

BoardSite™ 5100

UV Board Eraser

User Manual

January 1992

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1 *Operation*

The 5100 UV Board Eraser is a self-contained circuit board eraser that allows you to completely reprogram circuit boards. Since the UV Board Eraser operates independently from the 5100, you can erase circuit boards that are inserted in the Eraser while you program other circuit boards inserted on the programmer. You can also transport the UV Board Eraser in the larger 5100 case cover provided with the eraser.

5100 UV Board Eraser Kit Contents

The 5100 UV Board Eraser Kit contains the following:

- UV Board Eraser
- Larger 5100 case cover for UV Board Eraser transportation
- Power cord
- User Manual 096-0123

Safety Information

In addition to the standard safety information in the 5100 User Manual, there are several safety issues specific to this product. Because this product emits ultraviolet light, it is important you heed all Warnings and Cautions on the product and in this manual. There are three **WARNING** labels on the UV Eraser:

WARNING: Do not expose eyes or skin to ultraviolet light.

WARNING: Do not attempt to operate with the top cover or bottom panel removed. When the covers are removed, there is a potential for electric shock. Ultraviolet light is harmful to unprotected eyes and skin.

WARNING: Always disconnect power cord before removing the bottom panel.

Also be aware that the ultraviolet bulbs get very hot when in use. Be careful not to touch the bulbs when removing boards from the eraser.

Make sure you review the standard safety information at the front of the 5100 User Manual before operating this unit.

Specifications

General Description

The BoardSite 5100 Portable UV Board Eraser is a complete portable board erasure system designed as a stand-alone unit or to fit within the lid of the BoardSite 5100 portable board programmer. The 5100 Portable UV Board Eraser incorporates a rugged design for use in the field with the flexibility to handle a variety of board sizes, power requirements, erasure timing requirements, tray heights, and device erasure specifications for various manufacturers of UV erasable memory components.

Features

- Timer — 10 to 60 minutes
- Adjustable tray height
- Portable — fits into 5100 lid
- Flexible input power

Options

- UV Transit Case

Power Requirements

Operating Voltage	104Vac to 126Vac and 207Vac to 253Vac (including tolerance)
Frequency Range	47 Hz to 63 Hz
Power Consumption	150VA maximum 125W maximum
Fuse Ratings	For either 115Vac (nominal) or 230Vac (nominal) operation, 1.5A/250V fast blow.
Bulb Intensity	9000 μ W/cm ² , 1 inch from bulbs
Erase Timer	10 to 60 minutes

Physical and Environmental

Dimensions	4h x 18w x 13.5d inches (10.2h x 45.7w x 34.3d cm). The 5100 Eraser case cover adds 4 inches to the overall height of the 5100.
Weight	10 lb (4.5Kg)

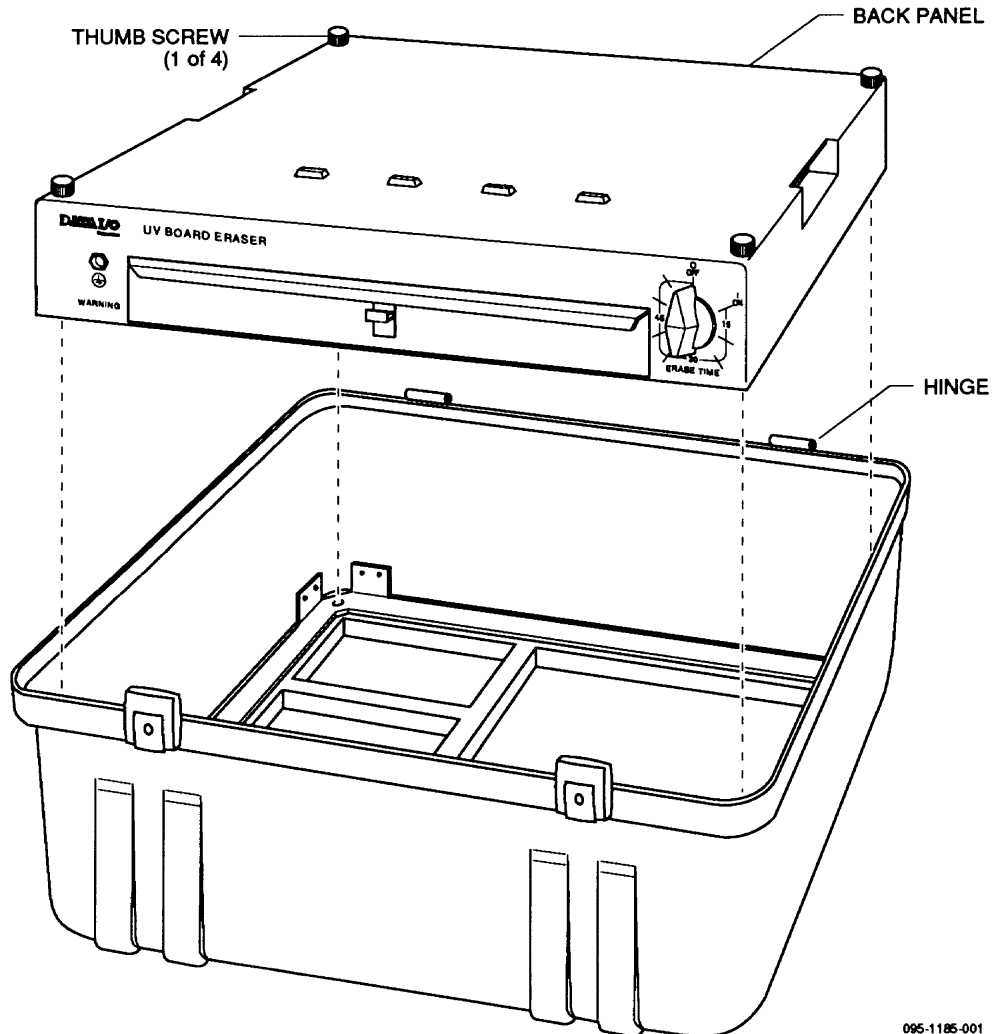
Maximum Board Size	1h x 9w x 11 3/4l inches (2.5h x 22.9w x 39.8l cm)
Tray Heights	.50, .75, 1.00 inches
Temperature	Operating: +5°C to +45°C (+40°F to +113°F) Storage: -20°C to +70°C (-4°F to +158°F)
Relative Humidity	Operating: 20% to 80% RH non-condensing Storage: 10% to 90% RH non-condensing
Altitude	Operating: To 3,000 meters (9,800 ft) Storage: To 8,500 meters (28,000 ft)
Safety	<p>The 5100 UV Board Eraser is designed to comply with the following safety standards.</p> <p>Underwriters Laboratories—1244</p> <p>Canadian Standard Association—C22.2 No. 231</p> <p>International Electrotechnical Commission—IEC 1010-1</p>
Electrostatic Discharge (ESD)	The 5100 UV Board Eraser is designed and tested to comply with IEC 801-2.

Preparation

Before you begin erasing circuit boards, there are two preparation steps you need to follow. The 5100 UV Board Eraser is shipped with a larger 5100 case cover that you can use to transport the UV Board Eraser with the 5100 programmer. The eraser case cover fits on the 5100 hinges the same way the original cover does.

1. Set the UV Board Eraser on your workspace. If the eraser is installed in the 5100 eraser case cover, remove the eraser from the cover and set it on your workspace. Figure 1-1 shows how the eraser is secured in the 5100 case cover with four thumb screws that you can tighten and untighten. Pockets are provided in the case lid for power cords, manual, and disk drive cartridge.

Figure 1-1
Removing the UV Board Eraser from the Case Cover

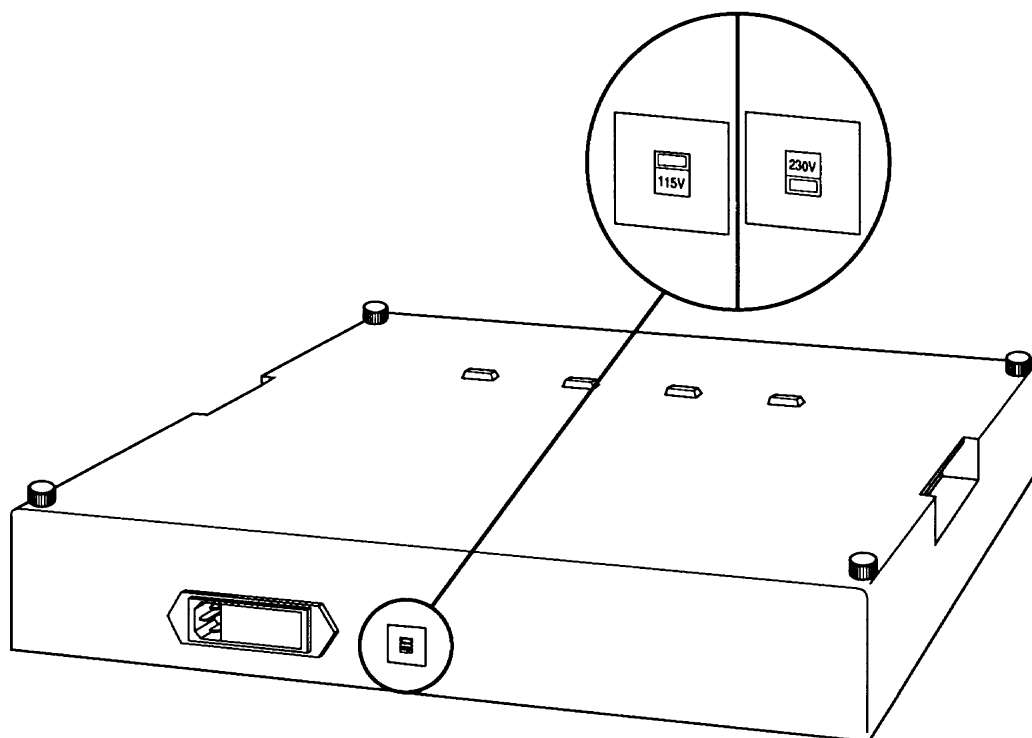


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2. Check the operating voltage selector before powering up the UV Board Eraser. The voltage selector switch is located on the back panel of the UV Board Eraser. Your nominal ac power line voltage must match the number indicated on the switch. Slide the switch up or down to show the operating voltage you are using, either 115Vac or 230Vac. See Figure 1-2.

