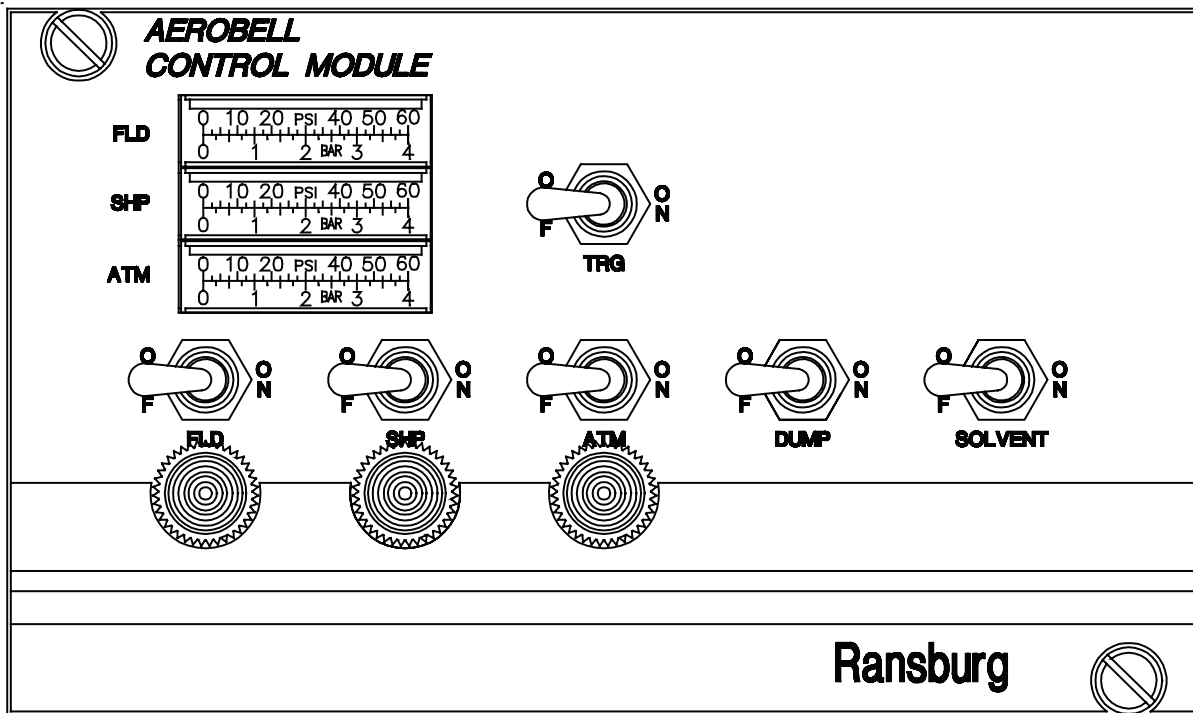


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## 9040 AEROBELL CONTROL MODULE

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**MODEL: 78387-00**

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**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: €25.00 (Euro)  
\$30.00 (U.S.)

**NOTE:** This manual has been changed from **CP-02-01.1** to revision **CP-02-01.2**. Reasons for this change are noted under “Manual Change Summary” on page 29 of this manual.

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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 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 Ransburg representative or Ransburg.




### WARNING



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

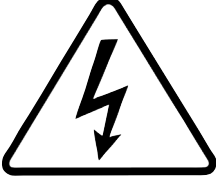





### WARNING

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

<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>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 used for general cleaning must have flash points above 100°F (37.8°C).</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. 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>

<p><b>AREA</b> Tells where hazards may occur.</p>	<p><b>HAZARD</b> Tells what the hazard is.</p>	<p><b>SAFEGUARDS</b> Tells how to avoid the hazard.</p>
<p><b>Spray Area</b></p> 	<p><b>Explosion 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.</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>
<p><b>General Use and Maintenance</b></p> 	<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, 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>

<p><b>AREA</b> Tells where hazards may occur.</p>	<p><b>HAZARD</b> Tells what the hazard is.</p>	<p><b>SAFEGUARDS</b> Tells how to avoid the hazard.</p>
<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>

<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>Electrical Equipment</b>  	<b>Electrical Discharge</b>  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.  Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation.  Frequent power supply shut-down indicates a problem in the system which requires correction.  An electrical arc can ignite coating materials and cause a fire or explosion.	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.  Turn the power supply OFF before working on the equipment.  Test only in areas free of flammable or combustible material.  Testing may require high voltage to be on, but only as instructed.  Production should never be done with the safety circuits disabled.  Before turning the high voltage on, make sure no objects are within the sparking distance.
<b>Toxic Substances</b>  	Certain material may be harmful if inhaled, or if there is contact with the skin.	Follow the requirements of the Material Safety Data Sheet supplied by coating material manufacturer.  Adequate exhaust must be provided to keep the air free of accumulations of toxic materials.  Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved.
<b>Spray Area</b>  	<b>Explosion Hazard – Incompatible Materials</b>  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, 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.



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# INTRODUCTION

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## GENERAL DESCRIPTION

The **9040 Aerobell Control Module** provides pneumatic control functions for Aerobell® applicators sold as part of the 78394 or 78399 Single Bell Packages. The Aerobell Control Module is included as a part of these packages.

The Aerobell Control Module consists of a 78387 Control Unit and a 78395 Remote Manifold assembly (see Figure 1). Together, these two units provide the following functions:

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

**Shaping Air Control:** A 0 to 60 psi adjustable pilot regulator in the Control Module provides output to a 1:1 volume booster on the Remote Manifold. A toggle valve in the 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 Control Module to supply a gage.

**Atomization Air Control:** A 0 to 60 psi adjustable pilot regulator in the Control Module provides output to a second 1:1 volume booster on the Remote Manifold. A toggle valve in the 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 Control Module to supply a gage.

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

**Dump Control:** A toggle valve output 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 Aerobell 33™. Not used for the standard RPM Aerobell.

**Bearing Air Interlock:** A sense valve is provided that only allows atomization air output if the bearing air is above 60 psi. This prevents possible turbine damage from operating the turbine at too low of a pressure.

**Fluid Interlocks:** Two valves are used to disable the solvent and trigger outputs if 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

<b>Width:</b>	8.4 inches (21.3 cm)
<b>Length:</b>	12.0 inches (30.5 cm)
<b>Height:</b>	5.2 inches (13.2 cm)

### Electrical

#### INPUT

<b>Voltage:</b>	18 VDC (from High Voltage Power Supply)
<b>Current:</b>	42 mADC
<b>Power:</b>	0.75 W

### Mechanical

#### AIR INPUTS

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

#### MAXIMUM AIR PRESSURE

<b>To Control Module:</b>	100 psi
<b>To Remote Manifold:</b>	160 psi

#### MINIMUM AIR PRESSURE

<b>To Control Module:</b>	80 psi
<b>To Remote Manifold:</b>	90 psi

#### AIR FILTRATION

<b>Control Module:</b>	User Supplied
<b>Remote Manifold:</b>	0.3 Micron Coalescer 3 Micron Prefilter 0.01 Micron Filter (Bearing Air Filter)

