

**Service Manual**  
**Operation and Maintenance**  
**Instructions With**  
**Illustrated Parts List**

**For**

**AIRBRASIVE® UNIT**  
**MODEL K SERIES II**  
**110 V 60Hz**  
**AU 801**



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(Revised: 01-2009)

## **AIRBRASIVE® Micro Abrasive Blasting Technology:**

Airbrasive® Jet Machining is a process in which high pressure air and very fine powder are blended together in a chamber to form an abrasive mixture. This mixture is then sent through a small, precisely machined nozzle. The result is a highly accurate abrasive stream that can be used for cleaning, cutting, drilling, deburring, and finishing all types of surfaces. Airbrasive® Machines have limitless applications. These highly engineered machines are incredibly versatile. They have the power to cut and drill materials as hard as diamonds, as well as the precision to delicately clean debris from ancient papyrus documents.

### **OPERATING PRINCIPLES**

The Airbrasive® Machine is capable of many cutting and abrading tasks. From cutting very hard materials such as diamonds to cleaning extremely delicate items like fabric or paper. The key to taking advantage of its versatility is the knowledge of how it cuts. Knowing this, you can properly set the various controls to achieve your desired cutting results. There are six key variables involved in the cutting process. 1) Air Pressure, 2) Powder Flow Rate, 3) Nozzle Size, 4) Type of Powder, 5) Nozzle Distance from work piece, and 6) Angle of Impingement.

### **AIR PRESSURE**

The air pressure is directly related to the velocity of the powder particles striking your work piece. The higher the air pressure the faster the particles and the greater the cutting speed. The lower the pressure the, lower the cutting speed. This is not a linear correlation. There are certain critical points you will notice as you experiment with different air pressure settings. When the particle velocity falls below a certain level the cutting action may suddenly stop altogether. Similarly, a small increase in air pressure may gain a large increase in cutting action. The air pressure is limited at the high end by safety concerns and by what your main air supply is capable of producing.

**The unit should never be pressurized beyond 140 PSI!**

### **POWDER FLOW RATE**

The amount of powder exiting the nozzle per minute is referred to as the flow rate. The greater the flow rate, the greater the cutting action. In order to achieve the better cutting action with higher powder flow rates, it is often necessary to increase the air pressure. This is done to maintain particle velocity which tends to slow down as the mass the air stream must carry increases. Cutting action will decrease quickly at very high powder flow rates. This is due to interference between the powder particles bouncing off the work piece and those coming out of the nozzle. Some brief experimentation at these high flow rates will quickly reveal your limits.

### **NOZZLE SIZE**

Nozzle orifices are shaped to be either round or rectangular. The nozzle widths vary in size from .005 up to .032 inches. The size of the nozzle determines the area that will be impacted by the powder. The larger the nozzle, the greater the area will be. The shape of the nozzle is important for getting into unusually shaped spaces. A rectangular nozzle can lightly cover a large width or, when turned, heavily impact a narrow space.

### **TYPE OF POWDER**

The cutting powder is the most important variable in the "Airbrasive" process. It determines the severity with which you will impact your part. Some powders are designed for aggressive removal of material while others for a gentle cleaning. In order to achieve consistent, sputter free smooth flow it is necessary to use uniformly sized powder. If the powder particles vary in size, even a little, the powder will have a tendency to clump together. This happens because the smaller particles fill in the gaps between the larger particles, effectively locking them all together. If all the particles are of the same size, then this locking action cannot take place.

## **NOZZLE DISTANCE TO WORK PIECE**

The distance you hold the nozzle from the work piece plays a large part in determining the area covered as well as the cutting rate.

## **ANGLE OF IMPINGEMENT**

The angle at which you hold the nozzle regulates the speed and efficiency by which material can be removed from the work piece. There are two theories at play here, one based on material removal by brittle failure and the other on material removal by ductile failure. Brittle failure occurs when impacting powder granules penetrate into the work surface and literally blast particles out of it. Ductile failure occurs when the powder granule strikes the work surface at an angle of less than 90 degrees and removes material by generating a chip.

Tests have shown that maximum material removal for ductile materials occurs between a 15 and 45 degree angle of incidence. For a brittle material, maximum removal occurs at an angle of 90 degrees.

## **Section I: Introduction and Description**

### **INTRODUCTION**

A. **Scope.** This technical manual contains operation and service instructions, as well as an illustrated parts list for the Airbrasive® Model K Series II manufactured by S. S. White Technologies, Inc.

B. **Characteristics.** The Airbrasive® Model K Series II is an electrically powered device that incorporates a patented electro-magnetic vibratory feed system for powder delivery. The Model K series II unit has been designed to accommodate both the intermittent and continuous production demands of high volume producers.

**SPECIFICATIONS:** The specifications of the Airbrasive® Model K Series II are listed below.

1. Air Supply Requirements	110 ± 30 psi Minimum 0.5 CFM at 80 psi Maximum 140 psi Dry, clean, compressed air, carbon dioxide, or nitrogen.
2. Electrical Power Requirements	<b>AU801</b> :115V, 60HZ, Single Phase, Three Wire The plug supplied is three-prong, polarized, providing an earth ground.
3. Weight	33 Lbs. (15.9kg)
4. Dimensions	Height 13 ¾" (35 cm) Width 14 ½" (37 cm) Depth 14 ¾" (38 cm)

### **WARNING**

**The use of oxygen as a gas supply presents the possibility of an explosion occurring. Under no circumstances should oxygen be used.**

### **IMPORTANT**

**A suitable dust collector system is required to maintain operator's exposures to powder dusts below permissible exposure limits such as those regulated by OSHA or recommended annually by ACGIH (American Conference of Governmental Industrial Hygienist). Consult the manufacturer of the dust collector equipment for the correct filter for other dusts or air contaminants resulting from material being abraded.**

### **AIR SUPPLY NOTE**

Many compressed air lines are contaminated with moisture, oil, and dirt, which are detrimental to the performance and operation of the Unit. Moisture filters and unloaders must be used. These items can be purchased directly from S S White Technologies, Inc.