CAUTION: *The UV Board Eraser may be damaged if operated with the wrong line voltage.*

Figure 1-2
Changing the Voltage Selection



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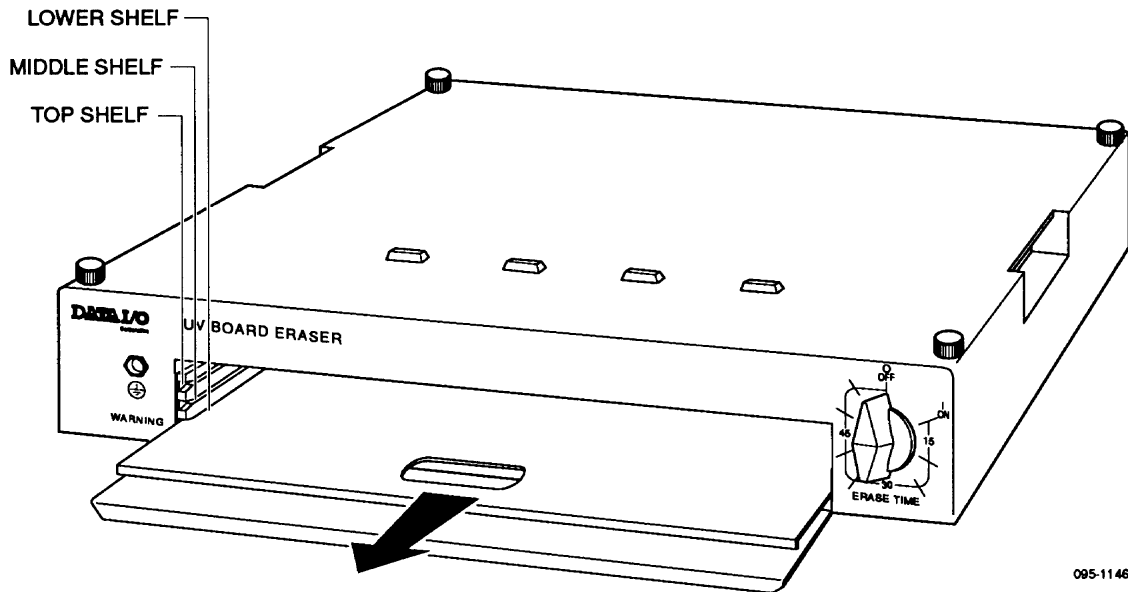
Operating Variables

Once you have verified or changed the voltage selection on the back panel, you are ready to select a rack height and an erase time. The following sections offer guidelines to help you determine these.

Select Rack Height

There are three rack shelves in the UV Board Eraser as shown in Figure 1-3. The rack shelf you choose will depend on the height of your board.

Figure 1-3
Selecting the Rack Height



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Lower shelf — Accommodates boards of 1.0 inch height.

Middle shelf — Accommodates boards of 0.7 inch height.

Top shelf — Accommodates boards of 0.50 inch height.

Erase Time

Erase time varies depending on how close the board is to the bulbs. The closer the board is to the bulbs, the shorter the erase time is. If you have a thin board, 0.50 inch height or less, you should put your board on the top shelf.

Below are examples of board height versus erase time.

Board Dimensions	Shelf Selected	Erase Time
0.50"	Lower shelf	30–35 min.
	Middle shelf	25–30 min.
	Top shelf	20–25 min.
0.75"	Lower shelf	25–30 min.
	Middle shelf	20–25 min.
1.00"	Lower shelf	20–25 min.

Operation

Now you are ready to begin operation.

1. Plug the power cord into the UV Board Eraser.
2. Apply power by plugging the power cord into an outlet.

CAUTION: *Make sure the two fans on the back of the Eraser are not blocked. These fans provide cooling for the Eraser during operation.*

3. Open the Eraser door by pushing down on the latch and pulling on the handle.
4. Attach the antistatic wrist strap to the Eraser and then to your wrist.
5. Slide your board, component side up, on the appropriate rack. Refer to the previous section, "Operating Variables."

CAUTION: *Do not force the board into a rack shelf. If your board is too tall for the selected rack height, remove the board and try a lower shelf. The UV bulbs can be broken if components are pushed against them. The maximum board height you should put into the Eraser is 1 inch.*

6. Close the eraser door.
7. After you have selected the erase time, turn the timer knob clockwise past the ON indicator to the desired erase time. Refer to the example in the previous section, "Erase Time."

Note: The UV Board Eraser has an automatic door interlock safety feature. If the Eraser door is open, even if the timer is on, the bulbs won't light. You do not need to turn the timer off before you open the door.

WARNING: *Do not attempt to override this interlock switch. UV light can be harmful to your eyes and skin.*

8. Check the bulb indicators. All four indicators on the top of the UV Board Eraser should be lit when the Eraser is operating.

Note: The bulb indicators will not light instantly when the UV Board Eraser timer is turned. They should light within a few seconds.

9. The timer bell will ring when erasing is completed.
10. Open the eraser door and slide the rack out. Allow the board to cool by setting it in an unobstructed place until it cools to room temperature before programming.

CAUTION: *Allow the board to cool to 25°C before programming.*

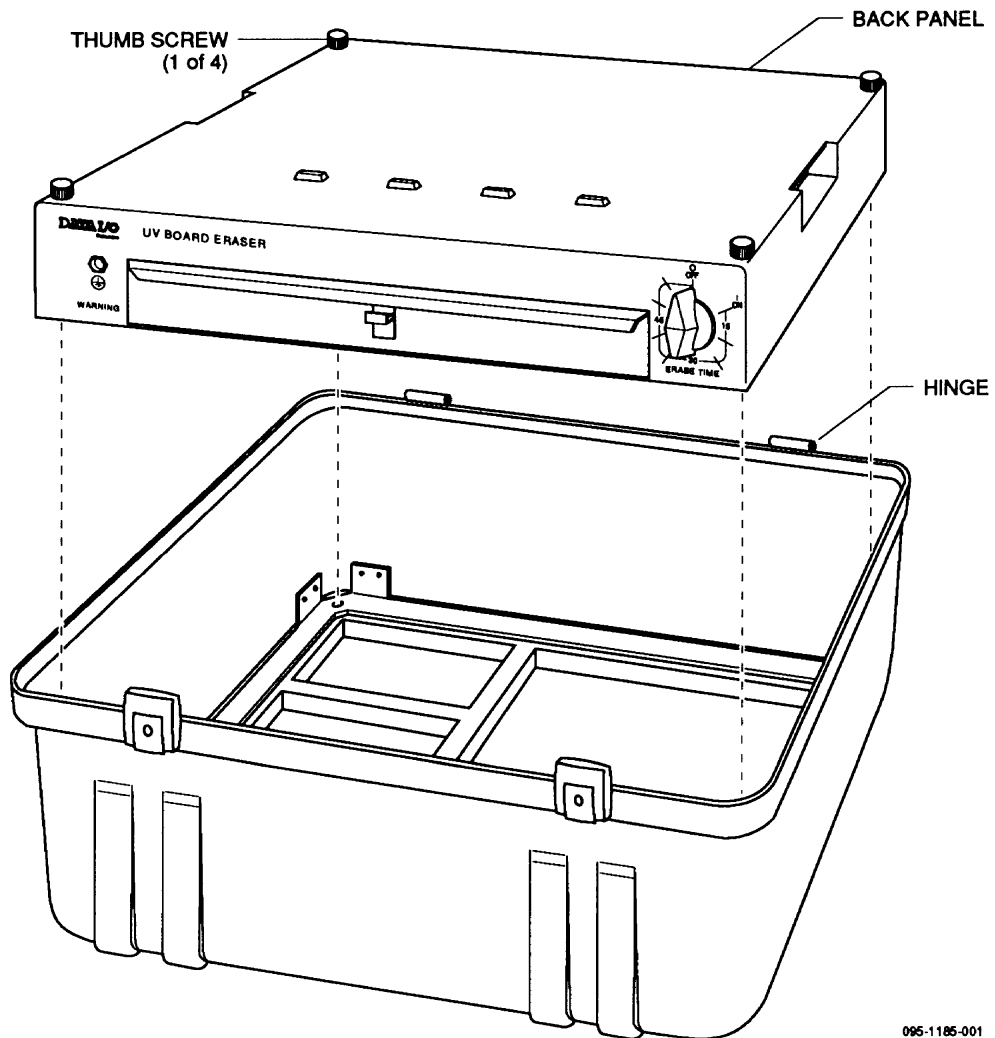
Transporting the UV Board Eraser

The UV Board Eraser is shipped with a larger 5100 case cover for transportation purposes only. If you want to transport the 5100 and the UV Board Eraser, you must put the UV Board Eraser into the 5100 Eraser case cover. Place the power cord, manual, and disk drive cartridge in the foam pockets.

CAUTION: Do not transport the UV Board Eraser with a board in a shelf. The board may damage the bulbs during transit.

1. Put the UV Board Eraser into the case cover as shown in Figure 1-4. Make sure the back of the UV Board Eraser (the panel with the voltage select switch) is toward the hinges on the 5100.

Figure 1-4
Inserting the UV Board Eraser in the Case Cover



2. Tighten the four thumb screws making sure you do not tighten any of them until all four have been started.
3. Slide the case cover onto the 5100 hinges and close.

2 *Theory of Operation*

This chapter describes the BoardSite 5100 UV Board Eraser theory of operation.

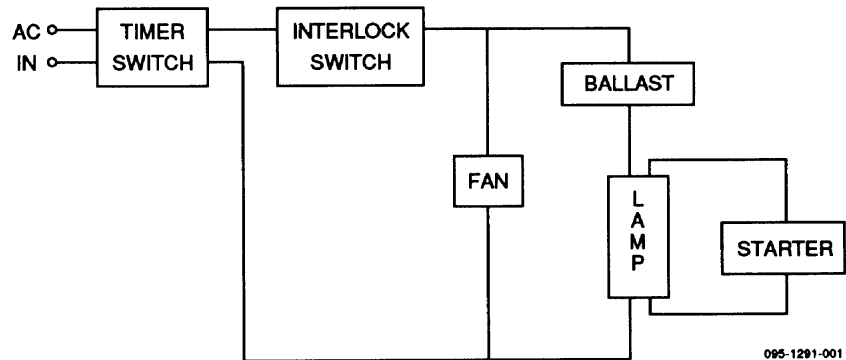
Overview

The 5100 contains the following major components:

- Timer switch
- Interlock switch
- UV fluorescent lamps
- Ballasts
- Fluorescent lamp starters
- Fans
- Voltage select switch
- Relay

Figure 2-1 shows a basic 5100 UV Board Eraser block diagram.

Figure 2-1
BoardSite 5100 UV Eraser
Basic Block Diagram



Component Descriptions

Timer Switch

This switch is used to turn the UV Board Eraser on and off and to set the erase duration. It is a double-pole, single-throw (DPST) mechanical interval time switch. The switch includes a bell to signal the end of the erase cycle.

Interlock Switch

This switch is used to turn the UV Board Eraser off when the door is opened. This protects the user from being exposed to the harmful ultraviolet light.

WARNING: Do not attempt to override this interlock switch. UV light can be harmful to your eyes and skin.

UV Fluorescent Lamp

These lamps emit ultraviolet light that erase EPROMs.

Ballast

The ballast performs three functions needed to start and operate a fluorescent lamp. It provides controlled energy to heat the lamp filaments, provides the right voltage to start the arc, and it limits the current flow to the proper value.