#### TUBING RUNS

<b>1/4" OD Tube:</b>	12
<b>3/8" OD Tube:</b>	2
<b>1/2" OD Tube:</b>	1

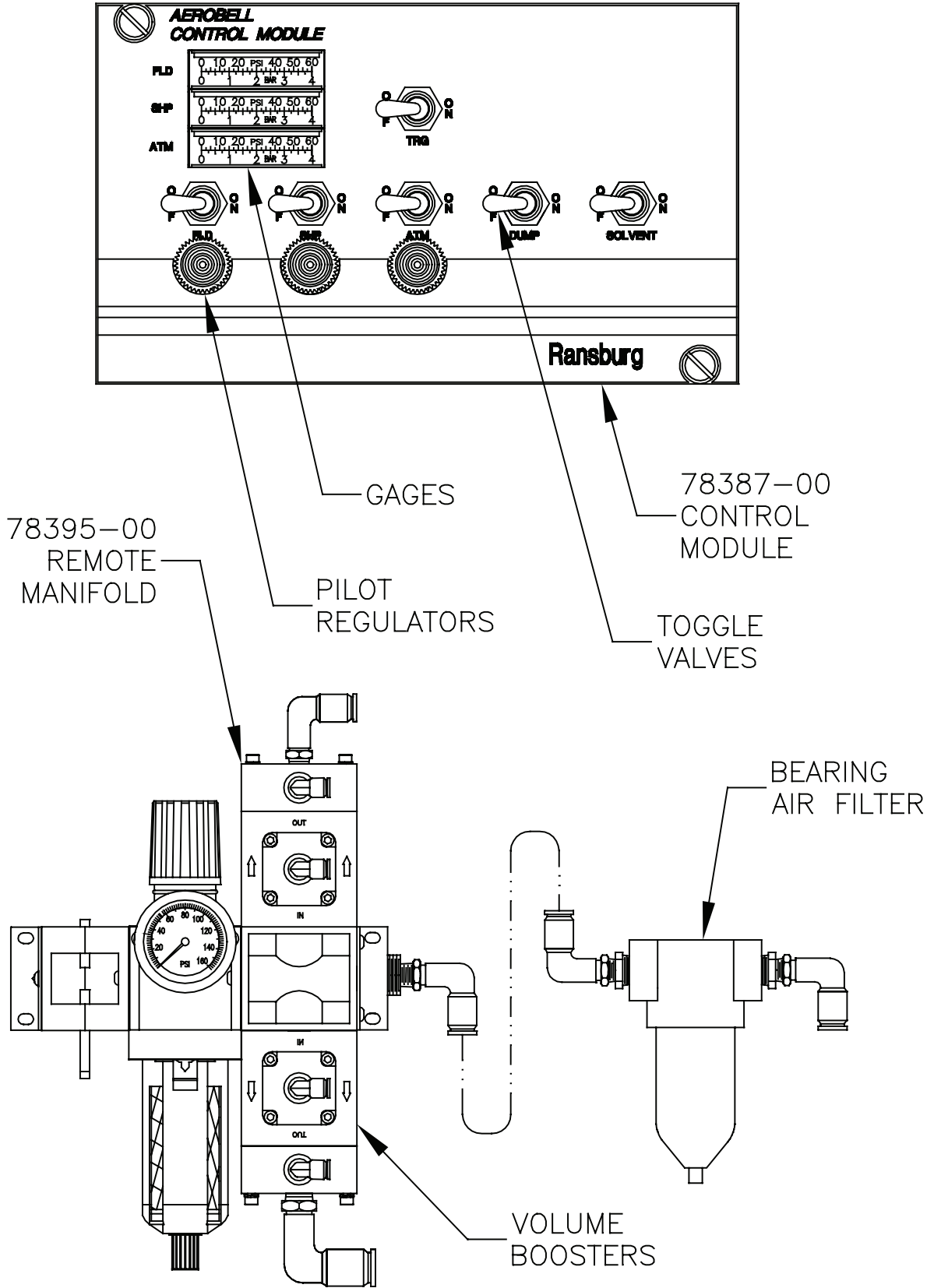


Figure 1: Aerobell Module Components

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

## LOCATION

### Control Module

Install the 78387-00, Aerobell 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.

### NOTE

► Do not locate the control module near or adjacent to heat producing equipment such as ovens, high wattage lamps, etc.

### Remote Manifold

The 78395-00 Remote Manifold (see Figure 1) may be mounted in a convenient area inside or outside 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

Each 9040 Single Bell Package is supplied with a mounting kit. These kits are different for Standard RPM Aerobells and Aerobell 33's. Before proceeding further with installation of the Aerobell Module, ensure these kits are installed as described below.

### Standard (RPM) Aerobell

Connect the fluid regulator and trigger/dump valve assembly to the RPM Aerobell using the supplied fittings, as shown in Figure 2. Connect the Aerobell to the RPM mounting arm as shown. The mounting arm may be connected to an optional stand (P/N LA0041) or to a reciprocator using an optional LRPM0106 bracket.

### Aerobell 33

Connect the Aerobell 33 to the mounting arm as shown in Figure 3. The mounting arm may be connected to an optional stand (P/N LA0041) or to a reciprocator using an optional LRPM0106 bracket. Mount the solvent flush manifold in an easy to reach location near the applicator. Ensure the solvent flush manifold is grounded to true earth ground.

### NOTE

► To prevent material backup into the Aerobell 33 the flow of solvent from the applicator should never exceed 500 cc's/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.

