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Millennium Multi-pay-based terminals:

Replacing parts

Module order number: P0883897 Document issue: 00.01

Document status: Standard Date: June 1998

This guide is for these multi-pay-based terminals:

- Coin basic w/o display (M1000)
- Coin basic with display (M1001)
- Multi-pay mag card (M1211)
- Multi-pay smart card (M1221)
- Multi-pay multi-card (M1231)
- Large-screen terminals using the multi-pay housing

Standard

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Millennium terminals installation, operation, and maintenance documentation modules

The table below shows all the customer-orderable books in the terminal installation, operation and maintenance suite. These books can be ordered separately as modules or in sets as documentation kits.

Title	Order code
All terminals	
Millennium terminals provisioning guide	A0685011
Millennium terminals: using the craft interface	P0883893
Millennium terminals: maintenance troubleshooting	P0883894
Millennium terminals pocket troubleshooting guide	P0883895
Multi-pay-based terminals	
Millennium Multi-pay-based terminals: installing terminal hardware	P0883896
Millennium Multi-pay-based terminals: replacing parts	P0883897
Card-based terminals	
Millennium Card-based terminals: installing terminal hardware	P0883898
Millennium Card-based terminals: replacing parts	P0883899
Desk terminals	
Millennium Desk terminals: installing and replacing hardware	P0883900
Also available:	
Accessory kit: binder, cover, and spine	A0737727
Complete assembly kit (one each of all modules)	A0737720
Multi-pay terminal documentation kit	A0737722
Card terminal documentation kit	A0737723
Desk terminal documentation kit	A0737725





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Publication history

June 1998

First standard release of the modularized version of the Millennium terminals installation, operation, and maintenance documentation. This document reflects the division of the Millennium Multi-pay terminal installation, operation, and maintenance guides for MSR 1.7, MTR 1.9 terminals. Also included in this edition is information about the Coin basic w/o display terminals, MTR 2.0-based terminals, and large-screen terminals.

Note: The order codes have been removed from this documentation. Current order information is available from Nortel sales offices.

This issue introduces the following new hardware revisions

- multi-application control PCP with SAM daughter board and ADSI daughter board. This board also includes the smart card alert connectors on the main board.
- universal telephony PCP, which has the datajack connector and a new card reader bezel with datajack connector
- introduction of a new keypad assembly which requires updates of both the upper bezel assembly and hookswitch assembly to reflect new connections of the keypad PCP and alerter functions
- coin return bracket, for added security of the coin return module
- a new universal rear terminal PCP with extra grounding and power regulation to accommodate the increased requirements of the multi-application control PCP

Millennium Multi-pay-based terminals: replacing parts





Revised terminology:

- lineswitch = hookswitch
- **external interface hookswitch:** the hookswitch module which is required for the new upper bezel assembly
- coin box = cash box
- **multi-application control PCP:** this control board is easily visually distinguished by its ADSI and SAM daughter board connectors and its square firmware and voiceware chip sockets
- smart card alert = SCA
- **display assembly:** refers to the 22 X 10 display, the buttons beside and below the display, and the casing around the display which is used for large-screen terminals in place of the 2-line display, clamp plate, and display window on other Multi-pay-based terminals
- **Coin basic w/o display terminal:** a terminal which has no VFD or card reader and accepts only coins or manually-entered calling cards as call payment
- RJ11 plug = teladapt

For a feature description of this terminal, refer to the *Millennium terminals product guide*. For configuration information, refer to Telco Maximizer documentation.

January 1997

This was the standard release for terminals based on firmware release MTR 1.9. This guide reflects an upgrade of the Millennium Manager platform to MSR 2.0.





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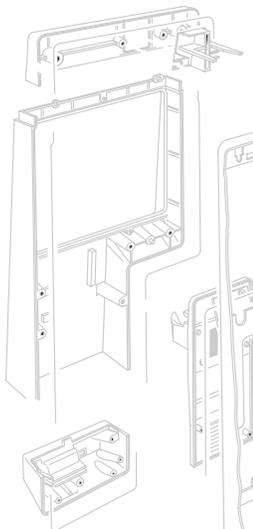
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1 Introduction



This guide is intended for the craftspeople who maintain the **Millennium Multi-pay** terminals on-site.

It describes in detail how to correctly access the terminal to do maintenance and how to replace each component.

Included is a chapter describing specific maintenance procedures for the **Coin basic w/o display terminal**, which is a display-less, coin-only terminal. The main difference in procedure involves installing a portable display in order to access the craft interface menus, and removing the display at the end of the maintenance session.

The replaceable components can be ordered by the operating company, unless otherwise noted. Information about ordering parts is available from Nortel sales representatives.

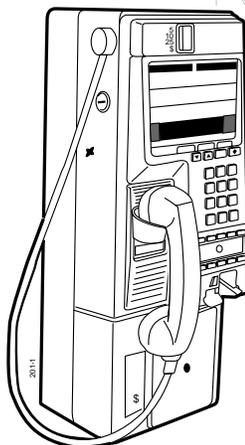
Ensure that you read and understand the steps that must be carried out before any parts are replaced.

Before you enter the terminal, always upload CDRs and transaction records, if present.

When you enter the terminal:

- Always connect your ESD wrist strap to an ESD point inside the terminal.
- Always disconnect the power to the terminal

Specific instructions for these procedures is included in this book.





1-2 Introduction

This chapter also includes a flowchart giving the key points to accessing the terminal for a maintenance session and returning the terminal to operation.

How this guide is organized

Millennium Multi-pay-based terminals: repairing parts is organized into the following sections:

- Chapter 1: Introduction** describes the guide contents and gives an overview of the terminal and the replacement components.
- Chapter 2: Accessing the terminal** provides instructions for accessing the terminal and removing the PCP assembly so the internal components of the terminal is accessible.
- Chapter 3: PCP assembly components** provides instructions about removing the PCP assembly so the internal components of the terminal are accessible, removing the telephony and control PCPs from the assembly, replacing firmware, and installing a smart card alert daughter board.
- Chapter 4: Upper bezel components** provides instructions for replacing the upper bezel assembly, which includes the keypad PCP, and the hookswitch/alerter components.
- Chapter 5: Card and hookswitch parts** provides instructions for replacing the card reader and the accessories associated with it, including the in-bezel datajack connector. As well, the chapter describes the hookswitch/alerter modules and bezel.
- Chapter 6: Coin path modules** provides instructions for replacing the components of the terminal which provide the coin path.





Chapter 7: Coin basic w/o display describes the recommended procedure for installing and replacing the Coin basic portable display. With the exception of the necessity to install the portable display, maintenance procedures for this terminal are the same as for any other Multi-pay-based terminal.

Index: provides an easy cross-reference.

Replaceable components

The following are the components which are replaceable on Multi-pay-based terminals. Some terminals may not have all the parts listed, or may have variations of the parts.

For instance, the Coin basic w/o display terminal does not have a card reader. Instead, a blank bezel covers this area of the terminal.

- * front housing assembly
- lock for the housing assembly, customer specific
- telephony printed-circuit pack (PCP)
- control PCP — through-hole and multi-application
- SAM daughter board (e-purse applications)
- ADSI daughter board (drives large-screen display)
- control and voice firmware
- handset and cord assembly, swivel assembly, cotter pin
- vacuum fluorescent display (VFD) with ESD shield
Note: Coin basic w/o display terminal has a black, plastic cover in place of this module.
Note: The display assembly for large-screen terminals comes as a window/display/clamp plate unit.
- * upper bezel assembly with integral keypad
Note: There are two versions of this module.
- * display window





1-4 Introduction

Note: Large-screen terminals do not use a display window assembly, this is part of the display assembly.

- instruction card, provided by the operating company
- Note:** Large-screen terminals cannot use display window instruction cards.

- * card reader assembly: mag card or multi-card with or without datajack connector

Note: Coin basic terminal has a blank bezel

- alerter PCP
- number card, provided by the operating company
- hookswitch PCP or external interface hookswitch PCP with rain shield (goes with upgraded upper bezel assembly)
- * hookswitch/alerter bezel assembly
- five- and ten-button quick access key sets or blank bezel
- * ID bezel and coin guide
- coin validator
- vault door
- coin box rail
- vault security PCP or e-lock security PCP and mount
- coin compartment lock, mechanical or electronic
- coin box and coin box cover
- escrow
- rear terminal PCP

Note: The Multi-application control PCP requires the newest version of rear terminal PCP, which has extra grounding and power regulation features

- IAS (inferred answer supervision) module (optional)
- smart card alert daughter board (optional) (through-hole control PCP only)

* These assemblies should have gaskets included. Do not install these components without a gasket. Ensure the gasket is undamaged before replacing it in the set.

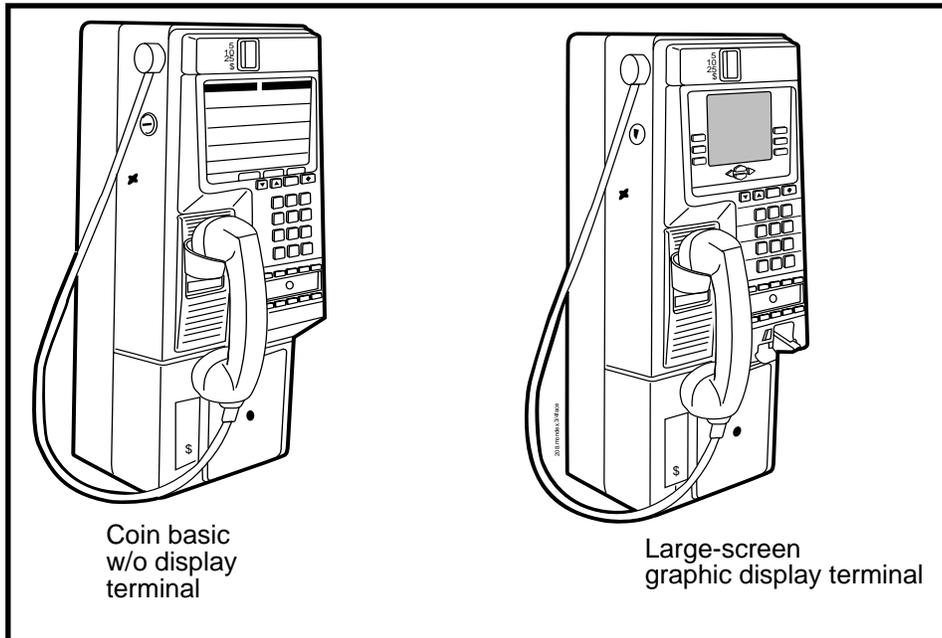




<p>See this:</p>  <p>Coin basic w/o display terminal</p>	<p>The Coin basic w/o display terminal is a Multi-pay-based terminal without a VFD assembly or a card reader.</p> <p>An internal black plastic shield covers the VFD cutout on the clamp plate. A blank bezel covers the card reader area.</p> <p>Refer to Figure 1-1.</p>
<p>Large-screen terminals</p>	<p>Large-screen terminals have display screens which fill the entire window opening. This assembly replaces the 2-line display, the clamp plate, and the window assembly found in other Multi-pay terminals.</p> <p>Refer to Figure 1-1.</p>



Figure 1-1: Special terminals





1-6 Introduction

Figure 1-2, Figure 1-3, and Figure 1-4 illustrate the various components outside and inside the terminal.

Figure 1-2: Replaceable parts, exterior

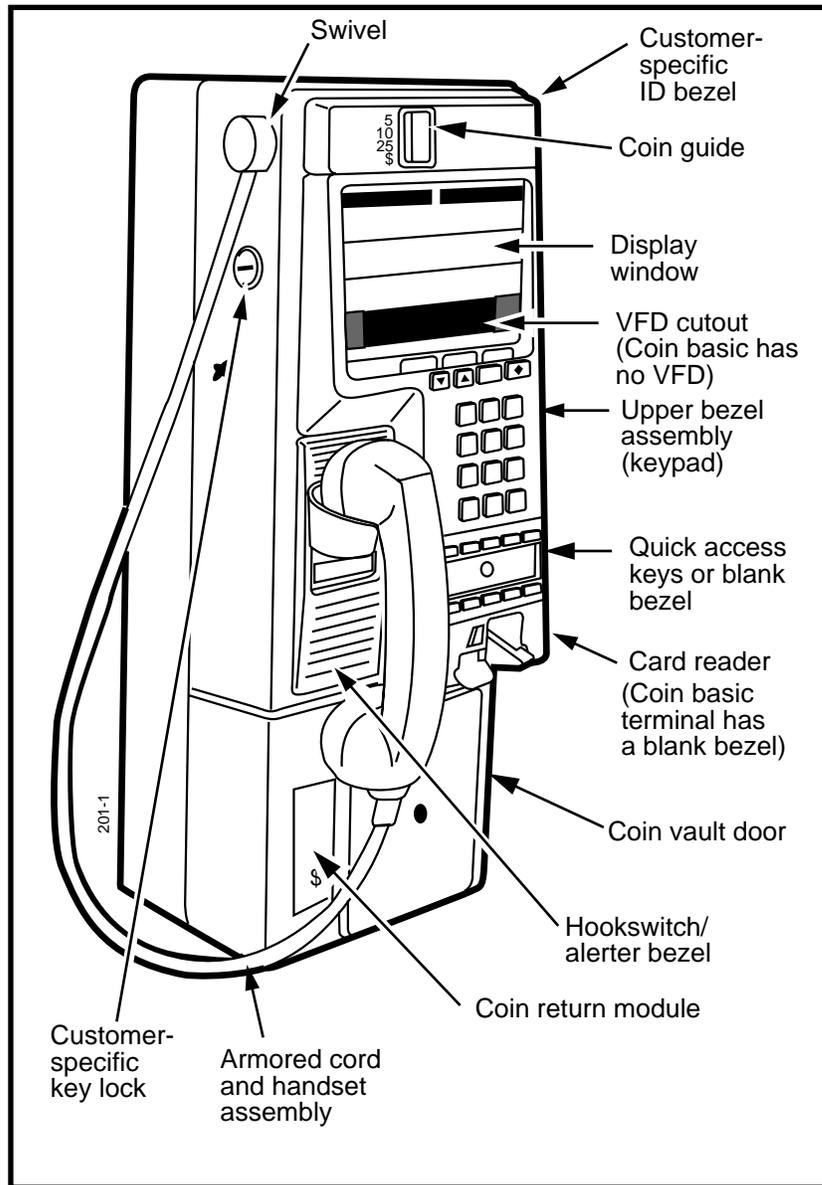
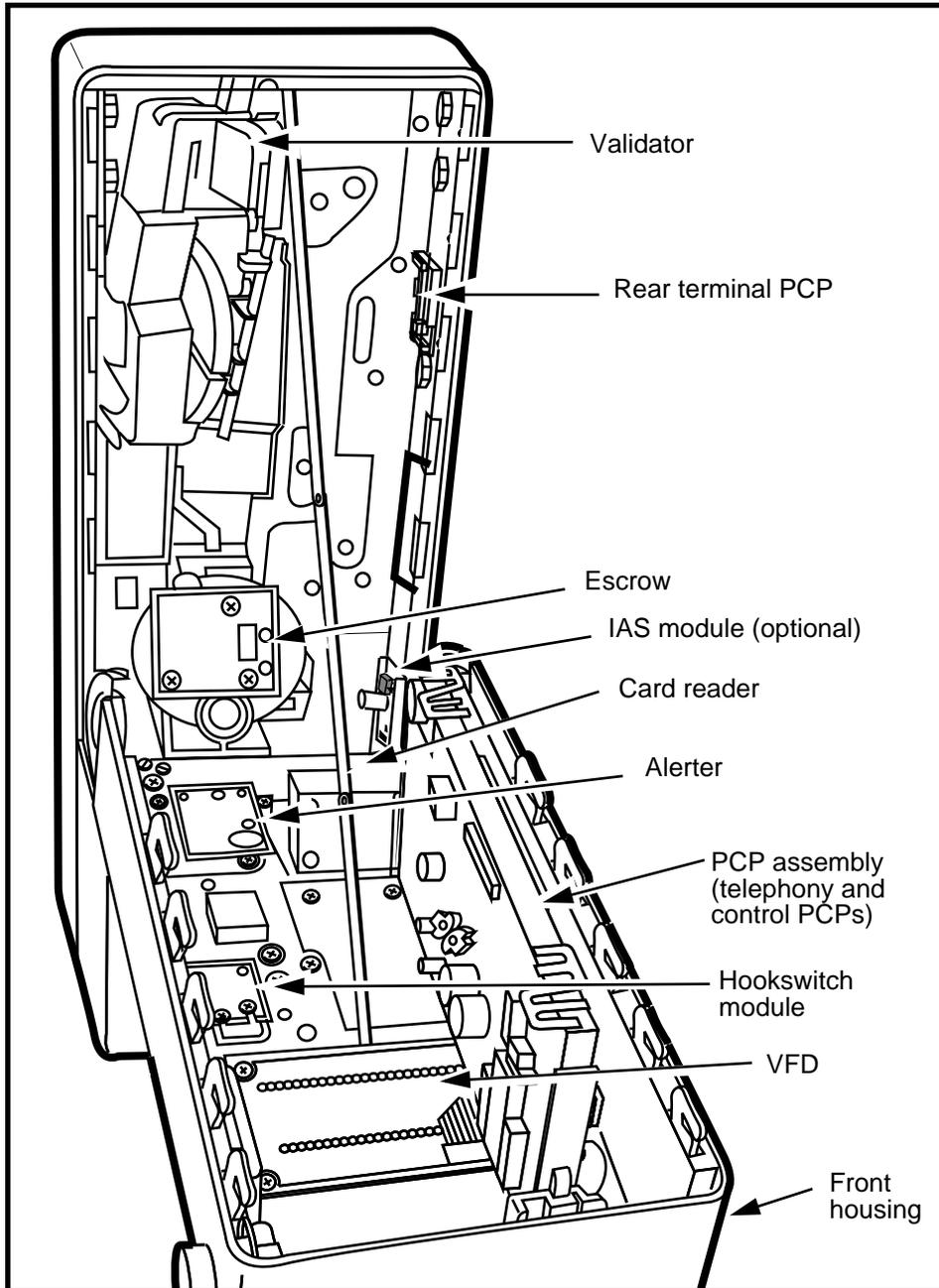




