

CCR2000

USERS GUIDE

CONDENSED MANUAL



CCRC_{Co}

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Welcome

Thank you for downloading this condensed version of the CCR2000 Conformal Coating Removal Workstation manual. This manual is meant to give you a basic idea of how the CCR2000 (and CCR1000) operate.

For any technical questions and/or sales questions please feel free to contact us at:

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SAFETY WARNINGS

The **CCR2000** operates on 110 VAC / 60 Hz (or 220 VAC/50Hz), which is potentially lethal. Observe the following precautions at all times:

- + Make sure your AC supply is properly grounded. Do not operate the **CCR2000** without a ground and **DO NOT** modify the supplied 3 prong plug.
- + Media is forced through the system using compress air. ***UNDER NO CIRCUMSTANCES***, do not remove the media chamber lid with pressure in the media chamber.
- + Do not attempt any major repairs to the **CCR2000** under any circumstances. If you are experiencing difficulties, contact CCRCo for assistance.
- + Failure to observe these precautions may result in injuries and / or damage to your **CCR2000**, and will invalidate your warranty.

SERVICE POLICY

If you have a problem with your **CCR2000** call us **IMMEDIATELY**. If it is decided that the equipment can not be repaired and must be returned to us for repair, you are responsible for all shipping costs in returning the equipment to CCRCo. We will return the unit to you at our expense.

FOREWORD

The **CCR2000** is a workstation designed for the removal of conformal coatings applied to printed circuit boards. Conformal coatings offer the printed circuit board protection against a multitude of contaminants, dependent on the environment in which the board is used.

However, in order to properly test or replace components, the conformal coating must be removed. CCRCo has endeavored to provide the safest and most practical way of effective conformal coating removal. CCRCo, however, will not be held responsible if this equipment, or any part of this equipment, is operated outside the guidelines laid down in this manual. Under no circumstances will CCRCo be held liable should damage occur to either the operator, the **CCR2000** or any other equipment when using the **CCR2000** incorrectly.

The **CCR2000** is **NOT** designed as a general purpose "blasting machine" and should not be used as such. If you have any questions about this please contact CCRCo.

ABOUT THIS MANUAL

This manual consists of 2 chapters and 2 appendices:

CHAPTER 1 - OPERATING FUNDAMENTALS

This explains how to use to **CCR2000** to its fullest capabilities.

CHAPTER 2 - OPERATING TIP & TECHNIQUES

This explains the every day use of **CCR2000**.

APPENDIX A - MEDIA RECYCLING PROCEDURE

Recommended recycling procedure for media.

APPENDIX B - MATERIAL SAFETY DATA SHEET

The published Material Safety Data Sheet for the **CCR2000** blasting media.

CONVENTIONS

This manual uses the following conventions:

Bold Italic is used for emphasis.

WORK CHAMBER Component parts and assemblies of the **CCR2000** are identified with bold small caps



This symbol alerts you to important information.

Caution

Caution and warning messages appear before procedures which, if not observed, could result in damage to the equipment.



The Stop sign is a **WARNING** message to alert you to a specific procedure or practice which, if not followed correctly, could cause personal injury.

GENERAL SPECIFICATIONS

Power Requirements - 110 VAC / 60 Hz or 220 VAC / 50 Hz

Work Chamber Lighting - 15 Watt White Fluorescent Tube (Protected) and 15 Watt UV Florescent Tube (Protected).

External Air Input - 160 psi input maximum. ***CLEAN Dry air required.***

Nozzle - Specially designed tempered glass with 1.5mm orifice that allows media and ionized air to be combined.

Nozzle Control - Foot switch activated, with CLEAN air and BLAST modes.

Cutting Pressure - Variable from 20 to 110 psi (max).

Media Pressure Indicator - Pressure Gauge mounted on the Control Panel with adjustment by the regulator located inside the **WORK CHAMBER**.

Ionizer - Ion Systems Nilstat 4201A.

Media Type - Thermoset Acrylic Plastic, 40/60 Mesh, impregnated with anti-stat. Recyclable.

Dust Extraction - Vacuum process, creating a negative pressure lock inside work chamber.

Dimensions

External - 20" High x 34" Wide x 24.0 " Deep

Work Chamber - 14.25" High x 32.0" Wide x 12.5" Deep

Weight - approx. 145 pounds

Chapter 1 - Operation Fundamentals

COMPONENT PARTS OF THE CCR2000

Please review and become familiar with the location of each of the main components of the CCR2000:

