

**SERVICE MANUAL**  
**CP-17-01.0**  
**MARCH – 2017**

**Ransburg**

## **9060 PNEUMATIC CONTROL MODULE**



**MODEL: 80112**

**IMPORTANT:** Before using this equipment, carefully read SAFETY PRECAUTIONS, starting on page 4, and all instructions in this manual. Keep this Service Manual for future reference.

Service Manual Price: \$50.00

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# SAFETY

## SAFETY PRECAUTIONS

Before operating, maintaining or servicing any Ransburg electrostatic coating system, read and understand all of the technical and safety literature for your 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 Ransburg equipment manuals to reconcile such differences.



Careful study and continued use of this manual will provide a better understanding of the equipment and processes, 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 Ransburg representative or call the Ransburg Technical Assistance phone number located on the last page of this manual, reprinted here for your convenience: 800-233-3366 (toll free) or 419-470-2000 (outside the USA).



 <b>WARNING</b>
<ul style="list-style-type: none"> <li>➤ The user <b>MUST</b> read and be familiar with the Safety Section in this manual and the Ransburg safety literature therein identified.</li> <li>➤ This equipment is intended to be used by trained personnel <b>ONLY</b>.</li> <li>➤ This manual <b>MUST</b> be read and thoroughly understood by <b>ALL</b> personnel who operate, clean or maintain this equipment! Special care should be taken to ensure that the <b>WARNINGS</b> and safety requirements for operating and servicing the equipment are followed. The user should be aware of and adhere to <b>ALL</b> local building and fire codes and ordinances as well as <b>NFPA-33 SAFETY STANDARD, LATEST EDITION</b>, prior to installing, operating, and/or servicing this equipment.</li> </ul>

 <b>WARNING</b>
<ul style="list-style-type: none"> <li>➤ The hazards shown on the following pages may occur during the normal use of this equipment. Please read the hazard chart located on pages 5-9.</li> </ul>


<p><b>AREA</b></p> <p>Tells where hazards may occur.</p>	<p><b>HAZARD</b></p> <p>Tells what the hazard is.</p>	<p><b>SAFEGUARDS</b></p> <p>Tells how to avoid the hazard.</p>
<p><b>Spray Area</b></p> 	<p><b>Fire Hazard</b></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 or Controller 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> <ul style="list-style-type: none"> <li>• Those used for equipment flushing should have flash points equal to or higher than those of the coating material.</li> <li>• Those solvents used for cleaning must have a flash point at minimum of 15°C (27°F) greater than the ambient temperature. It is the end user's responsibility to insure this condition is met.</li> </ul> <p>Spray booth ventilation must be kept at the rates required by NFPA-33, OSHA, country and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents.</p> <p>Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times.</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 waterborne installations to spray solvent based materials.</p> <p>The paint process and equipment should be set up and operated in accordance with NFPA-33, NEC, OSHA, local, country, and European Health and Safety Norms.</p>

<b>AREA</b> Tells where hazards may occur.	<b>HAZARD</b> Tells what the hazard is.	<b>SAFEGUARDS</b> Tells how to avoid the hazard.
<b>Spray Area</b> 	<b>Explosion Hazard</b> <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.</p> <p>Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.</p>	<p>Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times.</p> <p>Unless specifically approved for use in hazardous locations, all electrical equipment must be located <b>outside</b> Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33.</p> <p>Test only in areas free of flammable or combustible materials.</p> <p>The current overload sensitivity (if equipped) <b>MUST</b> be set as described in the corresponding section of the equipment manual. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if the current overload sensitivity is not properly set. Frequent power supply shutdown indicates a problem in the system which requires correction.</p> <p>Always turn the control panel power off prior to flushing, cleaning, or working on spray system equipment.</p> <p>Before turning high voltage on, make sure no objects are within the safe sparking distance.</p> <p>Ensure that the control panel is interlocked with the ventilation system and conveyor in accordance with NFPA-33, EN 50176.</p> <p>Have fire extinguishing equipment readily available and tested periodically.</p>
<b>General Use and Maintenance</b> 	<b>Improper operation or maintenance may create a hazard.</b> <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, EN 60079-0.</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, EN Norms and your insurance company requirements.</p>

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<p><b>Spray Area/ High Voltage Equipment</b></p> 	<p><b>Electrical Discharge</b></p> <p>There is a high voltage device that can induce an electrical charge on ungrounded objects which is capable of igniting coating materials.</p> <p>Inadequate grounding will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.</p>	<p>Parts being sprayed and operators in the spray area must be properly grounded.</p> <p>Parts being sprayed must be supported on conveyors or hangers that are properly grounded. The resistance between the part and earth ground must not exceed 1 meg ohm. (Refer to NFPA-33.)</p> <p>Operators must be grounded. Rubber soled insulating shoes should not be worn. Grounding straps on wrists or legs may be used to assure adequate ground contact.</p> <p>Operators must not be wearing or carrying any ungrounded metal objects.</p> <p>When using an electrostatic handgun, operators must assure contact with the handle of the applicator via conductive gloves or gloves with the palm section cut out.</p> <p><b>NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES REGARDING PROPER OPERATOR GROUNDING.</b></p> <p>All electrically conductive objects in the spray area, with the exception of those objects required by the process to be at high voltage, must be grounded. Grounded conductive flooring must be provided in the spray area.</p> <p>Always turn off the power supply prior to flushing, cleaning, or working on spray system equipment.</p> <p>Unless specifically approved for use in hazardous locations, all electrical equipment must be located <b>outside</b> Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33.</p> <p>Avoid installing an applicator into a fluid system where the solvent supply is ungrounded.</p> <p>Do not touch the applicator electrode while it is energized.</p>

<b>AREA</b> Tells where hazards may occur.	<b>HAZARD</b> Tells what the hazard is.	<b>SAFEGUARDS</b> Tells how to avoid the hazard.
<p><b>Electrical Equipment</b></p> 	<p><b>Electrical Discharge</b></p> <p>High voltage equipment is utilized in the process. Arcing in the vicinity 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>Unless specifically approved for use in hazardous locations, the power supply, control cabinet, and all other electrical equipment must be located outside Class I or II, Division 1 and 2 hazardous areas in accordance with NFPA-33 and EN 50176.</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>
<p><b>Toxic Substances</b></p> 	<p><b>Human Toxicity</b></p> <p>Certain material may be harmful if inhaled, or if there is contact with the skin.</p>	<p>Follow the requirements of the Material Safety Data Sheet supplied by the 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>