Starters

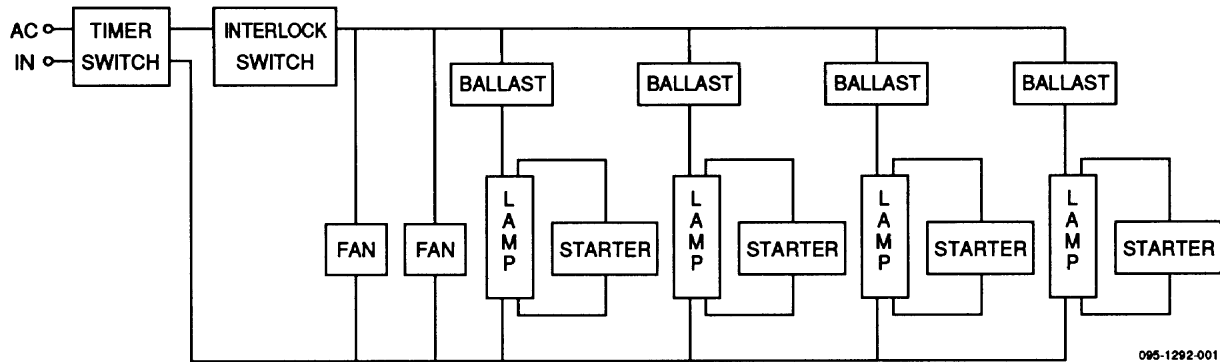
The UV fluorescent lamps used in the 5100 UV Board Eraser require a starter to preheat the lamp filaments before the lamps will light. When the filaments have heated up, the starter opens and the ballast then provides a suitable voltage to light the lamps.

Fans

The fans provide necessary cooling for the ballast.

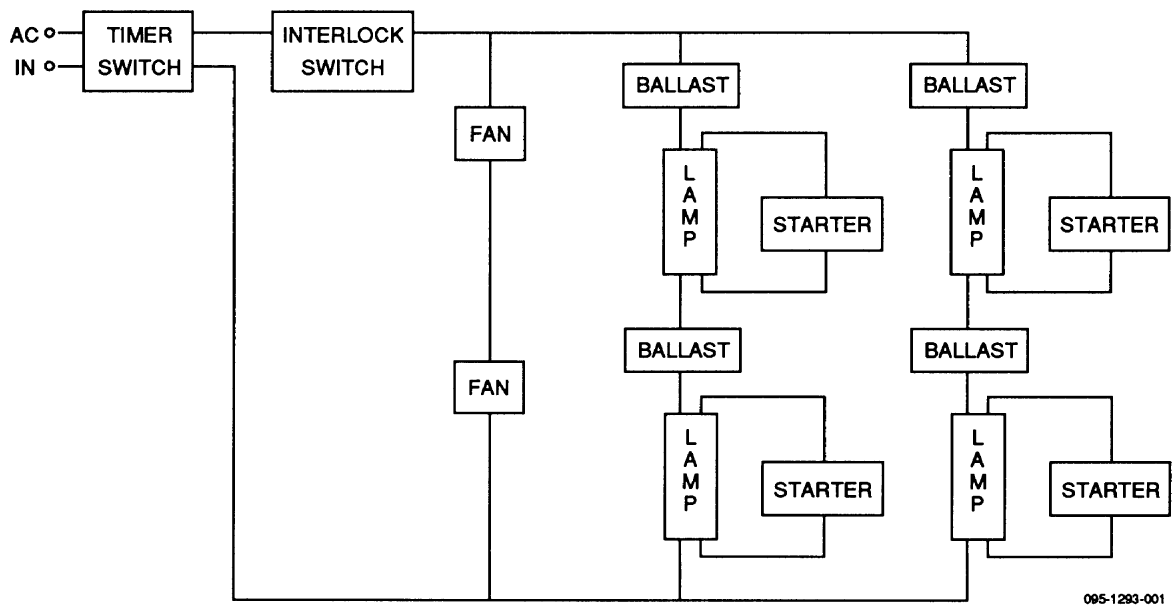
Voltage Select Switch This switch is used to select one of two operating voltages: 115Vac or 230Vac. When 115Vac is selected, all four lamp circuits and the two fans are connected in parallel, as shown in Figure 2-2.

Figure 2-2
5100 UV Board Eraser 115Vac Block Diagram



A lamp circuit consists of one lamp, one ballast, and one starter. When 230Vac is selected, two of the lamp circuits are connected in series, and the two fans are connected in series, as shown in Figure 2-3.

Figure 2-3
5100 UV Board Eraser 230Vac Block Diagram



Relay

The relay connects the two fans in series or parallel automatically, depending on the voltage selected with the voltage select switch.

3 *Maintenance and Troubleshooting*

This chapter describes BoardSite 5100 UV Board Eraser maintenance and troubleshooting.

WARNING: The instructions contained in this section are intended for use by trained electronics service personnel only. Do not attempt any of these procedures unless you are qualified to do so.

WARNING: To avoid electrical shock, disconnect the power cord before beginning any disassembly or reassembly procedure. Beware of high voltage on all components within the 5100 UV Board Eraser.

5100 UV Board Eraser Spares Kit

The BoardSite 5100 UV Board Eraser Spares Kit contains a complete set of spare parts for the maintenance and repair of the UV Board Eraser. This section assumes you have purchased the Spares Kit, or that you have procured replacement components from Data I/O Corporation.

The replaceable components included in the Spares Kit are listed below.

Part Number	Description	Qty
416-0014-001	AC Power Input Module (J1)	1
416-0005	Fuse, 1.5A, 240V (F1)	1
416-0017-101	RFI Filter (FL1)	1
371-0182-001	Timer Switch, DPST, w/Bell (S1)	1
371-0183-001	Interlock Switch (S2)	1
380-3013-001	Relay, DPDT (K1)	1
371-0043-002	Voltage Select Switch, 4PDT (S3)	1
417-1285-001	UV Fluorescent Lamp (DS1-4)	4
416-0468-001	Fluorescent Lamp Starter (S4-7)	4
305-8500-001	Ballast, Preheat (RT1-4)	2

Part Number	Description	Qty
420-6030-001	Fan (B1-2)	1
401-4501-001	Lamp Holder Socket (X1-8)	2
407-0380-001	AC Starter Socket (X9-12)	2
402-4000-001	ESD Wriststrap Jack (J2)	1
402-0012	Ring Terminal	1
402-0011	Splice, Wire	15
622-1261	Cable Tie	15
525-1501	Heatshrink Tubing, .25" Diameter	0.5 Feet
525-1499	Heatshrink Tubing, .187" Diameter	0.05 Feet
525-1498	Heatshring Tubing, .125" Diameter	0.1 Feet
408-1245-010	Wire, 22AWG, Solid, Black	2 Feet
408-1245-009	Wire, 22AWG, Solid, White	2 Feet
408-1263	Wire, 18AWG, Stranded, Black	2 Feet
408-1268	Wire, 18AWG, Stranded, White	2 Feet

Maintenance and Troubleshooting

Tools Needed for Troubleshooting

You need the following tools to perform the troubleshooting procedures detailed in this chapter.

- Small slotted screwdriver
- Phillips screwdriver for #2, #4, #6, and #8 screws
- Wire strippers
- Crimp tool
- 1/4 inch (#4) nut driver
- 3/16 inch (#6) nut driver
- Small crescent wrench
- Multimeter capable of measuring up to 250Vac and capable of measuring continuity
- Heat gun

Initial Troubleshooting Table

Use the following table to isolate the most probable area of trouble, then proceed to the referenced detailed troubleshooting section for further procedures.

Problem	Possible Cause	Action
Nothing works	Not plugged in Improper voltage selected Blown fuse Above changes don't work	Plug in Check voltage select switch Check fuse Go to Parts Testing and Troubleshooting
1-4 lamps don't work	Lamps or starters burnt Above changes don't work	Replace lamps and starters Go to Parts Testing
Fan(s) don't work	Bad fan Bad relay	Go to Parts Testing Go to Parts Testing
Lamps don't turn off when door is open	Bad interlock switch	Go to Parts Testing
Lamps don't turn off when timer is off	Bad timer switch	Go to Parts Testing
Timer doesn't turn off	Bad timer switch	Go to Parts Testing

Maintenance

Periodic maintenance of the 5100 UV Board Eraser consists of cleaning the exterior of the unit. The 5100 UV Board Eraser requires no calibration.

Cleaning

Clean the exterior of the UV Board Eraser with a clean cloth, dampened with water and a mild detergent. Never use caustic cleaning agents, alcohols, organic solvents, or other materials that could damage the surface.

WARNING: Always turn the 5100 UV Board Eraser power off and disconnect the power cord before cleaning.

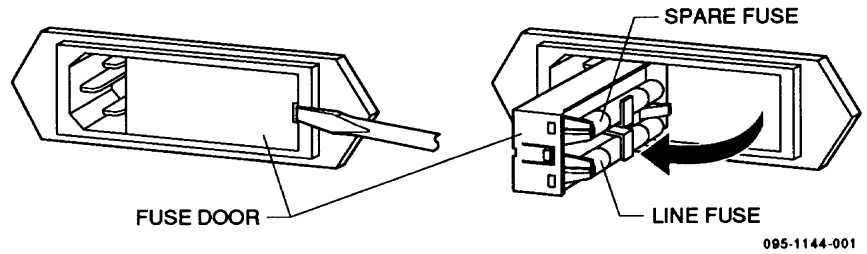
Checking and Replacing the Line Fuse

The line fuse is located on the back panel, behind the door on the ac power input module. Use the following procedure to check and replace the fuse.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.

- Use a small slotted screwdriver to gently pry open the fuse door as shown in Figure 3-1.

Figure 3-1
Replacing the Fuse



- The lower fuse is the line fuse. The top fuse is the spare fuse. Remove the line fuse and check if it is intact. If it is, put the fuse back in the holder. If it is blown, discard the blown fuse, remove the spare fuse from the top holder, and place it in the lower holder.

CAUTION: For continued protection against the possibility of fire, replace the fuse only with a fuse of the specified voltage, current, and type rating.

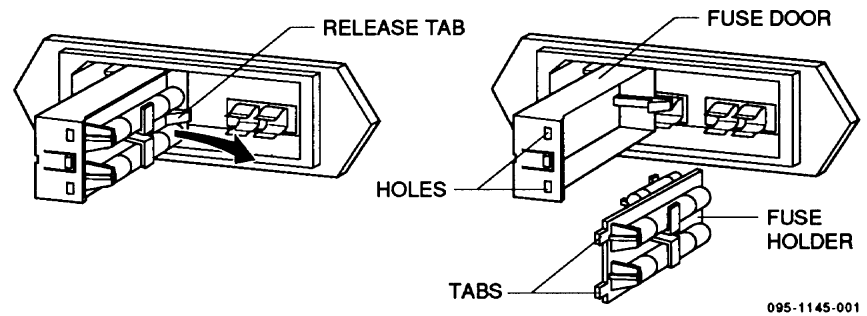
- Close the fuse holder door.