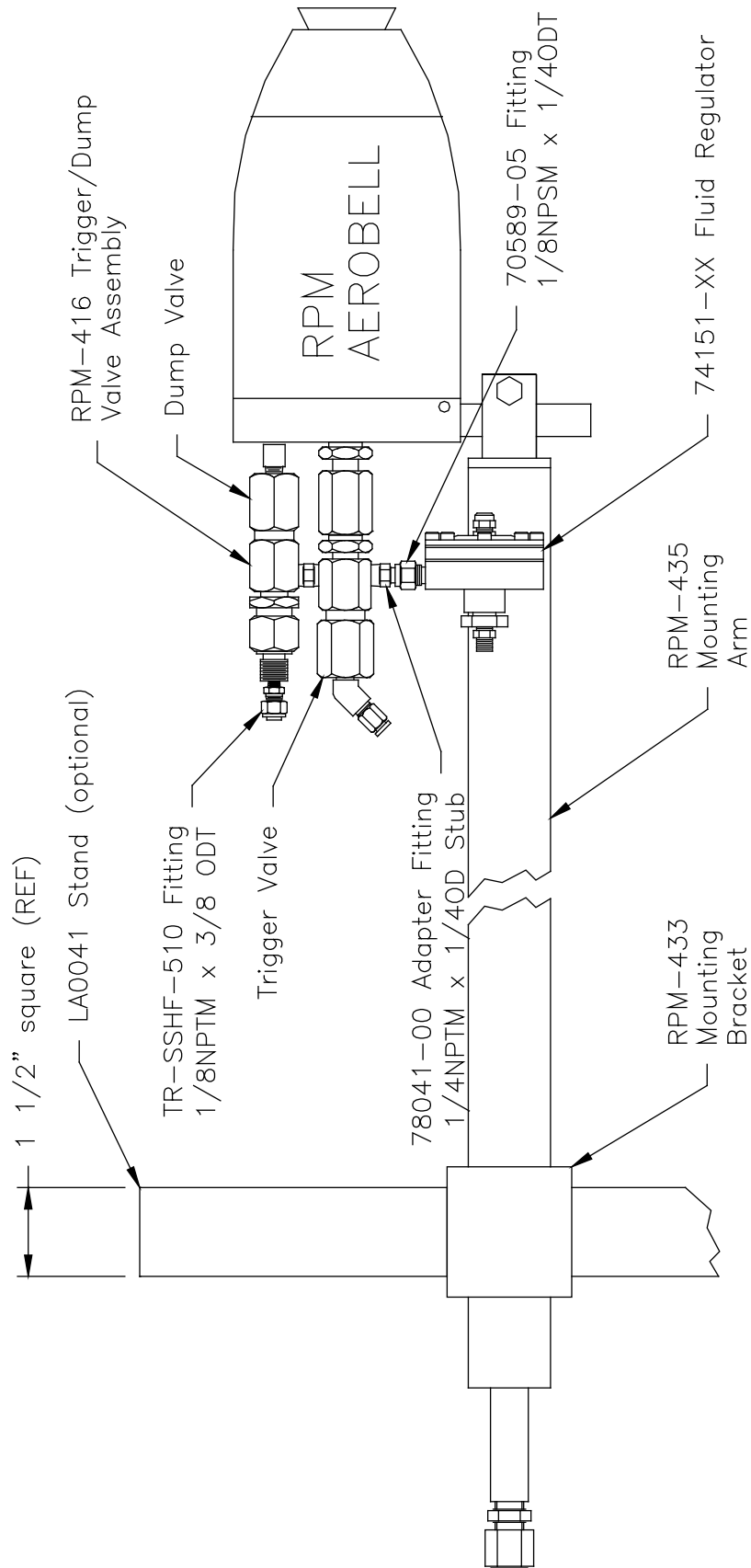


Figure 2: Standard Rpm Aerobell Mounting

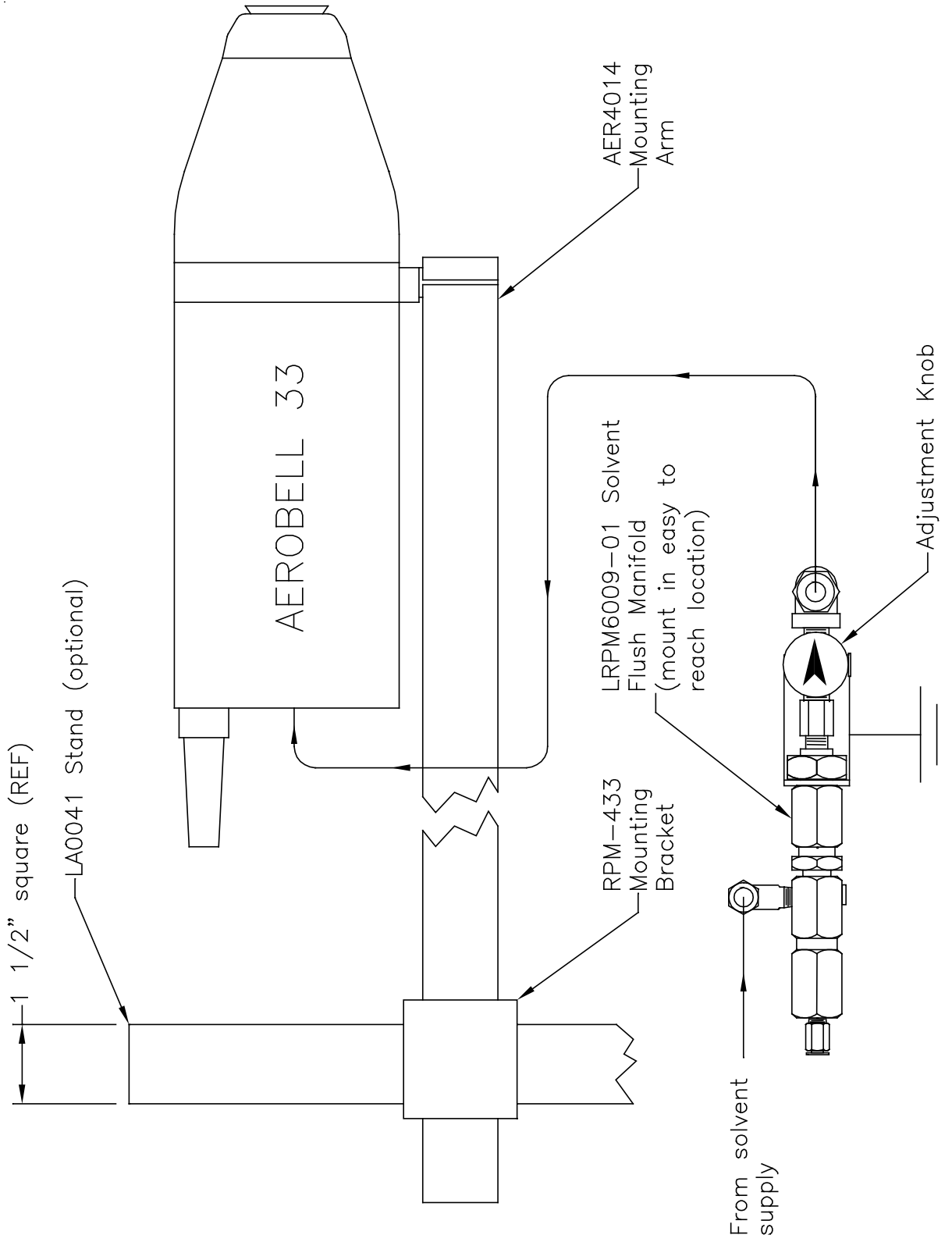


Figure 3: Aerobell 33 Mounting

### ELECTRICAL CONNECTIONS

#### HV Solenoid Cable

Connect the 3 foot 78386-00 cable assembly (supplied) from 1REC at the rear of the Aerobell Control Unit to 2SOC at the rear of the 9040 Cascade Low Voltage Module (see Figure 4).

**⚠ WARNING**

► This cable **MUST** be connected to ensure that the solvent or dump functions of the Aerobell Module cannot be activated when high voltage is present.

#### Ground Wire Assembly

Ensure that the 70539-00 Ground Wire Assembly (see Figure 4) is connected from the enclosure housing the Aerobell Module, to a true earth ground.

### PNEUMATIC CONNECTIONS

Referring to Figures 2, 3, 5, 6, and 7 make the following pneumatic connections (these connections are shown in "Pneumatic Connections" chart in the "Installation" section):

#### Control Module

##### "MAIN"

Main line air supply connection to the control module. Using 1/4-inch OD tubing, connect "MAIN" input to a source of clean, filtered factory air.

##### "HV"

Air output that ensures AC voltage to the low voltage module is OFF during dump or solvent flush operations. Using 1/4-inch OD tubing, connect "HV" output to 3PS on rear of the low voltage module (see Figure 4).