### **POWDER NOTE**

The MODEL K UNIT is designed to use specially prepared powders that are meticulously screened for uniform particle size. These specialty powders insure smooth flow through the many precision ports and feed-throughs. The use of any other type of powder can result in clogging of the internal components and potential damage to the unit. For more information on these powders, contact S.S. White Technologies Inc. (1-800-S.S. WHITE) or one of its authorized distributors.

### **STANDARD EQUIPMENT**

Description	Part Number	Quantity
AIRBRASIVE Model K	AU801	1
Air Supply Hose	AT122	5 Feet
Nozzle (Rt. Angel, 0.018 ID)	AN118	1
Nozzle (Straight, Round, 0.018" ID)	AN119	1
Nozzle (Straight, Rectangular, 0.006"x0.060")	AN124	1
AccuBrade 27 - Aluminum Oxide	AP101	4 lbs.
AccuBrade 50 – Aluminum Oxide	AP105	4 lbs.
Funnel	AM206	1
Hex T-handle, 3/16" – 9"	AM244	1

### **IMPORTANT:**

The Airbrasive® Model K Series II requires a suitable dust-collecting hood placed near the unit to collect used powder. S.S. White offers dust collectors and work chambers for this purpose. See Product Accessories.

### **WARNING:**

Do Not Use Oxygen as a gas supply for the unit. An explosion can occur.

## **Section IA: Description of Important Components:** **See Pages 8-10.**

### **1. SYSTEM POWER ON/OFF SWITCH:**

The master switch for electrical current supplied to the unit. This will initiate bleeding of all pneumatic lines when switched off during use. Allow a minimum of 20 seconds after turning system power off before attempting to open powder chamber; it takes this long for all pneumatic lines to bleed off and reduce pressure in the chamber to safe levels.

### **2. POWDER REGULATION ADJUSTMENT:**

This knob adjusts the voltage being applied to the vibrator/mixing chamber assembly. It regulates the powder flow rate exiting the nozzle

### **3. POWDER REGULATION GAUGE:**

A relative measurement of how much powder is entering the flow stream. The gauge measures voltage being applied to the vibrator/mixing chamber assembly. The higher the voltage, the greater the vibration and resultant powder flow.

### **4. CHAMBER PRESSURE GAUGE:**

A measure of the air pressure in the mixing chamber, auxiliary chamber. This is the air pressure that will be seen at the nozzle. Do not attempt to open auxiliary chamber to refill powder until this gauge reads "0 psi". This gauge is not field repairable and should be replaced with a new one if it malfunctions

**5. CHAMBER PRESSURE ADJUSTMENT:** Regulates incoming air line pressure to the desired level in the mixing chamber. This regulates the powder cutting pressure. This regulator is not field repairable. In the event of a malfunction, replace.

**6. AIR PRESSURE INDICATOR:** This tells you if your incoming air line pressure is available.

**7. HAND PIECE HOSE:** The hose leaving the pinch tube assembly, passing through the front panel and connecting to the handpiece. The regulated air/powder mixture runs through this hose to the nozzle.

**8. HAND PIECE ASSEMBLY:** Comprises of the tube/hose, the hand piece and end fitting where the nozzle is threaded.

**9. NOZZLE:** Where the powder leaves the unit under pressure. Nozzles come in a variety of shapes and sizes depending on what application you are dealing with.

**10. FOOT SWITCH:** Actuates the powder flow to allow for a hands free operation.

**11. MIXING CHAMBER:** When the mixing chamber is vibrated, powder falls through small holes in the orifice plate assembly, and is entrained into the air stream flowing through the chamber base. This is where the air and powder are precisely blended into the mixture you need for your application.

**12. PINCH VALVE ASSEMBLY REGULATOR:** Controls the amount of air pressure going to the pinch valve assembly. It is normally preset at 40 psi. This regulator is not field repairable. In the event of a malfunction, replace.

**IMPORTANT: The Pinch Valve Regulator is factory adjusted and locked at 40 psi. This setting should not to be changed. Less pressure will not operate the air pinch valve; more will result in abnormal wear.**

- 13. PRESSURE SWITCH ASSEMBLY:** Converts pneumatic pressure into an electric signal to operate the Vibrator.
- 14. FILTER ASSEMBLY:** Filters the air and powder mixture and assures its flow in the correct direction.
- 15. PINCH VALVE ASSEMBLY:** This assembly provides a path for the air/powder mixture to flow to the handpiece. When the SYSTEM POWER SWITCH is "On", air enters the assembly to depress the pinch tube. This blocks the air/powder mixture to the handpiece. When the foot pedal is depressed or you are in a continuous powder flow mode, the air is bled out of the assembly, thus opening the tube to allow flow.
- 16. AIR VALVE ASSEMBLY:** A junction point for distribution of air to various systems.
- 17. VIBRATOR:** The mixing chamber is oscillated by the vibrator assembly. The amplitude of vibration is controlled by the POWDER REGULATION ADJUSTMENT knob. The greater the vibration amplitude the higher the powder flow rate.
- 19. AIR IN:** External air source is connected here.
- 20. POWER OUTLET:** Your external power source is connected here.
- 21. FUSE HOLDER SOCKET:** Holds a 2.5 amp electric fuse.

