513 Series Control Unit.

Product Marking



Ex = Specific marking of explosive protection

II = Equipment Group hazardous area characteristics

2 = Equipment Category

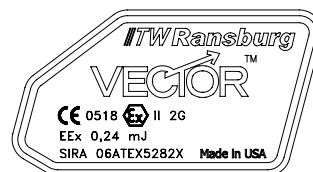
G = Type of explosive atmosphere (gases, vapors, or mists)

EEx 0.24mJ The Vector 79581 AA90 Classic Series and 79580 Cascade Series Applicators are suitable for use in automatic spraying installations complying with EN 50176 as they are a Type A class with a discharge energy limit of 0.24mJ.

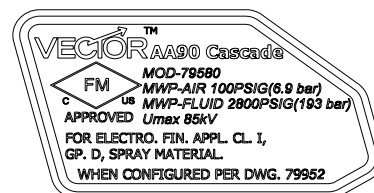
Label 79496

ITW Ransburg, Angola, IN, USA 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 FOR ELECTROSTATIC PAINT FINISHING APPLICATIONS (SERIAL NUMBER INCLUDES DATE OF MANUFACTURE) PART No. _____ INPUT VOLTAGE 100-240 VAC FREQUENCY 50/60 Hz VOLTAMPS 120 VA MAX. HUMIDITY 95% NON-CONDENSING INPUT PRESSURE 100 PSI MAX.		SERIAL No. _____ INPUT RMS CURRENT 1 A. MAX. PHASES 1 MAX. OUTPUT VOLTAGE "A" MAX. OUTPUT CURRENT "B" TEMPERATURE 0 - 40°C	
CE 0518 EEx II (2)G EN 50050 SIRA 06ATEX5282X		FM APPROVED MOD-79581 MWP-AIR 100PSIG(6.9 bar) MWP-FLUID 2800PSIG(193 bar) APPROVED Umax 85kV FOR ELECTRO. FIN. APPL. CL. I, GP. D, SPRAY MATERIAL. WHEN CONFIGURED PER DWG. 79953		LABEL REMOVAL VOID WARRANTY	

Label 79515



Label 79612-01



Label 79612-02



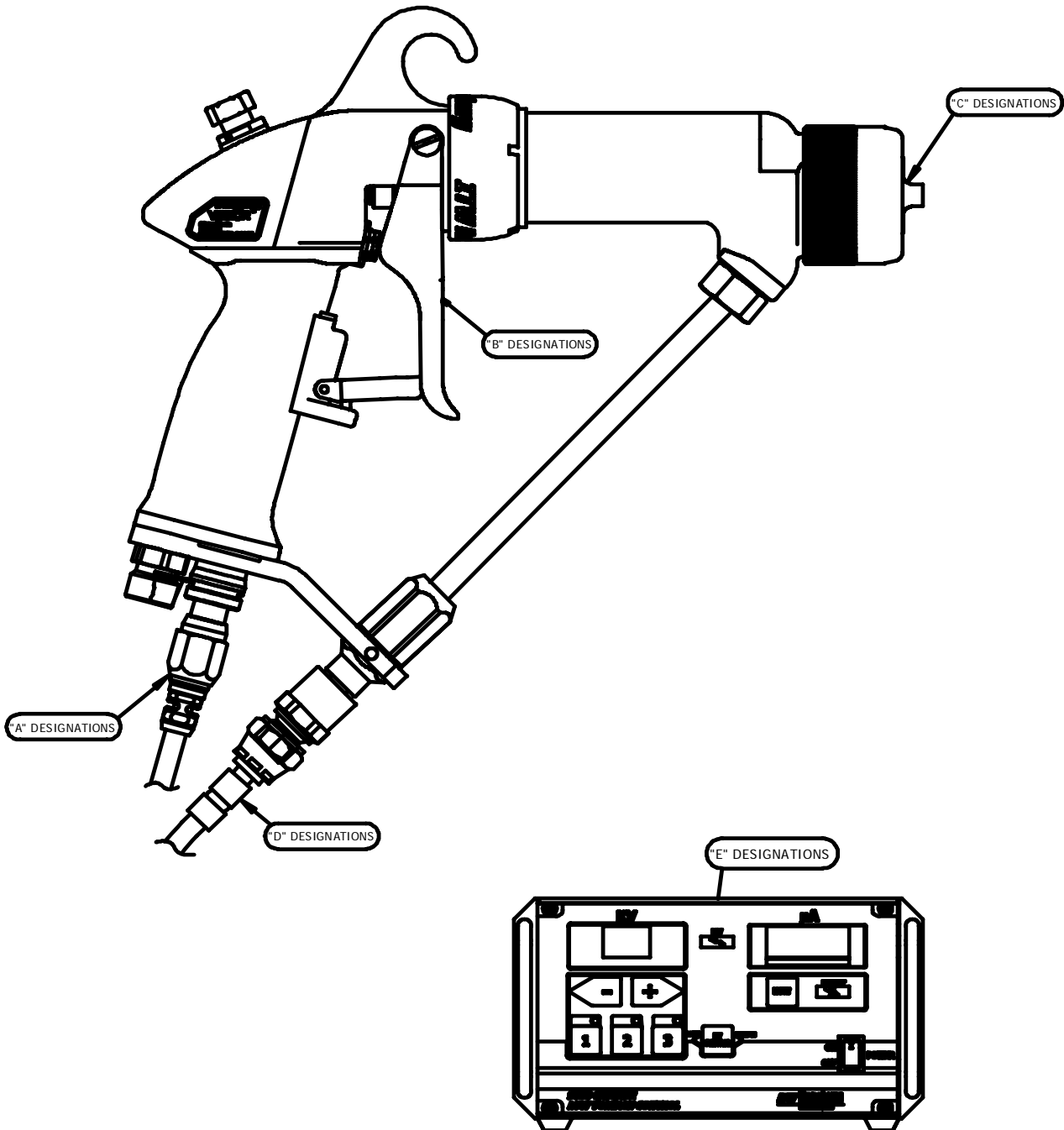
FM Configuration

These applicators are FM approved when configured to drawing 79952, 79953 shown on pages 9 thru 12.

VECTOR AA90 CASCADE. SOLVENT BASED

79580-ABCDE

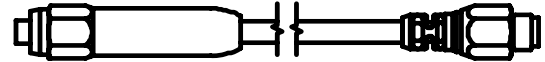
BASE OPTION
MODEL NO. DESIGNATIONS
(ORDERING INFORMATION ONLY)



CONFIGURATION DWG. 79952 REV A

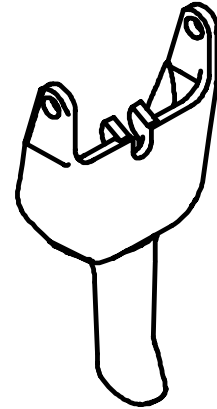
OPTION "A" DESIGNATIONS
CABLE LENGTH

- 0 FOR NO CABLE
1 FOR 10 METER CABLE-PART NUMBER: 79338-10
2 FOR 15 METER CABLE-PART NUMBER: 79338-15
3 FOR 20 METER CABLE-PART NUMBER: 79338-10 (2)
4 FOR 25 METER CABLE-PART NUMBER: 79338-10 (1) & 793 38-15 (1)
5 FOR 30 METER CABLE-PART NUMBER: 79338-15 (2)



OPTION "B" DESIGNATIONS
TRIGGER TYPE

- 2 FOR TWO FINGER TRIGGER-PART NUMBER: 79325-12
4 FOR FOUR FINGER TRIGGER-PART NUMBER: 79325-14



OPTION "C" DESIGNATIONS
SPRAY TIP SIZE

- 1 FOR 0811 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-0811
2 FOR 0813 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-0813
3 FOR 1011 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-1011
4 FOR 1015 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-1015

APPROVED SPARE TIP LIST

0509 TIP : 79691-0509, 0511 TIP : 79691-0511, 0513 TIP : 79691-0513
1009 TIP : 79691-1009, 1013 TIP : 79691-1013, 1018 TIP : 79691-1018, 1021 TIP : 79691-1021
1311 TIP : 79691-1311, 1313 TIP : 79691-1313, 1315 TIP : 79691-1315, 1318 TIP : 79691-1318
1511 TIP : 79691-1511, 1513 TIP : 79691-1513, 1515 TIP : 79691-1515, 1518 TIP : 79691-1518,
1521 TIP : 79691-1521
1715 TIP : 79691-1715



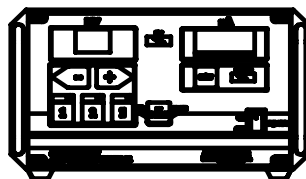
OPTION "D" DESIGNATIONS
FLUID HOSE LENGTH

- 0 FOR NO FLUID HOSE
1 FOR 11m (36FT) FLUID HOSE-PART NUMBER: 7994-36
2 FOR 15m (50FT) FLUID HOSE-PART NUMBER: 7994-50
3 FOR 25m (75FT) FLUID HOSE-PART NUMBER: 7994-75
4 FOR 30m (100FT) FLUID HOSE-PART NUMBER: 7994-100



OPTION "E" DESIGNATIONS
CONTROL UNIT

- 0 FOR NO CONTROL UNIT
1 FOR DOMESTIC SALES, 110/120 V -PART NUMBER: 79513-1 31
2 FOR EXPORT SALES, 240V-50/60 Hz -PART NUMBER: 79513-132

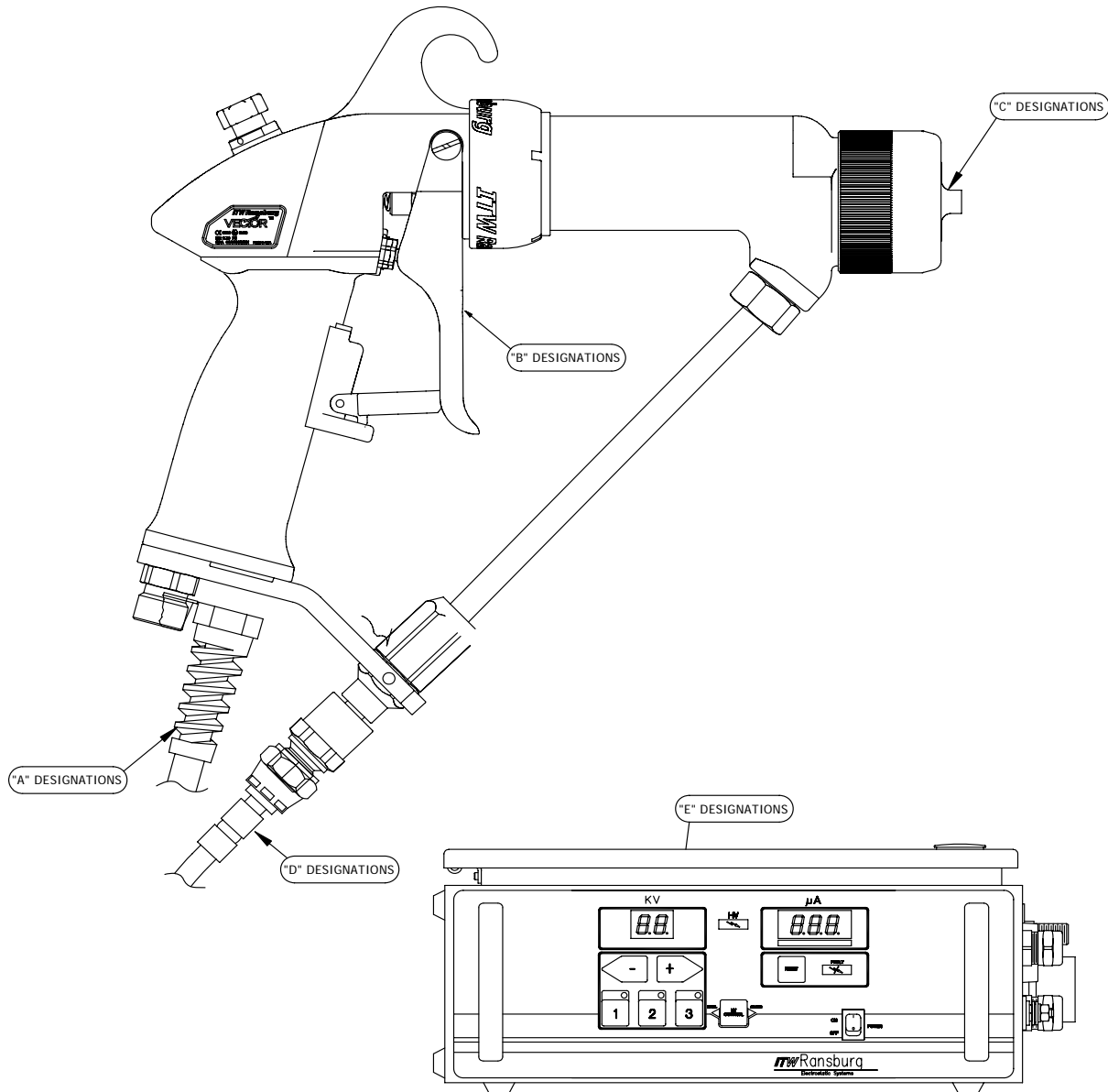


CONFIGURATION DWG. 79952 REV A

VECTOR AA90 CLASSIC, SOLVENT BASED

79581 – ABCDE

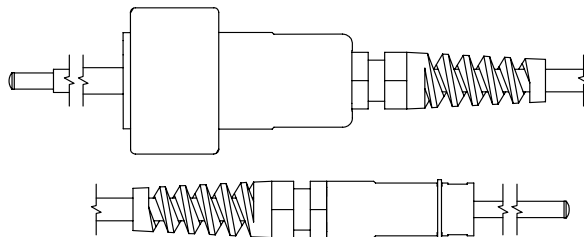
BASE OPTION
MODEL NO. DESIGNATIONS
(ORDERING INFORMATION ONLY)



CONFIGURATION DWG. 79953 REV A

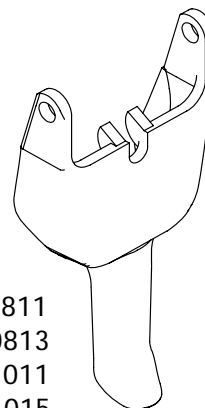
OPTION "A" DESIGNATIONS CABLE LENGTH

- 0 FOR NO CABLE
- 1 FOR 10 METER CABLE-PART NUMBER: 79519-10
- 2 FOR 15 METER CABLE-PART NUMBER: 79519-15
- 3 FOR 20 METER CABLE-PART NUMBER: 79519-20
- 4 FOR 25 METER CABLE-PART NUMBER: 79519-25
- 5 FOR 30 METER CABLE-PART NUMBER: 79519-30



OPTION "B" DESIGNATIONS TRIGGER TYPE

- 2 FOR TWO FINGER TRIGGER-PART NUMBER: 79325-12
- 4 FOR FOUR FINGER TRIGGER-PART NUMBER: 79325-14



OPTION "C" DESIGNATIONS SPRAY TIP SIZE

- 1 FOR 0811 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-0811
- 2 FOR 0813 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-0813
- 3 FOR 1011 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-1011
- 4 FOR 1015 TIP WITHOUT PREORIFICE-PART NUMBER: 79691-1015

APPROVED SPARE TIP LIST

0509 TIP : 79691-0509, 0511 TIP : 79691-0511, 0513 TIP : 79691-0513
 1009 TIP : 79691-1009, 1013 TIP : 79691-1013, 1018 TIP : 79691-1018, 1021 TIP : 79691-1021
 1311 TIP : 79691-1311, 1313 TIP : 79691-1313, 1315 TIP : 79691-1315, 1318 TIP : 79691-1318
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 1521 TIP : 79691-1521
 1715 TIP : 79691-1715



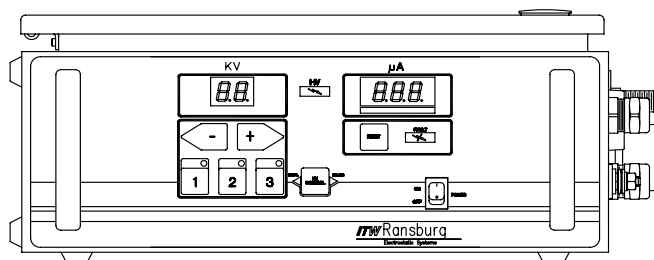
OPTION "D" DESIGNATIONS FLUID HOSE LENGTH

- 0 FOR NO FLUID HOSE
- 1 FOR 11m (36FT) FLUID HOSE-PART NUMBER: 7994-36
- 2 FOR 15m (50FT) FLUID HOSE-PART NUMBER: 7994-50
- 3 FOR 25m (75FT) FLUID HOSE-PART NUMBER: 7994-75
- 4 FOR 30m (100FT) FLUID HOSE-PART NUMBER: 7994-100



OPTION "E" DESIGNATIONS CONTROL UNIT

- 0 FOR NO CONTROL UNIT
- 1 FOR 110/120 V-PART NUMBER: 79344-141
- 2 FOR 240V-50/60 Hz-PART NUMBER: 79344-142



CONFIGURATION DWG. 79953 REV A

INTRODUCTION

THE ITW RANSBURG ELECTROSTATIC VECTOR AA90 PROCESS

This is a combined air/airless method for electrostatically applying coatings to objects. The **Vector AA90** system applies a high voltage DC charge to the applicator electrode, creating an electrostatic field between the electrode and the grounded target. The target is electrically grounded through its support which may be either stationary or moving.

A regulated high pressure fluid system delivers coating material to the fluid nozzle and is atomized by passing through an orifice under pressure. The atomized spray particles become electrically charged under the influence of the electrostatic field surrounding the nozzle. The air supply to the applicator 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, a high percentage of the coating is deposited on the target.

One of the many features of the Vector AA90 applicator system is that the electrical energy, which is available from the resistive charging electrode, is limited to the optimum level of safety and efficiency. The system is incapable of releasing sufficient electrical or thermal energy during normal operating conditions to cause ignition of specific hazardous materials in their most easily ignited concentrations in air.

The power supply provides voltage output to the applicator and contains controls for AC on/off, high voltage adjust, "one touch" triple setpoint, and displays kV and μ A in real time.

As the applicator electrode approaches ground, the power supply and applicator circuitry cause the high voltage to approach zero while the current approaches its maximum value.

WARNING

- When more than one waterborne applicator is fed from a common isolated fluid supply, there is a potential for electrical energy discharge through any other applicators when one applicator is triggered. Depending upon the system capacity, this discharge could be hazardous. Install only one spray applicator per isolated fluid supply system.

NOTES

SPECIFICATIONS SOLVENTBORNE (CASCADE)

Environmental/Physical

Applicator Length:	25.9cm (10.2-inches)
Weight:	760g (1.67 lbs.) (Cascade)
Hose and Cable Lengths:	10m, 15m, 20m, 25m, and 30m
Atomizer Assembly:	79580-0XXXX (See "Nozzle Selection Guide")

Electrical

Operating Voltage:	85 kV maximum
Current Output:	
Cascade:	65 microamperes maximum
Paint Resistance:*	.1 MΩ to ∞
Part Sprayability:	Determine sprayability of part to be coated using Model No. 76652 Test Equip- ment

(See "Paint, HV & SCI Test Equipment" service manual.)

Mechanical

Fluid Pressure:	193 bar (2800 psi) (maximum)
Fluid Flow Rate:	Variable to 1,500 cc/minute (spray tip dependent)
Air Pressure:	6.9 bar (0-100 psi) (maximum)

Sound Level

Consumption:	83 dB(A) @ 2.1 bar (30 psig)
Wetted Parts:	Nylon, Acetal, Stainless Steel, Teflon, and Carbide

*(Use Model No. 76652, Test Equipment)

79513-13X CONTROL UNIT ELECTRICAL SPECIFICATIONS

Electrical

Input Voltage:	100-240 VAC
Current:	1 A maximum RMS
Frequency:	50/60 Hz
Wattage:	40 watts (maximum)
Output Voltage:	20 VDC maximum
Current:	1A DC maximum

Physical

Height:	14.0cm (5.5-inches)
Width:	21.6cm (8.5-inches)
Depth:	19.1cm (7.5-inches)
Weight:	3.4 Kg (7.5 lbs.)