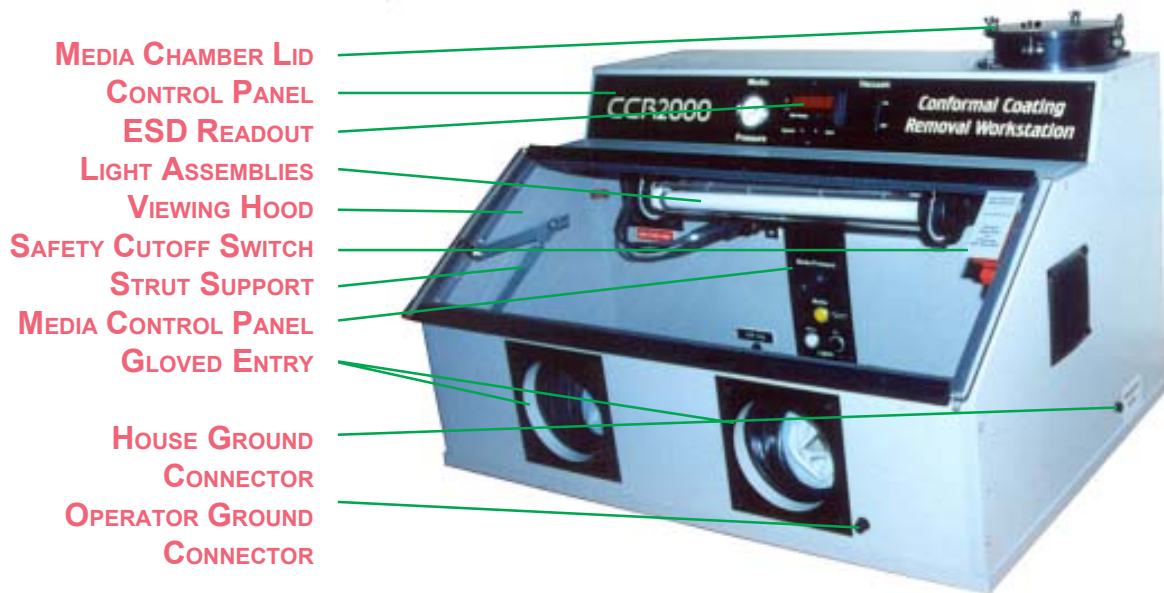


Figure 1 - CCR2000 Front View

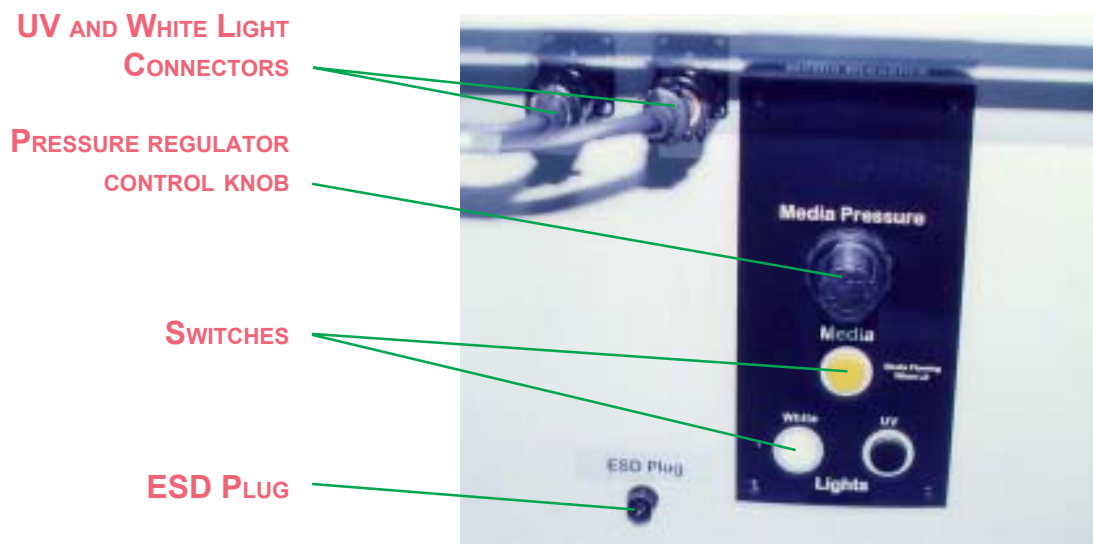


Figure 2 - Media Panel & ESD Plug

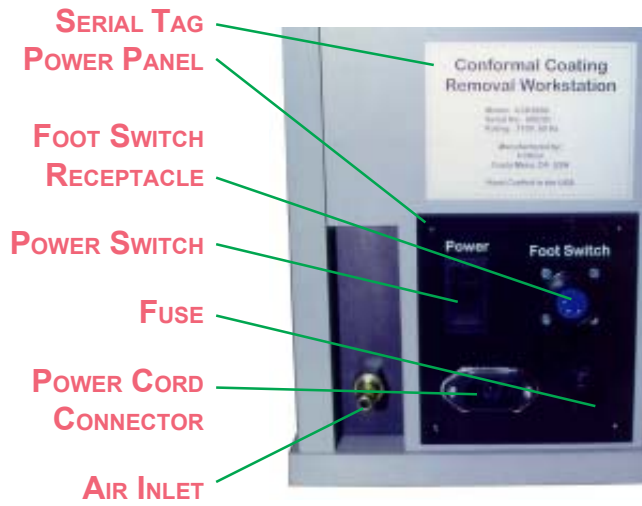


Figure 3 - Power Panel

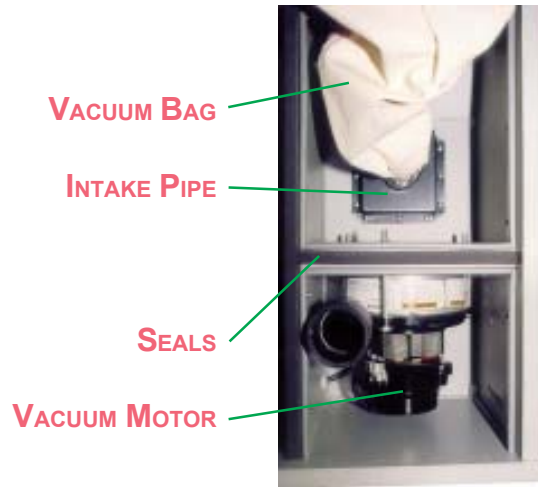


Figure 4 - Vacuum Area



Figure 5 - Vacuum Inlet Screen

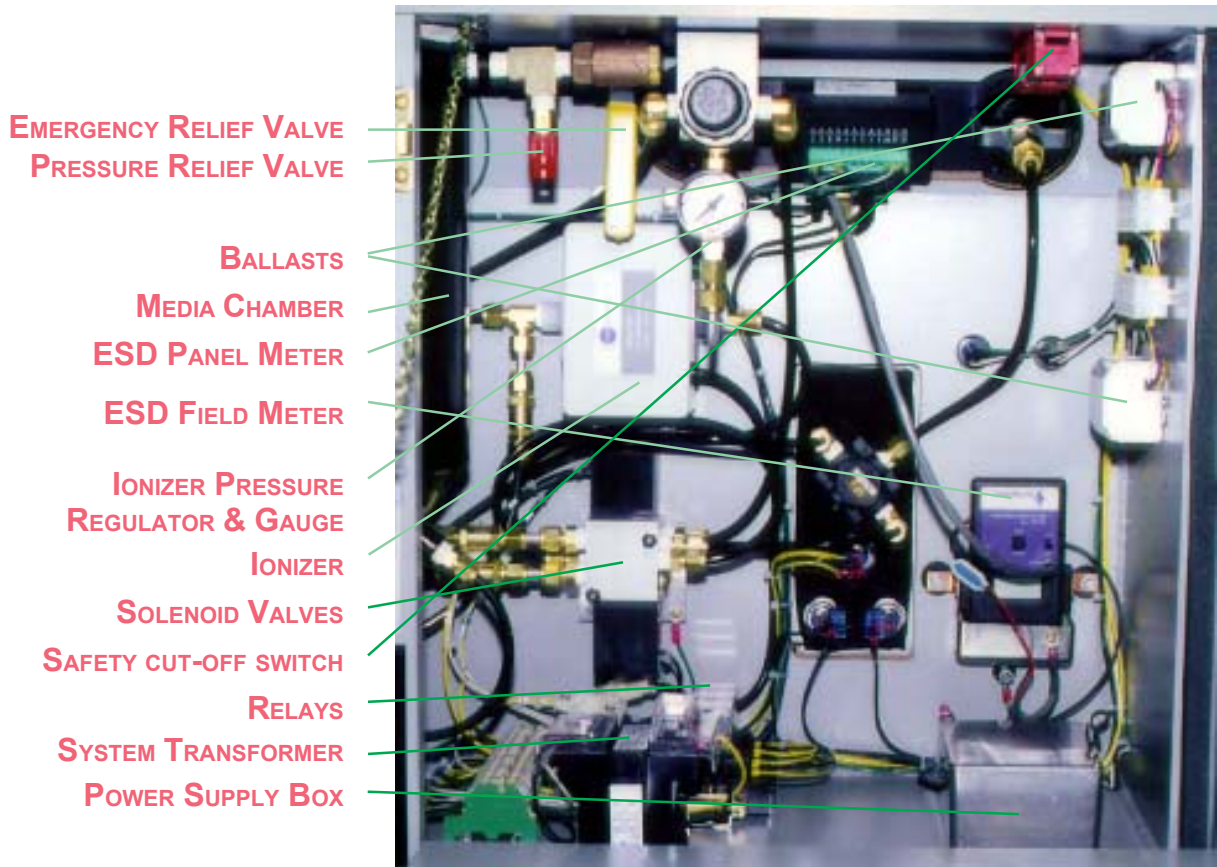


Figure 6 - Rear Area of the CCR2000

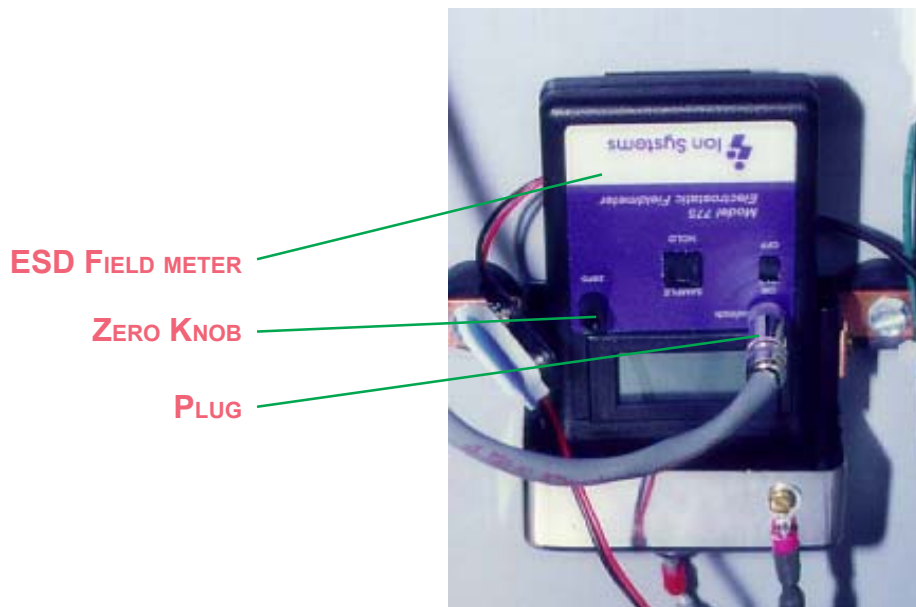


Figure 7 - ESD Field meter



Figure 8 - Media Chamber Lid

GETTING STARTED

Now that you have reviewed the location of all the necessary component parts of the **CCR2000** it is time to start stripping boards. Make sure that following is done before you begin the stripping operation:

FILLING THE MEDIA CHAMBER



The **MEDIA CHAMBER** is a precision pressure vessel and is capable of withstanding many atmospheres of pressure. For this reason, it features a **SAFETY RELIEF VALVE** for the purpose of exhausting residual back pressure that may accumulate inside the chamber. The **RELIEF VALVE** is preset to release at 75 - 80 psi of back pressure. It will only happen if there is a clog in the **MEDIA LINE**. Every effort has been made to engineer any possibility of clogs out of this system. However, a key requirement is **clean dry compressed air**.

The procedure for filling the **MEDIA CHAMBER** is as follows:

1. Raise the **WORK CHAMBER HOOD**, this disables system power.
2. Unscrew the four screws on the **LID** of the **MEDIA CHAMBER** and remove the **LID**.
3. Pour the **MEDIA** directly into the **CHAMBER** using the **MEDIA MEASURING DISPENSER**. The **MEDIA CHAMBER** will hold about 4 quarts, or 5 pounds of cutting **MEDIA**. Fill the **CHAMBER** to just below the pressure relief valve opening.
4. Remove any excess **MEDIA** from the lip of the **MEDIA CHAMBER** **with a brush** or the **HAND-E-VAC** vacuum accessory supplied with your unit.
5. Place the **MEDIA CHAMBER LID** on top of the **MEDIA CHAMBER**. Take the **LID** (with **O-RING** attached) and place it on top of the **MEDIA CHAMBER**. Align the four notches on the **LID** with the 4 screws on the **MEDIA CHAMBER**. Press the **LID** down flush until it bottoms against the **CHAMBER**. Flip the four screws up and tighten the wing nuts, finger tight. It is not necessary to exert a large amount of force on the wing nuts.

