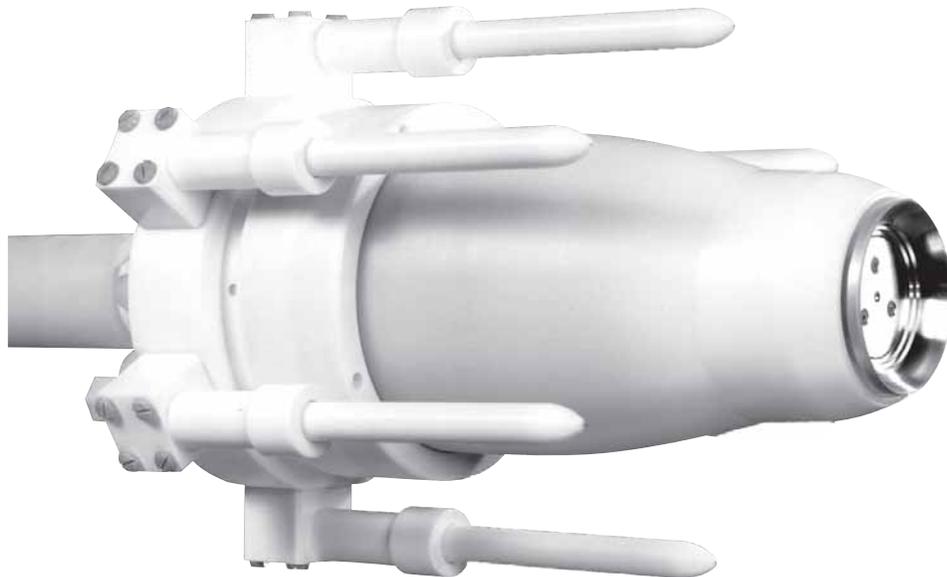


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## AEROBELL™ COPESTM\*\*

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**MODEL: 75850**

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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 Bulletin for future reference.



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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 **NFPA 33 SAFETY STANDARD, 1995 EDITION**, 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.

<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 shutdown indicates a problem in the system requiring correction.</p>	<p>Fire extinguishing equipment must be present in the spray area and tested periodically.</p> <p>Spray areas must be kept clean to prevent the accumulation of combustible residues.</p> <p>Smoking must never be allowed in the spray area.</p> <p>The high voltage supplied to the atomizer must be turned off prior to cleaning, flushing or maintenance.</p> <p>When using solvents for cleaning:</p> <p>Those used for equipment flushing should have flash points equal to or higher than those of the coating material.</p> <p>Those used for general cleaning must have flash points above 100°F (37.8°C).</p> <p>Spray booth ventilation must be kept at the rates required by NFPA 33, 1995 Edition, OSHA and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents.</p> <p>Electrostatic arcing must be prevented.</p> <p>Test only in areas free of combustible material.</p> <p>Testing may require high voltage to be on, but only as instructed.</p> <p>Non-factory replacement parts or unauthorized equipment modifications may cause fire or injury.</p> <p>If used, the key switch by-pass is intended for use only during set-up operations. Production should never be done with safety interlocks disabled.</p> <p>Never use equipment intended for use in waterborne installations to spray solvent based materials.</p>
<p><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, Chapter 16, 1995 edition.</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. OSHA references are Sections 1910.94 and 1910.107. Also refer to NFPA-33, 1995 edition and your insurance company requirements.</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>  	<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 shut-down 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 NFPA No. 33, 1995 Edition.</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>
<b>Explosion Hazard / Incompatible Materials</b>  	<p>Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1,-Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.</p>	<p>Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your material supplier. Any other type of solvent may be used with aluminum equipment.</p>
<b>Toxic Substances</b>  	<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 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>

<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 / High Voltage Equipment</b>  	This is a high voltage un-grounded device that can produce electrical arcs capable of igniting coating materials.	Parts being sprayed must be supported on conveyors or hangers and be grounded. The resistance between the part and ground must not exceed 1 megohm. (Reference NFPA Bulletin No. 33, 1995 Edition.)  A safe distance must be maintained between the parts being coated and the atomizer bell. A distance of at least 1 inch for each 10 KV of power supply output voltage is required at all times.  Parts must be supported so that they will not swing and reduce the clearance specified above.  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.  Unless specifically approved for use in hazardous locations, the power supply and other electrical equipment must not be used in Class I, Division 1 or 2 locations.
<b>Personnel Safety / Mechanical Hazards</b>  	The atomizer can rotate at speeds up to 30,000 (disk) and 55,000 RPM (bells). At these speeds, the edge of the applicator can easily cut into skin. Loose articles can also be caught by the rotating bell.	Personnel must stay clear of the bell whenever it is rotating.  Before touching the bell, the turbine air must be shut off.  If the bell has been rotating, allow at least two minutes for it to come to a complete stop before touching it.
<b>Personnel Safety</b>	Skin puncturing by sharp electrode.	Take precautions to see that flesh is not punctured by sharp electrode.
<b>Intended Use</b>	Using coating materials and/or cleaning and flushing solvents which have flash points below 100°F (37.8°C) may cause a fire hazard.	This system is intended for use with waterborne coating formulations only.

## NOTES:

# INTRODUCTION

## GENERAL DESCRIPTION

Aerobell Copes is a indirect (external) charging electrostatic applicator for use with grounded waterborne fluid systems. Indirect charging, known as ion bombardment, is a proven method of electrostatically charging waterborne material without the need of isolating the fluid system.

High voltage is applied to the six probes (electrode) assemblies located on the exterior of the bell assembly. Paint is atomized by the grounded bell cup and the electrostatic charge is applied to the atomized paint particles during the transfer to a grounded work piece via the electrostatic field generated from the six probes.

## FEATURES

- Aerobell quick change turbine motor.
- Retaining nut for fast replacement of the rotary atomizer assembly.
- Center mounting of rotary atomizer.
- Indirect (external) charge for use with grounded, waterborne systems.
- Optional direct charge for use with isolated, waterborne systems (electrodes removed).
- Optional direct charge for use with grounded, solventborne systems (electrodes removed).

## SPECIFICATIONS

### Electrical

**Power Supply Type:** RansPak 1000

**Charging Method:** Indirect, Grounded Fluid

**Output Voltage:** Voltage Regulation Mode  
Set Point (70 kV) max.

**Output Current:** Current Regulation Mode  
Set Points (0-300)  $\mu$ A

**Turbine Speed Control:** Eurocard Atomizer Module

**Shaping Air Control:** Eurocard Analog Module

### Mechanical

**Turbine Speed:** 10,000-50,000 rpm  
60,000 rpm max.  
intermittent

**Turbine Type:** Impulse

**Weight:** 14.2 lbs.

**Length:** 14 in.

**Diameter:** 7-7/8 in. @ Electrode Center

**Turbine Air:** 45 psi max. 18 scfm

**Bearing Air:** 60 psi min. / 100 psi max.  
2-3 scfm@80 psi

**Shaping Air:** 60 psi max.

**Brake Air:** 100 psi max.

**Fluid Delivery:** 400 cc/min. max.

**Atomization Pattern:** 15 in. - 48 in.

**Rotary Atomizer Change Time:** Approx. 40 sec.

**Bell Change Time:** Approx. 40 sec.

**Bell Cleaning Time: (Solvent Flush)** Approx. 2-3 sec.

**Rotational Speed Control Emitter Type:** Magnetic

**AEROBELL COPEs MODELS**

Complete Standard Models	Quick Change Motor Assembly (Included)
75850-02	76746-202
75850-03	76746-203
75850-12	76746-102
75850-13	76746-103
75850-22	76746-302
75850-23	76746-303

Figure 1: Models

**AEROBELL COPEs OPTION & REPLACEMENT ITEMS**

Quick Change Part Number	Air Bearing Turbine Model Number	Fluid Tube ID Size & Part Number
76746-202	76747-01	RPM-440 (3/32) .093 (Viscosity 25-35 sec. #4 Ford @ 30 psi) medium range materials.
76746-102		
76746-302		
76746-203	76747-02	RPM-441 (1/16) .062 (Viscosity 10-20 sec. #4 Ford @ 30 psi) light range materials.
76746-103		
76746-303		RPM-439 (1/8) .125 (Viscosity 30-50 sec. #4 Ford @ 30 psi) heavy range materials.

Figure 2: Options / Replacements

**AEROBELL COPEs MODEL IDENTIFICATION**

76746 - X - XX

Basic Part Number \_\_\_\_\_

Fluid Tube Type \_\_\_\_\_

Bell Cup Type \_\_\_\_\_

1 = RPM-441 (1/16 I.D.)  
2 = RPM-440 (3/32 I.D.)  
3 = RPM-439 (1/8 I.D.)

02 = RPM-457, 57mm bell cup, for use with;

Part #	Description	Qty Req'd.
76747-01	Turbine Motor Assy	1
76757-00	Shaping Air Ring Cap	1
76756-00	Shaping Air Ring	1
RPM-2	Seal	1

03 = LRPM-4001-00, 70mm bell cup, for use with;

Part #	Description	Qty Req'd.
76747-02	Turbine Motor Assy	1
76632-00	Shaping Air Ring Cap	1
76631-00	Shaping Air Ring	1
LRPM0112-00	Seal Adapter	1
LRPM0111-00	Seal	1
7554-105	O-Ring	1

Figure 3: Model Identification

## AIR FILTRATION REQUIREMENTS

It is the user's responsibility to insure clean, dry air at all times. Turbine failure resulting from contaminated air will not be covered under warranty. The following pre-filter and bearing air filter(s) (see Figure 5) are recommended for use in Aerobell Copes systems. See Figure 5 if other filters are incorporated in the system - the filters to be used **must** have filtering capacities equal to or greater than those shown in Figure 5.