<p><b>AREA</b></p> <p>Tells where hazards may occur.</p>	<p><b>HAZARD</b></p> <p>Tells what the hazard is.</p>	<p><b>SAFEGUARDS</b></p> <p>Tells how to avoid the hazard.</p>
<p><b>Spray Area</b></p> 	<p><b>Explosion Hazard – Incompatible Materials</b></p> <p>Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1,- Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.</p>	<p>Spray applicators require that aluminum inlet fittings be replaced with stainless steel.</p> <p>Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your coating supplier. Any other type of solvent may be used with aluminum equipment.</p>

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# INTRODUCTION

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## GENERAL DESCRIPTION

The **9060 Pneumatic Control Module** provides pneumatic control functions for Aerobell 168 or 268 Applicators sold as part of the A13351 or A13657 Single Bell packages. The Pneumatic Control Module is an optional control item that facilitates the use of the single bell applicators.

The Pneumatic Control Module consists of an 80112 Control Unit and an 80186-01 Remote Manifold Assembly (see Figure 1). Together, these two units provide the following functions:

**Fluid Control:** A 0-60 psi adjustable pilot regulator provides an output that can be connected to a fluid regulator of the applicator to control material delivery. A gauge and On/Off valve are also provided for this output.

**Shaping Air Control 1:** A 0-60 psi adjustable pilot regulator in the Pneumatic Control Module provides output to a 1:1 volume control booster on the Remote Manifold Assembly. A toggle valve in the Pneumatic Control Module provides On/Off control of this air signal. The output of the volume booster is used to supply shaping air to the applicator. A second output of the volume booster is connected back to the Pneumatic Control Module to supply a gauge for pressure measurement.

**Shaping Air Control 2:** For use only with applicators that have DualFlex shaping air capability. A 0-60 psi adjustable pilot regulator in the Pneumatic Control Module provides output to a second 1:1 volume control booster on the Remote Manifold Assembly. A toggle valve in the

Pneumatic Control Module provides On/Off control of this air signal. The output of the volume booster may be used to supply additional shaping air to the applicator if it is DualFlex capable. A second output of the volume booster is connected back to the Pneumatic Control Module to supply a gauge for pressure measurement.

**Atomization Air Control:** A 0-60 psi adjustable pilot regulator in the Pneumatic Control Module provides output to a third 1:1 volume booster on the Remote Manifold. A toggle valve in the Pneumatic Control Module provides On/Off control of this air signal. The output of this volume booster is used to supply atomization air to the applicator. A second output of the volume booster is connected back to the Pneumatic Control Module to supply a gauge for pressure measurement.

**Trigger Control:** A toggle valve output allows On/Off control of the fluid applicator trigger valve.

**Dump Control:** A toggle valve allows On/Off control of the applicator fluid dump valve.

**Solvent Control:** A toggle valve output allows On/Off control of the applicator solvent valve for the applicator.

**Bearing Air Interlock:** A sense valve is provided that only allows atomization air output if the bearing air is above 80 psi. This prevents possible turbine damage from operating at too low of a pressure.

**Fluid Interlocks:** Two valves are used to disable the solvent and trigger outputs if the atomization air is off, thus ensuring that the turbine is spinning and atomization air is on, when fluid is supplied to the applicator. This prevents possible material backup into the applicator.

**High Voltage Interlocks:** A solenoid is provided to prevent solvent or dump activation whenever the applicators' High Voltage Power Supply is on. In addition, an output is provided that ensures the Power Supply is disabled whenever the solvent or dump signals are active.

 **WARNING**

- The high voltage interlocks must be connected as described in the installation section of this manual to prevent possible operation of the dump or solvent functions when high voltage is present.

## SPECIFICATIONS

### Environmental / Physical

Width:	12.0 inches (30.5 cm)
Length:	15.0 inches (38.1 cm)
Height:	6.3 inches (16.0 cm)