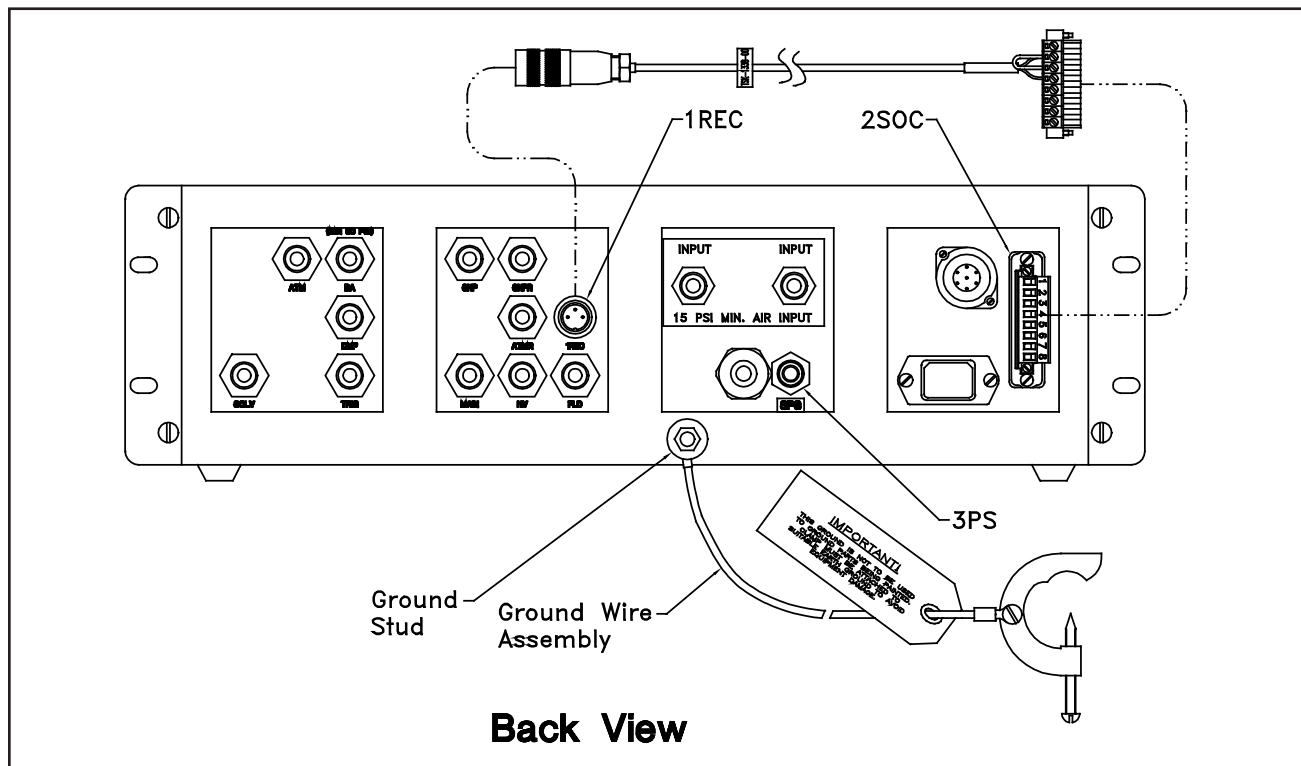
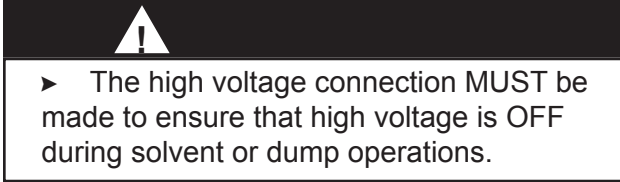


Figure 4: Electrical Connections

**"FLD"**

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

**"ATM"**

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

**"ATMR"**

Input from remote manifold used to display the pressure of the atomization air remote manifold volume booster on the ATM gage of the control module. Using 1/4-inch OD tubing, connect "ATMR" input to ATOMIZATION AIR GAGE OUTPUT of remote manifold.

**"SHP"**

0 to 60 psi pilot regulator output used as input to shaping air volume booster on remote manifold. Using 1/4-inch OD tubing, connect "SHP" output to SHAPING AIR PILOT INPUT of remote manifold.

**"SHPR"**

Input from remote manifold used to display the pressure of the shaping air remote manifold volume booster on the SHP gage of the control module. Using 1/4-inch OD tubing, connect "SHPR" input to SHAPING AIR GAGE OUTPUT of remote manifold.

**"BA"**

Input from Aerobell used to ensure at least 60 psi turbine air pressure before allowing fluid to the bell. Using 1/4-inch OD tubing, connect "BA" input to bearing air output of Aerobell (see current Aerobell service manual).

**NOTE**

- For standard RPM Aerobells there is no bearing air output signal from the bell itself. In this case insert a 1/4-inch OD tee fitting in the bearing air input line to the bell and connect the outlet of the tee to "BA". Make this connection as close to the bell as possible.

**"DMP"**

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

**"SOLV"**

**(For Aerobell 33 versions only; not used for standard RPM Aerobells.)**

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

**"TRG"**

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



## PNEUMATIC CONNECTIONS

CONTROL MODULE			
From	To	Tubing	Notes
Main Input	Filtered Plant Air Supply	1/4-inch PE	
HV Output	Low Voltage Module - 3PS	1/4-inch PE	
FLD Output	Applicator - Air Pilot Input of Fluid Regulator	1/4-inch PE	
ATM Output	Remote Manifold - Atomization Air Pilot Input	1/4-inch PE	
ATMR Input	Remote Manifold - Atomization Air Gauge Output	1/4-inch PE	
SHP Output	Remote Manifold - Shaping Air Pilot Input	1/4-inch PE	
SHPR Input	Remote Manifold - Shaping Air Gauge Output	1/4-inch PE	
BA Input	Applicator - Bearing Air Output	1/4-inch PE	1
DMP Output	Applicator - Dump Valve Air Input	1/4-inch PE	
SOLV Output	Applicator - Solvent Valve Air Input	1/4-inch PE	2, 4
SOLV Output	Solvent Flush Manifold - Air Input	1/4-inch PE	2, 4
TRG Output	Applicator - Trigger Valve Air Input	1/4-inch PE	
REMOTE MANIFOLD			
From	To	Tubing	Notes
Shaping Air Regulator Output	Applicator - Shaping Air Input	3/8-inch PE	
Atomization Air Regulator Output	Applicator - Atomization/Turbine Air Input	1/2-inch PE	
Remote Manifold Main Air Output	Bearing Air Filter - Air Input	3/8-inch PE	
BEARING AIR FILTER			
From	To	Tubing	Notes
Bearing Air Filter Output	Applicator - Bearing Air Input	1/4-inch PE	3
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>For standard RPM Aerobells, there is no bearing air output signal from the bell itself. In this case insert a 1/4-inch OD tee fitting in the bearing air input line to the bell and connect the outlet of the tee to "BA". Make this connection as close to the bell as possible.</li> <li>This connection not used for RPM Aerobell versions.</li> <li>Adhesive tape, pipe dope, or other thread sealant material should not be used downstream of the bearing air filter.</li> <li>1/4-inch ODT tee fitting required.</li> </ol>			