IMPORTANT INFORMATION ABOUT THE MEDIA

The **MEDIA** is an inert substance. It is a thermoset acrylic plastic 'sand' that is susceptible to moisture. For this reason, make sure that it is stored in a sealed container when not in use. The 30 pounds of **MEDIA** that was shipped with the unit will last about 6 months before it starts to break down into a fine dust. When it gets to this point, discard it and order more. The **ESD** characteristics will not degrade over time so this shouldn't be of concern.

Please review the Material Safety Data Sheet (see Appendix B) at the end of this manual. We recommend that the operator wears a **FACE MASK** when the **CCR2000** is in operation. A supply of suitable **FACE MASK** has been supplied.

Because of its susceptibility moisture, we highly recommend that at the end of the working day, all the MEDIA be removed from the CCR2000 (including the MEDIA CHAMBER) and stored in a moisture proof container. This is done to ensure proper media flow and to avoid blockage.



POWER SWITCH

Turn ON the main POWER SWITCH on the rear of the CCR2000 (see Figure 3).

AIR LINE CONNECTION

Attach one end of the AIR HOSE to its connection at the left rear of the CCR2000 (see Figure 3). Connect the other end of the AIR HOSE to your air line coupling. Check the air line and the couplings for any leaks before continuing.



CONNECT THE FOOT SWITCH

The FOOT SWITCH is connected to the POWER PANEL on the back of the CCR2000 (see Figure 3). Plug the CONNECTOR into the RECEPTACLE and screw the connector onto the receptacle.

INSTALLING THE NOZZLE

The NOZZLE should already be installed. If not, then please take note on what is required to install it:

The NOZZLE is a specially designed tool that must be installed properly or it will not work as designed. Notice in Figure 2.2 the two free connectors on the right side of the WORK CHAMBER. Media flows through the top connector and the ionized air flows through the bottom connector. Located in the WORK CHAMBER, is the NOZZLE with tubing attached. The NOZZLE is manufactured with two different sizes of tempered glass tubes (see Figure 2.3). The media must flow through the larger diameter tube and the ionized air flows through the smaller tube. Notice also that the smaller tube goes into the larger tube.

Connect the fittings on the hoses into the fittings in the WORK CHAMBER. Hand tighten ONLY.

PRESSURE ADJUSTMENT

Turn the MEDIA PRESSURE REGULATOR valve clockwise until GAUGE moves away from zero.

Set the pressure according to your requirements.

ESD MEASUREMENT

The CCR2000 comes with a built in ESD measurement system. This measurement system utilizes the Ion Systems MODEL 775 FIELD METER, the MODEL 775P PLATE ASSEMBLY, a 4 DIGIT PANEL METER, a plug on the wall of the CCR2000, and a CONNECTOR TEST CLIP.

To set up the ESD measurement system, perform the following tasks:

1. Turn the CCR2000 on. Let the FIELD METER stabilize for approximately 15 minutes.
2. After it stabilizes, attach one end of the CONNECTOR to the ESD PLUG on the back wall of the WORK CHAMBER. Connect the other end of the CONNECTOR to any point in the WORK CHAMBER such as the ground connection below the right arm hole or behind the safety switch in the upper right hand corner of the work chamber. Turn the MEDIA SWITCH on the MEDIA PANEL to the ON position.
3. Go to the back of the unit and open the REAR DOOR. All power is cut off when this happens so you must insert the SAFETY SWITCH ACTURATOR to turn the power back on. You will see the MODEL 775 FIELD METER directly in front of you. Reach in and turn the ZERO KNOB until it reads "0". Use caution not to touch any other components in the rear of the CCR2000. Close the REAR DOOR.
4. Go to the front of the CCR2000 and disconnect the CONNECTOR from its ground reference point.
5. After you have placed your PCB or electronic assembly into the work chamber, clip the CONNECTOR on any point on the board, i.e., ground plane, Vcc, or an IC. Start the removal process and view the ESD levels on the panel meter.

GROUND MONITORING

The **CCR2000** comes with a built in **GROUND MONITORING SYSTEM**. It's main purpose is to constantly check that all ground connections are properly connected. It monitors the **HOUSE GROUND CONNECTION**, the internal ground connections, and to make sure that the operator is properly connected to the system. It is designed to work in the following fashion:

- √ If the house ground connection is broken, the **SYSTEM LIGHT** will turn from green to red and there will be a constant audio alarm until the proper connection is made.
- √ If the operators wrist strap becomes disconnected from its plug, the **USER LIGHT** will turn red and an audio alarm will sound for a few seconds, then stop. The light will remain red until the wrist strap is reconnected.
- √ If any internal system ground connection is broken, the **SYSTEM LIGHT** will turn from green to red and there will be a constant audio alarm until the broken connection is found and reconnected.



Figure 9 - Model 775 Field meter



Figure 10 - ESD Plug Location

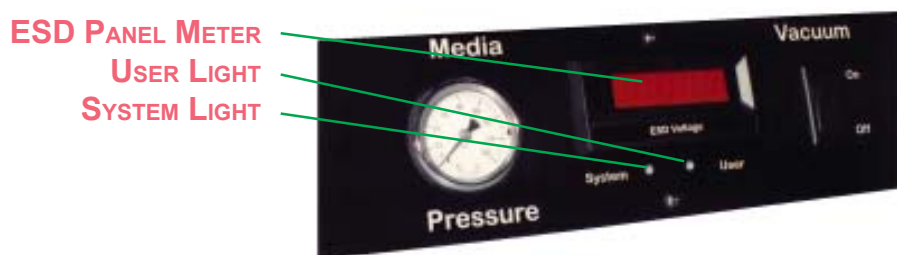


Figure 11 - Panel Meter & Ground Monitoring Lights

BLAST MODE - STRIPPING THE PCB

Press the MEDIA SWITCH to ON. The YELLOW LIGHT will come on. Hold the printed circuit board with one hand and the NOZZLE in your other hand, bring the NOZZLE up close to the printed circuit board. Hold the NOZZLE approximately $\frac{1}{4}$ to $\frac{1}{2}$ inch away from the area to be worked, at an angle of between 30 to 45 degrees and depress the FOOT SWITCH.

This will pressurize the MEDIA CHAMBER causing internal turbulence, forcing a mixture of MEDIA and compressed air to the NOZZLE tip. An almost invisible jet of MEDIA will now flow. Direct this flow over the desired area of the printed circuit board.