### Electrical

#### INPUT

Voltage:	24 VDC
Current:	20 mA DC
Power:	0.5W

### Mechanical

#### AIR INPUTS

To Control Module:	1/4" ODT
To Remote Manifold:	3/4" NPT

#### MAXIMUM AIR PRESSURE

To Control Module:	100 psi
To Remote Manifold:	160 psi

#### MINIMUM AIR PRESSURE

To Control Module:	80 psi
To Remote Manifold:	90 psi

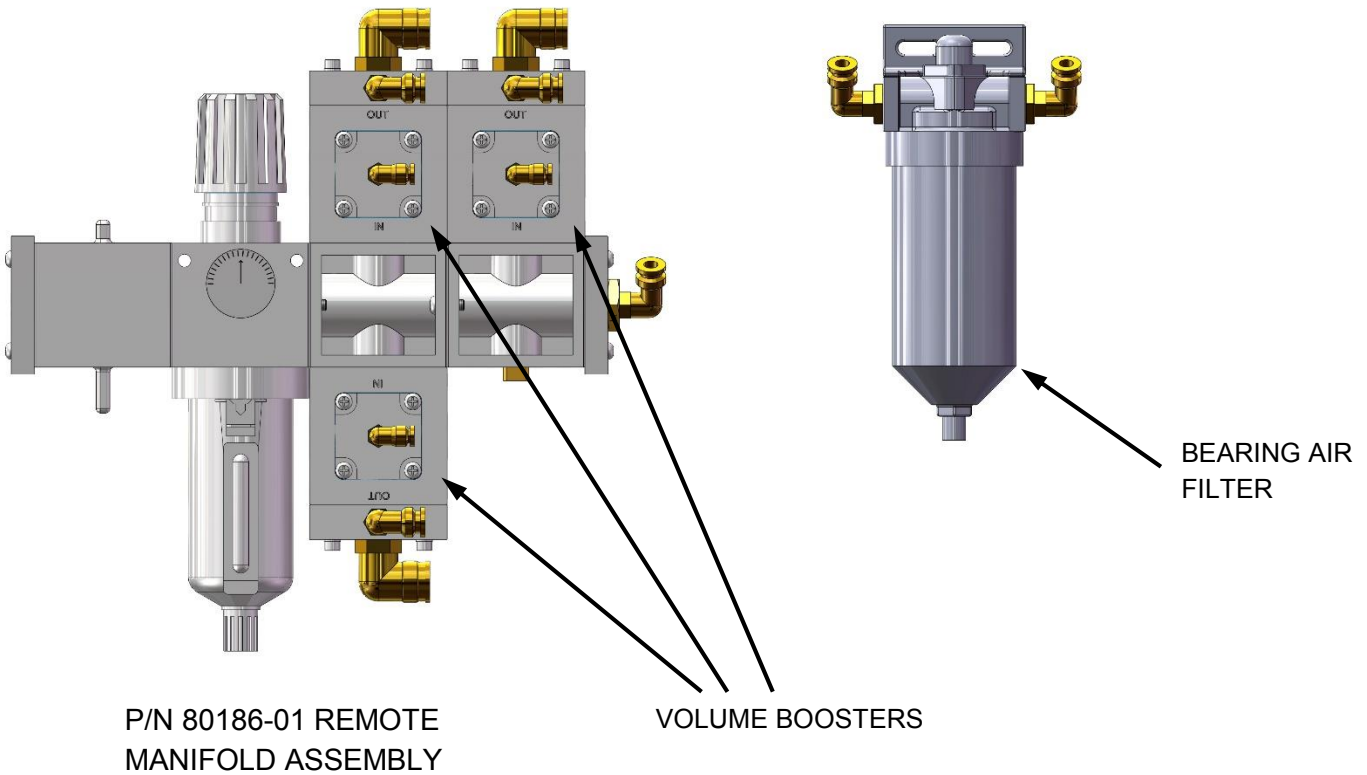
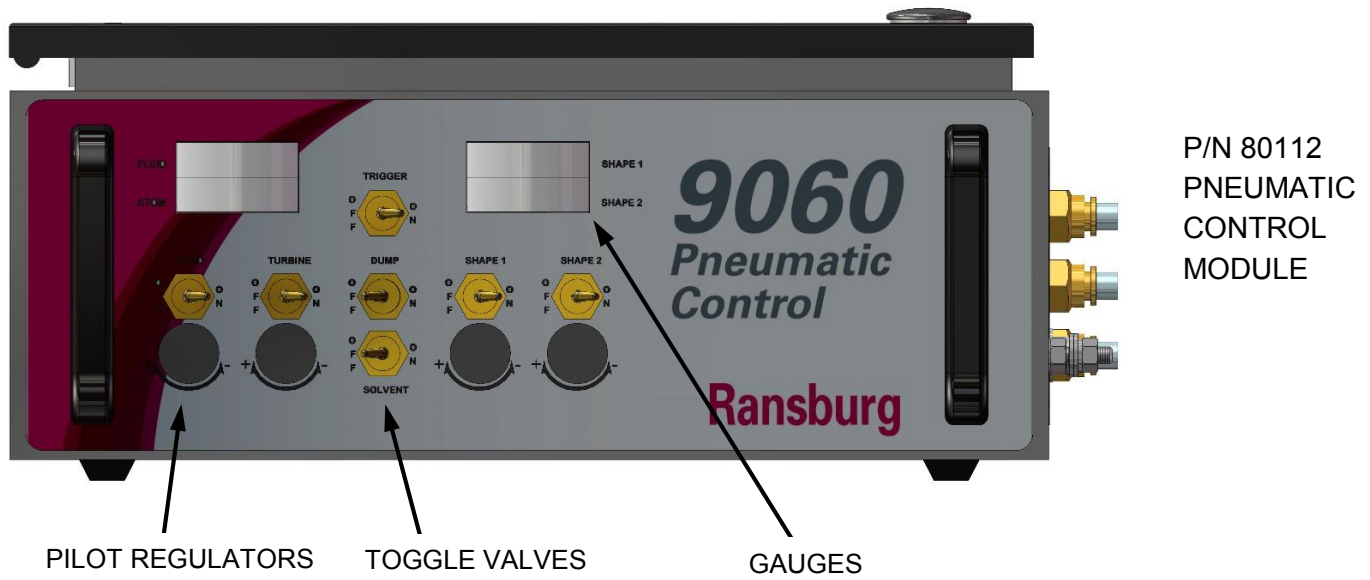
#### AIR FILTRATION

Control Module:	User Supplied
Remote Manifold:	0.3 Micron Coalescer 3 Micron Prefilter 0.01 Micron Filter Bearing Air Filter

#### TUBING RUNS

1/4" OD Tube:	15
3/8" OD Tube:	3
1/2" OD Tube:	1

Figure 1: 9060 Pneumatic Control Module and Remote Manifold Components



## **NOTES**

# INSTALLATION

## ⚠ WARNING

➤ 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 this equipment are followed. The user should be aware of and follow **ALL** local building and fire codes and ordinances, as well as **NFPA-33**, prior to installing, operating, and/or servicing this equipment.

## LOCATION

### Pneumatic Control Module

Install the 80112 Pneumatic Control Module (see Figure 1) in an area **OUTSIDE** the hazardous location, but as close to the applicator as possible, to minimize the length of tubing runs. The area should provide protection from the possibility of environmental intrusion, such as dust or moisture, and ambient temperatures in excess of 120°F (48.9°C).

## NOTE

➤ Do not locate the Pneumatic Control Module near or adjacent to heat producing equipment such as ovens, high wattage lamps, etc.

## Remote Manifold

The 80186-01 Remote Manifold (see Figure 1) may be mounted in a convenient area inside or outside of the hazardous location. Minimization of tubing runs should be considered when mounting the Remote Manifold. Mount the Bearing Air Filter as close to the applicator as possible.

## MOUNTING

The mounting of applicators is addressed in the appropriate service manual for each applicator.

## NOTE

➤ To prevent material backup into the applicator the flow of solvent should never exceed 500 cc's per minute. The flow can be adjusted below this value using the adjustment knob on the solvent flush manifold. The solvent supply should be connected to the fluid input of the solvent flush manifold. The fluid output of the solvent flush manifold should be connected to the solvent fluid input of the applicator.