Pneumatic

Supply Air:	6.9 bar (100 psig) maximum
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Control Unit Inputs / Outputs

9050 Part #	Voltage Designation	Maximum Output
79513-131	110/120 VAC	-85 kV DC
79513-132	220/240 VAC	-85 kV DC

Control Unit / Applicator Combinations

9050 Part #	For Use With
79513-131	79580-0XXXX
79513-132	79580-0XXXX

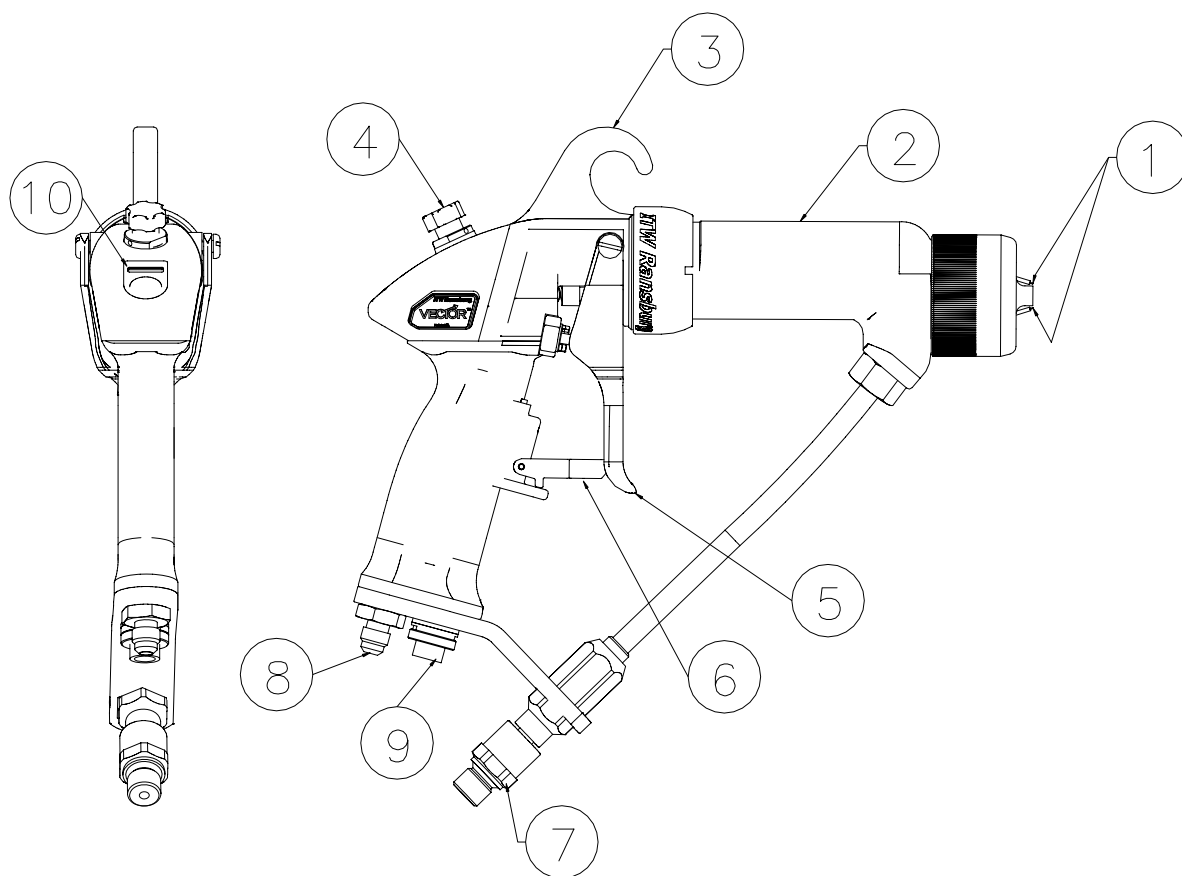


Figure 1: AA90 Cascade Solventborne Electrostatic Spray Applicator Features - Air Assist

AA90 CASCADE SOLVENTBORNE ELECTROSTATIC SPRAY APPLICATOR FEATURES - AIR ASSIST			
No.	Description	No.	Description
1	Cap/Electrode	6	Trigger Lock Assembly
2	Barrel, HP	7	Fluid Hose Connection
3	Replaceable Hook	8	Air Inlet Connection
4	Fan Air Adjust	9	Low Voltage Cable Connection
5	2-Finger Trigger	10	kV Setpoint Switch/Microamp Display

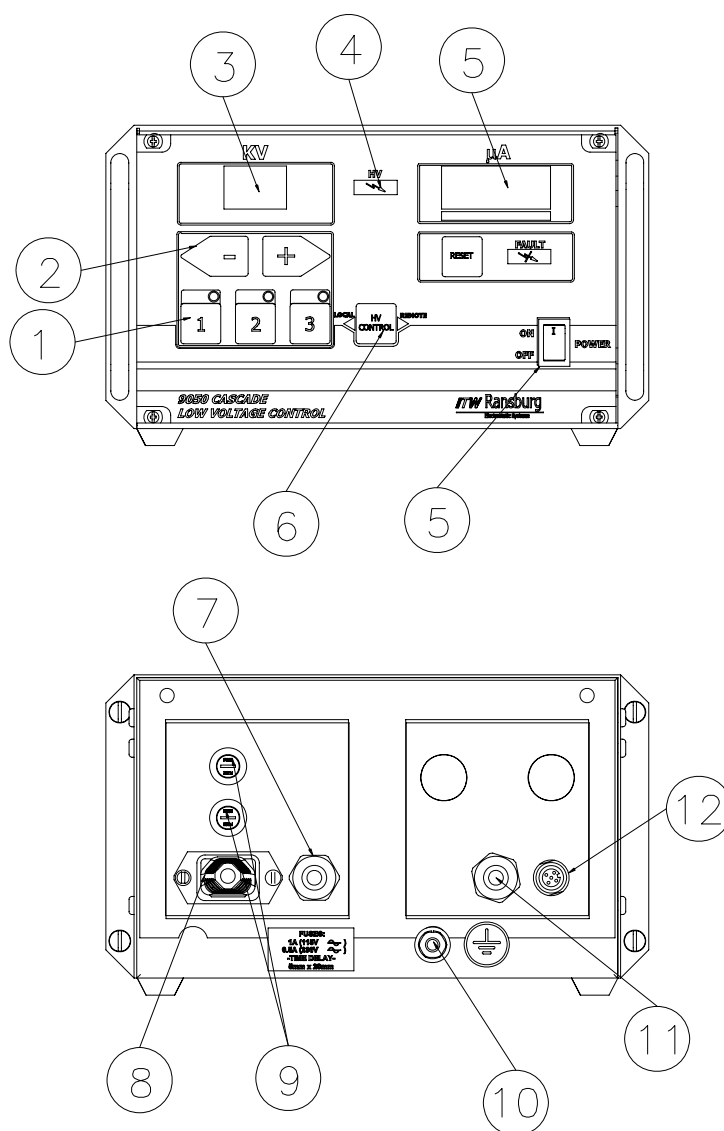


Figure 2: 79513-13X Cascade Control Unit Features

79513-13X CASCADE CONTROL UNIT FEATURES			
No.	Description	No.	Description
1	Setpoint Adjust Buttons	7	Interlock Connector
2	kV Setpoint Adjust Button	8	AC Line Connector
3	kV Meter	9	Fuses
4	HV On Indicator	10	Ground Lug
5	μA Meter	11	Standard I/O Connector
6	Local/Remote Mode Indicator	12	Low Voltage Cable Connector

SPECIFICATIONS SOLVENTBORNE (CLASSIC)

Environmental/Physical

Applicator Length:	2.59cm (10.2-inches)
Weight:	687.5g (1.52 lbs.) (Classic)
Hose and Cable Lengths:	10m, 15m, 20m, 25m, and 30m
Atomizer Assembly:	79581-0XXXX (See "Nozzle Selection Guide")

Electrical

Operating Voltage:	85 kV maximum
Current Output:	
Classic:	90 microamperes maximum
Paint Resistance:*	.1 MΩ to ∞
Part Sprayability:	Determine sprayability of part to be coated using Model No. 76652 Test Equipment

(See "Paint, HV and SCI Test Equipment" service manual.)

Mechanical

Fluid Pressure:	193 bar (2800 psi) (maximum)
Fluid Flow Rate:	Variable to 1,500 cc/minute (spray tip dependent)
Air Pressure:	6.9 bar (0-100 psi) (maximum)

Sound Level

Consumption:	83.2 dB(A) @ 2.1 bar (30 psig)
Wetted Parts:	Nylon, Acetal, Stainless Steel, Teflon, and Carbide

*(Use Model No. 76652, Test Equipment)

79344-14X 9050 POWER SUPPLY ELECTRICAL SPECIFICATIONS

Electrical

Input Voltage:	100-240 VAC
Current:	1 A maximum RMS
Frequency:	50/60 Hz
Wattage:	40 watts (maximum)
Output Voltage:	20-85 kV DC
Current:	90 microamps (maximum)

Physical

Height:	16.5cm (6.5-inches)
Width:	37.8cm (14.9-inches)
Depth:	30.7cm (12.1-inches)
Weight:	10.2 Kg (22.5 lbs.)

Pneumatic

Supply Air:	6.9 bar (100 psig) (maximum)
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Control Unit Inputs / Outputs

9050 Part #	Voltage Designation	Maximum Output
79344-141	110/120 VAC	-85 kV DC
79344-142	220/240 VAC	-85 kV DC

Control Unit / Applicator Combinations

9050 Part #	For Use With
79344-141	79581-0XXXX
79344-142	79581-0XXXX

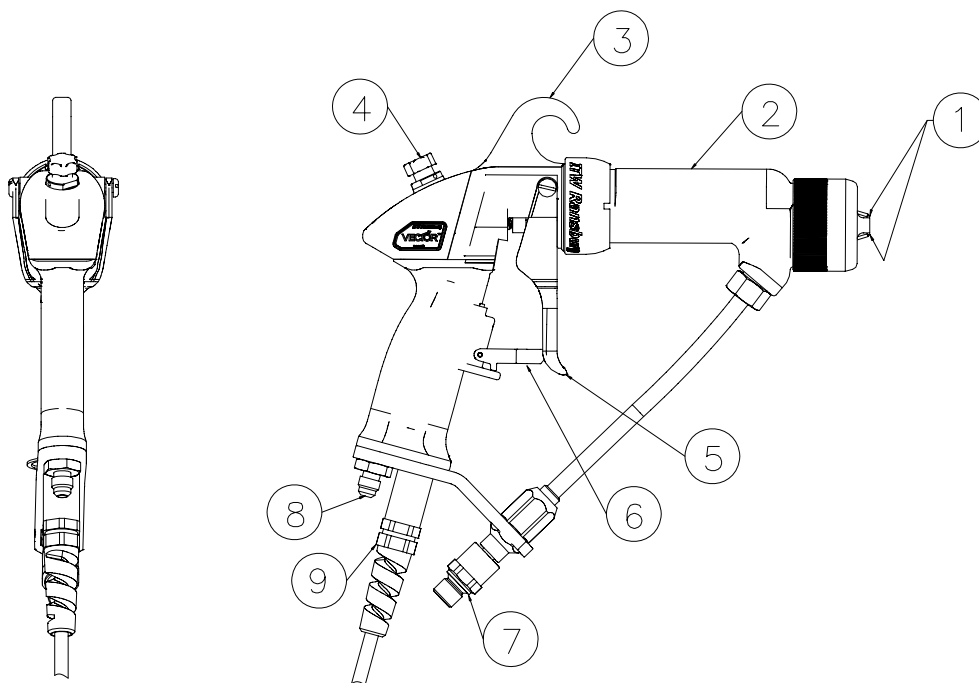


Figure 3: AA90 Classic Solventborne Electrostatic Spray Applicator Features - Air Assist

AA90 CLASSIC SOLVENTBORNE ELECTROSTATIC SPRAY APPLICATOR FEATURES - AIR ASSIST

No.	Description	No.	Description
1	Cap/Electrode	6	Trigger Lock Assembly
2	Barrel, HP	7	Fluid Hose Connection
3	Replaceable Hook	8	Air Inlet Connections
4	Fan Air Adjust	9	High Voltage Cable Connection
5	2-Finger Trigger		

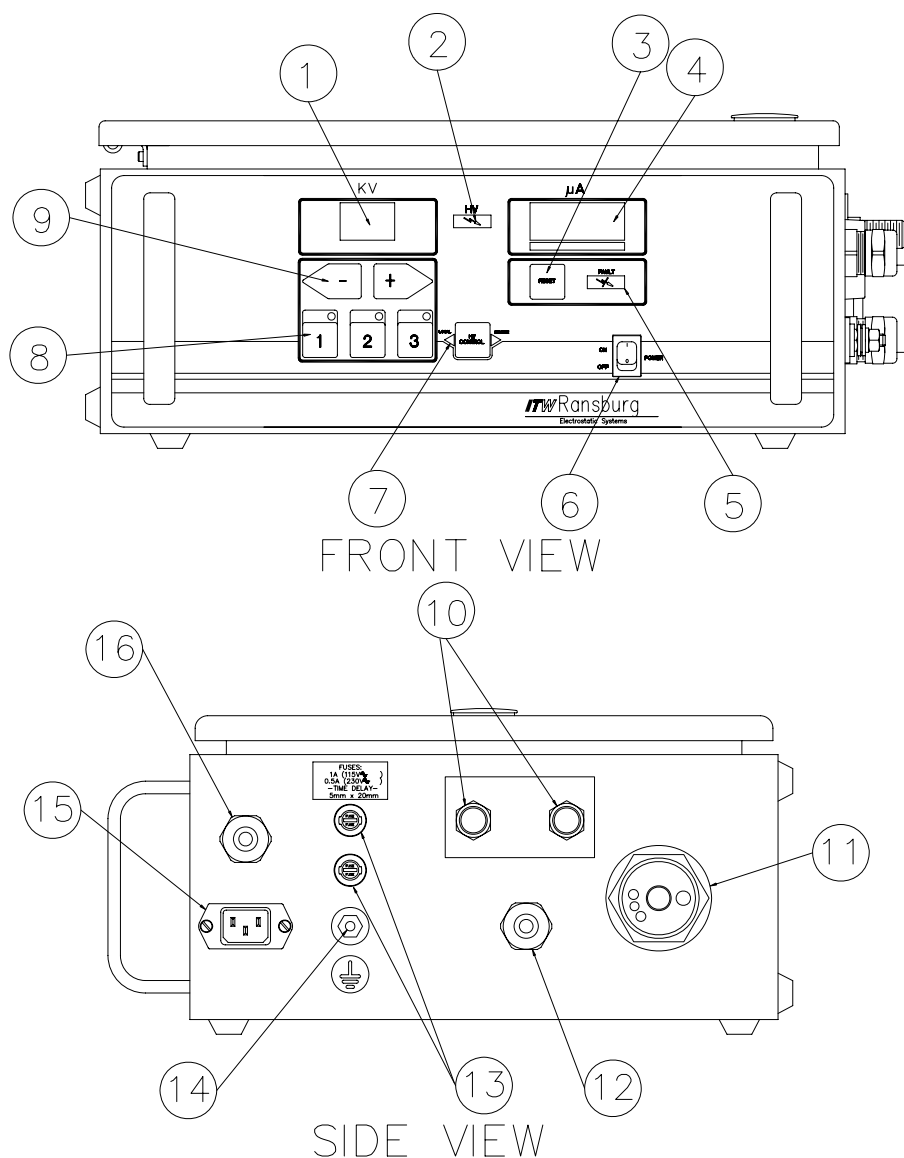


Figure 4: 79344-14X 9050 Power Supply Features

79344-14X 9050 POWER SUPPLY FEATURES			
No.	Description	No.	Description
1	kV Meter	9	kV Setpoint/Adjust Buttons
2	High Voltage On Indicator	10	Air Flow Switch Connections (Low Flow)
3	Reset Button	11	High Voltage Cable Connector
4	μ A Meter	12	Standard I/O Connector
5	Fault Indicator	13	Fuses
6	On-Off Switch	14	Ground Lug
7	Local Remote Mode Indicator	15	AC Inlet Receptacle
8	"One Touch" kV Setpoint Button	16	Interlock I/O Connector

INSTALLATION

! WARNING

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

This information is intended **ONLY** to indicate general installation guidelines of this product and its working relationship to other ITW Ransburg system components. Each installation is unique and should be directed by an ITW Ransburg representative.

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. Ensure that all target objects have a resistance to ground of one megohm or LESS.

! CAUTION

- Target grounding wire must not be connected directly to the ground lug of the 9050. A separate ground line must be used for each connection.

- Ensure that all elements of the coating system are correctly grounded, connected, and located.

- Position all non-approved electrical apparatus (including, but not limited to, high voltage power supplies, fluid pumps, and air compressors) outside of the hazardous location. See the appropriate country or local codes.
- Provide appropriate fire extinguishing equipment.
- Provide conductive flooring in all spray areas.

TYPICAL AA90 CASCADE APPLICATOR INSTALLATION

Connect the low voltage cable to the control unit low voltage socket. Gently hand tighten the cable retaining nut. Connect the other end of the low voltage cable to the applicator, using a wrench to tighten. Slide the cable boot over the nut.

! CAUTION

- **DO NOT** overtighten the low voltage cable connection to the applicator. Damage to plastic parts may occur.

The control unit may be connected through conduit with an explosion-proof switch on or near the spray booth where it will be convenient to the operator, or may be connected with a power cord depending upon application requirement.

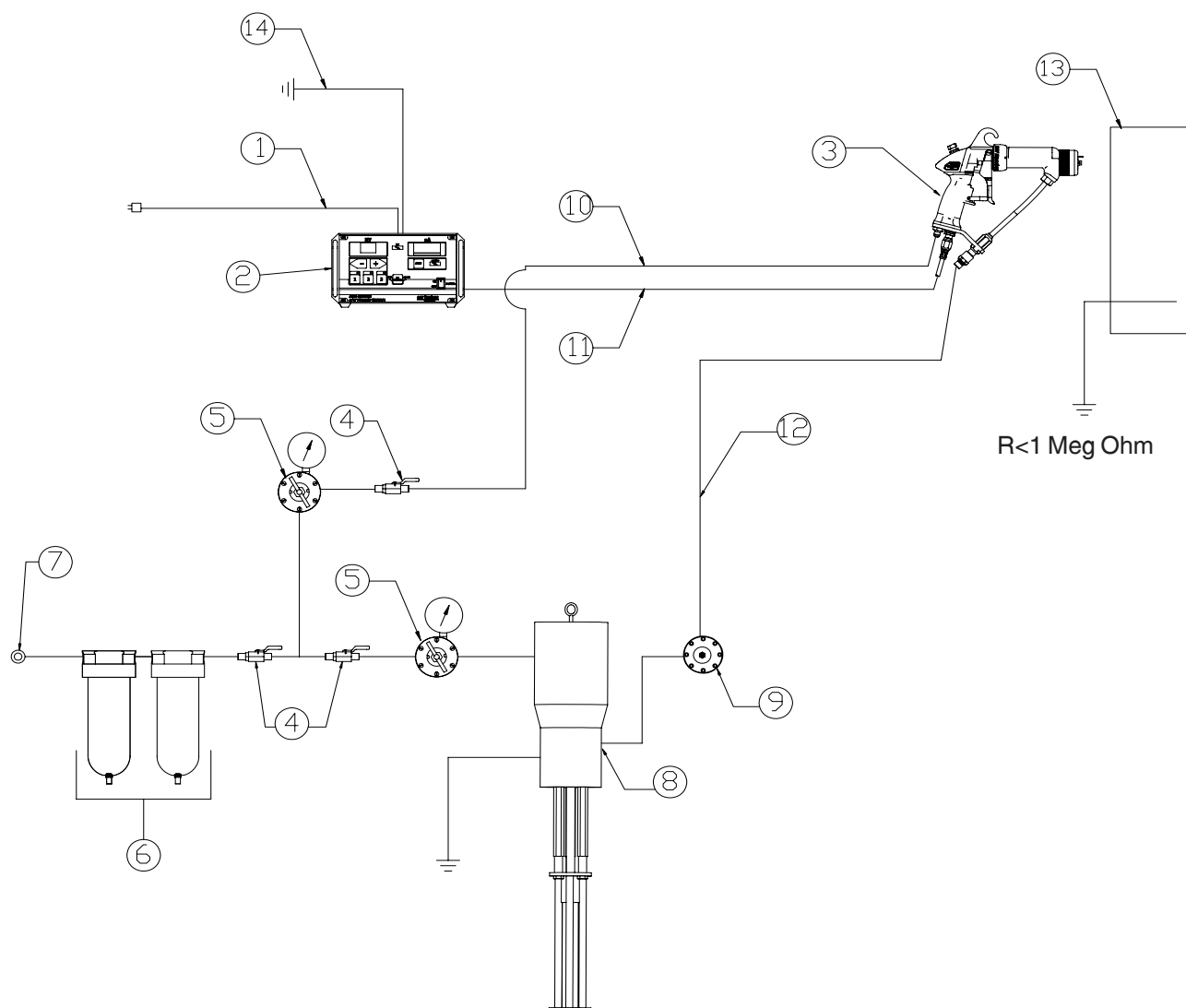


Figure 5: Typical AA90 Cascade Applicator Installation Features

TYPICAL AA90 CASCADE APPLICATOR INSTALLATION FEATURES			
No.	Description	No.	Description
1	AC Line Cord (110/220)	8	Fluid Supply (Grounded)
2	9050 Control Unit	9	Fluid Regulator
3	Vector Applicator	10	Air Line
4	Ball Valve	11	Low Voltage Cable
5	Air Regulator W/Pressure Gauge	12	Fluid Line
6	Air/Water Separator	13	Target (Earth or Building Ground)
7	Main Air Supply	14	9050 Ground (Seperate Earth or Building Ground)

MOUNTING THE CONTROL UNIT

The Vector AA90 cascade applicators have an optional Mounting Kit available 79527-00. This kit allows either top mounting or back mounting, with either swing-away or fixed attachment.

There are four convenient ways of mounting the enclosure assembly using the included hardware (see Figure 6).

CAUTION

► When mounting the control unit to a wall or ceiling, the 79527-00 9050 Mounting Kit should be used. If mounting to a non-metallic wall or ceiling, the mounting screws must be secured to the wall or ceiling studs. If mounting to a metal wall or ceiling (such as a spray booth) the wall or ceiling must be at least 0.050" (1.2mm) thick. In both cases, the customer must supply the screws to attach the brackets to the wall or ceiling. These screws should be at least 1/4" (6mm) in diameter.

