Service Guide

HP VidJet Pro Video Print Manager (including the HP Remote Front Panel)

SERIAL NUMBERS

Attached to the rear panel of the instrument is a serial number plate. The serial number is in the form: 0000A00000. The first four digits and the letter are the serial number prefix. The last five digits are the suffix. The prefix is the same for identical instruments; it changes only when a configuration change is made to the instrument. The suffix, however, is assigned sequentially and is different for each instrument.

This manual applies to instruments with serial numbers prefixed 3350A and above.

HP Part No. E2530-90015

5301 Stevens Creek Blvd., Santa Clara, California 95052
Printed in USA

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MANUAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or direct, indirect, special, incidental or consequencial damages in connection with the furnishing, performance, or use of this material.

WARRANTY

A copy of the specific warranty terms applicable to your Hewlett-Packard product and replacement parts can be obtained from your local Sales and Service Office.

Safety Considerations

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

This product is a Safety Class I system (provided with a protective earth terminal).

Before Applying Power

Verify that the product is set to match the available line voltage and the correct fuses are installed.

Safety Earth Ground

An uninterruptable safety earth ground must be provided from the main power source to the product input wiring terminals, power cable, or supplied power cable set.

Warning

Any interruption of the protective (grounding) conductor (inside or outside the system) or disconnecting the protective earth terminal will cause a potential shock hazard that could result in personal injury. (Grounding one conductor of a two conductor outlet is not sufficient protection.) In addition, verify that a common ground exists between the unit under test and the system prior to energizing either unit.

Whenever it is likely that the protection has been impaired, the system must be made inoperative and be secured against any unintended operation.

If this system is to be energized via an autotransformer (for voltage reduction) make sure the common terminal is connected to neutral (that is, the grounded side of the mains supply.)

Servicing instructions are for use by service-trained personnel only. To avoid dangerous electric shock, do not perform any servicing unless qualified to do so.

Adjustments described in the manual are performed with power supplied to the system's instruments while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Capacitors inside the system's instruments might still be charged even if the system has been disconnected from its source of supply.

For continued protection against fire hazard, replace the line fuses only with 250V fuses of the same current rating and type (for example, normal blow, time delay, etc.). Do not use repaired fuses or short circuited fuse holders.

Safety Symbols

Instruction manual symbol: The product will be marked with this symbol when it is necessary for the user to refer to the instruction manual (see Table of Contents for page references).

Indicates hazardous voltages.

Indicates earth (ground) terminal.

Warning

The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Caution

The CAUTION sign denotes a hazard. It calls attention to a procedure, practice, or the like which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

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Introduction

Introduction

The *HP VidJet Pro Service Guide* provides service information for the HP VidJet Pro and the HP Remote Front Panel. The Service Guide provides the necessary information needed to repair the HP VidJet Pro and HP Remote Front Panel to the assembly level. Troubleshooting information to the component level is not provided.

Manual Organization

The service guide includes the following chapters:

Chapter 1, INTRODUCTION, covers manual organization.

Chapter 2, IDENTIFYING THE FAILED ASSEMBLY, contains the troubleshooting information needed to isolate a failed major assembly.

Chapter 3, REMOVING THE FAILED ASSEMBLY/PART, contains information needed to remove or replace a major assembly.

Chapter 4, OBTAINING THE REPLACEMENT ASSEMBLY/PART, contains information needed to order assemblies for the instrument.

Safety Considerations

This product is a Safety Class 1 instrument, that is, it has a protective earth terminal. This Service Guide should be reviewed for familiarization with safety markings and instructions before operation.

Refer to the Safety Considerations pages found at the beginning of this manual for a summary of the safety information. Safety information for the various service functions appears in appropriate places throughout this manual.

Instruments Covered By This Manual

Attached to the rear panel of this instrument is a serial number plate. The serial number is in the form: 0000A00000. The first four digits and the letter are the serial number prefix. The last five digits are the suffix. The prefix is the same for identical instruments; it changes only when a configuration change is made to the instrument. The suffix assignment is sequential and is different for each instrument. The contents of this manual apply directly to instruments having the serial number prefix(es) listed under "Serial Numbers" on the title page.

Manual Updates

Different versions of this instrument are identified by a change in serial number prefix. The information for these different versions can be found either in the text of this manual or in a *Manual Updates* package. The package contains information that explains how to adapt this manual to the newer instrument version.

In addition to change information, the *Manual Updates* package may contain information for correcting errors in the manual. The package identification is the manual print date and part number, both appear on the back cover of this manual.

Assumptions About You

The procedures in this manual assume that you have the tools and equipment to perform each service task. To find what tools and equipment belong to each service task, refer to the chapter containing the task.

Repair During the Warranty Period

During the warranty period of the HP VidJet Pro and HP Remote Front Panel the warranty applies whether the instrument is returned to Hewlett-Packard or repaired by the customer. For customer repairs, exchange assemblies may be ordered through Hewlett-Packard's Support Materials Organization (SMO) or in Europe, Asia, or Canada, your Hewlett-Packard Professional Video Products Authorized Dealer. How to order a replacement part is described in chapter 4, "Obtaining the Replacement Assembly/Part."

The warranty does not apply to defects resulting from improper or inadequate maintenance or calibration by Customer, Customer-supplied software, interfacing or supplies, unauthorized modification or improper use, operation outside of the published environmental specifications for the Product, or improper site preparation or maintenance by Customer.

Returning the Instrument for Servicing

If the instrument needs to be returned for servicing, United States customers should return it to the Hewlett-Packard Golden Gate Service Center at the following address:

301 E. Evelyn Avenue
Mountain View, Ca. 94041

Tel. No. (415) 694-2000

Customers in Europe, Asia, and Canada should return the instrument to their local Hewlett-Packard Professional Video Products Authorized Dealer. Contact one of the following Hewlett-Packard Sales Offices for the location of the Hewlett-Packard Professional Video Products Authorized Dealer in your area:

Canada:
Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V1M8
(416) 678 9430

Germany:
Hewlett Packard GmbH
Herrenberger Strasse 130
W-7030 Boblingen
Germany
(70) 31 140

Japan:
Yokogawa-Hewlett-Packard Ltd.
91 Takakura-cho
Hachioji
Tokyo 192, Japan
0426-42-1231

Italy:
Hewlett-Packard Italiana S.p.A
Via Giuseppe di Vittorio, 9
20063 Cernusco sul Naviglio
Milano Italy
2 921 991

Latin America:
Hewlett-Packard
Latin American Region Headquarters
Monte Pelvoux No. 11
Lomas de Chapultepec
11000 Mexico, D.F. Mexico
(525) 202 0155

United Kingdom:
Hewlett-Packard Ltd.
Cain Road
Bracknell Berkshire RG12 1HN
(34) 436 0000

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Melbourne, Australia
(03) 895-2895

Europe:
Hewlett-Packard S.A.
150, route du Nant-d'Avril
1217 Meyrin 2/Geneva
Switzerland
(22) 780.8111

France:
Hewlett-Packard France
France Sales Region Headquarters
Parc d'Activite du Bois Briard
2, avenue du Lac
91040 Evry Cedex
France
(69) 91 8000

Far East:
Hewlett-Packard Pacific Ltd.
22-30/F Peregrine Tower
Lippo Centre
89 Queensway, Central
Hong Kong
(852) 848 7070

When returning the HP VidJet Pro or HP Remote Front Panel to Hewlett-Packard for servicing, please include a specific description of the nature of the problem. If you have recorded any error messages that appeared on the front panel or have any other specific data on the performance of the instrument, please send a copy of this information with the unit.

Original Packaging

Before shipping, pack the unit in the original factory packaging materials. If the original materials were not retained, identical packaging materials are available through any Hewlett-Packard office.

Other Packaging

Caution

Module damage can result from using packaging materials other than those specified. Never use styrene pellets, in any shape, as packaging materials. They do not adequately cushion the equipment or prevent it from shifting in the carton. They also cause equipment damage by generating static electricity.

You can repackage the module with commercially available materials as follows:

1. Attach a complete description of the failure to the instrument.
2. Wrap the module in anti-static plastic to reduce the possibility of ESD damage.
3. Use a strong shipping container. A double-walled, corrugated cardboard carton with 159-kg. (350-lb.) bursting strength is adequate. The carton must be both large enough and strong

enough to accommodate the instrument and at least three to four inches of packing material on all sides.

4. Securely pack the instrument in three to four inches of packing material to prevent it from moving around in the carton. If packing foam is not available, the best alternative is to use S.D.-240 Air Cap TM, from Sealed Air Corporation in Commerce, California, 90001. This material is a plastic sheet of $1\frac{1}{4}$-inch air bubbles. Use the pink-colored Air Cap to reduce static electricity. Wrap the instrument several times in this material to protect it and to prevent it from moving in the carton.
5. Seal the shipping container securely with strong nylon adhesive tape.
6. Mark the shipping container "FRAGILE, HANDLE WITH CARE" to encourage careful handling.
7. Retain copies of all shipping papers.

2

Identifying the Failed Assembly

Introduction

This is the troubleshooting chapter for the HP VidJet Pro and HP Remote Front Panel. The troubleshooting strategy is to isolate the problem to a major assembly. Troubleshooting information to the component level is not supplied.

The troubleshooting is presented using the following information:

- Overall Block Diagram
- Troubleshooting Diagnostics

The troubleshooting diagnostics refer to major assemblies and cable assemblies in the HP VidJet Pro and HP Remote Front Panel. Figure 2-2 is going to be helpful in identifying and locating these assemblies.

Safety Considerations

Warnings and Cautions

Pay attention to WARNINGS and CAUTIONS. They must be followed for your protection and to avoid damage to the equipment.

Before Applying Power

Caution

Verify that the correct fuse is installed.

Warning

Maintenance described herein is performed with power supplied to the instrument and with protective covers removed. Such maintenance should be performed only by service-trained personnel who are aware of the hazards involved (for example, fire and electrical shock). Where maintenance can be performed without power supplied, the power should be removed.

An uninterrupted safety earth ground must be provided from the main power source to the instrument input wiring terminals or power cable. Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting the protective earth terminal will cause a potential shock hazard that could result in personal injury. (Grounding one conductor of a two conductor outlet is not sufficient

protection.) In addition, verify that a common ground exists between this instrument and the test equipment prior to energizing either unit.

Whenever it is likely that the protection has been impaired, the instrument must be made inoperative and be secured against any unintended operation.

If this instrument is to be energized via an autotransformer (for voltage reduction) make sure that the common terminal is connected to neutral (that is, the grounded side of the mains supply).

Servicing instructions are for use by service-trained personnel only. To avoid dangerous electric shock, do not perform any servicing unless qualified to do so.

Energy available at many points may, if contacted, result in personal injury.

Capacitors inside the instrument may still be charged even if the instrument has been disconnected from its source of supply.

For continued protection against fire hazard, replace the line fuse(s) only with 250 V fuse(s) of the same current rating and type (for example normal blow, time delay, etc.). Do not use repaired fuses or short circuited fuseholders.

Caution

Unplug the instrument before disconnecting or removing any boards. Some boards contain devices that can be damaged if the board is removed when the power is on. There are several components including MOS and CMOS devices that can be damaged by electrostatic discharge. Use conductive foam and grounding straps when servicing sensitive components. Carefully unplug ICs in high-grip sockets.

After-Service Safety Checks

Visually inspect the interior of the instrument for any signs of abnormal internally generated heat, such as discolored printed circuit boards or components, damaged insulation, or evidence of arcing. Determine and remedy the cause of any such condition.

Using a suitable ohmmeter, check resistance from instrument enclosure to ground pin on power cord plug. The reading must be less than one ohm. Flex the power cable while making this measurement to determine whether intermittent discontinuities exist.

Check resistance from instrument enclosure to line and neutral (tied together) with the line switch in the ON (|) position and the power source disconnected. The minimum acceptable resistance is two megohms. Replace any component that results in a failure.

Check the line fuse to verify that a correctly rated fuse is installed.

Recommended Test Equipment

Test equipment and accessories required to maintain the instrument are listed in table 2-1, "Recommended Test Equipment." Equipment other than that listed may be used if it meets the critical specifications listed in the table.

Service Accessories

TORX® Screwdrivers

Most of the screws in the HP VidJet Pro and HP Remote Front Panel are TORX® screws. Remove these screws with a TORX® screwdriver. The part number of the #10 TORX® screwdriver is HP 8710-1623.

Pozidriv Screwdrivers

Some screws in the instrument appear to be Phillips type, but are not. To avoid damage to the screw head slots, Pozidriv screwdrivers should be used. The part number of the No. 1 Pozidriv is HP 8710-0899. The part number of the No. 2 Pozidriv is HP 8710-0900.

Hardware

The instrument has a mixture of Unified National (inch) and metric screws. The metric screws are defined in Industrial Fasteners publication (IFI 500). Do not use a metric screw in a Unified National nut, or a metric nut with a Unified National screw because thread damage will occur.

Parts and Cable Locations

The part reference designation is the assembly designation plus the part designation. For example, A6R9 is R9 on the A6 assembly.

Chassis and frame parts, as well as mechanical parts and cables (W), are identified in illustrated parts breakdowns (IPBs) in chapter 4.

Test Point Locations

Test and measurement points called out in the troubleshooting procedures are shown on the overall block diagram.

Service Aids on Printed Circuit Boards

Service aids on printed circuit boards include test points, indicator lights, some reference designations, and assembly part numbers.

Other Service Documents

Service Notes, Manual Update Packages, and other service literature are available through Hewlett-Packard. For further information, contact your nearest Hewlett-Packard Sales Office or Hewlett-Packard Professional Video Products Authorized Dealer.

Cleaning

Cleaning Intervals

Warning 

Before cleaning, make sure the instrument is disconnected from the power source. This is to eliminate the possibility of electrical shock.

Caution 

In procedures that call for a vacuum cleaner to remove dust, do not use a blower or compressed air. Doing so will cause the dust to be transferred throughout the instrument.

Hewlett-Packard recommends a 12-month interval between cleaning for some parts of the instrument. But, cleaning intervals are mostly dependent upon where the instrument is used. The instrument should be cleaned more often if it is in a dusty or very humid area.

Cleaning Solution

Hewlett-Packard recommends using either of two cleaning solutions on printed circuit (PC) board edge connectors. For best cleaning results, we recommend an ammonium hydroxide solution (NH4OH, 29.5% NH3 by weight). But, a concentrated solution of ammonia requires the use of gloves, eye goggles, and proper ventilation. The second recommendation is an 80:20 solution of isopropyl alcohol and water (IPA/H_2O). This should serve as a satisfactory cleaner where one would not want to use ammonium hydroxide.

12-Month Cleaning

Remove each printed circuit board, and clean the component side of the board with compressed air. To remove the boards, refer to chapter 3, Removing the Failed Assembly/Part. Return the boards to the instrument.

After cleaning, reinstall the cover.

Repair During the Warranty Period

Normally if a product needs repair during the warranty period it is returned to Hewlett-Packard and Hewlett-Packard will repair the product at no charge to the customer.

During the warranty period of the HP VidJet Pro and HP Remote Front Panel the warranty applies whether the instrument is returned to Hewlett-Packard or repaired by the customer. For customer repairs, return the defective assembly to Hewlett-Packard's Support Materials Organization (SMO) or in Europe, Asia, or Canada, your Hewlett-Packard Professional Video Products Authorized Dealer for a replacement assembly. How to order a replacement part is described in chapter 4, "Obtaining the Replacement Assembly/Part."

The warranty does not apply to defects resulting from improper or inadequate maintenance or calibration by Customer, Customer-supplied software, interfacing or supplies, unauthorized modification or improper use, operation outside of the published environmental specifications for the Product, or improper site preparation or maintenance by Customer.

Table 2-1. Recommended Test Equipment

Instrument	Critical Specifications	Recommended Model	Use[1]
Oscilloscope	Channels: 4	HP 54512B	T
Probe, 1:1		HP 10438A	T

1 T=Troubleshooting, A=Adjustments, P=Performance Tests

Isolating a Possible Failure

Introduction

The troubleshooting has been written to minimize the amount of time it should take to locate a failure. First an overall block diagram of the instrument is presented. Following the block diagram are procedures to verify the microprocessor and power supply. Finally, with the microprocessor and power supply known to be operational, individual troubleshooting diagnostics isolate a failure to one of the other assemblies.

HP VidJet Pro Troubleshooting

The HP VidJet Pro troubleshooting was designed to be used as follows:

- Use the overall block diagram to gain an understanding of the instrument.
- Verify operation of the power supply, if needed.
- Use Self-Test Menu 1 to isolate the failure.

Self-Test Menus

The diagnostics within Self-Test Menu 1 do not have to be run sequentially. You need only select those diagnostics needed to troubleshoot the problem.

Self-Test Menu 1 includes the following diagnostics:

- Memory
- Display
- Keyboard
- Printer
- Serial 422
- Serial 232
- Timecode

Self-Test Menu 2 includes the following menu pick:

- Firmware Revision

A5 I/O Board Verification

Refer to the end of this chapter for a procedure to verify that the A5 I/O Board is functioning properly.

Repair Verification

Once the defective assembly has been located and replaced, perform the following steps.

- Run the diagnostic that was used to locate the defective assembly. This will verify that the problem has been fixed.
- Verify that you can grab and print a frame.

Battery Disposal

There is a battery located on the A3 Microprocessor Board. The following warning must be observed concerning the battery.

Warning

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent battery type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

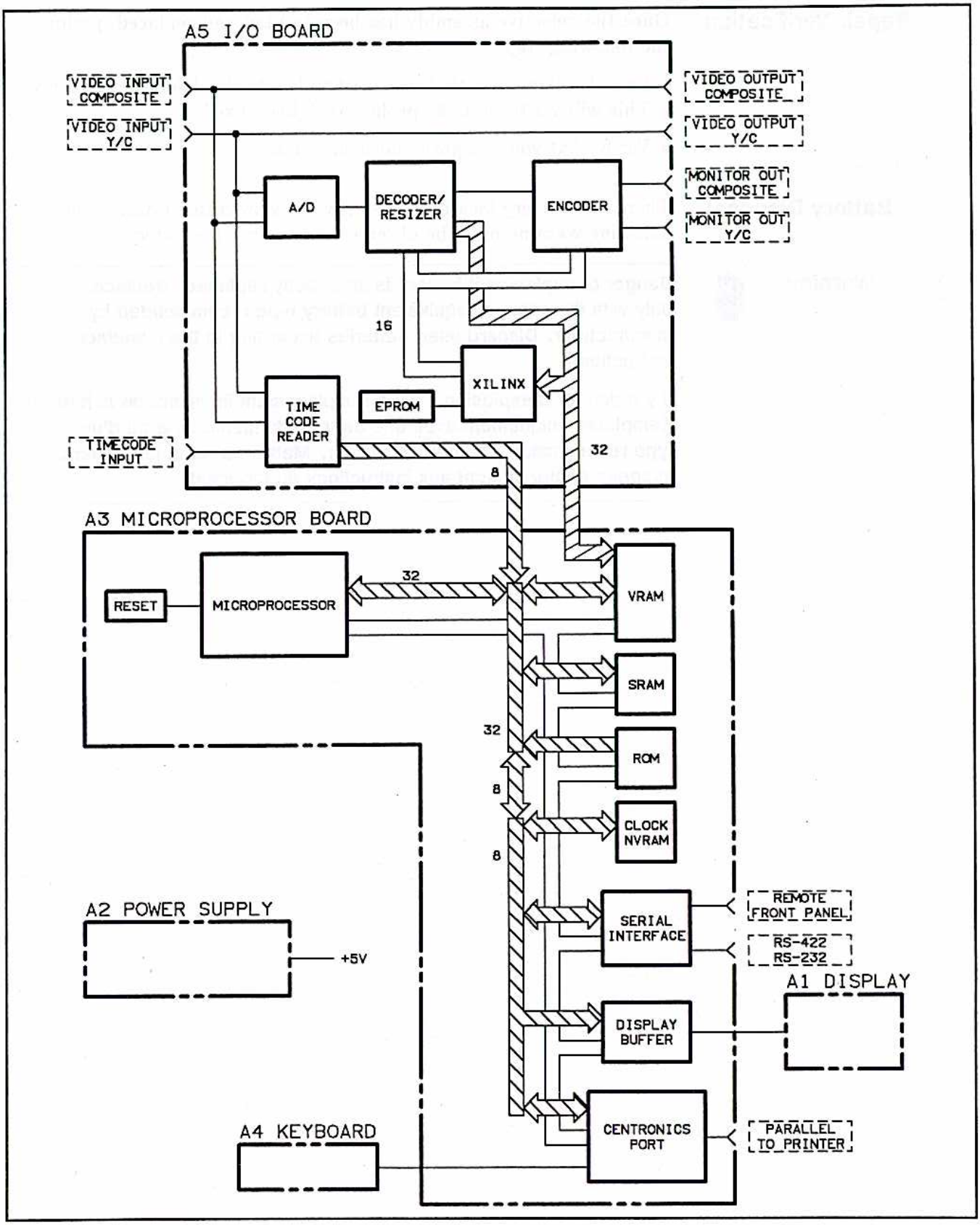


Figure 2-1. Overall Block Diagram (showing Composite I/O option)

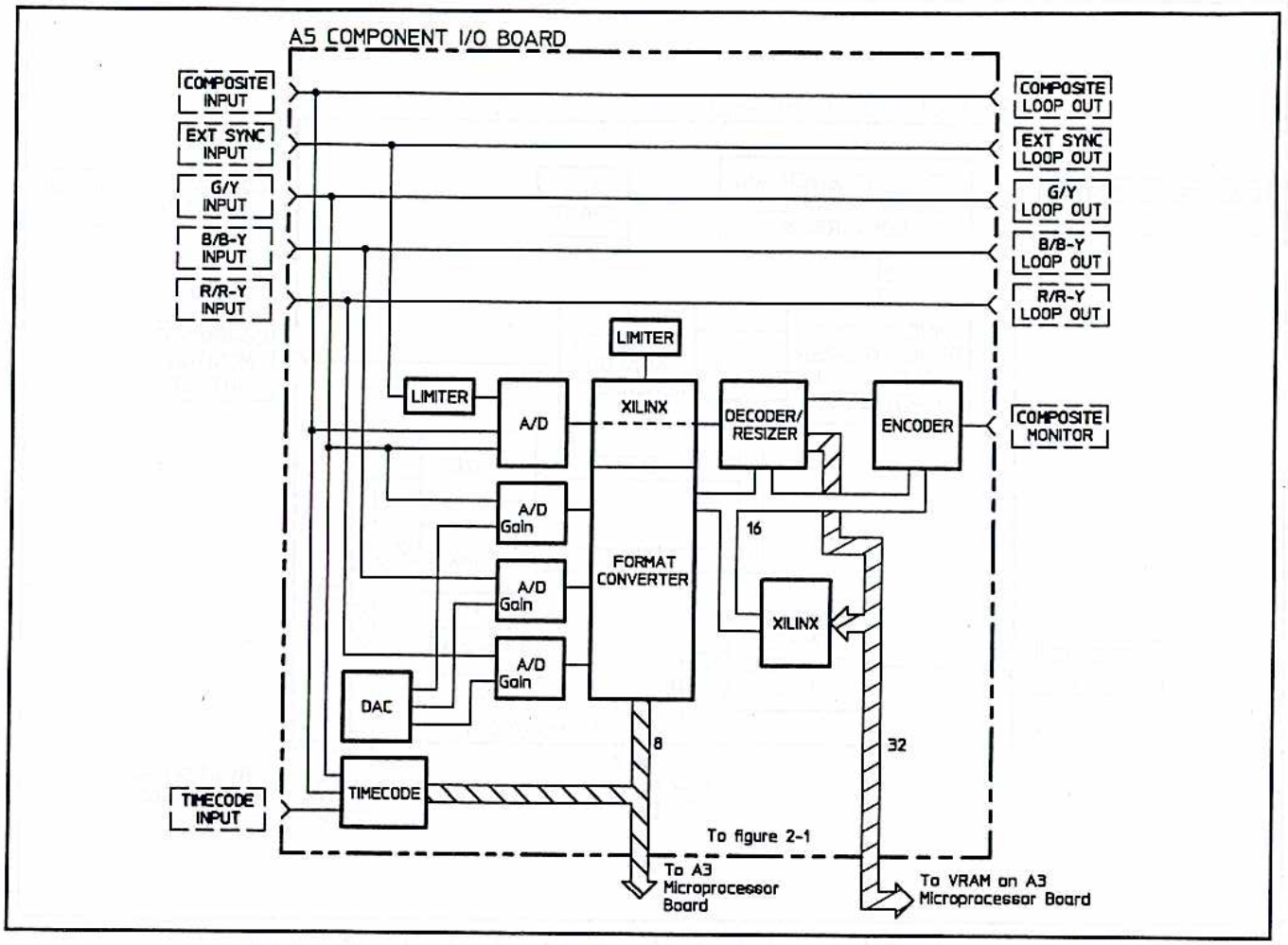


Figure 2-1a. P/O Overall Block Diagram (showing Analog Component I/O option)

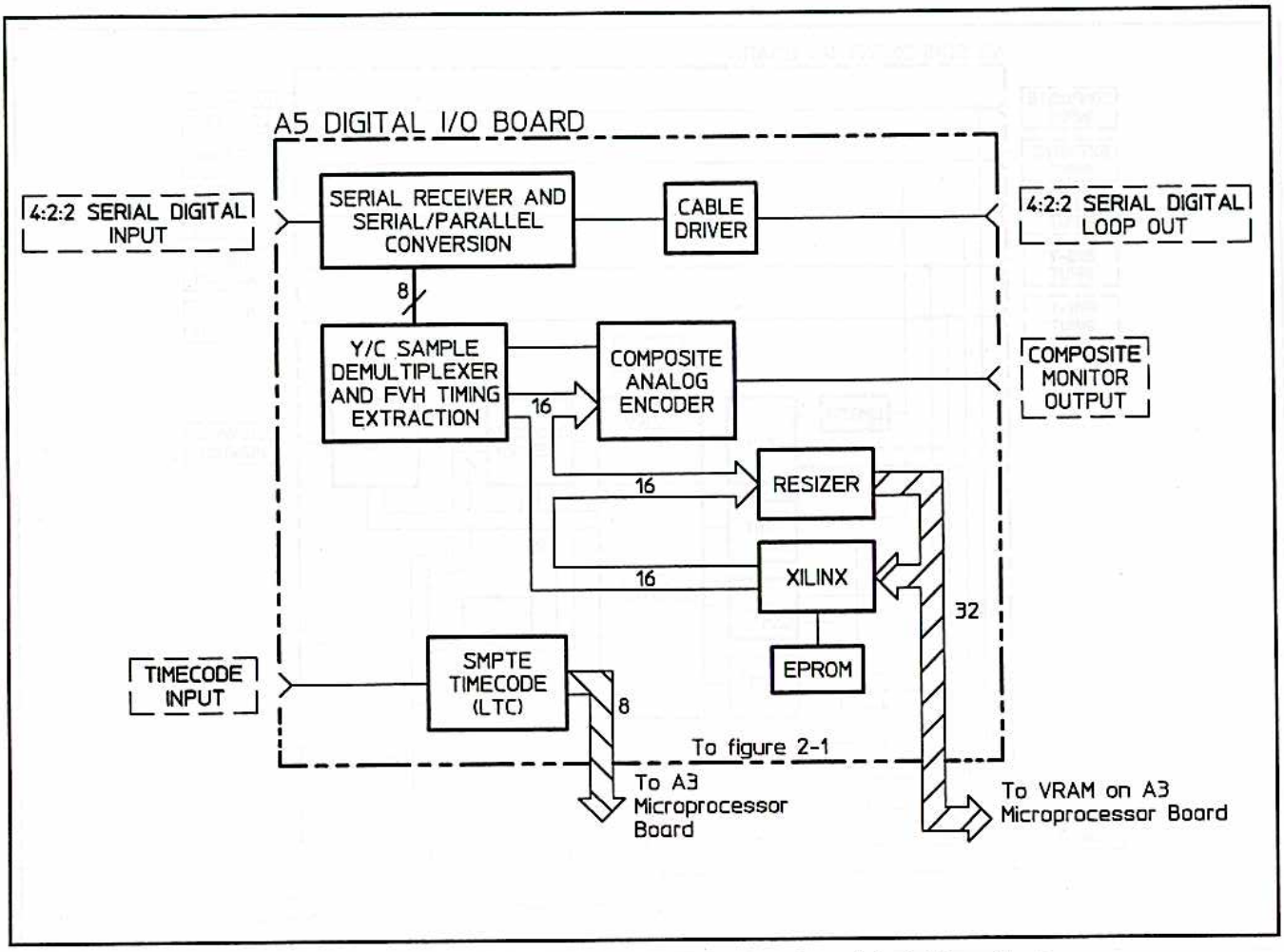


Figure 2-1b. P/O Overall Block Diagram (showing Digital I/O option)

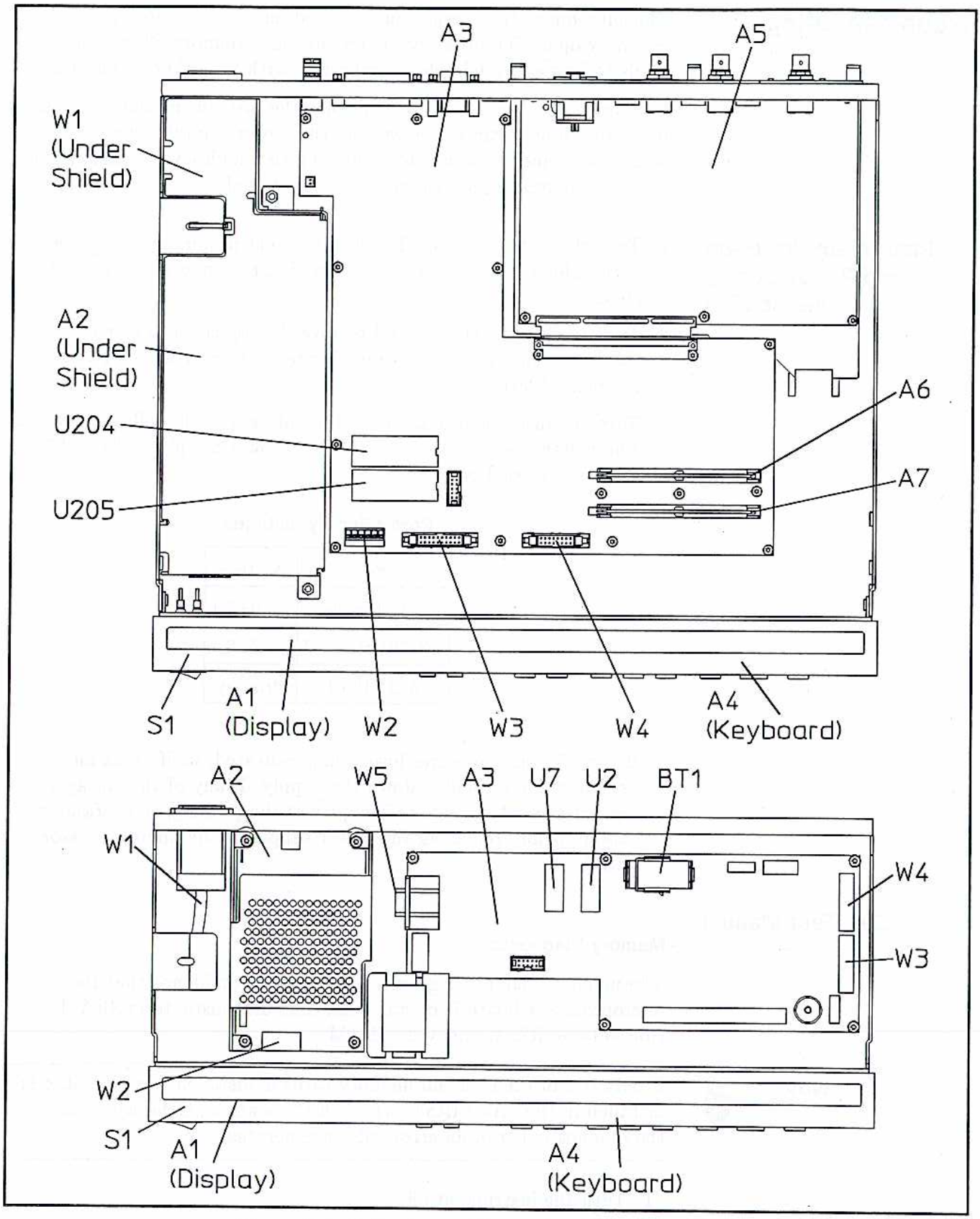


Figure 2-2. Major Assemblies and Cable Assemblies

Troubleshooting

The subsequent troubleshooting is based on the microprocessor assembly operating properly. Therefore the "Memory Diagnostic" needs to be performed before continuing with the other diagnostics.