## ELECTRICAL CONNECTIONS

### HV Solenoid Cable

Connect the 3 foot 78386-01 cable assembly (supplied) from the 1REC at the rear of the Pneumatic Control Module to the HV Interlock in either the 9060 Cascade LV Controller (80120) or HV Controller (80100). (See Service Manual CP-13-02 or CP-13-05 respectively).

 <b>WARNING</b>
<p>➤ This cable <b>MUST</b> be connected to ensure that the solvent or dump functions of the applicator cannot be activated when high voltage is present.</p>

**Ground Wire Assembly**

Ensure that the 70539-00 Ground Wire Assembly (see Fig. 2) is connected from the enclosure housing the Pneumatic Control Module to a true earth ground.

**PNEUMATIC CONNECTIONS**

Referring to Figure 2, make the following pneumatic connections (these connections are shown in the “Pneumatic Connections” chart in the Installation section of this manual.

**Pneumatic Control Module**

**“MAIN”**

Main air line supply connection to the Pneumatic Control Module. Using 1/4” OD tubing, connect the “MAIN” input to a source of clean, filtered compressed (factory) air.

**“HV”**

Air output that ensures that HV is OFF during dump and solvent flush operations. Using 1/4” OD tubing, connect “HV” output to a pressure switch (sold separately). Connect the output of the pressure switch to TB1 through the Interlock I/O opening on the rear of the 9060 Controller.

**“FLD”**

0-60 psi pilot regulator output that is used as a pilot signal to operate the fluid regulator at the applicator. Using 1/4” OD tubing, connect “FLD” output to the pilot air input of the applicator fluid regulator.

**“ATM”**

0-60 psi pilot regulator output used as input to the atomization air volume booster on the remote manifold. Using 1/4” OD tubing, connect “ATM” output to ATOMIZATION AIR PILOT INPUT of the remote manifold.

**“ATMR”**

Input from the Remote Manifold that is used to display the pressure of the atomization air remote manifold volume booster on the ATM gauge of the Pneumatic Control Module. Using 1/4” OD tubing, connect “ATMR” input to ATOMIZATION AIR GAUGE OUTPUT of Remote Manifold.

**“SHP1”**

0-60 psi pilot regulator used as input to shaping air volume booster on Remote Manifold. Using 1/4” OD tubing, connect “SHP” output to SHAPING AIR PILOT INPUT on the Remote Manifold.

**“SHP2”**

0-60 psi pilot regulator used as input to the second (dual-flex option) shaping air volume booster on Remote Manifold. Using 1/4” OD tubing, connect “SHP2” output to SHAPING AIR PILOT INPUT 2 on the Remote Manifold.

**“SHPR1”**

Input from the Remote Manifold used to display the pressure of the shaping air remote manifold volume booster on the SHP gauge of the control module. Using 1/4” OD tubing, connect the “SHPR” input to the SHAPING AIR OUTPUT of the Remote Manifold.

**“SHPR2”**

Input from the Remote Manifold used to display the pressure of the shaping air 2 remote manifold volume booster on the SHP2 gauge of the control module. Using 1/4” OD tubing, connect the “SHPR2” input to the SHAPING AIR OUTPUT 2 of the Remote Manifold.



### **“BA”**

Input from the applicator used to ensure at least 80 psi bearing air pressure before allowing turbine air supply to the bell. Using 1/4" OD tubing, connect the “BA” input to the bearing air output of the applicator (see appropriate applicator service manual).

### **“DMP”**

Air output used to activate the applicator dump valve. Using 1/4" OD tubing, connect “DMP” to the air trigger input of the dump valve at the applicator.

### **“SOLV”**

Air output used to activate the applicator solvent valve. Using 1/4" OD tubing and 1/4" tee fitting, connect “SOLV” to the air trigger input of the solvent valve at the applicator and to the air trigger input of the LRPM6009-01 Solvent Flush Manifold.

### **“TRG”**

Air output used to activate the applicator trigger valve. Using 1/4" OD tubing, connect “TRG” to the air trigger input of the trigger valve at the applicator.

## **Remote Manifold Assembly**

### ***Shaping Air 1 Regulator Output***

Air output from the remote manifold used to shape the spray pattern of the applicator. Using 3/8" OD tubing, connect the “SHAPING AIR 1 REGULATOR OUTPUT” of the remote manifold to the shaping air 1 input of the applicator.

### ***Shaping Air 2 Regulator Output***

Air output from the remote manifold used to shape the spray pattern of the applicator. Using 3/8" OD tubing, connect the “SHAPING AIR 2 REGULATOR OUTPUT” of the remote manifold to the shaping air 2 input of the applicator.

### ***Remote Manifold Main Air Out / Bearing Air Filter Input***

Main air output of the Remote Manifold used to supply the main air bearing filter. Using 3/8" OD tubing, connect the “REMOTE MANIFOLD MAIN AIR OUT” to the “BEARING AIR FILTER INPUT” of the bearing air filter.

## **Bearing Air Filter**

### ***Bearing Air Filter Output***

Air output used to supply filtered bearing air to the applicator. Using 1/4" OD tubing, connect the “BEARING AIR FILTER OUTPUT” to the bearing air input of the applicator.

### **NOTE**

- PTFE thread tape, pipe dope, or other thread sealant material should not be used downstream of the bearing air filter. The tape or dope may break free and cause plugging of the turbine air bearings, and result in turbine failure.