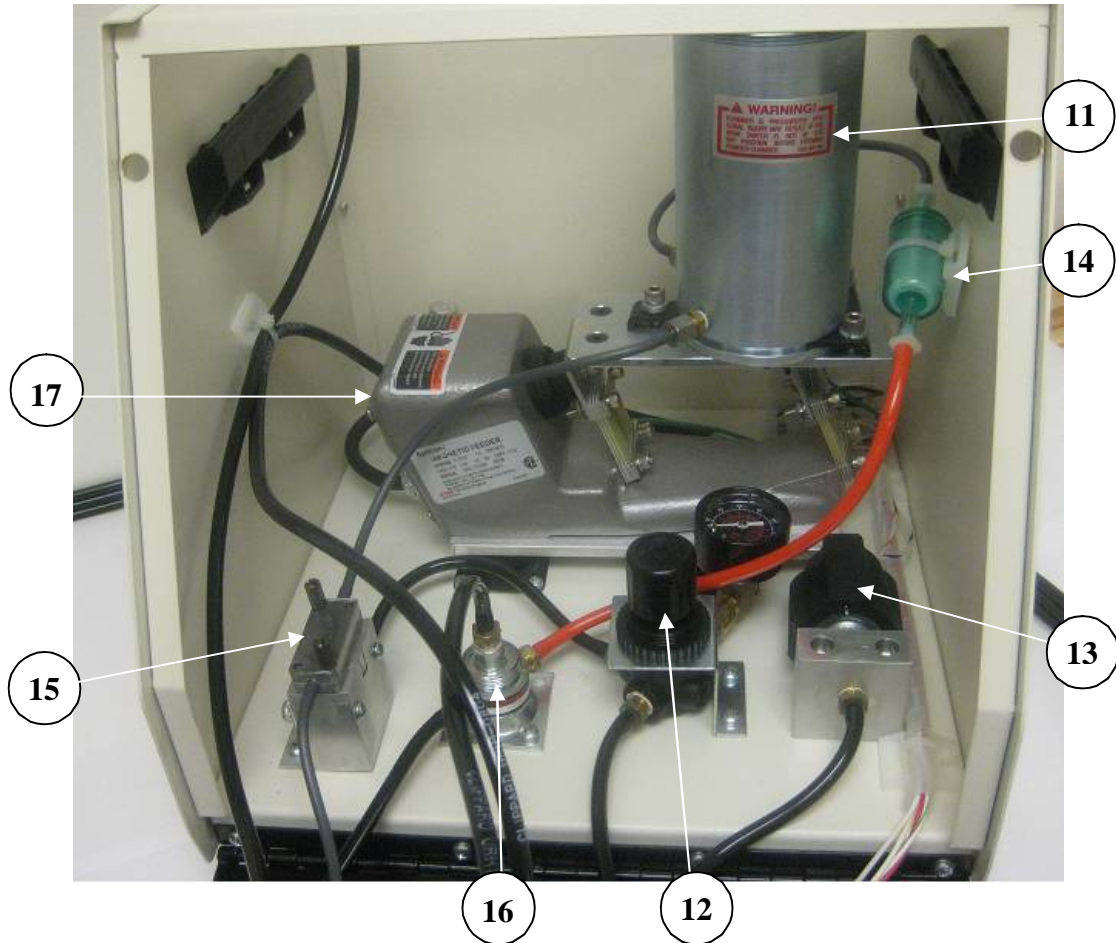
## FRONT PANEL



1	System Power ON/OFF Switch	AM258X	6	Air Pressure Indicator	AG105Y
2	Powder Regulation Adjustment	AE129X	7	Hand Piece Hose	AT105
3	Powder Regulation Gauge	AG113	8	Hand Piece Assembly	AH101Y
4	Chamber Pressure Gauge	AG111	9	Nozzle	Various
5	Chamber Pressure Adjustment	AR140W	10	Foot Switch	AR105X



## INSIDE THE UNIT



11	Mixing Chamber Assembly	AC153X	15	Pinch Valve Assembly	AR142Z3
12	Pinch Valve Assembly Regulator	AR140W1	16	Air Valve Assembly	AR172X
13	Pressure Switch Assembly	AE153X	17	Vibrator Assembly	AV104Y
14	Filter Assembly	AR106X	18		

## REAR PANEL



19	Air In Fitting	AQ104	21	Fuse	AE104
20	Electric Outlet	AE182			

## **Section II: Installation and Unit Checkout**

**The unit is tested in the factory and ready to use.**

- A. Connect the end of the AIR IN fitting (19) to the external air supply (see page 2 for supply requirements).
- B. Set the SYSTEM POWER ON/OFF Switch (1), on the front panel to "Off", and the POWDER REGULATION SETTING Knob (2), completely counterclockwise.
- C. Connect the provided power cord to the unit's power outlet (20) and plug the other end into an available outlet (see page 2 for electrical requirements).

D. Set SYSTEM POWER ON/OFF switch to "On".

**NOTE: If the SYSTEM POWER ON/OFF switch does not light, it indicates loss of electrical power. Check Unit fuse (21) and if OK, check input power source.**

E. Check reading on the CHAMBER PRESSURE GAUGE (4). Set the main air pressure to desired level by adjusting the CHAMBER PRESSURE ADJUSTMENT regulator (5).

F. Press foot switch pedal. Air should flow from the hand piece nozzle.

**CAUTION: Never direct the nozzle towards the face when operating the foot switch. Always use a suitable dust collector system whenever using the unit.**

G. Set SYSTEM POWER ON/OFF switch to "Off". This bleeds off any residual air remaining in the mixing chamber.

**CAUTION: Keep SYSTEM POWER ON/OFF switch to "Off" for a minimum of 20 seconds each time the Unit is turned off. This will allow enough time to bleed the mixing chamber.**

H. Install nozzle (9) in hand piece (8).

I. Place SYSTEM POWER ON/OFF switch to "ON" and set POWDER REGULATION ADJUSTMENT knob to obtain the desired amount of powder flow for the operation to be performed (nominal setting for most operations is in MID range of POWDER REGULATION GAUGE).

### **UNIT SHUTDOWN.**

Place SYSTEM POWER ON/OFF switch to " Off". Remove hose connection from air supply source.

## **Section III: Operation Instructions**

This section includes a description of the operating procedures and controls. The operation instructions also describe the capability and use of the UNIT.

### **FILLING THE POWDER CHAMBER**

Observe the following procedures when filling the powder chamber.