Changing to Metric Fuse

The ac power input module accepts two fuse sizes: U.S.-size fuses (1/4" x 1 1/4") and metric-size fuses (5mm x 20mm). The UV Board Eraser is shipped with U.S.-size fuses. Use the following procedure to change to metric-size fuses.

- Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
- Use a small slotted screwdriver and gently pry open the fuse door as shown in Figure 3-1.
- There is a small black release tab toward the back of the fuse holder. Push the tab toward the UV Board Eraser, and pull the fuse holder out as shown in Figure 3-2.

Figure 3-2
Removing Fuse Holder from Fuse Door



4. The back of the fuse holder holds the metric-size fuses.
5. Install the metric fuses into the fuse holder. The bottom holder is for the line fuse and the top holder is for the spare fuse.
6. Hold the fuse holder so that the fuses face you. Slide the end with the two tabs (opposite the release tab end) into the corresponding holes in the fuse door. Refer to Figure 3-2. Snap the fuse holder into place and close the door.

Bulb and Starter Replacement

We recommend that you replace all lamps and starters even if only one burns out. The intensity of the lamps is probably low and replacing all the lamps and starters at one time may prevent you from having to replace another one in the near future. You must remove the top cover and bottom panel to replace the lamps and starters.

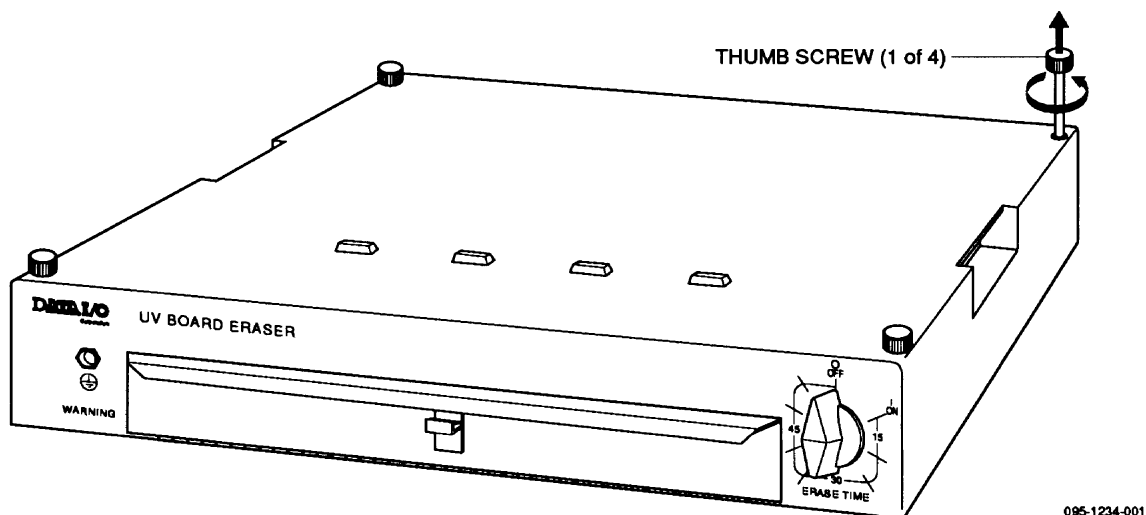
WARNING: To avoid electric shock, always disconnect the power cord before removing the top cover or bottom panel. Do not operate the UV Board Eraser with the top cover or bottom panel removed. Ultraviolet light is harmful to unprotected eyes and skin.

Removing the Top Cover

Use the following procedure to remove the top cover.

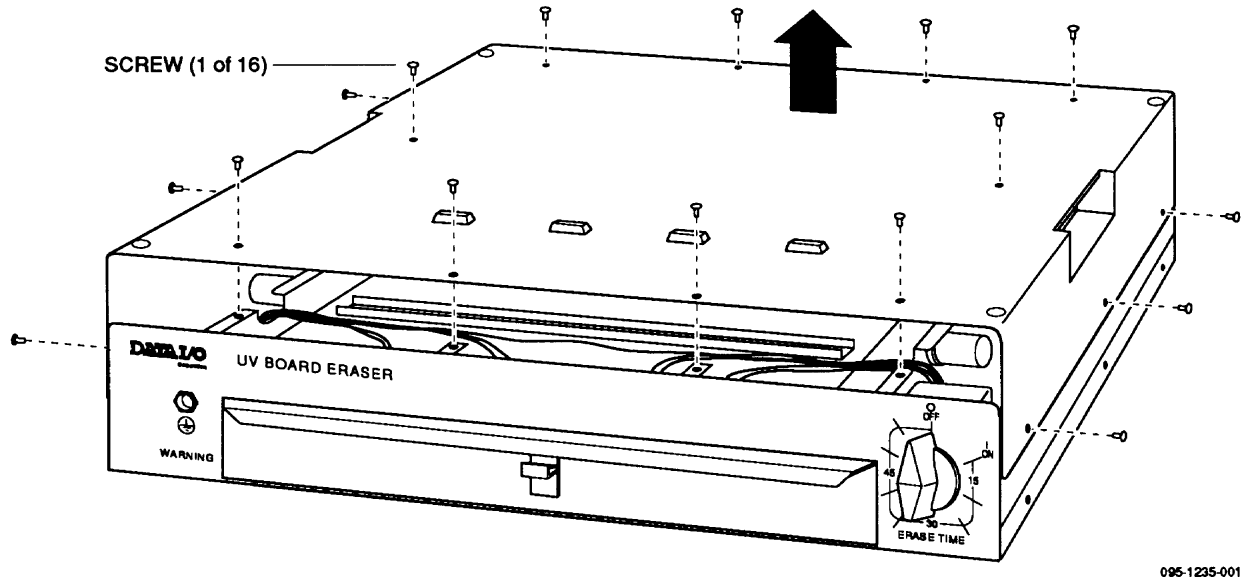
1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Pull up and unscrew the four thumb screws as shown in Figure 3-3. Remove them and put in a safe place away from your workbench.
3. Remove all the top cover screws, including the screws on the sides of the eraser, and put aside. See Figure 3-4.

Figure 3-3
Removing Thumb Screws



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Figure 3-4
Removing Top Cover Screws

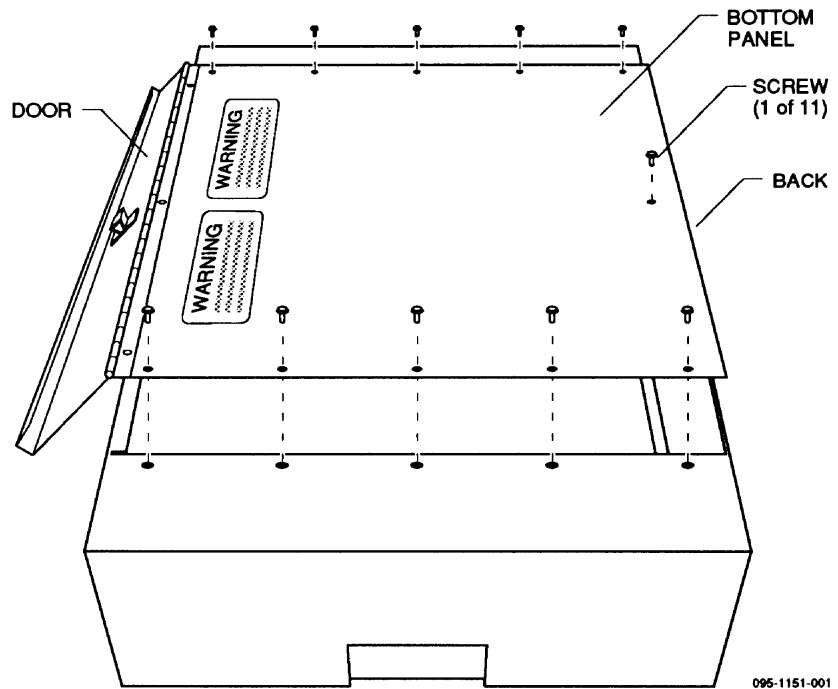


Removing the Bottom Panel

Use the following procedure to remove the bottom panel.

1. Remove the tray from the UV Board Eraser by pulling the eraser door open and sliding the tray toward you.
2. Turn the UV Board Eraser upside-down and remove the eleven screws on the bottom panel. See Figure 3-5.

Figure 3-5
Removing Bottom Panel



3. Set the panel aside.

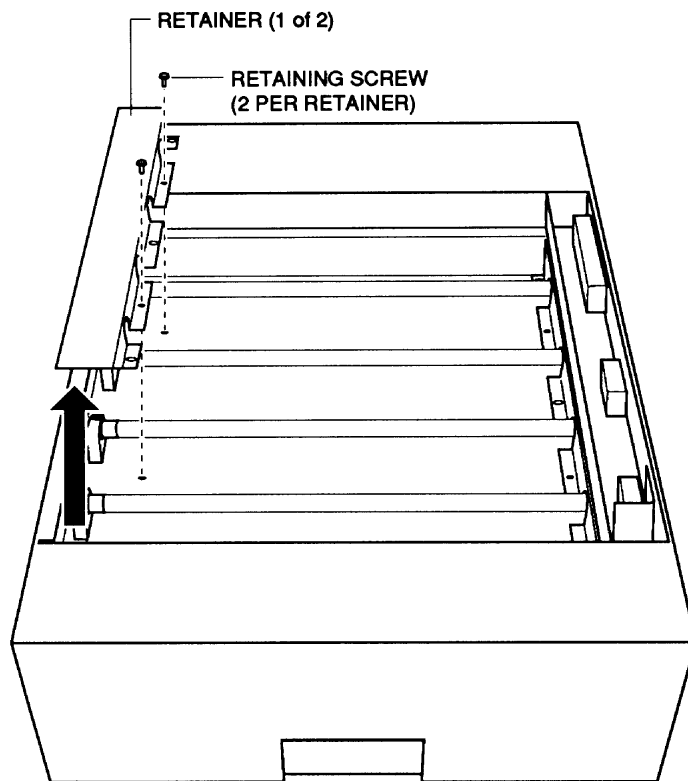
Lamp Replacement

Use the following procedure to replace the UV lamps.