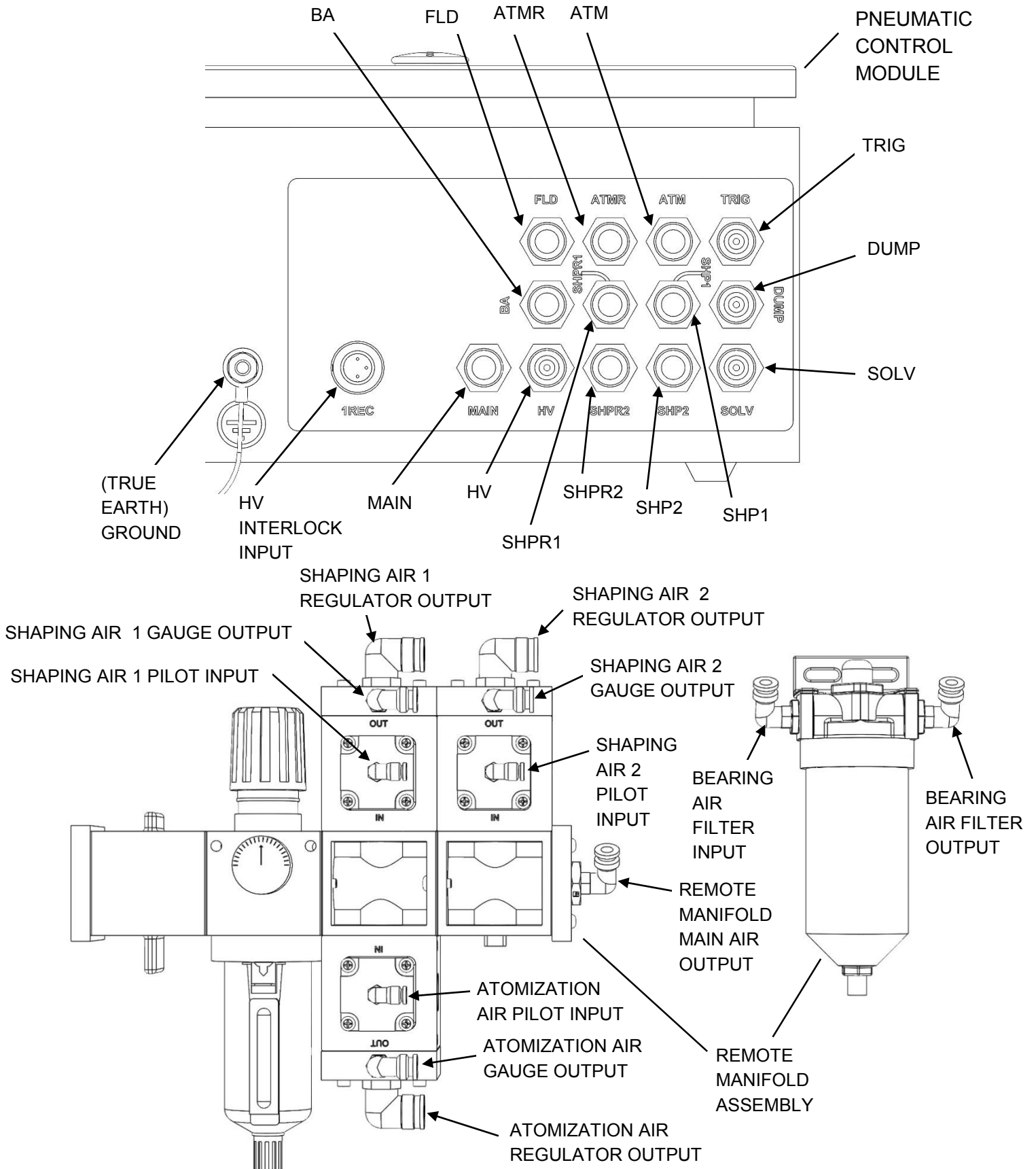
## **FLUID CONNECTIONS**

Using 3/8" OD tubing, make the appropriate fluid connections as described in the applicator service manual.

## PNEUMATIC CONNECTIONS

CONTROL MODULE			
From	To	Tubing	Notes
Main Input	Filtered Plant Compressed Air Supply	1/4 inch Nylon	
HV Output	Pressure Switch (sold sep.)	1/4 inch Nylon	
FLD Output	Applicator – Air Pilot Input of Fluid Regulator	1/4 inch Nylon	
ATM Output	Remote Manifold – Atomization Air Pilot Input	1/4 inch Nylon	
ATMR Input	Remote Manifold – Atomization Air Gauge Output	1/4 inch Nylon	
SHP1 Output	Remote Manifold – Shaping Air Pilot Input	1/4 inch Nylon	
SHPR1 Input	Remote Manifold – Shaping Air Gauge Output	1/4 inch Nylon	
SHP2 Output	Remote Manifold – Shaping Air Pilot Input 2	1/4 inch Nylon	
SHPR2 Input	Remote Manifold – Shaping Air Gauge Output 2	1/4 inch Nylon	
BA Input	Applicator – Bearing Air Output	1/4 inch Nylon	
DMP Output	Applicator – Dump Valve Air Input	1/4 inch Nylon	
SOLV Output	Applicator – Solvent Valve Air Input	1/4 inch Nylon	2
SOLV Output	Solvent Flush Manifold – Air Input	1/4 inch Nylon	2
TRG Output	Applicator – Trigger Valve Air Input	1/4 inch Nylon	
REMOTE MANIFOLD			
From	To	Tubing	Notes
Shaping Air 1 Regulator Output	Applicator – Shaping Air 1 Input	3/8 inch Nylon	
Shaping Air 2 Regulator Output	Applicator – Shaping Air 2 Input	3/8 inch Nylon	
Atomization Air Regulator Output	Applicator – Atomization / Turbine Air Input	1/2 inch Nylon	
Remote Manifold Main Air Output	Bearing Air Filter – Air Input	3/8 inch Nylon	
BEARING AIR FILTER			
From	To	Tubing	Notes
Bearing Air Filter Output	Applicator – Bearing Air Input	1/4 inch Nylon	1
Notes:			
1.) PTFE tape, pipe dope, or other thread sealant material should not be used downstream of the bearing air filter. 2.) 1/4" OD tubing tee fitting required.			

Figure 2: Connection Details



# OPERATION

(Refer to Figure 3)

## ! WARNING

► Operators must be fully trained in safe operation of electrostatic equipment. Operators must read all instructions and safety precautions prior to using this equipment (see NFPA-33).

Turn on supply air to the Remote Manifold and Pneumatic Control Module. The following controls are available from the front panel. (Adjust control settings as described in the applicator service manual.)

## OPERATING CONTROLS

### Fluid

Adjusting the FLD knob on the front panel adjusts the pilot air pressure to the fluid regulator at the applicator, thereby allowing flow rate adjustment of the material being sprayed. A FLD gauge on the front panel displays the current pressure setting of this signal. A FLD ON/OFF switch can be used to turn this signal ON or OFF.

## NOTE

► All air switches bleed off output air when switched off.