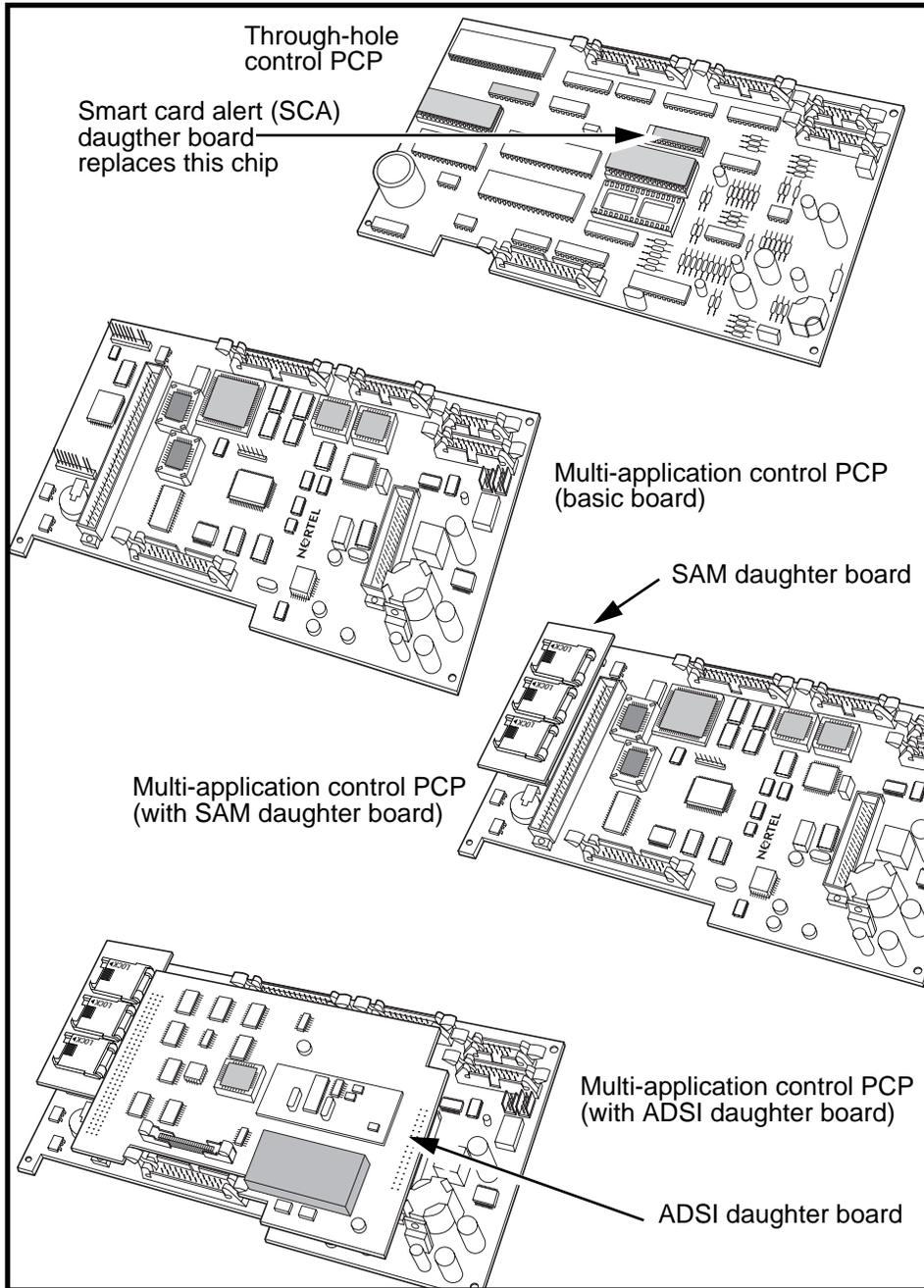
Figure 1-3: Replaceable parts, internal





1-8 Introduction

Figure 1-4: Through-hole and multi-application control PCPs



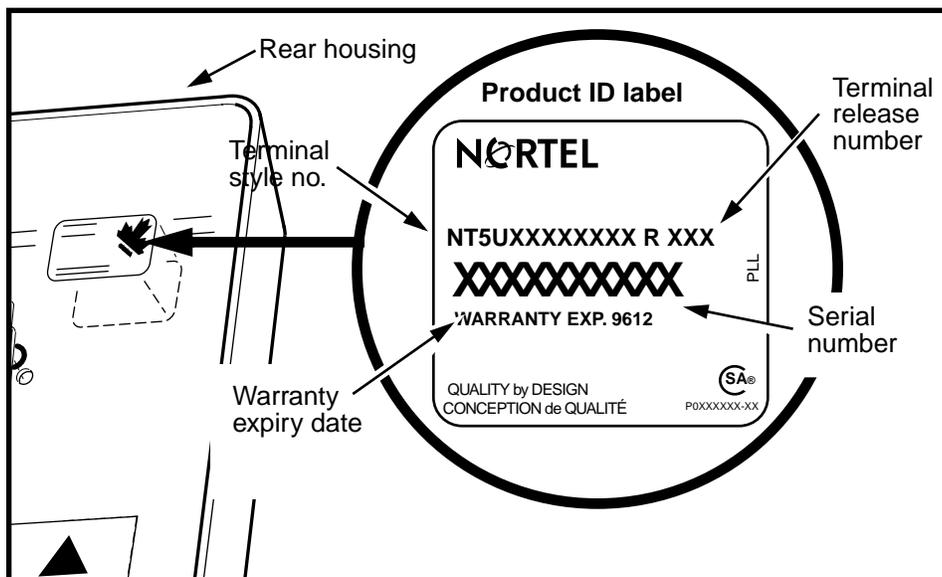
Identifying the terminal type

Each terminal has a **product ID label** located in the top righthand corner on the outside, and somewhere on the inside, of the rear housing.

Refer to Figure 1-5.

- This label tells you the type of terminal and the release number, which you may need to refer to when ordering components.
- This label also has the warranty expiry date of the terminal.

Figure 1-5: Locating the product ID label





1-10 Introduction

Telephony/control board identification

Table 1-1 lists the label color and the product engineering code (PEC) that appears on current control and telephony PCPs:

Table 1-1: Telephony/control PCP labels

Board type	PEC	Color
Multi-pay multi-application control PCP	Will vary	Brown
Datajack telephony PCP	NT5U4045	Yellow
MTR 1.7: Datajack control PCP	Will vary	Blue
MTR 1.7/1.9: control PCPs, standard and datajack telephony PCPs	Will vary	White
Repaired boards		Green

Note: Boards shipped with new terminals have a PEC which represents the firmware shipped with the board. Replacement boards, shipped without firmware, will have a different PEC.





Suggested tools and equipment required

Table 1-2 lists the tools and equipment used for installing, maintaining, and testing the terminal.

Table 1-2: Required tools and equipment

Tool	Use to
T-tool /L-tool	open the housing assembly
upper and lower housing keys	unlock the terminal housing
butt-end test set	test the line to the terminal
multimeter	test the voltage of the supplementary power
ESD wrist strap	protect electronic components from electrostatic discharge (ESD) damage
dry type cleaning card	clean the card reader
test cards: mag stripe and smart card	test the card reader and make calls
calibration coins, actual coins	test coin validator calibration
knuckle saver (lifter)	remove external instruction cards
small slot-head screwdriver	attach the tip and ring leads and the supplementary power supply leads to the terminals on the rear terminal board
#1 type 1A cross-recess screwdriver	tighten and loosen M3 screws and to remove the number-card window
#2 type 1A cross-recess screwdriver	tighten and loosen M3.5 screws and M5 screws
chip puller	replace control and voice chips on the control PCP Note: You will need two types of chip puller, one for the through-hole board firmware and one for the multi-application board firmware.
Coin basic portable display	access craft interface prompts on the Coin basic w/o display terminal



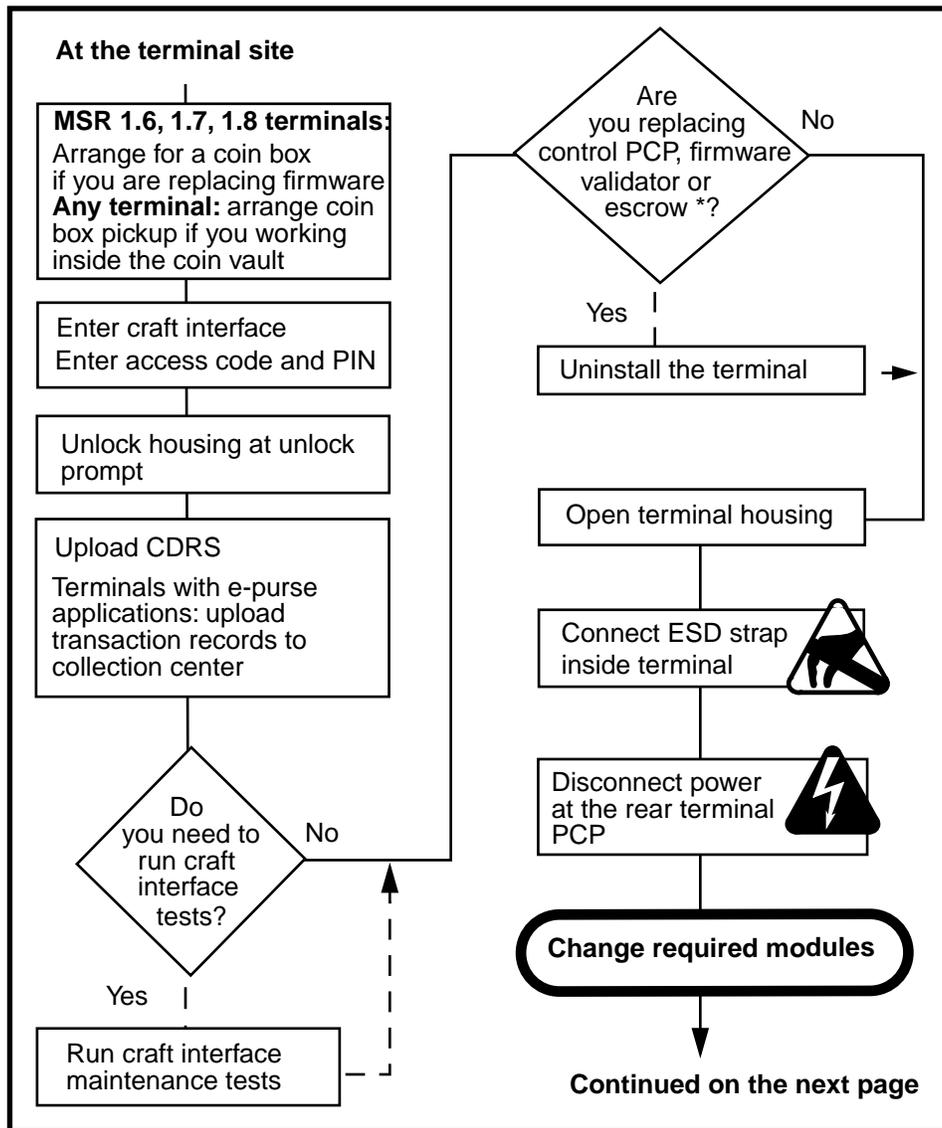


1-12 Introduction

Setup/restore flowchart

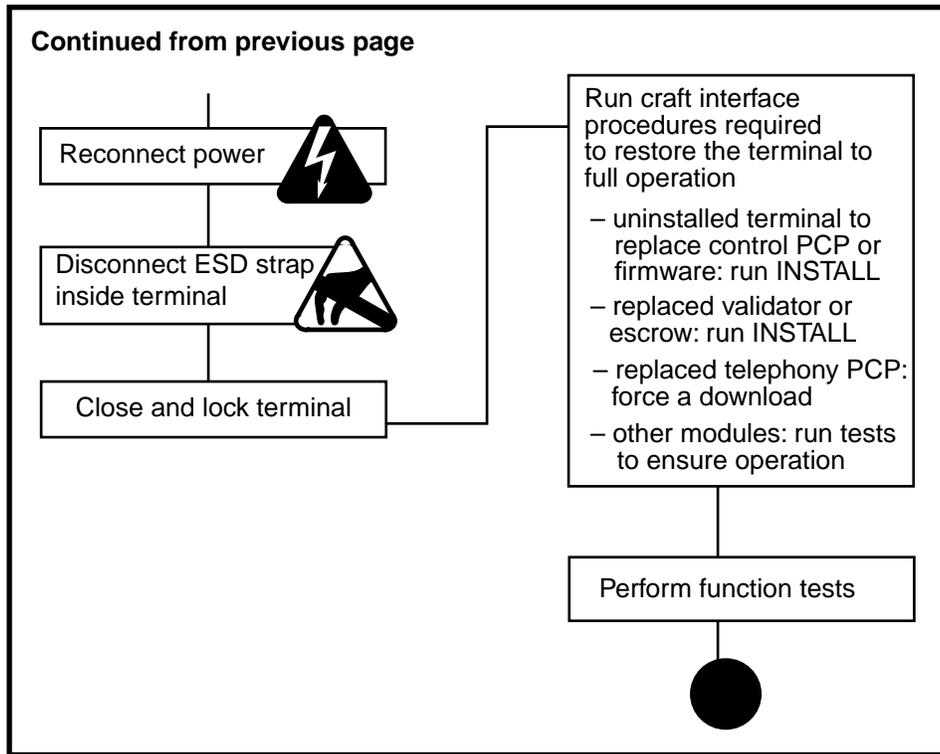
The following flowchart describes the process for preparing the terminal for maintenance procedures, and restoring it to service when maintenance is complete.

Figure 1-6: Flowchart — setting up for maintenance, page 1





Flowchart — maintenance session setup/restore, page 2





1-14 Introduction





2 Accessing the terminal

This chapter describes the procedures for accessing the terminal to do maintenance procedures.

As well, it includes procedures for:

- replacing the entire front housing
- installing a housing lock
- replacing the handset and cord or the swivel mount
- replacing the rear terminal PCP
- installing or replacing an inferred answer supervision (IAS) module



Before you enter the terminal

To access the inside of the terminal you require maintenance-level privileges, an upper housing key, and a locking tool (T- or L-tool).

See this



Vintage alert

Coin box pickup

MSR 1.6, 1.7, and 1.8 terminals:
arrange for a coin box pickup if you are replacing the control PCP or firmware or working inside the coin vault.

MTR 1.9 and later terminals:
arrange for a coin box pickup if you are working inside the coin vault.





2-2 Accessing the terminal

You need to access the terminal if the terminal is out of service or if you need to run craft interface tests to diagnose a faulty component.

- If you will be replacing the **control PCP** or **firmware** on it, you need to **uninstall the terminal** before you disconnect the power to install new parts. When you have completed the maintenance, run INSTALL.
- If you will be replacing the **validator** or the **escrow**, you do not need to uninstall the terminal, but you do need to run the INSTALL routine after you replace these modules.
- If you do not plan to change any of the above modules, it is not necessary to re-INSTALL the terminal when you complete your tasks. It is recommended that you do upload the CDRs as a precautionary measure.

Saving call detail records (CDRs)



It is important to upload all CDRs from the terminal before performing maintenance tasks inside the terminal.



Although records may not be directly affected by what you are doing, uploading the CDRs assures that the terminal records are up-to-date at the time of maintenance.





Preparing the terminal for maintenance

If you need to enter the terminal to replace parts, or for further testing you will need to enter the craft interface and upload the CDRs.

See this:



Coin basic w/o display terminal

To do maintenance tests on a Coin basic w/o display terminal, you will need to attach the portable display.

Chapter 7 describes the proper installation procedure.

Follow those instructions and then proceed with step 1 of the instructions below.

Follow these steps to access the terminal and upload the CDRs:

1. While the handset is on-hook, enter the access code from your instruction card.

If the buttons work but the access code produces no effect, enter the default access code. This will be necessary if the terminal has never previously been installed or if you replaced the control PCP.

2. Enter your personal identification number (PIN) code
If you make a mistake, press the **◆** button, then re-enter the number.
3. Press *****.

This message appears on the VFD:

```
Please use key now
& open the terminal
```





2-4 Accessing the terminal

Note: If you unlock the terminal without pressing *, the terminal sends an alarm to the Millennium Manager.

If you don't want to continue into the craft interface, press #.

- Put the key into the key lock on the left side of the housing assembly and turn it clockwise. Refer to Figure 2-1.