CAUTION: *After operation, the lamps will be hot; make sure the lamps are cool before attempting to remove them. Also, be careful not to get fingerprints on the reflector.*

1. Remove both retainers covering the lamp ends as shown in Figure 3-6.

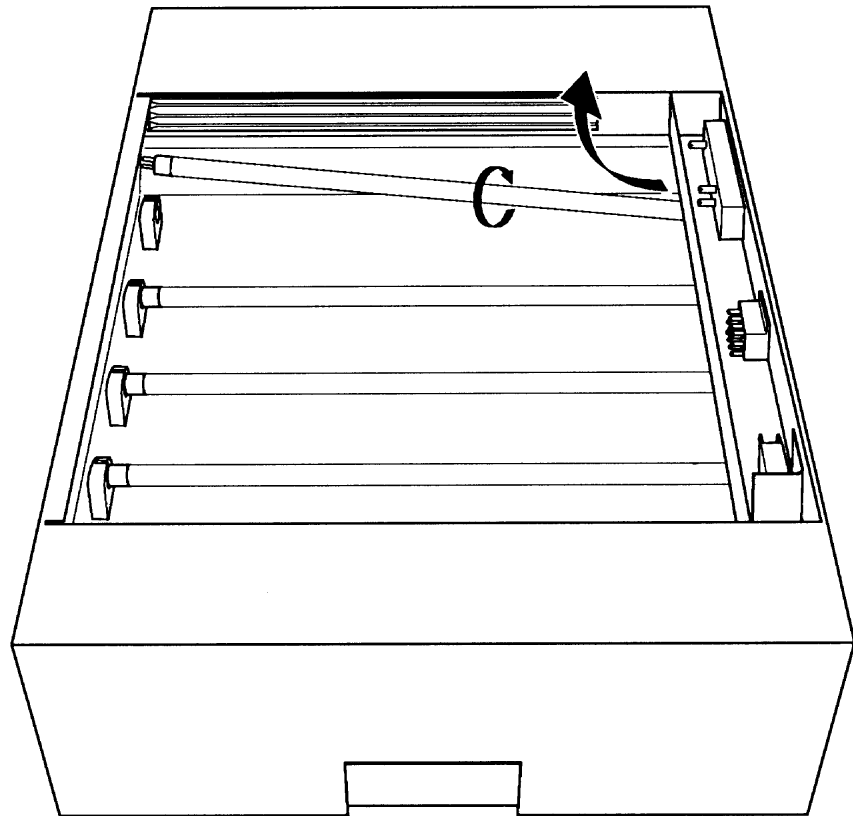
Figure 3-6
Removing the Retainers



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2. Remove the cooled lamp(s) by turning the lamp 90° and lifting as shown in Figure 3-7. Discard the old lamp(s).

Figure 3-7
Removing an Old Lamp



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3. Replace the old lamp(s) by inserting the pronged ends of the new lamp into the slots and turning 90°. Keep the new lamps free of grease or dirt during installation.
4. Replace the retainers and the bottom panel.

Lamp Age

The UV lamps sent with the UV Board Eraser are rated for 7500 hours of operation. Several conditions, including the following, will degrade the lamp life:

- Starting and stopping the UV Board Eraser many times over a period of time.
- Operating the UV Board Eraser at extreme temperatures.

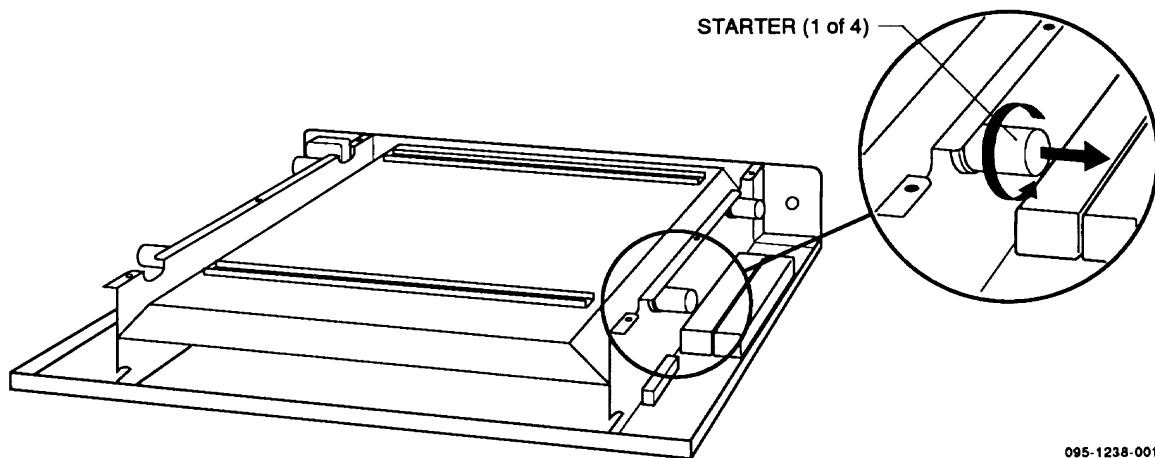
Note: If you are experiencing long erase times, you should consider replacing the lamps. A standard erase time for an Intel EPROM 1 inch from the lamp is 30 minutes.

Starter Replacement

Use the following procedure to replace the starters.

1. Remove the starter(s) by turning the starter 90° and pulling it out of the holder as shown in Figure 3-8.

Figure 3-8
Removing Old Starters

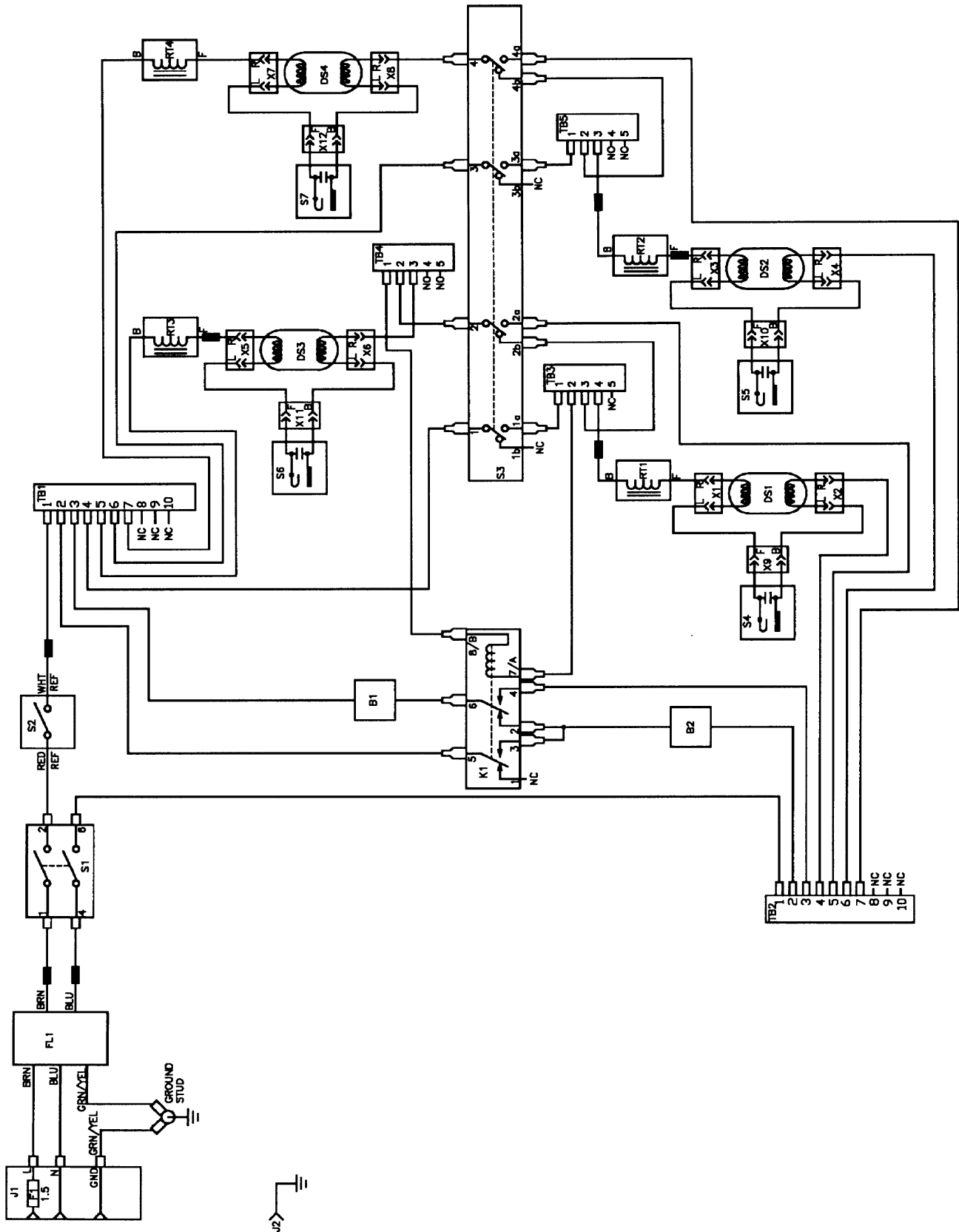


2. Discard the old starter(s).
3. Insert the new starter(s) into the holder and turn 90°.

Parts Testing and Troubleshooting

The following sections contain more detailed testing and troubleshooting procedures for the 5100 UV Board Eraser. Figure 3-9 shows the electrical schematic for the 5100 UV Board Eraser.

Figure 3-9
5100 UV Board Eraser Schematic



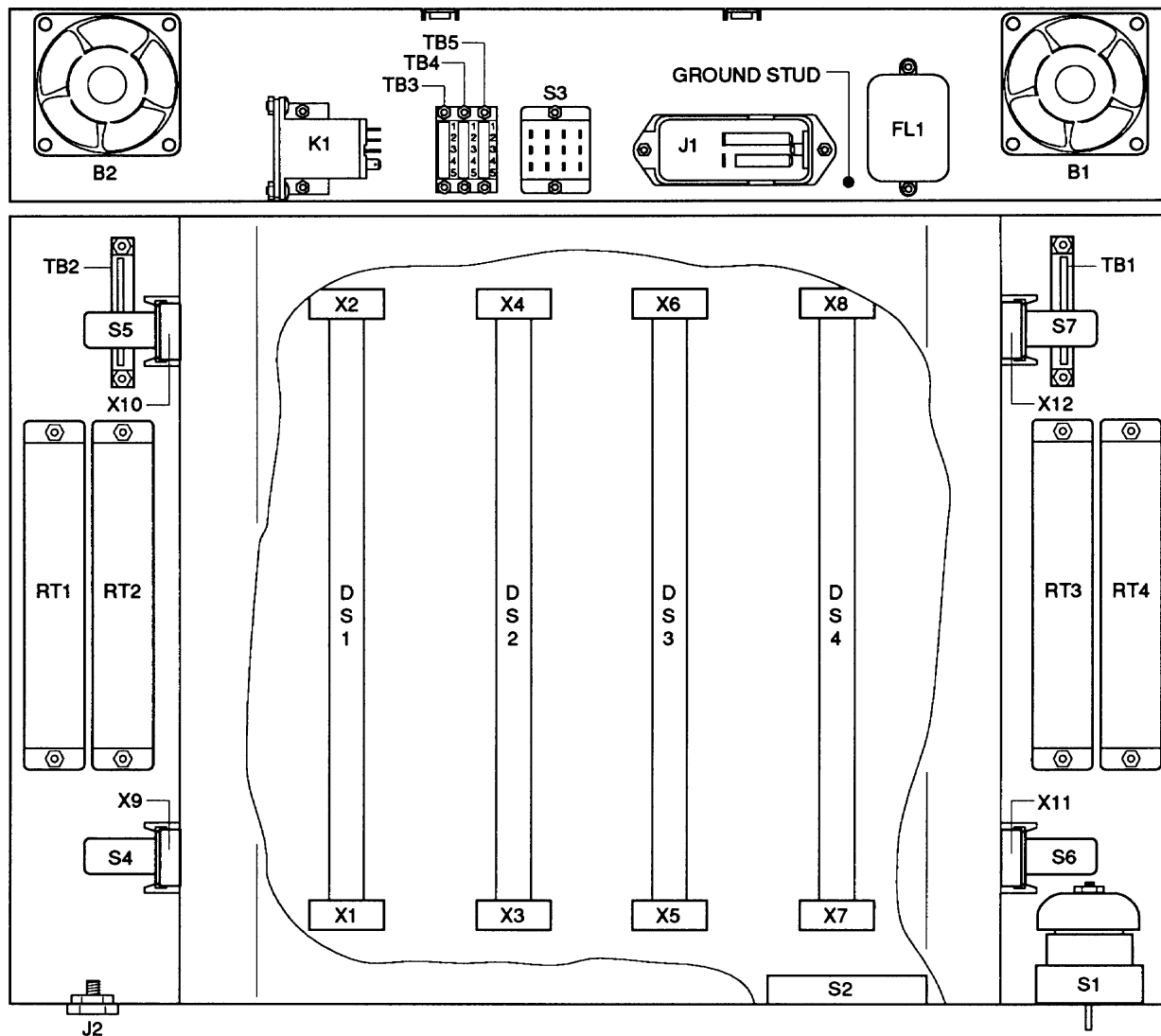
The table below lists the parts shown in the schematic.