 CAUTION	
<p>► Air must be properly filtered to assure extended turbine life and to prevent contamination of the paint job. Air which is not adequately filtered will foul the turbine air bearings and cause turbine failure. The correct type of filters must be used in an Aerobell Copes system. The filter elements must be replaced on a regular schedule to assure clean air.</p>	

PSI	RPM (unloaded)	SCFM
45	60,000 (max.)	18.0
40	56,000	15.8
35	52,600	14.2
30	48,300	13.0
25	43,400	11.4
20	37,700	9.7
15	31,000	7.9
10	23,000	6.1
5	13,000	3.9

Figure 4: Turbine Air Pressure / RPM / SCFM

ITW Ransburg Filter Model No.	Description / Specifications	Replacement Element Part No.
HAF-503	Pre-filter, removes coarse amounts of oil, moisture & dirt. Used upstream of RPM-417 pre-filter (used in systems with poor air quality).	HAF-15 Element, One
RPM-417	Pre-filter, coalescing type, 136 scfm, 98.5% efficiency particulate removal .3 to .6 micron, max. aerosol passed 1.0 micron, max. solid passed .4 micron (dependent upon scfm requirement per applicator).	RPM-32 Elements, Carton of 4
RPM-418	Bearing air filter, coalescing type, 19 scfm, 99.995% efficiency particulate removal .3 to .6 micron, max. aerosol passed .6 micron, max. solid passed .2 micron (one per applicator).	RPM-33 Elements, Carton of 8

Figure 5a: Aerobell Copes Models Recommended Air Filtration

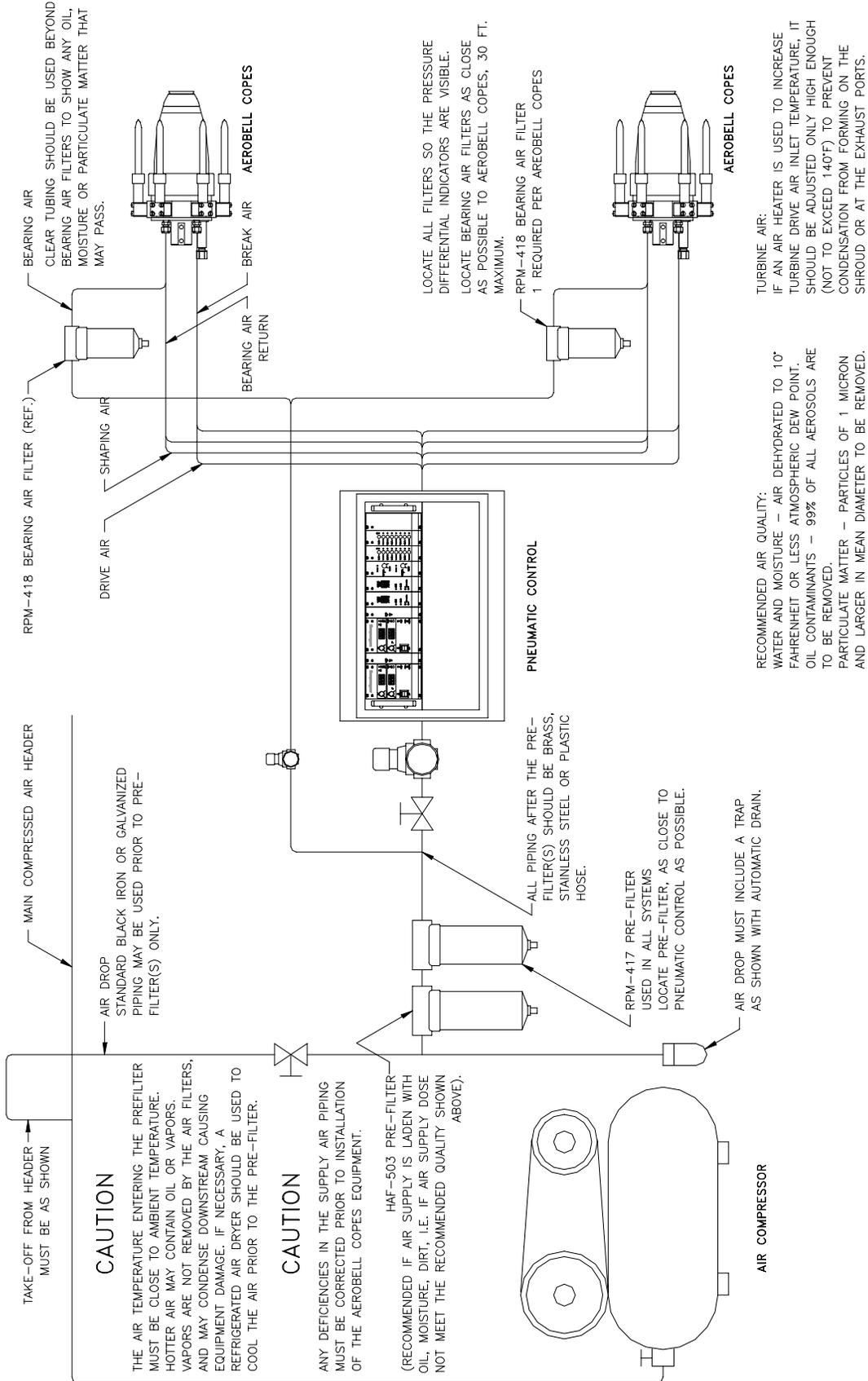


Figure 5b: Aerobell Copes Models Recommended Air Filtration

# INSTALLATION

The Aerobell Copes shipping container includes the basic atomizer assembly with bell and manifold.

Service tools required with the system are 2 (or more) RPM-419 (wrenches) per bell spray zone or spray station. **(These service tools must be purchased separately.)** These are required to remove the bell cup. Also required with the system is 1 (or more) 75852-00 (retaining nut tool) per zone which are used to remove the quick change Aerobell assembly.

Mount the Aerobell Copes securely to a stationary, reciprocating or oscillating fixture using (Qty-4) 5/16-18 plastic (nonconductive) mounting screws.

## ⚠ WARNING

- ▶ Risk of arcing / fire hazard. The Aerobell Copes must be located a safe distance from the object to be sprayed, as well as all other grounded objects. The safe distance is at least 1 inch per 10 kV of applied electrostatic voltage. Example: If the Aerobell Copes is used with 70 kV applied voltage, the electrode tips must be at least 7 inches from the object being sprayed.

## AIR FILTER INSTALLATION

The following guidelines **must** be observed when installing air filters for the Aerobell Copes system: (See Figure 5 for additional information.)

1. Use only recommended **pre-filters** and **bearing air filters** as shown in Figure 5. Additional system air filtration (i.e. refrigerated air dryer) may also be used if desired.
2. Use one **bearing air filter** per Aerobell Copes.
3. Mount the **bearing air filter** as close as possible to the Aerobell Copes (**do not mount** further than 30 ft. away).

4. Where possible, the **pre-filter(s)** and **bearing air filter(s)** should be mounted where they can be easily seen so that operating personnel can observe and determine when maintenance is required.
5. Standard black iron or galvanized piping may be used **prior** to the HAF-503 or RPM-417 pre-filters only. All piping after the pre-filter should be brass, stainless steel, aluminum, or hose (poly, nylon, nyloner, etc.).
6. Do **not** use teflon tape, pipe dope, or other thread sealant downstream of the **bearing air filter**. Loose flakes of teflon tape or other sealant can break loose and plug the very fine air holes in the turbine bearings.
7. Use clear see-through air tubing between the **bearing air filter** and bearing air fitting to clearly indicate if oil or moisture contamination is getting past the filter.
8. If air heaters are used in the system (to eliminate excessive in-line humidity conditions) and the heated air will exceed 120°F, the heaters must be located after all filters to prevent damage to the filter media.

## AIR & FLUID CONNECTIONS

See Figure 6 for rear views of the Aerobell Copes manifolds. Refer to this figure for proper location of connections.

## ⚠ WARNING

- ▶ Arcing / fire hazard exists if ungrounded metal connections (air or fluid) are used in the spray area. Use plastic nonconductive connections, or ensure metal connections are at ground potential.

## TUBE CONNECTIONS

See Figure 6 for rear views of the Aerobell Copes manifolds. Refer to this figure for proper location of connections.