See this:



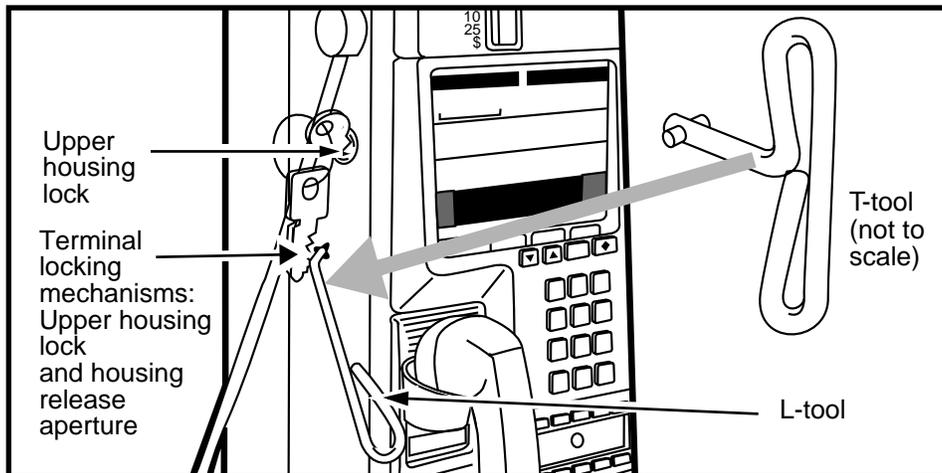
It is important to unlock and open the terminal quickly after entering your PIN. If you do not open the terminal within three minutes, the terminal times out.

If it is difficult to turn the key, insert the T-tool or the L-tool into the hole below the key lock, and apply a slight force counterclockwise while turning the key clockwise.

- Put the T-tool or L-tool in the housing aperture below the keylock.
- Rotate the T-tool or L-tool clockwise to release the terminal housing.



Figure 2-1: Locking tools for the upper housing





Note: Do not open the terminal housing.

See this:



Coin basic w/o display

At this point you will have to open the terminal to install the portable display if you have not already done so.

Ensure you follow the ESD precautions outlined below

BEFORE YOU INSTALL THE DISPLAY:

- **Connect your ESD strap to an ESD point inside the terminal.**
- **Disconnect the power from the control PCP.**

7. Upload the terminal status and call-detail records (CDRs) with the following procedure:
 - a) Enter 732 from the keypad if the prompt is not already displayed.
 - b) Press 1.
 - c) Press *.
 - d) If there were call records in the terminal, repeat **Steps 7b** to **7c** until this message appears on the VFD:

**No call records
To continue, press ***

- e) Press *.

See this:



e-purse applications

Ensure the transaction records get uploaded.

Refer to *Millennium terminals: using the craft interface* for specific details.





2-6 Accessing the terminal

8. If you do not need to uninstall the terminal, go to **Opening and closing the terminal** on page 2-6. If you need to uninstall the terminal, follow **steps 1 to 4** below.

If you need to uninstall the terminal

1. Close and lock the terminal.
2. With the handset on-hook, enter the access code.
3. When the PIN prompt appears, press # on the keypad. The terminal is uninstalled.
4. Go to the section **Opening and closing the terminal**.

Opening and closing the terminal



Once you have completed the section **Preparing the terminal for maintenance**, you are ready to open the terminal housing to gain access to the internal components. These components are described in Chapter 1.



This section describes:

- ESD precautions to take
- how to properly disconnect the power from the terminal
- how to restore the terminal once the maintenance is finished





Opening the unlocked terminal

1. Remove the handset from its cradle and let it hang by the armored cord.
2. Grasp the front housing assembly firmly by both sides and tip it forward until the housing clears the rear of the terminal.
3. Hold the front housing and move it downwards to the open position, as shown in Figure 2-3.

In the fully open position, the weight of the front housing is supported by the link assembly tie rods attached to the housing, also indicated in Figure 2-3.

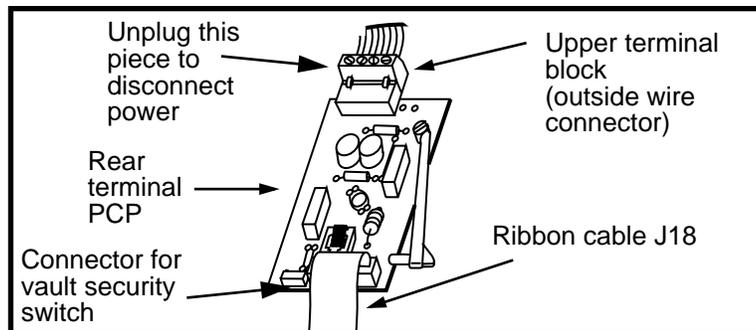
4. Attach your ESD wrist strap to an ESD connection point inside the terminal, as indicated in Figure 2-3.

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • When removing any component with a PCP, put it in an anti-static bag or on an anti-static surface to work on it. • Do not get any components wet.
---------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

5. Disconnect the power to the terminal.

Disconnect the upper terminal block, shown in Figure 2-2, which attaches at the rear terminal PCP. This is the safest way to disconnect power from the terminal.

Figure 2-2: Locating the terminal block connector





2-8 Accessing the terminal

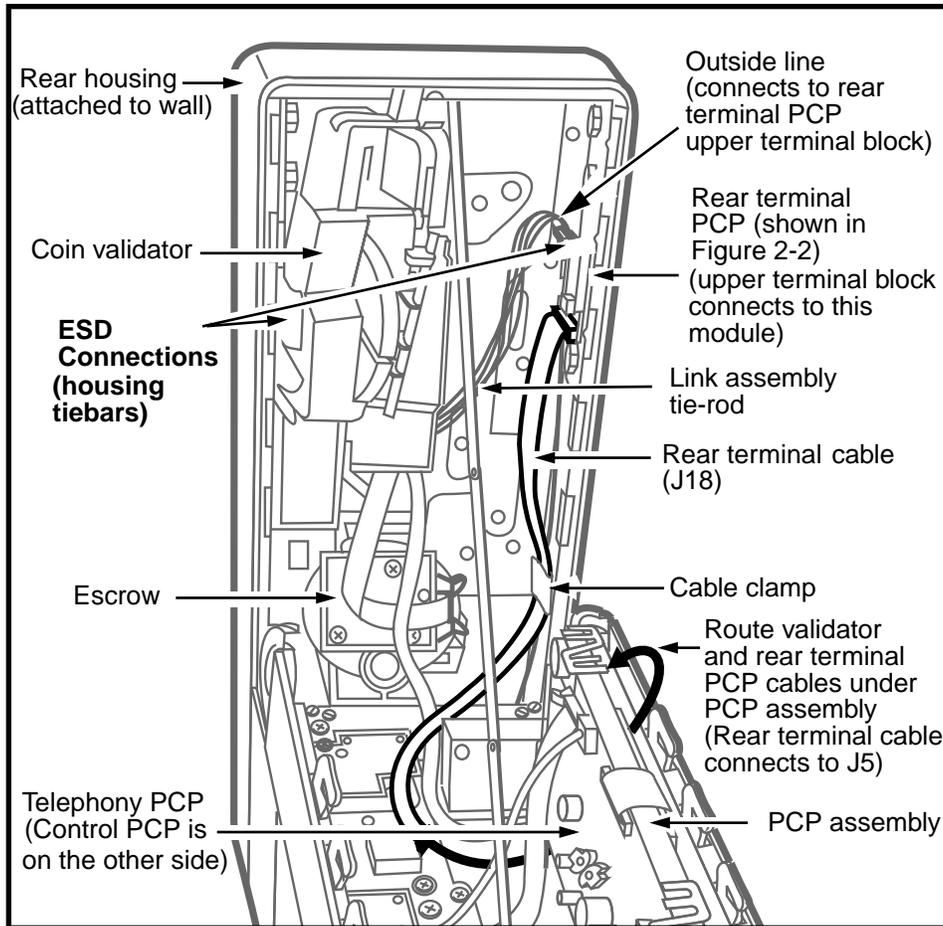
Warning



- Before disconnecting any component cables, disconnect the power supply.
- Do not reconnect the power until all cables are properly reconnected.

6. Install or replace the necessary parts.

Figure 2-3: ESD and power connections





See this:

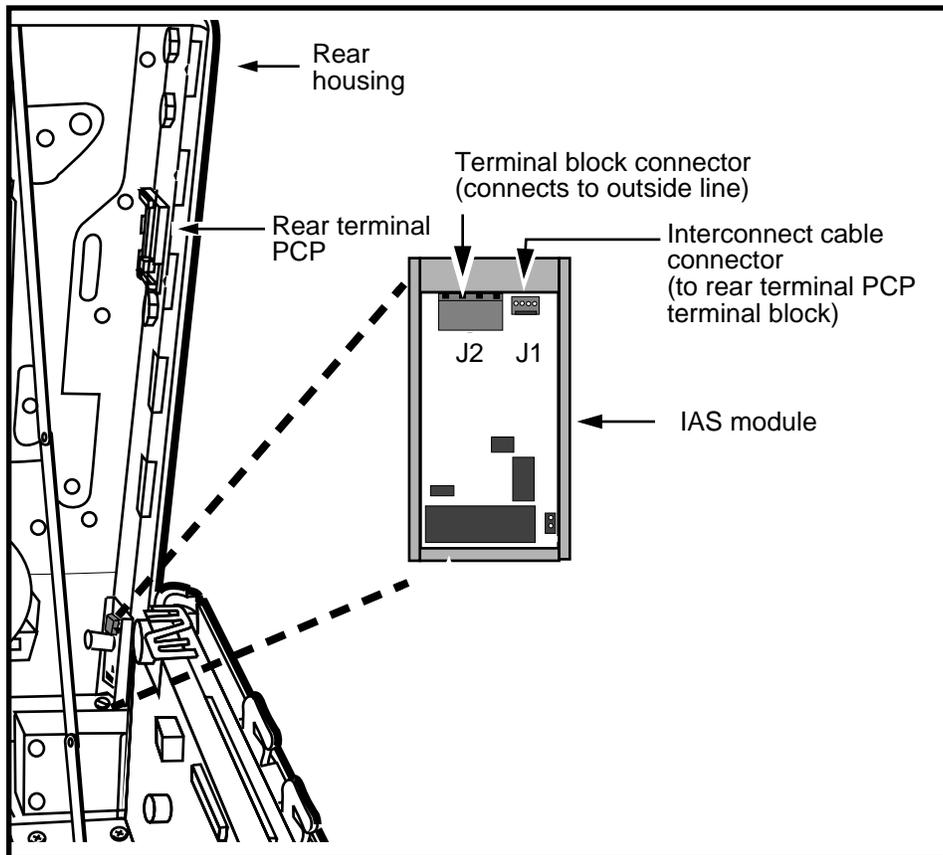


IAS module

If the terminal has an inferred answer supervision (IAS) module:

- Disconnect the cable between the IAS module and the rear terminal PCP terminal block to disconnect power to the terminal.
- If you are working with the IAS module, disconnect the terminal block from that module to disconnect power.

Figure 2-4: IAS module location inside the rear housing





2-10 Accessing the terminal

Restoring the terminal to operation

After you replace modules, you need to restore the terminal to operation.

This section describes:

- the checks you need to make before you close the terminal
- the steps needed to restore the terminal to operation.

1. **DO NOT CONNECT POWER** until you make the following checks:
 - a) Before replacing the PCP assembly, route the cable leading from the coin validator (J33), and the cable from the rear terminal PCP (J18) to the left of the card reader, between the PCP assembly brackets.
 - b) If the terminal has a smart card alert daughter board, route the alerter cable between the PCP assembly brackets before replacing the assembly.
 - c) When you replace the PCP assembly, ensure that it seats firmly in the brackets. You should hear a click as it goes in.
 - d) Ensure all cables are reconnected to the appropriate board.
Reconnect the rear terminal cable last.
 - e) Fold excess cable and tuck away from the sides of the terminal housing so it does not touch the housing or get caught when the housing is closed.
2. Reconnect the power:
 - Reconnect the terminal block to the rear terminal PCP.
 - If the terminal has an IAS module, reconnect the interconnect cable between the rear terminal PCP and J1 on the IAS module, and the IAS terminal block to the IAS module, if you removed it.





See this



If, after connecting power to the terminal, **Telephony board not responding** appears on the display, with the terminal open and the handset on the hook, allow the terminal to power up for three minutes.

- During this time, the terminal will not respond to install or maintenance instructions.
- If **Telephony board not responding** still shows after three minutes, replace the telephony PCP.

3. Close the terminal.
 4. Turn the L- or T-tool counterclockwise in the housing aperture to secure the housing.
 5. Turn the key in the lock counterclockwise to lock the terminal.
 6. If necessary, install a new coin box.
 7. Return the terminal to operation with the appropriate procedure listed below:
 - If you took the **terminal out of service** manually, return it to service through the craft interface.
 - If you **replaced the control PCP, the firmware, the validator, or the escrow**, run the INSTALL routine.
- Note:** You must lock the terminal to properly end this procedure.
- If you replaced the telephony PCP, use the maintenance level of the craft interface to perform a forced download.





2-12 Accessing the terminal

- Run the craft interface tests for the component you replaced or performed maintenance on to make sure the problem is fixed.

See this:



Coin basic w/o display: removing the portable display

When your tests are complete:

- a) Re-enter the craft interface, if required, and unlock the terminal.
- b) Remove the portable display following all ESD and power precautions.
- c) Close and lock the terminal.
- d) Proceed with **step 8**.

8. Perform operation tests to make sure the terminal works properly.





Replacing the front housing assembly

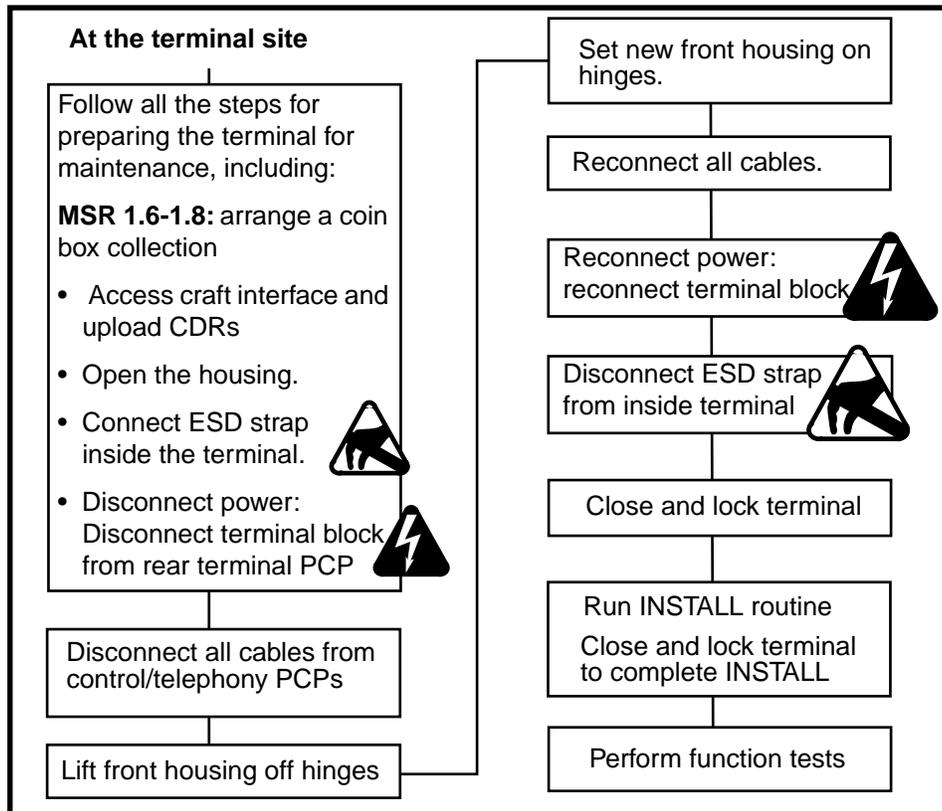
The following procedure describes how to remove and replace the entire front housing assembly.

This procedure would be necessary if the housing casing itself is vandalized, such as having the surface coating deeply scratched or spray-painted, requiring that the housing assembly be turned in for repair.

Flowchart

The flowchart in Figure 2-5 shows the key points to replacing the front housing assembly.

Figure 2-5: Flowchart — replacing the front housing





2-14 Accessing the terminal

Replacing the front housing assembly

The following procedure describes in detail how to **re-place the front housing** of the terminal.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start!</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start. • In some cases it will not be possible to do this step because of problems on the control PCP. In these cases, notify the operating company that the CDRs could not be uploaded.
<p>Uninstall the terminal</p>	<ul style="list-style-type: none"> • Remember to uninstall the terminal through the craft interface before you replace this part. • This means you need to run the INSTALL routine when you are finished.

- connected your ESD wrist strap inside the terminal

<p>Electrostatic discharge (ESD) precautions</p> 	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points inside the terminal. • Place any components you remove from the terminal into an anti-static bag.
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Accessing the terminal **2-15**

- confirmed that the terminal block is disconnected from the rear terminal PCP

See this



- Before disconnecting any cables, disconnect the supplementary power supply.
- **Do not reconnect power until you are ready to close the terminal.**

Failure to follow these precautions may damage ESD-sensitive components.

2. Disconnect the control PCP cables for rear housing components:
 - a) Disconnect the rear terminal PCP cable (J18) from the control PCP connector.
 - b) Disconnect the coin validator cable (J33) from the control PCP connector (J8).

Refer to Figure 2-6.

3. With the terminal open, you will see that the front housing is supported by a link assembly tie-rod.

This flat, jointed rod hooks onto a bracket at the top of the rear housing and about mid-way in the center of the front housing.

Refer to Figure 2-6.

Remove the link assembly arm from one of the brackets in the following manner:

- a) While supporting the front housing assembly, lift the link assembly until the top link is loose and almost parallel to the top of the housing, as shown in Figure 2-7.
- b) Move the top link upward and sideways so the slot on the tie-rod aligns with the pivot tab.
- c) Release the link.