The procedure begins by verifying that the instrument can power-up. If the instrument can not power-up, the power supply is verified. Next, the memory diagnostic is run to give a high level of confidence that the microprocessor assembly is operational.

Instrument Power-up and Power Supply Verification

1. Turn the instrument on. If the instrument powers up, continue with "Memory Diagnostics." Otherwise, continue with the next step.
2. Turn the instrument off, and remove the top cover. Refer to the cover removal procedure in chapter 3, Removing the Failed Assembly/Part.
3. Turn the instrument on. Verify the voltages in the following table. The voltages are measured on the A2 Power Supply and the A3 Microprocessor Board.

Power Supply Voltages

Pin	Voltage
A2J2-Pins 1-3	+5.0±0.1
A3J208-Pins 1-3	+5.0±0.1
A2J1-Pin 1	Primary

If the +5 volts measures lower than indicated, verify that an assembly is not loading down the supply. If any of the voltages are not present, verify the integrity of the primary and secondary cabling before replacing the power supply or the microprocessor board.

Self-Test Menu 1

Memory Diagnostic

The memory diagnostic gives a high level of confidence that the microprocessor board is operational. The diagnostic tests SRAM, Non-volatile RAM, and Video RAM.

Note

If only one of the optional memory cards is installed, verify that it is installed in the "A6 FIRST MEMORY" location. Otherwise when the diagnostic is run an error will be generated.

1. Turn the instrument off.
2. While pressing the front panel keys, (Grab Seq) and (Stop), turn the instrument on.

3. The instrument will display "Self-Test Menu 1 Self Test= None." If the display is not as indicated, continue with the next step. Otherwise continue with step 7.
4. Turn the instrument off and remove the A5 I/O Board. Refer to "I/O Board Removal" in chapter 3, Removing the Failed Assembly/Part.
5. Turn the instrument on. "CPU DIAGNOSTIC" is displayed, the two rows of the display fully light, the memory is tested, and the keyboard diagnostic is enabled. Refer to step 9 for an explanation of the memory diagnostic. Refer to the "Keyboard Diagnostic" section in this chapter for an explanation of the keyboard diagnostic. Run the "Memory Diagnostic" again when the problem has been solved. If the display was not as indicated, continue with the next step.
6. Remove the top cover. Refer to "Cover Removal" in chapter 3, Removing the Failed Assembly/Part. Ground testpoint "DTST" near the left front edge of the A3 Microprocessor Board. The display will go through its selftest. The self test consists of a series of ASCII characters traveling across the two rows of the display. If the selftest fails, replace the display. Otherwise, check the continuity of the cable. If the cable checks out, replace the A3 Microprocessor Board. When the A3 Microprocessor Board is replaced, run the "Memory Diagnostic" again.
7. Press the arrow keys until "Self Test Memory" is displayed.
8. Press the (Recall Save) key to start the diagnostic.
9. The amount of video RAM installed is displayed. The display will show something such as "5M Video RAM." The amount of video RAM depends on which options are installed. The standard instrument comes with 1 megabyte and each additional memory card adds an additional 2 megabytes. The diagnostic takes approximately one minute for each megabyte of memory. SRAM and the non-volatile RAM are tested last.
10. At the completion of the diagnostic, "Passed" is displayed if no errors were detected. If anything other than "Passed" is displayed, replace the assembly indicated in the following table.

Memory Diagnostic Error Codes

Displayed Error	Replace Assembly
80000000 to 800FFFFF	A3 Microprocessor Bd
80100000 to 802FFFFF	A6 Memory Bd
80300000 to 804FFFFF	A7 Memory Bd

11. Continue with the other "Self-Test Menu 1" diagnostics to troubleshoot the problem being experienced.

Display Diagnostic

The functionality of the display is verified by exercising all the elements of the display. A string of ASCII characters is moved across the two rows of the display.

1. Turn the instrument off.
2. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
3. The instrument will display "Self-Test Menu 1 Self Test= None."
4. Press the arrow keys until "Self Test Display" is displayed.
5. Press the [Recall Save] key to start the diagnostic. The diagnostic takes approximately seventy seconds to complete.
6. If the display is as indicated, the diagnostic passes. Otherwise, continue with the next step.
7. Remove the top cover. Refer to "Cover Removal" in chapter 3, Removing the Failed Assembly/Part.
8. Ground testpoint "DTST" near the left front edge of the A3 Microprocessor Board. The display will go through its selftest. The self test consists of a series of ASCII characters traveling across the two rows of the display. If the selftest fails, replace the display. Otherwise, check the continuity of the cable. If the cable checks out, replace the A3 Microprocessor board.

Keyboard Diagnostic

The functionality of the keyboard is verified by pressing any key and seeing the name of the key on the display.

1. Turn the instrument off.
2. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
3. The instrument will display "Self-Test Menu 1 Test= None."
4. Press the arrow keys until "Self Test Keyboard" is displayed.
5. Press the [Recall Save] key to start the diagnostic. The LEDs on the keyboard will blink as the keys are pressed.
6. If the name of each of the keys appears on the display, the diagnostic passes. Otherwise, continue with the next step.
7. Turn the instrument off.
8. Remove the top cover. Refer to "Cover Removal" in chapter 3, Removing the Failed Assembly/Part.

9. Verify the continuity of the keyboard cable (W4). If the cable checks out, continue with the next step.
10. Disconnect the keyboard cable (W4) at A3J303.
11. Measure the resistance between the pins shown in the following table while pressing the front panel key indicated. Pin 1 is indicated on the printed circuit board and pin 2 is opposite pin 1. The resistance must be less than 10 Ω. If the resistance for any key is not as indicated, replace the A4 Keyboard. Otherwise, replace the A3 Microprocessor Board.

Keyboard Verification

Key	Pins	Key	Pins
Prev Menu	1 and 6	Grab Seq	3 and 9
Menu ⇐	1 and 7	Clear Frame	4 and 6
Next Menu	1 and 8	View Frame ⇐	4 and 7
Menu ⇒	1 and 9	Tag Frame	4 and 8
Recall/Save	2 and 8	View Frame ⇒	4 and 9
System	2 and 9	Select Image Source	5 and 6
Page Layout	3 and 6	Print 1 Frame	5 and 7
Seq Trigger	3 and 7	Print Seq	5 and 8
Grab 1 Frame	3 and 8	Stop	5 and 9

Printer Diagnostic

The printer diagnostic exercises the PARALLEL TO PRINTER port. A full page of ASCII characters will be output to the printer.

1. Turn the instrument off.
2. Connect one of the recommended printers to the PARALLEL TO PRINTER port.

Note

When using an HP DeskJet Series 300 or 500 printer ensure that the monochrome cartridge is installed before running the diagnostic.

3. Turn the printer on.
4. While pressing the front panel keys, [Grab Seq] and [Stop], turn the HP VidJet Pro on.
5. The instrument will display "Self-Test Menu 1 Self Test= None."
6. Press the arrow keys until "Self Test Printer" is displayed.
7. Press the [Recall Save] key to start the diagnostic.

8. If the ASCII characters are output, the diagnostic passes. If the diagnostic failed, check the printer and printer cable. Run the diagnostic again.
9. If the diagnostic fails again, replace the A3 Microprocessor Board.

Serial 422 Diagnostic

The serial 422 diagnostic verifies the functionality of the "REMOTE FRONT PANEL" and "RS-422" rear panel ports.

1. Turn the instrument off.
2. Connect the "REMOTE FRONT PANEL" port to the "RS-422" port. Refer to Figure 2-3.

Note

The cable shown in Figure 2-3 is verified to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules.

Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

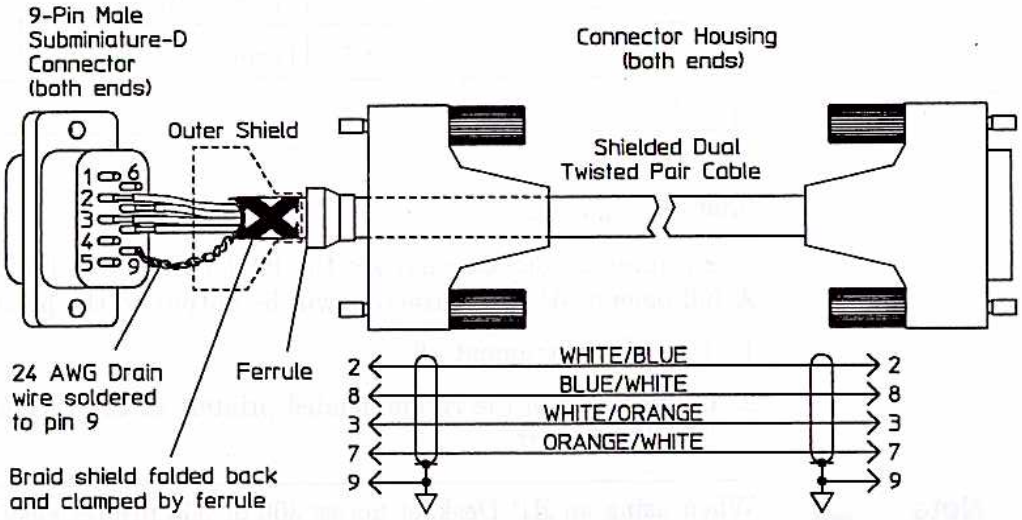


Figure 2-3. Serial Cable

3. Ensure that the switch is set to RS-422.
4. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
5. The instrument will display "Self-Test Menu 1 Self Test= None."
6. Press the arrow keys until "Self Test Serial 422" is displayed.
7. Press the [Recall Save] key to start the diagnostic.
8. The diagnostic takes less than one second to complete.

9. If anything other than "Passed" is displayed on the front panel, replace the A3 Microprocessor Board.

Serial 232 Diagnostic

The serial 232 diagnostic verifies the functionality of the "RS-232" rear panel port.

1. Turn the instrument off.
2. Connect pin 2 to pin 3 on the "RS-232" port. Refer to Figure 2-4. These are nine conductor subminiature D connectors.
3. Ensure that the switch is set to RS-232.
4. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
5. The instrument will display "Self-Test Menu 1 Self Test= None."

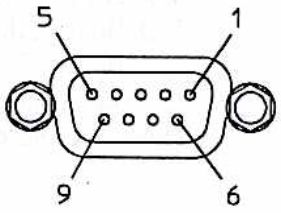


Figure 2-4. RS-232 Connector Pins (Rear Panel View)

6. Press the arrow keys until "Self Test Serial 232" is displayed.
7. Pressing the [Recall Save] key starts the diagnostic.
8. The diagnostic takes less than one second to complete.
9. If anything other than "Passed" is displayed on the front panel, replace the A3 Microprocessor Board.

Timecode Diagnostic

The timecode diagnostic verifies the functionality of the rear panel "TIMECODE INPUT" circuitry.

1. Turn the instrument off.
2. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
3. The instrument will display "Self-Test Menu 1 Self Test= None."
4. Use the arrow keys to select "Self Test Time Code."
5. Press the [Recall Save] key to start the diagnostic.
6. The diagnostic takes approximately ten seconds to complete.
7. If anything other than "Passed" is displayed on the front panel, replace the A5 I/O Board.

Self-Test Menu 2

Firmware Version

This menu pick displays the current version of firmware installed in the instrument.

1. Turn the instrument off.
2. While pressing the front panel keys, [Grab Seq] and [Stop], turn the instrument on.
3. The instrument will display "Self-Test Menu 1 Self Test= None."
4. Press the [Next Menu] key. "Self-Test Menu 2 FW Revision=XXXXX" will be displayed. Where XXXXX is the revision number.

A5 I/O Board Verification

The A5 I/O Board Verification is divided into three checks: Basic I/O Board Checks, A5 Component I/O Board Check, and A5 Digital I/O Board Check. Begin verification with the Basic I/O Board Checks. If necessary, in addition to the basic checks use the specific check for the component or digital I/O board.

Basic I/O Board Checks

Note

Verification of the composite I/O board only requires the Basic I/O Board Checks. In addition to the Basic I/O Board Checks, verification of the component and digital I/O boards may require the additional check.

The following checks have been designed to give a high level of confidence that the I/O board is functioning. If any one of the listed conditions is not present, the I/O board is failing and should be replaced. These conditions will be present when the instrument has powered up and a video signal is connected to the I/O board.

- A5DS1 (Composite or Component Boards) or A5DS2 (Digital Board) is on indicating that +5 volts is supplied to the board.
- A5DS3 (Digital Board ONLY) is on indicating that −5 volts is supplied to the board.
- A5DS2 (Composite or Component Boards) or A5DS1 (Digital Board) is either flashing or on, indicating that both Xilinx chips have successfully downloaded.
- A pulse train can be observed on the horizontal sync line (HSYNC or HS pin).
- A pulse train can be observed on the vertical sync line (VSYNC or VS pin).

If the component or digital I/O board passed the Basic I/O Board Checks, continue with one of the following checks.

A5 Component I/O Board Check

If all of the basic checks were present and an image still cannot be viewed using the analog component inputs, connect a composite video source to the VidJet.

Note

Remember to change the video setting to **composite** under System Menu 1.

If an image is not present, replace the A5 I/O board. However, if an image is present and the VidJet seems to function normally, check the continuity between the I/O BNC inputs and A5J9 using the following steps.

1. Turn the instrument off and unplug the power cord.
2. Remove the cover as shown in figure 3-2.
3. Check the continuity between the four BNC inputs and A5J9 as shown in Figure 2-5.

If all four continuity checks are one ohm or less, replace the A5 Component I/O board.

If any of the continuity checks fail, replace the RGB BNC board. Refer to figure 3-17 for replacement procedures.

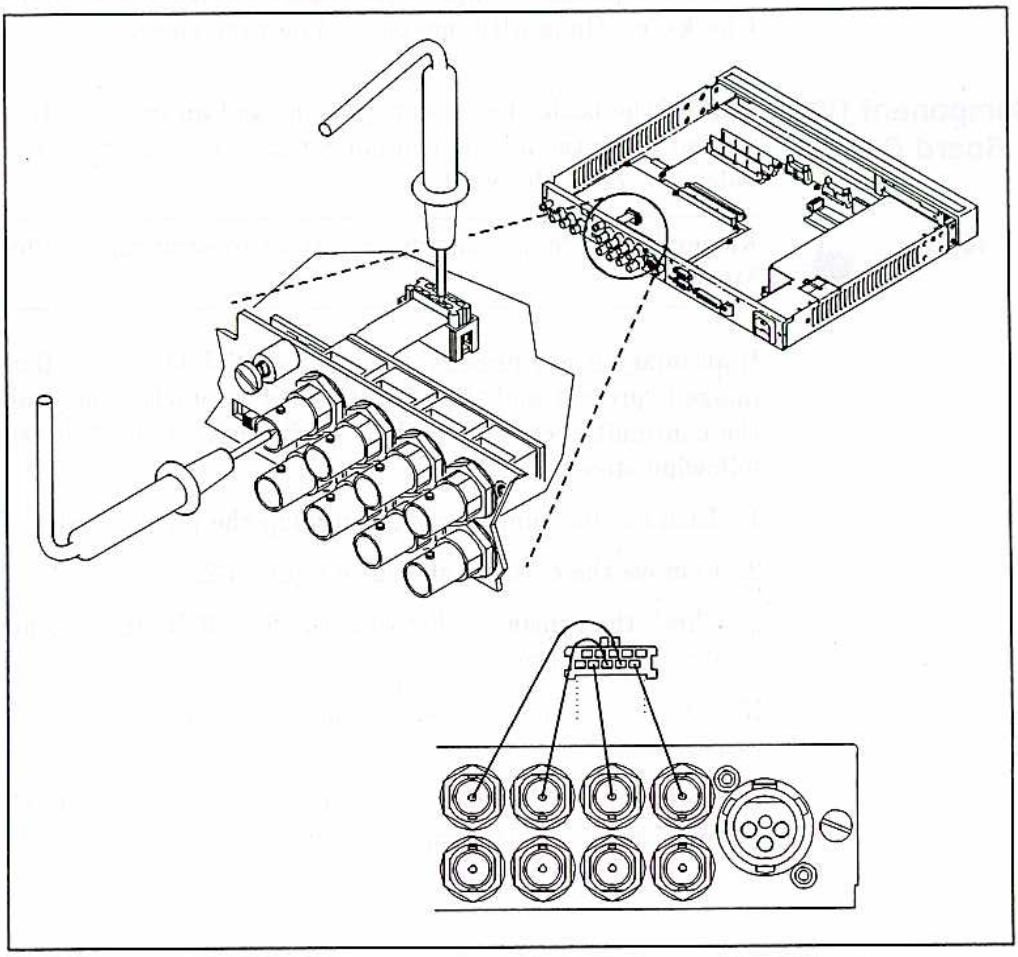


Figure 2-5. Diagnostic Connections for RGB BNC Board

A5 Digital I/O Board Checks

If all of the basic checks were present, continue with the following procedure.

1. Turn the instrument off and unplug the power cord.
2. Remove the cover as shown in figure 3-2.
3. Connect a digital signal to the 4:2:2 SERIAL DIGITAL INPUT using a 75 Ω coaxial cable.
4. Connect a monitor to the COMPOSITE MONITOR OUTPUT using a 75 Ω coaxial cable.
5. Connect a frequency counter to the testpoint labeled **CLK 27M** on the A5 Digital I/O Board.
6. Connect the power cord and turn the instrument on.
7. Verify that an undistorted picture is seen on the monitor, and 27 MHz±100 Hz is displayed on the frequency counter. If the picture and frequency are as stated, the Digital I/O Board is operational. Otherwise, continue with the next step.
8. If the picture is distorted and the frequency is 27 MHz±100 Hz or the picture is undistorted and the frequency is other than

27 MHz±100 Hz, replace the A5 Digital I/O Board. Otherwise, continue with the next step.

9. If the picture is distorted and the frequency counter displays a frequency other than 27 MHz±100 Hz, the A5 Digital I/O Board is not adjusted to capture the digital signal. Adjust A5R38 until the frequency is just above 30 MHz. Continue slowly turning A5R38. As you approach 29 MHz the frequency should jump to 27 MHz and the picture will become undistorted. Turn the adjustment another quarter turn. If you cannot make the adjustment, verify that the digital signal, monitor, and 75 Ω cables are good. If the digital signal, monitor, or 75 Ω cables are not the problem, replace the A5 Digital I/O Board.

3

Removing the Failed Assembly/Part

Introduction

This chapter contains procedures for the removal of assemblies and subassemblies from the HP VidJet Pro and HP Remote Front Panel. The procedures are organized to allow removal in the most effective way, leaving surrounding areas undisturbed wherever possible.

The procedures describe removal and replacement of the following assemblies:

- Cover
- Front Panel
  - Bezel
  - Display
  - Line Switch
  - Keyboard and Keypad
  - Front Dress Panel
- I/O Board Assembly

Note

The drawings in this chapter show the composite I/O board, but procedures actually document all I/O boards.

- Microprocessor Board Assembly
- Shield
- Line Module
- Power Supply

Using the Procedures

The procedures do not have to be performed in the order listed, although multiple procedures may be needed to remove an assembly. Each procedure contains all of the information necessary to remove the assembly. This does not mean that all of the instructions will be found in the procedure. The first panels of the procedure may direct you to another procedure in order to gain access to a part before continuing. For example, for every procedure, access to the interior of the instrument is required through removal of the instrument cover. Thus, the first panel of a procedure may remind you to perform the "Cover Removal" procedure found in figure 3-2.

Graphics

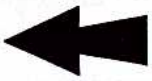
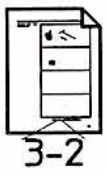
The text normally associated with disassembly procedures has been eliminated. As much as possible the procedures have been depicted graphically. Each procedure contains a series of panels; each panel is one step of the procedure. All the information needed to perform the step is contained in the panel. For example, if a screw is to be

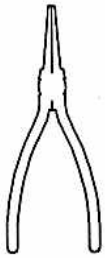
removed, the type of hardware is shown along with the tool needed to perform the step.

Icons

Special icons were developed to replace the text normally used in the procedures. The icons are described in the following table.

Table 3-1. Icons

Description	Icon
This arrow is used to point to a part or assembly.	
This arrow indicates movement. The part or assembly is moved in the direction of the arrow.	
Perform this procedure before continuing.	
See disassembly procedure in the figure indicated. (Figure 3-2 shown)	

Description	Icon
Type and size of hardware (TORX® #8 shown)	
Tool used in procedure (Needle nose pliers shown)	
Indicates the total quantity to be removed.	[2]

Major Assemblies and Cables

Throughout the procedures, assemblies and cables within the instrument are shown. Figure 3-1 will aid in identifying and locating these assemblies and cables.

Installing the Assembly

1. Reverse the disassembly procedure to install the new assembly.
2. Install all cables in their original positions with new tie-wraps.

HP VidJet Pro or HP Remote Front Panel

When a procedure applies to only one instrument, either HP VidJet Pro or HP Remote Front Panel will be added to the title of the procedure. If the procedure applies to both instruments nothing will be added to the title and, if necessary, the HP VidJet Pro will be depicted in the procedure.

Tools

The following tools are used for removal and installation of assemblies, subassemblies, and parts:

Table 3-2. Tools

Tool	Specifications
Allen Wrench	1/16-in
Diagonal Cutters	Small
Flat Blade Screwdriver	
Long-nose Pliers	4- to 6-in
Open End Wrench	3/16-in, 1/4-in, 6mm
Pozidriv® Screwdriver	No. 1 (HP P/N 8710-0899) No. 2 (HP P/N 8710-0900)
Nut Driver	7/16-in, 9/16-in, 5.5mm
Slotted Box Wrench	5/16-in
TORX® Screwdriver	Size 10 (HP P/N 8710-1623)
Work Station	Anti-static (ESD)

Electrostatic Discharge

Electrostatic Discharge (ESD) can damage or destroy electronic components. All work performed on assemblies containing electronic components should be done ONLY at a static-safe work station.

Safety

Warning

Disassembly procedures must be performed with the power cable disconnected from the instrument.

Caution

There are MOS and CMOS components that can be damaged by electrostatic discharge. A sensitive assembly should be stored in an anti-static container whenever it is not installed.

Fasteners (Screws and Nuts)

Screws and nuts used in the instrument require specific tools for removal or installation. If the incorrect tool is used, the fastener or the instrument could be damaged.

- Most screws used in the HP VidJet Pro or HP Remote Front Panel are TORX® head. Do not use Allen-head, spline, Bristol, or other hex-head drivers in place of the required TORX® driver. The fastener can be damaged so that it cannot be removed if an incorrect tool is used.
- Screws which are not TORX® are Pozidriv®. These fasteners appear similar to Phillips-head, but are not interchangeable. Do not use a Phillips-head driver in place of the required Pozidriv® tool.