Reference Designator	Description
B1-2	Fans
DS1-4	UV Fluorescent Lamps
F1	Fuse, 1.5A, 240V
FL1	RFI Filter
J1	AC Power Input Module
J2	ESD Wriststrap Jack
K1	Relay, DPDT
RT1-4	Ballast, Preheat
S1	Timer Switch
S2	Interlock Switch
S3	Voltage Select Switch, 4PDT
S4-7	Starter, Fluorescent Lamp
TB1-2	Terminal Block, Commoning, 10 Position
TB3-5	Terminal Block, Commoning, 5 Position
X1-8	Lamp Holder Socket
X9-12	Starter Socket

Figure 3-10 shows where these parts are located on the UV Board Eraser.

Note: We recommend that you read each section thoroughly before performing the procedures.

Figure 3-10
Parts Location



095-1296-001

All Lamps and Fans Not Working

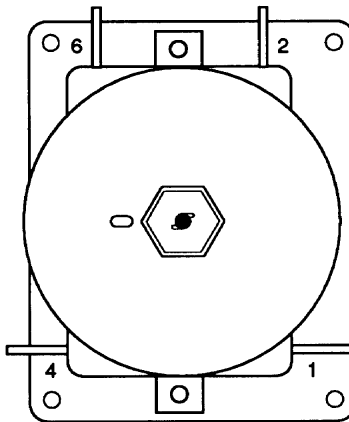
If all four lamps and both fans don't work after you have checked the power cord, the voltage select switch setting, and the fuse as discussed in the previous sections, use the following steps to troubleshoot.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the rack, top cover, and the bottom panel as shown in the previous sections.
3. Remove all four lamps as shown in the section, "Lamp Replacement." Removing all four of the UV fluorescent lamps prevents exposure to ultraviolet light while troubleshooting.

WARNING: UV light can be harmful to your eyes and skin.

4. Replace the bottom panel, leaving the lamps and the lamp retainers out of the UV Board Eraser.
5. Disconnect the wires from pin 1 and pin 4 of the timer switch S1. The pin numbers of the timer switch are shown in Figure 3-11.

Figure 3-11
Timer Switch Pin Numbers



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6. Connect an ac voltmeter to the wires that were disconnected from the timer switch. The black wire is Line and the white wire is Neutral.
7. Plug the power cord back into the UV Board Eraser and the wall outlet.

WARNING: Beware of high voltages on all of the components within the 5100 UV Board Eraser.

8. Use the ac voltmeter to measure the ac voltage between the two wires. Record the value.
9. Disconnect the power cord from the UV Board Eraser and the wall outlet.
10. If no voltage is measured (0 Vac), go to "Testing the Power Input Module." After testing and/or replacing the power input module (J1) and the RFI filter (FL1), proceed to step 24 of this section.
11. If 115Vac or 230Vac was measured (depending on the line voltage you are using), continue following this procedure.
12. Disconnect the wires from pin 2 and pin 6 of the timer switch S1.
13. Check the continuity through the timer switch S1 by connecting an ohmmeter to pins 1 and 2. When the timer switch is off, the resistance should be infinite. When the timer is on, the resistance should be 0 ohms. Repeat the test with the ohmmeter connected to pins 4 and 6. If the timer switch fails either of the tests, replace the timer switch as described in the section, "Replacing the Timer Switch."

14. Reconnect the black and white wires coming from the back panel to the Timer Switch S1. The black wire goes to pin 1 and the white wire goes to pin 4.
15. Reconnect the white wire coming from Terminal Block TB2 slot 1 to pin 6 of the Timer Switch S1.
16. Disconnect the black wire from Terminal Block TB1 slot 1 by pulling up on the wire. Terminal Block TB1 is on the same side as Timer Switch S1.
17. Test Interlock Switch S2 by connecting the Ohmmeter to the black wire disconnected from Terminal Block TB1 slot 1, and to the red wire that was disconnected from Timer Switch S1 pin 2. When the door is closed, the resistance should be 0 ohms. If the Interlock Switch fails the test, replace the Interlock Switch as described in "Replacing the Interlock Switch."
18. Reconnect the red wire to Timer Switch S1 pin 2, and the black wire to Terminal Block TB1 slot 1. Make sure that the connector locks or "clicks" into the terminal block. A small slotted screwdriver may be used to help push the connector into the terminal block, but make sure to push only on the metal part of the connector and not on the wire's insulation.
19. Check that all of the wires have been reconnected and that there are no loose wires.
20. Remove the bottom panel.
21. Replace the UV Fluorescent Lamps and lamp retainers as described in "Lamp Replacement."
22. Remount the bottom panel. Make sure to install all eleven screws before tightening any of them. After all screws are installed, tighten, starting with the three screws next to the back panel and work forward toward front panel.
23. Put the rack back into the UV Board Eraser.
24. Remount the top cover. Make sure that the UV lamp indicators on the top cover are toward the front panel.
25. If the UV Board Eraser still doesn't work, call the Data I/O Customer Support office.

**1 - 4 Lamps Not Working,
But Fans Do Work**

If one or more of the lamps do not operate (but the fans do work) after having replaced the lamps and starters as described in "Lamp Replacement" and "Starter Replacement," use the following steps to troubleshoot the problem.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the top cover as discussed in "Removing the Top Cover."
3. Replace the ballast(s) that corresponds with the lamp(s) that does not work, as described in "Replacing the Ballast." Refer to Figures 3-9 and 3-10 to determine lamp and ballast location. Ballast RT1 corresponds to lamp DS1, ballast RT2 corresponds to lamp DS2 etc.

4. Remount the top cover. Make sure that the UV lamp indicators on the top cover are toward the front panel.
5. If the lamp(s) still don't work, go to "Replacing the Voltage Select Switch." After testing and/or replacing the Voltage Select Switch, continue following these steps.
6. If the UV Board Eraser still doesn't work, call the Data I/O Customer Support Office.

**Lamps Don't Turn Off
When Door is Opened**

If the lamps do not turn off when the door is opened, use the following steps to troubleshoot the problem.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the rack, top cover, and the bottom panel as discussed in "Removing the Top Cover" and "Removing the Bottom Panel."
3. Remove all four lamps, as described in "Lamp Replacement," to aid in replacing the interlock switch (S2).
4. Replace the interlock switch (S2) as described in "Replacing the Interlock Switch."
5. Replace the UV fluorescent lamps and lamp retainers as described in "Lamp Replacement."
6. Remount the bottom panel. Make sure to install all eleven screws before tightening any of them. After all screws are installed, tighten them, starting with the three screws next to the back panel and work forward towards front panel.
7. Put the rack back into the UV Board Eraser.
8. Remount the top cover. Make sure that the UV lamp indicators on the top cover are towards the front panel.
9. If the UV Board Eraser still doesn't work, call the Data I/O Customer Support office.

**Lamps Don't Turn Off
When Timer Switch Off,
or Timer Does Not Turn
Off**

If the lamps do not turn off when the timer switch (S1) is off, or if the timer switch (S1) does not turn off at the end of the erase cycle, use the following steps to troubleshoot the problem.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the top cover as described in "Removing the Top Cover."
3. Replace the Timer Switch (S1) as described in "Replacing the Timer Switch."
4. Remount the top cover. Make sure that the UV lamp indicators on the top cover are toward the front panel.
5. If the UV Board Eraser still doesn't work, call the Data I/O Customer Support office.

One or Both Fans Do Not Work, But Lamps Do

If one or both of the fans (B1 and B2) do not work but the lamps do work, use the following steps to troubleshoot the problem.

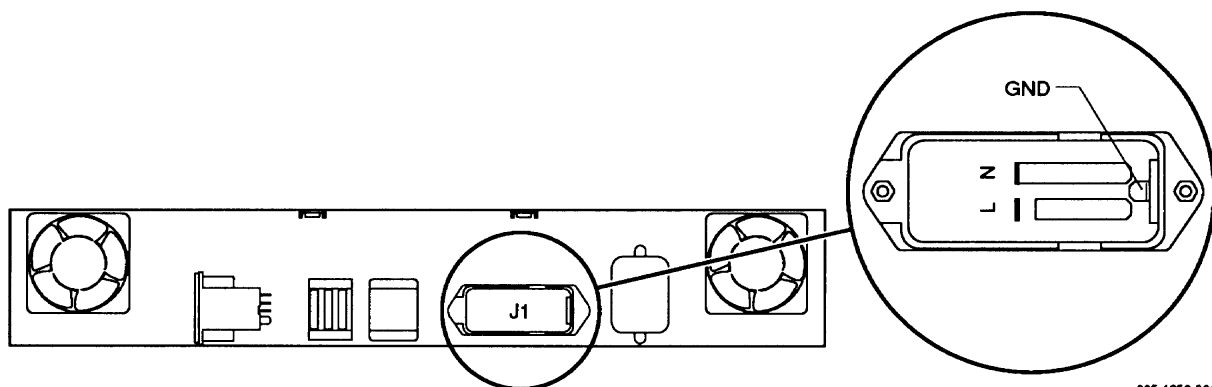
1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the rack, top cover, and the bottom panel as described in "Removing the Top Cover" and "Removing the Bottom Panel."
3. Replace the failed Fan(s) (B1, B2) as described in "Replacing the Fans."
4. Remount the bottom panel. Make sure to install all eleven screws before tightening any of them. After all eleven screws are installed, tighten them, starting with the three screws next to the back panel and work forward towards front panel.
5. Put rack back into the UV Board Eraser.
6. Remount the top cover. Make sure that the UV lamp indicators on the top cover are toward the front panel.
7. If, after replacing the failed fan(s), one or both of the fans still don't work, replace the relay as described in "Replacing the Relay."
8. If the UV Board Eraser still doesn't work, call the Data I/O Customer Support office.