**NOTE: Follow these instructions every time you need to open the front panel:**

- A. Turn the POWER switch "Off".
- B. Raise the upper cover. Make sure all pressure is released from the mixing chamber.
- C. Vacuum all dust or debris from the top of the mixing chamber assembly.
- D. Tap the spring-loaded trap door of the mixing chamber assembly. Be sure the pressure has been released and the door is free. **CAUTION: Do not force the trap door.**
- E. Insert the funnel into the trap door of the mixing chamber.
- F. Carefully pour the powder in the mixing chamber until it is level with the tip of the funnel.

**CAUTION: Make sure that lint, dirt or other foreign substances do not get into the mixing chamber.**

### **TURN-ON PROCEDURE.**

**This procedure applies after the Unit has been installed and checked as described on Page 11.**

To turn on Unit, proceed as follows.

- A. Set SYSTEM POWER switch to "Off", and rotate POWDER REGULATION ADJUSTMENT knob completely counter clockwise.
- B. Connect AIR IN fitting to an external air supply.
- C. Check that power supply cord is plugged into an electrical outlet.
- D. Set SYSTEM POWER switch to "On". Check that the PRESSURE INDICATOR (6) is glowing red.
- E. Check pressure reading on CHAMBER PRESSURE SETTING gauge. Adjust CHAMBER PRESSURE ADJUSTMENT knob as required. To set the pressure, pull knob and rotate. To lock in the pressure push the knob in.
- F. Check that no air flow is coming from the hand piece. This indicates the pinch valve tube is closed.

**If necessary**, adjust pinch valve regulator (12) until there is no flow of air/powder from nozzle of hand piece. When adjusting the pinch valve regulator, the front panel must be opened. Adjust the regulator until there is no air/powder flow from the regulator. **Please adjust slowly. Less pressure will not operate the PINCH VALVE ASSEMBLY; more will result in abnormal wear.**

G. Set SYSTEM POWER switch to "Off".

**CAUTION: Do not set pinch valve air pressure too high, it will result in excessive tube wear. Do not direct the hand piece towards the face.**

H. Select and install proper nozzle in hand piece for the operation to be performed.

I. Set POWDER REGULATION ADJUSTMENT knob until POWDER REGULATION SETTING gauge is at desired setting. For normal operation, the gauge should be in MID range.

J. Set SYSTEM POWER ON/OFF switch to "On". The UNIT is ready for operation.

K. Actuate foot switch to obtain powder flow.

**NOTE: The foot switch must be fully depressed for the unit to function properly.**

#### **TURN-OFF PROCEDURES**

When turning the unit off for short periods of time, set the SYSTEM POWER ON/OFF switch to "Off" position. If the unit is to be shut down for an extended period of time, proceed as follows:

A. Set SYSTEM POWER ON/OFF switch to "Off".

B. Unplug power supply cord.

C. Disconnect air supply hose from external source.

## **Section IV: Service Instructions:**

### **PERIODIC INSPECTION**

This unit should be inspected periodically for the following signs of wear.

- A. Damaged case or top cover.
- B. Frayed or worn hoses.
- C. Frayed or broken wires.
- D. Blown indicator lamp.
- E. Worn nozzle.
- F. Loose hose connections.
- G. Air Filter replacement

### **PERIODIC CLEANING**

- A. Clean out dust, dirt, and spilled powder from the Unit's interior using low pressure compressed air. Remove stubborn dirt with a brush. Do not use cleaning fluid on the hoses.
- B. Clean the external surface with a soft lint-free cloth moistened with a suitable non-toxic cleaning solution.

### **COMPONENT MAINTENANCE**

#### **NOZZLE TIPS**

A 3/64" I.D. nozzle tip supplied with the unit (See page 5), is made of sintered tungsten carbide, must be handled with care. Nozzle tips for special applications are available. Nozzle tips wear through the bore enlarging the side wall and piercing through. A fuzzy air powder stream, with lack of definition, is a sign that the nozzle is worn and should be replaced. Replace a nozzle by unscrewing the tip from its connector and replace with a new one. Screw the new nozzle securely to the hand piece connector to avoid powder leaks.

**CAUTION: Nozzle tips are manufactured of sintered tungsten carbide, and may break if not carefully handled. They should be stored in a safe place when not in use.**

On occasion the nozzle will clog due to an excessive flow of powder. Unclog a nozzle as follows:

- A. Remove the nozzle from its connector. Blow out obstruction using shop air hose, or
- B. Turn the POWDER REGULATION ADJUSTMENT knob completely Counter Clock Wise (CCW).
- C. Hold the tip end of the nozzle tight against the connector.
- D. Turn the unit on and actuate the foot switch, supplying air to reverse flush the clogged tip. This should be done in an exhaust chamber.

#### **PINCH VALVE TROUBLESHOOTING**

If the pinch valve tube stays open letting powder flow through when the foot pedal is not pressed, than proceed as follows:

- A. Remove the bottom hose connection from the pinch valve and check if there is air pressure. It should be 40 psi. If the pressure is incorrect adjust the PINCH VALVE REGULATOR (12). If no adjustment is possible replace the regulator.
- B. If pressure is available remove and disassemble the pinch valve assembly. Clean parts and replace any that are worn or damaged. (See drawing: Page 20).

**Pinch Tube Replacement:**

The rubber pinch valve tube wears and will eventually leak. The valve does not have to be removed from the Unit for tube replacement which is accomplished as follows: (See drawing: page 20)

- A. Set SYSTEM POWER ON/OFF switch to "Off" position.
- B. Disconnect hoses from air pinch valve tube.
- C. Remove top block from assembly by removing two knurled screws. Remove worn pinch valve tube from bottom block. Carefully insert the new pinch valve tube into the bottom block indentation. Align the pinch tube's seam to the side of the block.
- D. Carefully replace top block, again making certain that the tube aligns with the indentations in the top block. Secure top block in place with attaching hardware.
- E. Connect hoses removed in step (b) above.
- F. Turn Unit on and check for proper operation with no air leaks.