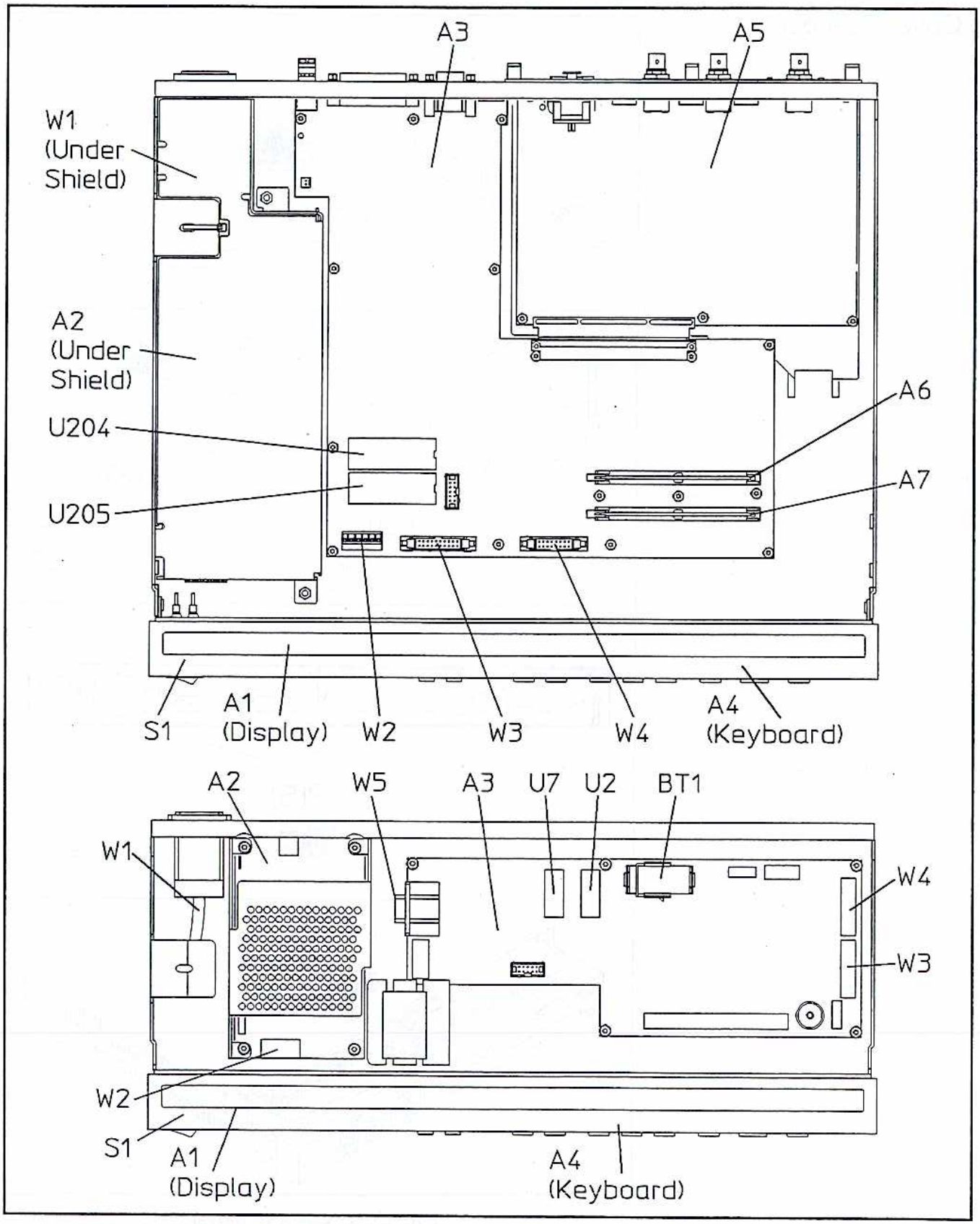


Figure 3-1. Location of Major Assemblies and Cables

Cover Removal

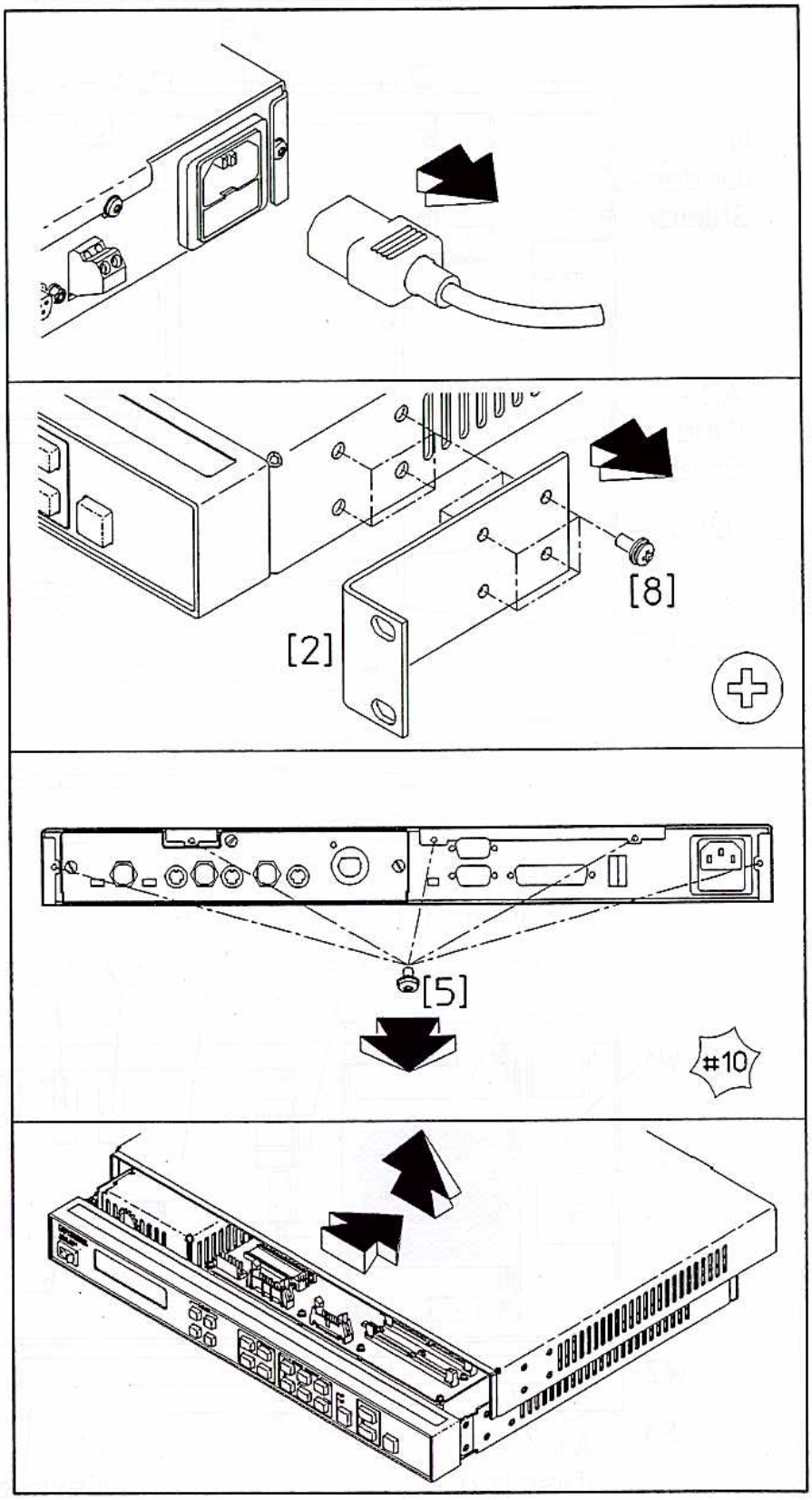


Figure 3-2. Cover Removal

Front Panel Removal - HP VidJet Pro

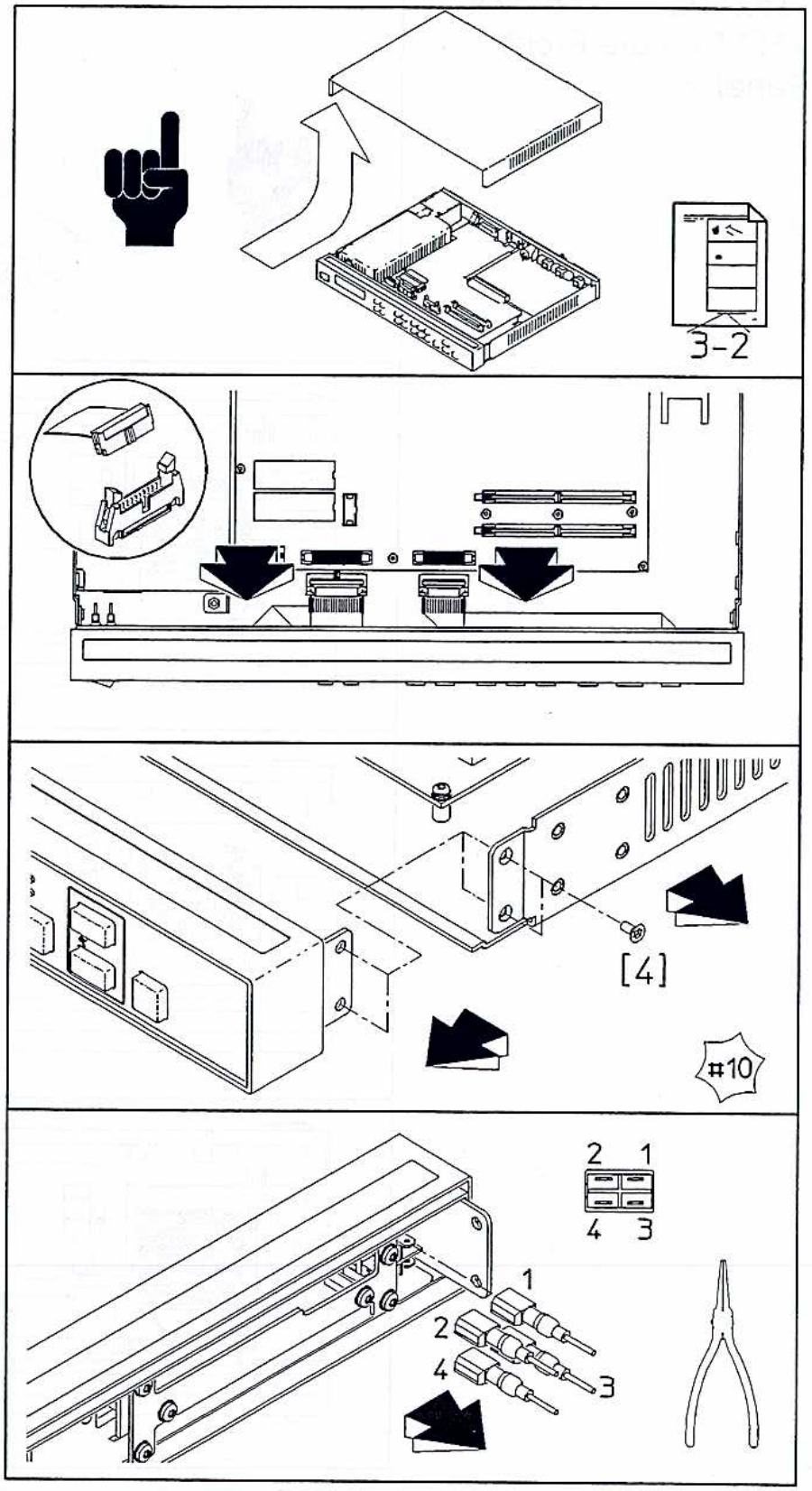


Figure 3-3. Front Panel Removal (HP VidJet Pro)

Front Panel Removal - HP Remote Front Panel

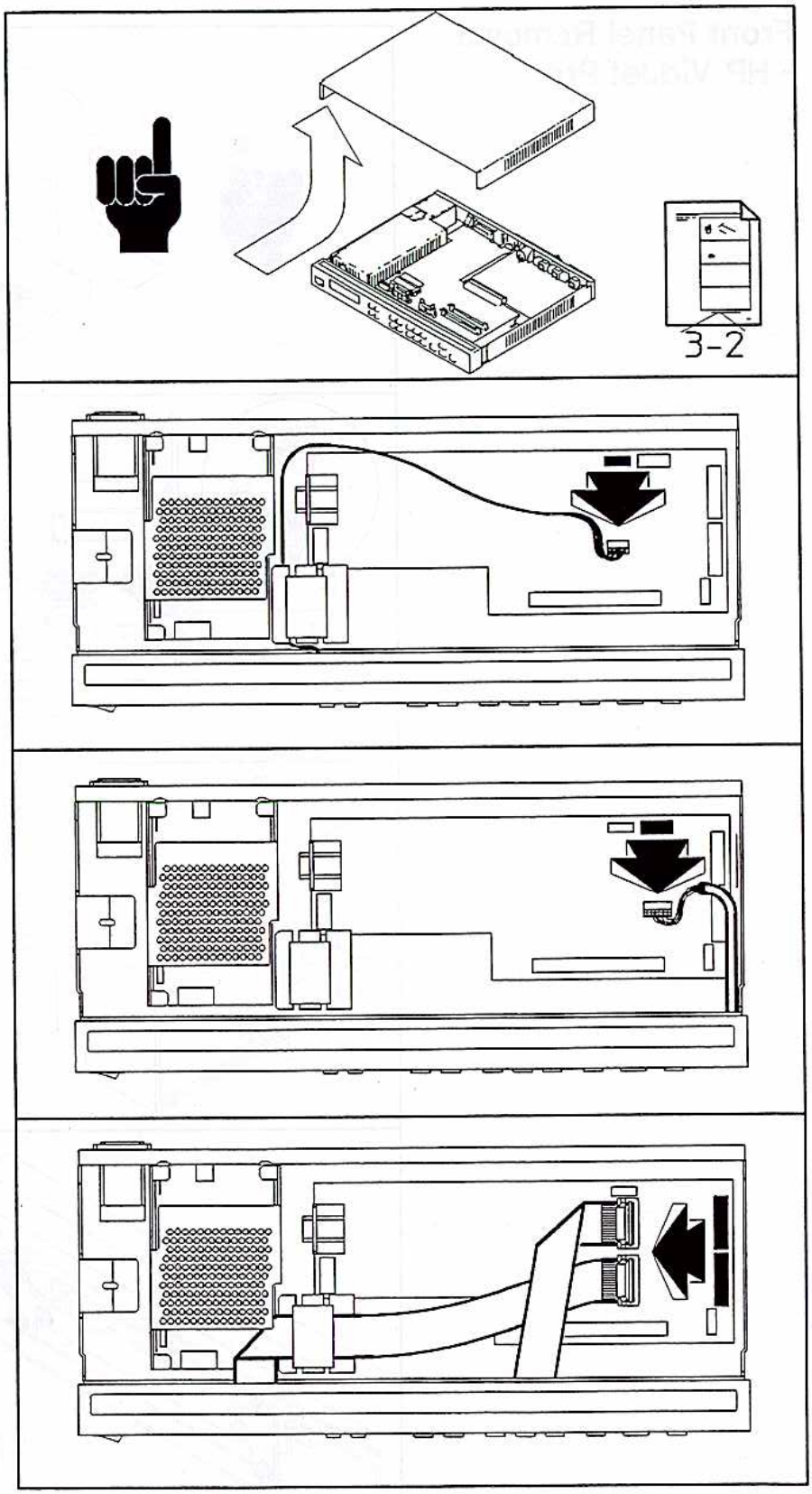


Figure 3-4. Front Panel Removal (HP Remote Front Panel; 1 of 2)

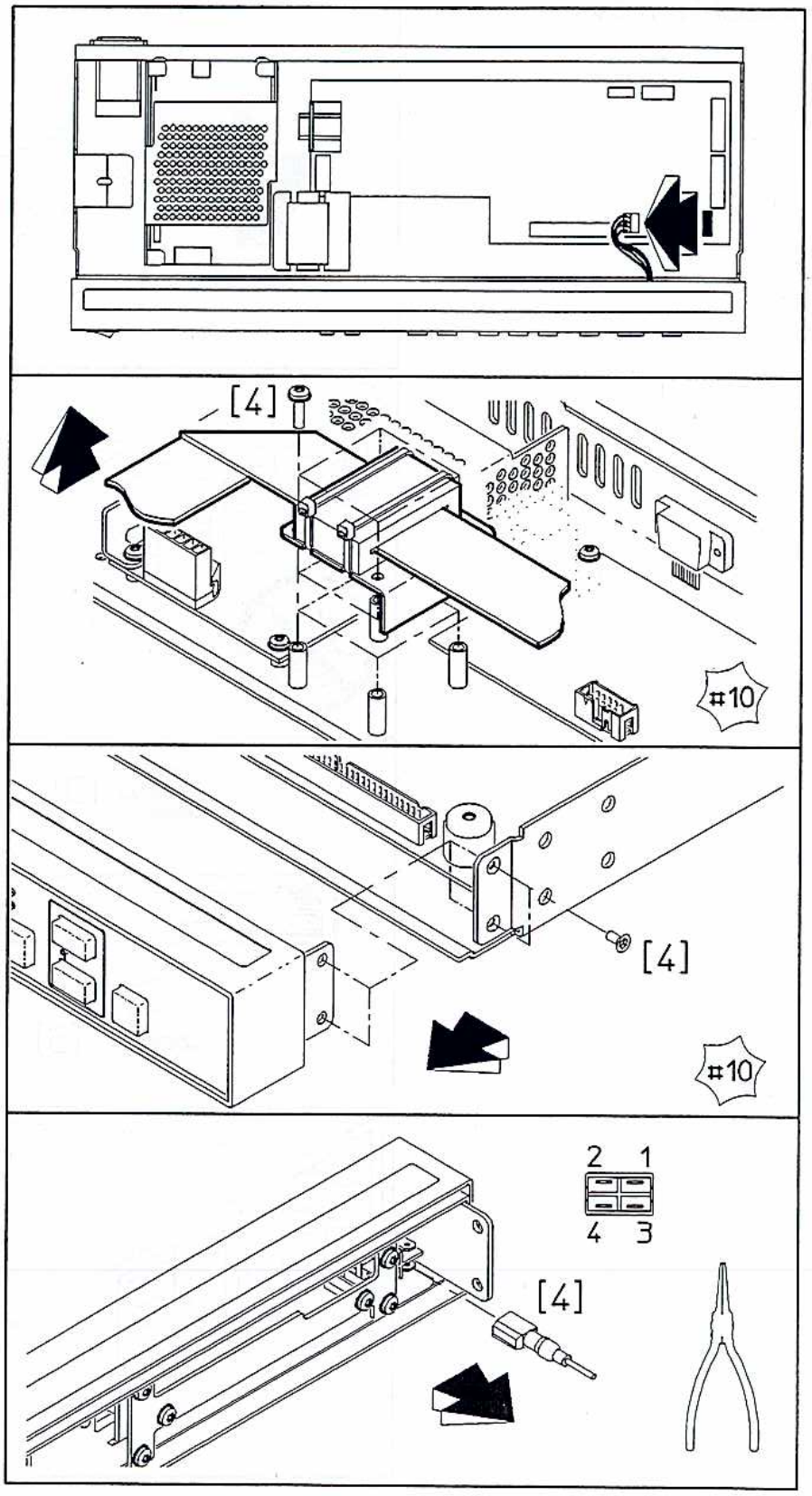


Figure 3-4. Front Panel Removal (2 of 2)