79527-00 9050 MOUNTING KIT - PARTS LIST (Figure 6)

Item #	Part #	Description	Qty
1	79512-00	Enclosure Assembly, 9050 Cascade (Ref. - Not in Kit)	–
2	79493-00	Screw, Pan Head, 8-32 Phillips, Stainless Steel	8
3	79489-00	Bracket, Machined, 9050 Cascade	1
4	79488-00	Hinge, Machined, 9050 Cascade	1
5	79490-00	Bracket, Wall Mount, 9050 Cascade	2
6	7734-03	Lock Washer, Standard, Helical Spring	6
7	SI-0222-06	Service Instruction	1

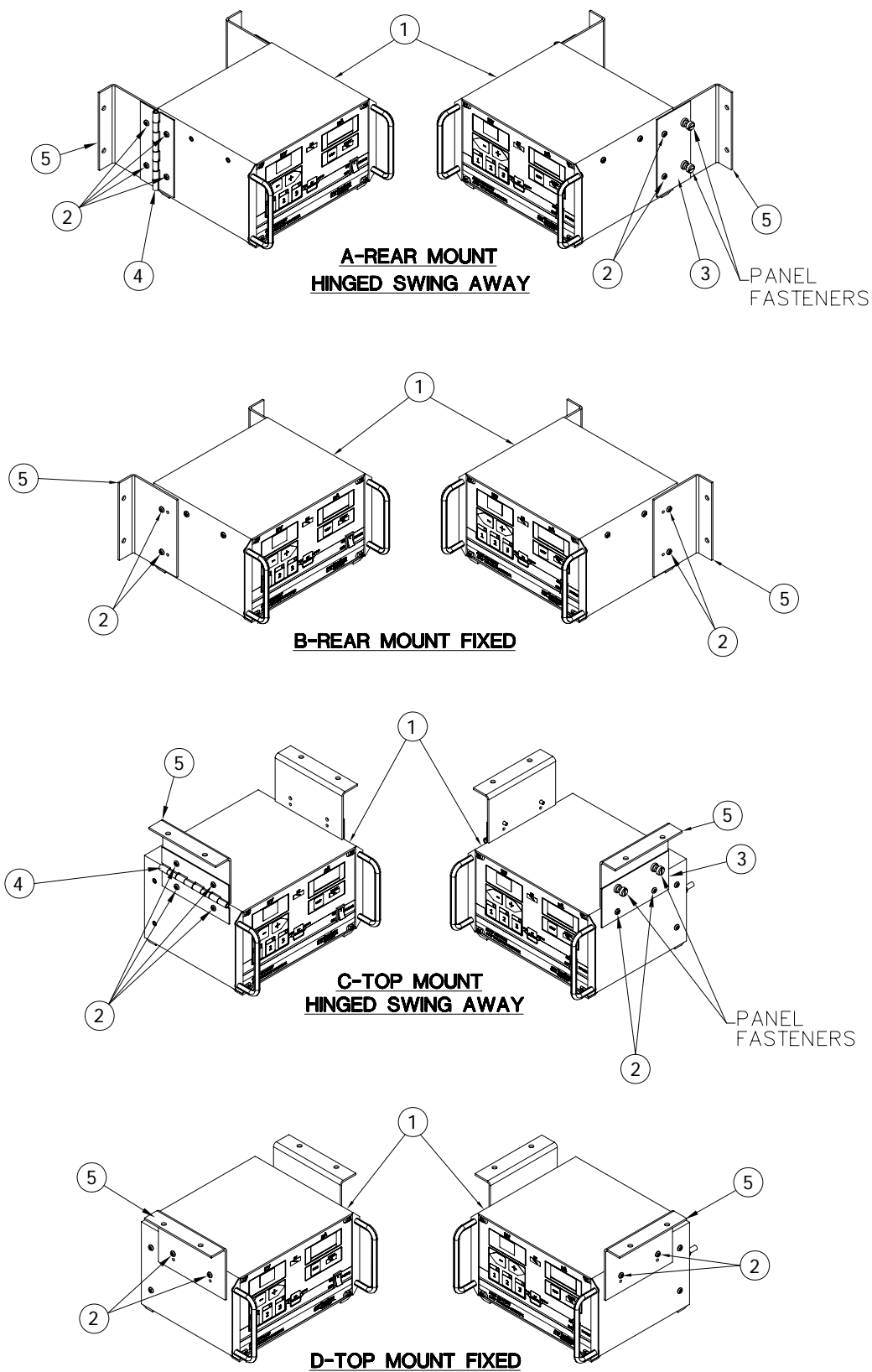


Figure 6: 79527-00 9050 Cascade Enclosures

ELECTRICAL NOISE

General Information - Classic or Cascade

Electrical noise refers to stray electrical signals in the atmosphere at various signal strengths and frequencies that can affect the operation of equipment. One of the best ways to prevent this is to shield the equipment and cables within a **continuous** ground envelope, such that any incident noise will be conducted to earth ground before it can affect the circuit conductors.

For conductors inside the control unit or power supply, the grounded enclosures provide this envelope. For the cables that connect the applicator to the control unit or power supply, a shielded cable has been used. The shield consists of an overall foil shield in combination with an overall braided shield. This provides the most effective shielding, as the foil covers the "holes" in the braid, and the braid allows for practical 360° termination at both ends of the cable.

The AC input cord is not shielded, but instead is directed to an AC line filter as soon as it enters the cabinet. This method filters out any noise that comes in on the AC line. For maximum noise immunity the AC line should connect to the filter as soon as it enters the cabinet with as short of leads as possible. Additional noise protection can be provided by running the AC input line to the control panel in grounded conduit.

For maximum noise protection any user supplied input/output (I/O) wiring should be made using shielded cable (or conduit) which is connected to earth ground in a continuous 360° fashion at both ends. The best way to do this is to use a connector (conduit fitting) at each end of the cable (conduit) that makes contact to the shield (conduit) in a full 360° circle around the cable (conduit) and makes contact to the grounded enclosure in the same fashion. Connecting the drain wire of a shield to a ground point on or in the cabinet (usually referred to as pigtail) is not an effective method of shielding and actually makes things worse (see Figure 7).

It is recommended that all AC I/O (interlocks) be run in conduit. If desired and codes permit, cabling may be used for these signals, but for maximum noise immunity the cabling must contain overall foil and braided shields and be terminated as described in the preceding paragraph.

Cable is recommended for the DC I/O (high voltage output signal, fault output signal). Again, for maximum noise immunity the cabling must contain overall foil and braided shields and be terminated in a continuous 360° manner as described above. Special fittings have been provided on the control panel for termination of these cables at that point. The use of these fittings is described in the corresponding sections of this manual.

Using the methods described above, the 9050 Control Unit and Power Supply have been successfully tested to the stringent standards of the Electromagnetic Compatibility Directive of the European Union. The results conclude that these units are neither a source of electrical noise nor affected by electrical noise when the above methods are utilized.

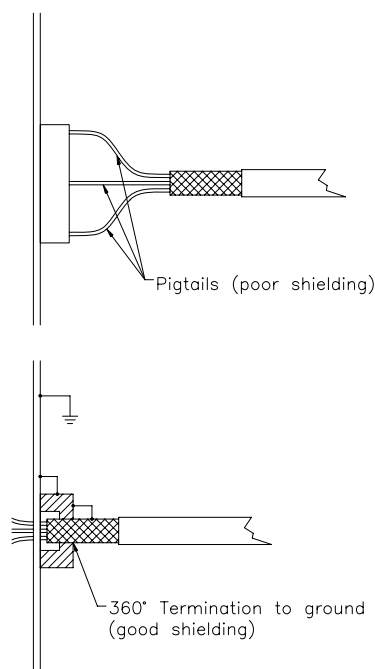


Figure 7: Pigtailing Connection

I/O CONNECTIONS (CASCADE UNITS)

For maximum noise immunity, I/O wiring should be run in conduit or cables having a foil shield with an overall braided shield. The foil shield provides 100% shielding, while the braid provides a means of making proper 360° shield terminations at the cable to cabinet connection points. To make I/O connections using shielded cable, perform the following:

1. Remove the cable grommet hardware from the desired I/O connector housing (see Figure 8).
2. Route the desired length of I/O cable through the connector housing and mark 1-inch span of cable that passes through connector housing to be stripped to braid (see Figure 9).
3. Remove cable and strip marked 1-inch section to cable braid.
4. Slide the cable grommet hardware onto the cable in the order shown in Figure 8.
5. Route the cable back through the connector housing and connect its wires to the desired I/O terminals inside the 9050 Control Unit or power supply.
6. Tighten the cable grommet ensuring the grommet spring makes 360° contact with the exposed braid of the cable, for maximum noise immunity.
7. For maximum noise immunity, connect the braid of the cable to earth ground at the end opposite the control unit or power supply.

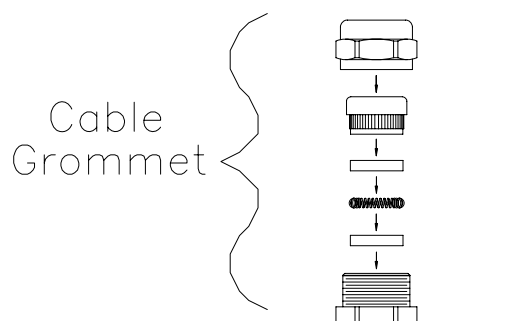


Figure 8: Cable Grommet

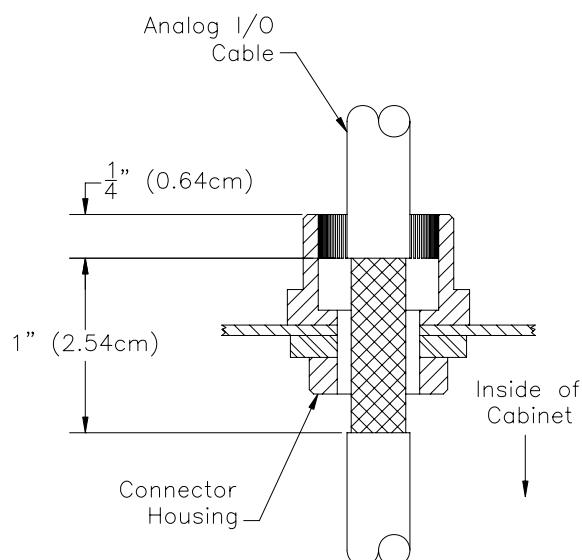


Figure 9: I/O Cable Stripping

AC INPUT CONNECTIONS (CASCADE UNITS)

For non-conduit installations, plug the detachable AC line cord into the receptacle on the rear of the control unit. Plug the other end of the line cord into a properly grounded 120 volt AC outlet.

NOTE

- Due to variations in source connections, European units are shipped without an AC line cord. When selecting a line cord for these units, select one that has the appropriate source connector at the plug end, and an IEC-60320 C13 connector at the control unit end of the cord. The cord should be rated for at least 60°C, have 0.8mm² (18 AWG) minimum conductors, and be less than 6m (20 ft.) in length.

NOTE

- In general, conduit must be used for approved AC installation, however, if national and local codes permit, the AC power may be supplied via the factory supplied line cord. If conduit is utilized, the control unit AC input wiring may be routed through an optional explosion proof switch mounted on or near the spray booth where it will be convenient to the operator.

For installations where it is required to run the AC input wiring in conduit, perform the following:

- Ensure the AC line cord is unplugged** and remove the AC inlet receptacle wiring from TB1-N, TB1-L1, and TB1-EARTH GROUND (see Figures 10a and 10b).

- Remove the mounting hardware from the AC inlet receptacle and remove it from the rear of the control unit.

- Install the Conduit Adapter Plate (supplied) in the hole where the AC inlet receptacle was removed (see Figure 10c).

- Install the AC input wiring (0.8mm² (18 AWG) minimum) through the Conduit Adapter Plate using conduit and wire to TB1 as follows:

Hot/Line	to TB1-L1
Neutral/Common	to TB1-N
Ground	to TB1-EARTH GROUND

NOTE

- When using conduit to route the AC input wiring to the control unit, the last several feet of conduit attached to the control unit should be of a flexible type, such that the control unit chassis can still be slid out of its enclosure for testing and set-up purposes.

Safety Ground

Crimp the appropriate terminal onto the ground wire assembly and install from the control unit ground lug, located on the back of the control unit, to a true earth ground.

INTERLOCKS

Interlocks required by code are as follows:

- Booth fan interlock - When the booth fan is on, a contact closure is made.
- Conveyor interlock - when the conveyor is moving a contact closure is made.
- Solvent interlock - When solvent supply to the applicator is off, a contact closure is made.

! WARNING

- Failure to connect interlocks could result in fire or explosion.

! WARNING

- Never flush the applicator while high voltage is on.

To install the control unit interlocks perform the following:

1. Turn the control unit off and remove the fuses.

2. Loosen the front panel screws and slide the control unit chassis out.

3. Using a small blade screwdriver, remove the factory installed test jumper from TB1-L2 to TB1-L3.

4. Using a shielded cable for the interlock wiring (supplied by user), route through the interlock connector on the rear of the control unit and terminate to TB1-L2 and TB1-L3 as shown in Figure 10a. The shielded cable must have a minimum rating of 300V and 105°C and its conductors should be 0.8mm² (18 AWG) minimum. Secure the cable to the interlock connector as described in the "I/O Connectors" in this section, so that the shield of the cable is connected to the chassis of the enclosure.

NOTE

- Some codes may require the interlock wiring to be run in conduit. In this case shielded cable is not necessary, but the conductors used should still meet the ratings specified above.

5. Slide the chassis back in, secure the front panel screws, and replace the fuses.

NOTE

- The interlock contacts (supplied by user) should be rated for at least 1 amp at 240 volts AC.

RELAY CONTACT OUTPUTS

A set of relay contacts for high voltage (CR1) and fault (CR2) conditions is provided at TB2-3 and TB2-1 (see Figure 10a). One end of these relay contacts are connected together and also connected to a source input terminal at TB2-2 (see Figure 10c). When a source voltage is present at TB2-2 and either the high voltage is on or a fault condition occurs, the source voltage will become available at the output end of the corresponding contact. Maximum contact ratings are as follows:

MAXIMUM CONTACT RATINGS

Description	DC	AC
Max. Switching Capacity	60W	62.5VA
Max. Operating Voltage	125VDC	125VAC
Max. Operating Current	2A	2A

When wiring to TB2, use a shielded cable and route the wiring through the standard I/O connector as described in the "I/O Connectors" in this section.

NOTE

- An internal 24VDC source voltage is available at TB2-4. Using a jumper wire, this voltage may be connected to TB2-2 to be used as the source voltage for the relay contact outputs. In this case, the total current sourced should not exceed 1 amp.



LOW VOLTAGE CABLE

Connect the low voltage cable from the control unit to the applicator using a wrench to tighten.

! CAUTION

- **DO NOT** overtighten the low voltage connection at the applicator. The plastic parts could be damaged.

With the Vector design, multiple cables may be connected together to create the length required, up to a maximum of 30m (100 ft.). To connect the cables, insert the male end of one cable into the female end of the other. Tighten both cable connectors against each other using two (2) 16mm (5/8") open-end wrenches.



Figure 11: Daisy Chained Cable

TYPICAL AA90 CLASSIC APPLICATOR INSTALLATION

Connect the low voltage cable to the control unit low voltage socket. Gently hand tighten the cable retaining nut.

Connect the outlet from a regulator supply switch with air hose to the applicator using a wrench. (The cascade unit uses reed switch triggering)

The control unit may be connected through conduit with an explosion-proof switch on or near the spray booth where it will be convenient to the operator, or may be connected with a power cord depending upon application requirement.

! WARNING

- The electrical discharge that is available from the charging electrode must not exceed 0.25 mJ of energy. To achieve this limit, any flow of energy from the paint supply through the paint line to the applicator electrode must be prevented by grounding the paint line at the applicator handle.
- Verify that the applicator handle is actually grounded before operating it! This is done with a fully connected and operational system, by placing one lead of an ohmmeter to the handle and the other to the building electrical ground (cold water pipe, building structure, steel, etc.). This reading should be essentially zero.
- If a greater reading is obtained, check that the control unit is grounded. (See the control unit manual for "Grounding Procedure".)

! WARNING

- The control unit power supply **MUST** be located at least 3 feet outside of the spray area. Install units in accordance with the code requirements. (See local and national codes.)

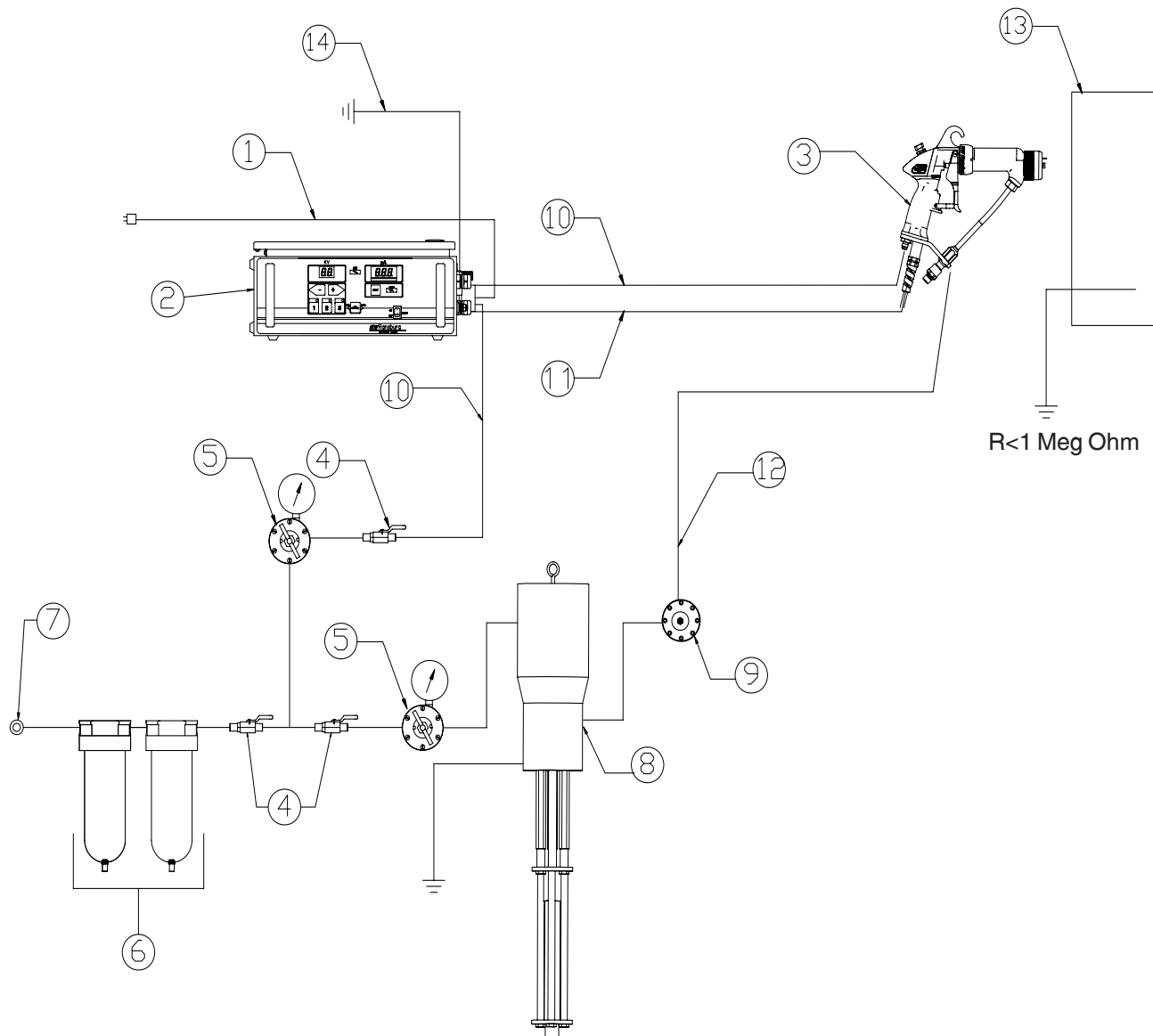


Figure 12: Typical AA90 Classic Applicator Installation Features

TYPICAL AA90 CLASSIC APPLICATOR INSTALLATION FEATURES

No.	Description	No.	Description
1	AC Line Cord (110/220)	8	Fluid Supply (Grounded)
2	9050 Control Unit	9	Fluid Regulator
3	Vector Applicator	10	Air Line
4	Ball Valve	11	Low Voltage Cable
5	Air Regulator W/Pressure Gauge	12	Fluid Line
6	Air/Water Separator	13	Target (Earth or Building Ground)
7	Main Air Supply	14	9050 Ground (Seperate Earth or Building Ground)

CLASSIC POWER SUPPLY INSTALLATION

! CAUTION

► **DO NOT** locate the power supply near or adjacent to heat producing equipment such as ovens, high wattage lamps, etc.

The power supply may be free standing on any flat surface or wall mounted (wall mount brackets not supplied) as shown in Figure 13.

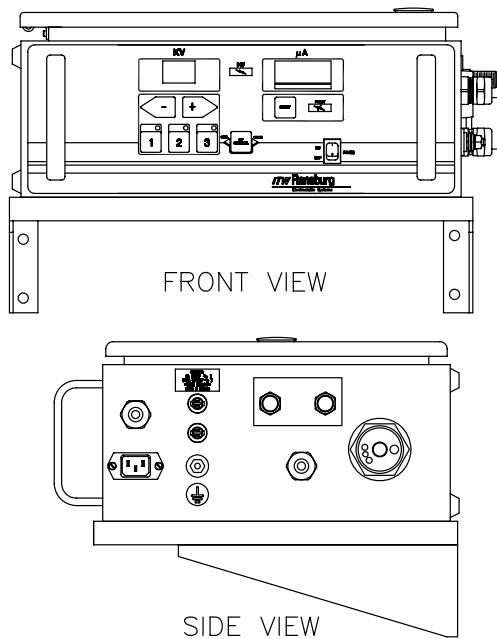


Figure 13: Typical Power Supply Mounting

I/O CONNECTIONS (CLASSIC UNITS)

For maximum noise immunity, I/O wiring should be run in conduit or cables having a foil shield with an overall braided shield. The foil shield provides 100% shielding, while the braid provides a means of making proper 360° shield terminations at the cable to cabinet connection points. To make I/O connections using shielded cable, perform the following:

1. Remove the cable grommet hardware from the desired I/O connector housing (see Figure 14).
2. Route the desired length of I/O cable through the connector housing and mark 1-inch span of cable that passes through connector housing to be stripped to braid (see Figure 15).
3. Remove cable and strip marked 1-inch section to cable braid.
4. Slide the cable grommet hardware onto the cable in the order shown in Figure 14.
5. Route the cable back through the connector housing and connect its wires to the desired I/O terminals inside the 9050 Control Unit or power supply.
6. Tighten the cable grommet ensuring the grommet spring makes 360° contact with the exposed braid of the cable, for maximum noise immunity.
7. For maximum noise immunity, connect the braid of the cable to earth ground at the end opposite the control unit or power supply.

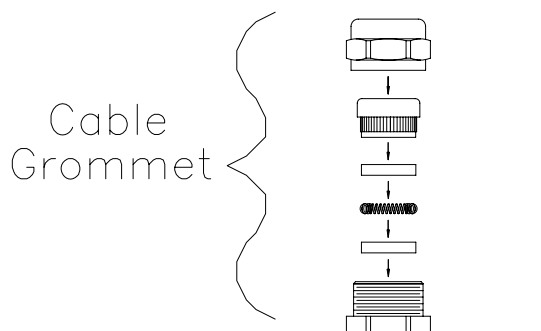


Figure 14: Cable Grommet

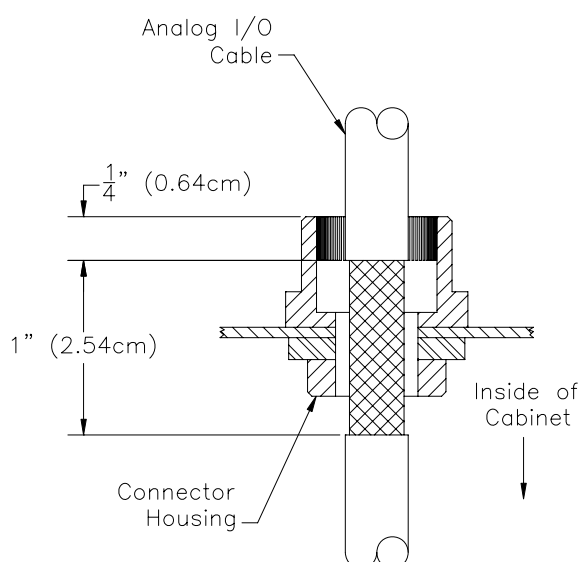


Figure 15: I/O Cable Stripping

AC INPUT CONNECTIONS (CLASSIC UNITS)

For non-conduit installations, plug the detachable AC line cord into the receptacle on the side of the power supply. Plug the other end of the line cord into a properly grounded 120 volt AC outlet.