Releasing the FOOT SWITCH will stop MEDIA flow. However, because of the size of the media chamber, air will continue to flow for a short period of time because of the pressure built up in the media chamber. This is a normal condition. For continuous operation, hold the foot switch down until the desired area has been cleaned. The angle of the pen is important in stripping some items.

Caution

Never use the NOZZLE in a vertical position. The media will eventually wear away the surface and an indentation in the surface will appear.

WARNING

DO NOT POINT NOZZLE DIRECTLY AT VIEWING HOOD. THIS WILL CAUSE ETCHING RENDERING IT UNSERVICEABLE. This is NOT covered under the warranty and new viewing hoods are expensive.

Using the NOZZLE at an angle will allow the MEDIA to lift the coating off in most cases. *Care must be taken when stripping coatings off printed circuit board assemblies.* When used properly, the CCR2000 will remove coatings in a fraction of the time it takes to chemically remove conformal coatings and without damage to components, color codes, or to the substrate.

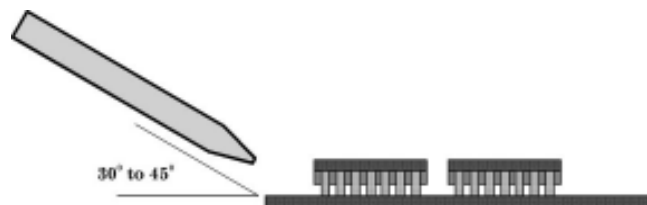


Figure 12 - Nozzle Positioning

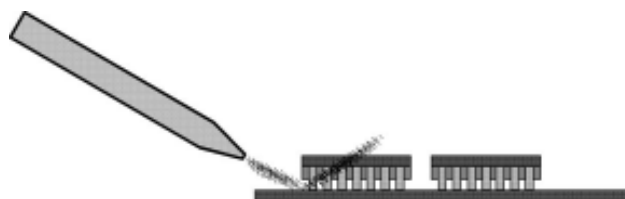


Figure 13 - Stripping Action

CLEAN AIR MODE - REMOVING RESIDUE

Clean air is available to blow excess residue and dust from the printed circuit board. Press the **MEDIA SWITCH** to the OFF position and depress the **FOOT SWITCH**. After a short period of time, all **MEDIA** stored in the line will be expended and clean air will blow any residue from the printed circuit board.

When you are finished with one printed circuit board, follow the same procedures and strip another board.

Note that media will flow when the foot switch is released. Point the nozzle away from the board and accumulated media in the work area before releasing the foot switch.

REMOVING MEDIA FROM THE CHAMBER

To be able to recycle the **MEDIA** you must vacuum up the **MEDIA** that is inside the **WORK CHAMBER**. You are supplied with the **HAND-E-VAC** gun for this purpose. See below and Appendix E for instructions on its operation. See Appendix A for complete instructions on recycling the media.

HAND-E-VAC GUN

The **HAND-E-VAC** gun is a 2-in-1 air cleaning gun. It connects directly to your air line and can be used in several configurations. The first configuration is as a vacuum gun. The second is as an air blow gun. Follow the assembly instructions provided with your **HAND-E-VAC** system.



Figure 14 - Hand-E-Vac Gun

VACUUM MODE

Connect the dust bag to the gun and tighten securely. Attach the air line and press the trigger to activate the vacuum system. The dust bag will inflate and the system is ready for use. The vacuum mode is essential if you wish to recycle your **MEDIA**. The **HAND-E-VAC** will come to you in the vacuum mode.

BLOWER MODE

Blower mode is useful for external cleaning and rear chamber cleaning of the **CCR2000**. It is also useful for final cleanup of printed circuit boards. **Remember to wear protective goggles if you are using this mode.**

RECYCLING THE MEDIA

The MEDIA may be recycled many times without losing its ESD characteristics using the FILTER SCREEN supplied with your CCR2000. You are supplied 30 pounds of MEDIA, which should last approximately 6 months (see Figure 15). Also shown in Figure 15 are the RECYCLING SCREEN and MEDIA MEASUREMENT CONTAINER.

See Appendix A for complete instructions on Recycling the Media.



Figure 15 - Media , Recycling Screen and Measurement Container

SHUT DOWN

When you are finished stripping boards for the day do the following operations:

CLEAN THE MEDIA CHAMBER

Clean out the MEDIA CHAMBER using the HAND-E-VAC system. Store the MEDIA in a moisture proof container.

CLEAN OUT THE WORK CHAMBER

Clean out the WORK CHAMBER using the HAND-E-VAC system. Recycle the MEDIA as described previously and then store it in a moisture proof container.

DISCONNECT

1. Turn all switches to OFF on the MEDIA PANEL inside the WORK CHAMBER.
2. Turn the MEDIA PRESSURE REGULATOR counterclockwise until it stops.
3. Disconnect the CCR2000 from all power and air supplies.
4. Check the VACUUM BAG inside the CCR2000. If it is full, empty it and then reinstall.

Chapter 2 - Operation Tips and Techniques

The following items are some tips, tricks and techniques that we have come across over the past years that will make using your workstation easier. There is no particular order of importance. Review all items in this chapter and if you have any questions, please feel free to contact us and we will be happy to discuss them with you.

COATING REMOVAL - GENERAL OBSERVATIONS

HOW THE COATING WAS APPLIED

The ease or difficulty to removing a conformal coating generally will depend on how the coating was initially applied. If the coating was applied in a dip tank or hand sprayed and then hung up to dry, one side of the component will have more coating on it than the other side. Thus, the side of the component with more coating will take longer to remove the coating than the other side. This is most relevant with urethanes and silicones in the removal process. If the coating was applied with an automatic spray coating machine or a selective dip coating machine, the coating is usually very uniform over the entire board thus making the removal process easier.

TYPE OF COATING WILL DETERMINE THE CUTTING PRESSURE

The harder the coating and or thickness, the more pressure is needed to remove it. The hardest coatings are epoxy and urethane and will usually take more than 60 psi to remove with higher pressures required depending on the thickness of the coating. Acrylic coatings will usually require no more than a setting of 50 psi. Silicone usually requires no more than 50 psi depending on the thickness. Parylene is the easiest to remove and a setting of no more than 35 psi is recommended.