Bezel Removal

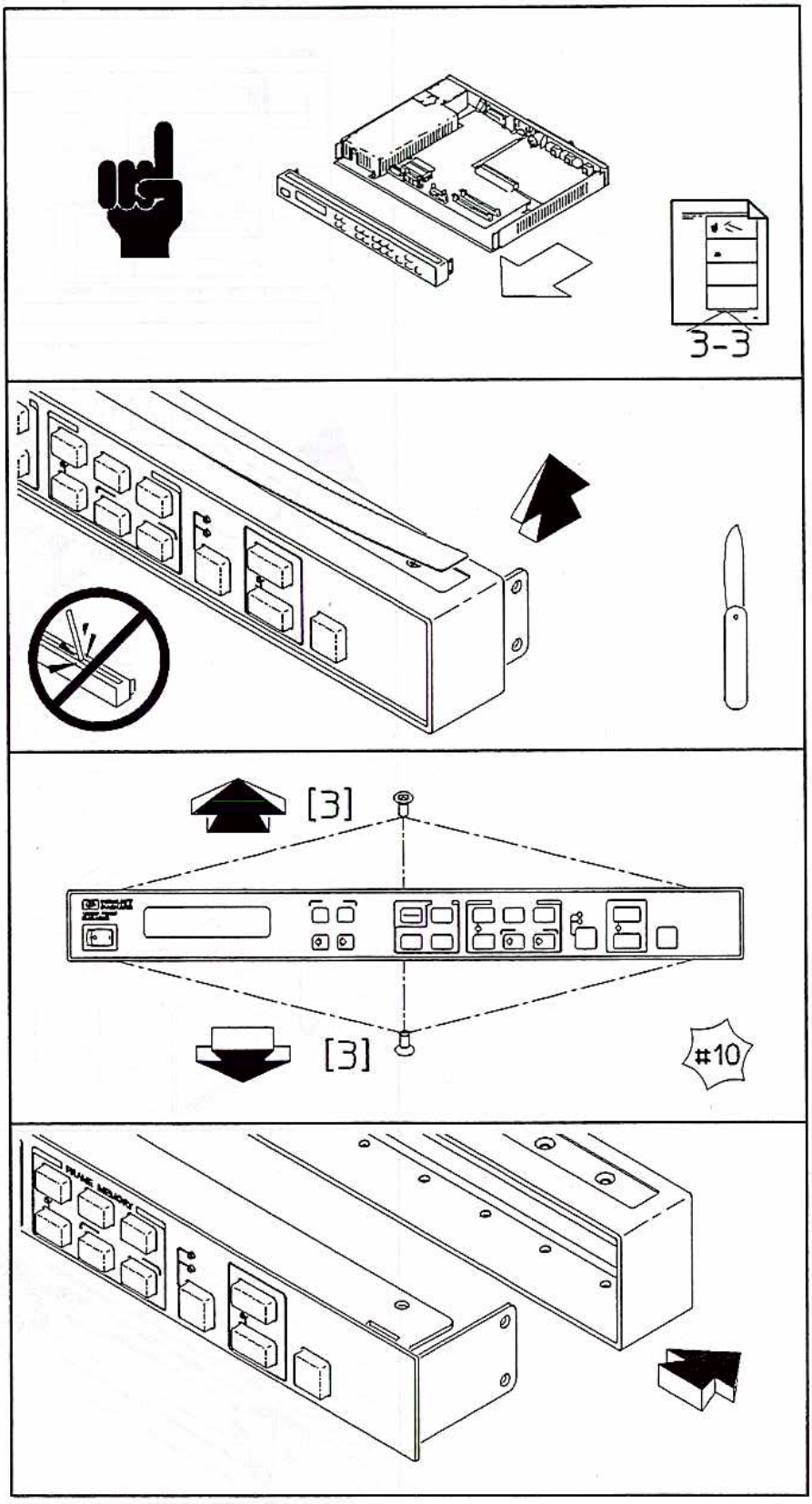


Figure 3-5. Bezel Removal

Display Removal

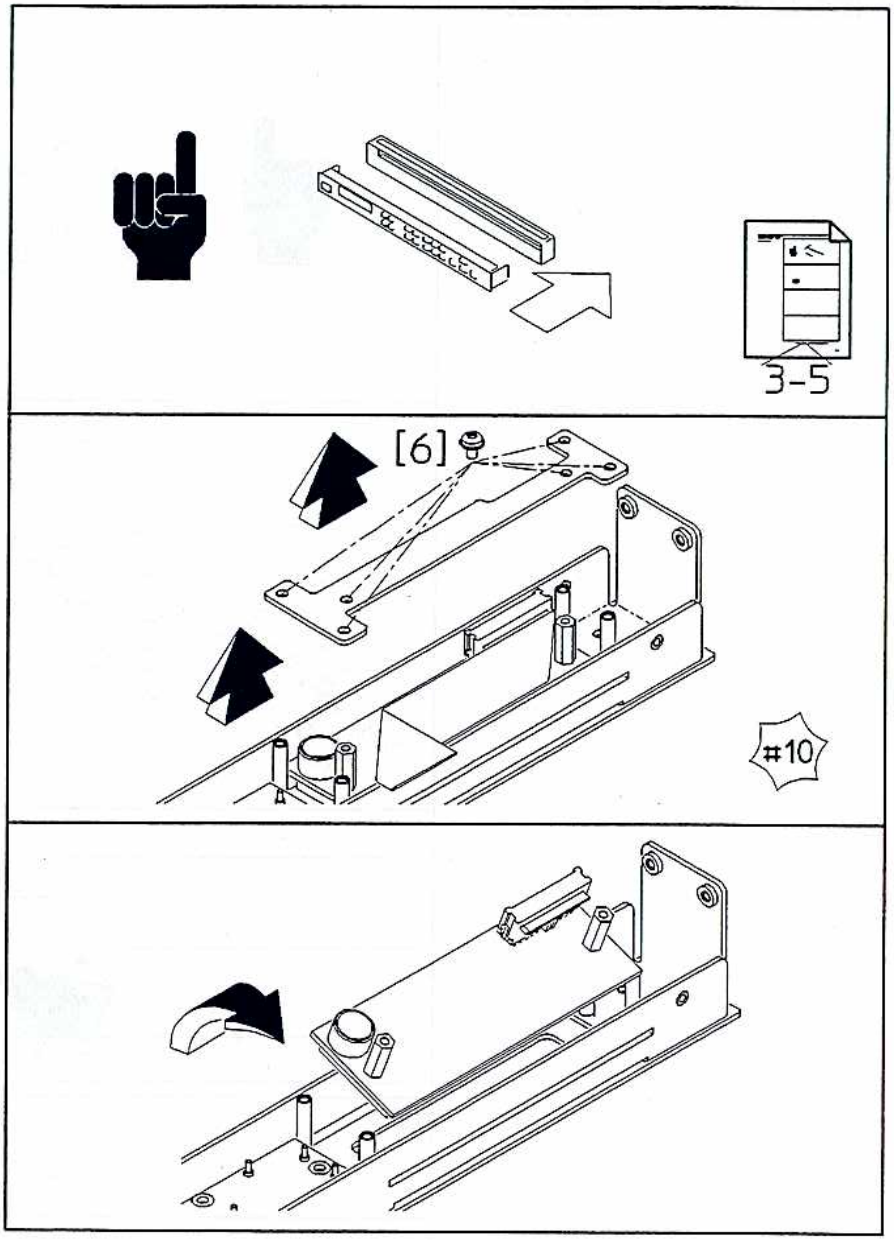


Figure 3-6. Display Removal

Line Switch Removal

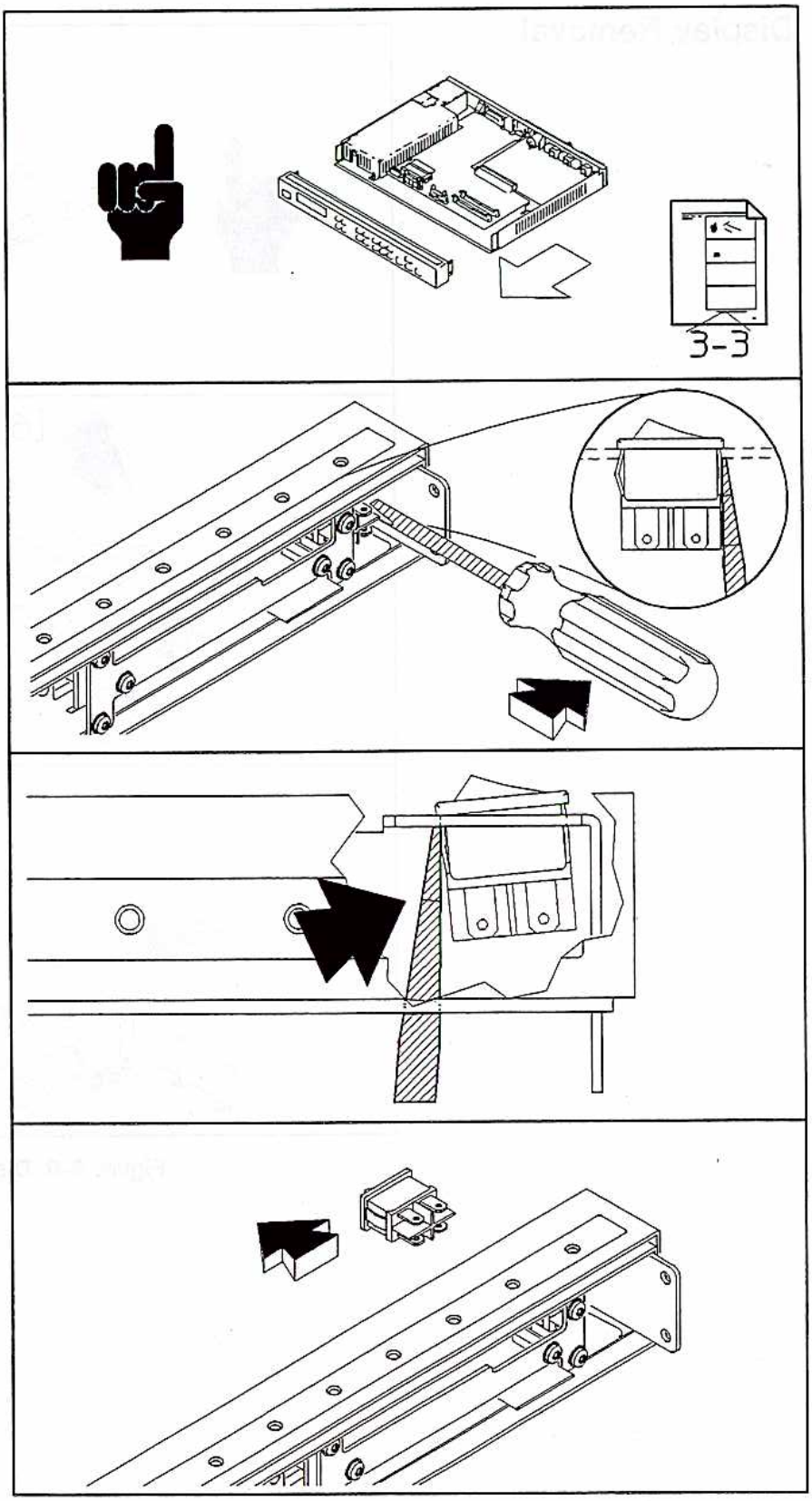


Figure 3-7. Line Switch Removal

Keyboard and Keypad Removal

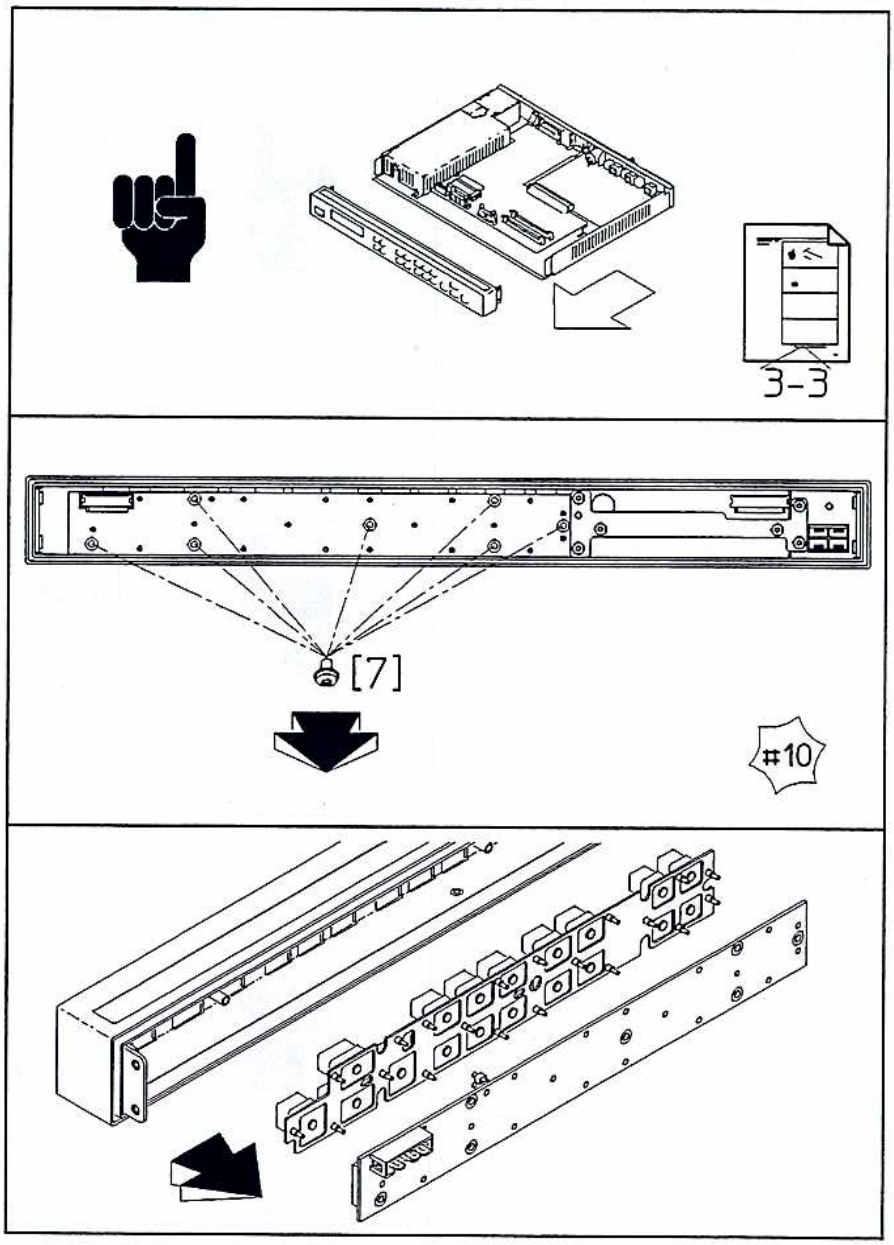


Figure 3-8. Keyboard and Keypad Removal

Front Dress Panel Removal

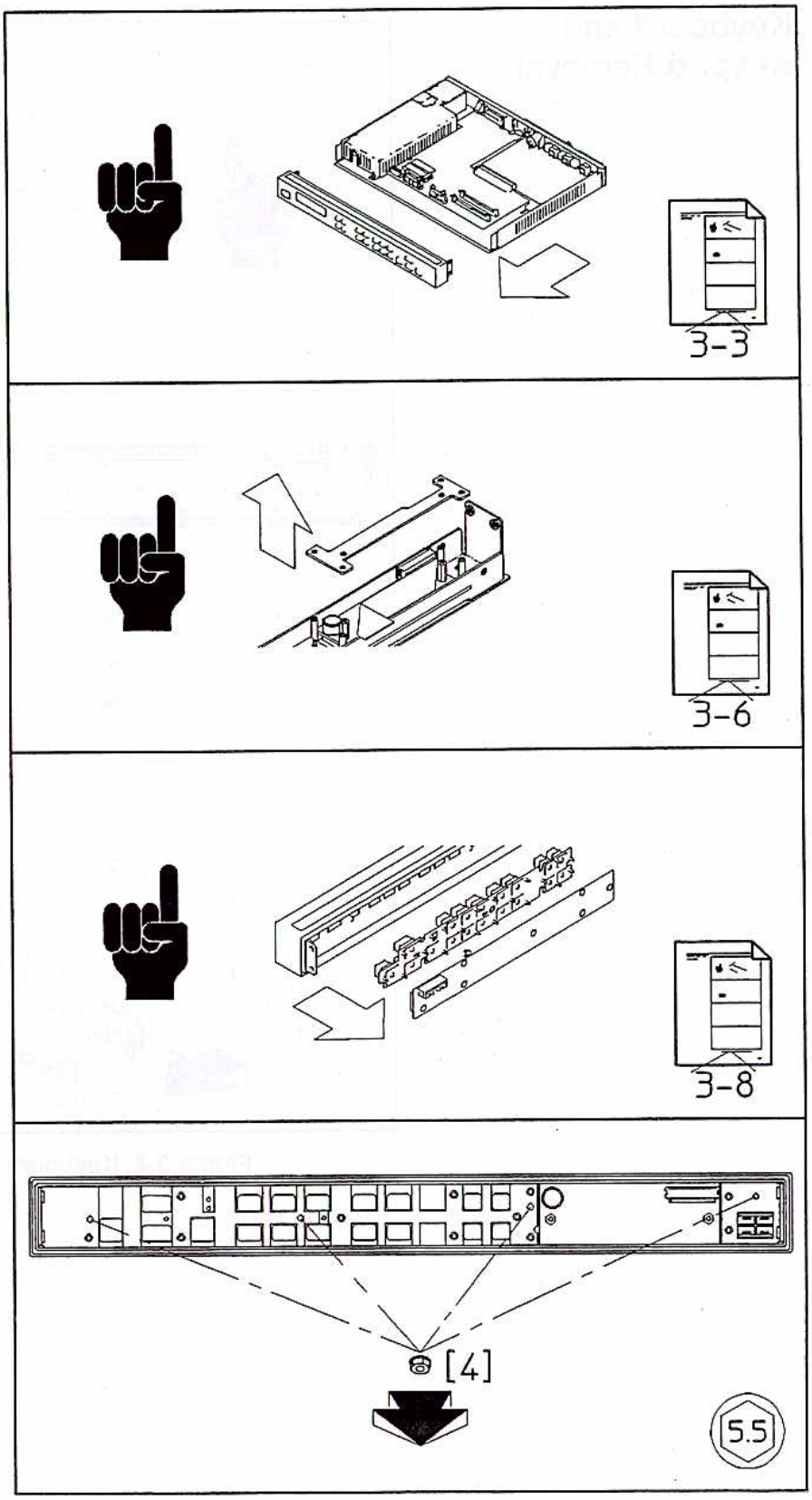


Figure 3-9. Front Dress Panel Removal (1 of 2)

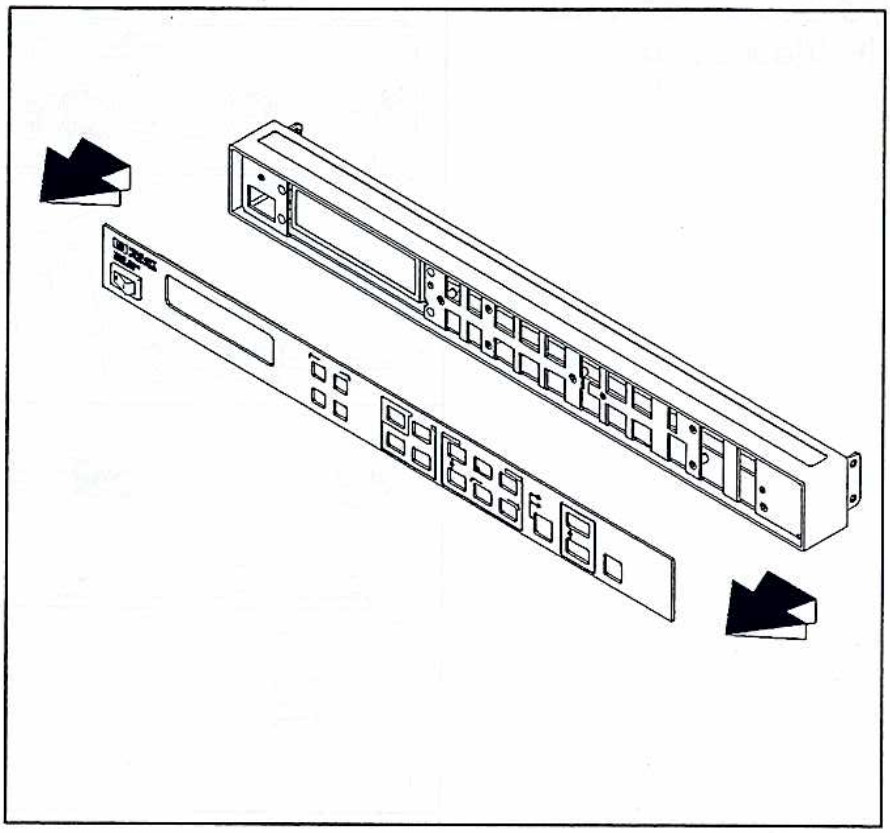


Figure 3-9. Front Dress Panel Removal (2 of 2)

I/O Board Removal - HP VidJet Pro

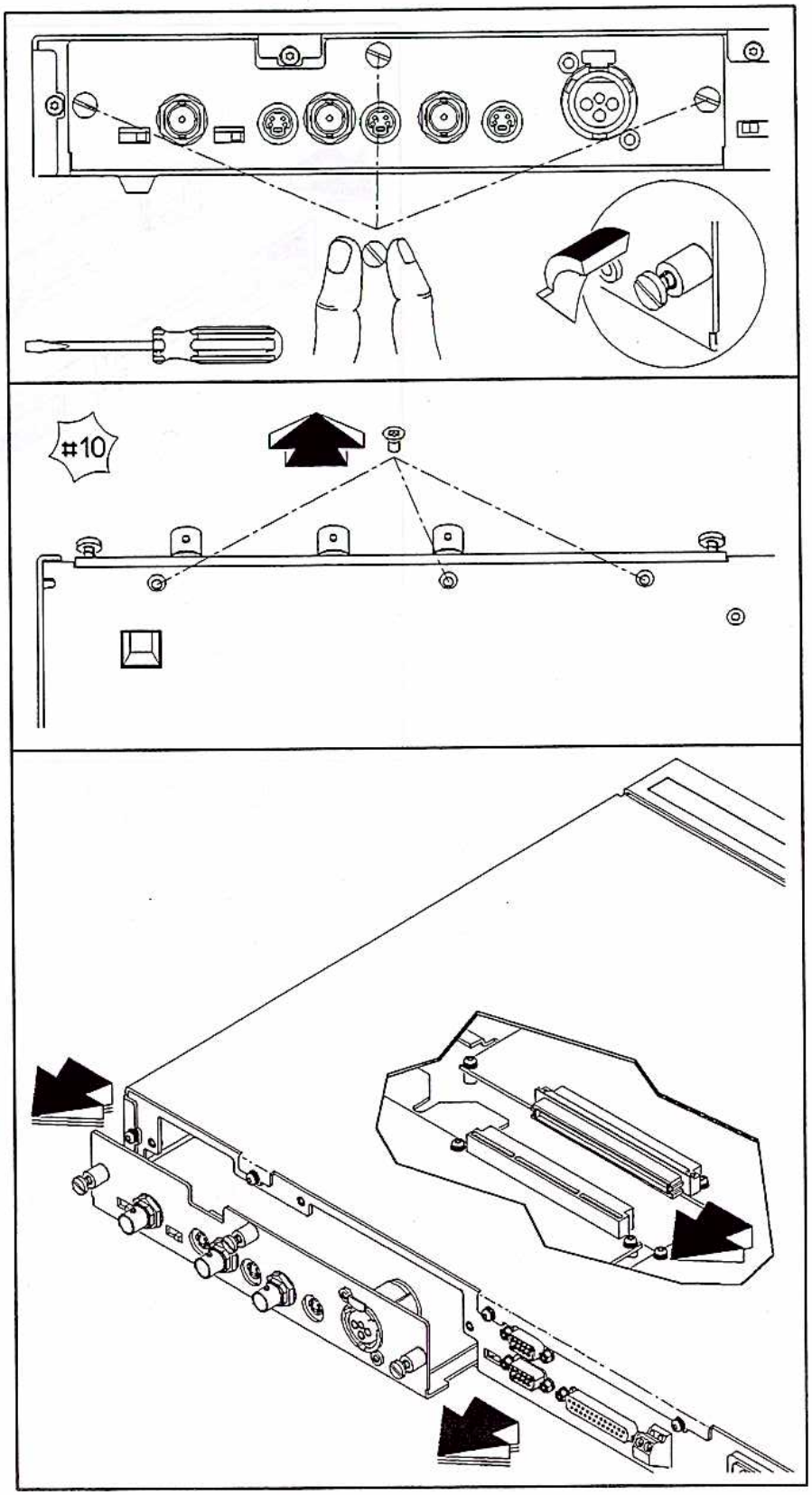


Figure 3-10. I/O Board Removal

Microprocessor Board Removal - HP VidJet Pro

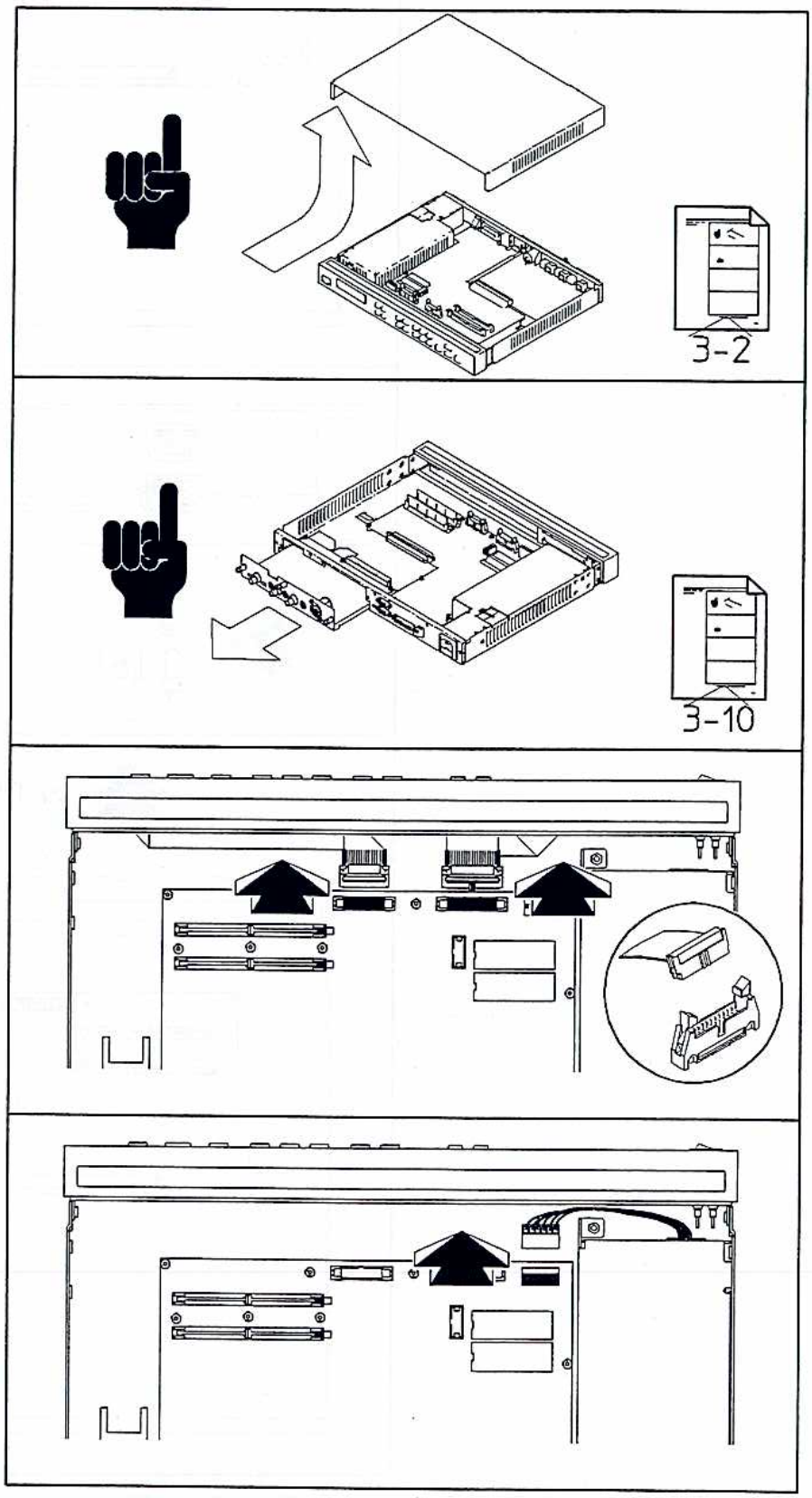


Figure 3-11. Microprocessor Board Removal (HP VidJet Pro; 1 of 3)

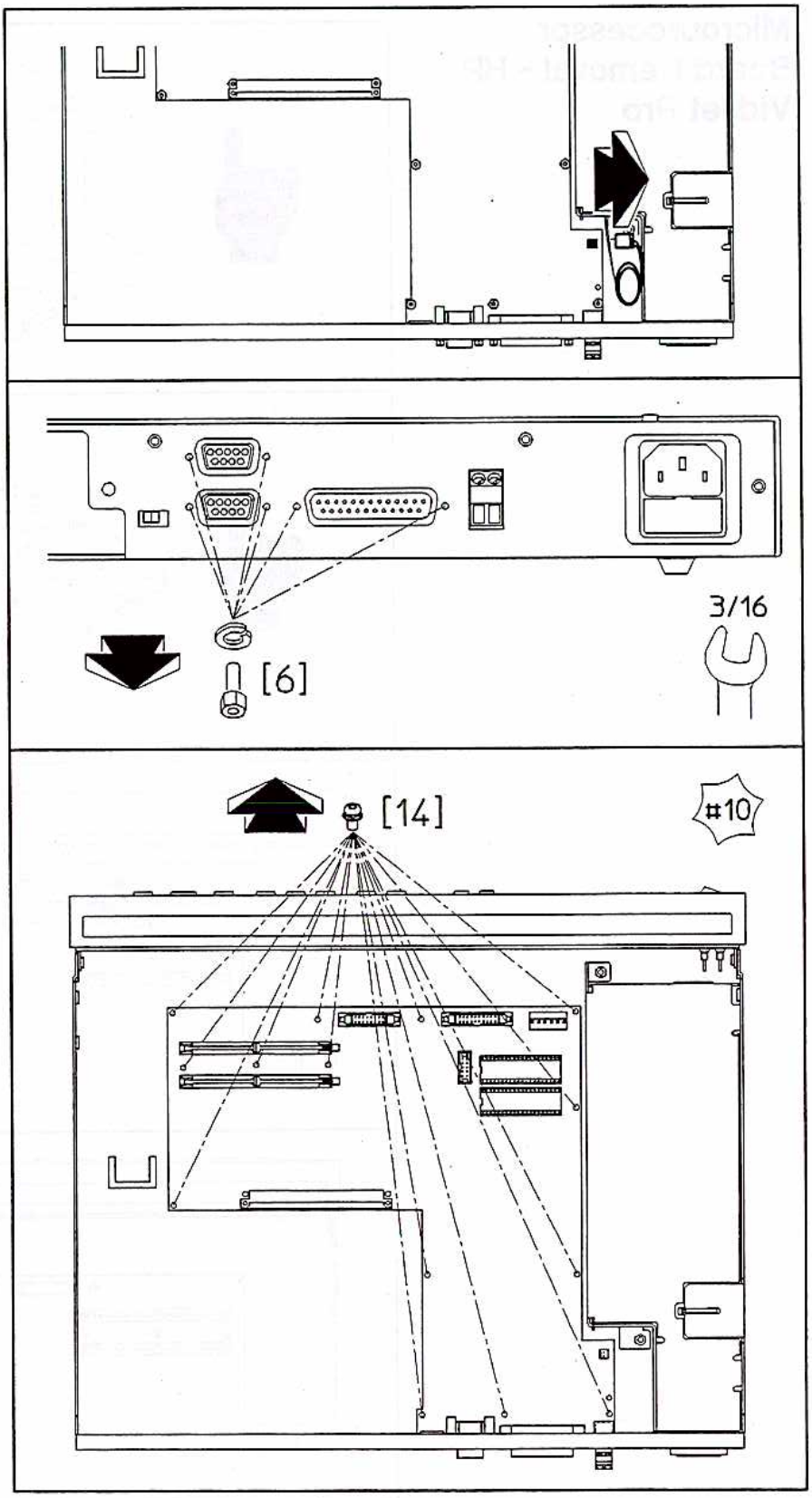


Figure 3-11. Microprocessor Board Removal (2 of 3)

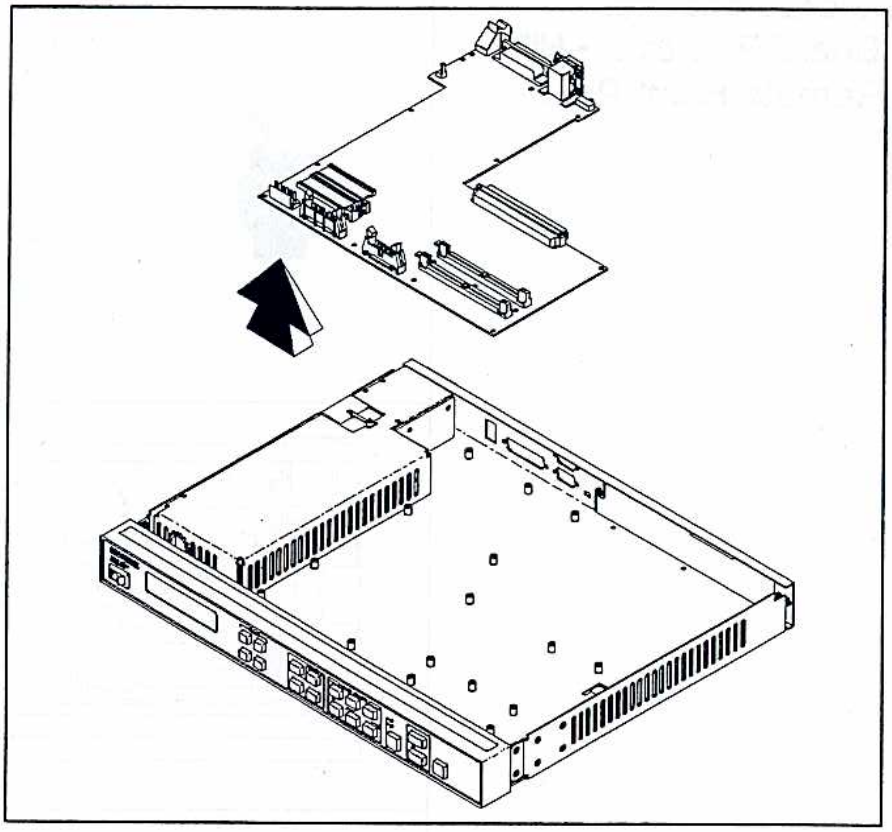


Figure 3-11. Microprocessor Board Removal (3 of 3)

Microprocessor Board Removal - HP Remote Front Panel

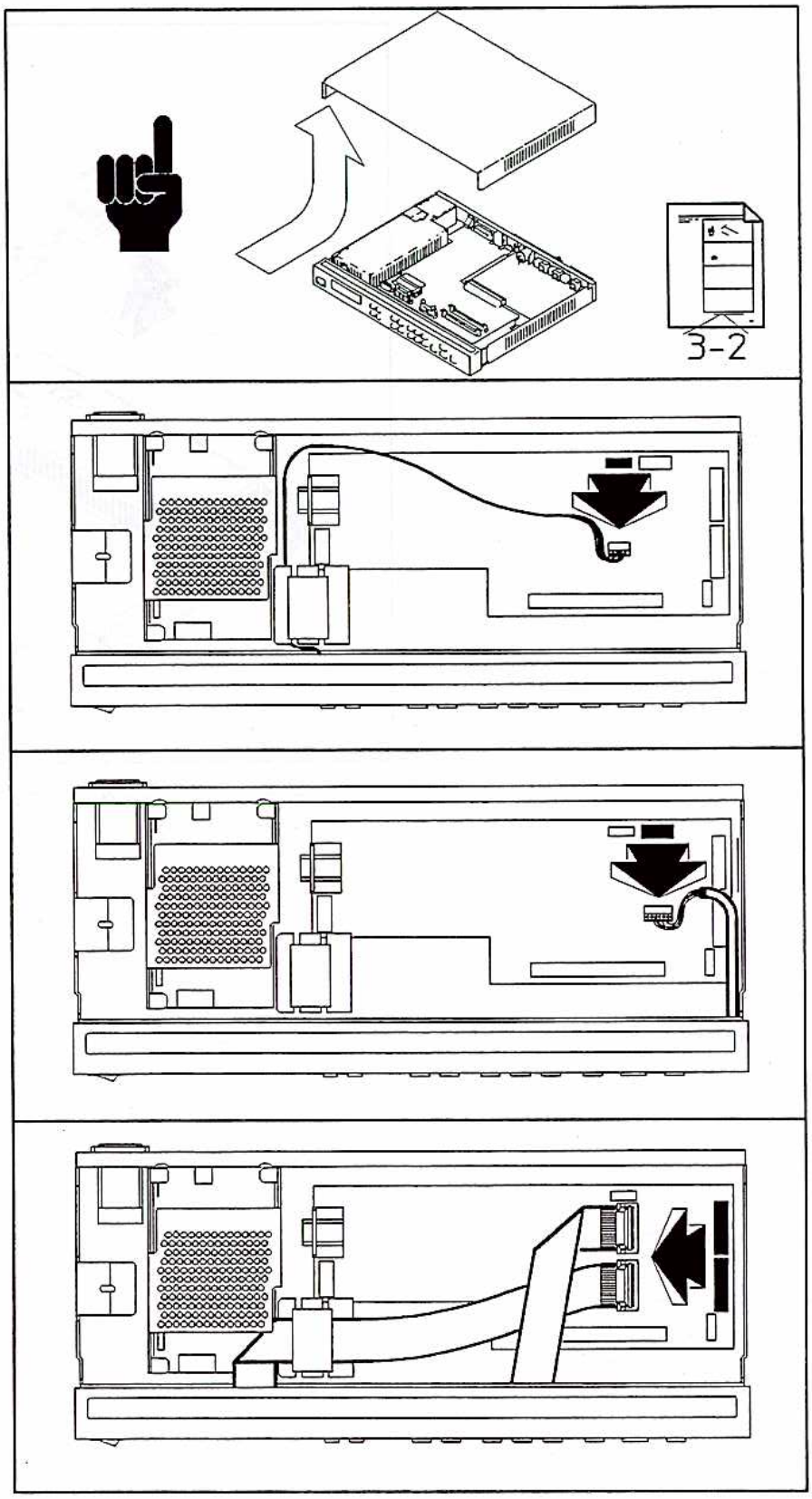


Figure 3-12.
Microprocessor Board Removal (HP Remote Front Panel; 1 of 2)