NOTE

► Due to variations in source connections, European units are shipped without an AC line cord. When selecting a line cord for these units, select one that has the appropriate source connector at the plug end, and an IEC-60320 C13 connector at the power supply end of the cord. The cord should be rated for at least 60°C, have 0.8mm² (18 AWG) minimum conductors and be less than 6m (20 feet) in length.

NOTE

► In general, conduit must be used for approved AC installation, however, if national and local codes permit, the AC power may be supplied via the factory supplied line cord. If conduit is utilized, the power supply AC input wiring may be routed through an optional explosion proof switch mounted on or near the spray booth where it will be convenient to the operator.

For installations where it is required to run the AC input wiring in conduit, perform the following:

1. **Ensure the AC line cord is unplugged** and remove the AC inlet receptacle wiring from TB1-N, TB1- L1 and TB1-EARTH GROUND (see Figures 16a and 16b).
2. Remove the mounting hardware from the AC inlet receptacle and remove it from the rear of the control unit.
3. Install the Conduit Adapter Plate (supplied) in the hole where the AC inlet receptacle was removed (see Figure 16c).

4. Install the AC input wiring (0.8mm² (18 AWG) minimum) through the Conduit Adapter Plate using conduit and wire to TB1 as follows:

Hot/Line to TB1-L1
Neutral/Common to TB1-N
Ground to TB1-EARTH GROUND

Safety Ground

Crimp the appropriate connector onto the ground wire assembly and install from the power supply ground stud, located on the side panel, to a true earth ground.

⚠ CAUTION

► The ground wire assembly **MUST** be connected from the power supply ground stud, located on the side panel, to a true earth ground.

INPUT VOLTAGE SELECTION

The 9050 Power Supply accepts universal input voltage between 100 and 240 VAC. There is no need to change any switch settings when changing input from 115 to 230 VAC or from 230 to 115 VAC.

NOTE

► 9050 units (79344-1X1) shipped from the factory for 115 VAC input will have a 72771-06 1 amp front panel fuse installed. While 9050 units (79344-1X2) shipped from the factory for 230 VAC input will have a 72771-01, 0.5 amp front panel fuse installed. If the other input is required, it is recommended that the fuse be changed in order to keep the same level of protection.

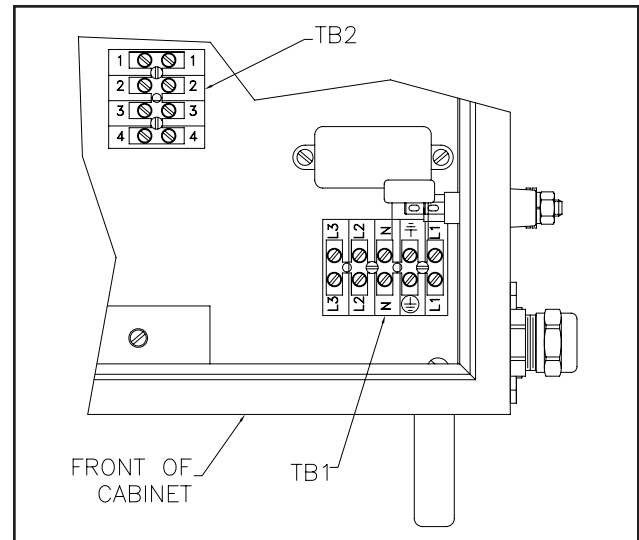


Figure 16a: Location of TB1 and TB2 In Power Supply

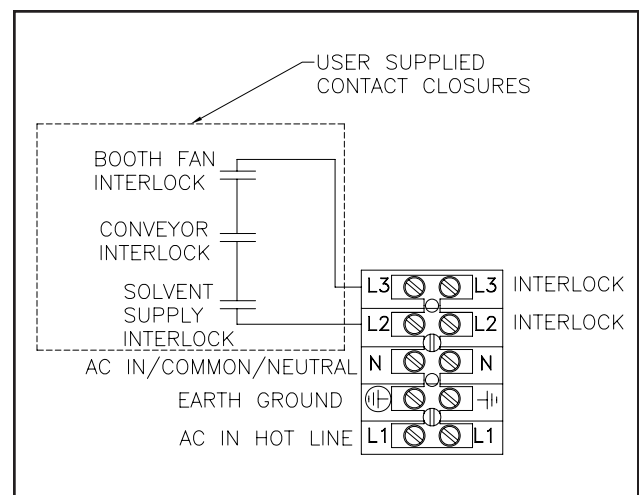


Figure 16b: TB1 Interlock Wiring

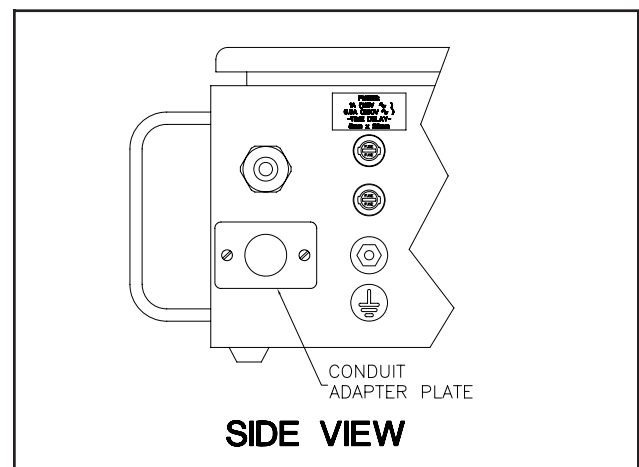


Figure 16c: Installation of Conduit Adapter Plate

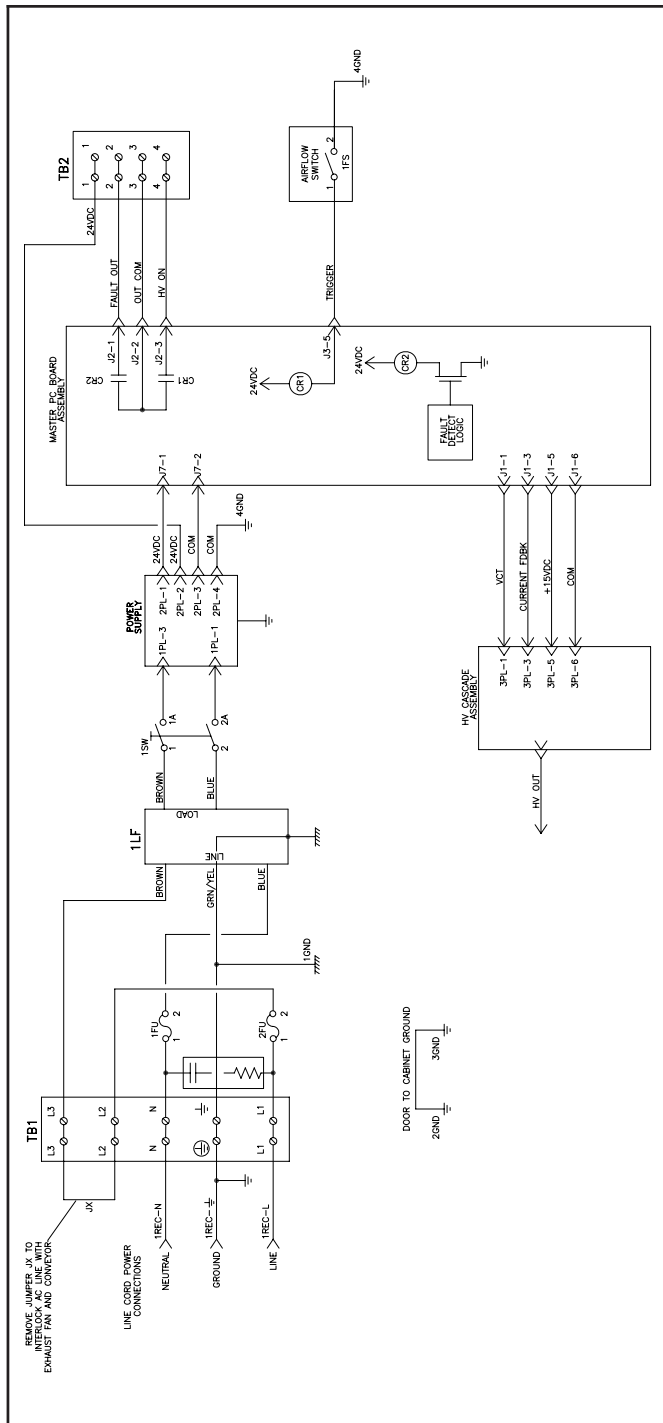


Figure 16d: Power Supply Schematic

INTERLOCKS

Interlocks required by code are as follows:

- Booth Fan Interlock - When the booth fan is on, a contact closure is made.
- Conveyor Interlock - When the conveyor is moving, a contact closure is made.
- Solvent Interlock - When solvent supply to the gun is off, a contact closure is made.

! WARNING

- Failure to connect interlocks could result in fire or explosion.

! WARNING

- **ALWAYS** ensure that high voltage is **OFF** before flushing the applicator with solvent. **NEVER** flush the applicator with high voltage **ON**, as this is a severe fire hazard and risk to personnel safety. It is recommended that the high voltage control be interlocked with the solvent flush signal so that high voltage is automatically locked out whenever flushing occurs. Consult your authorized ITW Ransburg representative for information on interlocking the high voltage **OFF** signal with the solvent flush signal.

As outlined in NFPA-33 and OSHA, the AC power line must be series interlocked with both the exhaust fan and conveyor.

To install the power supply interlocks perform the following:

1. Turn the power supply off, disconnect it from its AC source, and remove the fuses.
2. Open the power supply cabinet door.

! WARNING

- **ALWAYS** double check that the power supply is unplugged from its AC outlet before working with any internal wiring.

3. Using a small blade screwdriver, remove the factory installed test jumper from TB1-L2 to TB1-L3.

4. Using a shielded cable for the interlock wiring (supplied by user), route through the interlock connector on the rear of the power supply and terminate TB1-L2 and TB1-L3 as shown in Figure 16d. The shielded cable must have a minimum rating of 300V and 105°C and its conductors should be 0.8mm² (18 AWG) minimum. Secure the cable to the interlock connector as described in "I/O Connections" in this section so that the shield of the cable is connected to the chassis of the enclosure.

NOTE

- Some codes may require the interlock wiring to be run in conduit. In this case, shielded cable is not necessary, but the conductors used should still meet the ratings specified above.

5. Secure the cabinet door, replace the fuses, and reconnect the AC source.

NOTE

- The interlock contacts (supplied by user) should be rated for at least 1 amp at 240VAC.

HIGH VOLTAGE CABLE

Position the applicator in the spray area and route the high voltage cable to the power supply. The cable should be routed so that it is not damaged by foot and vehicle traffic and also so that it is not close to areas of high temperature (129° F+). The operator should have free movement of the applicator and all bend radii of the cable should not be less than 6-inches (15cm). Connect the high voltage cable to the power supply and tighten the retaining nut and set screw. If during the routing of the high voltage cable it is required to remove it from the applicator, care should be taken when reinstalling so that the clip retaining the high voltage cable in the applicator is completely engaged and the high voltage cable retention screw is tightened to 5-7 lbs•in (.6-.8 Nm) (see Figure 17).

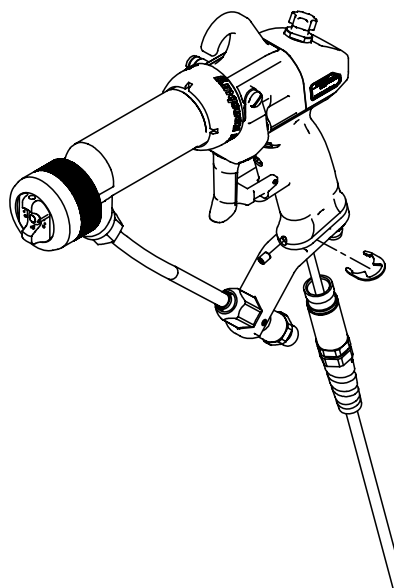


Figure 17: High Voltage Cable Removal and Installation

! WARNING

- The power supply must be off when the applicator is removed or reinstalled.

RELAY CONTACT OUTPUTS

A set of relay contacts for high voltage (CR1) and fault (CR2) conditions is provided at TB2-4 and TB2-2 (see Figure 16a). One end of these relay contacts are connected together and also connected to a source input terminal at TB2-3 (see Figure 16a). When a source voltage is present at TB2-3 and either the high voltage is on or a fault condition occurs, the source voltage will become available at the output end of the corresponding contact. Maximum contact ratings are as follows:

MAXIMUM CONTACT RATINGS		
Description	DC	AC
Max. Switching Capacity	60W	62.5VA
Max. Operating Voltage	125VDC	125VAC
Max. Operating Current	2A	2A

When wiring to TB2, use a shielded cable and route the wiring through the standard I/O connector as described in the "I/O Connectors" in this section.

NOTE

- An internal 24 VDC source voltage is available at TB2-1. Using a jumper wire, this voltage may be connected to TB2-3 to be used as the source voltage for the relay contact outputs. In this case, the total current sourced should not exceed 1 amp.

FILTERS (CLASSIC AND CASCADE)

Install an air filter assembly onto the factory air.

NOTE

- An air filter **MUST** be installed to prevent contamination of the coating material by the atomization and fan air.

LINE HOSE - AIR (CLASSIC AND CASCADE)

ITW Ransburg supplies a standard 2m whip hose with all applicator assemblies. Connect air hose of proper size and length based on application.

! WARNING

- Use only hose rated at 6.9 bar (100 psig) working pressure or above.

LINE HOSE - FLUID (CLASSIC AND CASCADE)

ITW Ransburg supplies a standard 1m whip hose. Optional hose lengths are available. ITW Ransburg offers this hose **ONLY** as a complete assembly to ensure that the hose is properly grounded at each end fitting.

! WARNING

- Use only high pressure hose rated at 193 bar (2800 psig) working pressure or above.

NOTES

OPERATION

SAFE OPERATION

- Ground all operators by requiring that they hold the applicator handle with a bare hand.
- 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.
- Exhaust fans must be interlocked with the control unit or Aviator.
- See that no more than one 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 "Troubleshooting Guide" or contact your authorized 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, or 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 "HHC Explosion Hazard Danger Sign" and "Halogenated Hydrocarbon Safety Bulletin".)

- Never flush the applicator with solvent while electrostatics are on. Failure to turn off electrostatics while flushing may cause 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.

Spray Width Determination

The size of the object being coated is the determining factor in adjusting the spray pattern. The larger the object, the larger the required pattern width. This is accomplished by fluid nozzle selection. Air adjustment is used to remove "tails" from the spray pattern and adjust the pattern size.

NOTE

- The degree of atomization is dependent on the viscosity of the paint formulation, the applied fluid pressure, and nozzle selection.

Applicator to Target Distance

The distance between the applicator and the target influences the appearance of the final finish of the object. If the applicator is held too close, under 100mm (approximately 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 150mm to 300mm area (6-inch to 12-inch).

CAUTION

- The object being coated is maintained at ground potential. The applicator operator is also grounded, therefore, the operator has as much attraction for the electrostatic paint as the object. To prevent "wrap-back" always keep the applicator nozzle closer to the target than to the operator.

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 compositions of objects being coated.

Triggering

Applicator triggering (ON/OFF) depends largely on the desired results (the amount of wraparound 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 buildup 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. For further paint formulation and test procedures, consult your ITW Ransburg representative and/or your paint supplier.

Fluid Nozzle

Because of the design of the AA90 applicators, the fluid nozzle precision is paramount to proper function. 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 given 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 their own nozzle selection whenever it becomes necessary. Selection should always be verified by actual tests to determine optimum efficiencies.

Refer to "Nozzle Selection Guide", Table I in this section for the choice of spray 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 in addition to the filter in the applicator fluid line to reduce nozzle clogging.

Table II shows the available pre-orifice sizes. The pre-orifice selected should be sized approximately .025mm (.001-inch) larger than the tip size opening. The pre-orifice can significantly increase the useful spray life of the tip.

The AA90 applicator incorporates a new feature, that being a locating air cap. Refer to Figure 18 for a view showing the locating pin. This feature gives the capability to spray with a fan pattern in either horizontal or vertical positions.

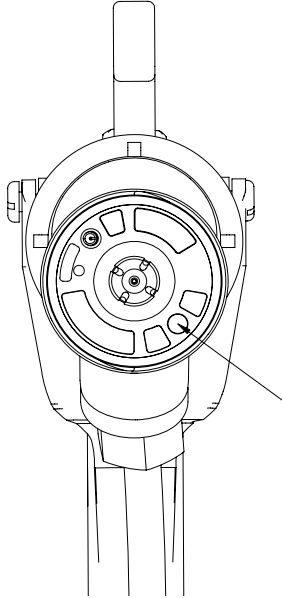


Figure 18: Air Cap Alignment Pin

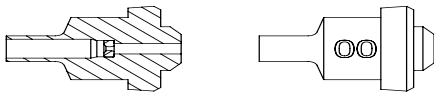


Figure 19: Pre-Orifice Seal Sizes Dash Identification

**TABLE I
NOZZLE SELECTION GUIDE**

<i>Nozzle Identification</i>	<i>Operating Parameters</i>	
AA90 Fluid Nozzle Part #	Nozzle Orifice Size in Inches (mm)	Pattern Width at 10-in. (mm)
79691-0509 79691-0511 79691-0513	.009 (.23) .011 (.28) .013 (.33)	5-in. (127)
79691-0811 79691-0813	.011 (.28) .013 (.33)	8-in. (203)
79691-1009 79691-1011 79691-1013 79691-1015 79691-1018 79691-1021	.009 (.23) .011 (.28) .013 (.33) .015 (.38) .018 (.46) .021 (.53)	10-in. (254)
79691-1311 79691-1313 79691-1315 79691-1318	.011 (.28) .013 (.33) .015 (.38) .018 (.46)	13-in. (330)
79691-1511 79691-1513 79691-1515 79691-1518 79691-1521	.011 (.28) .013 (.33) .015 (.38) .018 (.46) .021 (.53)	15-in. (381)
79691-1715	.015 (.38)	17-in. (432)

The first two digits of the nozzle dash number indicate the spray pattern width in inches at a distance of 10-inches (254mm) from the target. The second two digits indicate the orifice size in thousandths of inches.


For example: 79691-1015 has a 10-inches (254mm) spray pattern width and an orifice size of 0.015-inches (.38mm).

TABLE II - 79692-XX PRE-ORIFICE SEAL SIZES

Part #	Matching Spray Tip Part #	Restrictor Orifice Size
79692-01	79691-0509, -1009	.1010" (.256mm)
79692-02	79691-0511, -0811, -1011, -1311, -1511	.1021" (.307mm)
79692-03	79691-0513, -0813, -1013, -1313, -1513	.0141" (.358mm)
79692-04	79691-1015, -1315, -1515, -1715	.0161" (.409mm)
79692-06	79691-1018, -1318, -1518	.0201" (.511mm)
79692-07	79691-1021, -1521	.0221" (.561mm)

KV TEST JUMPER

To assist in testing and troubleshooting, a jumper (J8) has been added to the main PC board. By covering (shorting) both terminals of this jumper, the high voltage to the applicator can be activated. Thus, for testing and troubleshooting, high voltage output can be obtained without the need to trigger air through the applicator. After testing, the jumper must be repositioned so that it covers only one terminal (open) or the high voltage will stay on all the time (see Figure 27 for location of test jumper J8).

 CAUTION
<p>► If jumper J8 is left covering (shorting) both terminals, high voltage will be on whenever AC power is turned on.</p>

FAULT DESCRIPTIONS

For in depth troubleshooting information on the 9050 control units and power supplies, refer to **SI-09-05**. When a fault occurs, the Fault Indicator on the front of the control unit will light, a fault code will be displayed on the microamp meter and the 6 LED's at the rear of the applicator will flash. Faults can be reset by pressing the Reset button on the front of the control unit or by pressing and holding the kV switch at the rear of the applicator for 2-3 seconds.

Cable Fault (CF) (Cascade Units)

This fault will occur if high voltage is active and the microprocessor detects that no current is being supplied to the applicator. This indicates a connection problem from the control unit to the barrel assembly. Typical causes include a faulty low voltage cable, stuck pins on the plug assembly or contaminated contacts on the barrel assembly. This may also indicate a faulty barrel assembly. For additional information, refer to the Fault Troubleshooting Section.

Cable Fault (CF) (Classic Units)

This fault will occur if high voltage is active and the microprocessor detects that no current is being supplied to the applicator. This indicates a connection problem in the power supply from the PC board to the high voltage section. Check the wiring harness for loose pins, or replace the high voltage section.

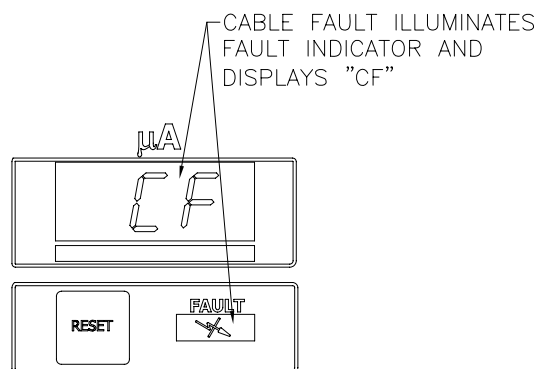


Figure 20: Cable Fault Display

Over Voltage Fault (OU) (Cascade and Classic Units)

This fault will occur if the microprocessor detects the unit is trying to output voltage above that required for the specific applicator type. If this occurs, reset the control unit. If this fault continues to occur, replace the main PC board.

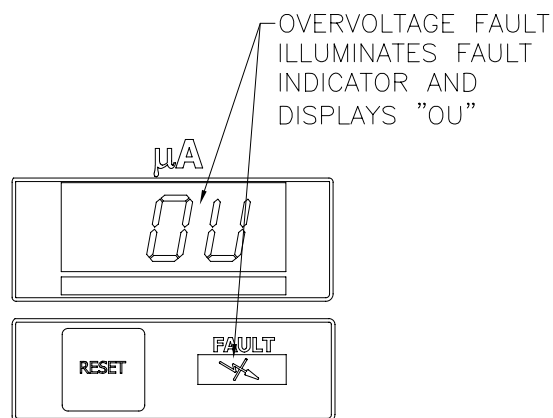


Figure 21: Over Voltage Fault Display

Safety Fault (SF) (Cascade Units)

If this fault occurs, the fault indicator at the control unit will illuminate, a SF indication will show in the μ A display and the LED on the rear of the applicator will flash. This fault will occur if the microprocessor detects a loss of ground at the gun barrel assembly. If this fault occurs, reset the fault from the applicator or control unit. This fault can be caused by a broken ground path between the applicator and the control unit and may indicate a faulty cable or plug assembly. For more information, refer to the Fault Troubleshooting Section.