COMPRESSED AIR SOURCE - CALIBRATING YOUR WORKSTATION

The CFM rating of your compressor will have a direct relationship to the amount compress air that will get to the nozzle. We have set a minimum CFM rating of 10 for use with our workstation.

There is a difference in the 'static' air pressure and the 'working' air pressure. The static air pressure is the level of air pressure, in psi, when the workstation is idle and the working air pressure is the amount of air that gets to the nozzle when the foot switch is depressed.

Here is a method to determine how much air pressure drop you have: Set the air pressure regulator inside the work chamber to 50 psi. The pressure gauge is on the control panel. Make sure you are in the 'clean air' mode (no media flowing). Press and hold down the foot switch and observe what the pressure gauge reads.

If you have a reading of 40 psi (a 10 psi drop), your working pressure is 40 psi. If you have a drop to 30 psi then you have a much lower working pressure. A 20 psi drop is rare but does indicate that the CFM rating on your compressor is probably lower than the recommend amount. If your drop in air pressure is minimal (0 to 5 psi) then you have good working pressure.

MEDIA FLOW - ADJUSTING THE CONE

The amount of media that comes through the nozzle and at what pressure has a direct relationship on how long it will take to remove the coating and how fast you will use up the media that is in the media chamber.

There is a cone assembly located inside the media chamber. It is held in place by a holding bar near the top of the chamber. The cone assembly is on a threaded rod that will adjust it up and down, thus changing the amount of media that will flow into the lower portion of the media chamber where it is agitated and sent to the nozzle.

The optimum setting for the cone assembly is 1/8th of an inch above the holding bar. If the cone assembly is too low in the media chamber, media will be blocked from entering the lower portion of the chamber and you will notice it takes a long time to remove coating. The cone assembly can also work its way all the way down, thus blocking all media flow. If the cone assembly is too high, too much media will flow and you will use too much media in the removal process. Too much media flow will empty the media chamber faster, thus shortening the amount of boards that can be worked on before the media has to be recycled. If too much media is flowing, there is a higher tendency for the nozzle to clog.

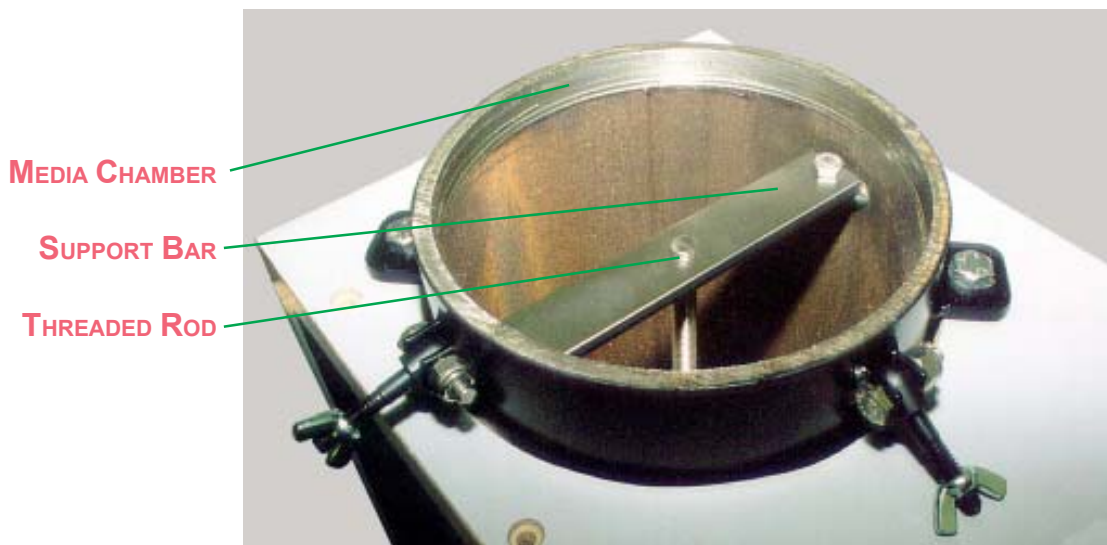


Figure 16 - Cone Assembly Adjustment

THE BEST AND FASTEST TECHNIQUE TO REMOVE CONFORMAL COATING

The best and fastest way, no matter what the coating type, is to hold the nozzle over the point you want to remove. Hold it there, on a 30 to 45 degree angle, with the foot switch depressed, until you see it break through the coating. Then move along the area you want to remove. In other words, if you have 8 pins you want to remove the coating from, hold it over the first point in the row until it breaks through the coating, then slowly move along the line of pins until you get to the last pin.

REMOVAL OF DIFFERENT TYPES OF COATING

URETHANE

Urethane are very hard and thus can take the longest to remove. Mil-spec calls for a thickness of no more than .007 mils but we have run across many cases that the thickness is much greater and thus it takes a lot longer to remove. Here are some tips to make it a little easier:

- If the thickness is greater than .007 mils increase the cutting pressure to over 80 psi. You can go as high as 110 psi but remember that at these pressures the likelihood of some degradation of the board is possible. You can remove most of the coating at the high pressure then when you get close to the board, turn down the pressure to about 60 psi. This will lessen the likelihood for any damage.
- An intermittent pressing of the foot switch will give an instant burst of media. This will cut through the urethane faster. Use this method only to get to the leads on the component, not when you are cleaning the leads.
- Some solvent based urethanes, when removed, have a tendency to break off in shards. If this happens you may experience some intermittent nozzle blockage because the shards will slip through the recycling screen. Later in this chapter we will discuss the proper way to clear the blockage from the nozzle. If the problem persists, contact us and we will be able to supply you with a special filter screen.

SILICONE

Silicones are just the opposite from urethanes, they are softer and more pliable. Many of the 'older' silicones were put on very thick. Also, because they are very elastic in nature, the media will have a tendency to bounce off the silicone. One way to get through the thicker silicone is to increase the media pressure until you get down close to the component then turn the pressure down. You can also use the technique of pumping the foot switch.