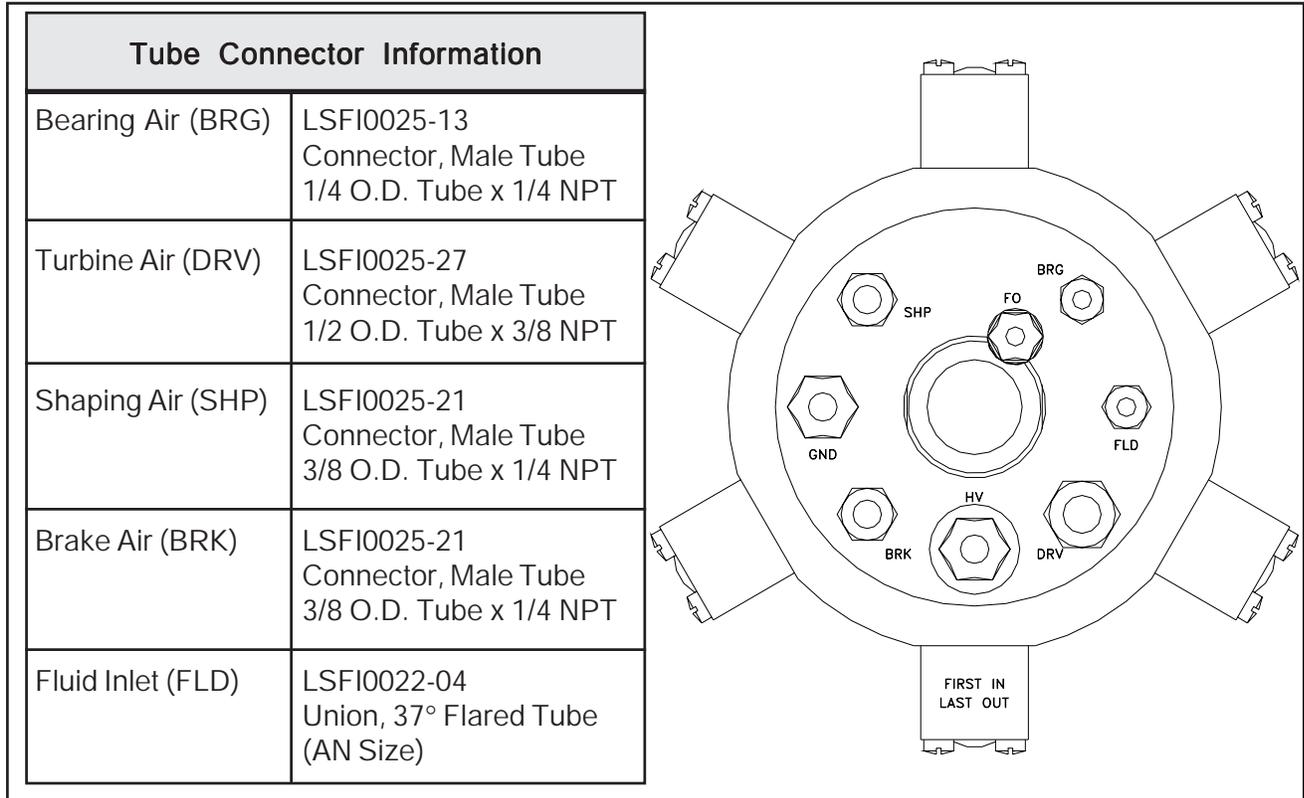


Figure 6: Tube Connector Information / Aerobell Copes

## BEARING AIR

Using 1/4" O.D. x 1/16" wall tubing (clear see-through), connect a properly filtered air source to the fitting marked "BRG" on the manifold. (See Figure 6.) It is recommended to use clear (see through) tubing for bearing air so that any contamination that gets past the final bearing air filter will be apparent.

Under the "Operation" section which follows, there is a Caution regarding bearing damage if the turbine is running while bearing air is OFF. Since the turbine must not be operated without first turning ON bearing air, some means of assuring the presence of bearing air before turning the turbine "On" must be provided. One method is by interlocking the turbine drive air to the bearing air (i.e. with an air piloted valve).

**⚠ CAUTION**

- ▶ Do not use teflon tape or pipe dope on any air fittings beyond the final air filter for bearing air. The tape or dope may break free and cause plugging of the turbine air bearings, and result in turbine failure.

**⚠ CAUTION**

- ▶ Provisions should also be made to assure bearing air remains ON during the coast down period when turbine air is turned OFF. (See "Specifications" on page 6.)

## SHAPING AIR

Use 3/8" O.D. x 1/16" wall tubing. Connect shaping air source to the fitting marked "SHP" on the manifold. (See Figure 6.)

## BRAKE AIR

Use 3/8" O.D. x 1/16" wall tubing. Connect brake air source to the fitting marked "BRK" on the manifold. See Figure 6.

### NOTE

- ▶ If the brake air feature is not used, the fitting supplied from the factory must be replaced using a plastic (non-conductive) 1/4 NPT pipe plug SSP-1425 or equivalent.

The plug is used to keep contamination out of the unit and prevent air leakage.

## TURBINE AIR

Using 1/2" O.D. x 1/16" wall tubing. Connect turbine air source to the fitting marked "DRV" on the manifold. See Figure 6.

## FLUID INLET

Use 1/4" O.D. x 1/16" wall tubing. Connect fluid source to the fitting marked "FLD" on the manifold. See Figure 6.

### NOTE

- ▶ If the coating material being used is heated, check the max. rated temperature for the fluid tubing to be used. Polyethylene tubing (9704-03) is rated for a max. of 80°F (27°C). Nylon tubing (7113-11) is rated for 200°F (95°C) max.

## HIGH VOLTAGE

Use SSW-1064 high voltage cable and 6287-00, (Qty-2) high voltage tacks, pressed into each end of cable. Connect high voltage cable to the port marked "HV" on the manifold. (See Figure 6.)

## GROUND

Use SSW-1064, high voltage cable, and 6287-00, (Qty-1) high voltage tack, pressed into one end of cable. Strip opposite end and connect to earth ground. Connect ground source to the port marked "GND" on the manifold. (See Figure 6.)

## AEROBELL COPES SYSTEM INTERLOCKS

The following system interlocks are required to prevent equipment damage:

1. System interlock that would shut OFF all applicator pneumatic controls if bearing air is disabled. Bearing air should remain ON at all times and should be shut OFF only by turning OFF the main air to the pneumatic control cabinet.

The exhaust from the bearing air is positive pressure acting as a seal air that may aid in keeping contaminants from entering the turbine assembly. Bearing air should only be disabled for applicator off-line (out-of-booth) maintenance and only after the "coast down" time of three minutes.

### CAUTION

- ▶ When the turbine air is turned OFF, the turbine will continue to operate or "coast down" for about two minutes. Provisions should be made to assure that the operator waits at least three minutes, after shutting OFF the turbine air, before shutting OFF the main air supply.

2. System interlock that would allow fluid flow only when the bell cup is spinning (turbine drive air ON) and must be shut OFF if turbine drive air is lost or disabled. It should not be possible for the coating material to be sprayed unless the turbine is spinning or in bypass mode for checking fluid deliveries.

**! CAUTION**

- ▶ The bell assembly must be removed when making fluid flow checks. If the paint is turned ON when the bell is mounted on the motor shaft and not rotating, paint will enter the shaft and possibly damage the air bearing. Normally pneumatic interlocks will not allow the paint to trigger ON when the turbine air is OFF.

**! WARNING**

- ▶ The coating material must never be turned ON unless the bell cup is mounted on the motor shaft and rotating at a speed high enough to ensure dissipation of all material supplied.

3. System interlock that would shut OFF the supply of drive air to the turbine if bearing air is lost or falls below 60psi at the applicator. If bearing air drops below 60psi at the turbine, the turbine drive air will automatically shut OFF. A bearing air return connection is provided at the applicator and is used to supply a signal to the pneumatic interlock located in the atomizer module or equivalent. The ports are interconnected so either may be used for supply or return to the air control cabinet.

**! CAUTION**

- ▶ Operating the turbine with bearing air pressure below 60psi (measured at turbine inlet) may cause bearing damage.

4. System interlock that would not allow the turbine to exceed the maximum rated intermittent speed and shut OFF turbine drive air if fiber optic feedback is lost or disabled when used with closed loop speed control system. The air inlet pressure determines the speed of the turbine and excessive speed will cause air turbine damage.

**! WARNING**

- ▶ Pneumatic input to the turbine air inlet must be controlled and prevent the turbine from exceeding the maximum rated intermittent speed of 60,000rpm. (See "Specifications" on page 6.)

5. If the Aerobell Copes unit is mounted with the bell cup facing up, a device should be provided to rotate the applicator into a horizontal position during maintenance.

# OPERATION

## ⚠ 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. (Ref. NFPA-33 / 1995 edition, Ch 16.)

## TURBINE SPEED

The speed of the turbine is determined by the air inlet pressure. See Figure 4 "TURBINE AIR PRESSURE/RPM/SCFM," under Air Filtration Requirements section for more information. The desired speed will depend upon the type of coating material and various application requirements.

## ⚠ CAUTION

- ▶ Excessive speed will cause air turbine damage. Do not exceed the maximum rated intermittent speed of 60,000 rpm.

Turbine speed may be controlled by use of optional Pulsetrack™ or eurocard atomizer module speed monitor and control. Contact your ITW Ransburg representative for more information on this optional equipment.

## BEARING AIR

## ⚠ CAUTION

- ▶ Air bearing air must be ON whenever the turbine is operated. If not, severe bearing damage will occur. It is recommended to leave bearing air ON at all times. During maintenance or disassembly, turbine air must be OFF for at least 3 minutes before shutting OFF bearing air or main line air.

Bearing damage (and subsequent turbine failure) caused by running the turbine without bearing air will not be covered under ITW Ransburg warranty.

When turning the turbine ON, bearing air must be present. Likewise, bearing air must remain ON when the turbine air is turned OFF until the turbine stops spinning. Never turn OFF bearing air to cause the turbine to stop spinning. Brake air can be used to slow the turbine (see next section on Brake Air), wait for the turbine to stop spinning before turning bearing air OFF.

## ⚠ CAUTION

- ▶ Operating the turbine with bearing air pressure below 60 psi (measured at turbine inlet) may cause bearing damage.

Nominal bearing air pressure is 80 psi, with an operating range of 60 psi minimum to 100 psi maximum. Under no circumstances should the turbine be operated with less than 60 psi bearing air pressure.

## BRAKE AIR

Brake air is used to slow the turbine speed. It is advantageous for short color change cycle times and may be used for stopping the turbine. Use of the brake involves (1) turning OFF turbine drive air, and then (2) turning the brake air ON for a short duration. For example, the air brake will reduce the turbine speed as shown in Figure 7.

## ⚠ CAUTION

- ▶ Never over brake allowing the bell cup to spin the opposite direction of drive rotation (CCW) facing the bell cup.

To Brake From (RPM)	Seconds (Approx.)
60,000 to 40,000	3.7
60,000 to 20,000	7.5
60,000 to 0	12.9
40,000 to 20,000	4.0
40,000 to 0	9.0

**Figure 7: Braking Time (At 90 psi Brake Air Pressure)**

## ELECTROSTATIC VOLTAGE

The RansPak 1000 power supply and control unit are recommended for use with the Aerobell Copes applicator. The output voltage can be controlled by one of two modes: Either mode can be adjusted from the controller's front panel or through a programmable controller.

To maintain the highest transfer efficiency, it is critical to determine the optimum (maximize) high voltage output without creating a high voltage overload.

### ***Current Regulation Mode***

The voltage is controlled using current regulation, allowing the voltage to vary while maintaining the desired current set point of 0-300 micro-amps.