(Classic Units)

If this fault occurs, the fault indicator at the control unit will illuminate, a SF indication will show in the μ A display and the LED on the rear of the applicator will flash. This fault will occur if the microprocessor detects a loss of ground at the high voltage section of the power supply. If this fault occurs, reset the fault from the power supply. This fault can be caused by a broken ground path between the high voltage section and the PC board in the power supply. Check the wiring to the high voltage section. For more information, refer to the Fault Troubleshooting Section.

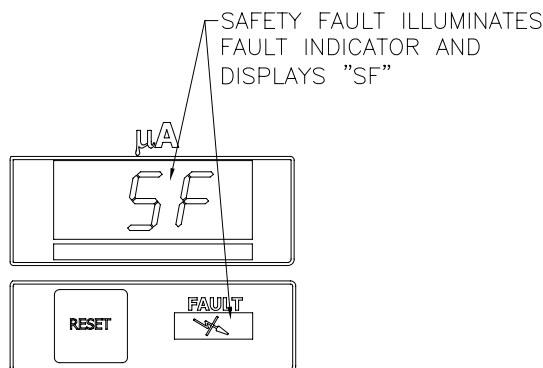


Figure 22: Safety Fault Display

Overload Fault (OL) (Cascade Units)

This fault will only occur if the overload feature is active (see "Overload Activation" previously in the Operation section) and the output current comes within 10 μ A of the maximum current. This can be caused by excessive overspray on the applicator or if the paint formulation is too conductive. Clean the applicator and check paint conductivity.

(Classic Units)

This fault will only occur if the overload feature is active (see "Overload Activation" previously in the Operation section) and the output current comes within 10 μ A of the maximum current. This can be caused by excessive overspray on the applicator or if the paint formulation is too conductive. Clean the applicator, check paint conductivity, or move overload jumper (JP17) in the power supply to the open position.

Current Limit Fault (CL)

This fault will occur if the output current exceeds the maximum current by more than 20 μ A for 2-3 seconds. If this occurs, reset the fault from the applicator or control unit. If this fault occurs repeatedly, investigate the main PC board or applicator barrel for the cause. This may be caused by excessive paint overspray on the applicator or the paint formulation may be too conductive.

Voltage Feedback Fault (UF) (Cascade Units)

This fault will occur if the microprocessor detects a loss of the voltage feedback signal. If this occurs, reset the fault from the applicator or control unit. If this fault occurs repeatedly, replace the main PC board.

(Classic Units)

This fault will occur if the microprocessor detects a loss of the voltage feedback signal. This can be caused by a failed high voltage cable, failed high voltage section of the power supply, or a failed PC board in the power supply. Replace the high voltage cable and re-test. If still faulty, replace the high voltage section and PC board and re-test.

Feedback Fault (FF)

(Cascade Units)

This fault will occur if the microprocessor detects a loss of the current feedback signal. If this occurs, reset the fault from the applicator or control unit. If this fault occurs repeatedly, refer to the Fault Troubleshooting Section to determine if the problem is with the low voltage cable, the cascade unit in the gun, or the main PC board in the control unit.

(Classic Units)

This fault will occur if the microprocessor detects a loss of the current feedback signal. If this occurs, reset the fault from the applicator or control unit. If this fault occurs repeatedly, refer to the Fault Troubleshooting Section to determine if the problem is with the high voltage section or the main PC board in the power supply.

POWERING UP CONTROL UNIT (CASCADE UNITS)

When the AC power is turned on, the unit will display the PC board applicator type number on the kV setpoint display and the software revision level in the μ A display for 2-3 seconds.

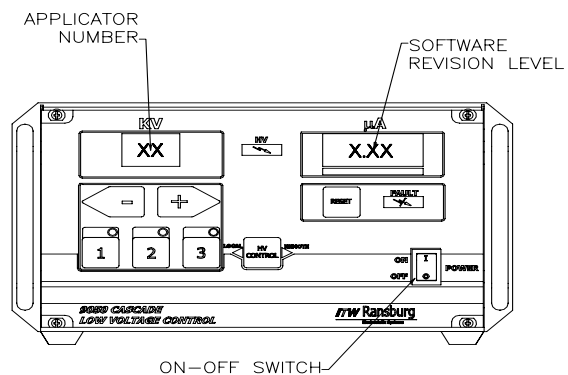


Figure 23: Control Unit Start-Up Display

START-UP DISPLAY	
Applicator Type	Description
0	85 kV Cascade

SETPOINT VOLTAGE

The Vector applicator system has three voltage setpoints 1, 2, and 3. Each of these voltages can be individually adjusted between 20 and full kV using the + and - buttons on the front of the control unit. When the applicator trigger is off, the present setpoint can be changed either from the control unit or from the switch on the back of the applicator.

NOTE

- Setpoints cannot be adjusted below 20 kV.

Setting and Changing the Setpoint at the Control Unit

From the factory, Preset 1 is full minus 20 kV, Preset 2 is full kV minus 10, and Preset 3 is full kV. For 79 full kV is 85 kV.

At the control unit with the applicator not triggered, press the 1, 2, or 3 button on the front panel of the control unit. (See Figure 24 for positions of the kV setpoint and adjust buttons.) The only place to adjust the kV of each setpoint is at the control unit.

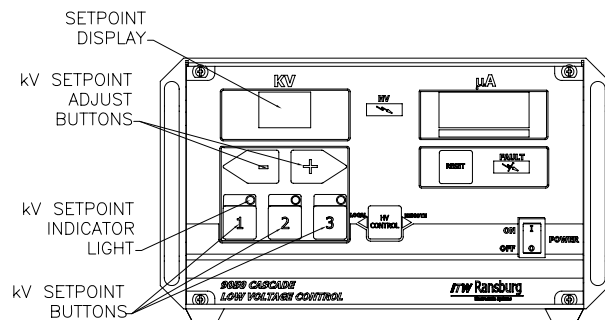


Figure 24: Front View of Control Unit

When a kV setpoint button is pressed, the light above the button will light and the kV display will show the present voltage for that setpoint. This indicates the unit is set to spray at that setpoint. To adjust the kV for the present setpoint, press the + or - setpoint adjust buttons.

When the + or - setpoint adjust buttons are held in longer than 1 second, the kV display will begin incrementing or decrementing in units of 5 instead of 1.

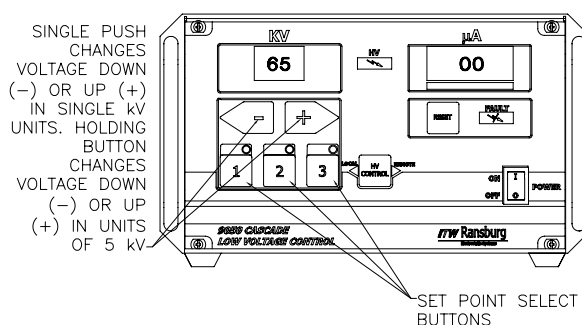


Figure 25: Changing Setpoint

Changing the Setpoint at the Applicator

To change the setpoint at the applicator, the applicator must NOT be triggered. By pushing the kV button on the rear cover of the applicator, the setpoint will change. If there are 2 green lights lit, setpoint 1 is active. If 2 green lights and 2 yellow lights are lit, setpoint 2 is active. If all lights are lit (2 green lights, 2 yellow lights, and 2 red lights) setpoint 3 is active.

kV to the applicator can be turned off by pressing the applicator kV button in for 2-3 seconds. This can be done whether the applicator is triggered or not and is useful if the kV needs to be turned off for spraying into recessed areas. When the kV is disabled in this manner, the kV meter will read zero, OFF will be displayed in the microamp meter, and all kV setpoint indicator lights will be disabled. Pressing the kV button in for another 2-3 seconds turns the kV to the applicator back on.

! WARNING

- **DO NOT** turn the applicator off using the applicator button in place of interlocking with a solvent supply for flushing. The applicator must be interlocked with solvent supply such that when the solvent is on to flush the applicator, there is no kV at the applicator.

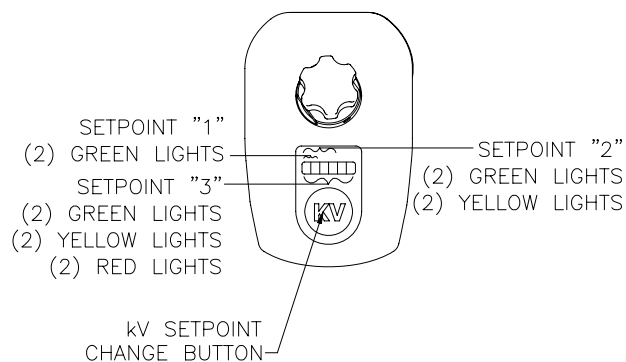


Figure 26: View of Rear Cover

LOCKOUTS

There are lockouts that may be done at the PC board (see Figure 27). These lockouts may be used individually or in combination as required. If the jumpers are disconnected, the original functions are re-enabled. After changing any jumpers, the AC power must be cycled for the new setting to take affect.

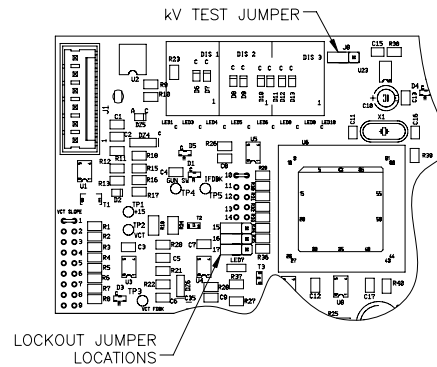


Figure 27: Lockout Jumper Location

Front Panel Lockout

This feature locks out any changes to the kV setting from the front panel of the control unit.

1. Set the kV to the desired value using the front panel buttons. This must be set prior to installing the jumper.
2. Turn AC power off and access the interior of the control unit.
3. Place the jumper across the two (2) pins at location 16 on the main PC board (see Figure 28).
4. Close the control unit and turn AC power back on. Pressing the front panel +, -, or setpoint buttons will now have no effect on the kV setting.

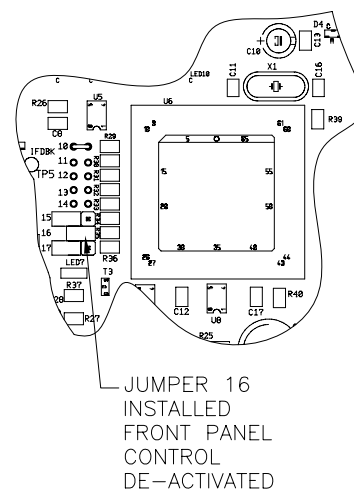


Figure 28: Jumper Location - Front Panel Lockout

Applicator Switch Lockout

The applicator switch may be de-activated for applications that require the operator to not be able to change settings or turn the applicator off at the applicator.

1. Turn AC power off and access the interior of the control unit.
2. Place the jumper across the two (2) pins at location 15 on the main PC board (see Figure 29).
3. Close the control unit and turn AC power back on. It will now be no longer possible to change setpoints or turn kV off at the applicator.

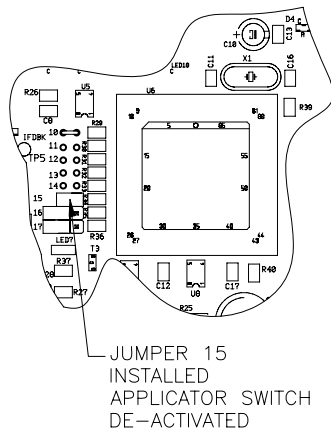


Figure 29: Jumper Location - Applicator Switch Lockout

3. Close the control unit and turn the AC power back on. An overload fault will now occur if the microamp display comes within 10 microamps of the maximum current.

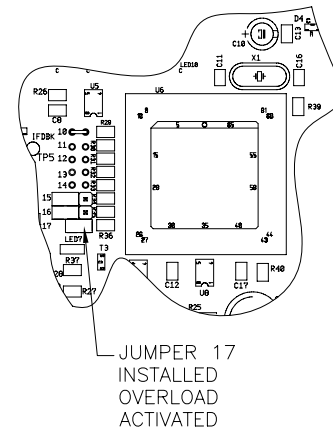


Figure 30: Jumper Location - Overload Activation

Overload Activation

The overload circuit may be activated for applications that require notification of high applicator output currents. The overload value is set in the software and is maximum microamp rating minus 10 microamps.

1. Turn AC power off and access the interior of the control unit.
2. Place the jumper across the two (2) pins at location 17 on the main PC board (see Figure 30).

BASIC OPERATION

(CASCADE UNITS)

Triggering

High voltage is actuated by pulling the trigger to start the flow of atomizing and fan control air through the applicator. When the applicator is triggered, a new switch in the applicator is activated. The kV setpoint is displayed on the kV display, the actual current draw on the μ A display, and the high voltage light illuminates. Under the μ A display is a bar graph meter that illuminates according to the actual current draw.

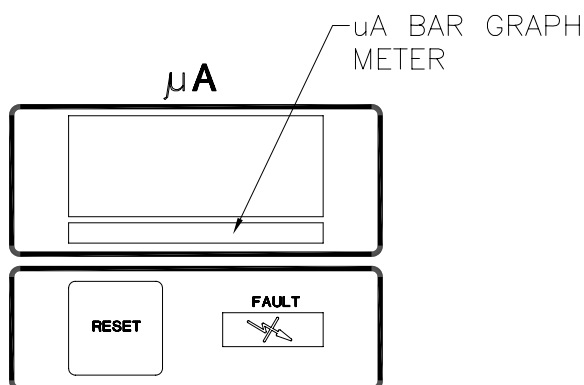


Figure 31: μ A Bar Graph Meter Display

The green and yellow regions of the bar graph meter indicate output current is in the optimum range for maximum transfer efficiency. The red region of the bar graph indicates high output current causing decreased transfer efficiency.

The display at the rear of the applicator also doubles as a microamp bar graph meter when high voltage is on (see Figure 30). Its function is similar to that of the control unit bar graph display.

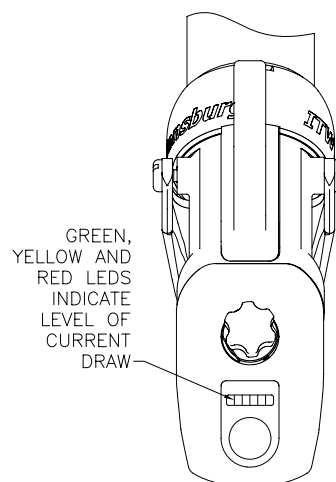


Figure 32: View of Applicator LED Display

Measuring "High Voltage On" Time

The 9050 Power Supply records the amount of time the high voltage is triggered on up to 99,999 hours. These units are displayed in the kV and μ A displays of the unit. There are two registers that retain this information, one that may be reset, the other that is permanently retained in memory. The number of hours the unit's high voltage has been on may be displayed by depressing at the same time the preset 1 and reset buttons. The display will show hours of use for 3 seconds. This is the re-settable register.

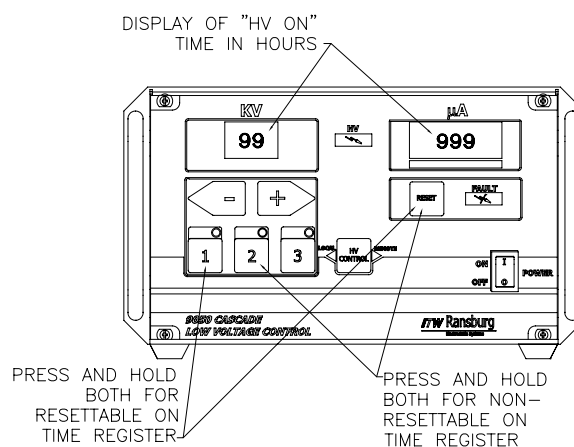


Figure 33: Display In "High Voltage On" Time


To reset this register, press the reset button while the hours are displayed. Pressing the preset 2 and reset buttons at the same time will show the number of hours on the non-re-settable register.

Local/Remote

The Vector product line is designed currently for applicators only. The local/remote high voltage control switch should be set to local for all Vector applicator applications.



Figure 34: High Voltage Control Switch

**CAUTION**

► The unit will not function if it is in remote mode without external inputs.

**START-UP
(CLASSIC UNITS)**

After all installation procedures are completed, operation of the applicator may begin. When the ON-OFF switch is turned on, the kV display will show the applicator type the 9050 Power Supply is configured for and the microamp display will show the current software revision level. These items are displayed for about 2-3 seconds.

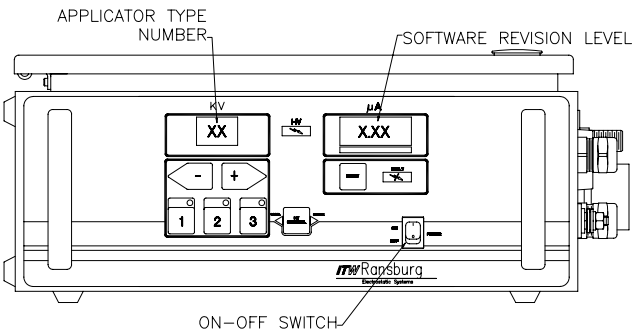



Figure 35: Power Supply Start-Up Display

START-UP DISPLAY	
Applicator Type	Description
6	85 kV Classic

**WARNING**

► **DO NOT** use a 65 kV Classic applicator with the 90 kV power supply.

SETTING AND ADJUSTING OUTPUT VOLTAGE

The voltage on the 79344-1XX power supply is adjustable between 20 kV and full kV DC. The factory preset voltages are Preset 1 - full kV minus 20 kV, Preset 2 - full kV minus 10 kV, and Preset 3 - full kV.

The Vector applicator system has three voltage setpoints 1, 2, and 3. Each of these setpoints can be individually adjusted between 20 and full kV using the + and - buttons on the front panel of the power supply. When the + or - buttons are held in longer than 1 second, the kV display will begin incrementing or decrementing in units of 5 instead of 1.

When the applicator trigger is off, the present setpoint can be changed by pressing the 1, 2, or 3 buttons on the front panel.

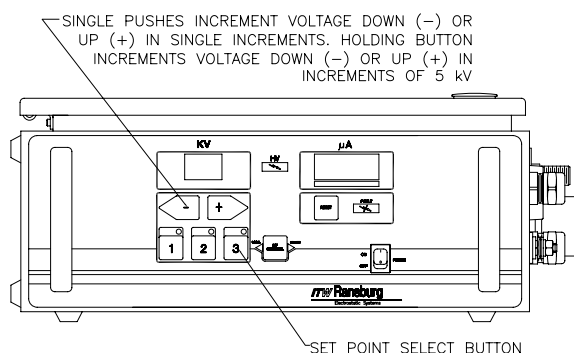


Figure 36: kV Adjust/Setpoint Buttons

BASIC OPERATIONS (CLASSIC UNITS)

Triggering

High voltage is actuated by pulling the trigger to start the flow of atomizing and fan control air through the applicator. When the applicator is triggered, an air flow switch is activated, the kV setpoint is displayed on the kV display, the actual current draw on the μA display and the high voltage light illuminates. Under the μA display is a bar graph meter that illuminates according to the actual current draw.

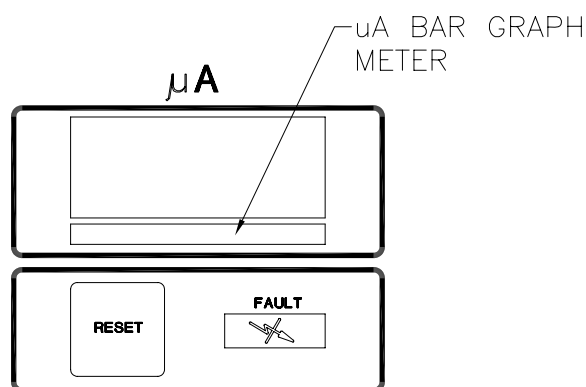


Figure 37: μA Bar Graph Meter Display

The green and yellow regions of the bar graph meter indicate output current is in the optimum range for maximum transfer efficiency. The red region of the bar graph indicates high output current causing decreased transfer efficiency.

Measuring "High Voltage On" Time

The 9050 Power Supply records the amount of time the high voltage is triggered on up to 99,999 hours. This value is displayed on the kV and μ A displays of the unit. There are two registers that retain this information, one that may be reset, the other that is permanently retained in memory. The number of hours the unit's high voltage has been on may be displayed by depressing at the same time the preset 1 and reset buttons. The display will show hours of use for 3 seconds. This is the resettable register.

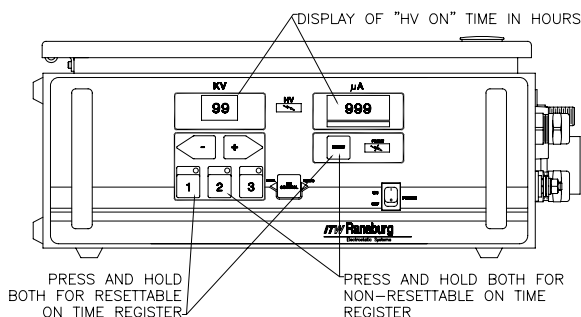


Figure 38: Displaying "High Voltage On" Time

To reset this register, press the reset button while the hours are displayed.

To view the non-resettable register, press and hold the preset 2 and reset buttons at the same time.

Local/Remote Mode Button

The 9050 Power Supply product line is designed currently for applicators only. The mode should be set to local for all Vector applicator applications.

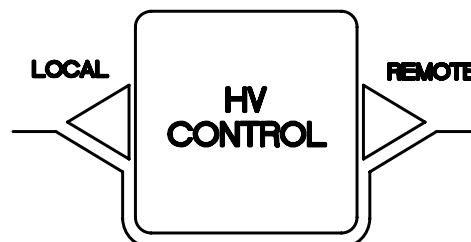


Figure 39: Local/Remote Mode Button

! CAUTION

► If unit is in remote mode with no external signal, the unit will not function. The unit must be in local mode.

TO REMOVE THE APPLICATOR FROM THE WORK SITE

CAUTION

- ▶ **ALWAYS** remove the applicator from the work site for service or repair!
- ▶ Always ensure power to control unit/ power supply is off prior to removing applicator from source.
- ▶ **DO NOT** use any silicone lubricants in order to avoid paint defects.