### Shaping Air

Adjusting the SHP1 knob on the front panel adjusts the pilot air pressure to the shaping air 1 volume booster at the Remote Manifold. The output of the

volume booster is connected to the applicator shaping air 1 input, thus adjustment of the SHP1 knob allows adjustment of the applicator shaping air. A SHP1 gauge on the front panel displays the current pressure setting of this signal. A SHP1 ON/OFF switch can be used to turn this signal On or OFF.

Adjusting the SHP2 knob on the front panel adjusts the pilot air pressure to the shaping air 2 volume booster at the Remote Manifold. The output of the volume booster is connected to the applicator shaping air 2 input, thus adjustment of the SHP2 knob allows adjustment of the applicator shaping air. A SHP2 gauge on the front panel displays the current pressure setting of this signal. A SHP2 ON/OFF switch can be used to turn this signal On or OFF.

### Atomization/Turbine Air

Adjusting the ATM knob on the front panel adjusts the pilot air pressure to the atomization air volume booster at the Remote Manifold. The output of the volume booster is connected to the applicator atomization/turbine air input, this adjustment of the ATM knob allows adjustment of the applicator turbine speed, which controls atomization. An ATM gauge on the front panel displays the current pressure setting of this signal. An ATM ON/OFF switch can be used to turn this signal ON or OFF.

### Trigger Air On/Off Switch

When this switch is turned on, an air signal is sent to the applicator to open the trigger valve and allow fluid flow.

### Dump Air On/Off Switch

When this switch is turned on, an air signal is sent to the applicator to open the dump valve. The dump valve can be used to quickly flush material out of the system without having to atomize it into the booth. This usually results in lower VOC emissions

as well. Once most of the system has been flushed through the dump valve, a short push of solvent through the applicator may be used to clean the applicator more thoroughly.

## **GENERAL OPERATING PROCEDURE**

1. Connect the fluid supply to the applicator.
2. Adjust fluid (FLD), shaping air (SHP1 and SHP2), and atomization (ATM) pressures as desired using the knobs on the front of the Pneumatic Control Module.
3. Turn FLD, SHP1, SHP2 (if necessary), and ATM air toggle switches ON.
4. Turn the Electrostatic Power Supply ON.
5. Turn trigger (TRG) air toggle switch ON to begin spraying.
6. When finished spraying, turn TRG, FLD, SHP1, SHP2 (if it was ON), and ATM toggle switches to OFF. Turn the electrostatic power supply OFF.

## **GENERAL CLEANING PROCEDURE**

1. Make sure the electrostatic power supply is turned OFF.
2. Connect the solvent supply to the applicator.
3. Turn the FLD, SHP1, SHP2 (if necessary), and ATM air toggle switches ON.

## **Solvent On/Off Switch**

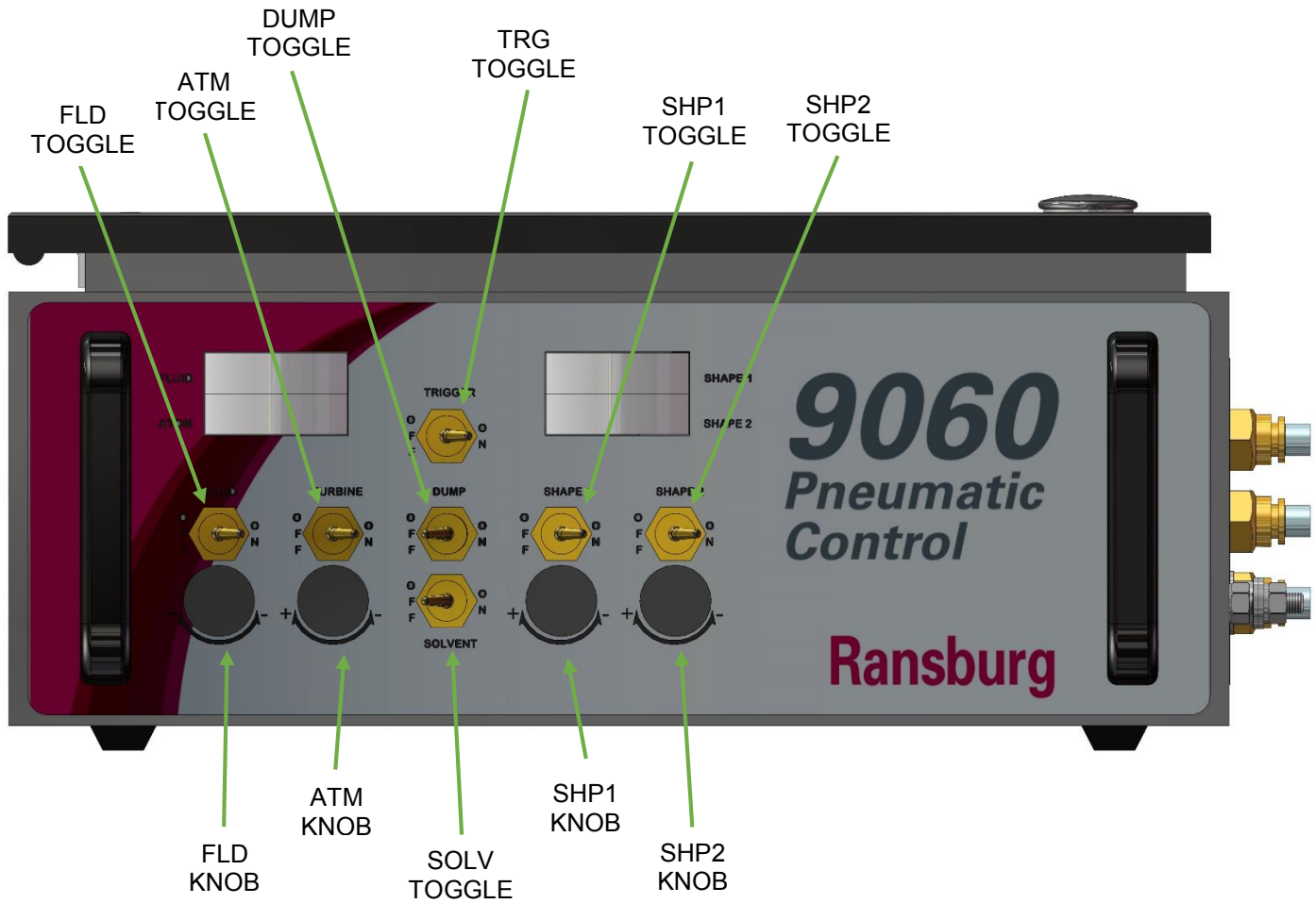
When this switch is turned on, an air signal is sent to open the applicator and flush manifold solvent valves.