2-16 Accessing the terminal

Figure 2-6: Disconnecting rear housing cables

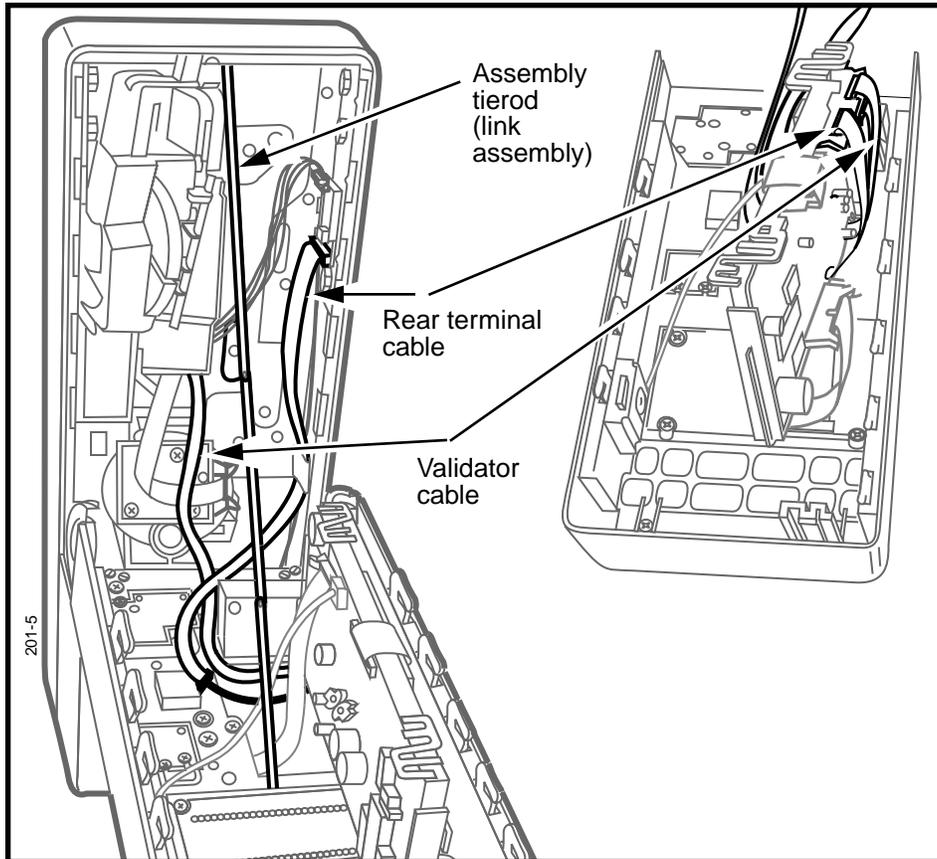
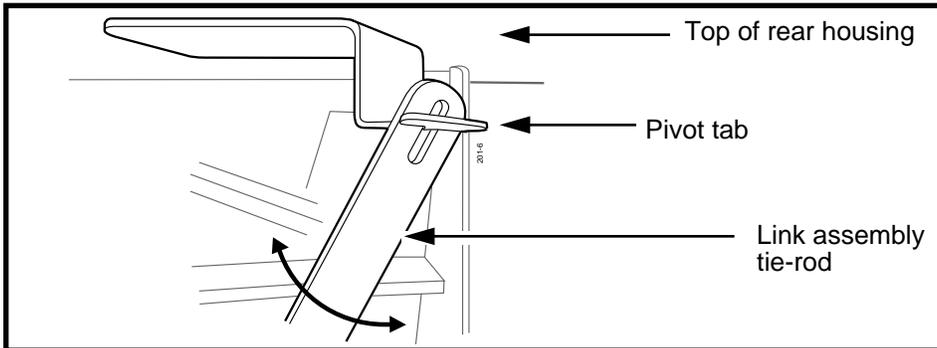


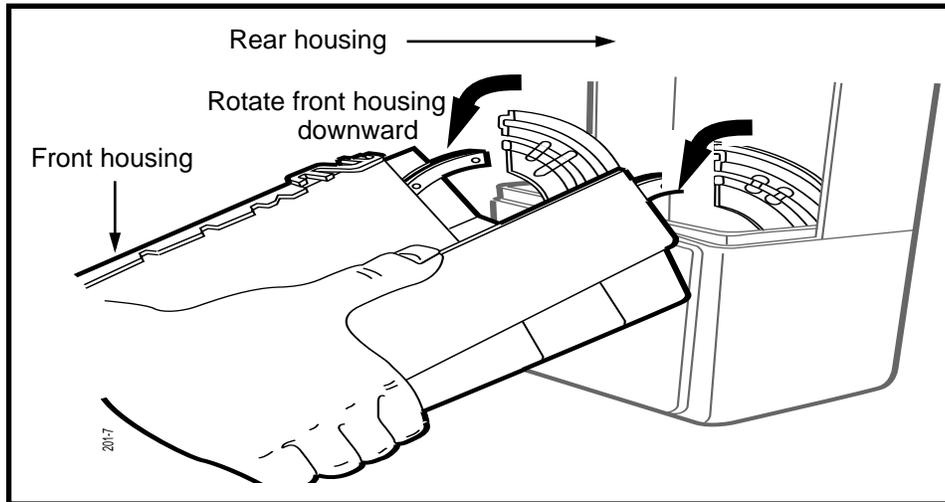
Figure 2-7: Link bracket on the rear housing





4. With the top link released, the front housing can be removed by rotating it downward until the hinges at the bottom of the two housing pieces disengage. Refer to Figure 2-8.

Figure 2-8: Removing the housing assembly from the hinges



5. To reinstall the front housing assembly, reverse the preceding steps.
6. Reverse the steps in **Restoring the terminal to operation** on page 2-10 to return the terminal to operation.
 - a) Run the INSTALL routine.
 - b) Before you leave the terminal, test the function both through the craft interface and by making calls.





2-18 Accessing the terminal

Replacing the upper housing lock

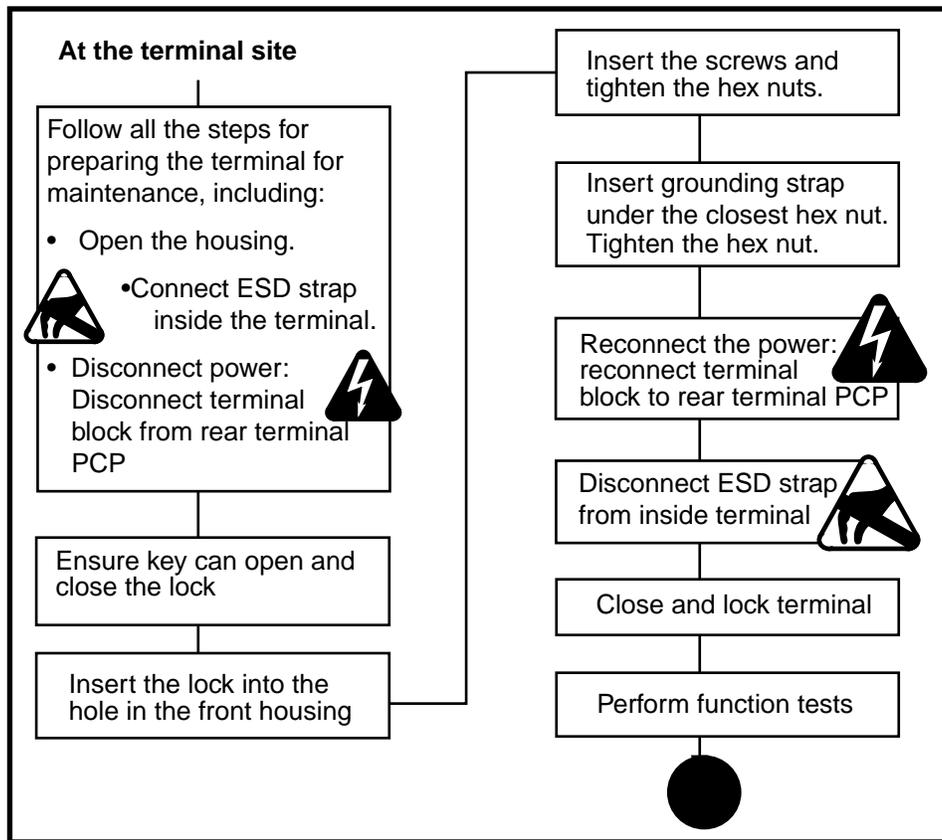
The upper housing lock is customer specific and may not be delivered as part of the terminal assembly. In this case, it would be necessary to install the lock as part of your pre-installation procedures.

This section describes the steps to installing a lock. If you are replacing a lock, reverse the procedure.

Flowchart

The following flow chart describes the key points to replacing the upper housing lock.

Figure 2-9: Flowchart — replacing the upper housing lock





Replacing the upper lock

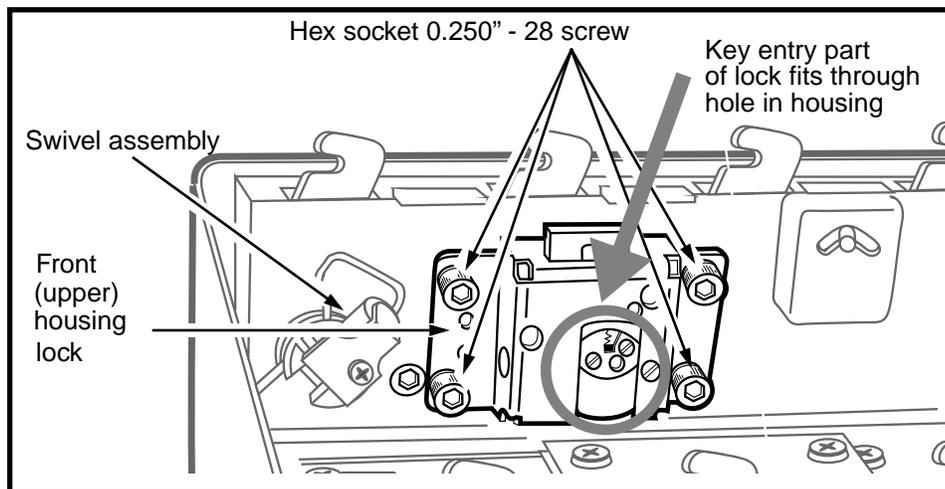
The following steps explain how to install the upper housing lock.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6.
 - It is not necessary to disconnect the power for this procedure, but it is recommended that you do so.
 - **DO CONNECT your ESD strap** to an ESD point inside the terminal, such as the locking tiebars on the side of the rear terminal housing.
2. Make sure the key operates the lock.
3. Insert the lock so the key entry protrudes through the round hole in the front housing.

The four mounting holes should align with the four threaded holes in the cover plate.

Refer to Figure 2-10.

Figure 2-10: Securing the upper housing lock to the terminal



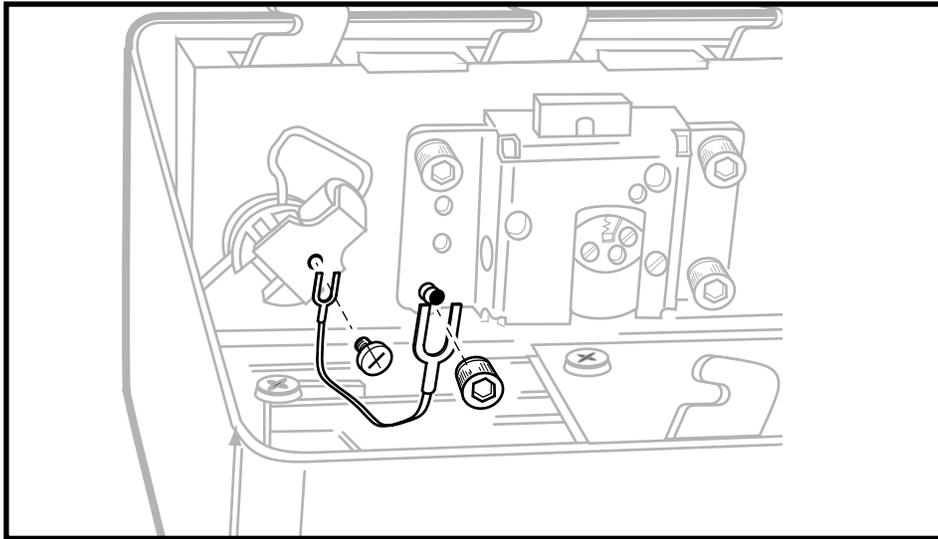


2-20 Accessing the terminal

4. Insert the four screws and tighten the hex nuts onto the screws.
5. Before you completely tighten the bottom, left hex nut, insert the grounding strap under the hex nut.

Note: The grounding strap is secured between the swivel and the lock, as shown in Figure 2-11.

Figure 2-11: Securing the grounding strap to the swivel and lock



6. Tighten the swivel screw and the lock hex nut snugly.
7. Lock and unlock the lock without closing the terminal to ensure that the lock works.
8. To remove the lock, reverse the preceding steps, with the key in the unlocked position.
9. When complete, disconnect your ESD strap and re-connect power, if it was disconnected.
10. Close and lock the housing assembly.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.





Installing the grounding strap

If you need to install the grounding strap between the swivel assembly and the lock assembly, follow this procedure.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6.

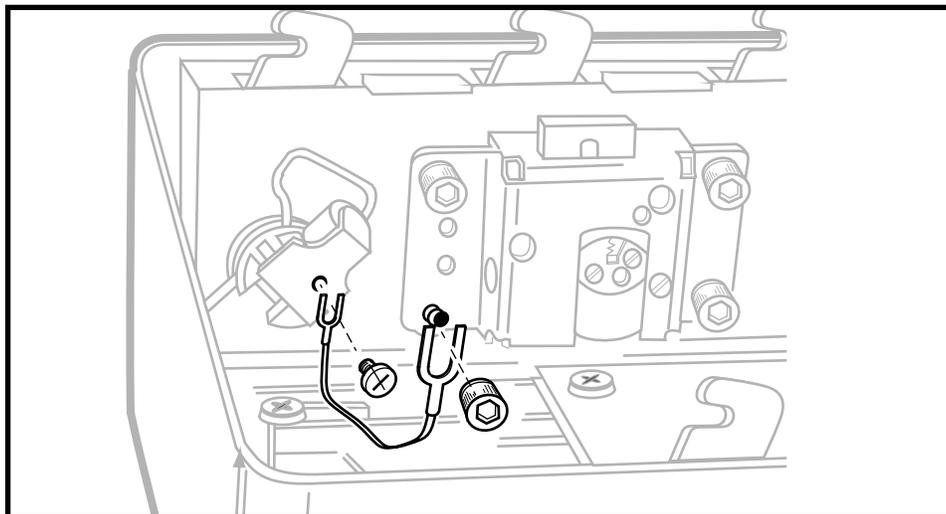
It is not necessary to disconnect the power to perform this procedure.

DO CONNECT your ESD strap to an ESD point inside the terminal, such as the locking tiebars on the side of the rear terminal housing.

2. Refer to Figure 2-12 and loosen the lower left mounting hex nut on the upper housing lock.
3. Loosen the screw retaining the swivel clamp to the swivel.
4. Install the U-shaped connectors of the grounding strap under the swivel screw and the lock hex nut and tighten both.



Figure 2-12: Attaching the grounding strap





2-22 Accessing the terminal

5. Remove ESD strap connection.
6. If you disconnected power, reconnect it.
7. Close and lock the terminal.

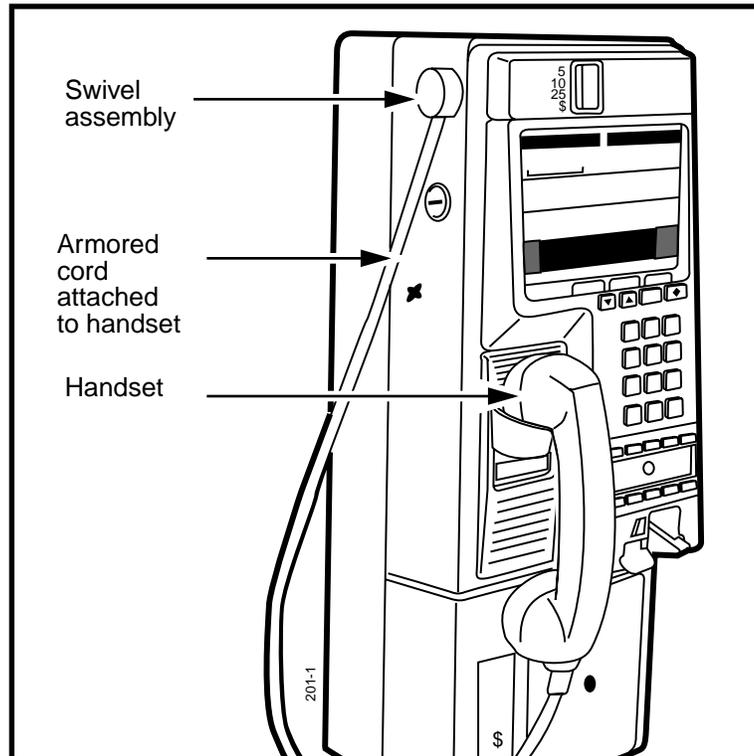
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

Replacing the handset, cord, and swivel

If the handset is damaged, both the handset and cord are replaced as one assembly.

The armored cord leading from the handset attaches to the terminal housing through a swivel unit, which occasionally may also need replacement. Refer to Figure 2-13.