### ***Voltage Regulation Mode***

The voltage is controlled using voltage regulation, allowing the current to vary while maintaining the desired voltage set point of 0-70 kV.

The actual settings will depend upon various coating application requirements and must not exceed 70 kV or 300 micro-amps during normal operating conditions.

## SHAPING AIR

Shaping air is used to shape the spray pattern. The lower the pressure, the wider the pattern and conversely, higher pressures result in narrower patterns. Shaping air does not help atomize the material, but does assist in the penetration of atomized particles into cavity areas. Shaping air should be kept at a minimum, consistent with coating requirements. Excessive shaping air may assist some atomized paint particles to blow by the target not allowing full "wrap", or causing paint particles to bounce back onto the atomizer.

## TARGET DISTANCE

The distance from the Aerobell atomizer to target affects the spray application. For instance, closer distances give a smaller spray pattern

and greater efficiency. Increasing the distance will give a larger pattern and possibly reduce efficiency. If the distance is too great, material may "wrap back" on the Aerobell. However, coming too close may cause arcing. See Warning below.

### **⚠ WARNING**

- ▶ Risk of arcing/fire hazard. The Aerobell must be located a safe distance from the object to be sprayed, as well as all other grounded objects. The safe distance is at least 1 inch per 10 kV of applied electrostatic voltage. Example: if the Aerobell Copes is used with 70 kV applied voltage, the electrode tips must be at least 7 inches from the object to prevent arcing.

## TURBINE AIR

If an air heater is used to increase the turbine drive air inlet temperature, it should be adjusted only high enough (not to exceed 140° F) to prevent condensation from forming on the shroud or at the exhaust ports.

### **NOTE**

- ▶ If the turbine drive air is heated, check the maximum rated temperature for the air supply tubing to be used. 9704-07, polyethylene tubing, is rated for a maximum of 80° F (27° C). 7113-13, nylon tubing, is rated for 200° F (95° C) maximum.

The 76739-00, foam insulator, and 76738-00, disposable cover, are used as a thermal insulator to prevent condensation from forming on the shroud. The foam insulator and disposable cover may be used in place of air heaters.

### **NOTE**

- ▶ If the thermal insulator and disposable cover are used, a maintenance schedule must be developed to ensure contaminated covers are continually replaced and a stockpile of new are kept on hand.

## COATING MATERIAL CONDUCTIVITY

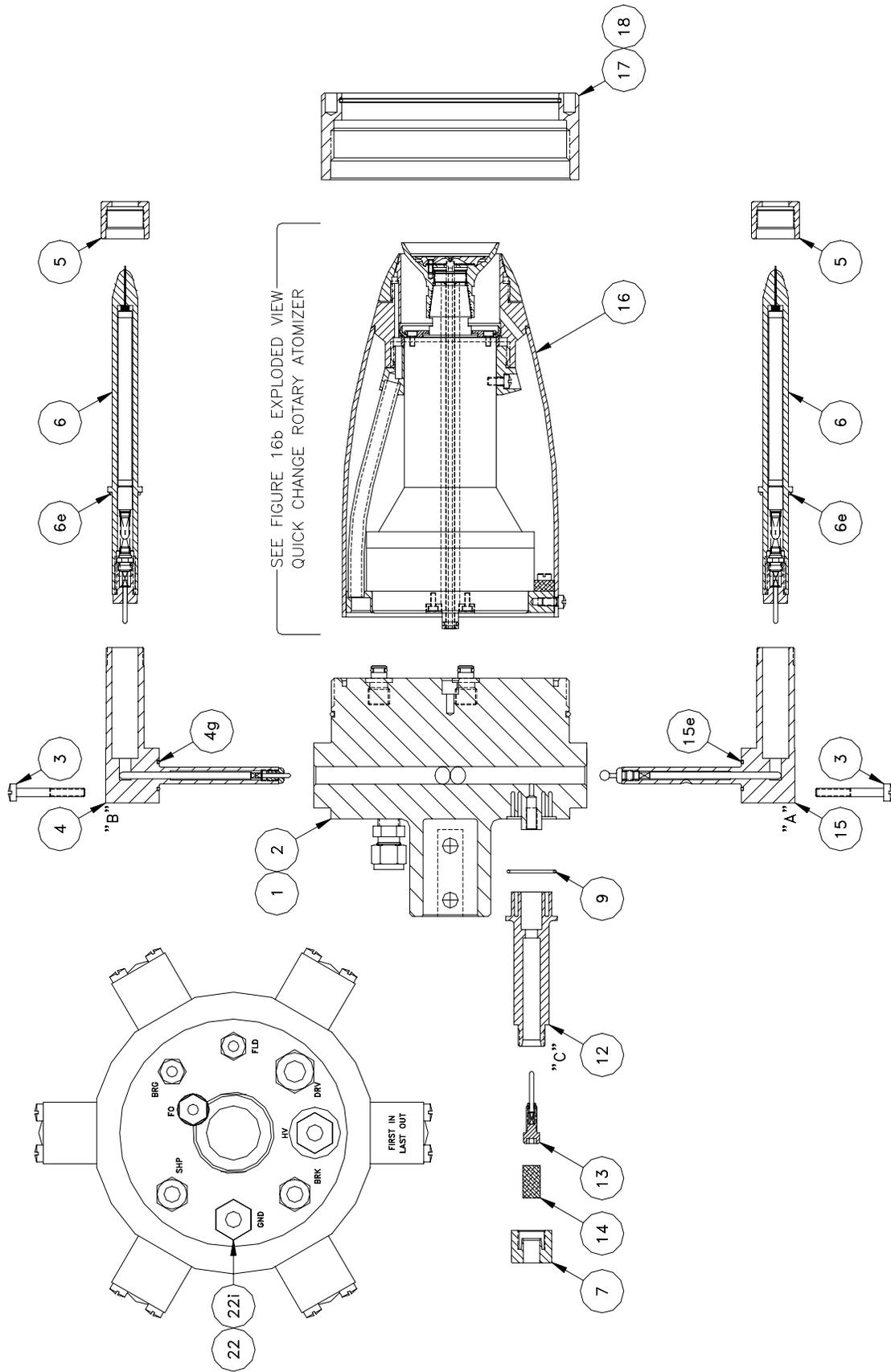
The Aerobell Copes can be used with a full range of conductive coatings including solvent-borne and waterborne materials. Charging methods include:

- Indirect charge for use with waterborne, grounded fluid systems. The fluid system, including the applicator, are connected to ground potential and voltage is applied to the external electrodes. (See Figure 8.)
- Direct charge for use with solventborne, grounded fluid systems with electrodes removed. The fluid system is connected to ground potential and voltage is applied to the applicator. (See Figure 8.)
- Direct charge for use with waterborne, isolated fluid systems with electrodes removed. The fluid system is isolated from ground potential and voltage is applied to the applicator. (See Figure 8.)

## ELECTRODE REMOVAL PROCEDURE FOR OPTIONAL DIRECT CHARGING METHOD

### -REFER TO FIGURE 8

1. Verify that high voltage is OFF. The high voltage must be turned OFF before performing any maintenance.
2. Remove item 7 (13521-03, compression nut) and high voltage cable from port marked HV.
3. Remove item 22i (13521-03, compression nut) and ground cable from port marked GND.
4. Remove item 14 (14061-02, conductive foam insert), item 13 (76562-00, spring loaded contact pin screw assembly), item 12 (75841-00, high voltage cable support tube) and item 9 (LSOR0007-06, O-Ring) from port marked HV.
5. Remove item 5 (Qty-6, 75847-00, electrode body retaining nuts) and item 6 (Qty-6, 76719-00, electrode body assemblies).
6. Remove item 3 (Qty-20, M5 x 40mm long, slotted fillister head screws) and item 4 (Qty-5, 75854-02, 90° connector electrode body assembly.) Items 3 and 4 (marked "B") must be removed prior to removing items 3 and 15 (marked "A").
7. Remove item 3 (Qty-4, M5 x 40mm long, slotted fillister head screws) and item 15 (75854-01, 90° connector electrode body assembly.) Unit damage may occur if items 3 and 15 (marked "A") are removed prior to disassembly of items 9, 12, 13 and 14 (marked "C") and items 3 and 4 (marked "B").
8. Install item 9 (LSOR0007-06, O-Ring), item 12 (75841-00, high voltage cable support tube) and item 7 (13521-03, compression nut) into port marked HV.
9. Install 73033-20F, 1/4-28 x 5/8 long nylon socket head cap screw (not shown), into item 12 (75841-00, high voltage cable support tube). Torque screw to 3-5 inch pounds.
10. Install 1/4 dia. x 3" long nylon rod (non-conductive) material (not shown) into item 12 (75841-00, high voltage cable support tube) and tighten item 7 (13521-03, compression nut).
11. Install S10364-00, (Qty-6, 90° connector port cap, not shown), LSOR0007-05, (Qty-6, o-ring, not shown) and item 3 (Qty-24, M5 x 40mm, long slotted fillister head screws) in ports marked A and B. Torque screws to 3-5 inch pounds. Unit damage may occur if screws are over torqued.
12. Install high voltage cable into port marked GND and tighten item 22i (13521-03, compression nut).



**Figure 8: Electrode Removal Procedure**

# MAINTENANCE

## CLEANING PROCEDURES

### WARNING

- ▶ Electrical shock/arcing and potential fire hazards can exist during maintenance. The high voltage must be turned OFF before entering the spray area and performing any maintenance procedures. Spray booth exhaust fans(s) should remain ON while cleaning the equipment with solvents.
- ▶ Never touch the atomizer bell while it is spinning. The front edge can easily cut into human skin. Make sure the atomizer bell has stopped spinning before attempting to touch it. Wait at least three minutes after turbine drive air is OFF before touching the bell.

In addition to the above Warning, which relates to potential safety hazards, the following information must be observed to prevent damage to the equipment.