1. Flush the applicator. (Refer to "Flushing Procedures" in the "Maintenance" section.)

2. Ensure all fluid and air pressure hoses are bled from the system prior to removing line. With a wrench, loosen and unscrew the fluid hose nut. Remove the fluid hose assembly.

3. With a wrench, lock the air fitting in place and loosen the air hose nut using a second wrench. Completely unscrew the nut and remove the air hose assembly.

4. **Cascade Applicator:** Loosen the low voltage cable nut from the plug assembly with a wrench turning counter-clockwise and unscrew the nut by hand. Remove the low voltage cable by pulling it from the plug assembly.

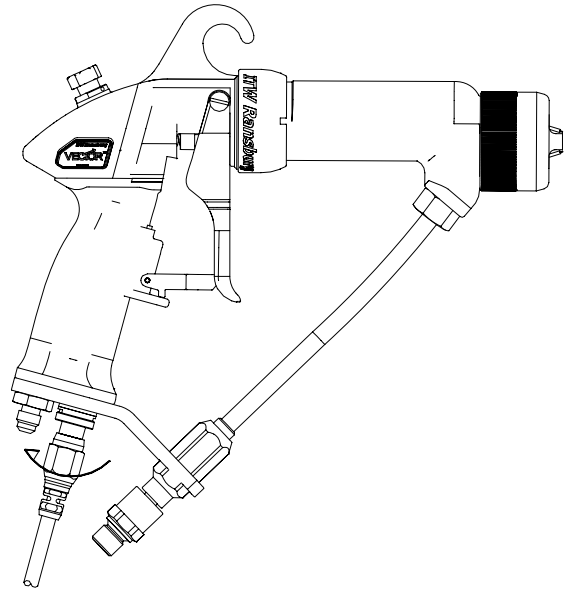


Figure 40: Removing Cascade Applicator

Classic Applicator: Pull the clip on the high voltage cable out with the blade of a screwdriver. Loosen cable set screw. Pull cable out of handle,

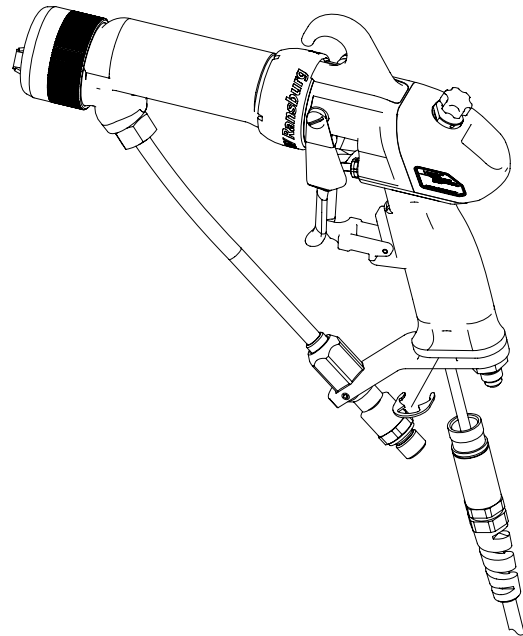


Figure 41: Removing Classic Applicator

5. Remove the applicator from the work site.

APPLICATOR REPAIR

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 dielectric grease (LSCH0009-00) to the following parts when assembling:

- All O-Rings (Teflon o-rings do not need lubrication)
- Needle Shaft Assembly
- Packing Tube
- Resistor Tube Assembly (Classic)
- Air Valve Rod Assembly 79310-00

Apply sealant (7969-10) to the external threads of the following parts when assembling:

- Air Valve Retaining Nut

EQUIPMENT REQUIRED

- Special Multi-Purpose Applicator Wrench 19749-00
- Air Cap Removal Tool 79642-00
- 2.5mm Wrenches 74133-00 (2)
- Nozzle Wrench 76428-00
- 3/32-inch Allen Wrench
- Open End Wrenches: 15/16, 7/8, 11/16, 9/16, 7/16, 3/4, 3/8, and 1/4-inch
- Screwdriver (blade)
- Dielectric Grease LSCH0009-00
- Medium Strength Sealant 7969-10
- Plastic or Wood Dowel Rod, 5/16-inch diameter

MAINTENANCE

SUITABLE SOLVENTS FOR CLEANING VECTOR AA90 APPLICATORS

When cleaning the Vector AA90 applicator, a suitable solvent for cleaning depends on the part(s) of the applicator to be cleaned and the material that needs to be removed. ITW Ransburg recommends that all exterior cleaning be done with non-polar solvents to prevent a conductive residue on critical components. We also understand that some of these solvents do not always meet the cleaning needs of some materials. If conductive polar solvents are used to clean the applicator components, all residues must be removed using a non-conductive non-polar solvent (i.e. high flash naphtha). If there are any questions as to what solvents are best for cleaning, contact your local ITW Ransburg distributor and/or your paint supplier.

The AA90 applicator, air hoses, fluid hoses, and low voltage/high voltage cable assemblies should not be submerged or soaked in solvent. However, the outer surface of these items can be wiped with a suitable solvent. When the applicator is disassembled into individual components, some of these items may be soaked in a suitable cleaning solvent. The items that cannot be soaked are noted throughout this manual. All electrical components cannot be cleaned or soaked in any solvents.

WARNING

- ▶ **ENSURE** the power is **OFF** and the system is grounded before using solvent to clean **ANY** equipment. Relieve all fluid pressures.
- ▶ When using cleaning solvent, standard health and safety precautions should apply.

CAUTION

- ▶ Cleaning of the exterior surfaces of the applicator should be done with non-polar solvents. If cleaning requires the use of polar solvents, the applicator should be wiped down with non-polar solvent prior to going back into use.

ROUTINE SCHEDULE

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

Several Times Daily

- Turn the control unit power OFF!
- Set the trigger stop lever and inspect the air cap for paint accumulation. Clean as frequently as necessary with a soft bristled brush and a suitable solvent.
- Clean all insulating surfaces in the system. Remove paint accumulation from the exterior of the applicator and low voltage or high voltage cable with a solvent dampened cloth.

CAUTION

- ▶ **NEVER** soak or submerge the electrical components of the applicator, i.e., cascade barrel assembly, assembly or cable assembly. Damage and failure may occur.

Daily (or at start of each shift)

- 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).
- Check that atomizer assembly is clean and undamaged.
- Check the applicator electrode for damage.
- Clean the fluid filter, if necessary.
- Turn the control unit power ON. Its green pilot should light or Aviator will be audible.
- Run a voltage output test.

Applicator High Voltage Output Test (Cascade/Classic)

Use high voltage probe assembly (76652-01).

1. Set the meter dial to the kV scale. Plug the high voltage probe into the side of the meter.
2. Attach the ground clamp to a proven earth ground.

WARNING

- Injury to personnel and damage to equipment is probable if the ground clip is **NOT ATTACHED**. This step **MUST** be accomplished before voltage is applied.

3. Make sure all grounded objects are at least 2-feet away.
4. Line up the hole in the test probe and the electrode. Slide the test probe straight over the electrode wire of the applicator.

5. Holding the metal portion of the high voltage probe in your hand, trigger the applicator so voltage exists at the electrode.

WARNING

- To provide proper equipment to operator ground, the conductive handle of the probe **MUST** be held in the bare hand of the operator. To avoid a shock hazard, the meter should **NEVER** be disconnected from the probe during high voltage contact.

6. Read the voltage displayed on the meter.
7. Turn the voltage to the applicator OFF, and pull the test probe straight off the electrode.

Shutdown (or at end of shift)

1. Turn the control unit/power supply power OFF.
2. Turn the paint supply OFF.
3. Turn the shaping air supply OFF.
4. Wipe the applicator, cable, and hoses with a rag and a suitable cleaning solvent.
5. Flush the fluid lines and applicator. Then bleed the fluid pressure to zero, and allow the solvent to remain in the lines (see "Flushing Procedures" in this section).
6. Set the trigger stop lever.

FLUSHING PROCEDURES

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 an extended period.

1. Turn OFF the control unit/power supply power.
2. Turn the paint supply OFF.
3. Turn the shaping air supply OFF. Bleed all air from the line.
4. Tilt the applicator down and trigger until it is clear of paint.
5. Set the trigger stop lever and remove the nozzle nut, air nozzle, and fluid nozzle.
6. Connect the solvent supply.
7. Release the trigger stop and run solvent through the system until it runs clear.
8. Disconnect the solvent supply.
9. Trigger the applicator until it is clear of solvent. After the preceding steps are complete, the applicator is ready for color change, storage, or maintenance.

NOTE

- If production downtime is to be short, the fluid lines may not require flushing (depending on the coating material being used). If the solids in the coating settle slowly, the lines will not need to be flushed as soon after shutdown as with fast settling solids. The paint being used and the length of downtime will determine the need for flushing. Metallic paint and primer will require flushing sooner than other types of coating material.

CAUTION

- If the coating material is fast settling and the fluid lines are not flushed soon enough, the internal passages may become clogged. This can lead to excessive downtime for repair.

Weekly

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

APPLICATOR ASSEMBLY CLEANING PROCEDURE

Routine Cleaning Equipment Needed

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

For efficient electrostatic operation, keep the applicator's exterior and low voltage / high voltage cable free of paint accumulation. This prevents the loss of voltage to ground with a resultant reduction in transfer efficiency.

CAUTION

- Before cleaning the nozzle assembly, turn the control unit or power supply **OFF** and flush the fluid line with a compatible solvent until clean. Turn the paint and air supplies **OFF**. Trigger the applicator to relieve both fluid and air pressures.

! WARNING

- ▶ Ensure supply pressures have been bled to zero prior to servicing the applicator. Failure to do so may cause personal injury.
- ▶ If the fluid 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 nozzle nut slowly into a grounded catch container.
- ▶ Any broken or damaged components should be replaced. Any damage to the applicator may result in **UNSAFE** operating conditions.

1. Turn OFF the control unit/power supply power.
2. Turn the paint and air supplies OFF. Relieve both fluid and air pressures. Set the trigger stop lever.
3. Unscrew the air cap retaining ring completely from the barrel.
4. With the front of the barrel tilted downward, remove the air cap and fluid nozzles.
5. Clean all parts in a suitable solvent and examine for wear and damage. To clear the fluid nozzle orifice, blow compressed air through the tip in the opposite direction of flow. Soaking in solvent and/or brushing may also be necessary to clean the orifice. Replace as necessary.
6. Clean all exterior surfaces of the applicator with a rag and a suitable solvent.
7. Assemble the parts in reverse order of disassembly.

! CAUTION

- ▶ A wire brush or metal tools must **NEVER** be used. **NEVER** use a cleaning tool that is harder than the plastic parts. If a deposit cannot be removed with solvent and a rag or the soft brush, soak the part in solvent **ONLY** until the deposit can be removed! **NEVER** soak the applicator body, barrel, or hook transformer!

! WARNING

- ▶ **NEVER** wrap the applicator, associated valves and tubing, and supporting hardware in plastic to keep it clean. A surface charge may build up on the plastic surface and discharge to the nearest grounded object. Efficiency of the applicator will also be reduced and damage or failure of the applicator components may occur. **WRAPPING THE APPLICATOR IN PLASTIC WILL VOID WARRANTY.**

Spray Tip Removal/Carbide Removal

1. Remove the retaining nut completely by hand.
2. Remove the air cap from applicator using the tool provided. Gently slip the tool blades underneath the two cut-outs on the air cap, pushing forward.

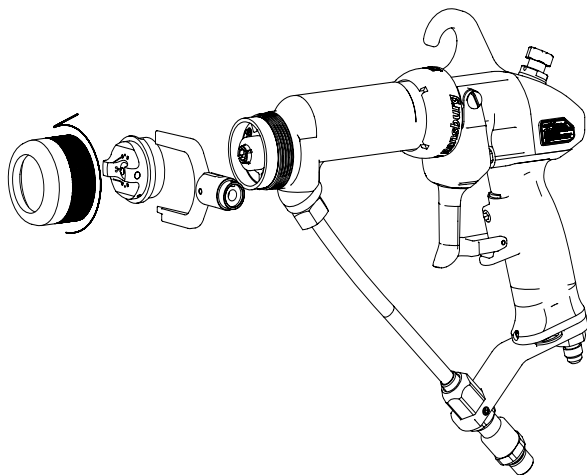


Figure 42a: Spray Tip Removal/Carbide Removal

3. Push the spray tip and holder out of the air cap by pressing with a finger or soft object on the carbide or tapered portion of spray tip. The carbide spray tip contains a removable nozzle seal with or without a pre-orifice. The pre-orifice seal is black, the standard seal is white. To remove the seal from the tip holder, hold the end of the tip and the end of the seal and snap apart the two pieces.

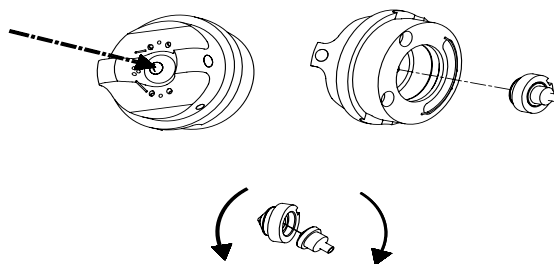


Figure 42b: Spray Tip and Seal Removal

4. By hand push the seal into the tip holder as shown. The seal will be held in place in the holder. Then place the tip holder on the insertion tool. Hold the tip upright, align the pin in the cap to the slot in the tip holder and push together. The tip should snap in place in the air cap.

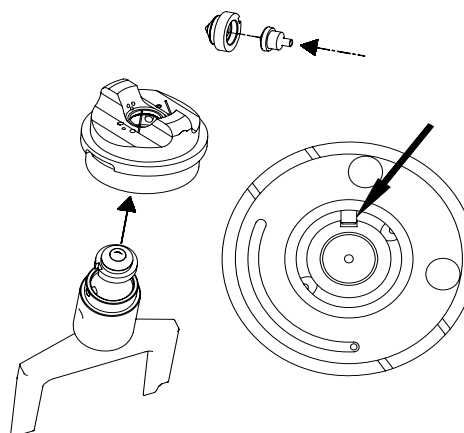


Figure 42c: Spray Tip Removal/Carbide Installation

Barrel Removal

1. Remove air cap and retaining ring.
2. With a flatblade screwdriver, remove trigger screws and trigger.
3. Loosen the fluid tube barrel connection.
4. Using 19749 special wrench, remove barrel nut.
5. Hold applicator handle, pull barrel straight out. With Cascade units, the entire cascade assembly will be removed. With Classic units, the resistor tube housing will be left in the applicator handle.

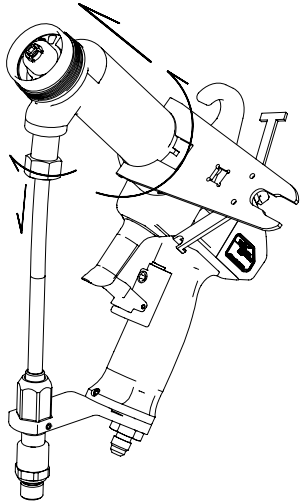


Figure 43: Barrel Removal

Barrel Disassembly

1. Using 76428 wrench, remove nozzle.

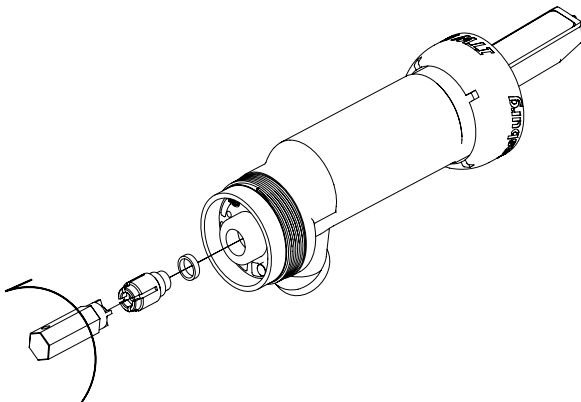


Figure 44a: Barrel Disassembly

2. Using 19749 special tool, remove packing nut.

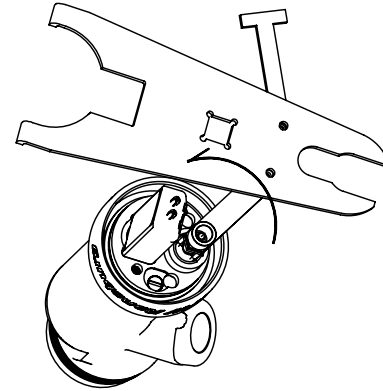


Figure 44b: Barrel Disassembly

3. Pull needle shaft assembly straight out.

Needle Shaft Packing Replacement

1. Remove spring spray retainer and lock nut from shaft. Pull all rear seal parts off shaft. Replace components as required.

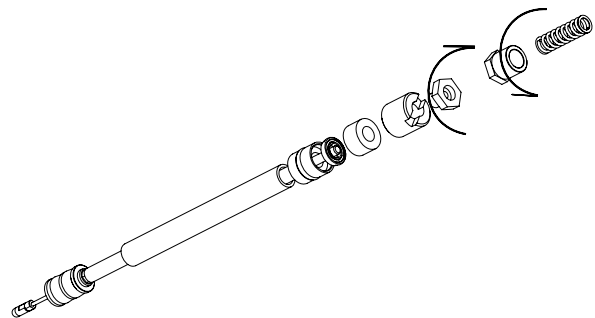


Figure 45a: Needle Shaft Packing Replacement

- Using two 74133 tools, remove carbide ball and jam nut. Remove packing components.

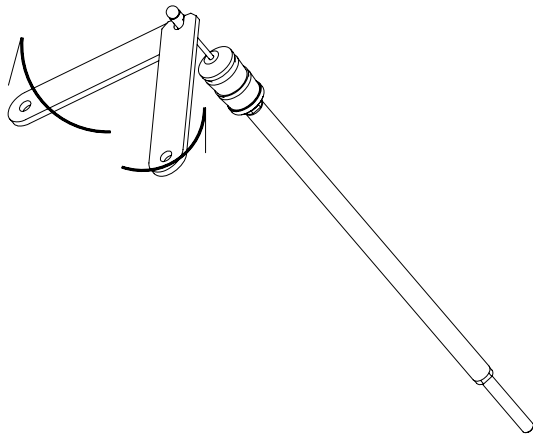


Figure 45b: Needle Shaft Packing Replacement

- Remove front spreader seal, front u-cup seal, rear spreader seal, rear u-cup seal, and pusher seal.

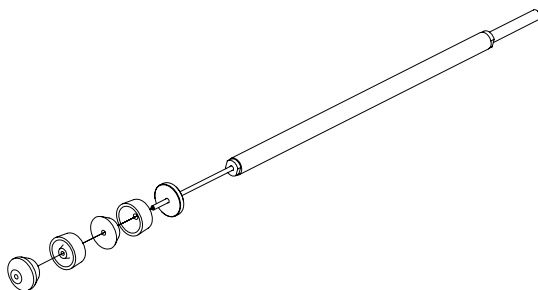


Figure 45c: Needle Shaft Packing Replacement

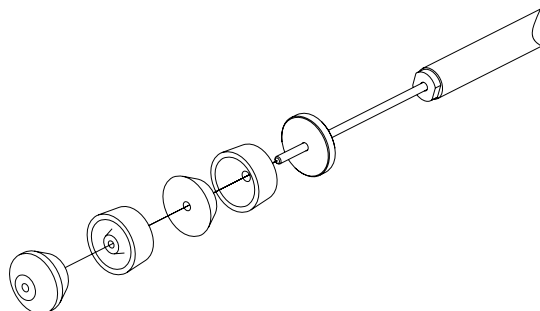


Figure 46a: Needle Shaft Pack Reassembly

Needle Shaft Pack Reassembly

- Install pusher seal, rear u-cup, rear spreader seal, front u-cup seal, front spreader seal as shown. Orient seals per Figure 52a.

- Install jam nut all the way on the shaft. Install the carbide ball all the way down using two 74133 tools. Tighten the jam nut against the carbide ball.

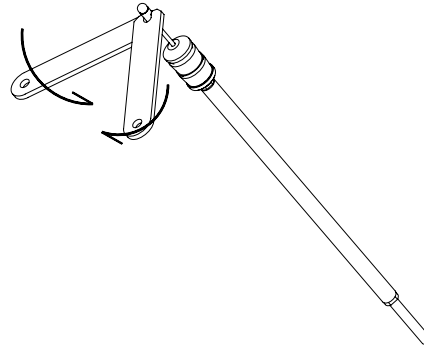


Figure 46b: Needle Shaft Packing Reassembly

- Install rest of parts in reverse order. Ensure all parts are adequately coated with LSCH0009-00 grease. Hand tighten needle shaft spring retainer and locking nut.

Reinstall Spring

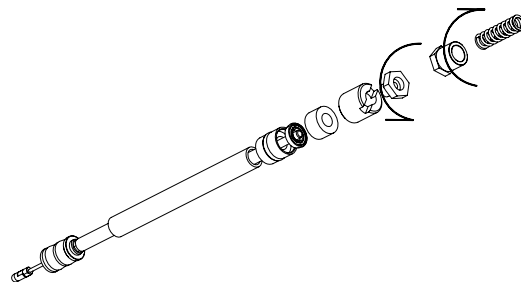


Figure 47: Reinstall Spring

Rebuild Barrel

1. Install tip and seals into barrel.

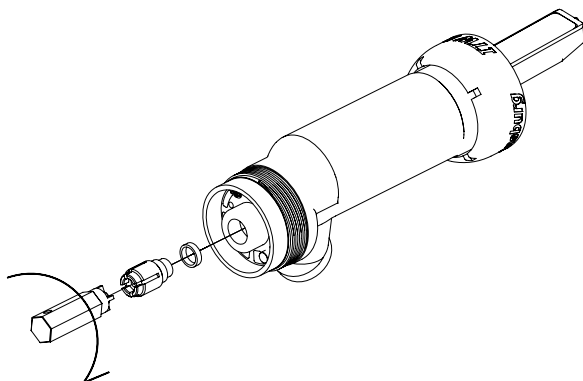


Figure 48a: Rebuilding Barrel

2. Install a generous amount of LSCH0009-00 into needle shaft cavity. Install needle shaft assembly into barrel

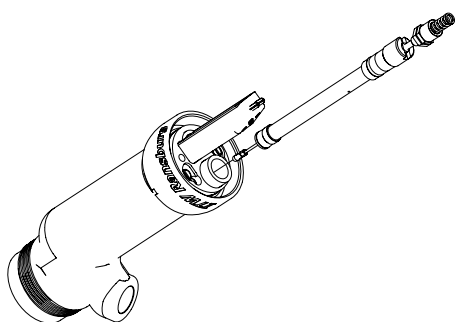


Figure 48b: Rebuilding Barrel

3. Tighten packing nut until resistance on the shaft may be felt when the shaft is pushed in and out.

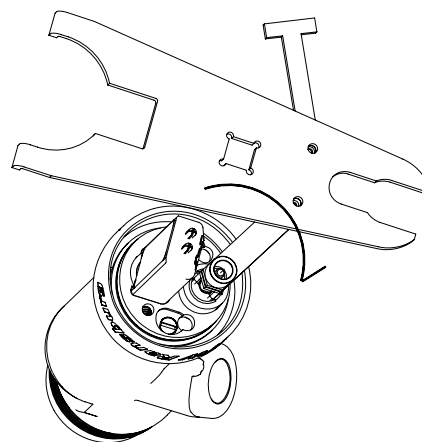


Figure 48c: Rebuilding Barrel

Install Barrel on Handle

1. Adjust spring retainer and locking nut to dimension shown. Tighten against each other.

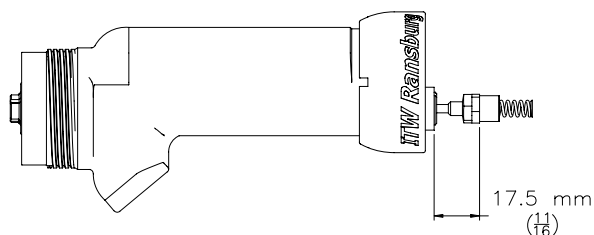


Figure 49a: Install Barrel on Handle

2. Push barrel straight into handle.
3. Using 19749 wrench, tighten barrel nut onto handle
4. Tighten fluid tube nut into place.
5. Install trigger and trigger screws.