**POWDER REGULATION ADJUSTMENT KNOB**

The powder flow rheostat adjusts the magnetic coil voltage level. If it malfunctions check electrical connections at the rheostat. If this is not the problem then check operation as follows:

- A. Connect a voltmeter across the input to the magnetic coil of the vibrator assembly.
- B. Turn the POWDER REGULATION ADJUSTMENT knob completely counterclockwise.
- C. With the SYSTEM POWER ON/OFF switch set to "On" and the foot switch actuated, observe the reading on the POWDER REGULATION SETTING gauge while slowly turning the POWDER REGULATION ADJUSTMENT knob CW. The range of the gauge reading from completely CCW to fully Clock Wise (CW) should be from low to high.
- D. If the gauge reading in step (c) above does not indicate any change over a wide range of knob movement and then suddenly jumps to maximum reading, it indicates faulty wiper arm contact or an open winding in the rheostat. Replace rheostat; the item is not field repairable.

**VIBRATOR.**

Each vibrator assembly (17) is factory adjusted to produce the desired vibrating characteristic.

**CAUTION: The POWDER REGULATION ADJUSTMENT knob should never be set too high. This will cause audible striking of the pole pieces by the magnetic coil armature. It will create an excessive amount of vibration that could cause damage to the Unit.**

If the Vibrator does not function properly, it must be removed and returned to S. S. White Technologies, Inc., for readjustment and/or repair. To remove the assembly, disconnect the power cord, air supply, all electrical wires and pneumatic hoses (and tag) from the vibrator (17) and mixing chamber (11). The vibrator and mixing chamber assemblies can now be lifted directly from the multi-plane mounting shock absorbers. Detach the mixing chamber from the vibrator by removing the attaching hardware. To reassemble and install reverse the above procedure. After installation, check the Unit for proper operation with no leaks.

### **MIXING CHAMBER MAINTENANCE.**

It is normally not necessary to remove the mixing chamber (11) unless the powder cakes (due to excessive moisture in the compressed air) or the orifice plate needs replacement. To disassemble and clean the mixing chamber, first remove it from the unit and then proceed as follows:

A. Mark the position of the mixing chamber on the vibrator (17). This is necessary, so when reassembling, it is not put in another location causing the vibrator to change its vibratory characteristics. This will also prevent stretching and kinking of air and powder hoses.

B. Remove the one screw that retains the mixing chamber to vibrator via the small cleat. Use the Hex T-handle (AM244). Loosen the other two screws from the larger double cleat.

C. Loosen the three screws which retain the base cap of the mixing chamber.

D. Remove hoses going to mixing chamber after tagging them. Make sure you do not lose the fiber washers on the hose nut fittings.

E. With the mixing chamber upright in the vise, reach into the mixing chamber and grasp the tube portion of the orifice plate assembly and push the assembly out through the base.

F. Remove the base cap.

G. Position a container under the chamber and remove the orifice plate, and shake the mixing chamber, causing the powder to fall into the container

H. Clean the orifice plate, if required, with a fine wire brush and low pressure compressed air. Replace the gasket.

To reassemble, reverse the above procedure, making certain the base cap gasket is properly seated and the chamber located to its scribed position. Clean away any powder that has fallen into the vibrator assembly or Unit itself.



## **Section V: Service Tips**

**FLOW DIFFICULTIES.** Some causes of powder flow difficulties are the following:

A. Worn or clogged nozzle tips.

B. Overfilled or nearly empty mixing chambers. Both conditions can cause an increase in powder flow. When the foot switch is first actuated an initial heavy burst of powder is usually seen for a fraction of a second. This momentary heavy mix is normal. It is due to small amounts of settled powder in the line. A slightly heavier than normal flow is also noticeable after the mixing chamber has been filled.

C. Reused, contaminated, or improper powders. Such powders can decrease flow or clog the Unit completely, especially at the mixing chamber orifices and at the hand piece nozzle. Never reuse powder. Use of S. S. White Technologies ABRASIVE Powders exclusively is recommended. We strongly recommend against the use of other commercial powders because they are rarely classified adequately for use with the AIRBRASIVE apparatus, causing needless maintenance and repairs. They may also have toxic substances present which could be harmful to your health.

D. Insufficient nozzle pressure, usually due to leaks, will reduce cutting speed.

E. Leaks around the mixing chamber, auxiliary chamber cap, and at fittings may increase powder flow. This condition exists especially at low voltage (Powder Flow control knob set at lower range) and when the footswitch is actuated intermittently every second or so.

F. Leaks around the base of the mixing chamber can result in decreased powder flow.

G. Visible leaks which can be detected by the pressure of powder.

H. Inoperative vibrator caused by broken, loose or shorted magnetic coil leads.

I. Loose or broken vibrator springs or improper vibrator adjustment.

**TESTING FOR LEAKS:** Leakage may affect the machine's performance and cause an excessive use of powder. The following service tips should be observed:

A. To check for total system leakage, turn on air pressure until the system is pressurized. Shut off the external air supply valve and observe the Chamber Pressure Setting gauge. If pressure does not drop more than 15 psi during five minutes, the system leakage is less than one cubic foot per hour. This is negligible.

B. Most leaks are traced by ear, touch, or the use of soap and water. The presence of powder can indicate a leak.

C. To check for leakage at the auxiliary chamber top cover, have the chamber pressurized, and apply soap and water. Look for leakage bubbles. Be certain to wipe off all traces of the soap after test completion.