The newer silicones are much easier to remove and no special procedures are required. Because they are soft, the cutting pressure required is low, in the 35 to 50 psi range.

PARYLENE

Parylene is very easy to remove because it is so thin. Here are some recommendations:

- Cutting pressures should be low, in the 30 to 35 psi range.
- Parylene will feather around the area you are removing. To eliminate the feathering, mask off the area you want to clean. This will leave a nice sharp edge that is hardly noticeable. Note: The masking technique is strictly for cosmetic purposes. Actually, when the Parylene is reapplied it will bond better if you don't mask the area.
- If you have to remove all the Parylene from a board, turn the media pressure up to 80 psi and hold the nozzle 3" to 5" from the board. Sweep the nozzle slowly over the entire board. This will break the adhesion the Parylene has on the board. You will see the hole board start to feather as you go over it. Then lower the pressure to 30 psi and clean off all the Parylene.

ACRYLIC

Acrylic normally comes off very easily. No special procedure is required. If you do come across thick acrylic, use the same techniques discussed with urethane.

EPOXY

Use the same procedures discussed with urethane.

MEDIA

The media is made of thermoset acrylic plastic. Its size is 40 to 60 mesh, type 'X' which means it is hard. The media is impregnated (blended) with 'anti-stat' which makes it the best media available for low ESD generation. Listed below are some items that you should be aware of when using the media:

DAY TO DAY USAGE

You are supplied with 30 pounds of media with your original shipment. It is packaged in two containers; 27 pounds in a 5-gallon pail and 3 pounds in a smaller container. We highly recommend that you do not open the 5 gallon pail until you have 'used up' the media in the small container. In other words, use the media in the small container to fill the media chamber the first time. Use the workstation to remove your coating until the chamber is empty, recycle the media (see appendix A), and put the same media back in the media chamber. We call this a media chamber cycle. There are several reasons for you to use this method.

1. Lets you keep track of your media usage.
2. Let's you see when the media needs to be changed.
3. If for some reason the media gets contaminated, you will only lose a small amount instead of the whole lot.

KNOWING WHEN TO DISCARD MEDIA

You will know when to discard the media when it turns to dust, literally. After repeated media chamber cycles you will see when it starts to turn to dust. It will become obvious. When this happens, discard the old media and refill the small container and use it until it turns to dust.

TESTING THE MEDIA

Yes, you can even test the media for its ESD characteristics if you follow these simple procedures:

Equipment Used - Yellow Springs Model 32 Conductivity Meter or equivalent

Procedure:

1. Place 25 grams of media in a 100-ml tube
2. Add distilled water to the 100-ml level
3. Shake the contents for 5 seconds
4. Let stand for 5 minutes
5. Place the conductivity probe in the solution and take the reading

If the reading is above 50, this means that the media still has enough anti-stat to do its job and ESD will not be a problem.

MEDIA AND MOISTURE

The media is susceptible to moisture. You must safeguard against moisture getting into you media. If your facility is in a high humidity location, we recommend that you place the media in a plastic bag and seal it to prevent the air getting to it.

If your compressor system does not have proper air drying, the media will absorb the moisture in the compress air and clog the system. We highly recommend an air dryer to eliminate any possible moisture buildup in the compress airline.

If the media absorbs moisture it will clog the system.

To dry 'wet' media, place a couple of pounds in the work chamber and then use the Hand-E-Vac to vacuum it up. The vacuuming process will, in most cases, dry the media.

“MUST DO” OPERATION REQUIREMENTS

There are several things that **MUST** be done while operating your workstation. You **MUST**:

1. **Always run the vacuum.** The internal vacuum system is designed to do several things.
 - a. It keeps the work area clear so you can see what you are working on.
 - b. It creates a negative pressure inside the work chamber so the media will not leak out and get all over the work area, operator, and the floor.
2. **Always keep the vacuum intake screen clean.** It should be cleaned every time you vacuum out the media chamber or whenever it gets coated with media. If it is not cleaned on a regular basis, it will become clogged and the vacuum motor will burn up. You might also consider brushing the screen on a regular basis. We use an old toothbrush and leave it in the work chamber.
3. When recycling the media, **always remove the media from the inside vacuum bag.** If you don't, the bag will fill up, drop from its snaps, fall over the vacuum motor inlet and burn up the vacuum motor.
4. **Always recycle the media after every media chamber cycle.** If you keep filling the media chamber with media and not recycle the media every media chamber cycle the media will build up inside the work chamber and clog the sealed push-button switches.



Figure 17 - Vacuum Inlet Screen

IONIZER PRESSURE SETTING

The ionizer pressure is preset to operate at 30 psi. We assume that your compressor system will have a 10-psi drop when the workstation is in use. If you have a larger than 10 psi drop, contact us and we will walk you through increasing the ionizer pressure on your system. **Do not attempt to change the ionizer pressure on your own.** This is a key element in the design of the system that eliminates ESD problems.

Appendix A - Media Recycling Procedures

Following is the basic procedure for recycling the media. Please read these instructions and follow the procedures otherwise damage can occur to certain parts of the workstation:

1. Turn the power off the workstation.
2. Attach airline to HAND-E-VAC.
3. Put on a pair of SAFETY GOGGLES and one of the DUST RESPIRATORS.
4. Vacuum media from work chamber using HAND-E-VAC. Make sure you hold onto the vacuum bag as you are vacuuming out the work chamber. The bag is held on only with a press fit and the weight of the media will pull the bag loose from the Hand-e-vac.
5. Put vacuum over 3 PUSH-BUTTON SWITCHES and vacuum any excess media that might have entered around the push-buttons.
6. Vacuum the vacuum inlet screen located in the upper left hand portion of the WORK CHAMBER.
7. Remove the Hand-e-vac from the work chamber.
8. Disconnect the airline from the HAND-E-VAC.
9. Take the small RECYCLING CONTAINER and open it.
10. Place the RECYCLING SCREEN on the container.
11. Remove the VACUUM BAG from the HAND-E-VAC.
12. Slowly pour the MEDIA from the VACUUM BAG into the RECYCLING SCREEN while shaking the RECYCLING SCREEN, do not over fill the screen.
13. Sift the media through the RECYCLING SCREEN until it has all gone back into the RECYCLING CONTAINER.
14. Dispose of the conformal coating pieces left in the RECYCLING SCREEN.
15. Repeat this process until the HAND-E-VAC bag is empty.