Figure 2-13: Handset cord/swivel location

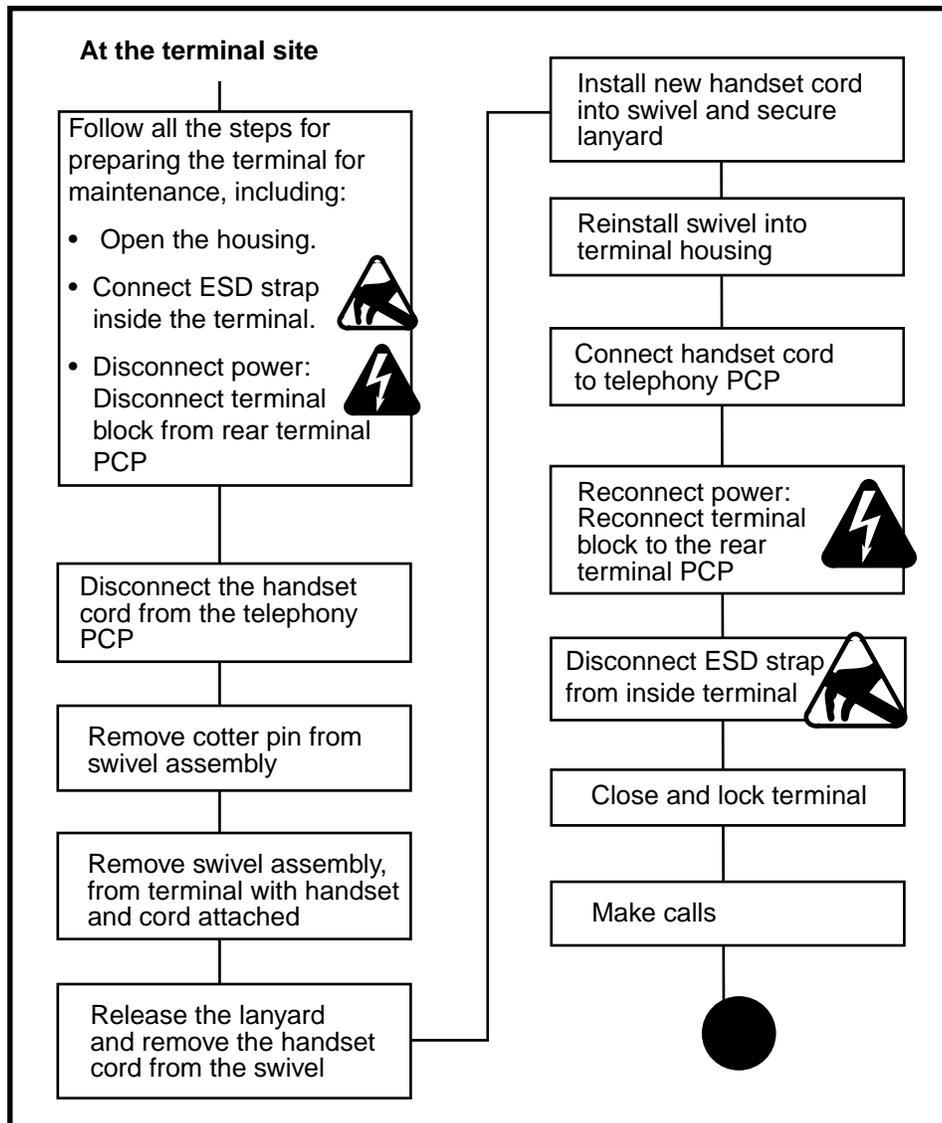




Flowchart

The following flow chart describes the key points to replacing the handset and cord, or the swivel.

Figure 2-14: Flowchart — replacing the handset/cord, swivel





2-24 Accessing the terminal

Replacing the swivel/handset assembly

The following procedures describe replacing the swivel, and includes directions for removing the handset cord from the swivel and installing a new cord.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6.

Note: It is not necessary to upload CDRs to do this procedure

- connected your ESD wrist strap inside the terminal
- confirmed that the terminal block is disconnected from the rear terminal PCP

Electrostatic discharge (ESD) precautions



- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the supplementary power supply.
- **Do not reconnect until the end of this procedure.**
- Place any components you remove from the terminal into an anti-static bag.

Failure to follow these precautions may damage ESD-sensitive components.

2. Remove the handset cord connector (J15) from J10B on the telephony PCP.

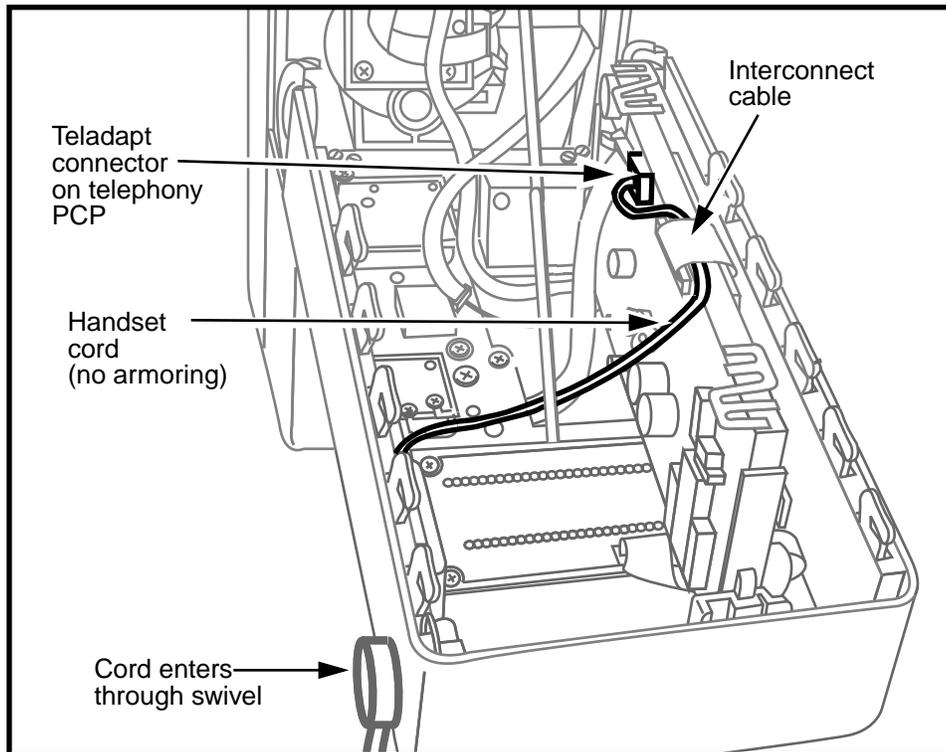
Look for the name of the connector on the PCP or refer to Figure 2-15.

You may need to disconnect the interconnect cable between the control PCP and the telephony PCP to release the cord.





Figure 2-15: Disconnecting the handset cable



3. Inside the front housing, remove the cotter pin from the swivel as shown in Figure 2-16.

The cotter pin fits into a groove in the swivel, and lies flush against the inside of the housing.

4. Slide the swivel assembly out of the housing.
5. Guide the armored cord and the handset leads, which are in the same black sheathing, through the opening in the housing.

6. Remove the screw retaining the swivel clamp and ESD strap to the swivel.

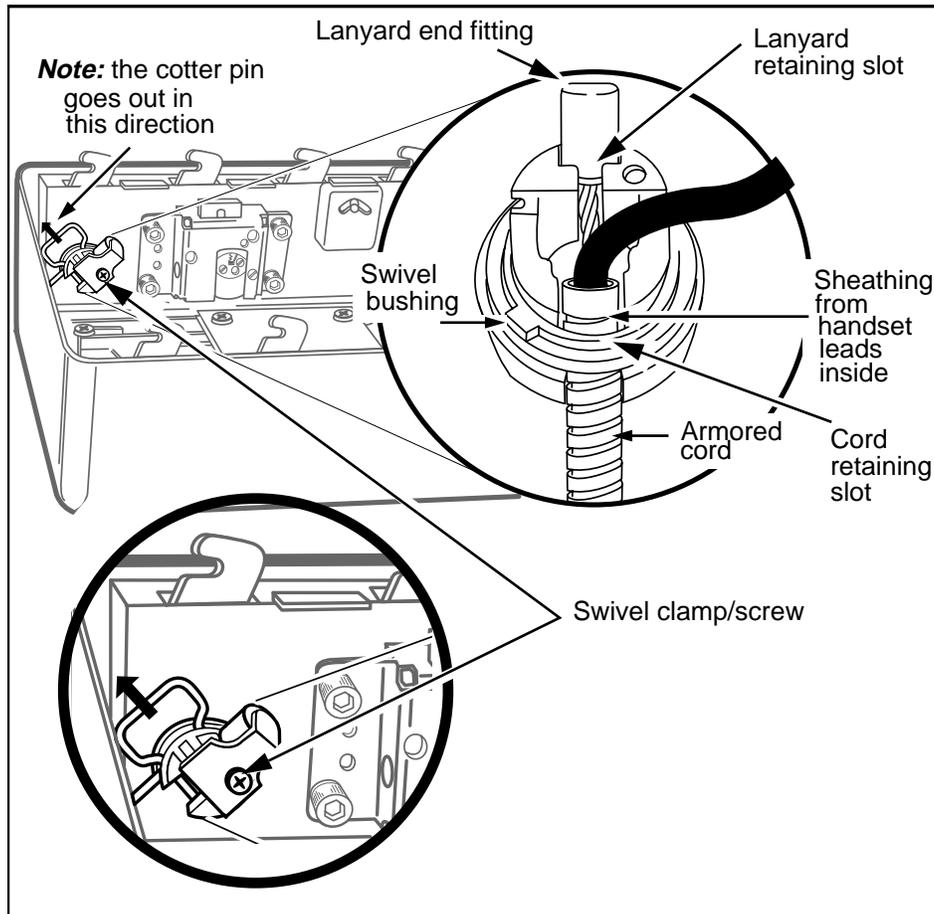
Refer to Figure 2-12 to locate the screw.

The swivel clamp holds the lanyard end-fitting of the armored cord to the swivel.



2-26 Accessing the terminal

Figure 2-16: Close-up of the swivel assembly



7. Remove the swivel bushing from the swivel.
Refer to Figure 2-16.
8. Slide the end fitting of the lanyard cord out of its retaining slot. Refer to Figure 2-16.
9. Slide the armored cord and handset leads out of the retaining slot in the swivel housing.

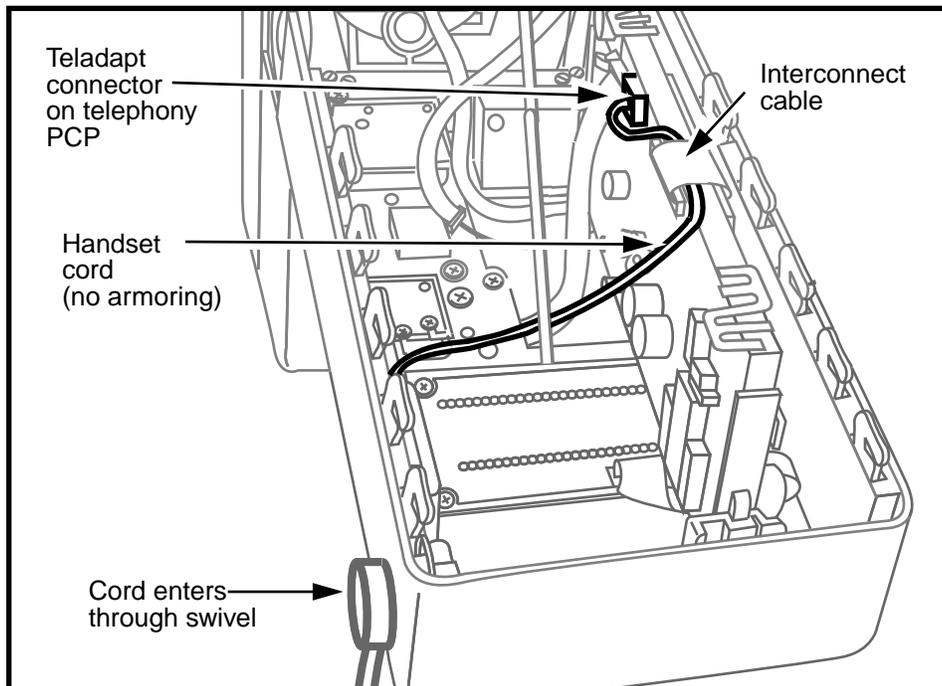


10. To replace the handset and swivel, reverse the preceding steps.
 - Make sure the black sheathing is inserted into the swivel by at least an inch.
 - When you reconnect the handset cable to the telephony PCP, ensure that you tuck it under the telephony/control PCP interconnect cable and reconnect that cable.
11. Restore the terminal to operation.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.

Figure 2-17: Reconnecting the handset cable





2-28 Accessing the terminal

Replacing the rear terminal PCP

The rear terminal PCP controls the power input into the terminal.

See this



Vintage alert!

The **multi-application control PCP** requires a rear terminal PCP with extra grounding protection, which is found on the latest version of the rear terminal PCP.

If you need to replace the rear terminal PCP for terminals which have this board, ensure that the replacement rear terminal PCP has a grounded strapping wire.

If the terminal has an IAS module installed, the rear terminal PCP will be attached to the IAS module and the IAS module will be connected to the outside line.



Flowchart

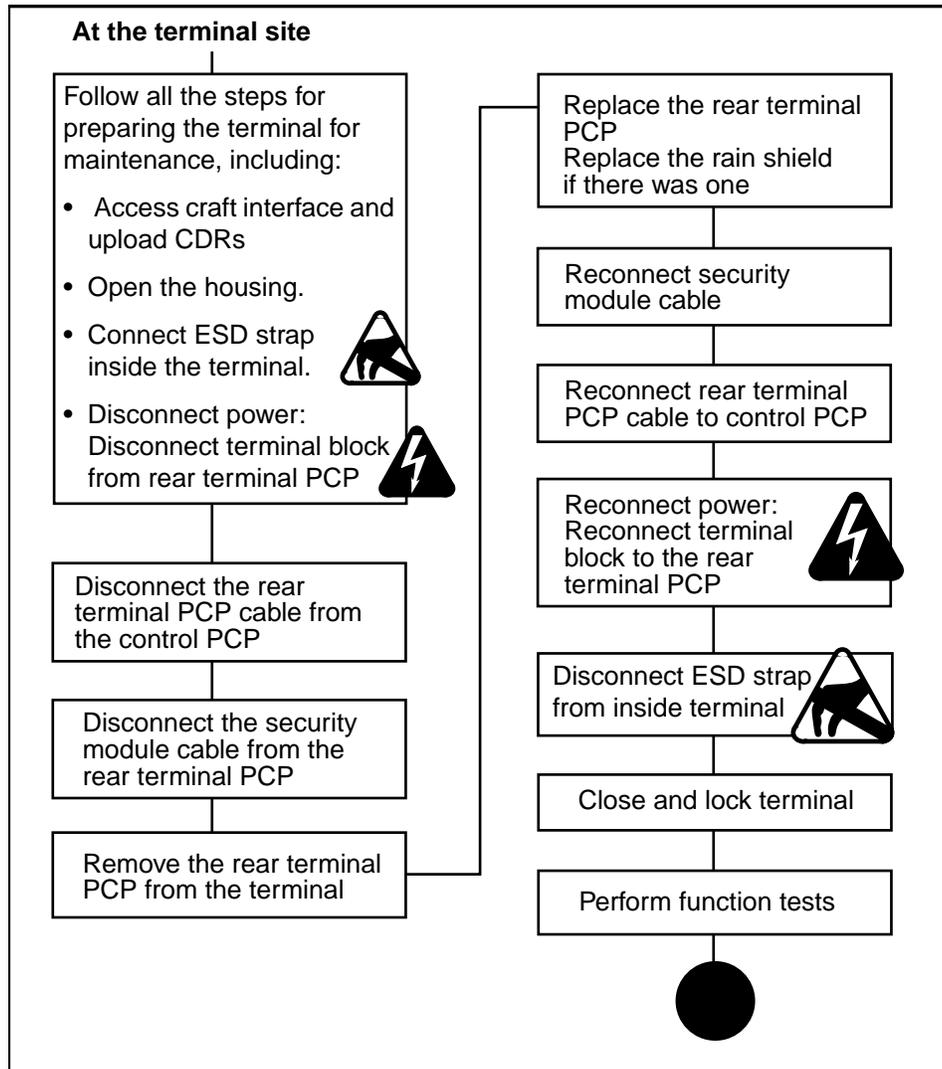


The flowchart in Figure 2-8 shows the key points to replacing the rear terminal PCP.





Figure 2-18: Flowchart — replacing the rear terminal PCP





2-30 Accessing the terminal

Replacing the rear terminal board

To replace the rear terminal PCP, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start!	Upload the CDRs to the Millennium Manager before you perform internal maintenance on the terminal.
--------------------------------------	----------------------------------------------------------------------------------------------------

- attached your ESD wrist strap inside the terminal
- disconnected the power by disconnecting the upper terminal block, shown in Figure 2-19.

Electrostatic discharge (ESD) precautions	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points. • Disconnect the supplementary power supply. • Do not reconnect until you are read to close the terminal. • Place any components you remove from the terminal into an anti-static bag.
--------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Failure to follow these precautions may damage ESD-sensitive components.

- removed the coin validator – **do not disconnect** the cable from the control board – as explained in **Replacing the coin validator** on page 6-6.

Set the validator carefully down on the front housing assembly.