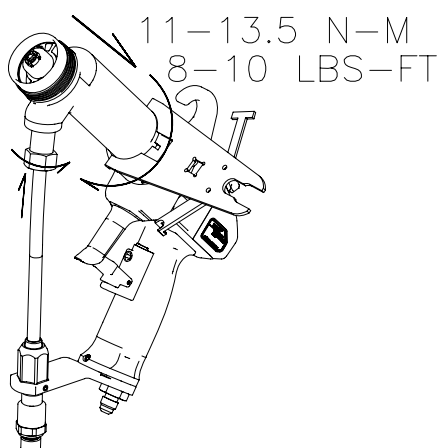


Figure 49b: Install Barrel on Handle

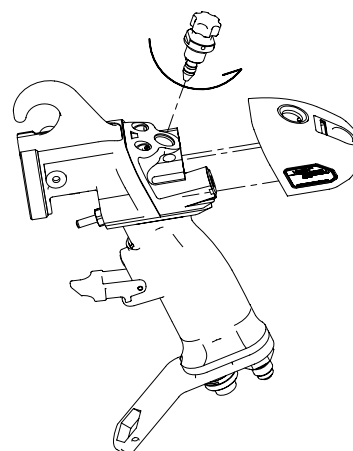


Figure 50b: Handle Disassembly

Handle Disassembly

1. Remove the barrel.
2. Remove the fluid tube from the bracket.

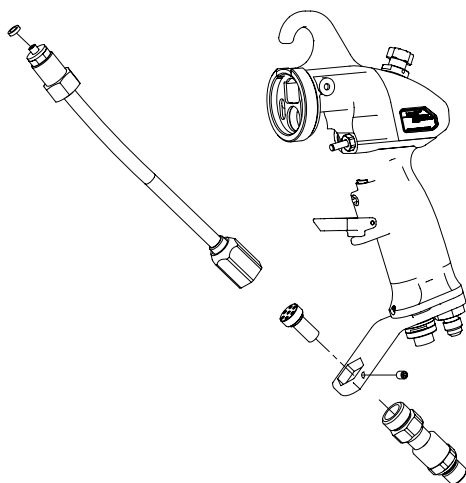


Figure 50a: Handle Disassembly

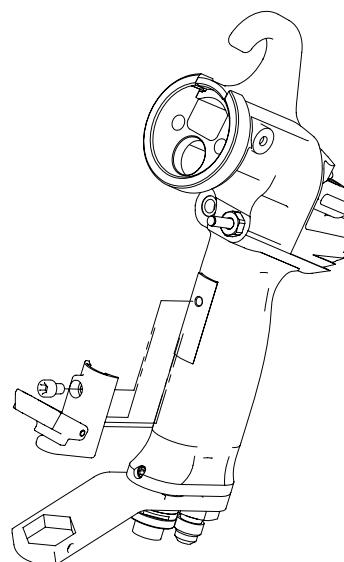


Figure 50c: Handle Disassembly

3. Remove the fan valve and rear cover.

4. Remove trigger lock assembly.

5. Remove air fitting and bracket.

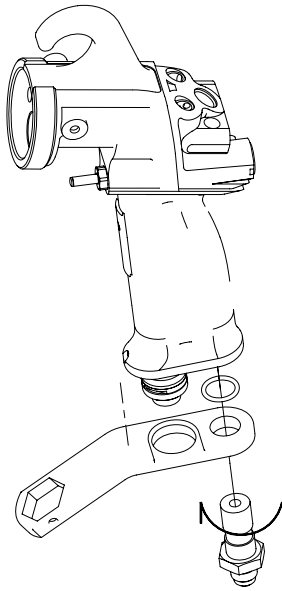


Figure 50d: Handle Disassembly

6. Remove air valve and air valve seal.

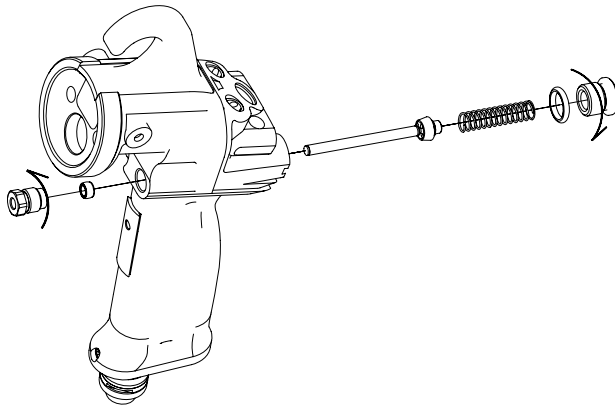


Figure 50e: Handle Disassembly

7. Remove gasket, hook, and hook gasket.

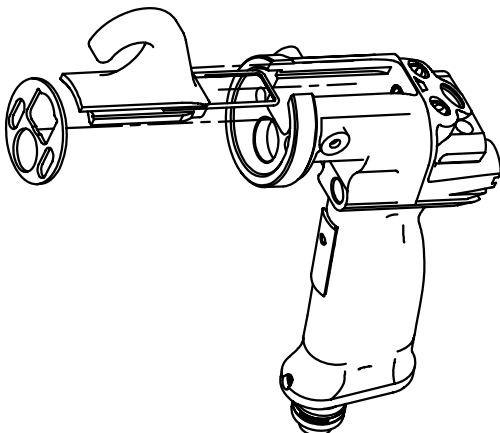


Figure 50f: Handle Disassembly

8. For Cascade Units - remove plug assembly.

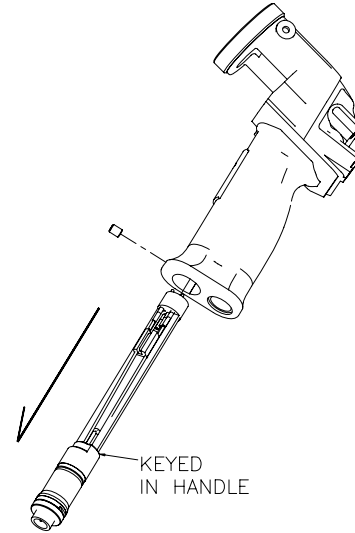


Figure 50g: Handle Disassembly

9. For Classic Units - remove resistor tube assembly.

Apply LSCH0009-00 dielectric grease to resistor tube prior to reassembly.

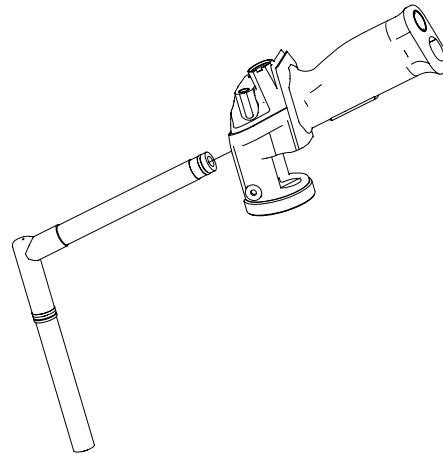


Figure 50h: Handle Disassembly

Handle Reassembly

1. Reverse disassembly procedure. Replace parts as required. Use LSCH0009-00 on all electrical components.

TROUBLESHOOTING GUIDE

General Problem	Possible Cause	Solution
Poor Atomization and Distribution	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 Wraparound	<ol style="list-style-type: none"> 1. Poor atomization 2. Excessive exhaust velocity 3. Excessive fluid pressure 4. Applicator held too close to target 5. Paint too conductive 6. Poor target ground 	<ol style="list-style-type: none"> 1. See "Poor Atomization and distribution". 2. Reduce (with code limits). 3. Reduce air pressure to pump. 4. Hold applicator further back. 5. Consult ITW Ransburg technical assistance. 6. Check ground integrity from target through support to ground.
Paint Wraps Back On Operator	<ol style="list-style-type: none"> 1. Poor ground on parts 2. Applicator held too far from parts 3. Booth exhaust insufficient or improperly routed 4. Improper spray technique 	<ol style="list-style-type: none"> 1. Check that parts are fully grounded, strip workholders. 2. Hold applicator closer. 3. Increase, or adjust direction, change booth filter. 4. Keep applicator directed at work.
No Paint Delivery	<ol style="list-style-type: none"> 1. Clogged nozzle 2. Clogged hose or filters 3. No pressure at paint pump 	<ol style="list-style-type: none"> 1. Blow out nozzle. 2. Clean. 3. If pump air supply OK, consult pump manual.

TROUBLESHOOTING GUIDE (Cont.)

General Problem	Possible Cause	Solution
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 	<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.
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. Loose nozzle cap 2. Improper trigger adjustment 3. Defective or dirty valve seat 	<ol style="list-style-type: none"> 1. Tighten nut. 2. Readjust. 3. Flush out or replace as needed.
Paint Leaks Around the Nozzle Cap	<ol style="list-style-type: none"> 1. Loose nozzle cap 2. Fluid seal worn 	<ol style="list-style-type: none"> 1. Tighten nut. 2. Replace seal.
Paint Leaks At Rear of Barrel	<ol style="list-style-type: none"> 1. Loose packing nut 	<ol style="list-style-type: none"> 1. Tighten packing 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 and Distribution". 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.

(Continued On Next Page)

TROUBLESHOOTING GUIDE (Cont.)

General Problem	Possible Cause	Solution
Improper or No High Voltage	1. Faulty low voltage cable connections	1. Check and secure at the applicator and at the control unit.
	2. Improper or no ground at control unit	2. Trace and correct.
	3. Faulty barrel/cascade assembly	3. Replace.
	4. Faulty low voltage cable	4. Replace.
	5. Faulty control PC board	5. Replace.
	6. Dirty air cap and/or fluid nozzle	6. Clean as require per suggested "Maintenance Schedule".
	7. Blown fuse	7. Replace fuse.
	8. Is the power turned on?	8. Check power supply.
	9. Is the atomizing air turned on?	9. Check air regulator.
	10. Is the applicator triggered?	10. Check applicator trigger.
	11. Is the applicator switch on?	11. Check applicator switch.
	12. Is the paint too conductive?	12. Check conductivity of paint.
	13. Faulty flow switch	13. Replace flow switch.
Isolation System Grounded Out	1. Failed fluid hose	1. Replace fluid hose.
	2. Isolation stand or charged equipment too close to ground	2. Provide adequate ground distance.

NOTES

PARTS IDENTIFICATION

79580 VECTOR AA90 APPLICATOR MODEL IDENTIFICATION

When ordering, use 79580-A, B, C, D, and E as indicated by Tables A, B, C, D, and E. Five digits must follow the basic part number, for example:

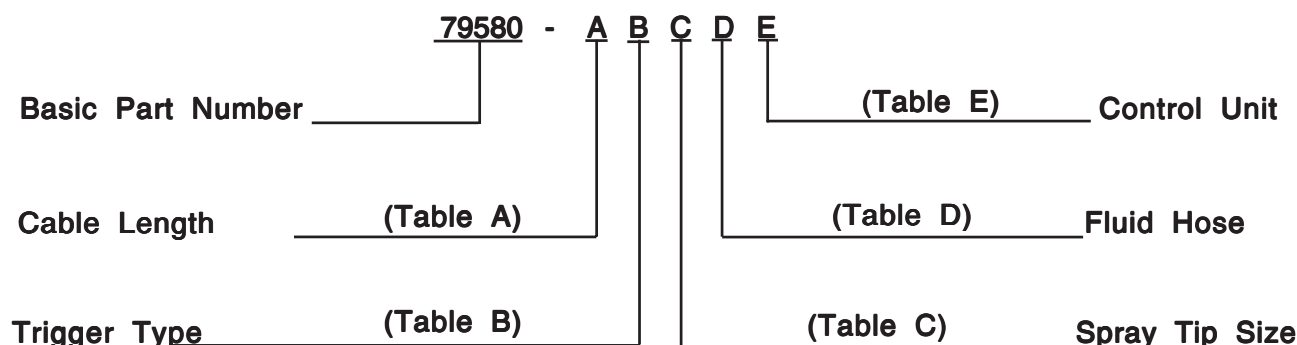


TABLE A
Cascade Solventborne Cable Lengths - Metric

Dash No.	Cable Length - Meters	"A"
0	No Cable	-----
1	10	79338-10
2	15	79338-15
3	20	79338-10(2)
4	25	79338-15,-10
5	30	79338-15(2)

TABLE B Trigger Type

Dash No.	Description	"B"
2	2-Finger Trigger	79325-12
4	4-Finger Trigger	79325-14

TABLE C Tip Size

Dash No.	Description	"C"
0	0811 Tip	79691-0811
1	0813 Tip	79691-0813
2	1011 Tip	79691-1011
3	1015 Tip	79691-1015

TABLE D - Fluid Hose Length

Dash No.	Description	"D"
0	No Fluid Hose	--
1	11m (36-ft.) Pant Hose, 3/16" ID	7994-36
2	15m (50-ft.) Paint Hose, 3/16" ID	7994-50
3	23m (75-ft.) Paint Hose, 3/16" ID	7994-75
4	30m (100-ft.) Paint Hose, 3/16" ID	7994-100

TABLE E
Control Unit

Dash No.	Description	"E"
0	Applicator with Cable Only, No Power Supply	--
1	110/120 V	79513-131
2	240 V - 50/60 Hz	79513-132

PARTS IDENTIFICATION

79581 VECTOR AA90 APPLICATOR MODEL IDENTIFICATION

When ordering, use 79581-A, B, C, D, and E as indicated by Tables A, B, C, D, and E. Five digits must follow the basic part number, for example:

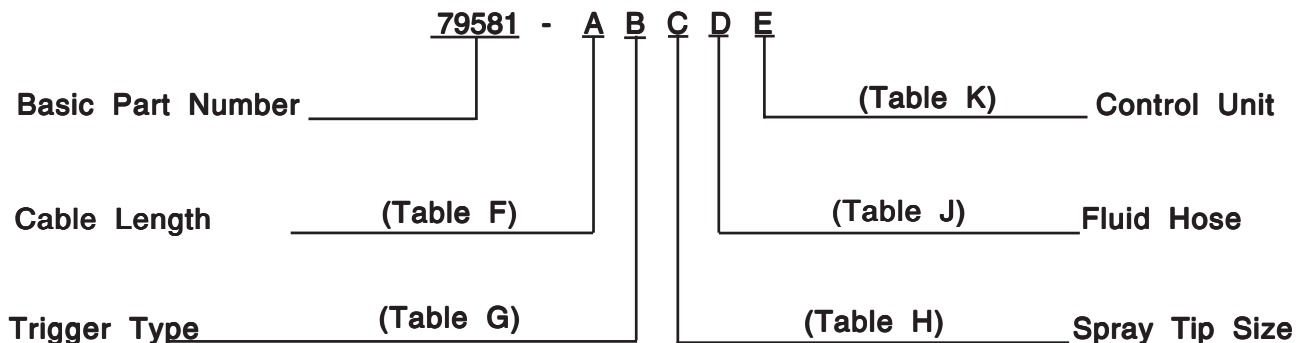


TABLE F
Cascade Solventborne Cable
Lengths - Metric

Dash No.	Cable Length - Meters	"F"
0	No Cable	-----
1	10	79549-10
2	15	79519-15
3	20	79519-20
4	25	79519-25
5	30	79519-30

TABLE G Trigger Type

Dash No.	Description	"G"
2	2-Finger Trigger	79325-12
4	4-Finger Trigger	79325-14

TABLE H Tip Size

Dash No.	Description	"H"
0	0811 Tip	79691-0811
1	0813 Tip	79691-0813
2	1011 Tip	79691-1011
3	1015 Tip	79691-1015

TABLE J - Fluid Hose Length

Dash No.	Description	"J"
0	No Fluid Hose	--
1	11m (36-ft.) Pant Hose, 3/16" ID	7994-36
2	15m (50-ft.) Paint Hose, 3/16" ID	7994-50
3	23m (75-ft.) Paint Hose, 3/16" ID	7994-75
4	30m (100-ft.) Paint Hose, 3/16" ID	7994-100

TABLE K
Control Unit

Dash No.	Description	"K"
0	Applicator with Cable Only, No Power Supply	--
1	110/120 V	79344-141
2	240 V - 50/60 Hz	79344-142



VECTOR AA90 CASCADE - PARTS LIST (Figure 51)

Item #	Part #	Description	Qty
1	79568-00	Ring, Retaining, Air Assist	1
2	19603-8F	Set Screw, Cup Point	2
3	79460-04	Assembly, Plug, Low Voltage	1
4	79588-00	Assembly, Barrel AA90 With Needle, Retaining Ring	1
	79586-00	Assembly, Barrel AA90, Barrel Only	1
5	76105-00	Swivel, High Pressure	1
6	77096-00	Fluid Tube Assembly	1
7	79476-01	Handle Assembly	1
8	7720-01	Filter, Paint, .005 Web Spacing, 100 Mesh (Fine)	1
	7720-02	Filter, Paint, .009 Web Spacing, 60 Mesh (Course)	1
9	LSOR0005-17	O-Ring, Teflon Encapsulated	1
10	72375-02	Seal, Teflon	1
11	17130-00	Spring, Return	1
12	79001-31	O-Ring, Solvent Proof	1
13	79310-00	Rod Assembly, Dual Stage Air Valve	1
14	79453-00	Cap, Retaining, Air Valve	1
15	78635-00	Nut, Retaining, Air Valve	1
16	10051-05	Cup Seal, Spring Loaded	1
17	79322-11	Hook, Blank, Molded	1
18	79570-00	Bracket, Support, Offset	1
19	74189-00	Fitting, Air Inlet (REM)	1
20	79001-08	O-Ring, Solvent Proof	1
21	Table B - "B"	Trigger, Molded	1
22	79454-00	Screw, Trigger Retention	2
23	79638-00	Trigger Lock Assembly	1
24	----	----	--
25	----	----	--
26	8301-08C	SHCS	1
27	79566-10	Assembly, Valve, Fan Click Adjust	1
28	79322-00	Hook, Molded	1
29	79479-00	O-Ring, Cord	1
30	79471-01	Assembly, Rear Cover	1
31	79378-00	Gasket, Barrel Cover	1
32	78824-00	Spring	1
33	78632-00	Nut, Locking, Needle Shaft	1
34	78633-00	Spring Retainer, Needle Shaft	1
35	79373-00	Nut, Retaining Barrel	1
36	75326-00	Ring, Retaining	1
37	79668-00	Assembly, Valve Seat Body	1
38	72375-03	Seal, Teflon	1
39	79695-00	Assembly, Air Cap, Air Assist	1
40	Table C - "C"	Carbide Tip Assemblies	1
41	Table A - "A"	Cable, Low Voltage	Table A - "A"
42	79692-00-K3	Seal, Carbide Tip, Kit of 3	1
43	--	--	--
44	LSOR0005-11	O-Ring, Teflon Encapsulated (included in item 39)	1

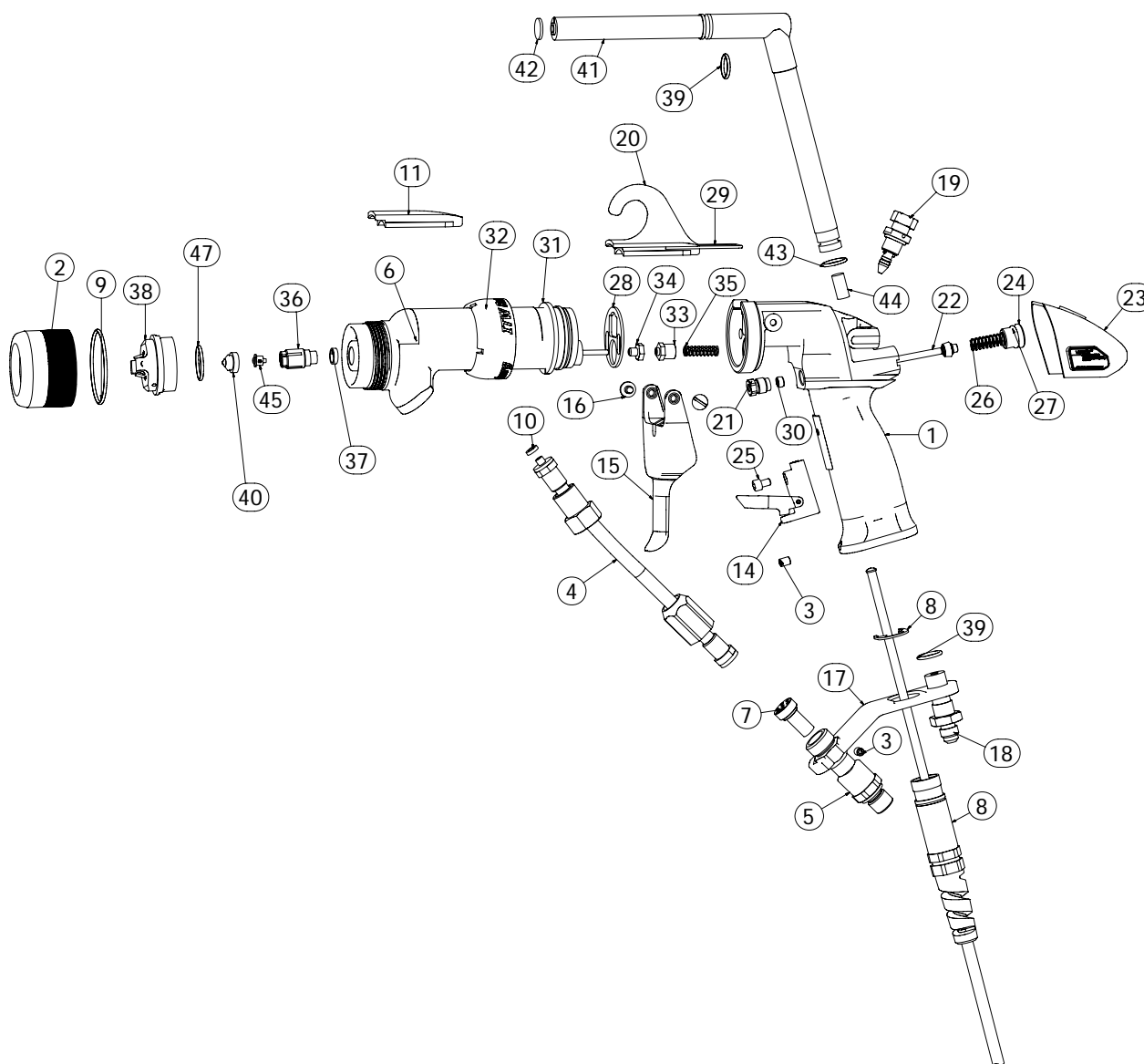


Figure 52: Vector AA90 Classic Exploded View

VECTOR AA90 CLASSIC - PARTS LIST (Figure 52)