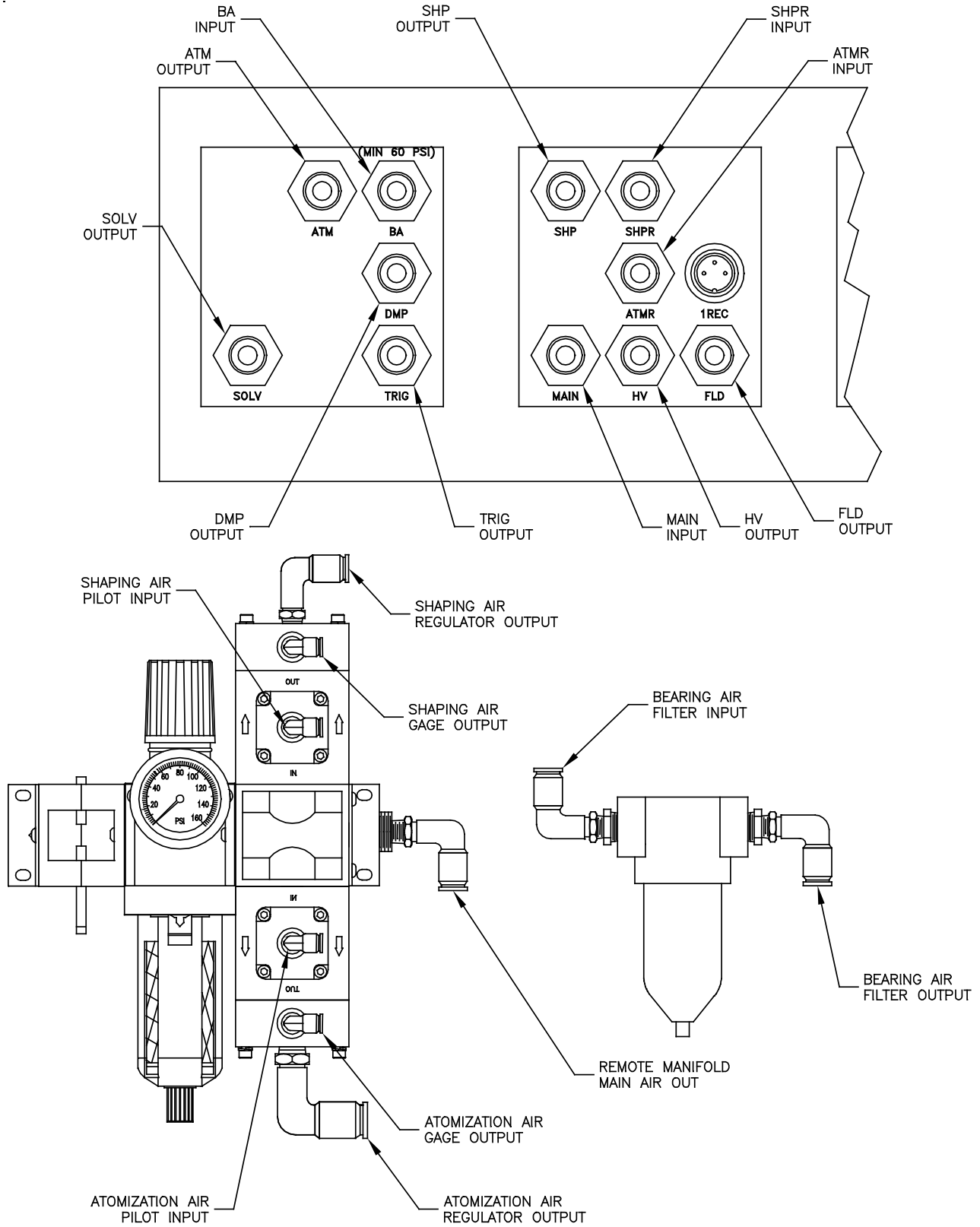


Figure 5: Pneumatic Connections

### Remote Manifold

#### Shaping Air Regulator Output

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

#### Atomization Air Regulator Output

Air output from remote manifold used to control the turbine speed of the applicator. Using 1/2-inch OD tubing, connect “ATOMIZATION AIR REGULATOR OUTPUT” of the remote manifold to the atomization/turbine air input of the applicator.

#### Remote Manifold Main Air Out / Bearing

##### Air Filter Input

Main air output of remote manifold used to supply main air to bearing air filter. Using 3/8-inch OD tubing, connect “REMOTE MANIFOLD MAIN AIR OUT” to “BEARING AIR FILTER INPUT” of bearing air filter.

#### Bearing Air Filter

##### Bearing Air Filter Output

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

#### NOTE

- ▶ Adhesive tape, pipe dope, or other thread sealant material should not be used downstream of the bearing air filter.

## FLUID CONNECTIONS

Using 3/8-inch OD adhesive tube, make the appropriate fluid connections as described in the Applicator Service Manual.