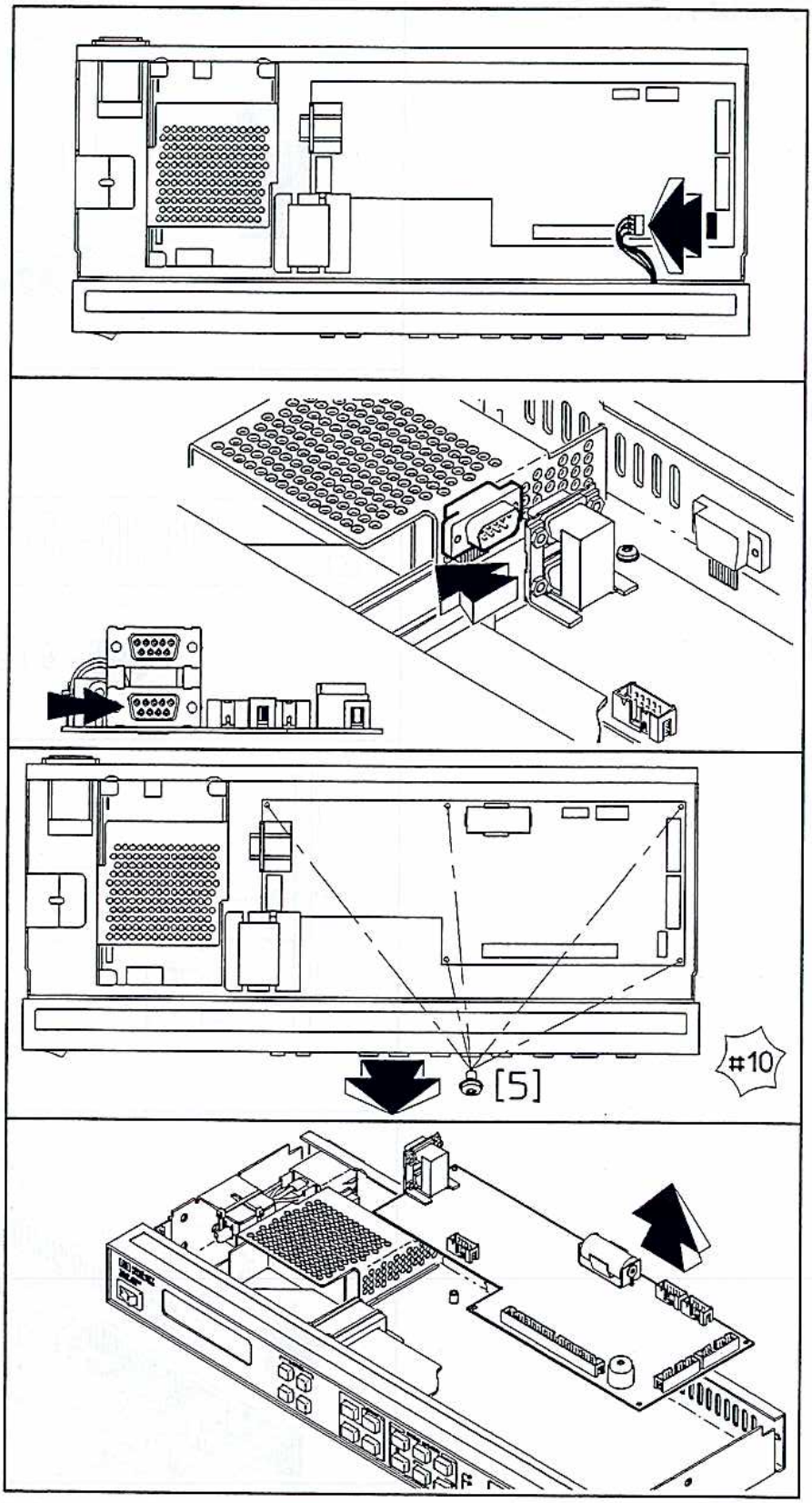


Figure 3-12. Microprocessor Board Removal (2 of 2)

Shield Removal

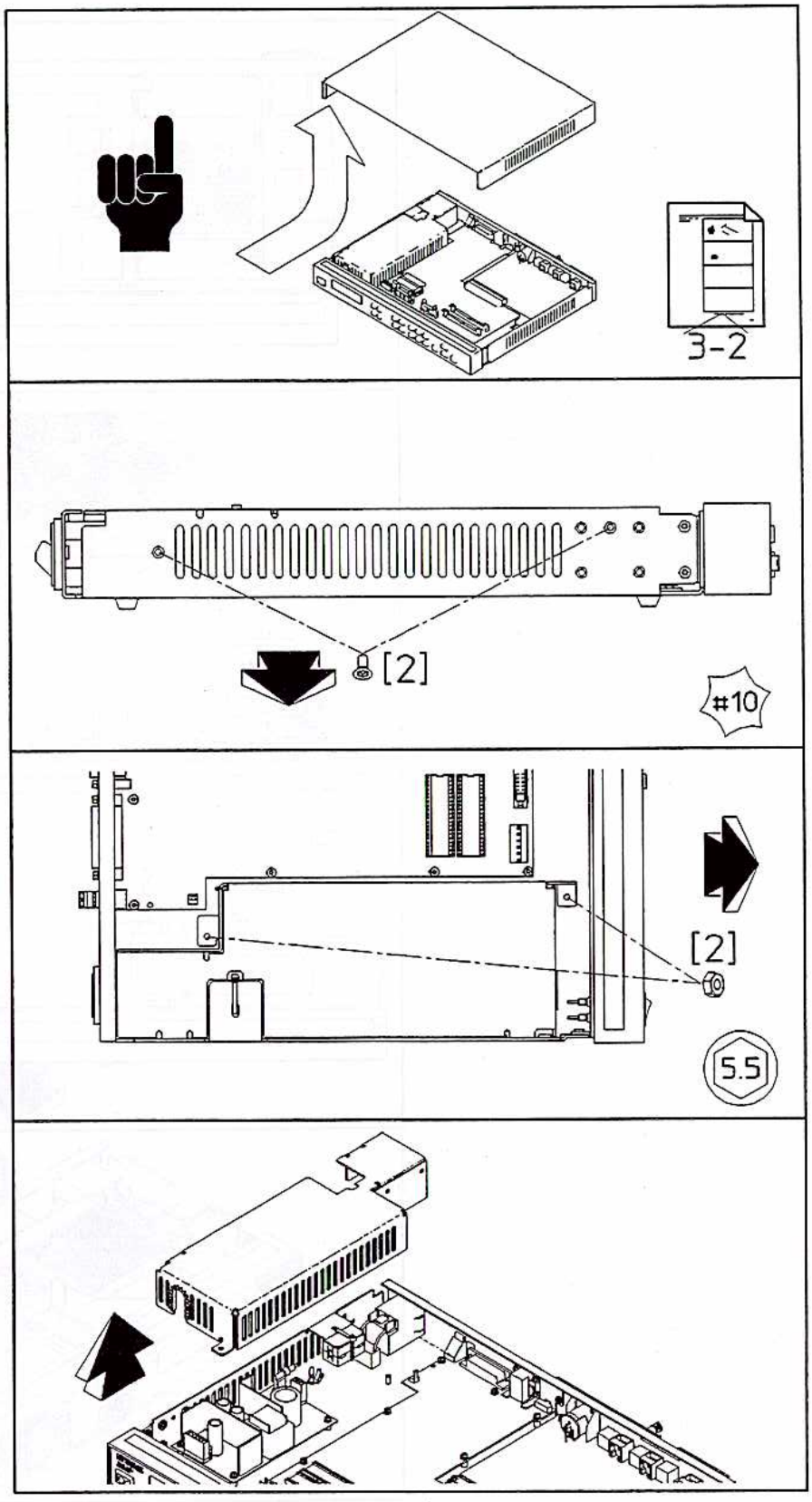


Figure 3-13. Shield Removal

Line Module Removal - HP VidJet Pro

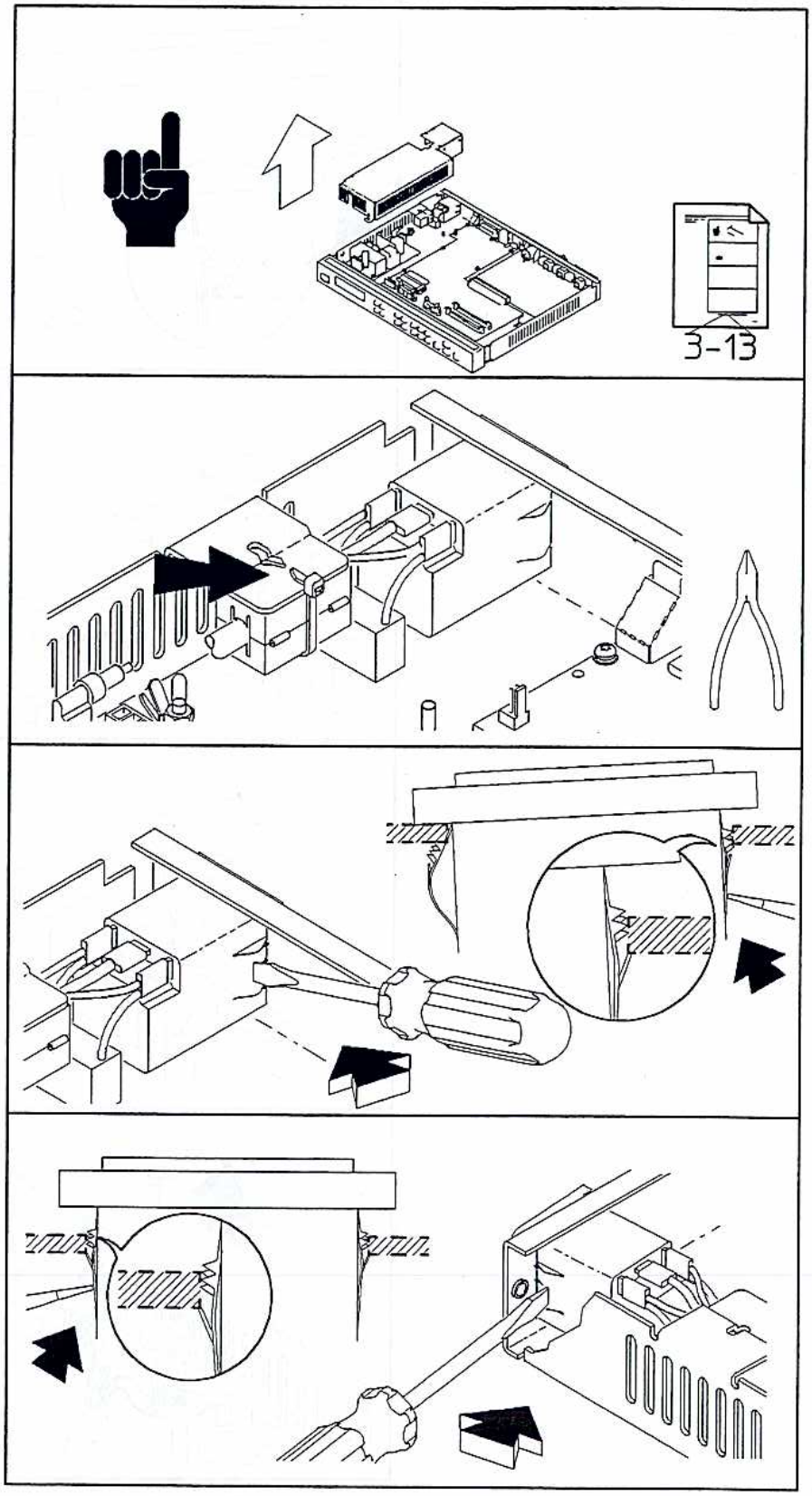


Figure 3-14. Line Module Removal (HP VidJet Pro; 1 of 4)

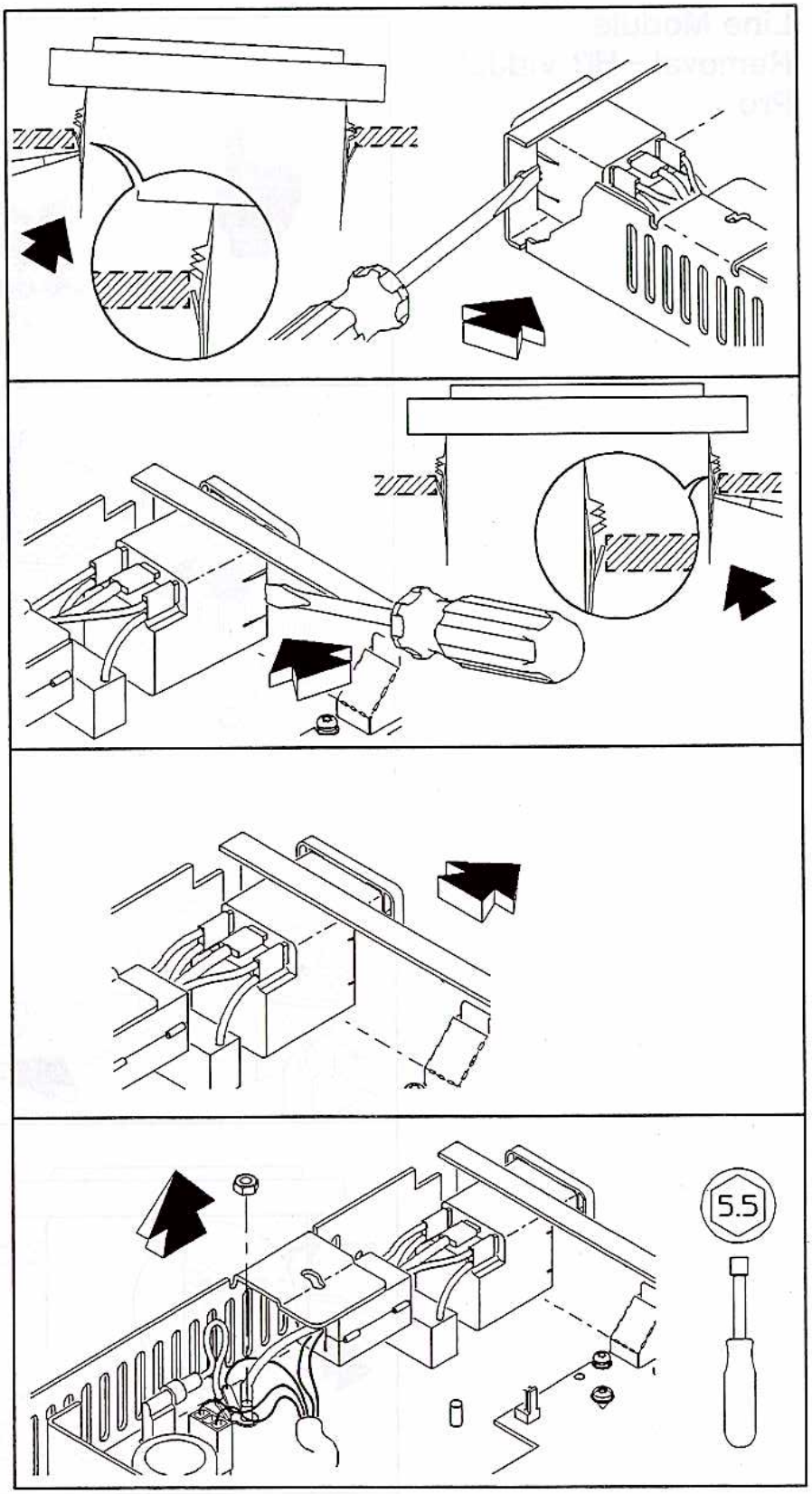


Figure 3-14. Line Module Removal (2 of 4)

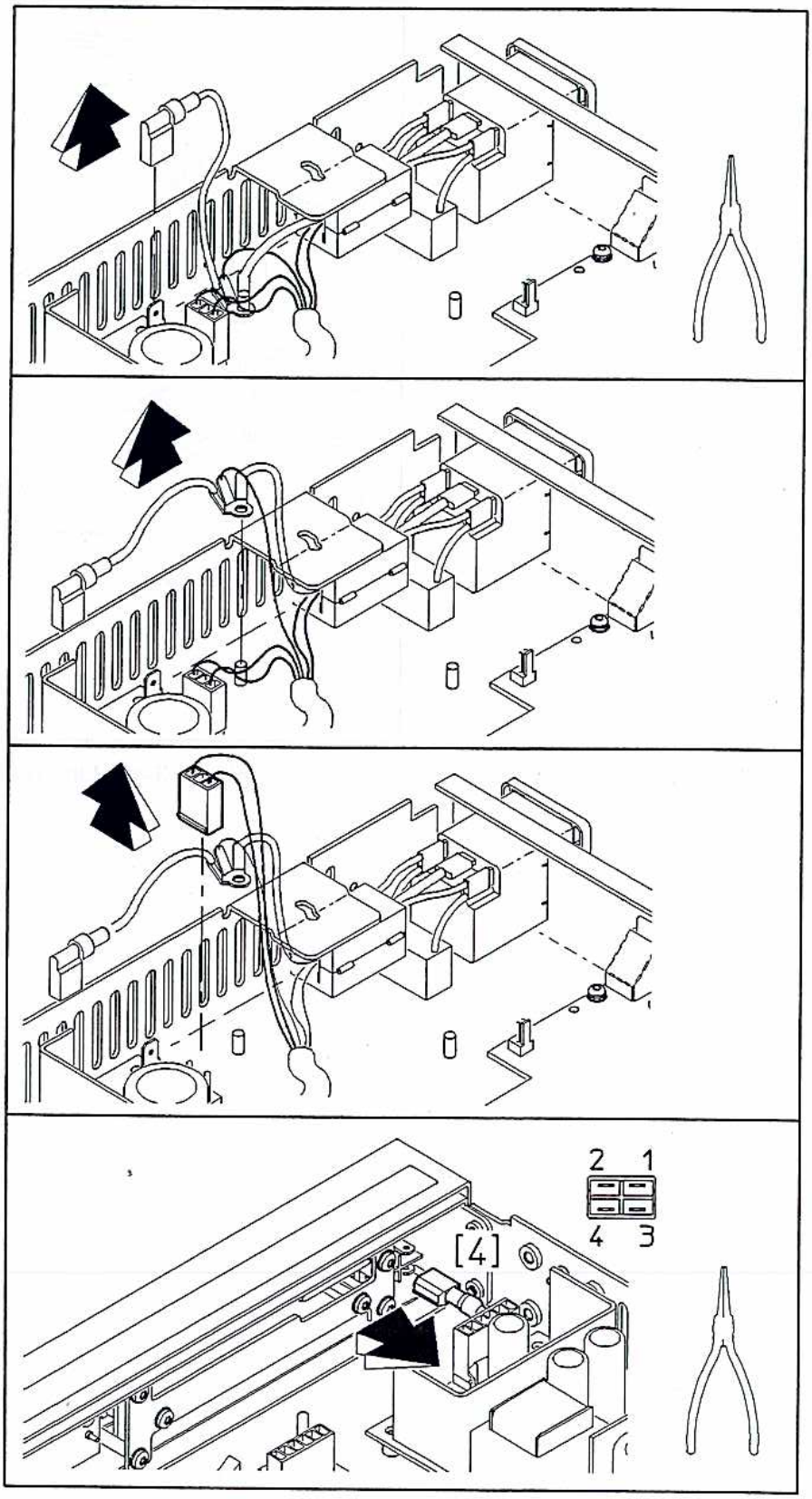


Figure 3-14. Line Module Removal (3 of 4)

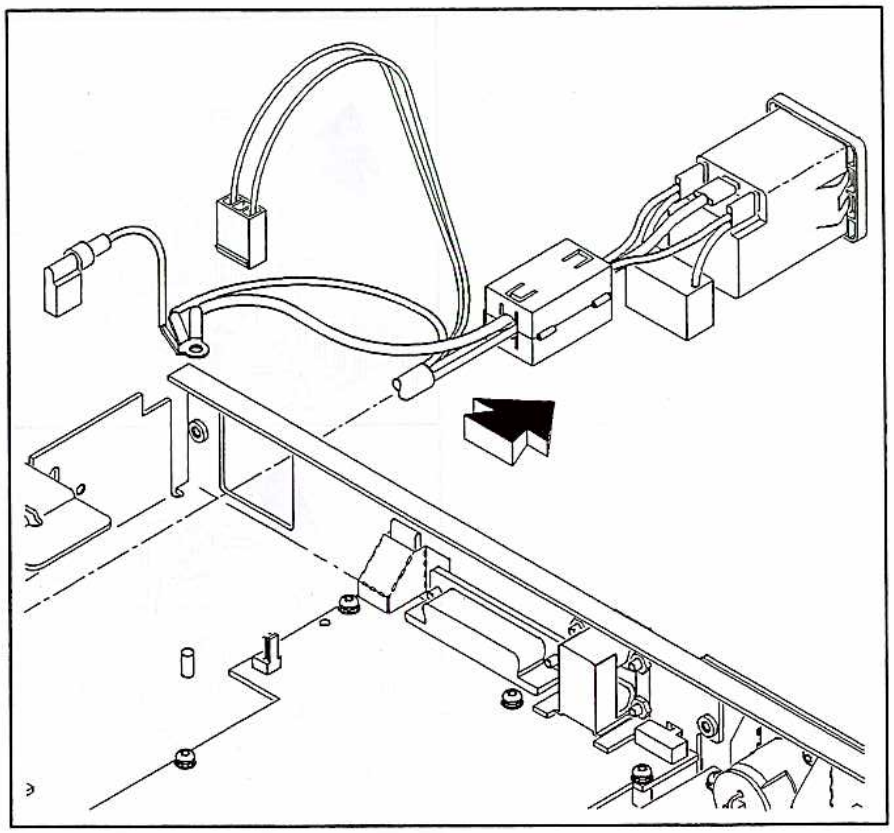


Figure 3-14. Line Module Removal (4 of 4)

Line Module Removal - HP Remote Front Panel

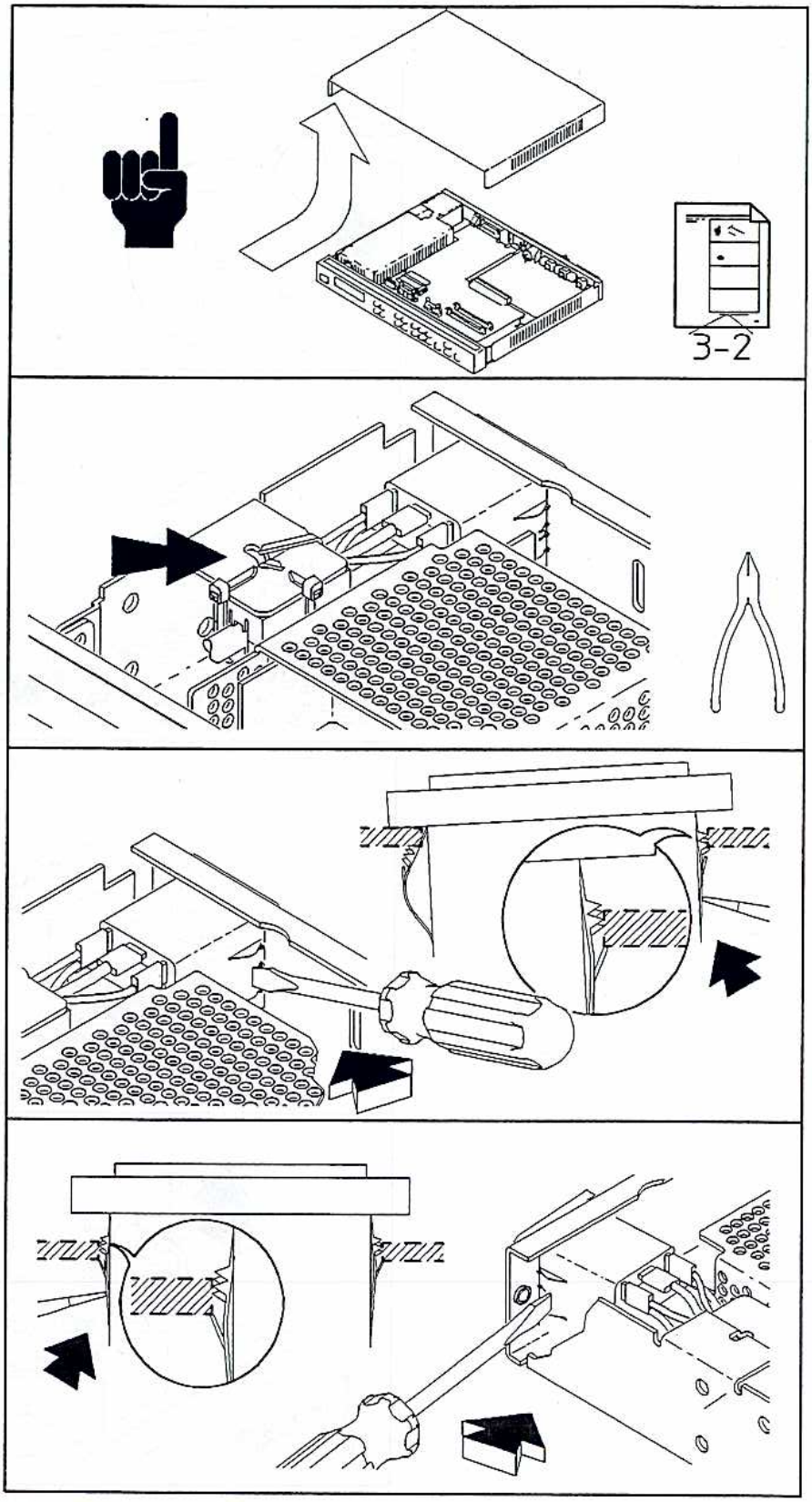


Figure 3-15. Line Module Removal (HP Remote Front Panel; 1 of 3)

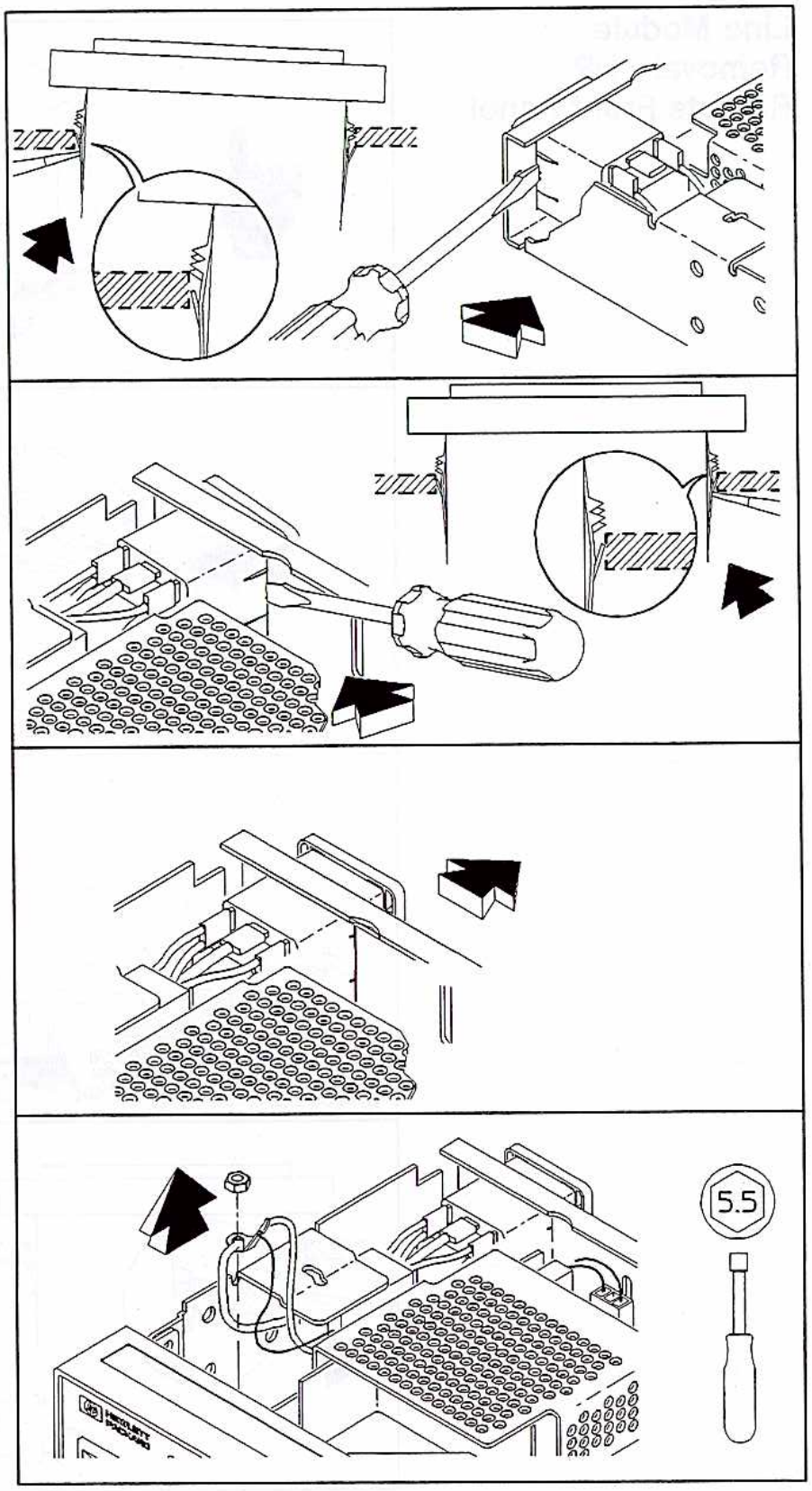


Figure 3-15. Line Module Removal (2 of 3)