4. Turn the DMP air toggle switch to the ON position.
5. Flush until the line is clean.
6. Turn the DMP air toggle switch to the OFF position.
7. Turn the trigger (TRG) air toggle switch to the ON position.
8. Flush until the applicator is clean.
9. Turn TRG, FLD, SHP1, SHP2, and ATM air toggle switches to the OFF position.

## **APPLICATOR ONLY CLEANING PROCEDURE**

1. Make sure the electrostatic power supply is turned OFF.
2. Turn FLD, SHP1, SHP2, and ATM air toggle switches ON.
3. Turn the SOLV air toggle switch to ON.
4. Flush until the applicator is clean.
5. Turn the DMP air toggle switch to ON.
6. Flush until the dump line is clean.
7. Turn DMP, SOLV, FLD, SHP1, SHP2, and ATM air toggle switches to OFF.

Figure 3: Operating Controls – Front Panel



**NOTES**

# MAINTENANCE

## MONTHLY MAINTENANCE

1. Inspect all air lines for defects. Replace any faulty items.
2. Inspect air filter bowls on main air inputs. Drain them and replace filters if necessary.

## TROUBLESHOOTING GUIDE

(Refer to Figures 4 and 5)

General Problem	Possible Cause	Solution
Improper Air Output or Input	<ol style="list-style-type: none"> <li>1. Main line air off</li> <li>2. Loose fitting</li> <li>3. Defective tubing</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on main line air</li> <li>2. Tighten fitting</li> <li>3. Replace defective tubing</li> </ol>
System Operates OK, But Gauge Does Not Read	<ol style="list-style-type: none"> <li>1. Clogged or cracked tubing</li> <li>2. Defective gauge</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace defective tubing</li> <li>2. Replace defective gauge</li> </ol>
No Fluid (FLD) Air Output	<ol style="list-style-type: none"> <li>1. Main line air off</li> <li>2. FLD toggle switch off</li> <li>3. Defective FLD regulator REG1</li> <li>4. Defective FLD toggle switch SW1</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on main line air</li> <li>2. Turn FLD air toggle switch on</li> <li>3. Replace regulator REG1</li> <li>4. Replace toggle switch SW1</li> </ol>
No High Voltage (HV) Air Output	<ol style="list-style-type: none"> <li>1. Dump or solvent output is active</li> <li>2. Defective air valve PV3</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn off dump or solvent air toggle valve</li> <li>2. Replace air valve PV3</li> </ol>
No Dump Air Output	<ol style="list-style-type: none"> <li>1. Electrostatic power supply on</li> <li>2. Dump toggle switch off</li> <li>3. Defective dump toggle switch SW4</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn electrostatic power supply off</li> <li>2. Turn dump toggle air switch on</li> <li>3. Replace toggle switch SW4</li> </ol>
No Solvent (SOLV) Air Output	<ol style="list-style-type: none"> <li>1. Electrostatic power supply on</li> <li>2. Atomization (ATM) air output off</li> <li>3. Solvent air toggle switch off</li> <li>4. Defective solvent toggle switch SW5</li> <li>5. Defective air valve PV1</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn electrostatic power supply off</li> <li>2. Activate ATM air output</li> <li>3. Turn solvent toggle switch on</li> <li>4. Replace toggle switch SW5</li> <li>5. Replace air valve PV1</li> </ol>



General Problem	Possible Cause	Solution
No Trigger (TRG) Air Output	<ol style="list-style-type: none"> <li>1. Atomization (ATM) air output off</li> <li>2. TRG air toggle switch off</li> <li>3. Defective TRG toggle switch SW6</li> <li>4. Defective air valve PV2</li> </ol>	<ol style="list-style-type: none"> <li>1. Activate ATM air output</li> <li>2. Turn TRG air toggle switch on</li> <li>3. Replace toggle switch SW6</li> <li>4. Replace air valve PV2</li> </ol>
No Atomization (ATM) Air Output	<ol style="list-style-type: none"> <li>1. No bearing air (BA) input</li> <li>2. ATM air toggle switch off</li> <li>3. Defective ATM toggle switch SW3</li> <li>4. Defective bearing air sense valve SNS1</li> <li>5. Defective ATM regulator REG2</li> </ol>	<ol style="list-style-type: none"> <li>1. Activate bearing air</li> <li>2. Turn ATM air toggle switch on</li> <li>3. Replace toggle switch SW3</li> <li>4. Replace sense valve SNS1</li> <li>5. Replace regulator REG2</li> </ol>
No Shaping Air 1 (SHP1) Output	<ol style="list-style-type: none"> <li>1. SHP1 air toggle switch off</li> <li>2. Defective SHP1 air toggle switch SW2</li> <li>3. Defective SHP1 regulator REG3</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn SHP1 air toggle switch on</li> <li>2. Replace toggle switch SW2</li> <li>3. Replace regulator REG3</li> </ol>
No Shaping Air 2 (SHP2) Output	<ol style="list-style-type: none"> <li>1. SHP2 air toggle switch off</li> <li>2. Defective SHP2 air toggle switch SW7</li> <li>3. Defective SHP2 regulator REG4</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn SHP2 air toggle switch on</li> <li>2. Replace toggle switch SW7</li> <li>3. Replace regulator REG4</li> </ol>
No Turbine Air At Applicator	<ol style="list-style-type: none"> <li>1. Remote Manifold main air input off</li> <li>2. No ATM output from Pneumatic Control Module</li> <li>3. Improper tubing connection</li> <li>4. Defective booster on Remote Manifold</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn Remote Manifold main air on</li> <li>2. See “No ATM air output”, above</li> <li>3. Correct tubing connection</li> <li>4. Replace defective volume booster</li> </ol>
No Shaping Air 1 at Applicator	<ol style="list-style-type: none"> <li>1. Remote Manifold main air input off</li> <li>2. No SHP1 output from Pneumatic Control Module</li> <li>3. Improper tubing connection</li> <li>4. Defective volume booster on Remote Manifold</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn Remote Manifold main air input on</li> <li>2. See “No SHP1 air output”, above</li> <li>3. Correct tubing connection</li> <li>4. Replace defective volume booster</li> </ol>