NOTE: The vacuum bag located in the workstation should be emptied after every media chamber refill.

16. Lower the REAR DOOR of the workstation. On the right hand side you will see a bag that looks similar to the bag on the HAND-E-VAC.
17. Remove the bag from the workstation. Note that there are 2 snaps holding the bag to the top of the CABINET. Unsnap these by pulling down. The bag will then slip out of the FUNNEL.
18. Pour the media from this bag through the RECYCLING SCREEN.
19. When the bag is empty, replace it in the WORK CHAMBER. Make sure that the bag is firmly in the funnel and the 2 snaps are secure to the top of the cabinet.
20. If you have any question to whether there is any pressure in the MEDIA CHAMBER, grab the yellow handle on the EMERGENCY PRESSURE RELIEF VALVE and push it slowly toward the MEDIA CHAMBER. If there is air pressure in the chamber, this will relieve it. If you find that there is pressure in the MEDIA CHAMBER then there is a clog somewhere in airline and you must clear the clog before proceeding.
21. Close the REAR DOOR of the workstation.
22. Remove the lid from the top of the MEDIA CHAMBER.
23. Pick up the RECYCLING CONTAINER and slowly pour the media into the MEDIA CHAMBER. The media must not be filled above the pressure relief hole located approximately 3 1/2 inches down from the top of the chamber.
24. Replace the MEDIA CHAMBER LID and secure with the 4 wing nuts.
25. Attach the AIR HOSE to the system.
26. Turn the power on the workstation.

Appendix B - Material Data Safety Sheet

Material Safety Data Sheet Blasting Media

PRODUCT INFORMATION

Product: Solidstrip Plastic Abrasive Medium
Manufacturer: Solidstrip Incorporated
Telephone: For Medical Emergencies: (800)441-3637
For Transportation Emergency: (800)424-9300

INGREDIENTS

<u>INGRED.#/CASE NO.</u>	<u>INGREDIENT</u>	<u>EXPOSURE LIMIT</u>	
1. None	Acrylic Polymer	ACGIH	none
		OSHA	none
2. None	Stearamidopropyldimethyl- beta-hydroxyethylemmonium nitrate	ACGIH	none
		OSHA	none

PHYSICAL DATA

EVAPORATION RATE: Solid
VAPOR DENSITY: Not Applicable
SOLUBILITY IN WATER: Insoluble
PERCENT VOLATILE: Not Applicable
APPROXIMATE BOILING RANGE: Not Applicable
DENSITY: 1.19

FIRE AND EXPLOSION DATA

FLASH POINT, ASTM D-1929: Estimated Flash Ignition Approx. 391° C
EXTINGUISHING MEDIA: Foam, Carbon Dioxide, Water, Dry Chemical
UNUSUAL FIRE & EXPLOSION HAZARDS: None
APPROXIMATE FLAMMABLE LIMITS: Not Applicable
SPECIAL FIRE FIGHTING PROCEDURES: Full protective equipment, including self-contained breathing apparatus, is recommended.

HEALTH HAZARD DATA

SYMPTOMS/EFFECTS OF OVEREXPOSURE AND FIRST AID

ROUTE OF ENTRY:

INGESTION: Ingestion of small quantities of this material under normal circumstances would not cause harmful effect.

INHALATION: Gross Overexposure to nuisance particles, regardless of how generated, may cause irritation of the respiratory tract. If irritation develops, remove to fresh air. If breathing difficulty persists, consult a physician.

SKIN OR EYE CONTACT: Nuisance particulates may cause irritation. In case of eye contact, flush immediately with large amounts of water for 15 minutes. Call a physician. For skin, wash with soap and water. If irritation persists, consult a physician.

REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: Sources of ignition and temperatures above 570°F (300°C)

INCOMPATIBILITY: Not Applicable

HAZARDOUS DECOMPOSITION: Under fire conditions, hazardous decomposition products will include: CO, CO₂, and smoke. Temperatures above 370°C can cause methyl methacrylate monomer (MMA) to be released (see Section 8).

Methyl Methacrylate

EXPOSURE LIMITS: OSHA & ACGIH - 100 ppm

CAS NUMBER - 80-62-6

VAPOR PRESSURE - 29mm (20°C)

Vapor may cause irritation of the eyes, nose and throat. May cause central nervous system effects such as dizziness, headache, nausea and loss of consciousness.

Under some circumstances, mutagenic changes have been observed with MMA. The meaning and significance of these results is not understood. At 1000 ppm, MMA is weakly embryotoxic with rats.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID FOR HAZARDOUS POLYMERIZATION: Not Applicable.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: No Special procedures required.

WASTE DISPOSAL METHOD: Sanitary landfill; in accordance with Federal, State, and Local Regulations.

SPECIAL PROTECTIONS INFORMATION

RESPIRATORY: Do not breathe dust. Wear a properly fitted dust respirator approved by NIOSH/MSHA during application, unless air monitoring show dust levels below 10 mg/m³.

VENTILATION: Provide sufficient ventilation in volume and pattern to keep airborne levels of methyl methacrylate below 100 ppm and dust levels below 10 mg/m³.

PROTECTIVE GLOVES: Leather gloves are recommended.

EYE PROTECTION: Safety glasses with side shields, goggles and / or face shield

OTHER PROTECTIVE EQUIPMENT: None required, however, a protective apron is recommended.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Not Applicable.

OTHER PRECAUTIONS: None

TRANSPORTATION: Not Applicable.

NOTICE FROM THE MANUFACTURER

The data in this material safety data sheet relates only to the specific material designated herein and do not relate to use in combination with any other material or any process.

NOTICE FROM CCRCo

This material was first developed to be used with a high pressure gun with the operator not protected. In this application the material is used in a much different way with many built-in protections for the operator. We, therefore, recommend that the operator use a simple breathing mask and the light gloves like those supplied with the unit.

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