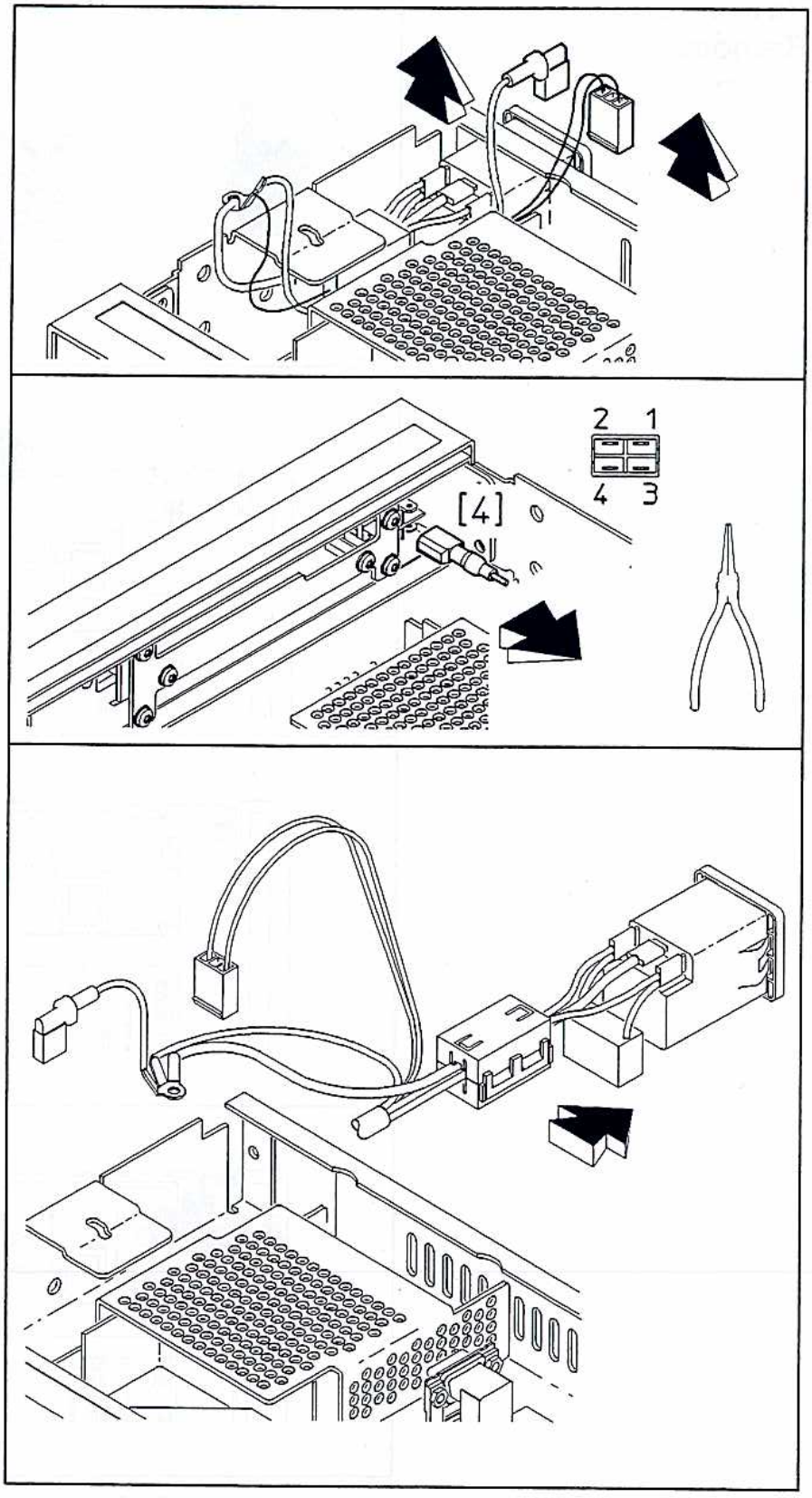


Figure 3-15. Line Module Removal (3 of 3)

Power Supply Removal

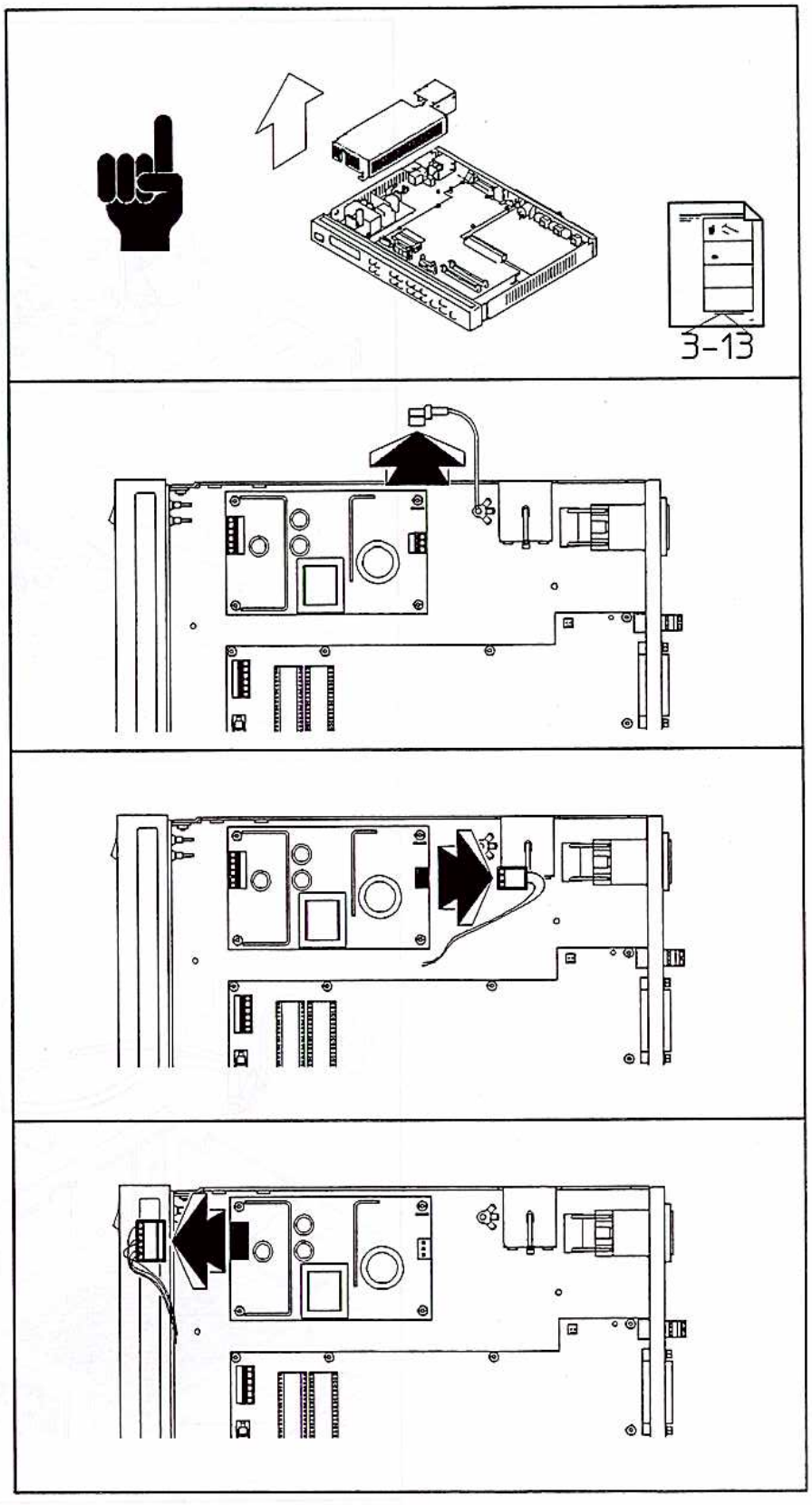


Figure 3-16. Power Supply Removal (1 of 2)

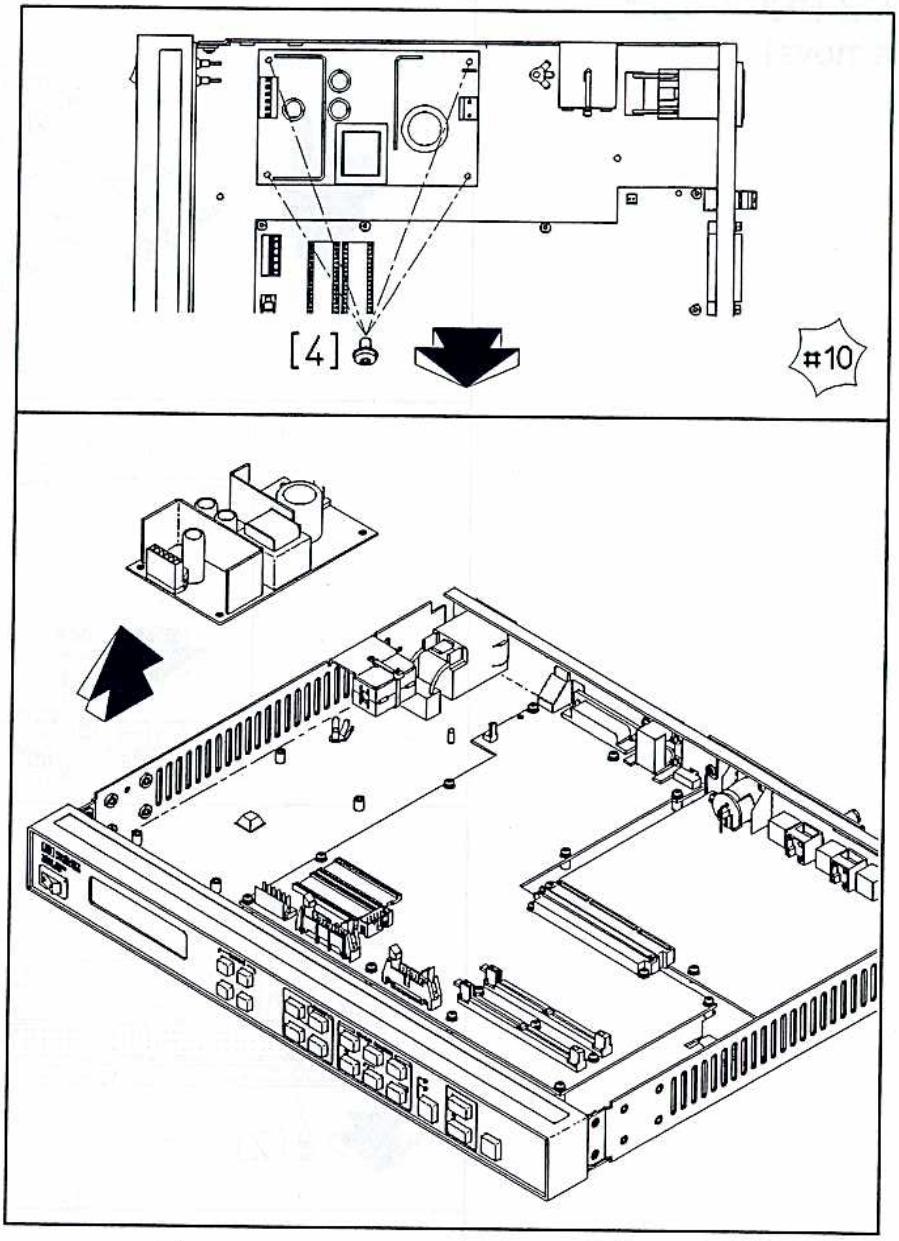


Figure 3-16. Power Supply Removal (2 of 2)

RGB BNC Board Removal

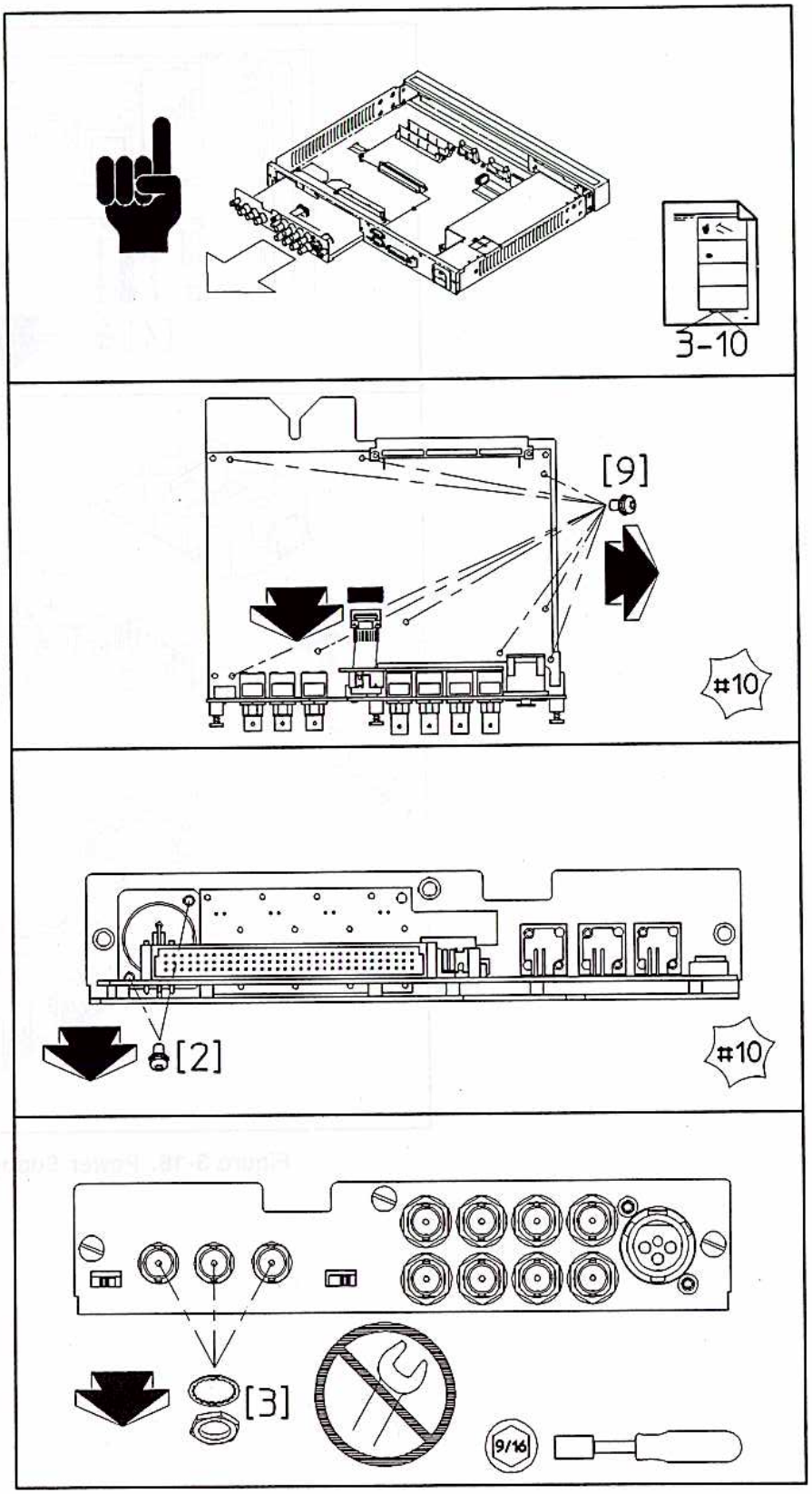


Figure 3-17. RGB BNC Board Removal (1 of 2)

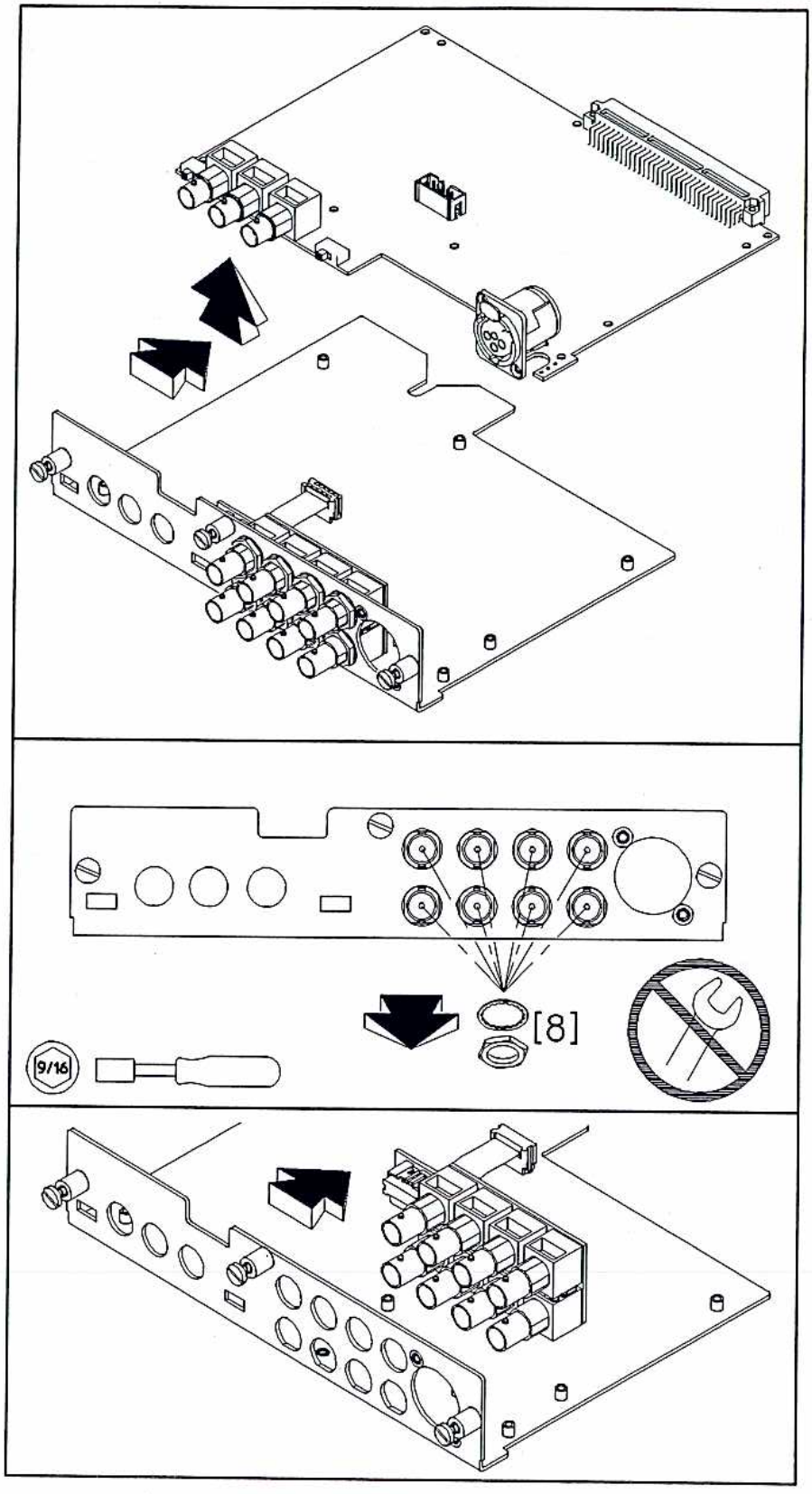


Figure 3-17. RGB BNC Board Removal (2 of 2)

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4

Obtaining the Replacement Assembly/Part

Introduction

This chapter contains information for identifying and ordering major assemblies, cable assemblies, and mechanical parts for the HP VidJet Pro and HP Remote Front Panel.

Abbreviations

Tables 4-2 through 4-4 list reference designations, abbreviations, and multipliers used in the parts list, block diagram, and throughout the manual. Standard abbreviations may be in upper or lower-case letters. However, the replaceable parts lists are computer printouts using only upper-case letters. Thus, abbreviations in the replaceable parts lists are in upper-case letters only.

Replaceable Parts Table Format

Tables 4-5 through 4-15 list the following information for each major assembly, cable assembly, and mechanical or electrical part that is not part of a major assembly:

1. Assembly reference designation. This column lists the reference designator for the assembly or the reference number of the assembly or part shown in the applicable illustration.
2. Hewlett-Packard part number.
3. Part number check digit (CD). This digit is used by HP to perform a checksum test, helping to assure that the part number you order has been written correctly.
4. Quantity used. The total quantity of parts used in the illustration or in a specific area of the illustration is listed in this column.
5. Description of the assembly. A brief description of the assembly or part is given. Parenthetical information may be included to indicate optional parts or parts deleted when an option is added. Reference designators may also appear in parentheses. References to another illustration will appear in this column where a part is shown in more than one illustration.
6. Manufacturer's code number. This column lists a five-digit code for the manufacturer of each part, with the exception of common hardware. The codes are listed in Federal Cataloging Handbook H4/H8: Commercial and Government Entity (CAGE) Publications. This handbook is available from:

Commander
Defense Logistics Services Center
Federal Center
74 North Washington
Battle Creek MI 49017-3084

7. Manufacturer's part number.

Illustrated Parts Breakdowns

Figures 4-2 through 4-11 are Illustrated Parts Breakdowns (IPBs) of the HP VidJet Pro and HP Remote Front Panel. Each IPB contains an exploded illustration of a section of the instrument along with a listing of the parts that are identified in each figure.

Ordering Parts

The method used to order parts depends on where you are located.

United States Customers

For customers in the United States replaceable parts are ordered through Hewlett-Packard's Support Materials Organization (SMO), twenty-four hours a day, seven days a week. The toll-free number for SMO is: 1-800-227-8164. Parts will be delivered within twenty-four hours.

While the instrument is under warranty, the part will be sent to you before the Support Materials Organization receives the defective assembly. When the new assembly arrives you will also receive a "Warranty Claim" form. Fill out the form and send it and the defective assembly back to the Support Materials Organization to receive credit for the new assembly.

European, Asian, and Canadian Customers

For customers in Europe, Asia, or Canada replaceable parts are ordered through your local Hewlett-Packard Professional Video Products Authorized Dealer. Contact one of the following Hewlett-Packard Sales Offices for the location of the Hewlett-Packard Professional Video Products Authorized Dealer in your area:

Canada:
Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V1M8
(416) 678 9430

Germany:
Hewlett Packard GmbH
Herrenberger Strasse 130
W-7030 Boblingen
Germany
(70) 31 140

Japan:
Yokogawa-Hewlett-Packard Ltd.
91 Takakura-cho
Hachioji
Tokyo 192, Japan
0426-42-1231

Italy:
Hewlett-Packard Italiana S.p.A
Via Giuseppe di Vittorio, 9
20063 Cernusco sul Naviglio
Milano Italy
2 921 991

Latin America:
Hewlett-Packard
Latin American Region Headquarters
Monte Pelvoux No. 11
Lomas de Chapultepec
11000 Mexico, D.F. Mexico
(525) 202 0155

United Kingdom:
Hewlett-Packard Ltd.
Cain Road
Bracknell Berkshire RG12 1HN
(34) 436 0000

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Melbourne, Australia
(03) 895-2895

Europe:
Hewlett-Packard S.A.
150, route du Nant-d'Avril
1217 Meyrin 2/Geneva
Switzerland
(22) 780.8111

France:
Hewlett-Packard France
France Sales Region Headquarters
Parc d'Activite du Bois Briard
2, avenue du Lac
91040 Evry Cedex
France
(69) 91 8000

Far East:
Hewlett-Packard Pacific Ltd.
22-30/F Peregrine Tower
Lippo Centre
89 Queensway, Central
Hong Kong
(852) 848 7070

Parts List Backdating

The replaceable parts lists contain the parts for all instrument configurations. If a part is not used in all instrument configurations, this is indicated with a serial number prefix or a range of prefixes.

Parts List Updating (Manual Updates Package)

Production changes made after the publication date of this manual are accompanied by a change in the serial number prefix. Changes to the parts list are recorded by serial number prefix in a "Manual Update" package. For information on how to order a "Manual Update" package for the HP VidJet Pro or HP Remote Front Panel, see "Manual Update Package" in Chapter 1.

Parts Identification

To identify a part not shown or not in the "Manual Update Package", contact the parts identification section of your nearest Hewlett-Packard service center. Be prepared to identify the instrument by model and serial number, and to describe the part by type, function, and location within the HP VidJet Pro or HP Remote Front Panel.

Exchange Assemblies

Table 4-1 lists assemblies within the HP VidJet Pro or HP Remote Front Panel that can be replaced on an exchange basis. Factory repaired and tested exchange assemblies are available only on a trade-in basis. Defective assemblies must be returned for credit. Assemblies required for spare parts stock must be ordered by the new assembly part number.

Table 4-1. Part Numbers for Exchange Assemblies

Reference Designator	Description	Part Number[1]	
		Exchange Assy	New Assy
A3	Microprocessor Board	E2530-69002	E2530-60002
A5	I/O Bd, Composite	E2531-69001	E2531-60001
A5	I/O Bd, Composite/timecode	E2531-69004	E2531-60004
A5	I/O Bd, Analog Component	E2533-69001	E2533-60001
A5	I/O Bd, 4:2:2 Digital	E2534-69001	E2534-60001

1 When ordering extra assemblies for spare parts stock, use new assembly part number only. Exchange orders require return of the defective part.

Recommended Spares List

Stocking spare parts for an instrument is often done to ensure quick return to service after a malfunction occurs. Hewlett-Packard prepares a "Recommended Spares" list for this instrument. The contents of the list are based on failure reports and repair data. Quantities given are for one year of parts support. A copy of the "Recommended Spares" list may be requested from your nearest Hewlett-Packard office.

When stocking parts to support more than one instrument or to support a variety of Hewlett-Packard instruments, it may be more economical to work from one consolidated list rather than simply adding together stocking quantities from the individual instrument lists. Hewlett-Packard will prepare consolidated "Recommended Spares" lists for any number or combination of instruments. Contact your nearest Hewlett-Packard office for details.

Table 4-2. Reference Designations

A ..... assembly
AT ..... attenuator; isolator; termination
B ..... fan; motor
BT ..... battery
C ..... capacitor
CP ..... coupler
CR .... diode; diode thyristor; varactor
DC ..... directional coupler
DL ..... delay line
DS .... annunciator; signaling device (audible or visual); lamp; LED
E miscellaneous electrical part
F ..... fuse
FL ..... filter
H ..... hardware
HY ..... circulator
J ..... electrical connector (stationary portion); jack
K ..... relay
L ..... coil; inductor
M ..... meter
MP . miscellaneous mechanical part
P electrical connector (movable portion); plug
Q ..... transistor; SCR; triode thyristor
R ..... resistor
RT ..... thermistor
S ..... switch
T ..... transformer
TB ..... terminal board
TC ..... thermocouple
TP ..... test point
U ..... integrated circuit; microcircuit
V ..... electron tube
VR ..... voltage regulator; breakdown diode
W ... cable; transmission path; wire
X ..... socket
Y crystal unit (piezoelectric or quartz)
Z .. tuned cavity; tuned circuit

Table 4-3. Abbreviations

A ..... ampere
ac ..... alternating current
ACCESS ..... accessory
ADJ ..... adjustment
A/D ..... analog-to-digital
AF ..... audio frequency
AFC .... automatic frequency control
AGC .. automatic gain control
AL ..... aluminum
ALC .. automatic level control
AM .... amplitude modulation
AMPL ..... amplifier
APC . automatic phase control
ASSY ..... assembly
AUX ..... auxiliary
avg ..... average
AWG ... American wire gauge
BAL ..... balance
BCD ... binary coded decimal
BD ..... board
BE CU ..... beryllium copper
BFO . beat frequency oscillator
BH ..... binder head
BKDN ..... breakdown
BP ..... bandpass
BPF ..... bandpass filter
BRS ..... brass
BWO backward-wave oscillator
CAL ..... calibrate
ccw ..... counterclockwise
CER ..... ceramic
CHAN ..... channel
cm ..... centimeter
CMO ..... cabinet mount only
COAX ..... coaxial
COEF ..... coefficient
COM ..... common
COMP ..... composition
COMPL ..... complete
CONN ..... connector
CP ..... cadmium plate
CRT ..... cathode-ray tube
CTL complementary transistor logic
CW ..... continuous wave
cw ..... clockwise
cm ..... centimetre
D/A ..... digital-to-analog
dB ..... decibel
dBm decibel referred to 1 mW
dc ..... direct current
deg ..... degree (temperature interval or difference)
... ° ... degree (plane angle)
°C degree Celsius (centigrade)
°F ..... degree Fahrenheit
°K ..... degree Kelvin
DEPC ..... deposited carbon
DET ..... detector
diam ..... diameter
DIA .. diameter (used in Parts List)
DIFF AMPL ..... differential amplifier
div ..... division
DPDT ..... double-pole, double-throw
DR ..... drive
DSB ..... double sideband
DTL .... diode transistor logic
DVM ..... digital voltmeter
ECL .... emitter coupled logic
EMF ..... electromotive force
EDP electronic data processing
ELECT ..... electrolytic
ENCAP ..... encapsulated
EXT ..... external
F ..... farad
FET .... field-effect transistor
F/F ..... flip-flop
FH ..... flat head
FIL H ..... fillister head
FM .... frequency modulation
FP ..... front panel
FREQ ..... frequency
FXD ..... fixed
g ..... gram
GE ..... germanium
GHz ..... gigahertz
GL ..... glass
GRD ..... ground(ed)
H ..... henry
h ..... hour
HET ..... heterodyne
HEX ..... hexagonal
HD ..... head
HDW ..... hardware
HF ..... high frequency
HG ..... mercury
HI ..... high
HP ..... Hewlett-Packard
HPF ..... high-pass filter
HR .. hour (used in Parts List)
HV ..... high voltage
Hz ..... Hertz
IC ..... integrated circuit
ID ..... inside diameter
IF .... intermediate frequency
IMPG ..... impregnated
in ..... inch
INCD ..... incandescent
INCL ..... include(s)
INP ..... input
INS ..... insulation
INT ..... internal
kg ..... kilogram
kHz ..... kilohertz
kΩ ..... kilohm
kV ..... kilovolt
lb ..... pound
LC .... inductance-capacitance
LED ..... light-emitting diode
LF ..... low frequency
LG ..... long
LH ..... left hand
LIM ..... limit
LIN linear taper (used in Parts List)
lin ..... linear
LK WASH ..... lock washer
LO ..... low; local oscillator
LOG .. logarithmic taper (used in Parts List)
log ..... logarithm(ic)
LPF ..... low pass filter
LV ..... low voltage
m ..... metre (distance)
mA ..... millampere
MAX ..... maximum
MΩ ..... megohm
MEG meg (10^6) (used in Parts List)
MET FLM ..... metal film
MET OX ..... metallic oxide
MF ..... medium frequency; microfarad (used in Parts List)
MFR ..... manufacturer
mg ..... milligram
MHz ..... megahertz
mH ..... millihenry
mho ..... mho
MIN ..... minimum
min ..... minute (time)
... ' ... minute (plane angle)
MINAT ..... miniature
mm ..... millimetre
MOD ..... modulator
MOM ..... momentary
MOS ..... metal-oxide semiconductor
ms ..... millisecond
MTG ..... mounting
MTR meter (indicating device)
mV ..... millivolt
mVac ..... millivolt, ac
mVdc ..... millivolt, dc
mVpk ..... millivolt, peak
mVp-p . millivolt, peak-to-peak
mVrms ..... millivolt, rms
mW ..... milliwatt
MUX ..... multiplex
MY ..... mylar
μA ..... microampere
μF ..... microfarad
μH ..... microhenry
μmho ..... micromho
μs ..... microsecond
μV ..... microvolt
μVac ..... microvolt, ac
μVdc ..... microvolt, dc
μVpk ..... microvolt, peak
μVp-p microvolt, peak-to-peak
μVrms ..... microvolt, rms
μW ..... microwatt