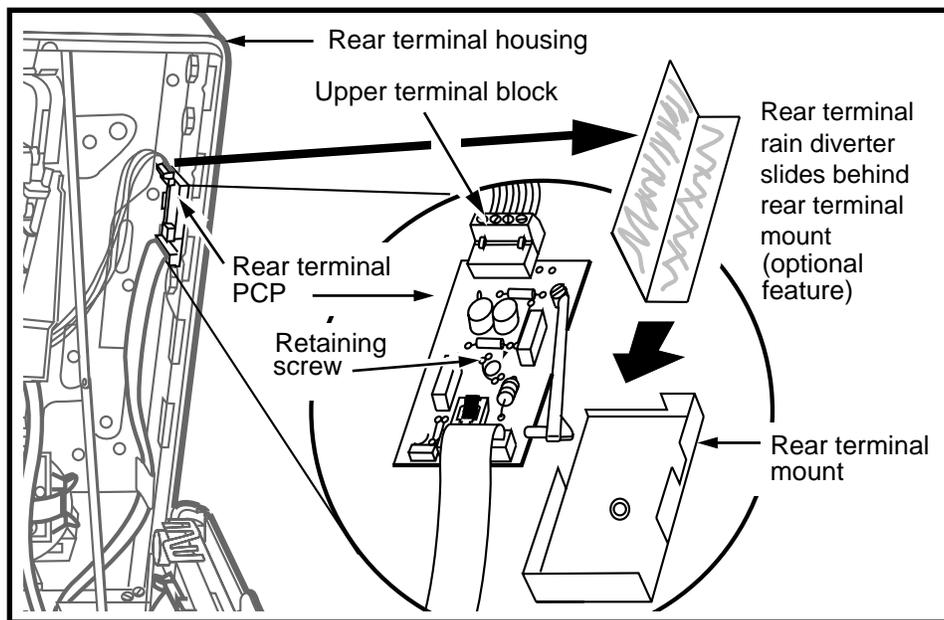




Accessing the terminal **2-31**

2. Disconnect cables from the module:
 - a) Disconnect the rear terminal PCP cable (J18) from the control PCP connector (J5).
 - b) Disconnect the security PCP cable (J31) from the rear terminal PCP connector (J32).
 - c) If the terminal has an IAS module, disconnect the interconnect cable between the IAS module and the rear terminal PCP.
3. Remove the rear terminal PCP retaining screw.
Refer to Figure 2-19.
4. Remove the rear terminal PCP from the mount.

Figure 2-19: Close-up of rear terminal PCP



5. Reverse **steps 2 to 3** to replace the PCP.
 - When inserting the new PCP, make sure the alignment pins on the terminal mount fit into the holes in the housing assembly.





2-32 Accessing the terminal

Installing the rain diverter

- If you are installing a rear terminal rain diverter, follow the procedure below before tightening the central screw on the rear terminal PCP.
 - a) Place the rain diverter in the corner of the rear housing assembly above the rear terminal PCP, as shown in Figure 2-19.
 - b) Slide the rain diverter down behind the rear terminal mount until the top of the rain diverter is about one-quarter inch above the oval hole in the back of the rear housing.
 - c) Tighten the rear terminal PCP retaining screw.
- 4. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
- 5. Run the craft interface CO line test. Then test terminal function.



Describing the IAS module

Millennium terminals require answer supervision on the CO line so that billing records can be accurate.

For lines that do not have this feature, an IAS (inferred answer supervision) module is installed inside the terminal.

- The IAS module is installed in the Millennium Multi-pay terminal below the rear terminal PCP.
- The module connects between the telephone line and the rear terminal board.





Figure 2-20 shows the IAS module inside the rear housing.

Figure 2-21 shows how the IAS module connects to the terminal.

Figure 2-20: Locating the IAS module in the terminal

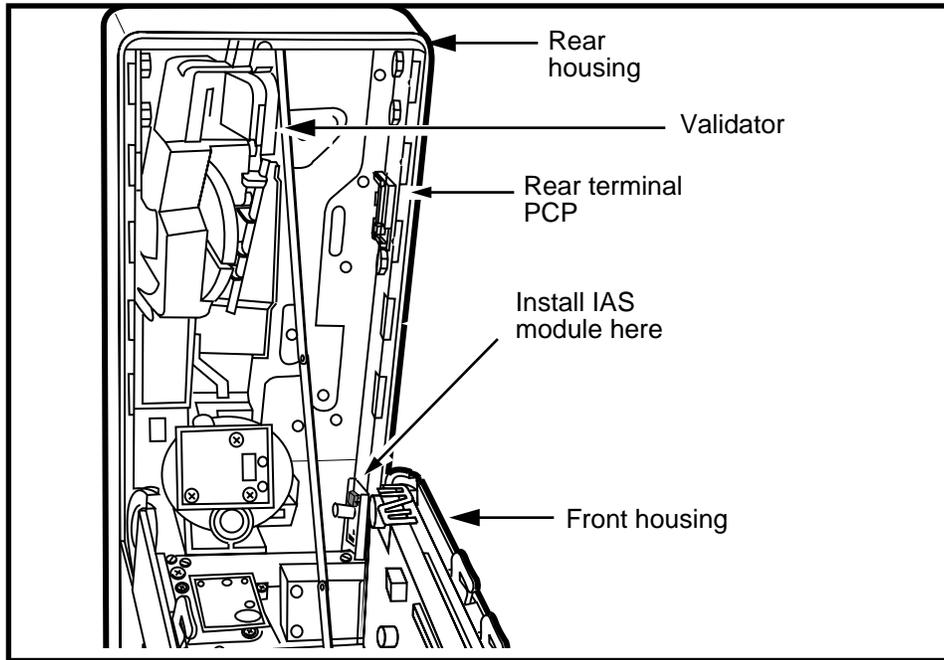
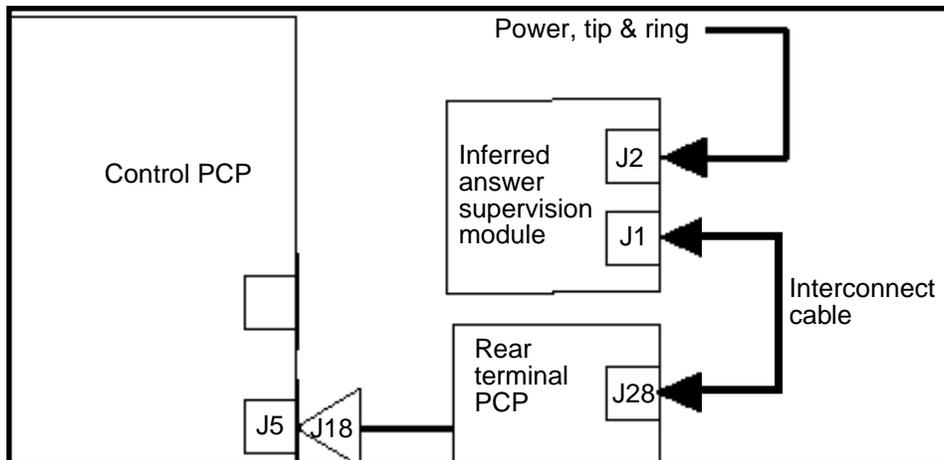


Figure 2-21: IAS interconnection diagram



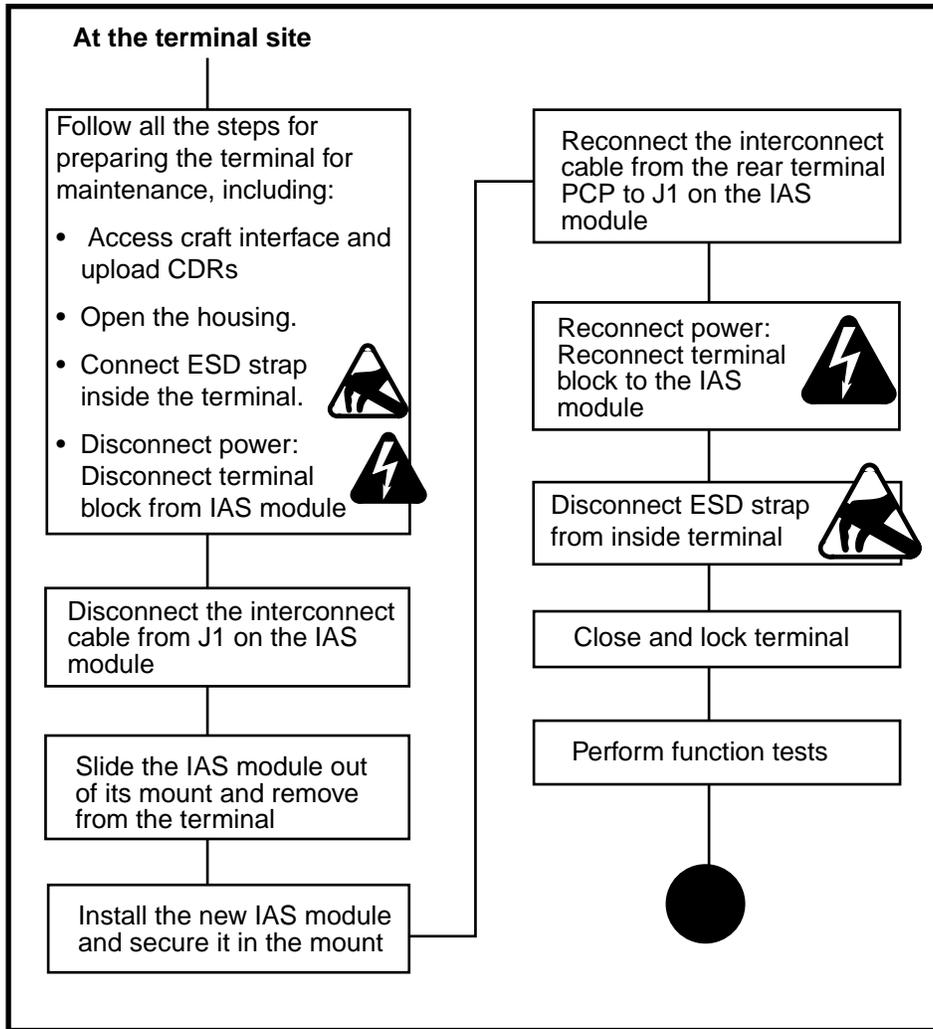


2-34 Accessing the terminal

Flowchart

The following flowchart describes the key points to replacing the IAS module.

Figure 2-22: Flowchart — replacing the IAS module





Installing an IAS module

The IAS module can be installed in the field.

The following steps describe how to position the module in the terminal and then connect it between the inside service wires (ISWs) and the rear terminal PCP.

The following sections require that these procedures have been done:

- **Preparing the terminal for maintenance** on page 2-3
- **Opening and closing the terminal** on page 2-6.
- uploaded the CDRs to the Millennium Manager before you start this procedure
- attached your ESD wrist strap inside the terminal
- disconnected the power by disconnecting the upper terminal block from the rear terminal PCP.

Electrostatic discharge (ESD) precautions



- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the supplementary power supply.
- **Do not reconnect until you are ready to close the terminal.**
- Place any components you remove from the terminal into an anti-static bag.

Failure to follow these precautions may damage ESD-sensitive components.

- removed the rear terminal PCP, if necessary, as explained in **Replacing the rear terminal PCP** on page 2-28.





2-36 Accessing the terminal

Installing an IAS mounting bracket

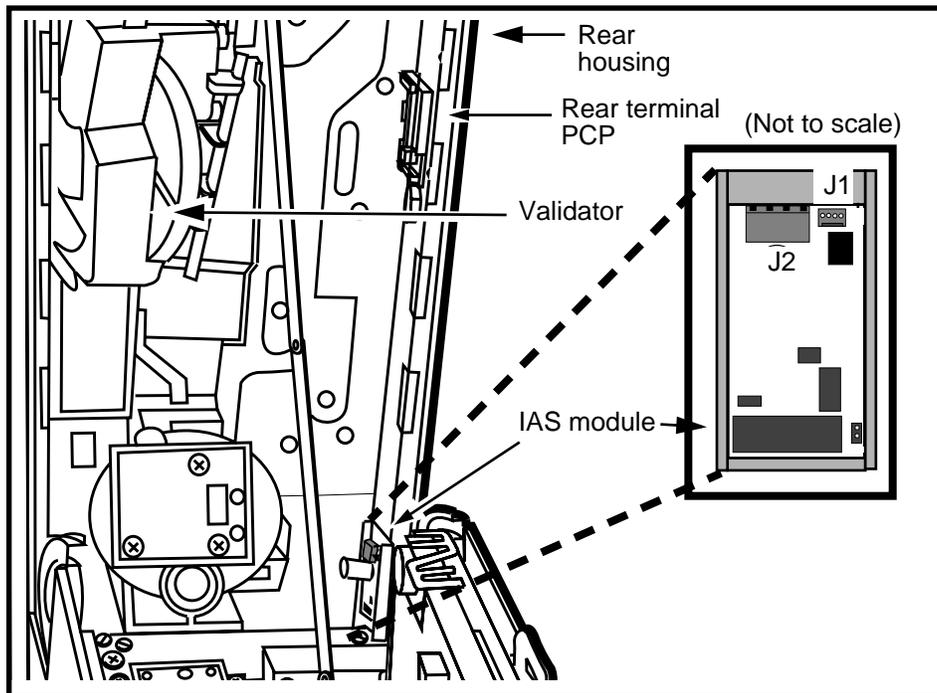
Usually terminals requiring answer supervision come with the module installed. However, if you need to install a module in a terminal in the field, follow these steps.

If you are replacing an IAS module, skip this section and go to **Connecting an IAS module** on page 2-37.

1. Slide the IAS PCP out of the board mount.
2. Leave the protective paper of the board mount, and position the mount on the side of the terminal.
3. Set the bottom of the mount in the corner at the bottom right of the rear housing above the coin vault. Refer to Figure 2-23.

Note: The cable connectors on the IAS module will be at the top.

Figure 2-23: Installing an IAS module





Accessing the terminal **2-37**

4. Ensure you have enough room to connect and disconnect cables from the module.
Refer to Figure 2-23.
5. Take the board mount out and remove the protective paper from the adhesive foam on its back.
6. Firmly press the board mount to the side of the terminal, where you placed it in **Step 4**.
7. Continue with the steps in **Connecting an IAS module**.

Connecting an IAS module

Once the IAS module mount is installed in the terminal, you need to install the module and connect it to the inside service wires and to the rear terminal PCP terminal block.

The following steps should be done in sequence.

1. Slide the IAS PCP into the board mount so that connectors J1 and J2 are at the top of the board.
2. Insert the interconnect cable into J1 on the IAS PCP. Make sure the cable sits into the connector so the black edge of the cable fits into the Tip terminal connection at either end.
3. If you are installing the module for the first time:
 - a) Remove the terminal block from the IAS module (J2).
 - b) The terminal block from the rear terminal PCP should already be disconnected.
 - c) Disconnect the ISWs from the rear terminal PCP terminal block and connect them to the terminal block for the IAS module.

DO NOT PLUG this terminal block into the IAS module until you are finished.



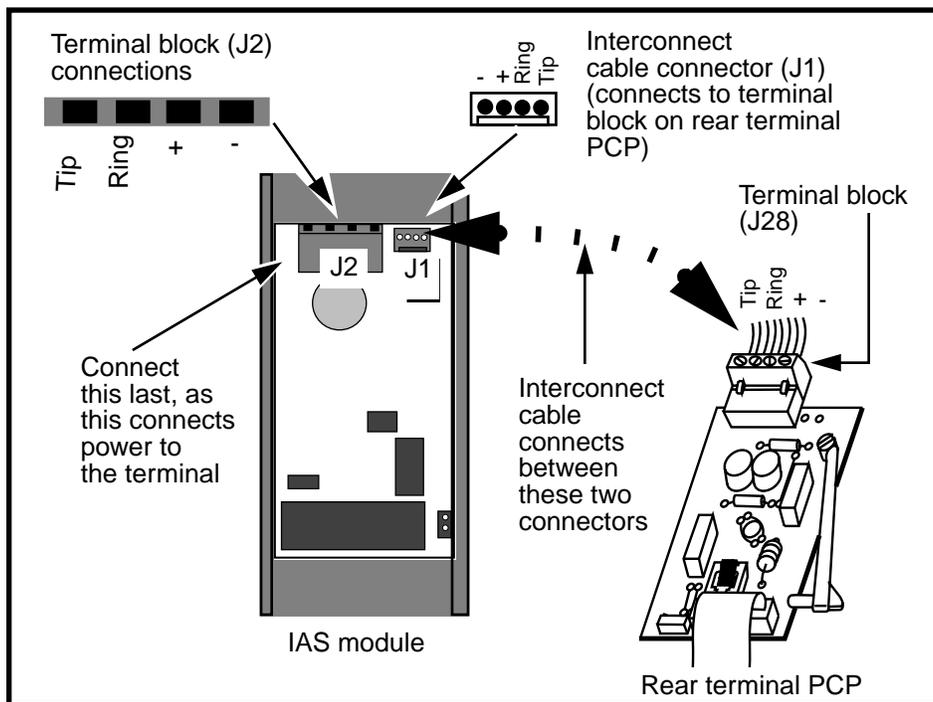


2-38 Accessing the terminal

<p>CAUTION</p>  <p>Connecting live wires to the terminal</p>	<ul style="list-style-type: none"> • Ensure the proper polarity when connecting the supplementary power supply. The terminal does not work if the polarity is incorrect. • Take the usual precautions with the wiring. • Conceal the wiring near the telephone or use approved moulding or tubing. • Locate protectors and connecting blocks where they will be inaccessible to the terminal user.
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d) Connect the interconnect cable wires to the upper terminal block for the rear terminal PCP (J28). Refer to Figure 2-24.