General Problem	Possible Cause	Solution
No Shaping Air 2 At Applicator	<ol style="list-style-type: none"> <li>1. Remote Manifold main air input off</li> <li>2. No SHP2 output from Pneumatic Control Module</li> <li>3. Improper tubing connection</li> <li>4. Defective volume booster on Remote Manifold</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn Remote Manifold main air input on</li> <li>2. See “No SHP2 air output”, above</li> <li>3. Correct tubing connection</li> <li>4. Replace defective volume booster</li> </ol>
No Bearing Air To Applicator	<ol style="list-style-type: none"> <li>1. Remote Manifold main air input off</li> <li>2. Improper tubing connection</li> <li>3. Defective bearing air filter</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn Remote Manifold main air input on</li> <li>2. Correct tubing connection</li> <li>3. Repair or replace bearing air filter</li> </ol>

PNEUMATIC SCHEMATIC

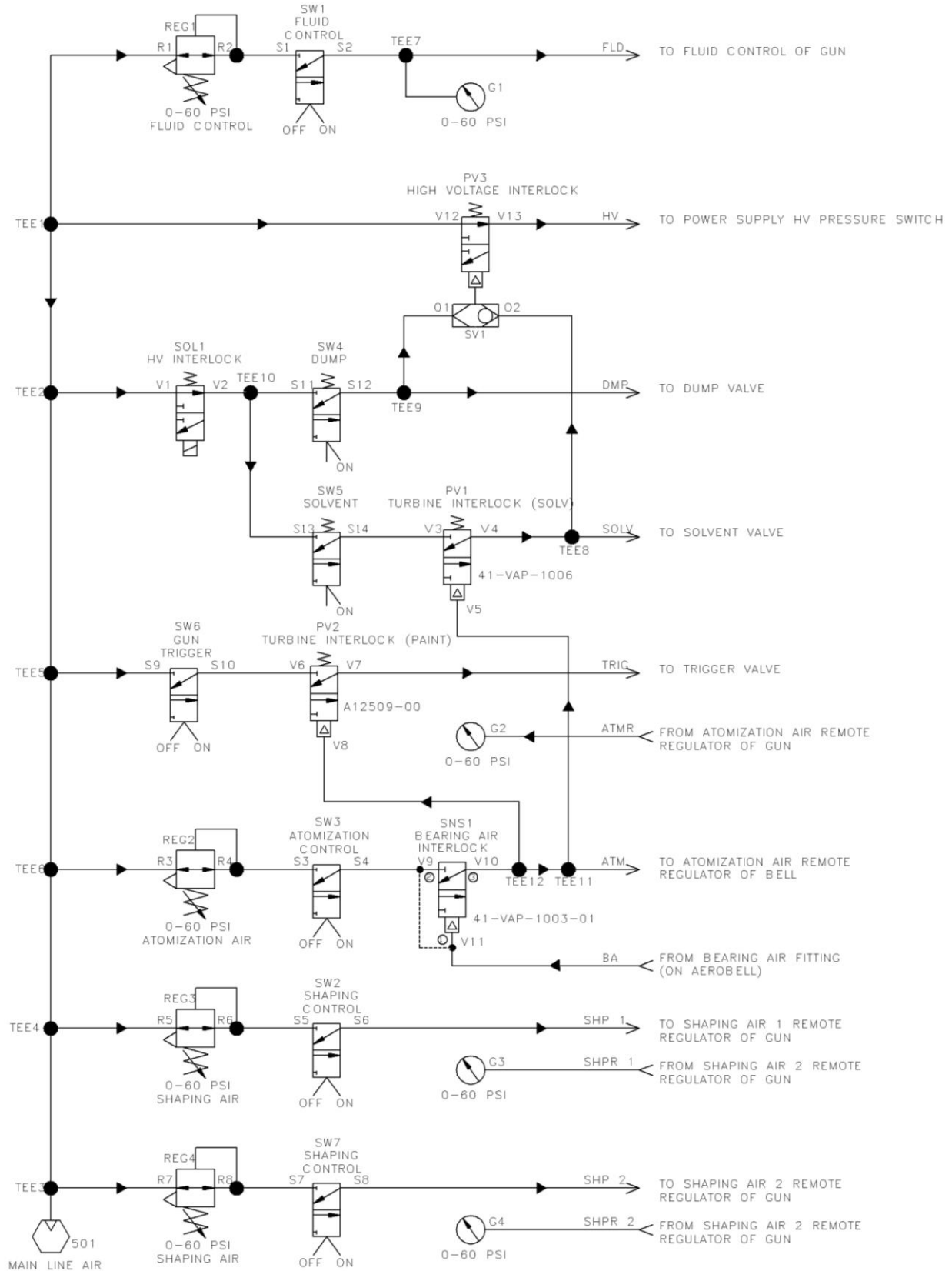


Figure 4: Pneumatic Control Module and Remote Manifold Assembly Schematic

ELECTRICAL SCHEMATIC

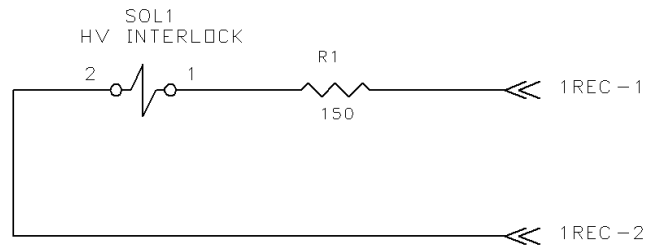


Figure 5: Pneumatic Control Module and Remote Manifold Electric Schematic

# WARRANTY POLICIES

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## LIMITED WARRANTY

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 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 RANSBURG APPROVED PARTS, VOID ALL WARRANTIES.**

### SPARE PARTS:

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

### EQUIPMENT:

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

**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. 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 Ransburg's opinion the warranty item in question, or other items damaged by this part was improperly installed, operated or maintained, 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

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This manual is an initial release – there have been no changes made.

# Ransburg

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Telephone (outside the U.S.A.): 419-470-2000  
Fax: 419-470-2233

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

Form No. CP-17-01

Litho in U.S.A.

03/2017

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