### CAUTION

- ▶ Do not immerse the Aerobell Copes turbine in solvent or other liquids. Turbine components will be damaged.
- ▶ Bearing air must be ON during all cleaning procedures.
- ▶ Do not spray the Aerobell Copes unit with a solvent gun for cleaning. Dousing or spraying the applicator and Aerobell Copes components with solvent before wiping will not help to loosen paint.

The precise sequence of flushing paint from the system will vary according to the type of color valve arrangement used and other automatic features built into the system. Follow these basic procedures when cleaning:

1. Verify high voltage is OFF. The high voltage must be turned OFF before performing any maintenance.
2. With the bearing air and turbine air ON, flush paint out with solvent. Flushing should be done before any break in production. If the Aerobell Copes is mounted facing up, rotate to a horizontal plane before flushing or cleaning.
3. Flushing should be done with the atomizer bell installed. The bell includes a self cleaning feature, and the bell will normally be fully cleaned with flushing. However, if there is any remaining paint build up on any areas of the bell after flushing, the bell should be removed and cleaned by hand (see 4 below).
4. Clean the bell by soaking in an appropriate solvent as long as necessary to loosen paint. Use a soft bristle brush dipped in solvent to remove paint. Make sure all signs of paint are removed. See Caution below. Rinse and dry bell.
5. Before re-installing the bell onto the shaft, check the tapered mating surfaces of the turbine shaft and bell for any paint residue. Clean any residue. See Caution below.

### CAUTION

- ▶ Using an atomizer bell with paint build up will cause a bell imbalance. An imbalanced bell may cause bearing damage and turbine failure. Also, any paint residue caught between the tapered surfaces can prevent the bell from seating properly and result in an imbalanced condition.
- ▶ Never install an atomizer bell onto the shaft without cleaning the fluid tube tip. Paint build-up on the tip may get caught in the thread relief of the bell during installation.

6. Paint or other contamination on the surfaces of the equipment may cause high voltage reduction and poor transfer efficiency. A schedule must be developed for equipment maintenance (cleanliness). However, care must be taken during cleaning. The electrode needle must be straight and sharp. It is recommended that the electrode tip be cleaned using a mild solvent and a soft bristle brush. Clean the exterior surfaces of the Aerobell Copes as follows (see Warning below).

**! WARNING**

► To reduce the risk of fire or explosion, OSHA and NFPA-33 require that solvents used for exterior cleaning be non-flammable (flash points higher than 100°F / 37.8°C). Also, since electrostatic equipment is involved, these solvents should also be non-polar. Examples of non-flammable, non-polar solvents for wipe down are: amyl acetate, methyl amyl acetate, high flash naphtha and mineral spirits.

- a). All external surfaces may be cleaned using a mild solvent and lint free rags to hand wipe the Aerobell Copes. Turbine drive air must be OFF, but leave shaping air and bearing air ON. Be careful not to drip solvent into the opening behind the bell. (See step #1.)
- b). If conductive, polar solvents are used to clean the Aerobell Copes unit all residue must be removed using a non-conductive non-polar solvent. (i.e., high flash naphtha.) (See step #1.)
- c). Do not spray the Aerobell Copes units with a solvent gun used for cleaning. The cleaning fluid under pressure may aid conductive materials to wick into hard to clean areas or may allow fluids to be forced into the turbine assembly. (See step #1.)

7. Do not reuse an atomizer bell that shows signs of damage such as nicks, heavy scratches, dents, or excessive wear.

## VIBRATION NOISE

If the Aerobell Copes is vibrating or making an unusually loud noise, it usually means there is an imbalance situation. The atomizer bell may have dried paint on it, or the bell may be physically damaged, or there may be paint trapped between the bell and shaft preventing the bell from properly seating. If any of these conditions exist, they **must** be corrected. Excessive imbalance caused by one of these conditions may result in bearing damage and turbine failure. Warranty **does not** cover failure caused by imbalanced loading conditions.

To determine if the bell is dirty or damaged, remove the bell and turn the turbine ON. If the noise is eliminated, the bell is the problem. If the noise continues, the turbine may be damaged and should be inspected. Do **not** continue to operate a noisy turbine.

## PREVENTIVE MAINTENANCE

### Daily Maintenance

- Due to the close proximity of high voltage to ground potential, a schedule must be developed for equipment maintenance (cleanliness).
- Paint within the applicator must be flushed from the system prior to any down time or break in production.
- Verify that high voltage is OFF and that shaping air, bearing air and turbine drive air are ON.
- Open the solvent valve, flushing all paint from the supply lines and through the atomizer bell assembly.

- Verify that high voltage is OFF, turbine drive air is OFF, and that the bell cup has stopped spinning. The bearing air and shaping air should remain ON.
- Clean all external surfaces of the applicator using a lint-free rag dampened with solvent. External surfaces include the quick-change applicator, retaining nut, rear manifold, and electrodes.
- After cleaning, all conductive residue must be removed using a non-conductive solvent. Since electrostatic equipment is involved, these solvents should also be non-polar.

**⚠ WARNING**

- ▶ The high voltage must be turned OFF before entering the spray area and performing any maintenance procedures. Spray booth exhaust fan(s) should remain ON while cleaning the equipment with solvents.

### Weekly Maintenance

- Follow all procedures as described under daily maintenance prior to performing any weekly maintenance.
- Verify that shaping air is OFF, remove the shaping air ring and cap from the applicator for thorough cleaning.
- Clean the shroud edge, which mates with the shaping air ring taper, using a lint-free rag dampened with solvent.
- Clean the shaping air ring taper, which mates with the shroud edge, using a soft bristle brush dipped in solvent.
- Clean all external surfaces of the air ring and cap using a lint-free rag dampened with solvent.
- Remove the cap for cleaning inside surfaces. The parts may be soaked in clean solvent only, to loosen paint that has wicked around the cap.

- After removing the cap, use a soft bristle brush dipped in solvent to clean the grooves, male threads of the air ring, and female threads of the cap.
- Paint residue found in the shaping air or exhaust holes is not acceptable and must be removed prior to assembly.
- After cleaning, all conductive residue must be removed using a non-conductive solvent. Since electrostatic equipment is involved, these solvents should also be non-polar.

## MEAN TIME BETWEEN FAILURE

### Air Filters / Element Replacement

**⚠ CAUTION**

- ▶ Introducing air which contains oil, moisture and dirt may cause wear and damage to the bearings. It is the user's responsibility to monitor the quality of air and to replace the filter elements as often as necessary. Turbine failure caused by poor air quality will not be covered under warranty.

ITW Part#	Qty. Elements Per Carton	Used On
HAF-15	1	HAF-503, Pre-Filter
RPM-32	4	RPM-417, Pre-Filter
RPM-33	8	RPM-418, Bearing Air Filter

Figure 9: Replacement Elements

ITW Ransburg Aerobell Copes systems include a pre-filter(s) and a final filter for all air to the Aerobell Copes unit. The final filter is for bearing air only. All filters contain elements that must be replaced on a regular basis to assure clean air. RPM-417 and RPM-418 filters also contain an automatic drain and pressure differential indicator.

The pressure differential indicator provides a visual indicator that pops up (becomes more visible) as the filter element becomes plugged.

Replace the filter elements when the visual indicator becomes visible, don't wait until it pops up fully. As the elements become plugged, their efficiency drops. The frequency of filter element change will depend upon the quality of the plant air. But it is recommended that all elements be replaced at least every 4 to 6 months.

In plants where heavy amounts of oil and moisture vapor are present in the air lines, a refrigerated air dryer may be necessary.

The Aerobell Copes is designed to give dependable service and extended life. One of the most important factors in realizing long life is the quality of air. It is therefore essential for the user to closely monitor the quality of their air and to properly maintain the air filters by replacing the filter elements as often as necessary. (Replace elements at least every 4-6 months or more often.)

## **Muffler**

Replace the 76310-00, porous plastic muffler, at least once per year depending upon the application environment.

Install the porous plastic muffler with the coarse (rough to the touch) side against the 76749-00, mounting ring assembly.

The coarse (rough to the touch) side should always face the direction of air flow.

## **Plastic Hardware**

Inspect for broken or loose mounting hardware every 4 to 8 weeks. Hardware includes all non-conductive screws used for retaining the 90 degree electrodes, rear manifold, and support rod.

The M5 x 40mm long fillister head screw (part number 75828-40) used for mounting the 90 degree electrodes must be tightened and/or replaced when broken prior to cleaning. Cleaning solvents may wick under the electrodes if the mounting hardware is not equally tightened.

## **Shaping Air Ring Seal**

Inspect the shaping air ring seal for damage at the cupped edge and at the sealing surface every 12 to 16 weeks or as often as necessary.

The shaping air ring seal (part number RPM-2 or LRPM0111-00) is a wear item and must be replaced if damaged. A damaged seal may affect the distribution of shaping air within the air ring. Always install the seal with the cupped edge facing forward.

## **Atomizer Bell Assembly**

Inspect the atomizer bell assembly for any damage, wear, or paint build-up every 4 to 8 weeks.

The bell cup is a critical part of the applicator and is directly responsible for the finish quality of the product being coated. Replace any atomizer bell that shows signs of damage such as nicks, heavy scratches, dents, or excessive wear.

Always clean the fluid tube tip before re-installing the bell onto the shaft using a lint-free rag dampened with solvent.

## DISASSEMBLY PROCEDURES

### Atomizer Bell Removal

1. Remove 76756-00, shaping air ring, from shroud by hand or by strap wrench if required, turning CCW. Note the 76757-00, shaping air ring cap, will come off with the 76756-00, shaping air ring.
2. To remove atomizer bell, place RPM-419, wrench, over flats of shaft to lock shaft. Unscrew atomizer bell by hand turning CCW.
3. If the atomizer is tight and can't be removed by hand, use the second RPM-419, wrench, to place over the wrench flats of the atomizer bell.
4. Refer to page 18 for important information about atomizer bell cleanliness. Do not install a dirty or damaged bell onto the Aerobell Copes.