Table 4-3. Abbreviations (continued)

nA ..... nanoampere
NC ..... no connection
N/C ..... normally closed
NE ..... neon
NEG ..... negative
nF ..... nanofarad
NI PL ..... nickel plate
N/O ..... normally open
NOM ..... nominal
NORM ..... normal
NPN negative-positive-negative
NPO ..... negative-positive zero ..... (zero temperature coefficient)
NRFR .. not recommended for field replacement
NSR ..... not separately replaceable
ns ..... nanosecond
nW ..... nanowatt
OBD .... order by description
OD ..... outside diameter
OH ..... oval head
OP AMPL ..... operational amplifier
OPT ..... option
OSC ..... oscillator
OX ..... oxide
oz ..... ounce
Ω ..... ohm
P ... peak (used in Parts List)
PAM ..... pulse-amplitude modulation
PC ..... printed circuit
PCM .. pulse-code modulation; pulse-count modulation
PDM ..... pulse-duration modulation
pF ..... picofarad
PH BRZ .... phosphor bronze
PHL ..... Phillips
PIN ..... positive-intrinsic-negative
PIV ..... peak inverse voltage
pk ..... peak
PL ..... phase lock
PLO ..... phase lock oscillator
PM ..... phase modulation
PNP positive-negative-positive
P/O ..... part of
POLY ..... polystyrene
PORC ..... porcelain
POS positive; position(s) (used in Parts List)
POSN ..... position
POT ..... potentiometer
p-p ..... peak-to-peak
PP peak-to-peak (used in Parts List)
PPM ..... pulse-position modulation
PREAMPL ..... preamplifier
PRF pulse-repetition frequency
PRR .... pulse repetition rate
ps ..... picosecond
PT ..... point
PTM .. pulse-time modulation
PWM . pulse-width modulation
PWV ... peak working voltage
RC .... resistance-capacitance
RECT ..... rectifier
REF ..... reference
REG ..... regulated
REPL ..... replaceable
RF ..... radio frequency
RFI ..... radio frequency interference
RH ... round head; right hand
RLC ... resistance-inductance-capacitance
RMO ..... rack mount only
rms ..... root-mean-square
RND ..... round
RAM .. random-access memory
ROM ..... read-only memory
R&P ..... rack and panel
RWV . reverse working voltage
S ..... scattering parameter
s ..... second (time)
... " ... second (plane angle)
S-B ..... slow-blow (fuse) (used in Parts List)
SCR silicon controlled rectifier; screw
SE ..... selenium
SECT ..... sections
SEMICON ..... semiconductor
SHF .... super-high frequency
SI ..... silicon
SIL ..... silver
SL ..... slide
SNR ..... signal-to-noise ratio
SPDT ..... single-pole, double-throw
SPG ..... spring
SR ..... split ring
SPST single-pole, single-throw
SSB ..... single sideband
SST ..... stainless steel
STL ..... steel
SQ ..... square
SWR ..... standing-wave ratio
SYNC ..... synchronize
T ..... timed (slow-blow fuse)
TA ..... tantalum
TC temperature compensating
TD ..... time delay
TERM ..... terminal
TFT ..... thin-film transistor
TGL ..... toggle
THD ..... thread
THRU ..... through
TI ..... titanium
TOL ..... tolerance
TRIM ..... trimmer
TSTR ..... transistor
TTL transistor-transistor logic
TV ..... television
TVI .... television interference
TWT .... traveling wave tube
U ..... micro (10^{-6}) (used in Parts List)
UF . microfarad (used in Parts List)
UHF .... ultra-high frequency
UNREG ..... unregulated
V ..... volt
VA ..... voltampere
Vac ..... volts, ac
VAR ..... variable
VCO ..... voltage-controlled oscillator
Vdc ..... volts, dc
VDCW ..... volts, dc, working (used in Parts List)
V(F) ..... volts, filtered
VFO ..... variable-frequency oscillator
VHF ..... very-high frequency
Vpk ..... volts, peak
Vp-p ..... volts, peak-to-peak
Vrms ..... volts, rms
VSWR . voltage standing-wave ratio
VTO . voltage-tuned oscillator
VTVM vacuum-tube voltmeter
V(X) ..... volts, switched
W ..... watt
W/ ..... with
WIV .. working inverse voltage
WW ..... wirewound
W/O ..... without
YIG ..... yttrium-iron-garnet
Z_o ... characteristic impedance

Table 4-4. Multipliers

Abbreviation	Prefix	Multiple
T	tera	10^{12}
G	giga	10^{9}
M	mega	10^{6}
k	kilo	10^{3}
da	deka	10
d	deci	10^{-1}
c	centi	10^{-2}
m	milli	10^{-3}
μ	micro	10^{-6}
n	nano	10^{-9}
p	pico	10^{-12}
f	femto	10^{-15}
a	atto	10^{-18}

Table 4-5. Replaceable Parts (Figure 4-1)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
A1	2090-0325	5	1	MONITOR-CRT 3 IN MONO FUTABA		M202SD01HA
A2	0950-2478	5	1	POWER SUPPLY (HP VIDJET PRO)	28480	0950-2478
	0950-2065	6	1	POWER SUPPLY (HP REMOTE FRONT PANEL)	28480	0950-2065
A3	E2530-60002	6	1	CPU BOARD (HP VIDJET PRO; NEW)	28480	E2530-60002
	E2530-69002	4	1	CPU BOARD (HP VIDJET PRO; EXCHANGE)	28480	E2550-69002
	E2550-60004	2	1	CPU BOARD (HP REMOTE FRONT PANEL; NEW)	28480	E2550-60004
	E2550-69004	0	1	CPU BOARD (HP REMOTE FRONT PANEL; EXCHANGE)	28480	E2550-69004
A3U2	E2530-80001	7	1	ROM	28480	E2530-80001
A3U7	E2530-80002	8	1	ROM	28480	E2530-80002
A3U204	E2530-80009	5	1	ROM	28480	E2530-80009
A3U205	E2530-80010	8	1	ROM	28480	E2530-80010
A4	E2530-60001	5	1	KEYBOARD ASSEMBLY	28480	E2530-60001
A5	E2531-60001	6	1	COMPOSITE I/O BD Y/C	28480	E2531-60001
	E2531-60004	9	1	COMPOSITE I/O BD Y/C/TIMECODE	28480	E2531-60004
	E2533-60001		1	ANALOG COMPONENT I/O BD	28480	E2533-60001
	E2533-60002		1	RGB CONNECTOR BORAD (part of Analog Component I/O)	28480	E2533-60002
	E2534-60001	9	1	4:2:2 DIGITAL I/O BD	28480	E2534-60001
A6	1818-5736	5	1	VID-RAM-MDL 512KX32 70 NS SI-MEM-MDL	28480	1818-5736
A7	1818-5736	5	1	VID-RAM-MDL 512KX32 70 NS SI-MEM-MDL	28480	1818-5736
BT1	1420-0341	5	1	BATTERY 3 VOLTS		
S1	3101-3239	2	1	SWITCH-RKR PRI-SW DPST 8A 250VAC QDISC		232KW20C2A8A
W1	E2530-60008	3	1	CABLE, PRIMARY WIRING (HP VIDJET PRO)	28480	E2530-60008
	E2550-60017	7	1	CABLE PRIMARY WIRING (HP REMOTE FRONT PANEL)	28480	E2550-60017
W2	E2530-60004	8	1	CABLE, SECONDARY WIRING (HP VIDJET PRO)	28480	E2530-60004
	E2550-60013	3	1	CABLE, SECONDARY WIRING (HP REMOTE FRONT PANEL	28480	E2550-60013
W3	E2530-60005	9	1	CABLE, DISPLAY (HP VIDJET PRO)	28480	E2530-60005
	E2550-60016	6	1	CABLE, DISPLAY (HP REMOTE FRONT PANEL)	28480	E2550-60016
W4	E2550-60007	5	1	CABLE ASSEMBLY, KEYBOARD	28480	E2550-60007
W5	E2550-60011	1	1	CABLE, REMOTE	28480	E2550-60011

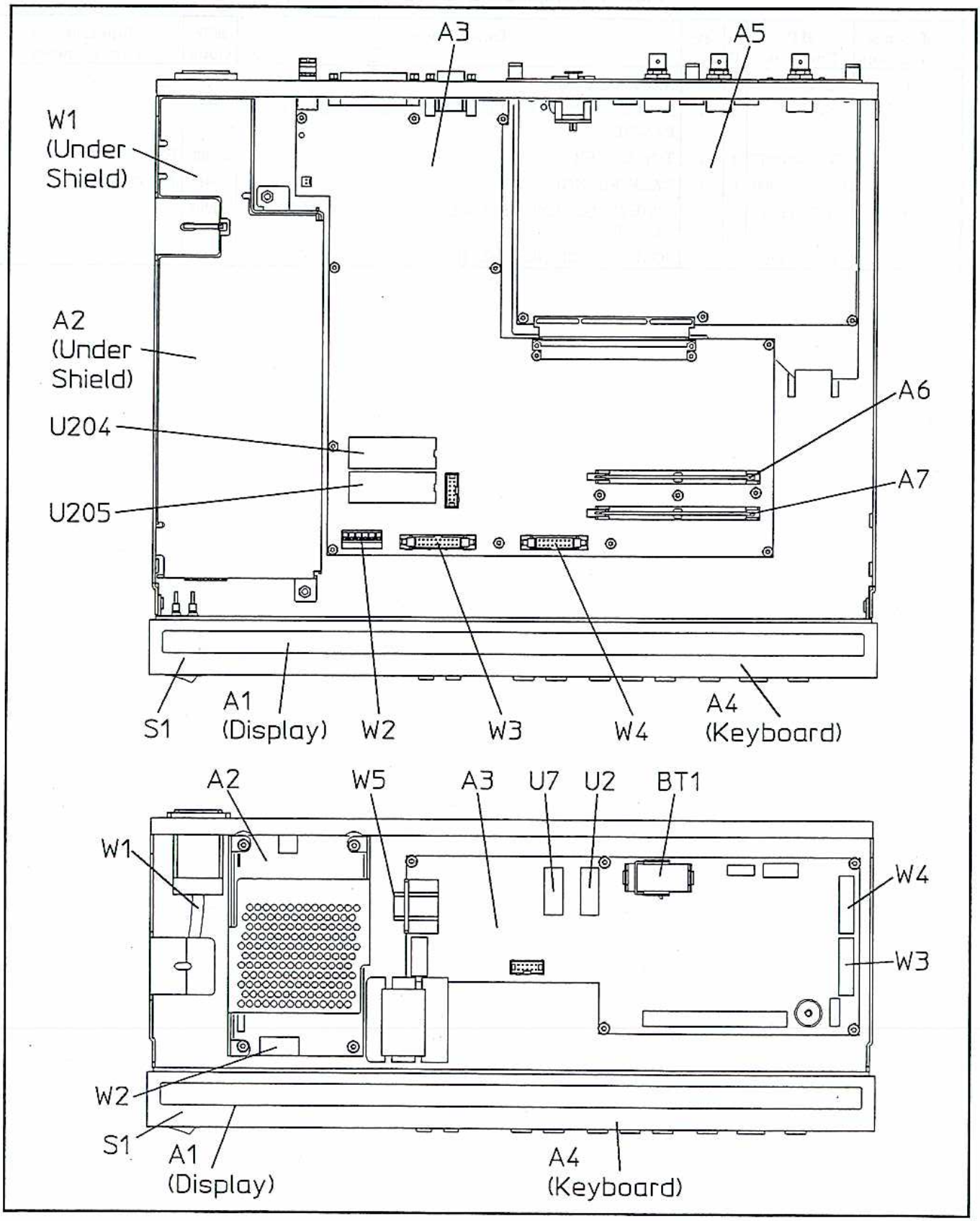

Figure 4-1. Major Assemblies and Cable Assemblies

Table 4-6. Replaceable Parts (Figure 4-2)

Reference Designation	HP Part No.	CD	Qty	Description	Mfr Code	Manufacturer Part Number
1	E2550-00006	8	1	RACK FLANGE	28480	E2550-00006
2	0515-1114	2	4	SCREW-MACHINE ASSEMBLY M4 X 0.7 10MM-LG PAN-HD	93907	
3	E2530-00007	4	1	TOP COVER	28480	E2530-00007
4	E2550-00006	8	1	RACK FLANGE	28480	E2550-00006
5	0515-1114	2	4	SCREW-MACHINE ASSEMBLY M4 X 0.7 10MM-LG PAN-HD	93907	
6	0515-0430	3	5	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG		

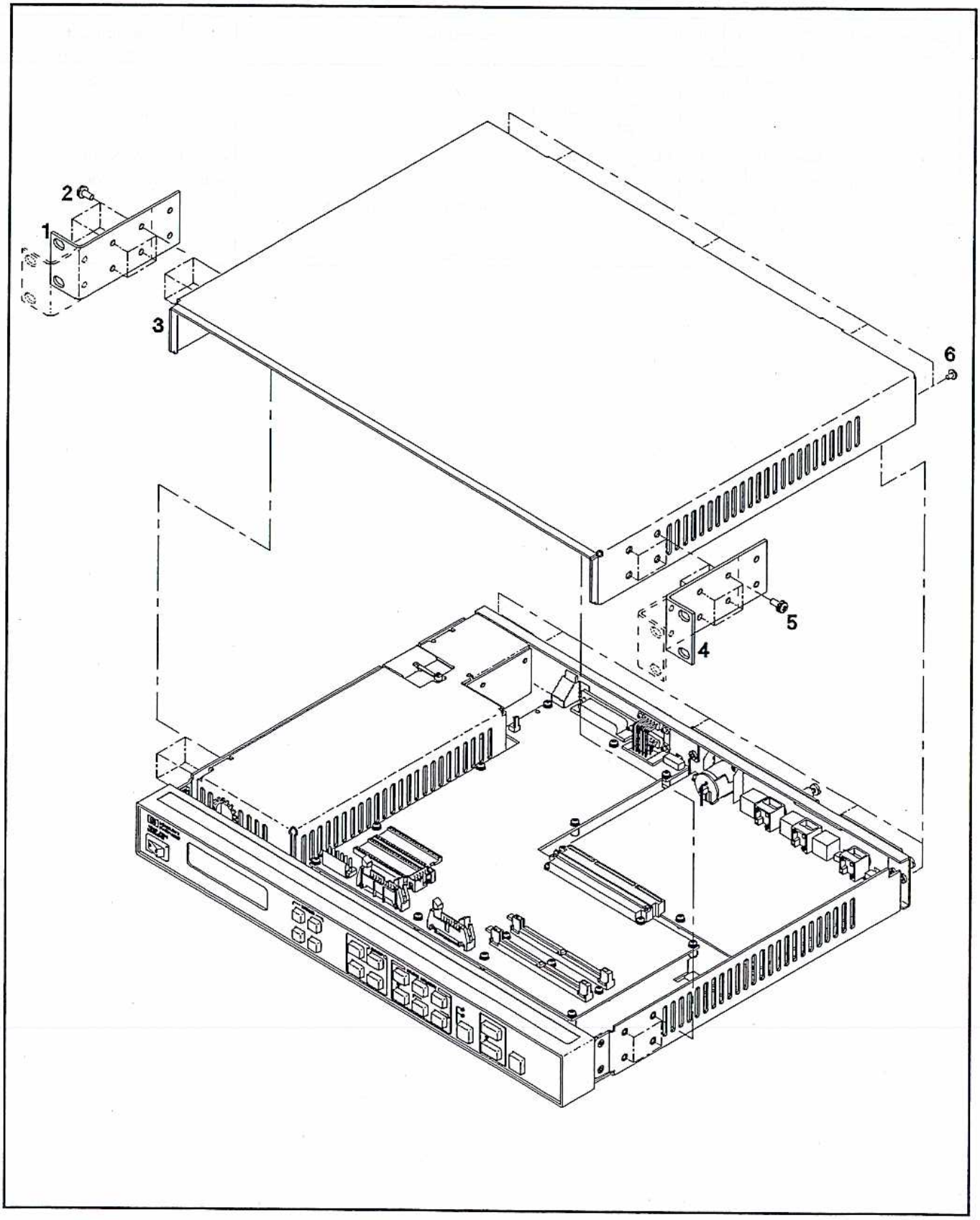

Figure 4-2. Cover Illustrated parts Breakdown—HP VidJet Pro

Table 4-7. Replaceable Parts (Figure 4-3)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1	E2550-00006	8	1	RACK FLANGE	28480	E2550-00006
2	0515-1114	2	4	SCREW-MACHINE ASSEMBLY M4 X 0.7 10MM-LG PAN-HD	93907	
3	E2550-00010	4	1	TOP COVER	28480	E2550-00010
4	E2550-00006	8	1	RACK FLANGE	28480	E2550-00006
5	0515-1114	2	4	SCREW-MACHINE ASSEMBLY M4 X 0.7 10MM-LG PAN-HD	93907	
6	0515-0430	3	5	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG		

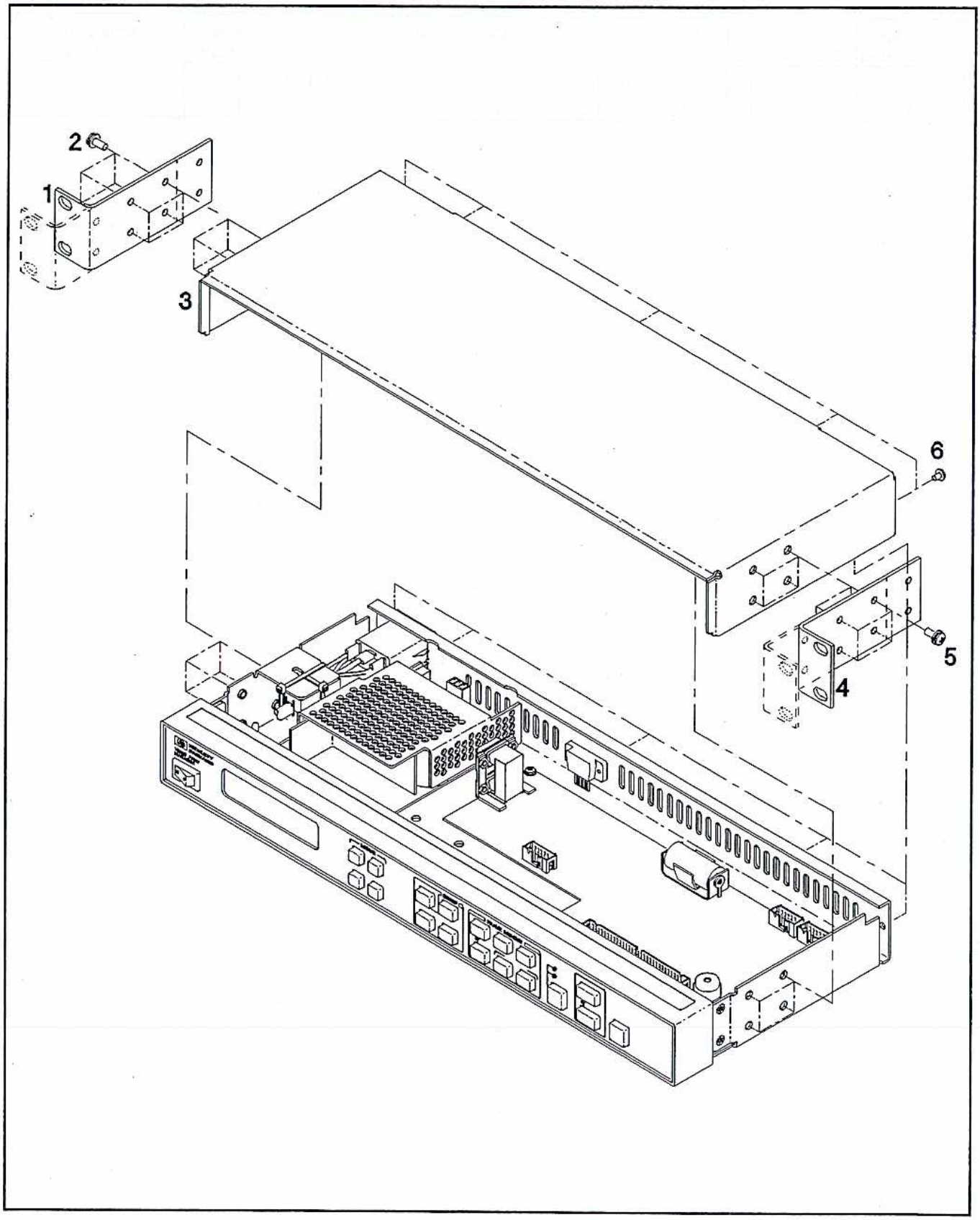

Figure 4-3. Cover Illustrated Parts Breakdown—HP Remote Front Panel

Table 4-8. Replaceable Parts (Figure 4-4)

Reference Designation	HP Part No.	CD	Qty	Description	Mfr Code	Manufacturer Part Number
1	0515-1946	8	2	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		
2	0515-1946	8	2	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		

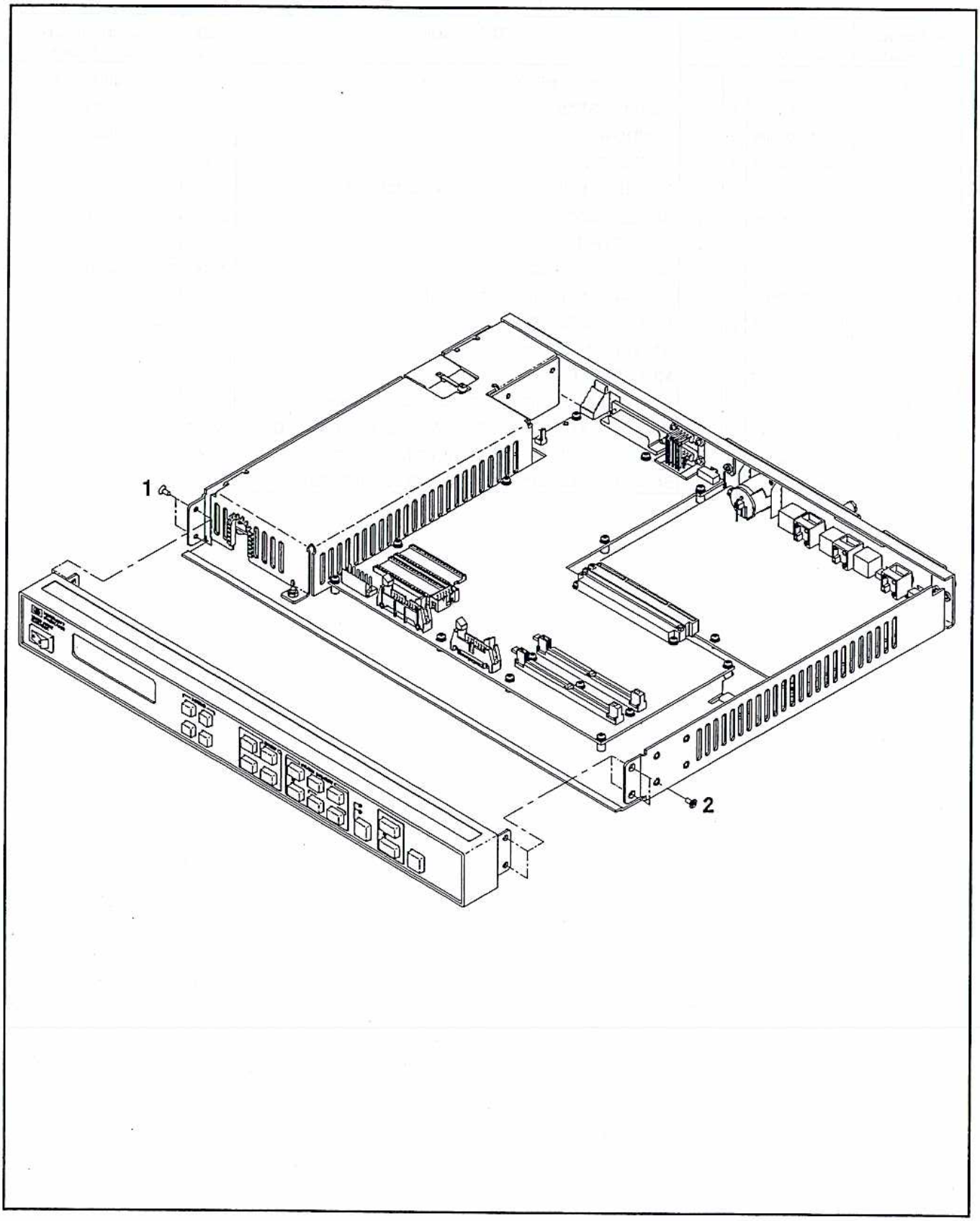

Figure 4-4. Front Panel Illustrated Parts Breakdown

Table 4-9. Replaceable Parts (Figure 4-5)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1	3101-3239	2	1	SWITCH-RKR PRI-SW DPST 8A 250VAC QDISC		232KW20C2A8A
2	E2530-00003	1	1	PANEL DRESS	28480	E2530-00003
3	E2550-00008	0	1	WINDOW	28480	E2550-00008
4	E2530-00002	0	1	PANEL SUB	28480	E2530-00002
5	0535-0031	2	4	NUT-HEX W/LKWR M3 X 0.5 2.4MM-THK		
6	E2550-20006	0	1	BEZEL PAINTED	28480	E2550-20006
7	E2550-80001	1	1	TRIM STRIP	28480	E2550-80001
8	E2530-40001	3	1	KEYPAD RUBBER	28480	E2530-40001
9	0515-1946	8	3	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		
10	E2530-60001	5	1	BOARD AY KEYBOAR	28480	E2530-60001
11				A1; SEE FIGURE 4-1		
12	E2550-00007	9	1	MOUNT VFD	28480	E2550-00007
13	0515-0430	3	3	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
14	0515-0374	4	7	SCREW-MACHINE ASSEMBLY M3 X 0.5 10MM-LG	93907	
15	0515-0430	3	3	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
16	0515-1946	8	3	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		