Testing the Power Input Module

Use the following procedure to test the power input module (J1) and the RFI Filter (FL1).

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the back panel as described in "Removing the Back Panel."
3. The power input module (J1) is shown in Figure 3-12.

*Figure 3-12
Power Input Module Pin Numbers*



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4. Use an ohmmeter to test the continuity between the pins on both sides of the power input module. There should be no resistance (0 ohms) between the line (L) pins on both sides of the power input module, no resistance between the neutral (N) pins on both sides of the power input module, and no resistance between the ground (GND) pins on both sides of the power input module.

The Line pins are the lower pins on each side, the Neutral pins are the top pins on each side, and the Ground pins are the center pins on each side.

5. If resistance is measured between any of the pins, replace the power input module as described in "Replacing the Power Input Module."

CAUTION: *When reconnecting the wires to the power input module, make sure that the brown wire is connected to the Line (L) pin, the blue wire is connected to the Neutral (N) pin, and that the green and yellow wire is connected to the Ground (GND) pin of the power input module. Failure to do so could cause serious damage to the UV Board Eraser, and cause electric shock to the user.*

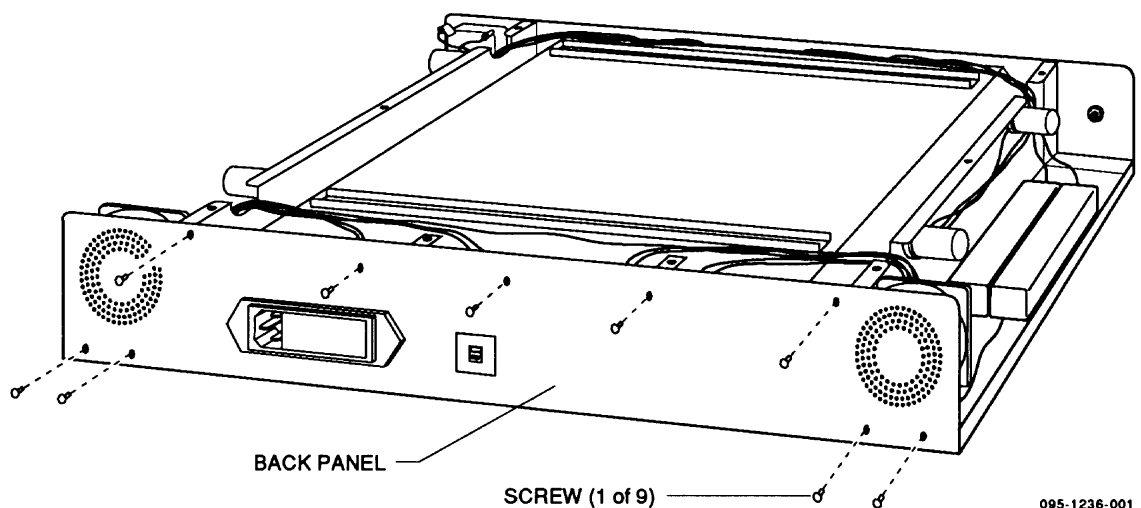
6. If the power input module passed the continuity tests, replace the RFI filter as described in "Replacing the RFI Filter."
7. Remount the back panel as described in the following section.

Removing the Back Panel

To perform the tests and some of the part replacements discussed in the following sections, you must remove the back panel to gain access to the parts that are mounted on it. Use the following procedure to remove the back panel.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the rack, top cover, and the bottom panel as described in "Removing the Top Cover" and "Removing the Bottom Panel."
3. Remove the back panel by removing the nine screws as shown in Figure 3-13.

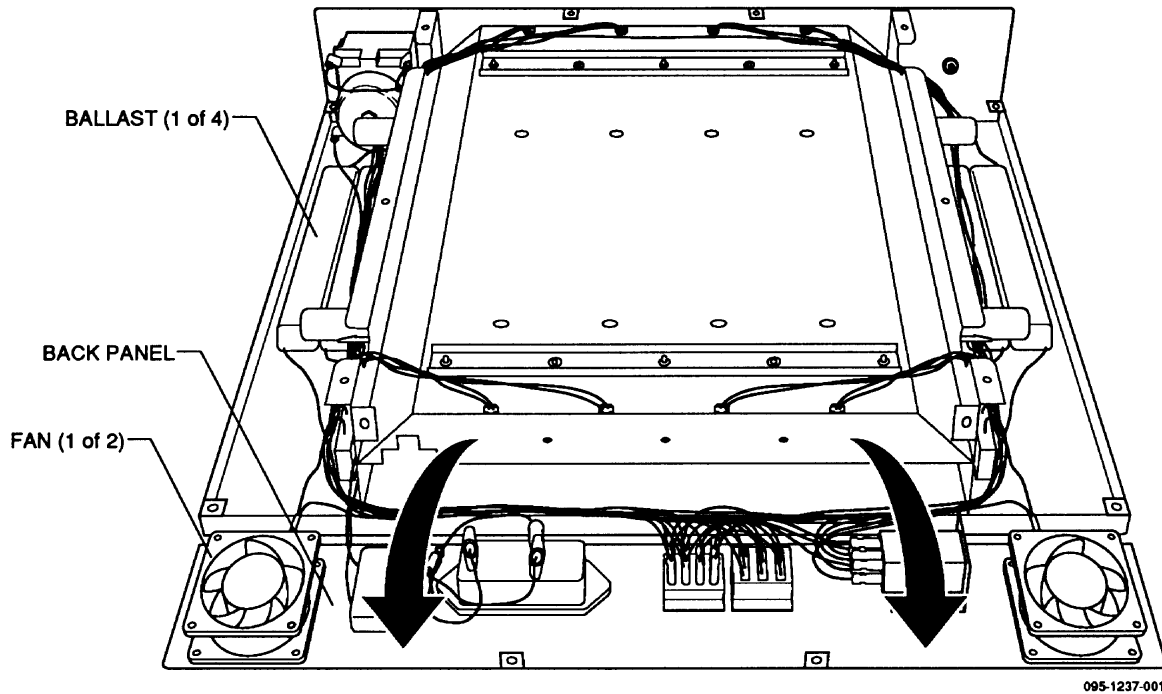
Figure 3-13
Removing Back Panel



095-1236-001

4. Lay the back panel down as shown in Figure 3-14.

Figure 3-14
UV Board Eraser with Back Panel Removed



Remounting the Back Panel

Use the following procedure to attach the back panel to the chassis.

1. When remounting the back panel on to the UV Board Eraser, make sure that all of the wires from the rear panel are located in the cutout in the chassis and are not pinched between the back panel and the chassis. Also make sure that the wires run underneath the fans (B1 and B2).
2. Lift the back panel up against the chassis and tighten the nine screws shown in Figure 3-13. Push the back panel against the chassis while tightening the three middle screws.

Replacing Parts in the 5100 UV Board Eraser

Use the procedures in the following section to replace the parts in the 5100 UV Board Eraser. You may need to cut some of the cable ties in the 5100 UV Board Eraser when replacing the parts. Cable ties (622-1261) have been supplied in the Spares Kit, and it is highly recommended that you replace any cable ties that have been cut.

Replacing the Ballast

Use the following procedure to replace a ballast.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.

2. Use Figures 3-9 and 3-10 to determine which ballast(s) corresponds to the lamp(s) that does not work. Ballast RT1 corresponds to lamp DS1, ballast RT2 corresponds to lamp DS2, and so on.
3. Cut the two black wires on the ballast mounted in the UV Board Eraser at 2 inches from the ballast. Cut the two black wires on the new ballast at 2.5 inches from the ballast. Strip 1/4 inch of the insulation off all four wires.
4. Remove the old ballast by removing the two #4 nuts.
5. Mount the new ballast with the two #4 nuts.
6. Splice the wires using the wire splices (402-0011) provided in the Spares Kit and then use a crimp tool.

Replacing the Fan

Use the following procedure to replace a fan.

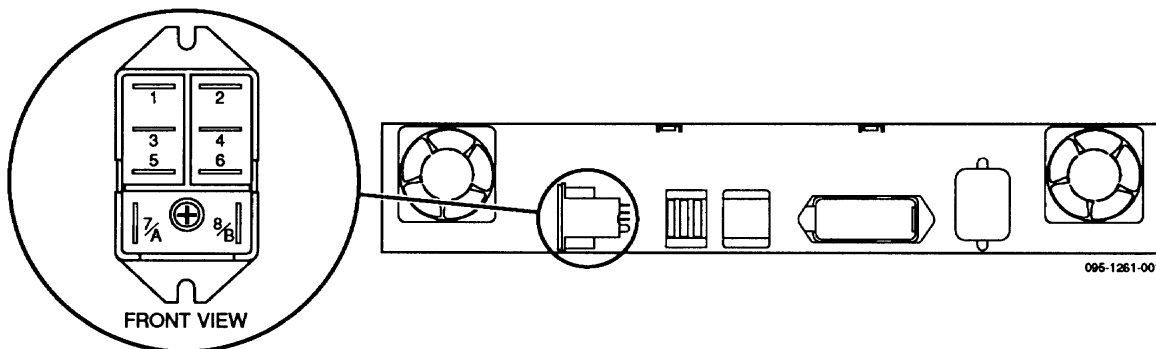
1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Cut the two black wires on the fan mounted in the UV Board Eraser, at 2 inches from the fan. Strip 1/4 inch of the insulation off the wires.
3. Remove the old fan by removing the four #4 nuts.
4. Mount the new fan with the four #4 nuts.
5. Splice the wires using the wire splices (402-0011) provided in the Spares Kit and use a crimp tool.

Replacing the Relay

Use the following procedure to replace the K1 relay.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Heatshrink the .187 inch diameter heatshrink tubing (525-1499) provided in the Spares Kit to pin 1 of the new relay.
3. Remove the K1 relay from the relay bracket.
4. Transfer the wires from the old relay to the new relay one at a time to prevent connecting the wire to the wrong pin. See Figure 3-15 for the pin numbers of the K1 relay.

Figure 3-15
Relay K1 Pin Numbers



5. Mount the new relay to the relay bracket.

Replacing the Power Input Module

Use the following procedure to replace the power input module.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the power input module (J1) from the back panel by removing the two #4 screws and nuts.
3. Transfer the wires from the old power input module to the new power input module.

CAUTION *When reconnecting the wires to the power input module, make sure that the brown wire is connected to the line (L) pin, the blue wire is connected to the neutral (N) pin, and that the green and yellow wire is connected to the ground (GND) pin of the power input module. Failure to do so could cause serious damage to the UV Board Eraser, and cause electric shock to the user.*

4. Refer to Figure 3-12 for the power input module pin numbers.
5. Mount the new power input module to the back panel using the two #4 screws and nuts.