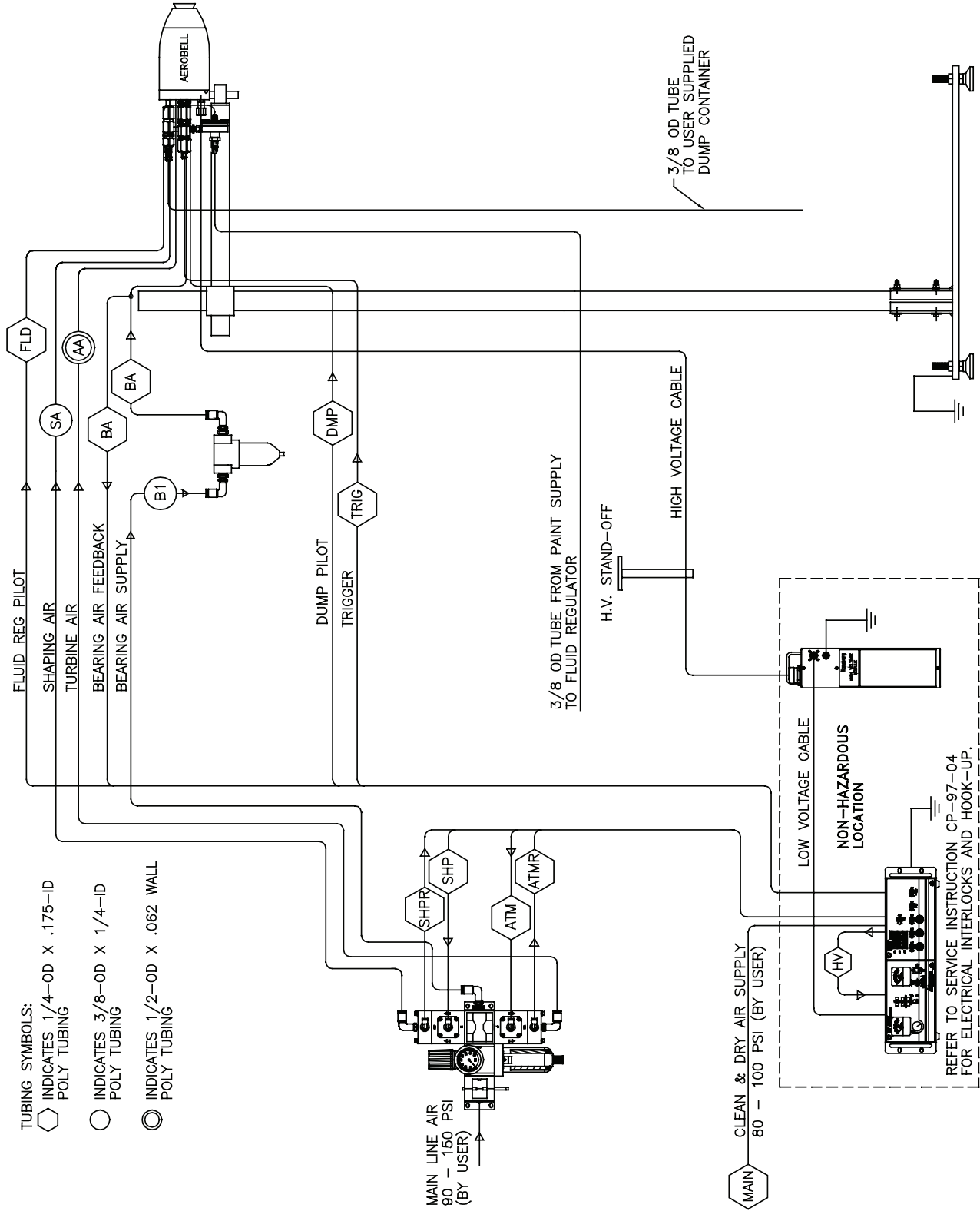


Figure 6: Typical Installation W/Rpm Aerobell

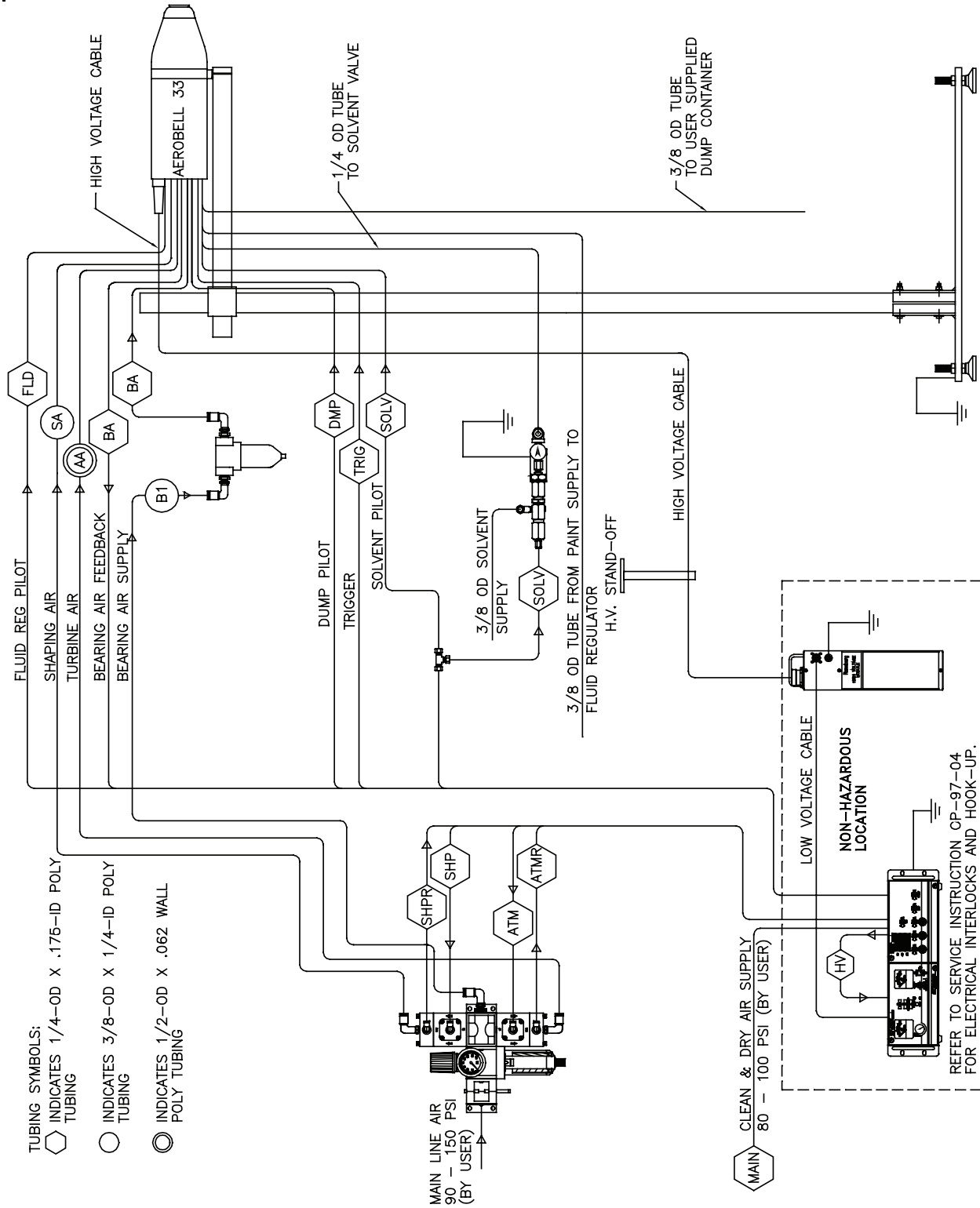



Figure 7: Typical Installation W/Aerobell 33

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# OPERATION

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(Refer to Figure 8)

 <b>WARNING</b>
<p>► 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).</p>

Turn supply air on to the remote manifold and 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.

<b>NOTE</b>
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- All air switches bleed off output air when switched off.
- 

### Shaping Air

Adjusting the SHP knob on the front panel adjusts the pilot air pressure to the shaping air volume booster at the remote manifold. The output of the volume booster is connected to the applicator shaping air input, thus adjustment of the SHP knob allows adjustment of applicator shaping air. A SHP gauge on the front panel displays the current pressure setting of this signal. A SHP 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, thus adjustment of the ATM knob allows adjustment of 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 can be used to clean the applicator.