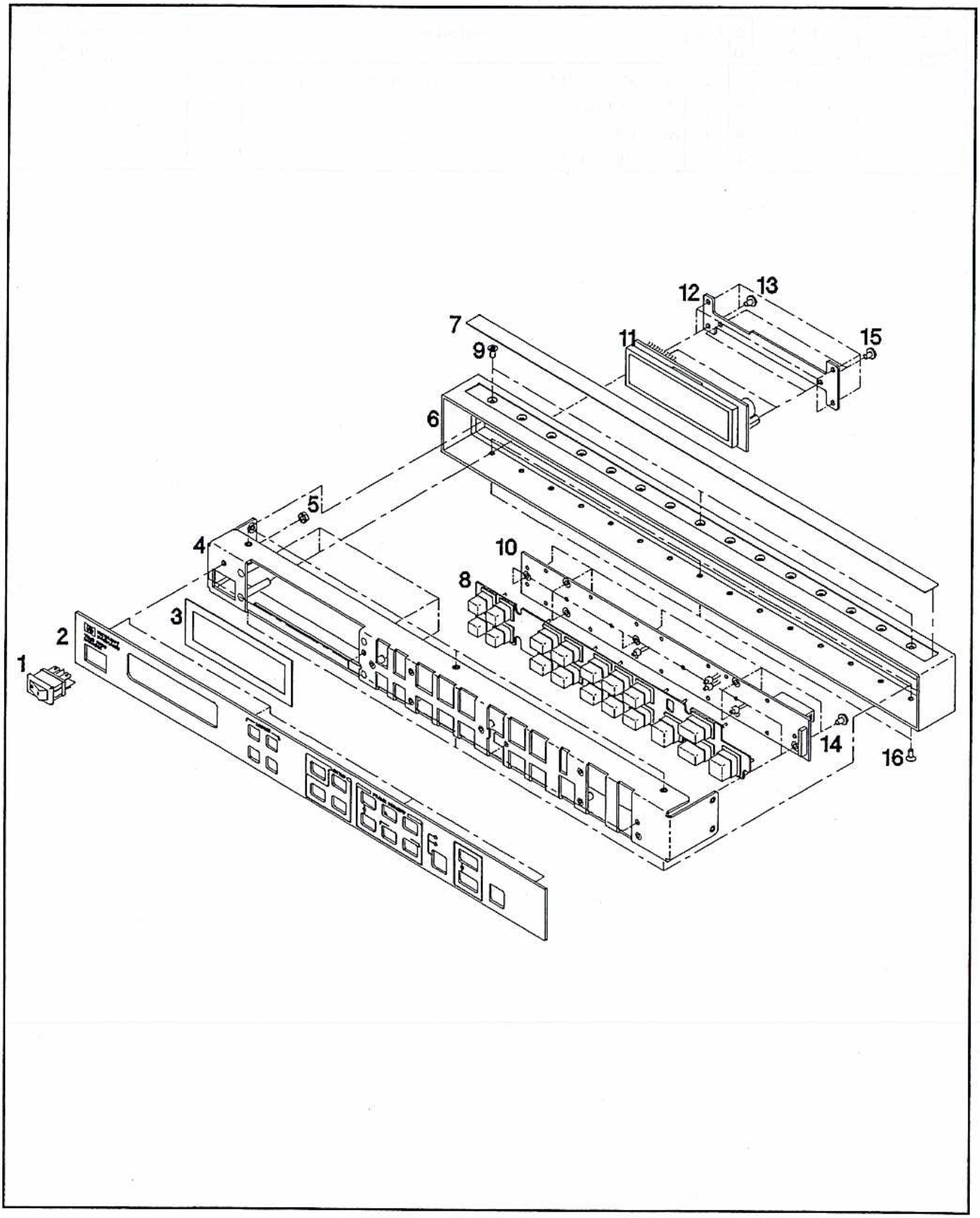

Figure 4-5. Front Panel Disassembly Illustrated Parts Breakdown

Table 4-10. Replaceable Parts (Figure 4-6)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1	0515-1946	8	2	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		
2	E2530-00009	3	1	COVER PWR SPLY	28480	E2530-00009
3	0535-0031	6	1	NUT-HEX M3.0		
4	0535-0031	6	1	NUT-HEX M3.0		

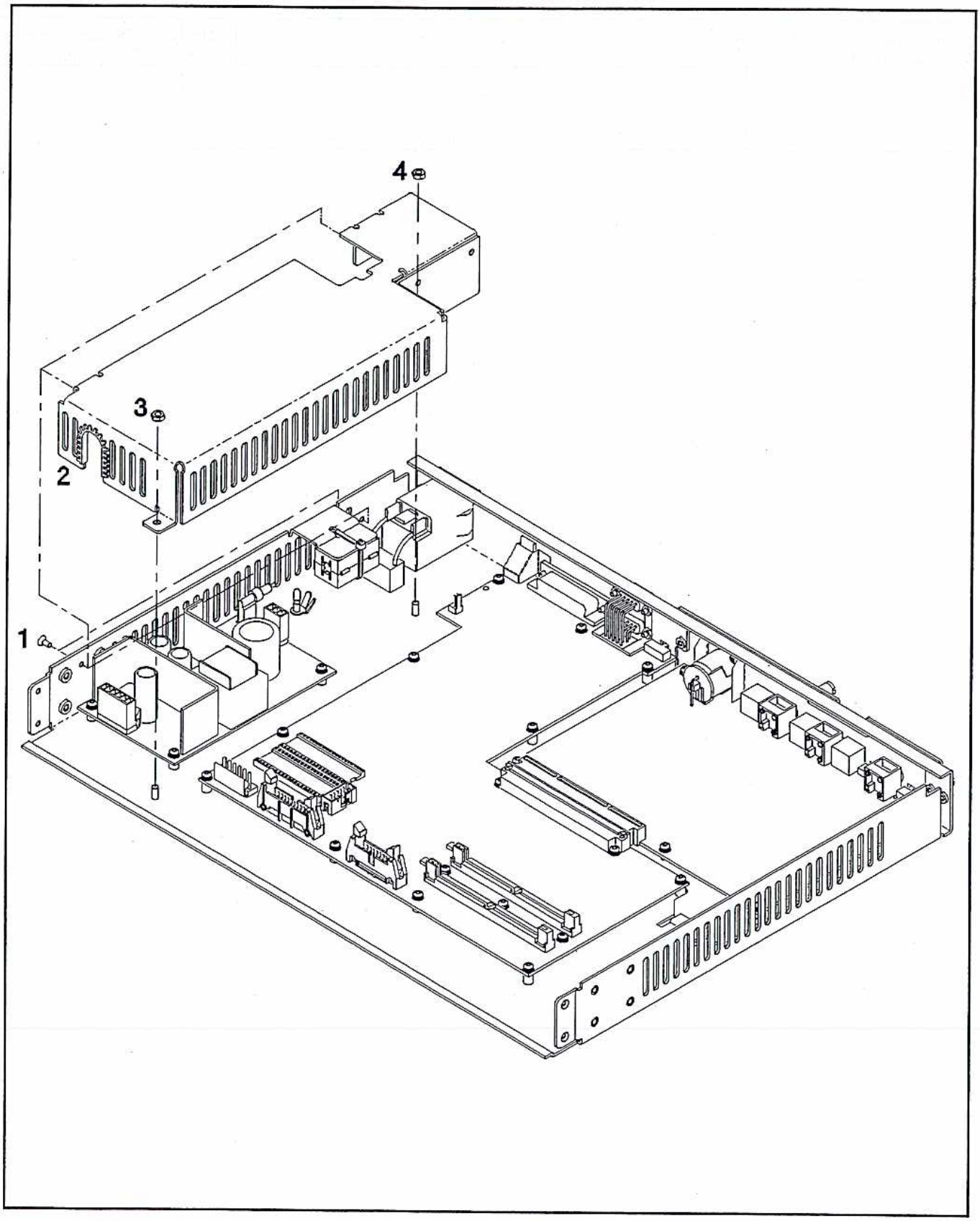

Figure 4-6. Shield Illustrated Parts Breakdown

Table 4-11. Replaceable Parts (Figure 4-7)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1				A5; SEE FIGURE 4-1		
2				A5; SEE FIGURE 4-1		
3	0515-1946	8	3	SCREW-MACH M3 X 0.5 6MM-LG 90-DEG-FLH-HD		

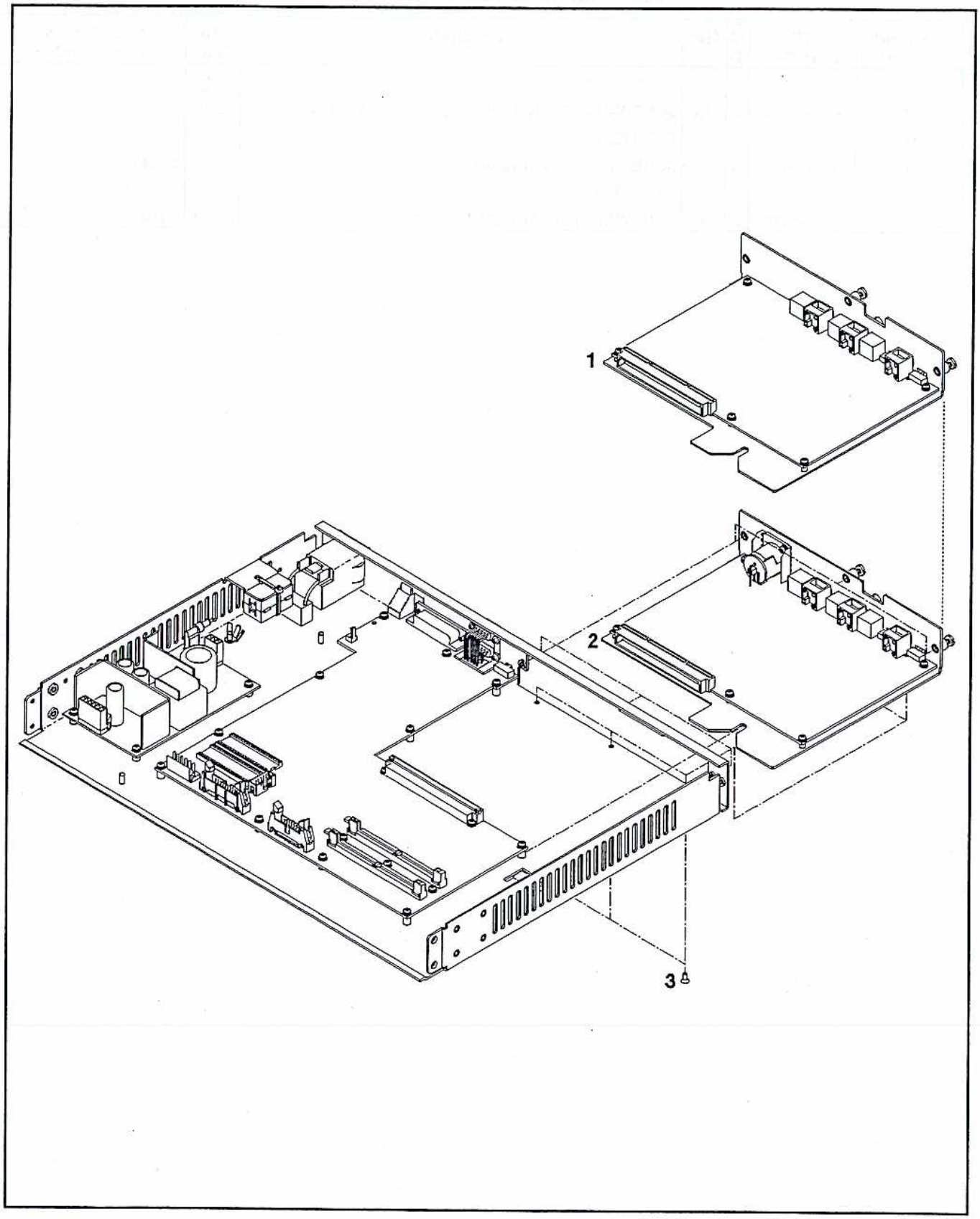

Figure 4-7. I/O Board Illustrated Parts Breakdown

Table 4-12. Replaceable Parts (Figure 4-8)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1				A3; SEE FIGURE 4-1		
2	0515-0430	3	16	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
3				P/O ITEM 4		
4	1252-5619	3	1	SCREWLOCK FEMALE-RECT CONN	05791	ST9453-36
5				P/O ITEM 6		
6	1252-5619	3	1	SCREWLOCK FEMALE-RECT CONN	05791	ST9453-36

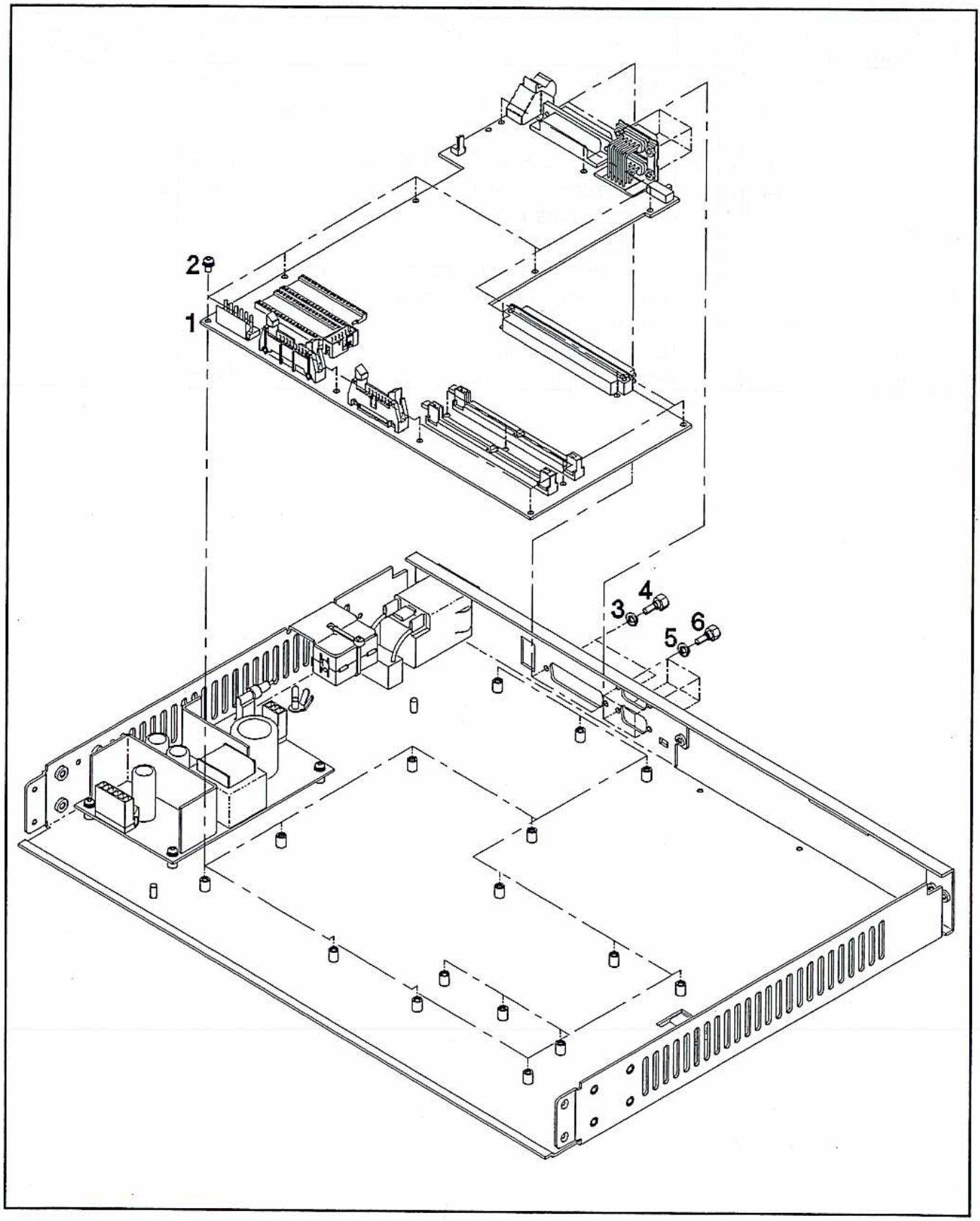

Figure 4-8. Microprocessor Board Illustrated Parts Breakdown—HP VidJet Pro

Table 4-13. Replaceable Parts (Figure 4-9)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1	E2550-00013	7	1	PLATE	28480	E2550-00013
2	0515-0430	3	4	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
3				P/O W3; SEE FIGURE 4-1		
4	1400-0249	0	1	CABLE TIE .062-.625-DIA .091-WD NYL	59730	TY-23M-8
5	1400-0249	0	1	CABLE TIE .062-.625-DIA .091-WD NYL	59730	TY-23M-8
6				A3; SEE FIGURE 4-1		
7				W5; SEE FIGURE 4-1		
8				NOT SEPARATELY REPLACEABLE; P/O ITEM 9		
9	1252-5619	3	2	SCREW LOCK KIT-SUBMIN D CONN		
10	1400-1815	8	1	CLIP-BAT STL	91833	#66
11				BT1; SEE FIGURE 4-1		
12	0515-0430	3	5	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	

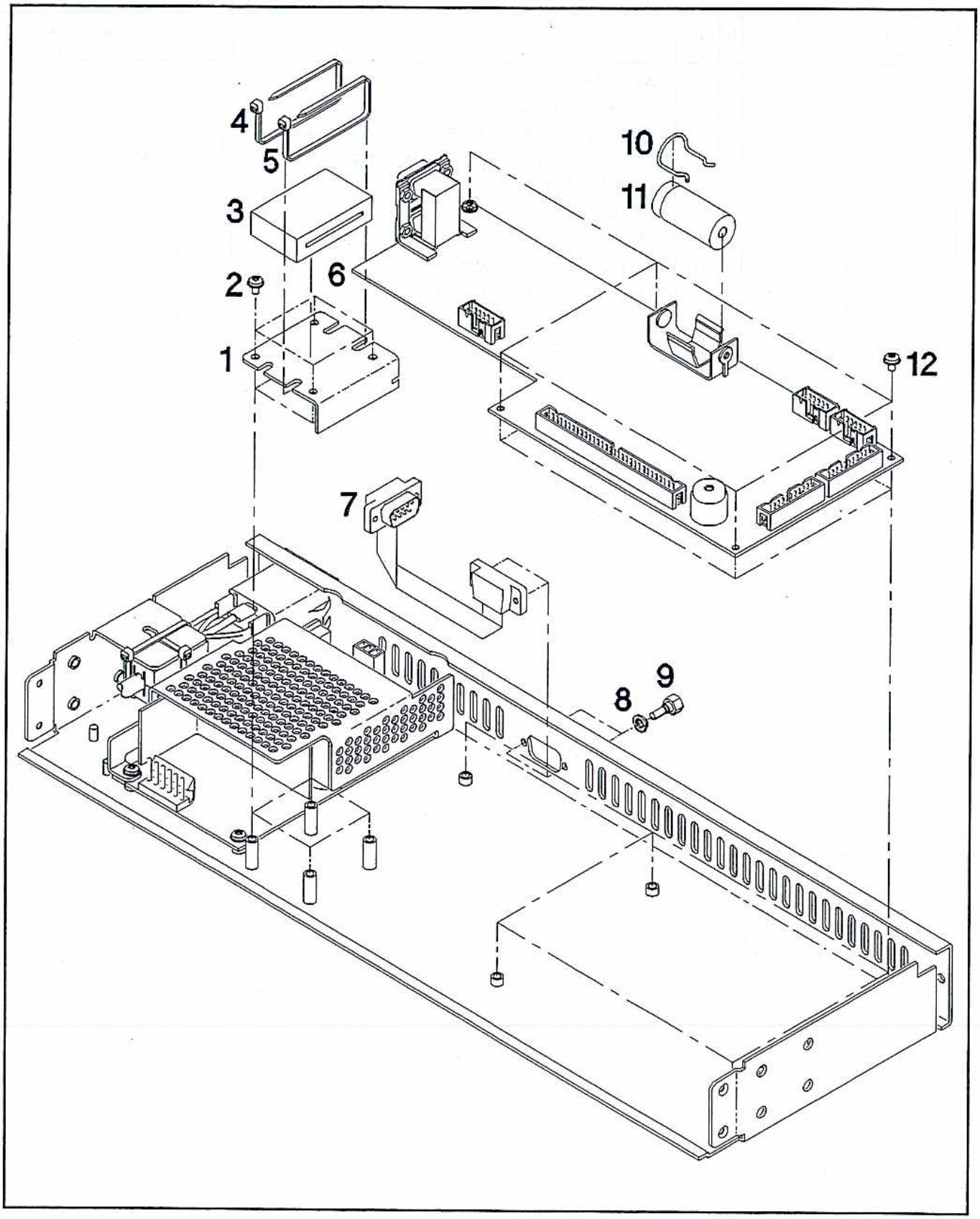

Figure 4-9. Microprocessor Board Illustrated Parts Breakdown—HP Remote Front Panel

Table 4-14. Replaceable Parts (Figure 4-10)

Reference Designation	HP Part No.	C D	Qty	Description	Mfr Code	Manufacturer Part Number
1	E2530-00001	3	1	MAIN CHASSIS	28480	E2550-00001
2				A2; SEE FIGURE 4-1		
3	0515-0430	3	4	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
4	0403-0285	9	1	BUMPER FOOT-ADH MTG 12.7-MM-WD	76381	SJ-5018 GRAY
5				PART OF ITEM 10	28480	
6				PART OF ITEM 10	28480	
7				PART OF ITEM 10	28480	
8	0535-0031	2	1	NUT-HEX M3 X 0.5 2.4MM-THK		
9	1400-0249	0	1	CABLE TIE .062-.625-DIA .091-WD NYL	59730	TY-23M-8
10				P/O W1; SEE FIGURE 4-1		
11	0403-0285	9	1	BUMPER FOOT-ADH MTG 12.7-MM-WD	76381	SJ-5018 GRAY

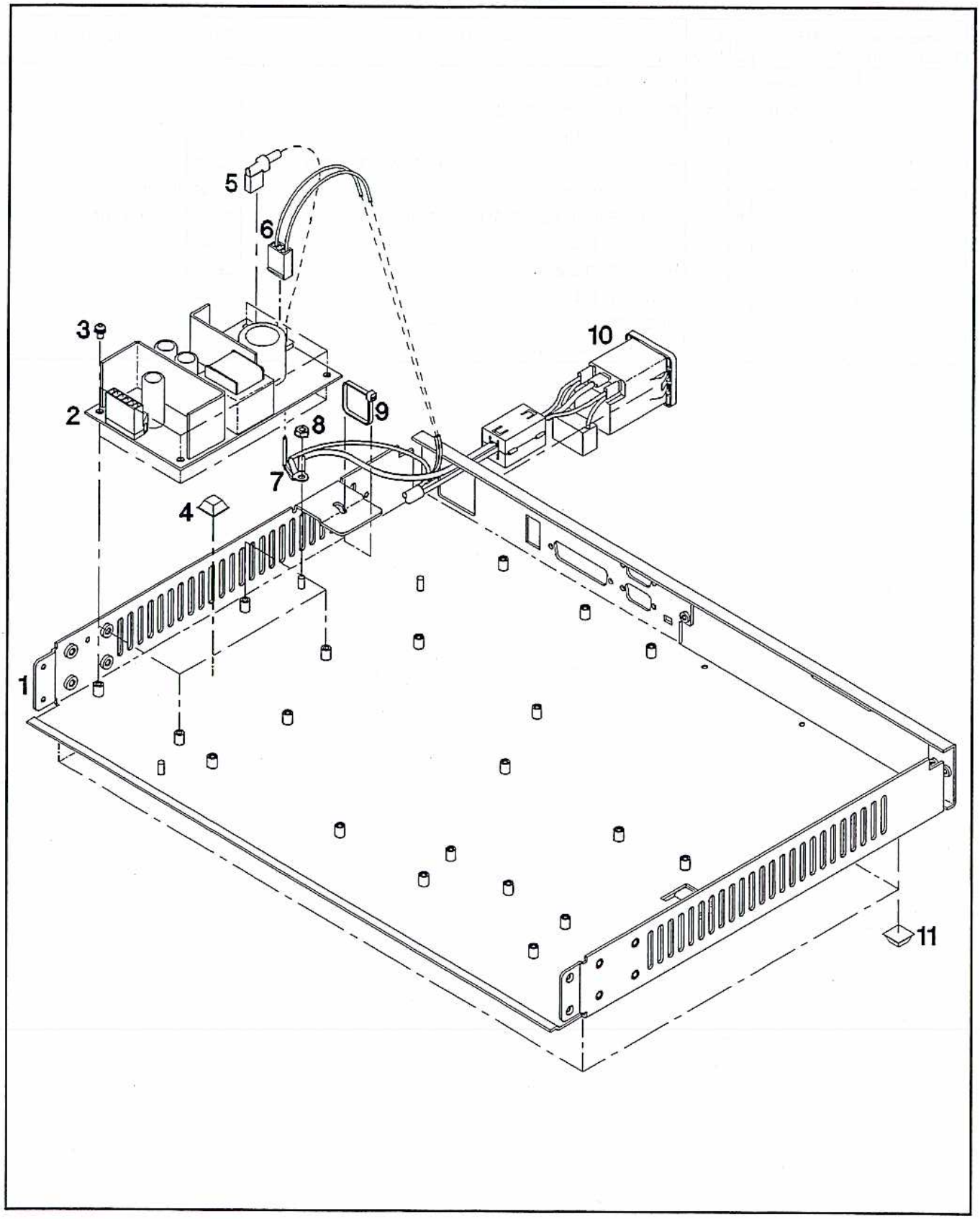

Figure 4-10. Power Supply and Line Module Illustrated Parts Breakdown—HP VidJet Pro

Table 4-15. Replaceable Parts (Figure 4-11)

Reference Designation	HP Part No.	CD	Qty	Description	Mfr Code	Manufacturer Part Number
1	E2550-00009	1	1	MAIN CHASSIS	28480	E2550-00009
2	E2550-00015	9	1	POWER SUPPLY COVER		
3				A2; SEE FIGURE 4-1		
4	0515-0430	3	4	SCREW-MACHINE ASSEMBLY M3 X 0.5 6MM-LG	93907	
5	1400-0249	0	1	CABLE TIE .062-.625-DIA .091-WD NYL	59730	TY-23M-8
6	0403-0285	9	1	BUMPER FOOT-ADH MTG 12.7-MM-WD	76381	SJ-5018 GRAY
7				PART OF ITEM 11	28480	
8				PART OF ITEM 11	28480	
9				PART OF ITEM 11	28480	
10	0535-0031	2	1	NUT-HEX M3 X 0.5 2.4MM-THK		
11				P/O W1; SEE FIGURE 4-1		

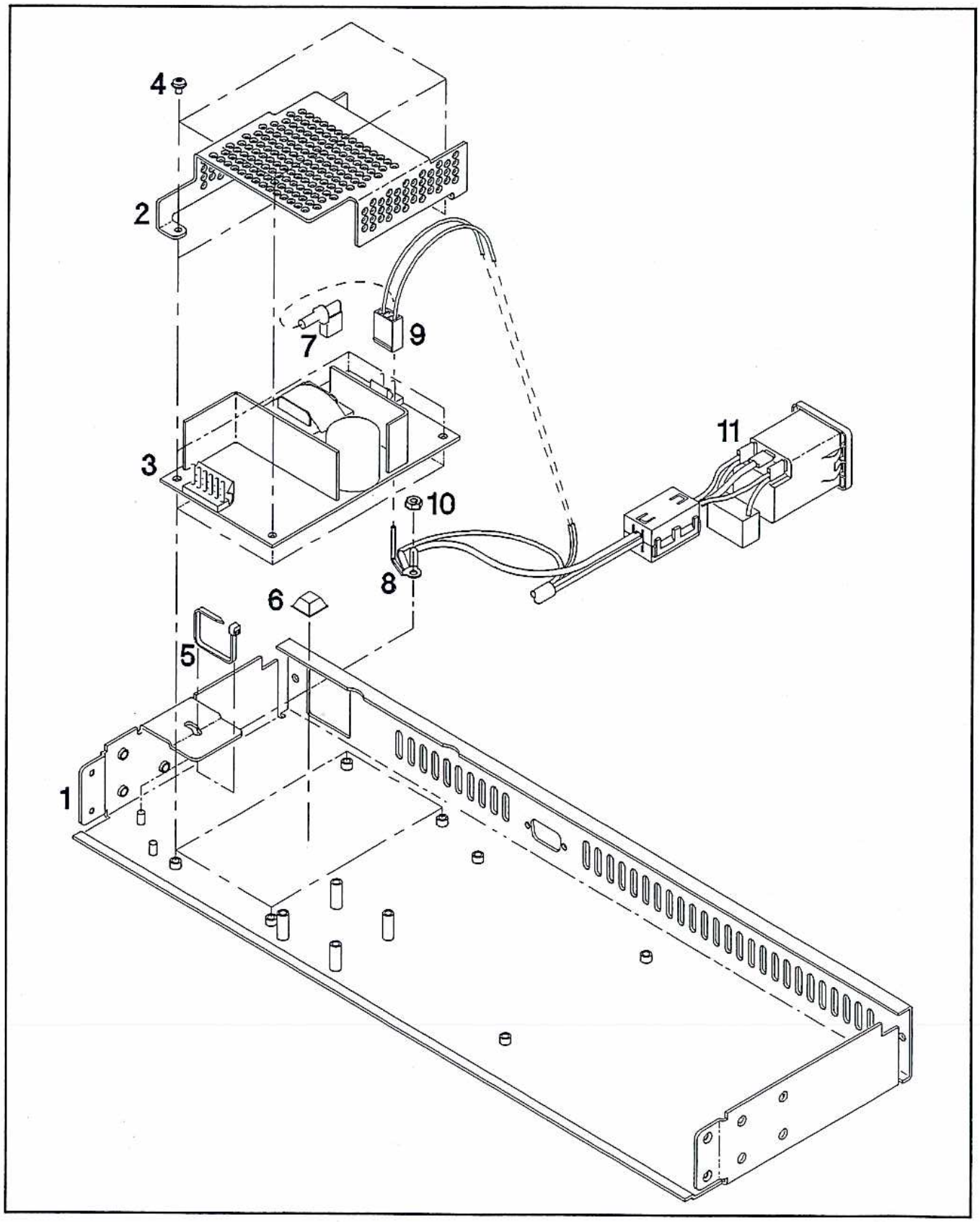

Figure 4-11. Power Supply and Line Module Illustrated Parts Breakdown—HP Remote Front Panel