### Shaping Ring Air Cap / Shaping Air Ring Disassembly

1. Separate 76756-00 and 76757-00 by hand or by strap wrench. Hold one stationary while turning the other CCW. Note that it is only necessary to separate these parts if replacing one, or for thorough cleaning.

### Atomizer Bell Reassembly

1. Before reassembling the atomizer bell, ensure the tapers of the shaft and bell which mate are totally clean, as well as the shaft and bell threads.
2. Place RPM-419, wrench, over wrench flats of shaft to lock the shaft.
3. Screw atomizer bell onto shaft in CW direction. (Hand tighten only.)

4. Reinstall 76756-00, shaping air ring, into shroud. Note that when screwing 76756-00 in place, it will become tight after approximately 2-1/2 turns. At this point, use a strap wrench if required, to tighten further. The 76756-00 will break free and become loose again and can then be tightened down fully by hand until it bottoms against the shroud.
5. Screw 76757-00, shaping air ring cap, onto the 76756-00, shaping air ring, in CW direction. Hand tighten until the ring and cap mating tapered surfaces contact and hand torque 1/8 turn.

### Copes Quick Change Aerobell Motor Removal

#### CAUTION

- Be sure to carefully hold the quick change motor assembly during removal. The quick change motor assembly weighs approximately 7 lbs and may be dropped and damaged if not properly supported.

1. Prior to removing the Quick Change Motor Assembly, flush the paint feed line and bell with solvent. If flushing is not possible and paint is in the atomizer feed tube, place a rag over the bell end of the atomizer and proceed to step 2.
2. Using 75852-00, retaining nut tool, loosen 75844-00, quick change motor assembly retaining nut. Loosen retaining nut CCW to complete thread disengagement.
3. While properly supporting the quick change motor assembly, remove from the manifold. Do not allow any paint to drip from the manifold into the air ports on the back of the air turbine.

## Quick Change Aerobell Motor Disassembly

1. Remove 76757-00, shaping air ring cap, 76756-00, shaping air ring from the shroud and the atomizer bell from the turbine shaft (refer to "Atomizer Bell Removal" on page 22.)
2. Remove shroud by removing the three 76748-12F, fillister head screw, using medium flat head screwdriver. Shroud can then be pulled forward.

## Aerobell Copes Turbine Disassembly & Repair

 <b>CAUTION</b>
<p>► Disassembly and repair of the turbine during warranty period is not allowed. See "Warranty" on page 32, and refer to SR-70-52-1 for details.</p>

Disassembly and repair of the Turbine is covered in Service Reference SR-70-52-1 (latest issue). When returning the air bearing turbine to ITW Ransburg for repair, return the Quick Change Motor Assembly or turbine only.

## Copes Quick Change Aerobell Motor Reassembly

1. Reassemble the shroud, atomizer bell, shaping air ring and cap onto the Quick Change Motor Assembly by reversing the above instructions.
2. Before installing the Quick Change Assembly back into the manifold, check the condition of the four teflon-coated o-rings located on the four air fittings of the manifold. If any are damaged or missing, replace them.

3. Check the condition of the SSG-8128, Kalrez o-ring, located on the fluid inlet on the rear of the turbine. Replace if damaged or missing. Lightly lubricate the SSG-8128, o-ring, with petroleum jelly.
4. Install the Quick Change Motor Assembly onto the manifold. Align properly (it is easiest to align the shaping air fitting which is furthest from the center line). Press the Quick Change Assembly straight forward as much as possible (don't force it on).
5. Tighten 75844-00, retaining nut, CW which will draw the quick change motor assembly fully into place with the manifold.

## AEROBELL COPES TURBINE MAINTENANCE & REPAIR ITEMS

Kit Part No.	Description
KK-4461	Turbine Repair Kit (for on-site turbine repair)
KK-4462	Rotor Screw Kit (for on-site turbine repair)
KK-4463	Turbine Screw Kit (for on-site turbine repair)
RPM-33	Bearing Air Filter Element Kit (box of 8)
RPM-32	Pre-filter Element Kit (box of 4)

**Figure 10: Pre-packaged Repair Kits**

# PARTS IDENTIFICATION

PART VARIATIONS		
Part Number	A (Figure 11A / Item #16)	Description
75850-02	76746-202	3/32 I.D. Feed Tube, 57mm Bell Cup
75850-03	76746-203	3/32 I.D. Feed Tube, 70mm Bell Cup
75850-12	76746-102	1/16 I.D. Feed Tube, 57mm Bell Cup
75850-13	76746-103	1/16 I.D. Feed Tube, 70mm Bell Cup
75850-22	76746-302	1/8 I.D. Feed Tube, 57mm Bell Cup
75850-23	76746-303	1/8 I.D. Feed Tube, 70mm Bell Cup

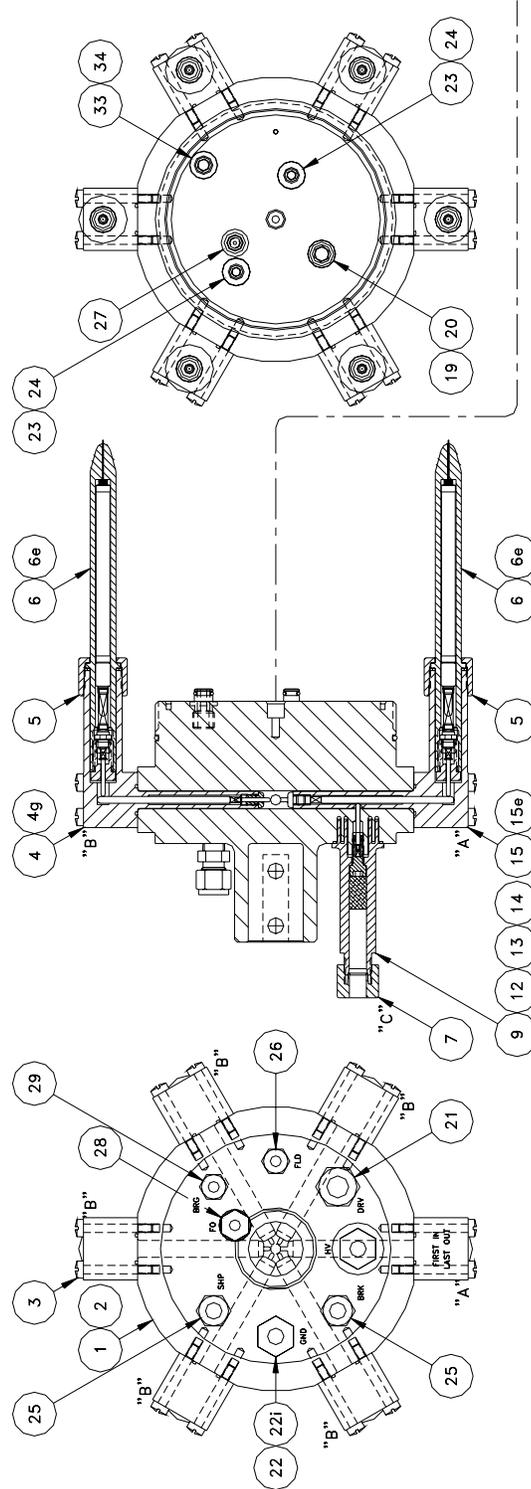


Figure 11a: Quick Change Manifold Assembly - Exploded View

**QUICK CHANGE MANIFOLD ASSEMBLY - PARTS LIST (Figure 11a)**

Item #	Part #	Description	Qty
1	75826-00	Manifold, Rear	1
2	LSOR0007-07 (*)	O-Ring, Viton, 5.237 I.D. x 5.443 O.D.	1
3	75828-40 (*)	Screw, Fillister Head, M5 x .8-6g x 40 Long	24
4	75854-02	Body Assembly, 90° Connector, Electrode	5
4g	LSOR0007-05 (**)	O-Ring, Viton, .551 I.D. x .691 O.D. (Included in 75854-02)	1
5	75847-00	Nut, Retaining, Electrode Body	6
6	76719-00 (*)	Body Assembly, Electrode, Spherical R. Tip	6
6e	LSOR0007-05 (**)	O-Ring, Viton, .551 I.D. x .691 O.D. (Included in 76719-00)	1
7	13521-03	Nut, Compression, 3/8 Tube	1
8	-----	-----	---
9	LSOR0007-06 (*)	O-Ring, Viton, .989 I.D. x 1.129 O.D.	1
10	-----	-----	---
11	-----	-----	---
12	75841-00	Tube, Support, High Voltage Cable	1
13	76562-00	Screw Assembly, Contact Pin, Spring Loaded	1
14	14061-02 (*)	Insert, Foam, Conductive	1
15	75854-01	Body Assembly, 90° Connector, Electrode	1
15e	LSOR0007-05 (**)	O-Ring, Viton, .551 I.D. x .691 O.D. (Included in 75854-01)	1
16	A (*) (See Page 27, "Part Variations")	Aerobell Assembly, Quick Change (See Exploded View - Figure 11b)	1
17	75844-00	Nut, Retaining, Aerobell Assembly	1
18	LSOR0005-03 (*)	O-Ring, FEP Teflon Encapsulated, 2-049	1
19	75845-02 (*)	Fitting, Special, .314 I.D.	1
20	SSG-8146 (*)	O-Ring, Teflon Coated	1
21	LSFI0025-27	Connector, Male Tube, 1/2 O.D. x 3/8 NPT	1
22	75853-00	Tube Assembly, Ground Cable Support	1
22i	13521-03 (**)	Nut, Compression, 3/8 Tube (Included in 75853-00)	1
23	75845-01 (*)	Fitting, Special, .190 I.D.	2
24	SSG-8145 (*)	O-Ring, Teflon Coated	2
25	LSFI0025-21	Connector, Male Tube, 3/8 O.D. x 1/4 NPT	2
26	LSFI0022-04	Union, 3/7" Flared Tube (AN Size)	1
27	LSOR0007-04 (*)	O-Ring, Viton, .489 I.D. x .629 O.D.	1
28	75856-00	Transmitter, Fiber Optic	1
29	LSFI0025-13	Connector, Male Tube, 1/4 O.D. x 1/4 NPT	1
30	75852-00 (Δ)	Tool, Retaining Nut (Not Shown)	---
31	RPM-419 (Δ)	Wrench (Not Shown)	---
32	76060-00	Fitting Assembly, Bearing Air Interlock (Not Shown)	1
33	75845-03	Fitting, Special, .252 I.D.	1
34	76745-01	O-Ring, Teflon Coated	1
35	76739-00	Insulator, Foam (Not Shown)	4
36	76738-00	Cover, Disposable (Not Shown)	8

Δ Two (or more) wrenches required per Aerobell Copes application zone and must be ordered separately.