Figure 2-24: Connecting to the rear terminal PCP





Accessing the terminal **2-39**

Ensure you maintain the proper Tip and Ring connections.

If you are replacing the module, the interconnect cable should already be wired.

- e) Connect the upper terminal block to the rear terminal PCP (J28). Refer to Figure 2-24.

Position the cable along the back of the terminal so that it does not interfere with the PCP assembly when the housing is closed.

- 4. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the IAS module.
 - b) Route the ISW to the bottom of the rear housing to prevent interference with the PCP assembly.
 - c) To prevent the IAS PCP from sliding up in its mount, insert a cable tie through the hole at the top of the board mount and tie its ends together.
 - d) Remove your ESD strap connection.
 - e) Close and lock the terminal.
- 5. Run the answer supervision test in the craft interface to test the module.





2-40 Accessing the terminal





3 PCP assembly components

This chapter describes the procedures for working with the two main printed-circuit packs (PCPs) inside the terminal. These two boards — the telephony and control PCPs — are mounted in a plastic frame which is removable for better access to components at the front of the terminal. When fit together, these three pieces are called the PCP assembly.

This chapter includes procedures for:

- removing the PCP assembly
- removing the telephony or control PCP from the PCP assembly
- replacing firmware chips on the through-hole and the multi-application control PCPs
- installing the smart card alert daughter board and connecting it (through-hole control PCP only)
- describing the multi-application control PCP and associated daughter boards
- connecting the smart card alert wires to the multi-application control PCP





3-2 PCP assembly components

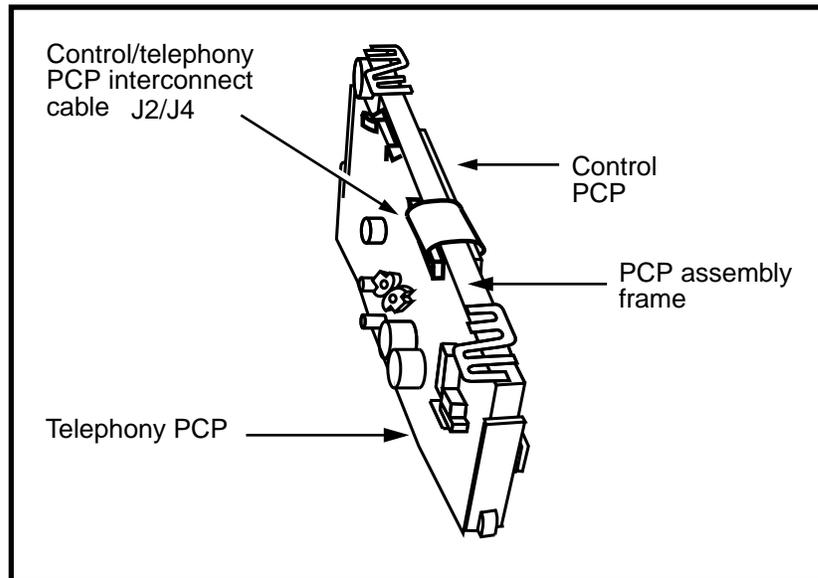
Removing the PCP assembly

The PCP assembly must be removed to replace a telephony or control PCP.

Also, it may need to be removed to access several of the components.

ESD and power precautions	Before you work with these boards:
	It is critical that you attach your ESD strap to an ESD point inside the terminal and that the power is disconnected from the terminal before you start removing cables from these boards.

Figure 3-1: PCP assembly components

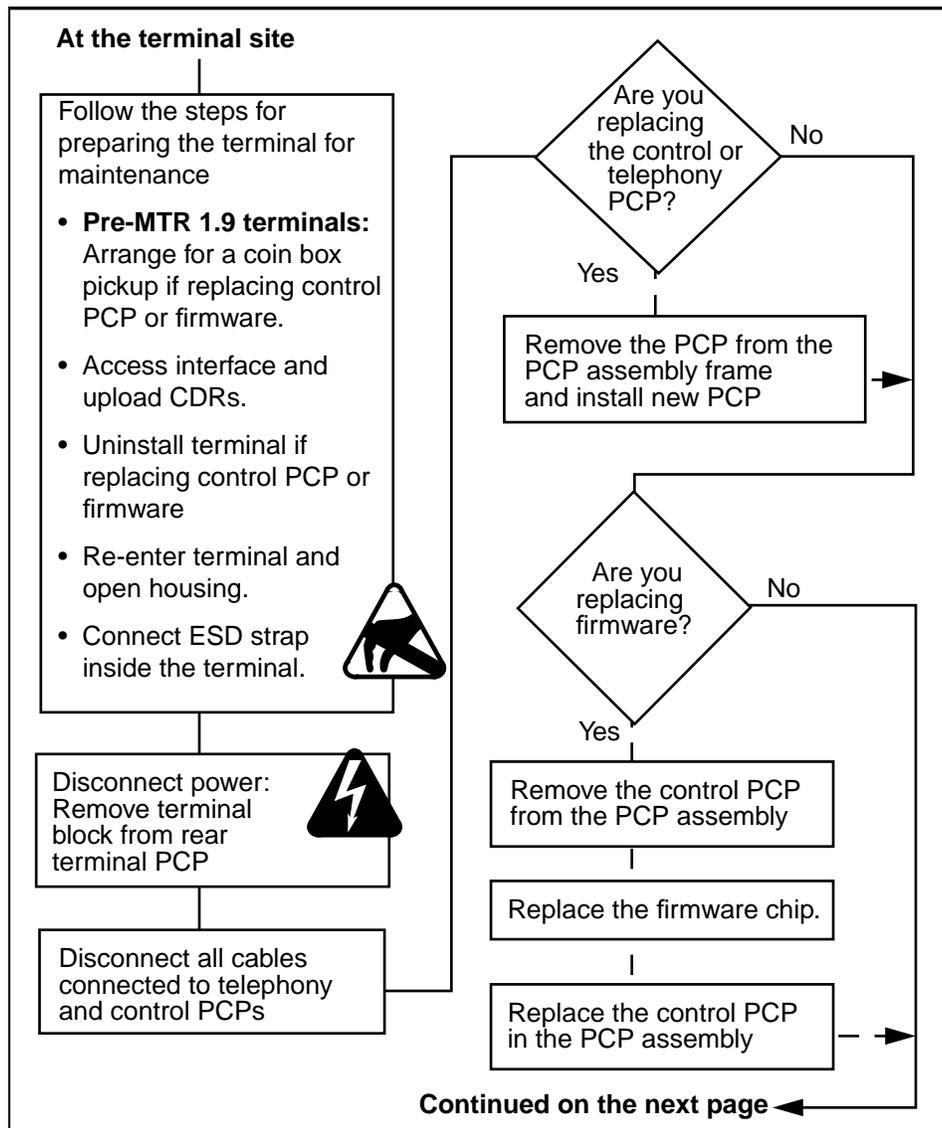




Flowchart

The flowchart shown in Figure 3-2 describes the key points to replacing the telephony or control PCP, or removing the PCP assembly in order to do further maintenance.

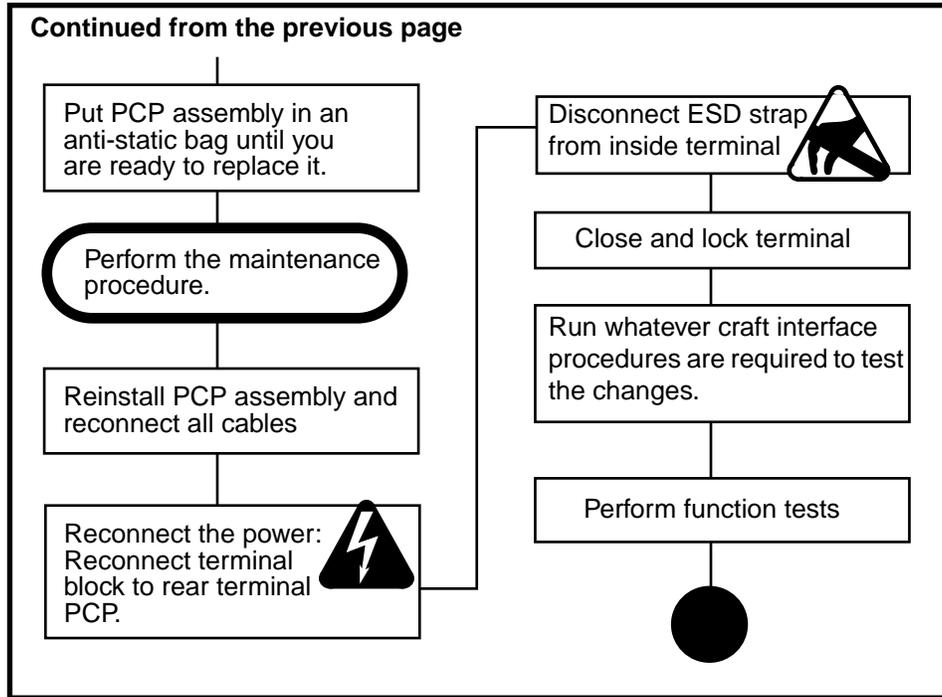
Figure 3-2: Flowchart — removing PCP assembly, page 1





3-4 PCP assembly components

Flowchart — Replacing the PCP assembly components, page 2





Working with the PCP assembly

To perform an orderly removal of the PCP assembly, follow these procedures:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:
 - **Pre-MTR 1.9 terminals:** if replacing the control PCP or firmware, a coin box pickup was arranged.

Upload CDRs before you start!	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start. This is especially important if you are going to replace the control PCP, firmware, the validator, the escrow, or remove the cash box. • If it is not possible to do this step because of problems with the control PCP, notify the operating company that the CDRs could not be downloaded.
Do you need to uninstall the terminal?	<p>If you need to replace the control PCP or the firmware, uninstall the terminal before disconnecting the power.</p> <p>This means you will have to run the INSTALL routine when you are finished.</p>

- connected ESD strap to a connection point inside the terminal
- disconnected power from the rear terminal PCP.





3-6 PCP assembly components

<p>Electrostatic discharge (ESD)</p>  <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs</p>	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points shown in Figure 7-2. • Disconnect the supplementary power supply. • Do not reconnect the power until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
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2. Disconnect the cables from the telephony and control PCPs, folding them back out of the way.

Table 3-1 lists the cable numbers and connector numbers for cables which connect to the telephony or control PCP.



Table 3-1: Component connections list

Disconnect these components	from:
Remove this cable first; reconnect this cable last.	
J18, rear terminal PCP	J5 on the control PCP
J15, handset	J10B on the telephony PCP
J53, keypad PCP J53, alerter module *	J1A on the telephony PCP
J19, card reader PCP	J6 on the control PCP
J20, display PCP	J7 on the control PCP
If the terminal is equipped with a datajack module:	
J35, datajack module	J34 on the telephony PCP





Table 3-1: Component connections list (continued)

Disconnect these components	from:
If the terminal is equipped with the smart card alert:	
J14, alerter module	J37 on the daughter board J37 on the multi-application control PCP **
J38 Smart card alert keypad cable	J36 on the daughter board J36 on the multi-application control PCP **
* upgraded upper bezel assembly keypad connects to the new external interface hookswitch. ** upgraded control PCP includes smart card alert connectors directly on the board.	

The cable connections inside the terminal are shown in Figure 3-3 and Figure 3-4.





3-8 PCP assembly components

Figure 3-3: Cable connections, open housing, left view

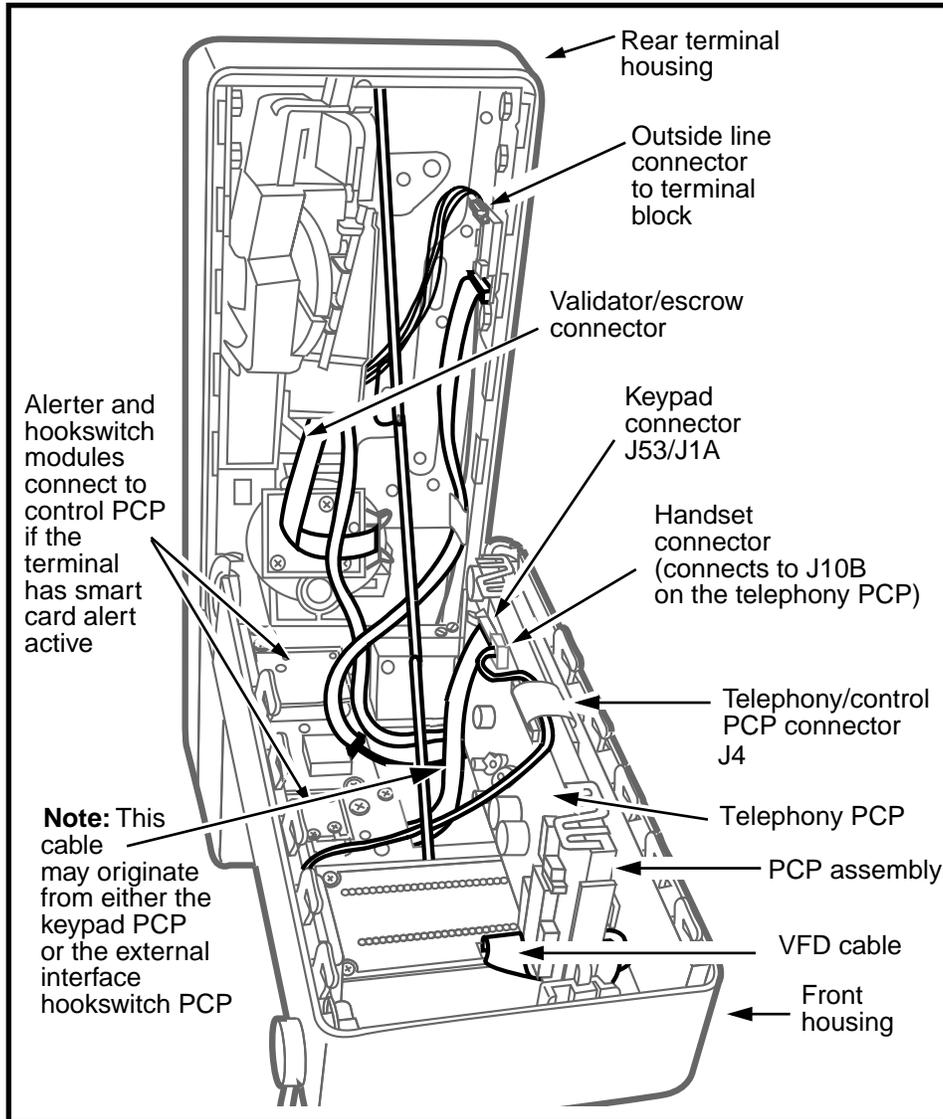
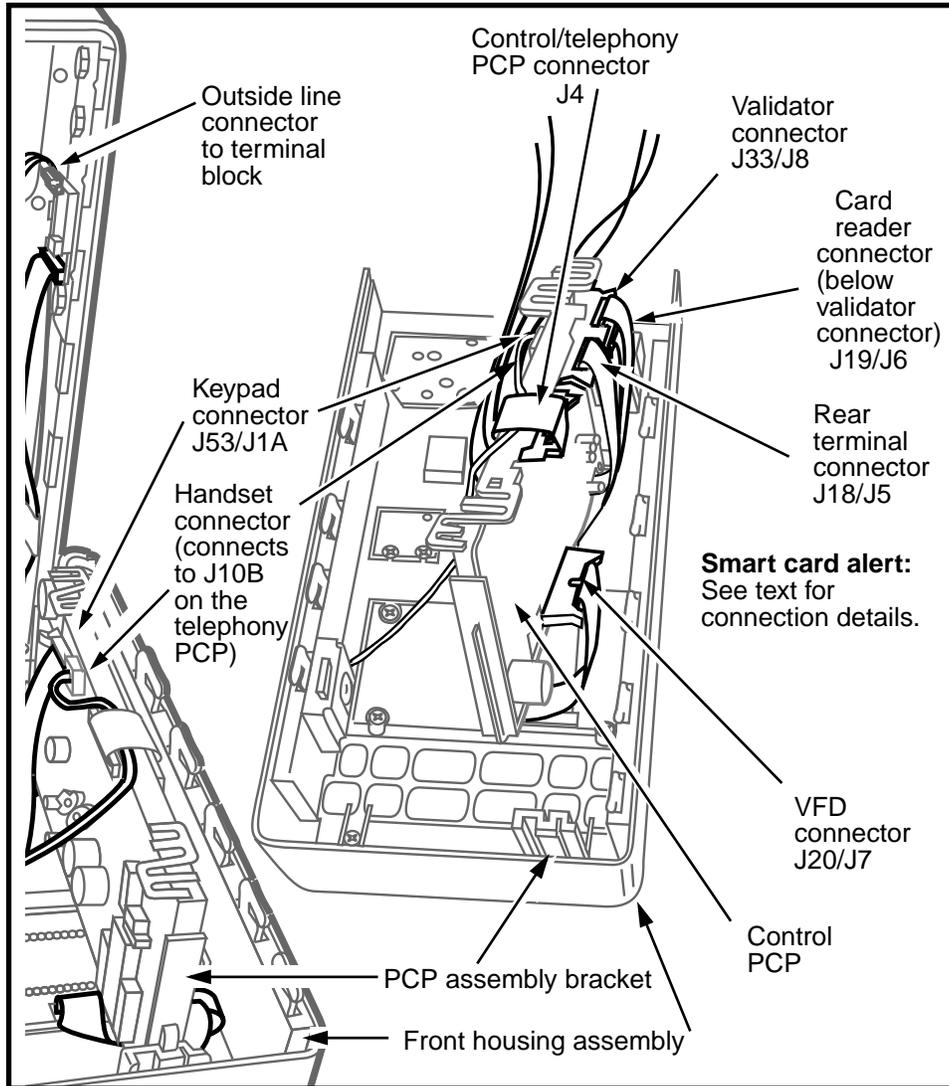