Replacing the RFI Filter

Use the following procedure to replace the RFI filter FL1.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Disconnect the RFI filter's green and yellow wire for the ground stud by removing the #6 nut. Leave the nut holding the power input module's (J1) green and yellow wire attached.
3. Disconnect the RFI filter's blue and brown wire from the power input module (J1) and cut it in half. Save the ends with the connectors to use with the new RFI filter.
4. Cut the brown and blue wires running to timer switch S1.
5. Remove the old RFI filter from the back panel by removing the two #4 nuts, and mount the new RFI filter using the two #4 nuts. Make sure that the three wire side of the RFI filter faces the power input module (J1).
6. Crimp the ring terminal (402-0012) supplied in the Spares Kit to the new RFI filter's green and yellow wire using a crimp tool. Attach the ring terminal to the ground stud with the #6 nut.
7. Splice the brown and blue wire from the three wire side of the RFI filter to the brown and blue wires which have the power input module connectors on them. Use the splices (402-0011) supplied in the Spares Kit and a crimp tool. Connect the wire to the power input module.

CAUTION: When reconnecting the wires to the power input module, make sure that the brown wire is connected to the line (L) pin, the blue wire is connected to the neutral (N) pin, and that the green and yellow wire is connected to the ground (GND) pin of the power input module. Failure to do so could cause serious damage to the UV Board Eraser, and cause electric shock to the user.

8. Splice the brown and blue wire from the two wire side of the RFI filter to the black and white wire that lead to timer switch S1 pins 1 and 4, respectively.

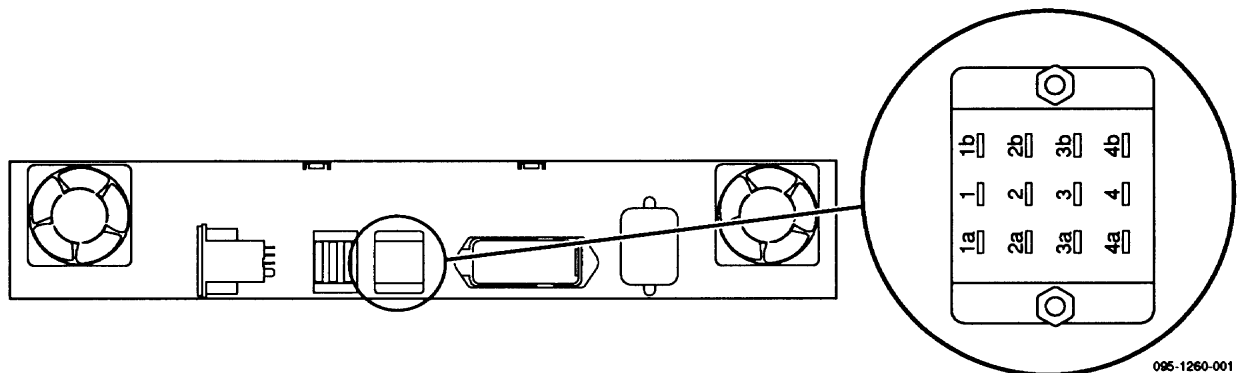
CAUTION: Make sure that the brown wire from the RFI filter is connected to the black wire that leads to pin 1 of timer switch S1, and that the blue wire from the RFI filter is connected to the white wire that leads to pin 4 of the timer switch S1.

Replacing the Voltage Select Switch

Use the following procedure to replace the voltage select switch S3.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Heatshrink the .125-inch diameter heatshrink tubing (525-1498) provided in the Spares Kit to pins 1b and 3b of the new voltage select switch.
3. Remove the voltage select switch (S3) from the back panel by removing the two #4 nuts.
4. Transfer the wires from the old switch to the new switch one at a time to prevent connecting the wire to the wrong pin.
5. Figure 3-16 shows the pin numbers of voltage select switch S3.

Figure 3-16
Voltage Select Switch S3 Pin Numbers



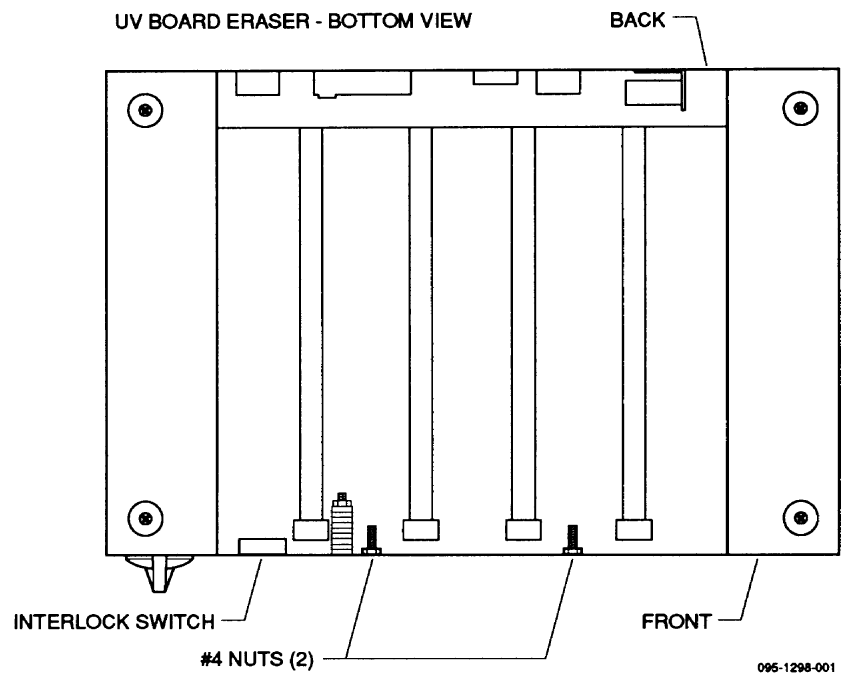
6. Mount the new switch to the back panel using the two #4 nuts.

Removing the Front Panel

To replace the timer switch or the interlock switch, you must remove the front panel from the UV Board Eraser. Use the following procedure to remove the front panel from the UV Board Eraser.

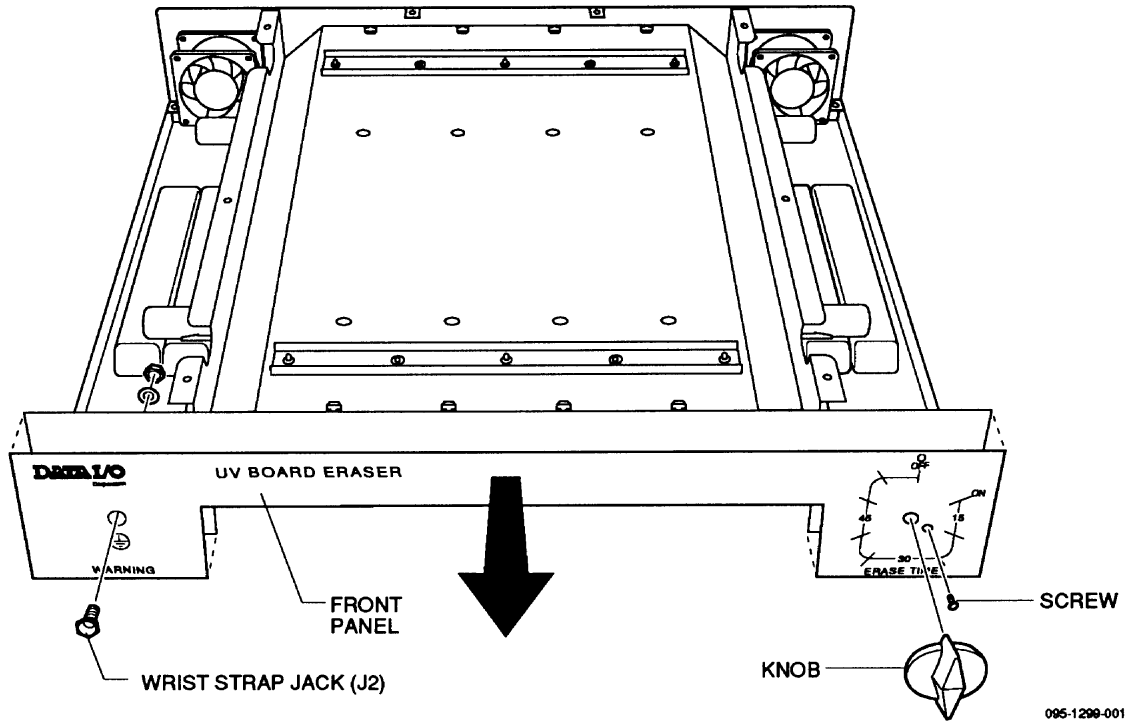
1. Carefully pry the knob off the timer switch using a small slotted screwdriver. A piece of paper may be placed between the screwdriver and the front panel to prevent the front panel from being scratched.
2. Remove the screw next to the timer switch that is now visible.
3. Remove the ESD wrist strap jack (J2) by unscrewing the back side of the jack.
4. Remove the two #4 nuts shown in Figure 3-17 and pull the front panel off as shown in Figure 3-18.

Figure 3-17
Bottom View of the UV Board Eraser



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Figure 3-18
Removing Front Panel



Replacing the Timer Switch

Use the following procedure to replace timer switch S1.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the front panel as described in "Removing the Front Panel."
3. Disconnect the wires from pins of the timer switch.
4. Unscrew the two screws holding the timer switch to the front of the UV Board Eraser, and mount the new timer switch using the same two screws. Note that there is a plastic spacer on each screw.
5. Connect the wires to the timer switch. Refer to Figure 3-11 for the timer switch pin numbers.
6. Replace the front panel.
7. Remount the knob on the timer switch.

Replacing the Interlock Switch

Use the following procedure to replace interlock switch S2.

1. Verify that the power cord is disconnected from both the UV Board Eraser and the wall outlet.
2. Remove the front panel as described in "Removing the Front Panel."
3. Cut the red wire that connects to pin 2 of timer switch S1. Cut the white wire that connects to terminal block TB1 slot1.
4. Remove the interlock switch by removing the two #4 screws and nuts holding it to the front of the UV Board Eraser. Pull the wires through the grommet in the reflector.
5. Heatshrink the .25-inch diameter heatshrink tubing (525-1501) provided in the Spares Kit to the wires of the new interlock switch. Make sure that the heat shrink tubing is pushed up against the interlock switch.
6. Mount the new interlock switch to the UV Board Eraser using the two #4 screws and nuts, and route the wires through the grommet.
7. Splice the red wire to the wire that connects to pin 2 of the timer switch. Splice the white wire to the wire that connects to terminal block TB1 slot 1. Use the splices (402-0011) provided in the Spares Kit and a crimp tool.
8. Remount the front panel.
9. Remount the knob on the timer switch.