D. Auxiliary chamber and mixing chamber gaskets are subject to leakage and require periodic replacement.

E. Make certain that the small nylon gaskets in the hose fittings are in place.

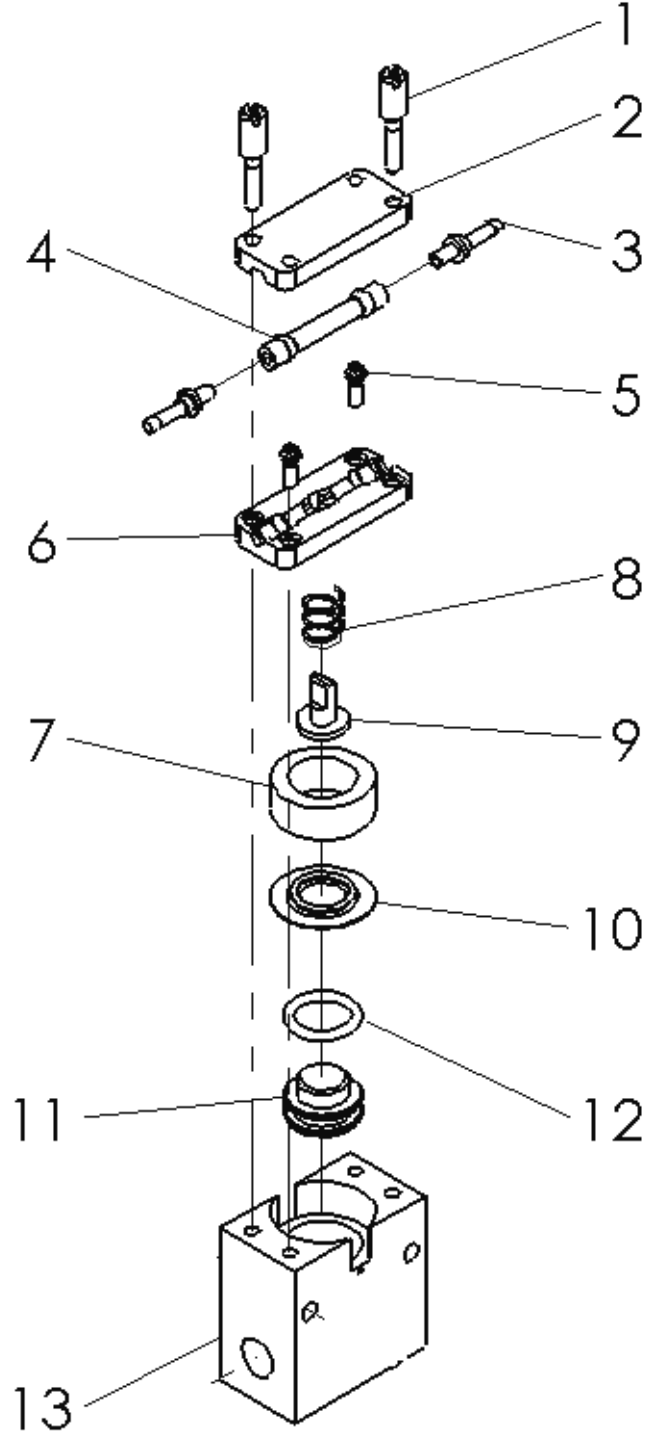
F. With the system pressurized and the air pinch valve tube closed, leakage through the pinch valve tube should not exceed three bubbles per second with the nozzle tip immersed in water.

## Section VI: Trouble Shooting:

<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
1. With SYSTEM POWER ON/OFF switch "On", Air Pressure Indicator does not activate.	a. No air pressure to the unit.  b. Switch is defective.	a. Check air supply.  b. Replace switch.
2. With SYSTEM POWER ON/OFF switch "On" and with external air connected to unit, rotation of Chamber Pressure Adjustment does not change psi reading on Chamber Pressure Setting.	a. Inoperative air pressure regulator.    b. Inoperative air pressure gauge.	a. Turn Powder Regulation Adjustment fully CCW. Operate footswitch and check for air flow at nozzle tip. Vary Chamber Pressure from fully CCW to fully CW. A definite change in air flow should be noted at the nozzle tip as the knob is rotated its full range. If not, replace air pressure regulator.  b. Replace gauge.
3. Traces of powder at pinch valve.	Ruptured air pinch tube.	Replace tube (see page 20).
4. No air flow at nozzle tip with unit on and foot switch actuated.	a. Nozzle tip clogged.  b. Powder in Pinch Valve assembly.  c. Defective Foot Switch	a. Clean nozzle tip.  b. Clean and inspect Pinch Valve assembly.  c. Replace Foot Switch
5. Constant air flow at nozzle tip with unit on and foot switch is not actuated.	a. Pinch Valve pressure is set too low.        b. Foot Switch	a. Increase pressure between 40-50 psi by turning the knob CW until air flow stops. If this has no effect, remove the hose from the bottom of the Pinch Valve and check for air pressure. If no change over range of the knob, inspect Pinch Valve assembly. If okay, replace regulator.  b. Check air output through N.O. and N.C. ports of the Switch. Pinch Valve should be attached to N.O. port of the Switch. Replace Foot Switch, if defective.