Δ One (or more) retaining nut tool required per Aerobell Copes application zone and must be ordered separately.

\* Parts shown should be kept on hand as spare parts for service convenience.

\*\* The parts shown are included with the sub-assembly or may be ordered separately as spare parts for service convenience.

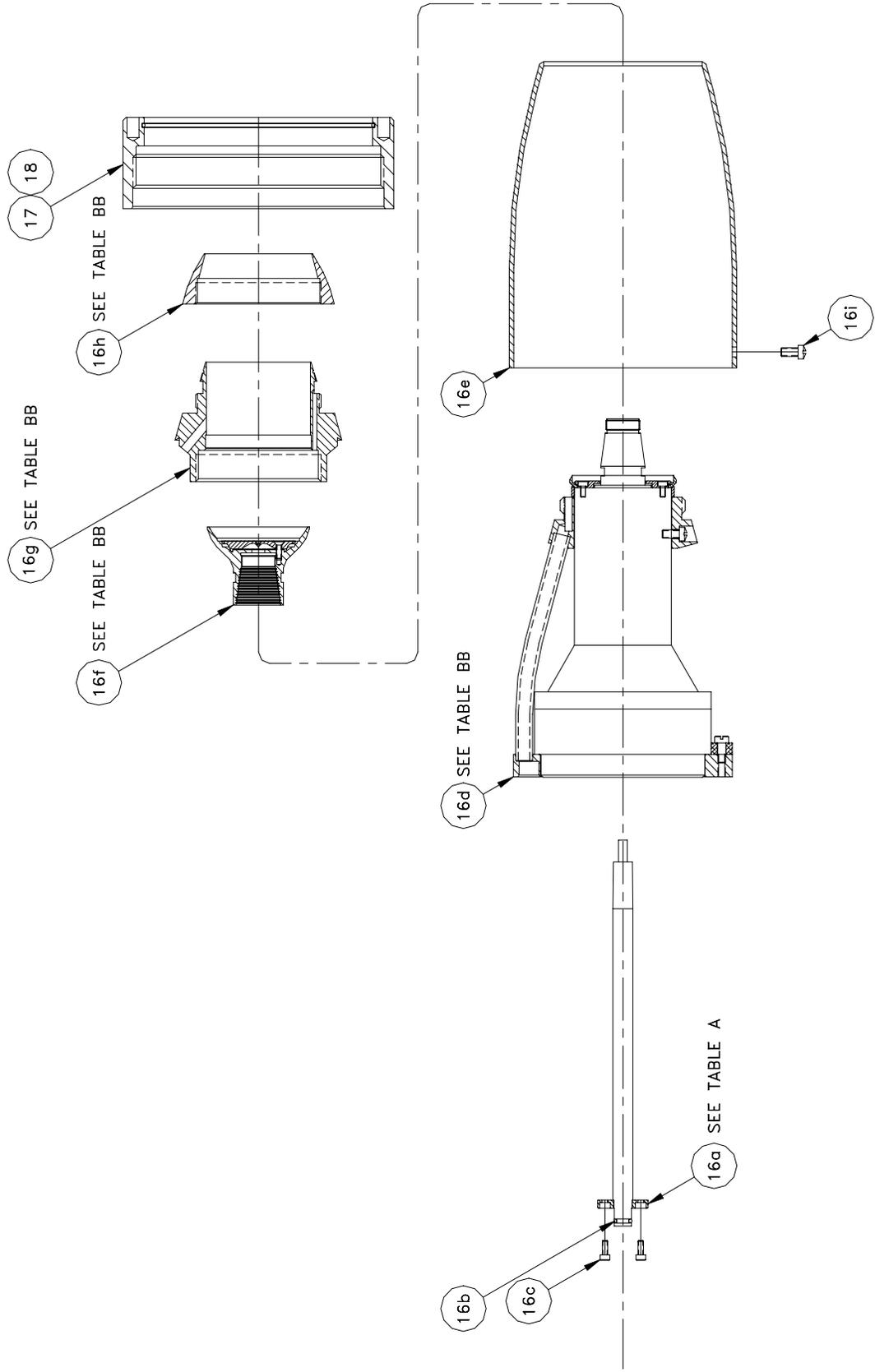


Figure 11b: Quick Change Motor Assembly - Exploded View



Part No.	Description	D
76747-01	57mm Shaping Air Ring	76751-00
76747-02	70mm Shaping Air Ring	76752-00

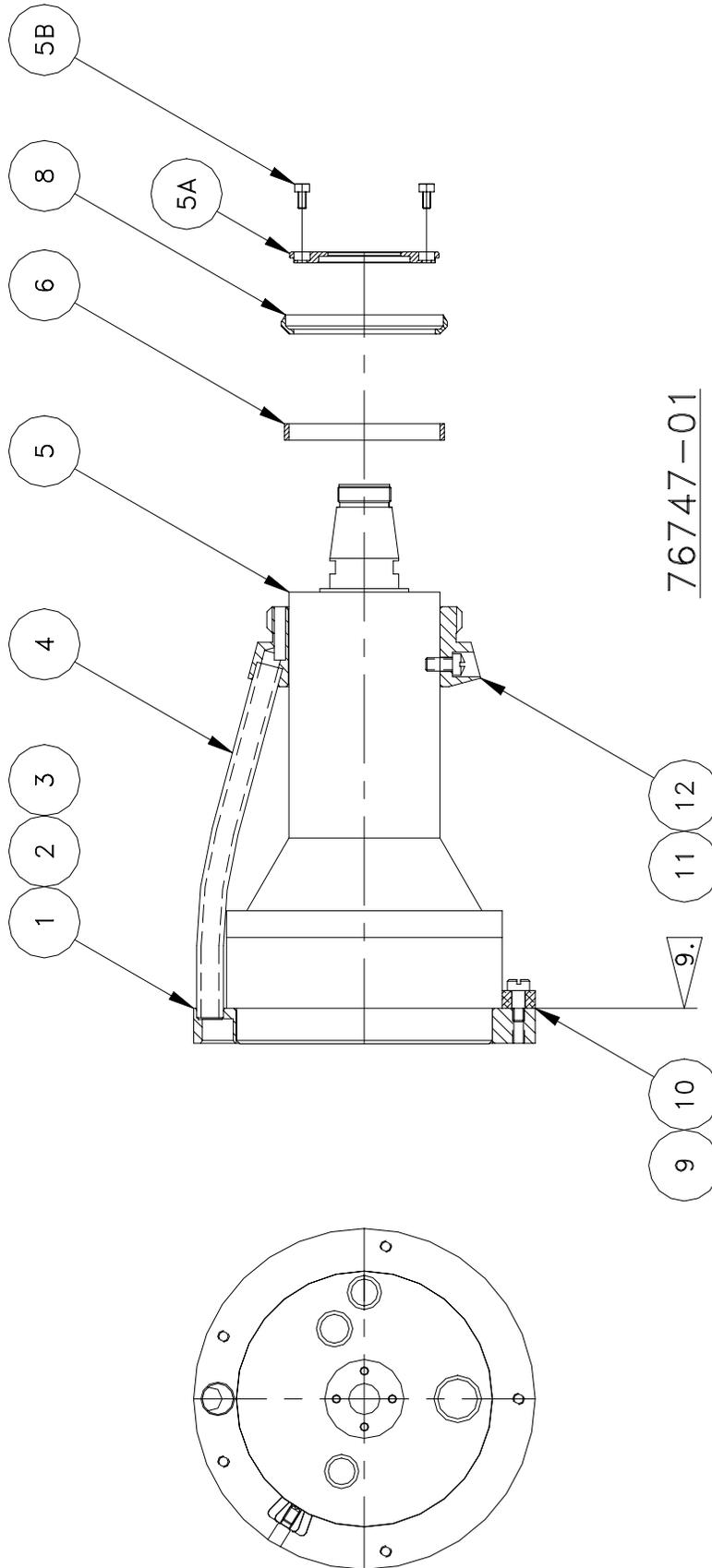


Figure 12: Turbine Motor Assembly (See Figure 11B / Item 16d)

<b>TURBINE MOTOR ASSEMBLY - PARTS LIST (Figure 12)</b>			
<b>Item #</b>	<b>Part #</b>	<b>Description</b>	<b>Qty</b>
1	76749-00	Ring, Mounting, Plastic, High Flow	1
2	SSF-3130	Screw, Socket Head Cap, 1/4-20 UNC x 5/8 Long	3
3	76753-08C	Screw, Set, Cup Pt. #8-32 UNC x 1/4 Long	1
4	55994-25	Tubing, Teflon, 3/8 O.D. x 1/4 I.D.	5"
5	RPM-401-1	Turbine, Air Bearing, Tested	1
5a	RPM-100 (**)	Cover, Front, Turbine Assembly (Included in RPM-401-1)	1
5b	(***)	Screw, Socket Head Cap, M3 x .5 Pitch x 6 Long (Included in RPM-401-1)	Ref
6	SSG-8166	Ring, Glyd	1
7	-----	-----	---
8	RPM-2 (*)	Retainer, Shaping Air Cap	1
9	76310-00 (*)	Muffler, Porous Plastic	1
10	76750-08C	Screw, Shoulder, #8-32, G-10 Fiberglass	5
11	D (See Chart Page 28)	Manifold, Shaping Air, Plastic, High Flow	1
12	76748-12F	Screw, Fillister Head, #10-32 UNF x 3/8 Long	3

\* Parts shown should be kept on hand as spare parts for service convenience.