### Solvent Air On/Off Switch (Aerobell 33 Version Only)

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

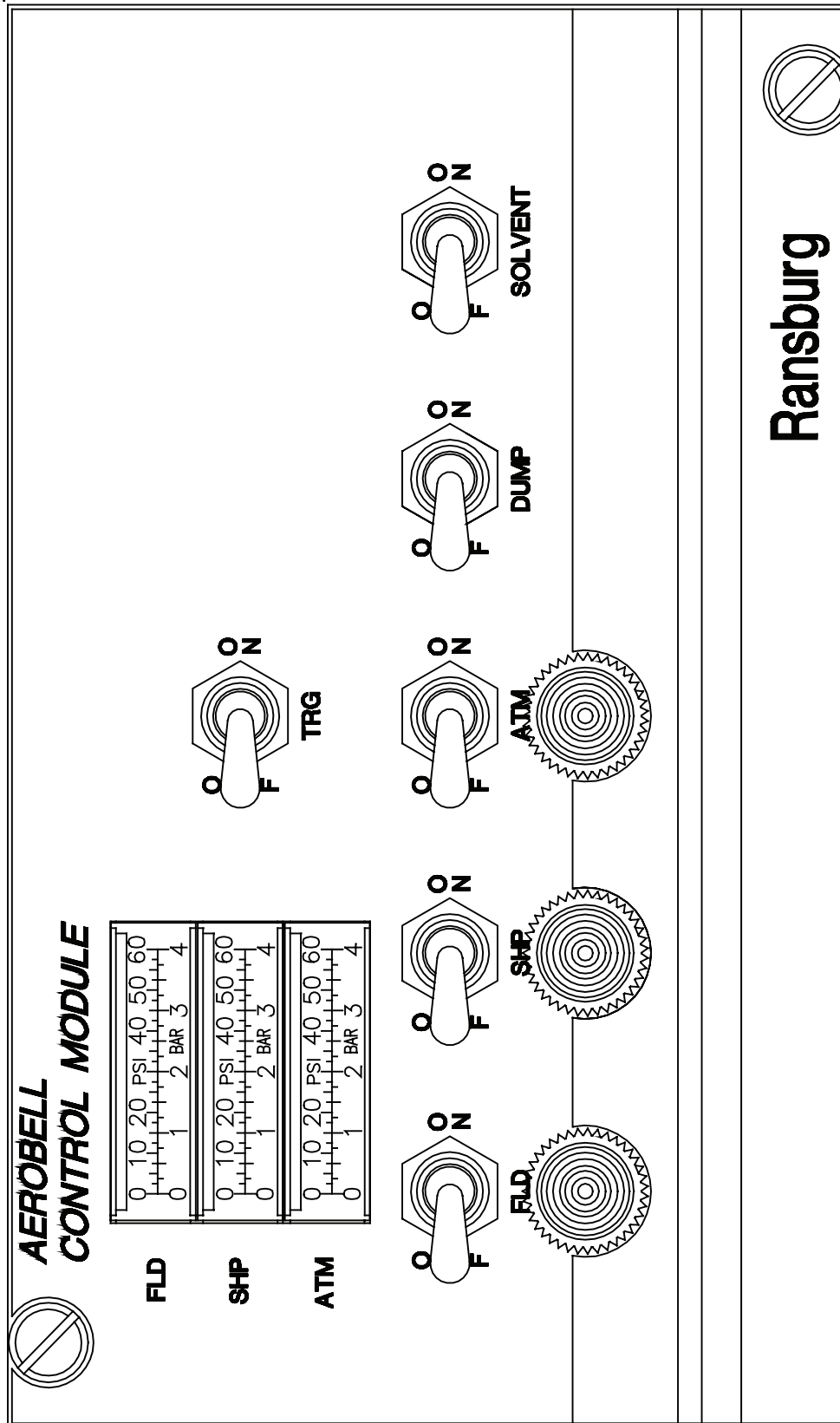


Figure 8: Operating Controls

## GENERAL OPERATING PROCEDURE

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

## GENERAL CLEANING PROCEDURE

1. Turn electrostatic power supply OFF.
2. Connect solvent supply to the applicator.
3. Turn FLD, SHP, and ATM air toggle switches ON.
4. Turn DUMP air toggle switch to ON position.
5. Flush until line is clean.
6. Turn DUMP air toggle switch to OFF position.
7. Turn trigger (TRG) air toggle switch to ON position.
8. Flush until applicator is clean.
9. Turn TRG, FLD, SHP, and ATM air toggle switches to OFF position.

## APPLICATOR ONLY CLEANING PROCEDURE (Aerobell 33 Only)

With the additional solvent valve at the applicator, it is possible to clean the Aerobell 33 without having to flush the entire line. To do this perform the following:

1. Turn electrostatic power supply OFF.
2. Turn FLD, SHP, and ATM air toggle switches ON.
3. Turn SOLVENT air toggle switch to ON position.
4. Flush until applicator is clean.
5. Turn DUMP air toggle switch to ON position.
6. Flush until dump line is clean.
7. Turn DUMP, SOLVENT, FLD, SHP and ATM air toggle switches to OFF position.



# MAINTENANCE

## MONTHLY MAINTENANCE

1. Remove the Aerobell Control Unit from the rack and inspect air lines for defects.
2. Replace any faulty items. Inspect air bowls on main air inputs. Drain them and replace filters if necessary.

## TROUBLESHOOTING GUIDE

(Refer to Figures 9 & 10)

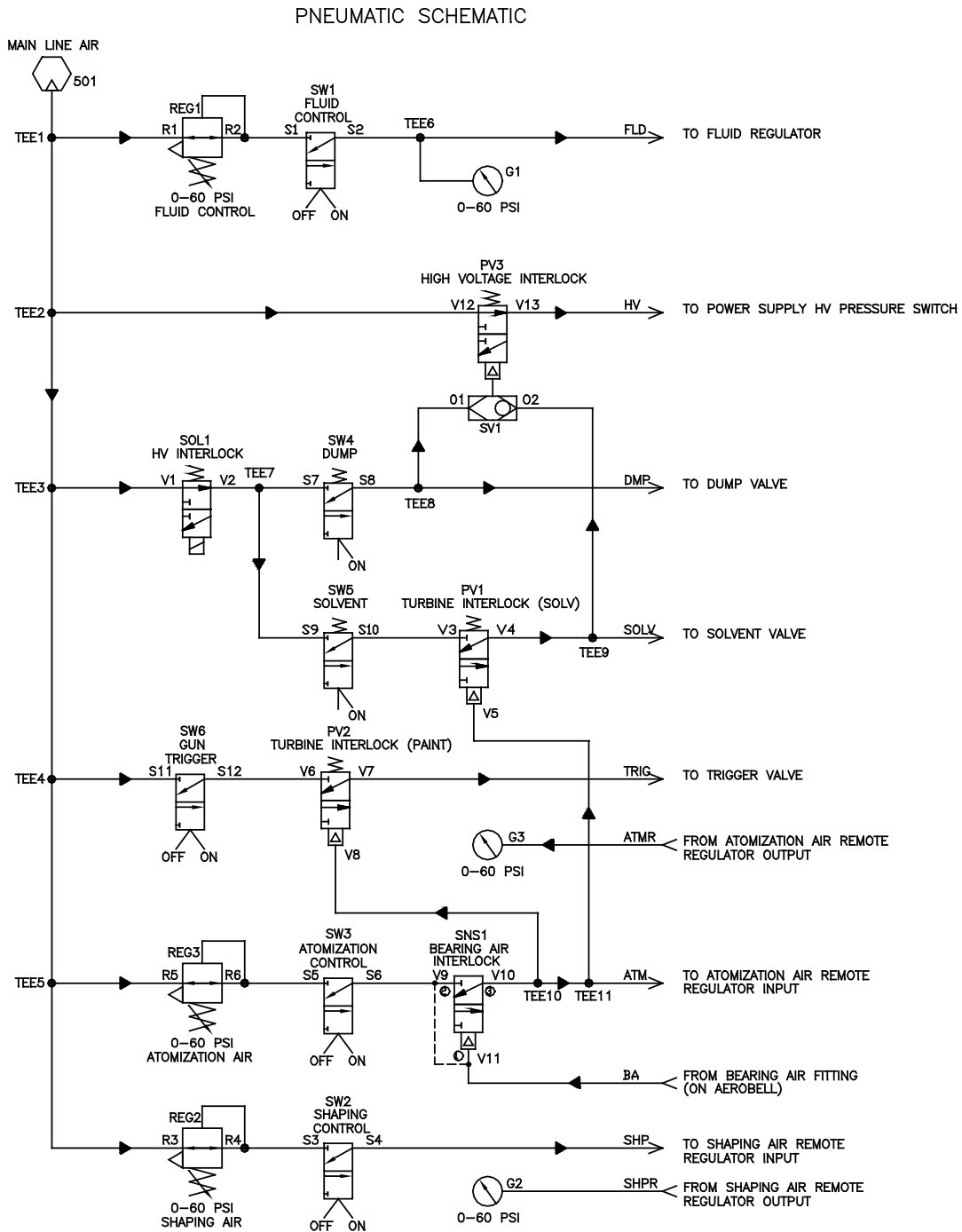
General Problem	Possible Cause	Solution
<b>Improper Air Output or Input</b>	<ol style="list-style-type: none"> <li>1. Main line air off</li> <li>2. Loose fitting</li> <li>3. Defective tubing</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on main line air.</li> <li>2. Tighten fitting.</li> <li>3. Replace defective tubing.</li> </ol>
<b>System Operates OK, But Gauge Does Not Read</b>	<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 tube.</li> <li>2. Replace defective gauge.</li> </ol>
<b>No Fluid (FLD) Air Output</b>	<ol style="list-style-type: none"> <li>1. Main line air off</li> <li>2. FLD air 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>
<b>No High Voltage (HV) Air Output</b>	<ol style="list-style-type: none"> <li>1. Dump or solvent output 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 switch.</li> <li>2. Replace air valve PV3.</li> </ol>
<b>No Dump Air Output</b>	<ol style="list-style-type: none"> <li>1. Electrostatic power supply on</li> <li>2. Dump air 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 air toggle switch on.</li> <li>3. Replace toggle switch SW4.</li> </ol>