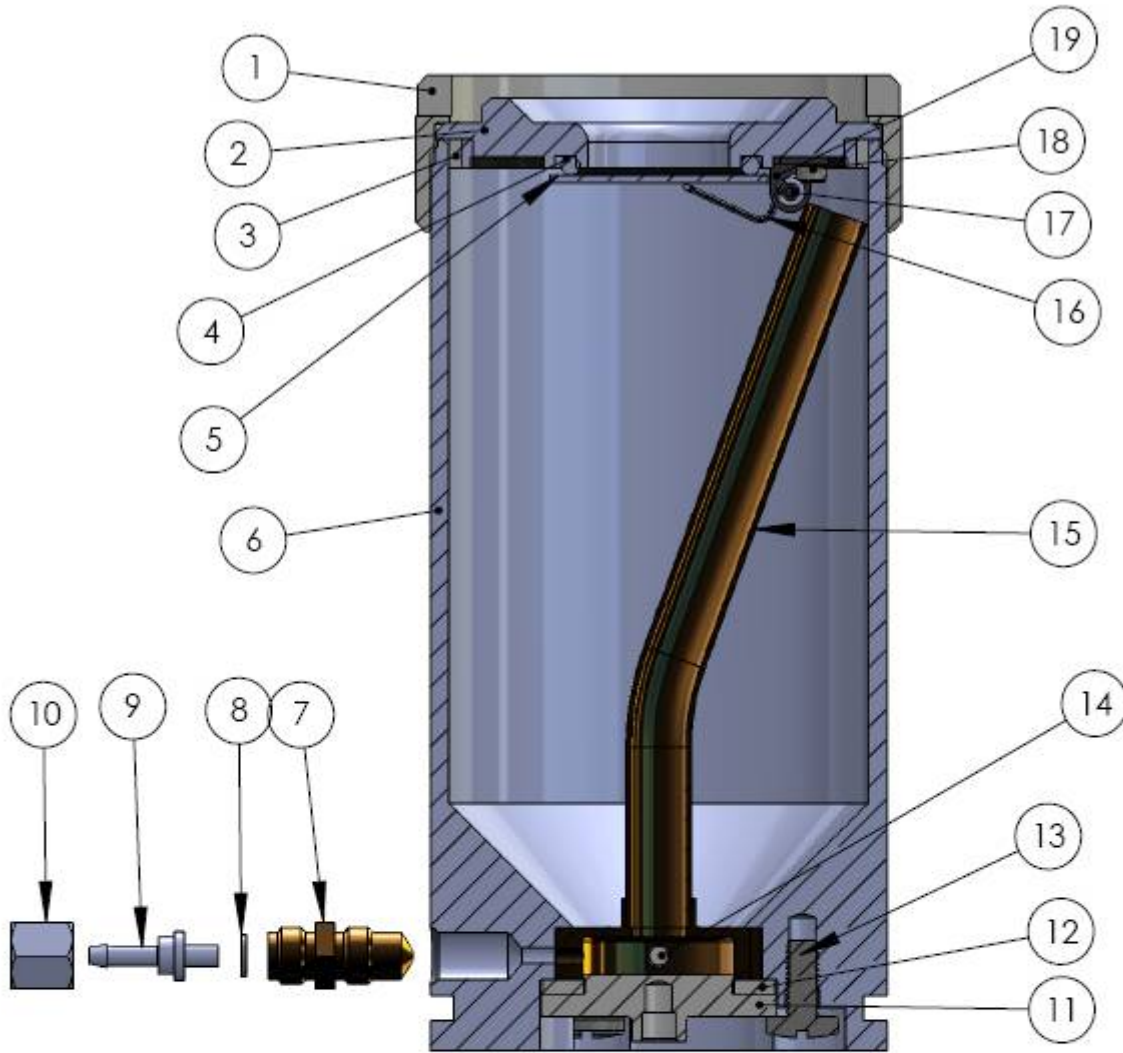
<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
6. Vibrator Inoperative	a. Open rectifier  b. Open Powder Regulation Adjustment rheostat c. Vibrator magnetic coil burnt out.	a. Connect good rectifier in parallel with rectifier on unit (see schematic page 23). If vibrator operates, replace bad rectifier.  b. Check operation of rheostat.  c. Replace vibrator assembly.
7. No powder flow from Mixing Chamber.	a. Clogged orifice plate in Mixing Chamber.  b. Contaminated powder	a. Remove, disassemble, and clean Mixing Chamber (see page 21).  b. Check if powder is dry. Check storage conditions.
8. Powder spray from nozzle tip loses definition.	Worn nozzle tip.	Replace nozzle tip.

# Pinch Valve Assembly AR142Z1



1	Screw, Knurled (2)	AR113	8	Spring	AR126
2	Block, top	AR119	9	Depressor	AR129
3	Hose fitting (2)	AQ130X	10	Diaphragm	AR121
4	Pinch tube	AR142	11	Plunger	AR115
5	Screw, special (2)	AF126	12	O-ring	AO118
6	Block, bottom	AR112	13	Body	AR171
7	Sleeve	AR117			