Item #	Part #	Description	Qty
1	79476-01	Handle Assembly	1
2	79568-00	Ring, Retaining, Air Assist	1
3	19603-8F	Set Screw, Cup Point	2
4	77096-00	Fluid Tube Assembly,	1
5	76105-00	Swivel, High Pressure	1
6	79584-00	Assembly, Barrel, AA90 Classic With Needle, Retaining Ring and Resistor Tube	1
	79583-00	Assembly Barrel, Barrel Only	1
7	7720-01	Filter, Paint, .005 Web Spacing, 100 Mesh (Fine)	1
	7720-02	Filter, Paint, .009 Web Spacing, 60 Mesh (Course)	1
8	Table F - "F"	Assembly, Cable High Voltage	1
9	LSOR0005-17	O-Ring, Teflon Encapsulated	1
10	72375-02	Seal, Teflon	1
11	79322-11	Hook, Blank, Molded	1
12	----	----	--
13	----	----	--
14	79638-00	Trigger Lock Assembly	1
15	Table G - "G"	Trigger, Molded, 2-Finger	1
16	79454-00	Screw, Trigger Retention	2
17	79570-00	Bracket, Support, Offset	1
18	74189-00	Fitting, Air Inlet (REM)	1
19	79566-10	Assembly, Valve, Fan Click Adjust	1
20	79322-00	Hook, Molded	1
21	78635-00	Nut, Retaining, Air Valve	1
22	79310-00	Rod Assembly, Dual Stage Air Valve	1
23	79471-11	Assembly, Rear Housing, AA90 Classic	1
24	79453-00	Cap, Retaining, Air Valve	1
25	8301-08C	SHCS	1
26	17130-00	Spring, Return	1
27	79001-31	O-Ring, Solvent Proof	1
28	79378-00	Gasket, Barrel Cover	1
29	79479-00	O-Ring, Cord	1
30	10051-05	Cup Seal, Spring Loaded	1
31	75326-00	Ring, Retaining	1
32	79373-00	Nut, Retaining Barrel	1
33	78633-00	Spring Retainer, Needle Shaft	1
34	78623-00	Nut, Locking, Needle Shaft	1
35	78824-00	Spring	1
36	79668-00	Assembly, Valve Seat Body	1
37	72375-03	Seal, Teflon	1
38	79695-00	Assembly, Air Cap	1
39	79001-08	O-Ring, Solvent Proof	2
40	Table H - "H"	Carbide Tip Assemblies	1
41	70397-02	Resistor Housing, Potted	1
42	14061-05	Sponge, Conductive	1
43	79001-07	O-Ring, Solvent Proof	1
44	14061-08	Sponge, Conductive	1
45	79692-00-K3	Seal, Carbide Tip, Kit of 3	1
46	--	--	--
47	LSOR0005-11	O-Ring, Teflon Encapsulated (included in item 38)	1

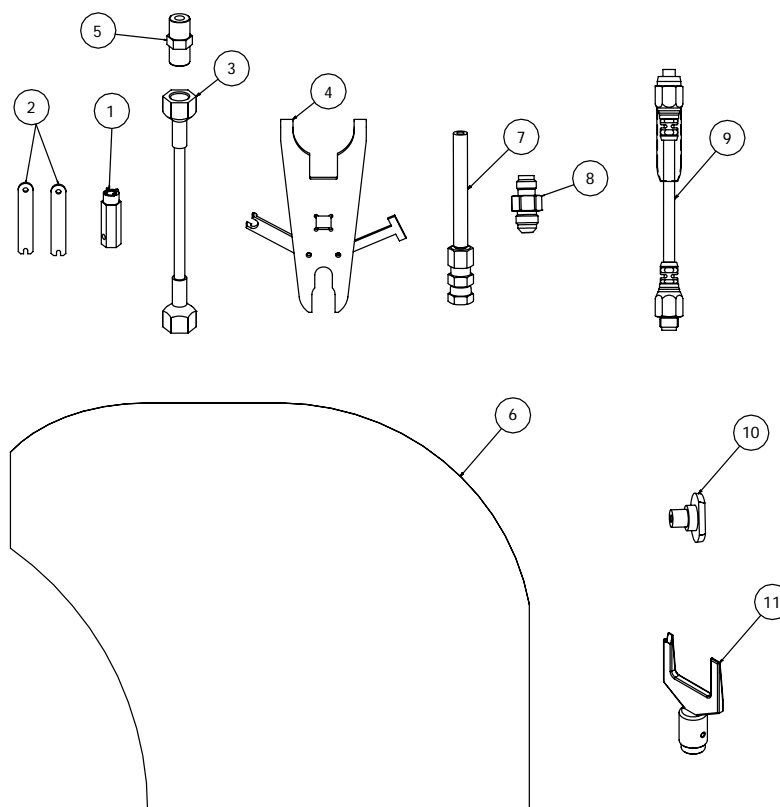
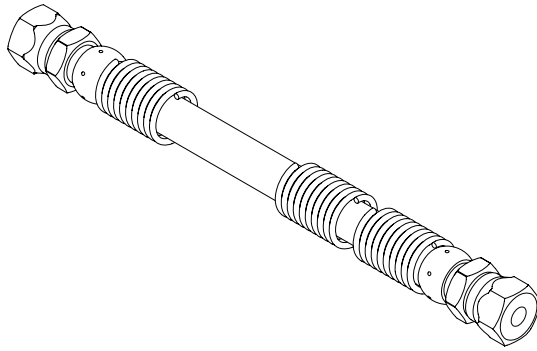


Figure 53: Accessories

ACCESSORIES - PARTS LIST (Figure 53) *			
Item #	Part #	Description	Qty
1	79676-00	Wrench, Nozzle Removal	1
2	74133-00	Wrench, Needle	2
3	76104-00	High Pressure Whip Hose, 1m	1
4	19749-00	Wrench Assembly	1
5	71880-06	Nipple, Male Double	1
6	79529-00	Disposable Applicator Cover	1
	79529-00-K5	Disposable Applicator Cover (Lots of 5)	—
7	74187-02	Air Hose Assembly, 2m Whip (6.5 ft.)	1
8	77105-00	Adapter, 3/8" AN Male to 1/4" NPSM(M)	1
9	79338-01	1 Meter Low Voltage Cable (79580 Vector Cascade Only)	1
10	79634-00-K3	Carbide Tip Seals, Kit of 3	1
	79634-XX	Carbide Tip Pre-Orifice	1
11	79642-00	Cap Removal Tool	1

* The "Accessories" are included with each Classic or Cascade Unit



**7994-XX FLUID LINE
(Figure 54)**

Part Number	Length	
	Feet	Meters
7994-36	36' ± 9"	11 ± .23
7994-50	50' ± 12"	15 ± .30
7994-75	75' ± 18"	23 ± .46
7994-100	100' ± 24"	30 ± .61

Figure 54: 7994-XX Fluid Line

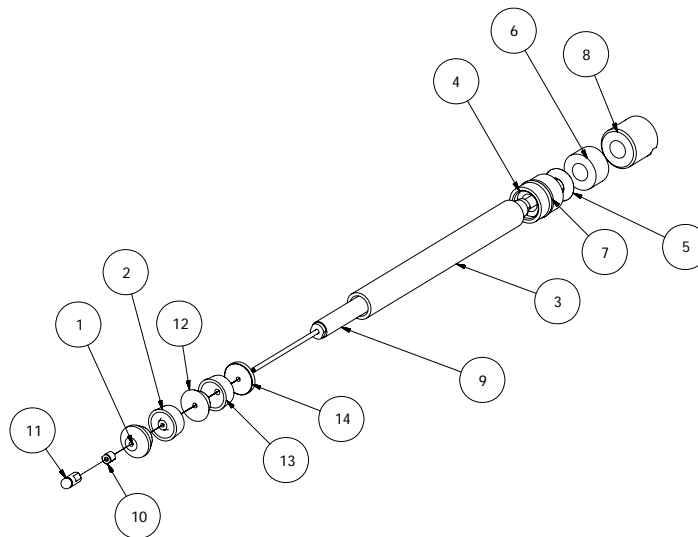
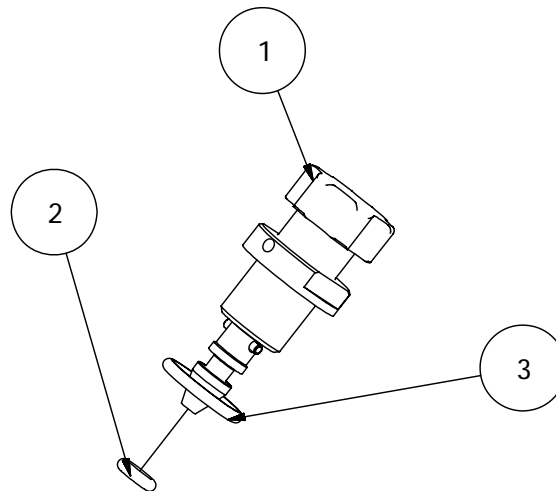


Figure 55: 79575-00 AA90 Needle Shaft

79575-00 AA90 NEEDLE SHAFT - PARTS LIST (Figure 55)

Item #	Part #	Description	Qty
1	79618-00	Spreader, Seal, Front	1
2	73345-00	Seal, Front U-Cup	1
3	72378-01	Packing Tube	1
4	73347-00	Container, Rear Seal	1
5	74330-00	Seal, High Pressure	1
6	73348-00	Retainer, Real Seal	1
7	72209-05	O-Ring, Metric	1
8	73354-00	Nut, Packing	1
9	79572-00	Assembly, Needle Shaft	1
10	73351-00	Nut, Jam	1
11	73350-00	Assembly, Ball Valve	1
12	79615-00	Spreader, Seal Rear	1
13	79616-00	Seal, Rear U-Cup	1
14	79617-00	Seal, Pusher, AA90	1

**Figure 56: Fan Air Valve Components**

FAN AIR VALVE - PARTS LIST (Figure 56)			
Item #	Part #	Description	Qty
1	79566-10	Assembly, Fan Air Adjust (Contains #2 and #3)	1
2	79001-16	O-Ring, Solvent Proof	1
3	79001-07	O-Ring, Viton	1

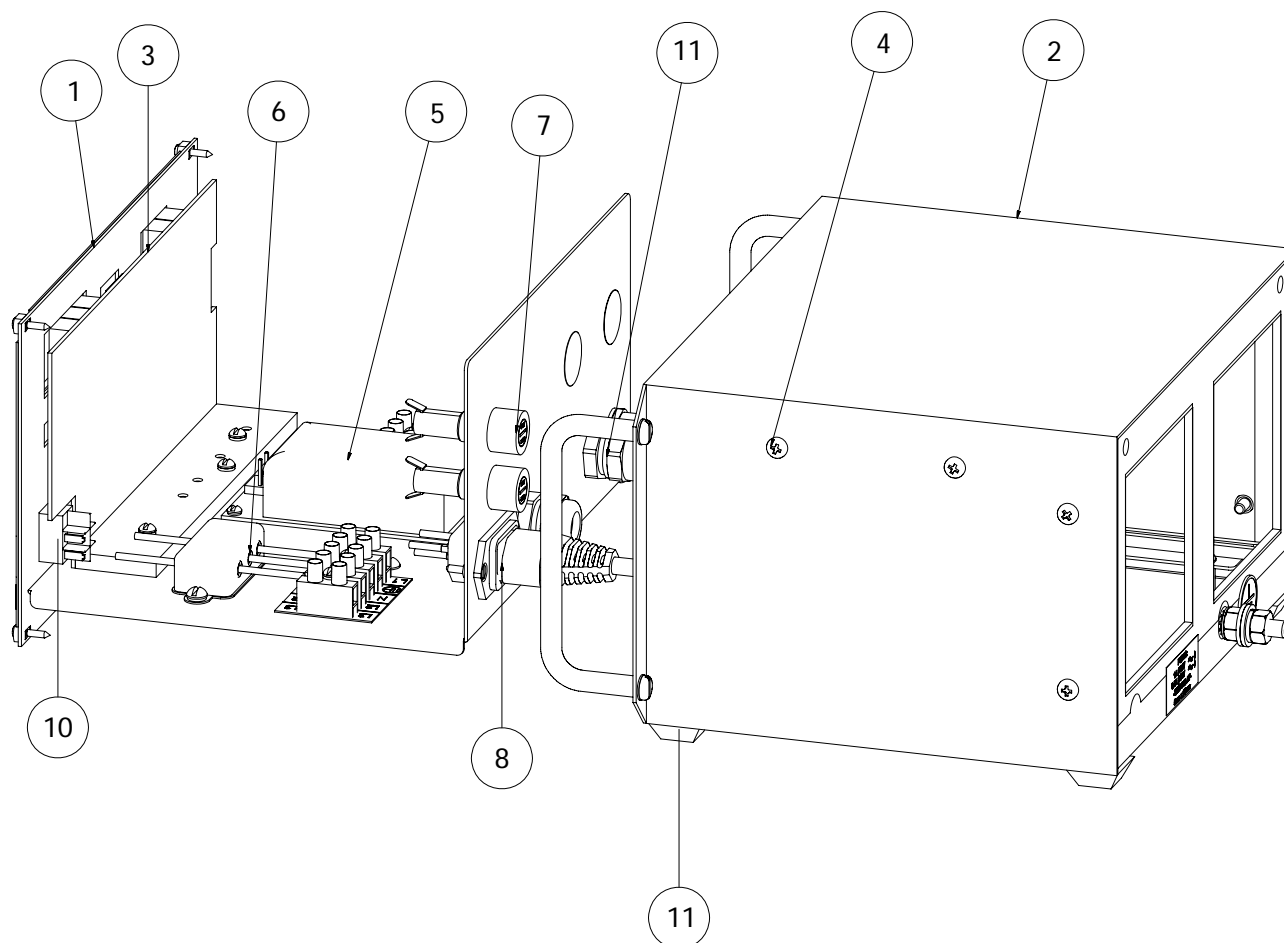


Figure 57: 79513-13X Control Unit

79513-13X CONTROL UNIT - PARTS LIST (Figure 57)			
Item #	Part #	Description	Qty
--	79513-132	Assembly, Control Unit, 220/240 V	--
1	79511-131	Chassis Assembly, 110/120 V, (Contains all parts)	1
	79511-132	Chassis Assembly, 220/240 V, (Contains all parts)	1
2	79512-00	Enclosure Assembly, 9050	1
3	79390-24	Assembly, PC Board, for 79513-13X	1
4	79493-00	Screw, Mounting, #8-32, Phillips, Pan Head, Stainless Steel	8
5	79428-00	Power Supply, 24 VDC	1
6	79491-00	Filter, AC Line, Assembly	1
7	72771-06	Fuse, 110/120 V, 1 Amp, Time Delay, 5mm X 20mm	2
8	76449-00	AC Line Cord	1
9	A11357-01	Cable Gland, EMC Spring	2
10	76434-01	Switch, AC Power, On/Off	1
11	5627-00	Rubber Foot	4
12	79494-00	Receptacle, Low Voltage Cable (Not Shown)	1
13	70539-00	Ground Wire Assembly (Not Shown)	1

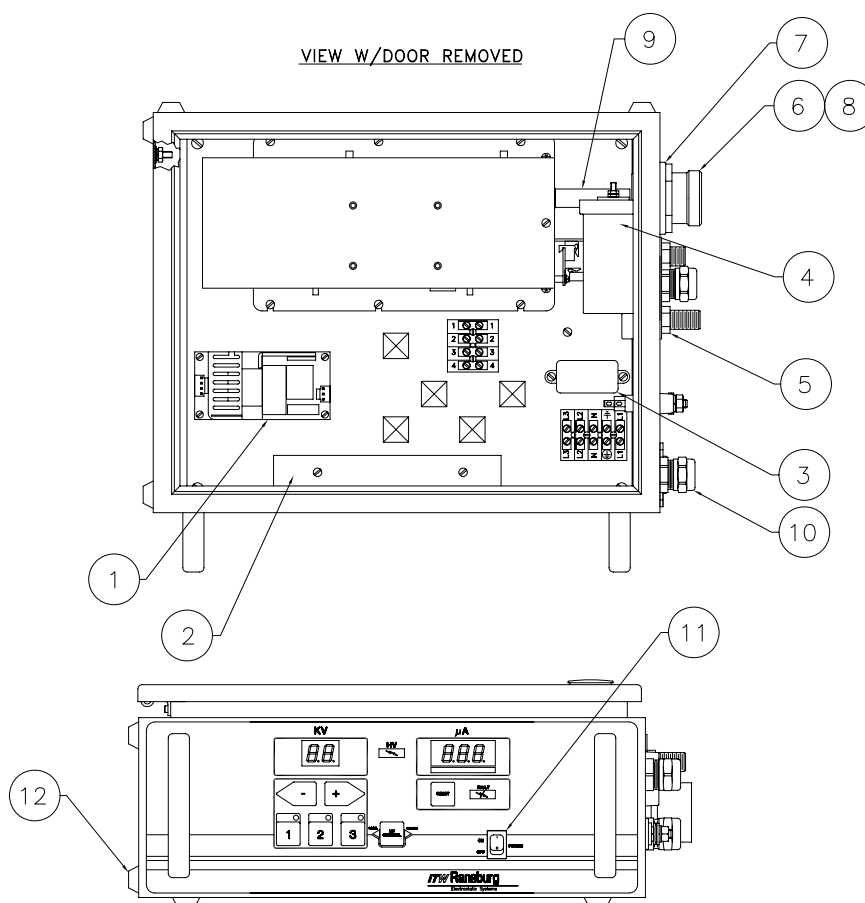


Figure 58: AA90 Classic Power Supply

AA90 CLASSIC POWER SUPPLY - PARTS LIST (Figure 58)

Item #	Part #	Description	Qty
--	79344-141	Power Supply, 110/120 V	--
--	79344-142	Power Supply, 220/240 V	--
1	79428-00	Power Supply 24 VDC	1
2	79390-06	Main PC Board, Vector AA90 Classic for 79344-12X	1
3	79412-00	AC Line Filter	1
4	13742-02	Flow Switch, Low Flow	1
5	LSFA0008-00	Nut, Flow Switch	2
6	15824-01	High Voltage Connector, Assembly	1
7	14762-02	Washer, Conduit	1
8	5307-04	Nut, Conduit	1
9	79350-02	HV Multiplier Assembly, 65 kV for 79344-11X	1
	79350-01	HV Multiplier Assembly, 90 kV for 79344-12X	1
--	72771-01	Fuse, 220/240 V, 0.5 Amp, Time Delay, 5mm X 20mm	2
	72771-06	Fuse, 110/120 V, 1 Amp, Time Delay, 5mm X 20mm	2
10	A11357-02	EMC Cable Gland	2
	A11358-02	Gland Nut	2
11	76434-01	AC Power Switch	1
12	5627-00	Rubber Foot	12
--	76449-00	AC Line Cord	1
--	70539-00	Ground Wire Assembly	1

AA90 APPLICATORS RECOMMENDED SPARE PARTS			
Part #	Description	Qty	
		Classic	Cascade
10051-05	Cup Seal, Spring Loaded	1	1
17130-00	Return Spring	1	1
72209-05	O-Ring	1	1
72375-02	Seal, Teflon	1	1
72375-03	Seal, Teflon	1	1
72378-01	Packing Tube	1	1
73344-00	Seal, Spreader	1	1
73345-00	U-Cup Seal	1	1
73347-00	Container, Rear Seal,	1	1
73348-00	Retainer, Rear Seal	1	1
73350-00	Ball Valve Assembly	1	1
73351-00	Jam Nut	1	1
74330-00	High Pressure Seal	1	1
75326-00	Air Cap Retaining Ring	1	1
77096-00	Fluid Tube Assembly	1	1
7720-01	Paint Filter, 100 Mesh	1	1
7720-02	Paint Filter, 60 Mesh	1	1
78824-00	Spring	1	1
79566-10	Fan Air Valve Assembly	1	1
79695-00	Air Cap	1	1
79691-XXXX	Carbide Spray Tips	1	1
79616-00	Rear U-Cup Seal	1	1
79617-00	Seal Pusher	1	1
79692-00-K3	Tip Seal, Kit of 3	1	1
79668-00	Assembly, Valve Seat Body	1	1

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 GUN IN PLASTIC 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 **AH-07-01.7** Vector AA90 Applicators, to make the following changes:

1. Corrected "Special conditions for safe use" information in "ATEX" section with appropriate gun model numbers and their corresponding control units and power supplies.
2. Added additional explanations of specific cascade or classic unit fault causes in "Fault Descriptions" area of "Operation" section.

Service Manual Price: €40.00 (Euro)
\$50.00 (U.S.)

Manufacturing

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Telephone: 800/ 233-3366 Fax: 419/ 470-2071

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