\*\* The parts shown are included with the sub-assembly or may be ordered separately as spare parts for service convenience.

\*\*\* The parts shown are included with the sub-assembly and are only available by ordering (Qty-1) KK-4463, turbine screw kit, as spare parts for service convenience.

Part No.	Description	D
76747-01	57mm Shaping Air Ring	76751-00
76747-02	70mm Shaping Air Ring	76752-00

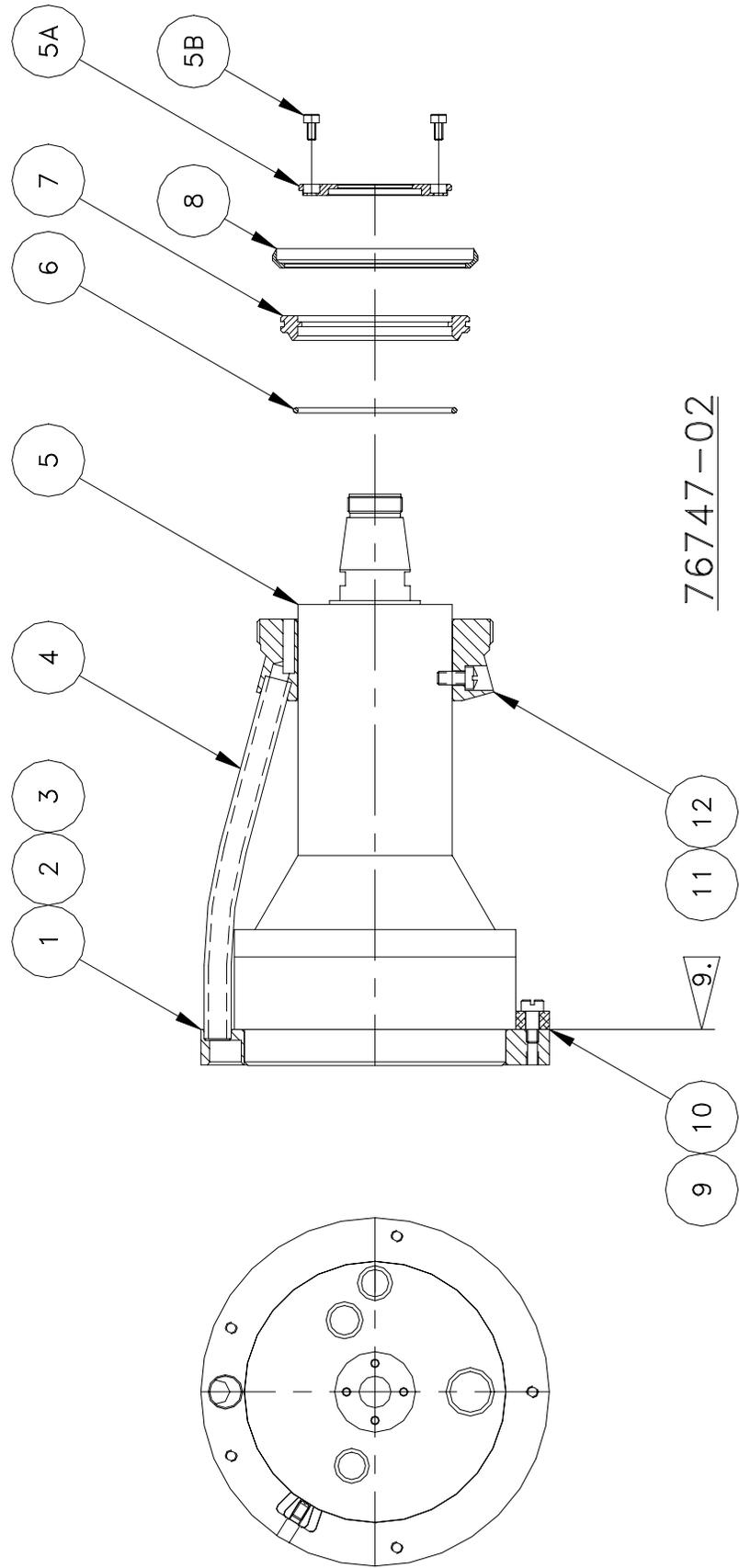


Figure 13: Turbine Motor Assembly (See Figure 11B / Item 16d)

**TURBINE MOTOR ASSEMBLY - PARTS LIST (Figure 13)**

Item #	Part #	Description	Qty
1	76749-00	Ring, Mounting, Plastic, High Flow	1
2	SSF-3130	Screw, Socket Head Cap, 1/4-20 UNC x 5/8 Long	3
3	76753-08C	Screw, Set, Cup Pt. #8-32 UNC x 1/4 Long	1
4	55994-25	Tubing, Teflon, 3/8 O.D. x 1/4 I.D.	5"
5	RPM-401-1	Turbine, Air Bearing, Tested	1
5a	RPM-100 (**)	Cover, Front, Turbine Assembly (Included in RPM-401-1)	1
5b	(***)	Screw, Socket Head Cap, M3 x .5 Pitch x 6 Long (Included in RPM-401-1)	Ref
6	7554-105 (*)	O-Ring, Viton, 2-034	1
7	LRPM0112-01	Adapter, Seal, Shaping Air Ring, 70mm	1
8	LRPM0111-00 (*)	Seal, Shaping Air Ring, 70mm	1
9	76310-00 (*)	Muffler, Porous Plastic	1
10	76750-08C	Screw, Shoulder, #8-32, G-10 Fiberglass	5
11	D (See Chart Page 30)	Manifold, Shaping Air, Plastic, High Flow	1
12	76748-12F	Screw, Fillister Head, #10-32 UNF x 3/8 Long	3

\* Parts shown should be kept on hand as spare parts for service convenience.

\*\* The parts shown are included with the sub-assembly or may be ordered separately as spare parts for service convenience.

\*\*\* The parts shown are included with the sub-assembly and are only available by ordering (Qty-1) KK-4463, turbine screw kit, as spare parts for service convenience.

# WARRANTY POLICIES

## WARRANTY FOR AEROBELL COPEs ROTARY ATOMIZER

The ITW Ransburg Aerobell Copes rotary atomizer is warranted to be free of defects in workmanship and material. The terms of this warranty, except as hereinafter provided, extend from one year from the date of first installation. This excludes equipment failures which are the result of misapplication, misuse, incorrect maintenance, or normal wear. If, after inspection by ITW Ransburg a defect is confirmed, we will at our option repair, replace or issue credit, minus allowance for usage received.

## SPECIFIC AEROBELL COPEs AIR TURBINE WARRANTY

The air turbine only is warranted for 15,000 operating hours, or three years from the date of first installation, whichever ever occurs first. If, after inspection by ITW Ransburg, defect is confirmed, we will repair or replace the air turbine, free of charge, during the warranty period. The repaired air turbine (or replacement air turbine) will continue to be warranted for the remainder of the initial warranty period (from installation date). The warranty period for the air turbine does not begin again when a repair is completed under warranty. Air turbines repaired by ITW Ransburg after the warranty period will be warranted for 90 days from the date of shipment from the repair center.

### This Warranty Does NOT Cover:

1. Aerobell Copes that has become inoperative because of:
  - a). Misuse - Particularly the flooding of the rotor area due to turning on the fluid before the turbine is up to speed.
  - b). Negligence.
  - c). Accidents - Collisions with external objects, fires, or similar occurrences.
  - d). Improper maintenance procedures.
  - e). Attempted customer repair of air turbine during warranty.
  - f). Failure to insure clean air to air bearing and turbine.
  - g). Operating turbine without air bearing air.
  - h). Operating turbine with less than the minimum specified air bearing pressure (60 psi min., measured at turbine inlet).
  - i). Operating with imbalanced loads (heavy paint buildup on atomizer bell or shaft, or damaged atomizer bell).
  - j). Acts of God, flood, earthquake, or similar occurrence.
  - k). Aerobell Copes being operated by control systems not designed by ITW Ransburg, or when others have modified the ITW Ransburg control system, unless reviewed and approved in writing by an authorized ITW Ransburg Technical Representative.
2. Labor or incidental costs occasioned by removal, replacement or repair of rotary atomizer or air turbine by an unauthorized entity.
3. Rotary atomizers inspected and determined by ITW Ransburg not to have been installed and maintained in accordance with ITW Ransburg service instruction LN-9230-00 (latest edition).

4. Cost of repair/replacement and return transportation from ITW Ransburg of merchandise determined not to be defective.

**There is no other express warranty, implied warranties, including those of merchantability and fitness for a particular purpose are limited to one year from purchase and to the extent permitted by law any and all implied warranties are excluded. This is the exclusive remedy, and liability for consequential or incidental damages under any and all warranties are excluded to the extent exclusion is permitted by law. Some states do not allow limitations on how long an implied warranty lasts, or the limitation or exclusion of consequential or incidental damages, so the above limitation or exclusion may not apply to you.**

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

In the event of malfunction, first ensure that the equipment is the correct equipment to do the job required, is properly installed and adjusted, and is correctly maintained and operated. Then, if a claim is made that ITW Ransburg equipment or a part thereof does not operate properly, contact your ITW Ransburg distributor through which the equipment was purchased or your ITW Ransburg representative.

## NOTES:

## NOTES:

## NOTES:

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## **Manufacturing**

1910 North Wayne Street  
Angola, Indiana 46703-9100  
Telephone: 260/665-8800  
Fax: 260/665-8516

## **Technical/Service Assistance**

Automotive Assembly and Tier I  
Industrial Systems  
Ransburg Guns

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

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