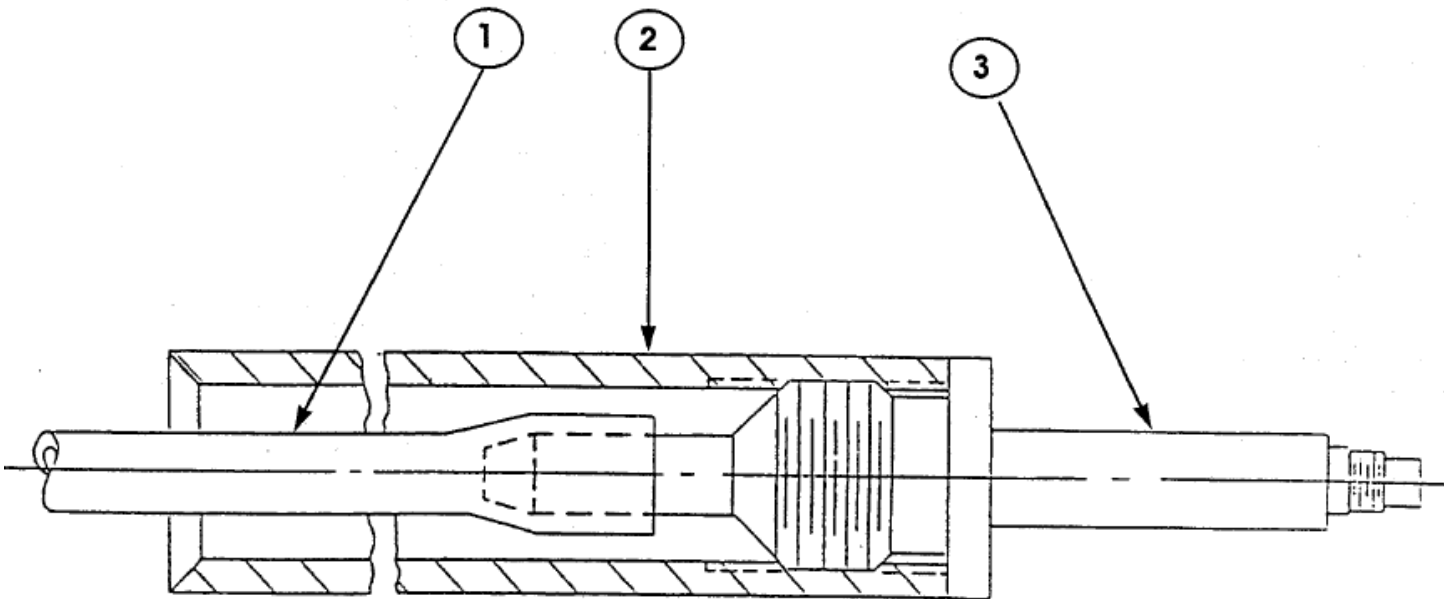
## MIXING CHAMBER ASSEMBLY AC153X



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	AF402	CAP NUT	1
2	AC135	CAP	1
3	AO111	CAP GASKET	1
4	AO129	DOOR O-RING	1
5	AC137	DOOR	1
6	AC153	MIXING CHAMBER	1
7	AQ155	FITTING	2
8	AF700	WASHER	2
9	AQ129X	CARBIDE ASSEMBLY FITTING	2
10	AF416	NUT	2
11	AC114	BASE CAP	1
12	AO108	BASE GASKET	1
13	AF105A	BASE SCREW	3
14	AC117	GUIDE PIN	1
15	AC141X	ORIFICE PLATE ASSEMBLY	1
16	AC140	SPRING	1
17	AC139	PIN	1
18	AF168	RETAINER SCREW	2
19	AC160	DOOR BRACKET	1

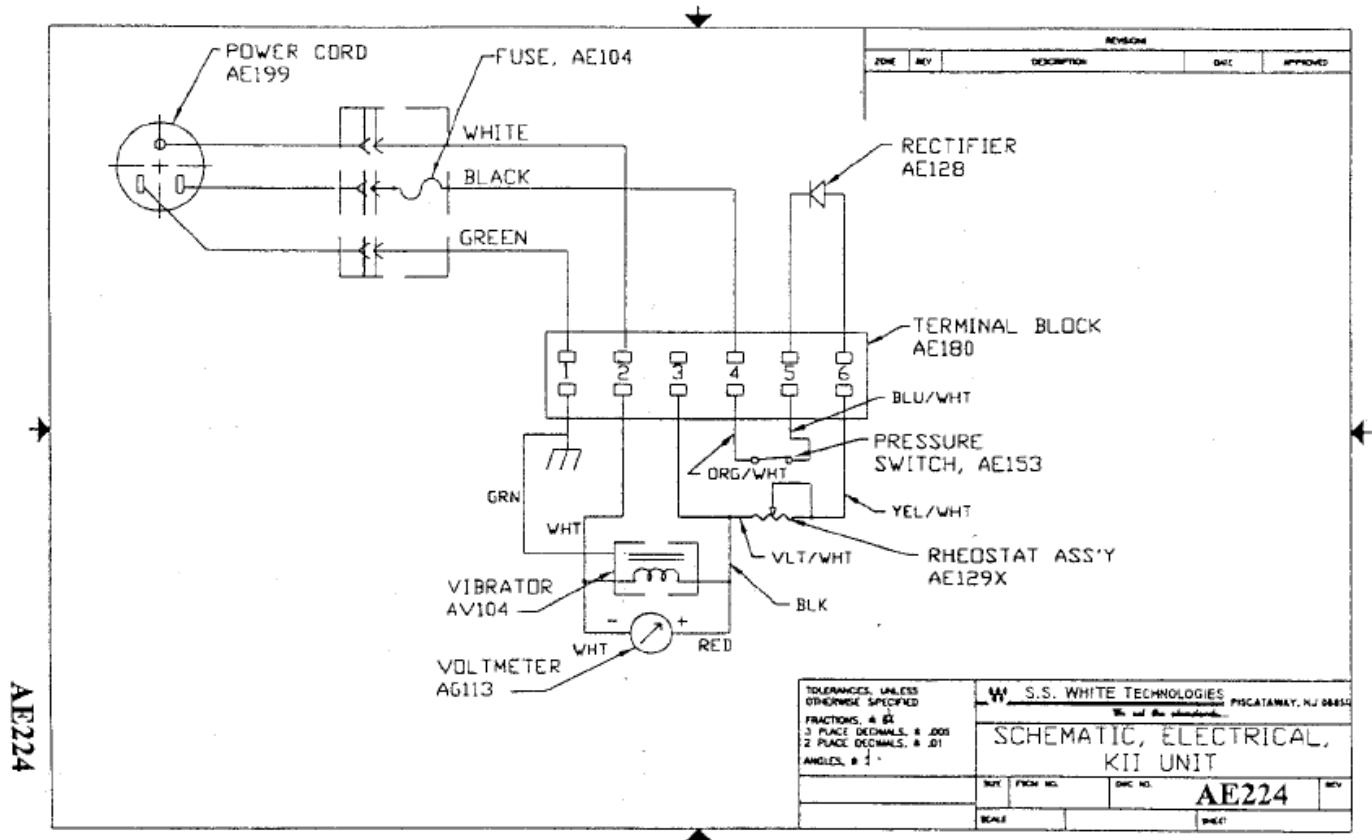
# HAND PIECE ASSEMBLY

## AH101Y



- |                               |       |
|-------------------------------|-------|
| 1. Tube . . . . .             | AT105 |
| 2. Handpiece . . . . .        | AH101 |
| 3. Handpiece End Fitting. . . | AH112 |

# Electrical Schematic



# Pneumatic Diagram