**Troubleshooting Guide (Cont.)**

<b>General Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
<b>No Solvent Air Output (Aerobell 33 Version Only)</b>	<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 air toggle switch on.</li> <li>4. Replace toggle switch SW5.</li> <li>5. Replace air valve PV1.</li> </ol>
<b>No Trigger (TRG) Air Output</b>	<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>
<b>No Atomization (ATM) Air Output</b>	<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 REG3</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 REG3</li> </ol>
<b>No Shaping (SHP) Air Output</b>	<ol style="list-style-type: none"> <li>1. SHP air toggle switch off</li> <li>2. Defective SHP toggle switch SW2</li> <li>3. Defective SHP regulator REG2</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn SHP air toggle switch on.</li> <li>2. Replace toggle switch SW2.</li> <li>3. Replace regulator REG2.</li> </ol>
<b>No Turbine Air At Applicator</b>	<ol style="list-style-type: none"> <li>1. Remote manifold main air input off</li> <li>2. No ATM output from Aerobell Control Unit</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 ATM air output" above.</li> <li>3. Correct tubing connection.</li> <li>4. Replace volume booster.</li> </ol>

### Troubleshooting Guide (Cont.)

General Problem	Possible Cause	Solution
<b>No Shaping Air At Applicator</b>	<ol style="list-style-type: none"> <li>1. Remote manifold main air input off</li> <li>2. No SHP output from Aerobell Control Unit</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 SHP air output" on previous page.</li> <li>3. Correct tubing connection.</li> <li>4. Replace volume booster.</li> </ol>
<b>No Bearing Air To Applicator</b>	<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>



ELECTRICAL SCHEMATIC

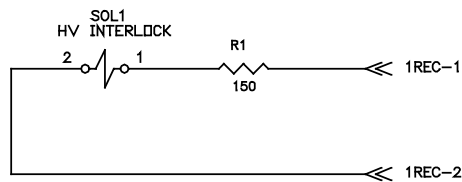


Figure 9: Aerobell Control Module Schematic

# PARTS IDENTIFICATION

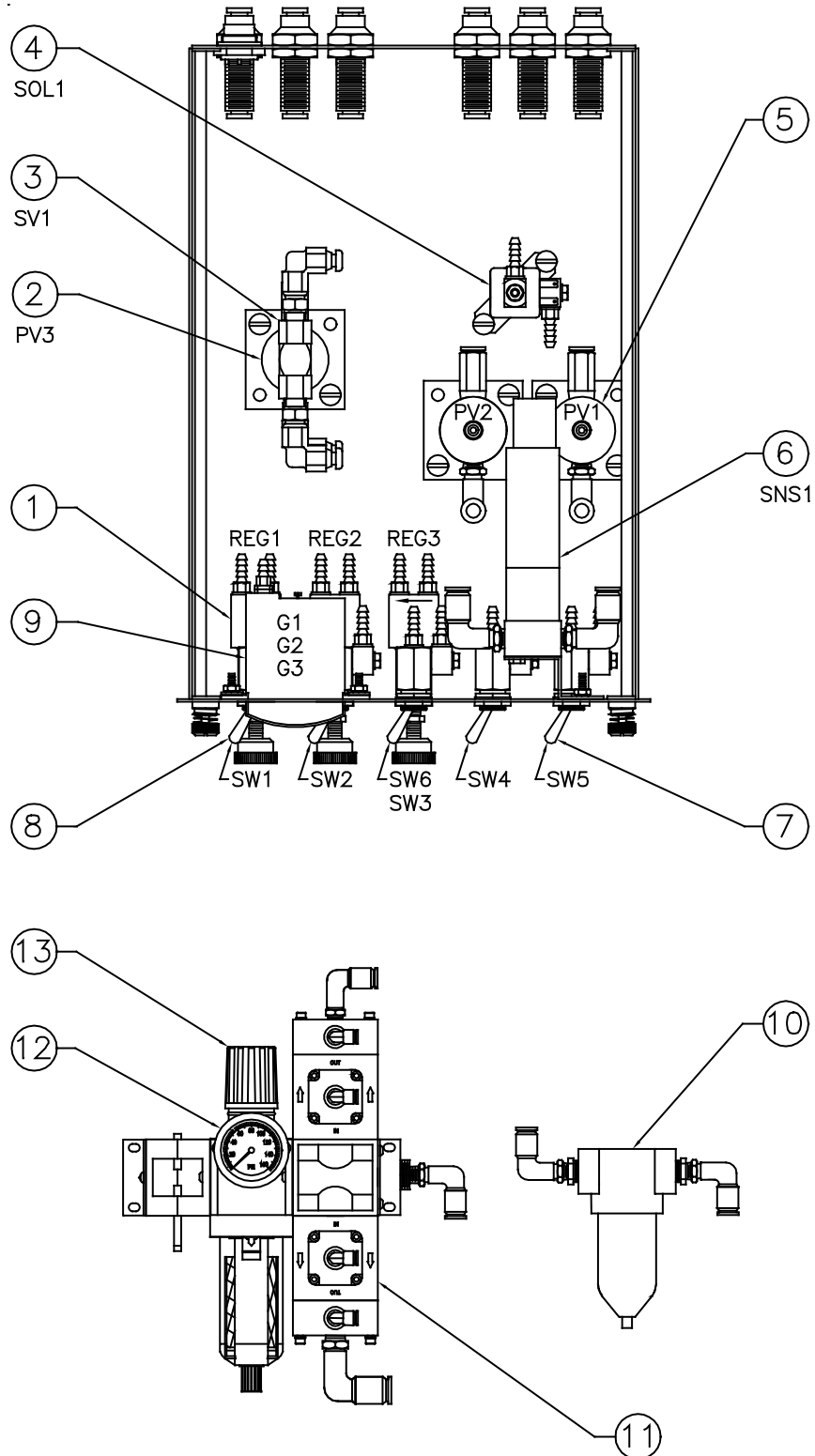


Figure 10: 9040 Aerobell Control Module Parts Diagram

**9040 AEROBELL CONTROL MODULE - PARTS LIST (Figure 10)**

Item #	Description	Part #	Notation
	<b>Aerobell Control Module Assembly</b>	<b>78387-00</b>	
1	Regulator, Pilot, 0-60 psi	76648-02	REG1, REG2, REG3
2	Air Piloted Air Valve, NO	41-VAP-1000	PV3
3	Shuttle Valve	41-VSH-1000	SV1
4	Solenoid, 12 VDC	78393-01	SOL1
5	Air Piloted Air Valve, Low Acting, NC	41-VMP-1003	PV1, PV2
6	Sensing Valve	SSV-3206	SNS1
7	Switch, Air Toggle, NC, Momentary	76647-02	SW4, SW5
8	Switch, Air Toggle, NC	76647-01	SW1, SW2, SW3, SW6
9	Pressure Gauge, 0-60 psi	76646-06	G1, G2, G3
	<b>Remote Manifold</b>	<b>78395-00</b>	
10	Filter, Bearing Air	RPM-418	
	Filter Element Only (Set of 8)	RPM-33	
11	Volume Booster, Pilot Operated	76736-00	
12	Pressure Gauge, 0-160 psi	GA-316	
13	Filter/Regulator Assembly	76775-01	
	Filter Element Only	76192-02	

**RECOMMENDED SPARE PARTS**

Item #	Description	Part #
10	Filter Element, Bearing Air Filter (Set of 8)	RPM-33
13	Filter Element, Remote Manifold Filter	76192-02

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# 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.

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# MANUAL CHANGE SUMMARY

This manual was published to replace Service Manual **CP-02-01.1**, 9040 Aerobell Control Module, to make the following changes:

1. Added "Service Manual Price - €25.00 (Euro) to "Front Cover".
2. Added **€** to "Front Cover".
3. Removed "Appendix" section. See literature "IL-307 Technical Supplement for All Products".
4. Revised "Contact Information" on the "Back Cover".
5. Added "Service Manual Price - €25.00 (Euro) to "Back Cover".



**Service Manual Price: €25.00 (Euro)**  
**\$30.00 (U.S.)**

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