Figure 3-4: PCP assembly cable connections



3. Refer to Figure 3-5 and remove the PCP assembly by sliding it out of its guides.

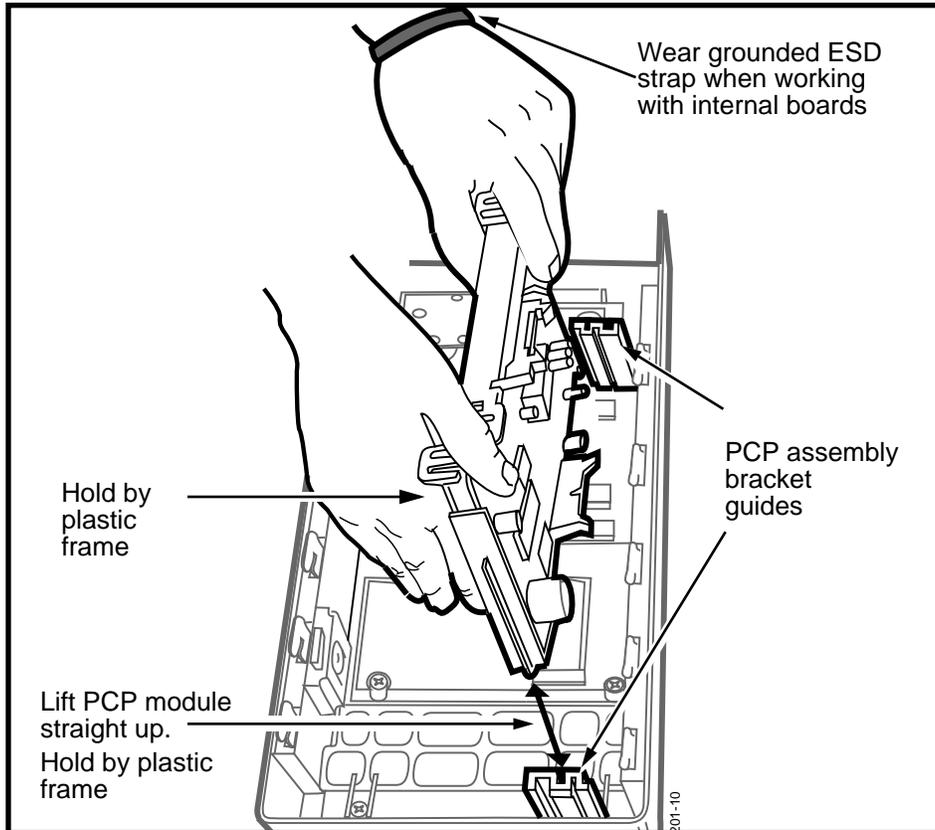
If necessary, press the guides away from the PCP assembly to free it.





3-10 PCP assembly components

Figure 3-5: Removing the PCP assembly bracket



4. Refer to **Removing the telephony or control PCPs** on page 3-11, if you need to replace either PCP.

If you are removing the PCP assembly in order to access other components, put the PCP assembly in a static-free bag until you need to re-install it.

5. Replace the PCP assembly by reversing the previous steps.
6. Return the terminal to operation. Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
7. Make sure you test the various functions to ensure that the terminal is operational.





Removing the telephony or control PCPs

This section describes how to remove the control or telephony PCP from the PCP assembly frame.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:
 - **Pre-MTR 1.9 terminals:** if replacing the control PCP or firmware, a coin box pickup was arranged.

Upload CDRs before you start!	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start internal maintenance procedures. • In some cases it will not be possible to do this because of problems on the control PCP. In these cases, notify the operating company that the CDRs could not be uploaded.
Uninstall the terminal	<ul style="list-style-type: none"> • Remember to uninstall the terminal through the craft interface before you replace the control PCP. This means you will have to run the INSTALL routine when you are finished. • If you replace the telephony PCP, do a download through the craft interface when you are finished.

- attached your ESD strap inside the terminal and disconnecting the power
- disconnected the power from the terminal by disconnecting the terminal block from the rear terminal cable or the IAS module.





3-12 PCP assembly components

(ESD) warning



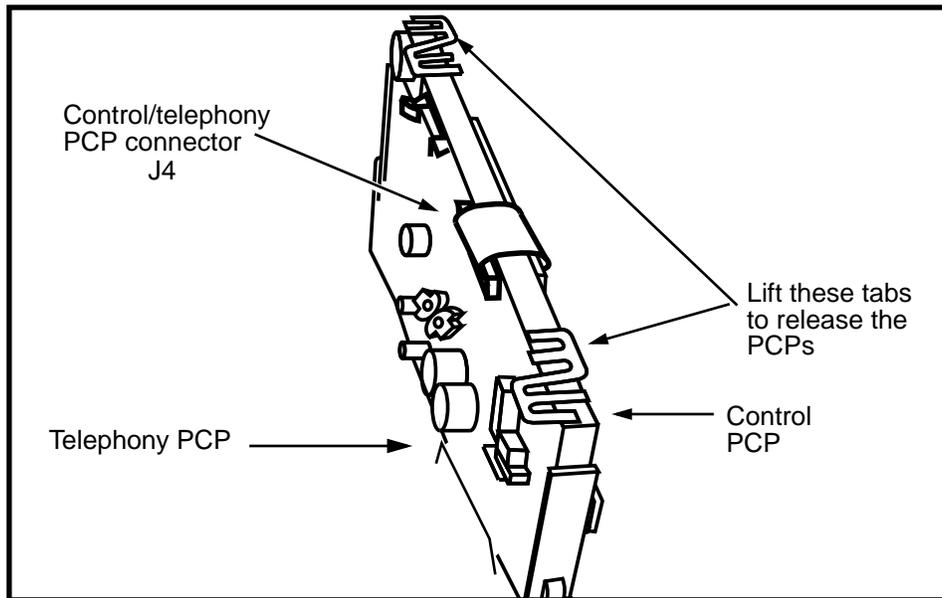
Failure to follow these precautions may damage ESD-sensitive components.

- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the supplementary power supply.
- **Do not reconnect until you are ready to close the terminal.**
- Place any components you remove from the terminal into an anti-static bag.

- removed the PCP assembly from the terminal. Refer to **Removing the PCP assembly** on page 3-2.
2. Disconnect the cable connection between the telephony and control PCPs (J4). Refer to Figure 3-6.
 3. Release the tabs holding the PCP in the frame. Refer to Figure 3-6.



Figure 3-6: Releasing PCP assembly components





PCP assembly components **3-13**

4. Handle the PCP only by the edges and lift it away from the PCP assembly.
5. Do maintenance on the PCP you removed or put it in an anti-static bag to be sent for repair.

Put the PCP assembly and remaining board in a static-free bag until you are ready to reinstall the PCP you are working on.

6. To replace the PCPs, reverse the previous steps.
7. To replace the PCP assembly, reverse the steps in the preceding section.
 - The cable connections are listed in Table 3-1.
 - When you are ready to close the terminal, reconnect the power and return the terminal to operation.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

- After replacing the control PCP or firmware, perform the INSTALL routine to store data in the memory.
- After replacing a telephony PCP, perform a forced download.

The INSTALL routine and the download process are described in detail in *Millennium terminals: using the craft interface*.

8. Perform operation tests to make sure the terminal works properly.





3-14 PCP assembly components

Replacing firmware on the control PCP

When the firmware gets updated, you may be required to replace chips on the control PCP rather than replacing the entire board.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

- **Pre-MTR 1.9 terminals:** if replacing the control PCP or firmware, a coin box pickup was arranged.

Upload CDRs	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you replace any firmware.
Uninstall the terminal	<ul style="list-style-type: none"> • Uninstall the terminal through the craft interface before you replace firmware. • This means you will have to run the INSTALL routine when you are finished.

- attached your ESD strap to an ESD point inside the terminal
- disconnected the power at the rear terminal PCP

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Connect your ESD wrist strap to the ESD connection points inside the terminal. • Disconnect the power. • Do not reconnect the power until you are ready to close the terminal. <p>Failure to follow these procedures may damage the electrostatic-sensitive devices.</p>
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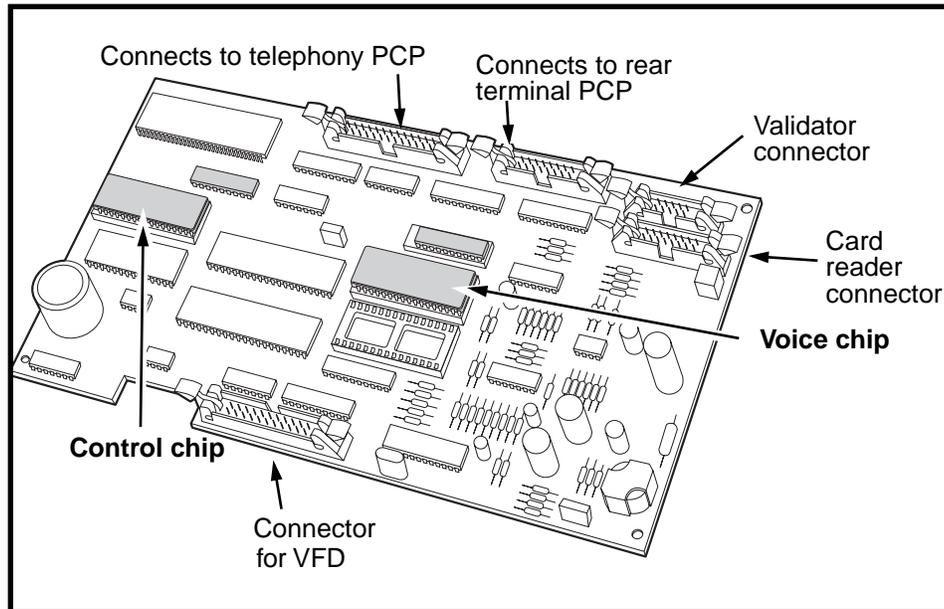


PCP assembly components 3-15

- removed the PCP assembly as explained in **Removing the PCP assembly** on page 3-2
 - removed the control PCP from the PCP assembly as explained in **Removing the telephony or control PCPs** on page 3-11
2. Set the control PCP on an anti-static pad on a flat and stable surface.
 3. Put the PCP assembly in an anti-static bag until you are ready to re-install the control PCP.
 4. Refer to Figure 3-7 and Figure 3-8 for chip locations on the two types of control boards which are currently in the field.

Note that the through-hole control PCP has one firm-ware and one voice chip.

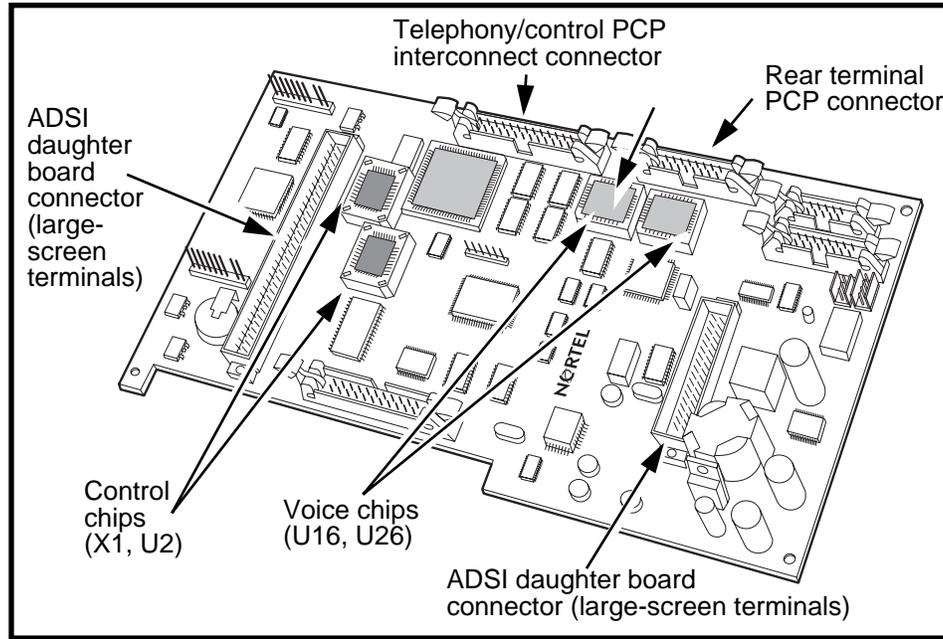
Figure 3-7: Through-hole board — replaceable chips





3-16 PCP assembly components

Figure 3-8: Multi-application board — replaceable chips



Note that the multi-application control PCP has two firmware chips and two voice chips. Normally, the chips will be replaced as a set.

See this



Vintage alert

Large-screen terminals

If the control PCP comes from a large-screen terminal, there will be an ADSI daughter board covering the firmware chips.

Remove this board by loosening it at either end and then pulling it off the control PCP. Put the board in an anti-static bag until you are ready to reinstall it.

Refer to Table 3-2 for the socket numbers for the multi-application control PCP firmware chips.



**Table 3-2: Firmware chip socket locations**

Control chips	Label	Put in socket
Firmware chip #1	XXXXXX (loaded device CPC code) FW2.0A (firmware and version code) U2 (socket number)	U2
Firmware chip #2	XXXXXX (loaded device CPC code) FW2.0A (firmware and version code) X1 (socket number)	X1
Voice chips		
Voice chip #1	XXXXXX (loaded device CPC code) VW2.0A (voiceware and version code) U16 (socket number)	U16
Voice chip #2	XXXXXX (loaded device CPC code) VW2.0A (voiceware and version code) U26 (socket number)	U26



5. Remove the appropriate chip(s) from the board:
 - a) Use the chip puller from your kit to grasp the chip.
 - b) Pull it straight up, out of the board socket.
 - c) Line the new chip up in the socket on the board and press down firmly to seat the chip.



Through-hole control PCP: There is a notch or tab on the socket that matches a notch or tab on the chip. Match these up to ensure the chip is orientated properly in the socket.

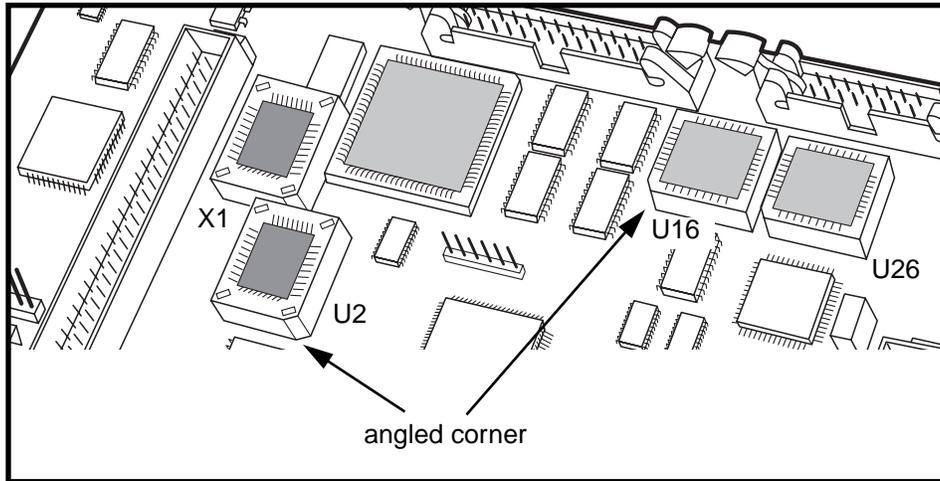
Multi-application control PCP: An angled corner on the chip matches to an angled corner on the bottom of the sockets. Refer to Figure 3-9.





3-18 PCP assembly components

Figure 3-9: Lining up the chip in the socket



6. Replace the control PCP and the PCP assembly reversing the steps in **Removing the telephony or control PCPs** on page 3-11 and **Removing the PCP assembly** on page 3-2.

7. When you are ready to close the terminal, reconnect the power by connecting the terminal block to the rear terminal PCP and restore the terminal to operation.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

8. Perform the INSTALL routine in the craft interface.

9. Perform operation tests to ensure that the terminal works properly.

The tests performed will depend on the version of the firmware. Contact your Technical Assistance Manager (TAM) for the correct testing procedure.





Using secure application modules (SAMs)

Terminals which use reloadable smart card (e-purse) applications require a compatible internal module in order for the cards to work.

These secure application modules (SAMs) fit into sockets on a daughter board attached to the multi-application control PCP.

The SAMs should be thought of as firmware chips, in that the terminal must be powered down to install or replace them.

If you are replacing a control PCP, the modules must be transferred from the defective board to the new board, either by moving the SAM daughter board or by moving the SAMs to a new daughter board on the new control PCP.

Replacing the SAM

The following section describes how to install a SAM module.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p style="text-align: center;">Upload CDRs before you start!</p>	<ul style="list-style-type: none"> • Uploaded the CDRs to the Millennium Manager. • Uploaded e-purse transaction records.
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- connected your ESD wrist strap to an ESD point inside the terminal
- disconnected the power from the rear terminal PCP
- It is not necessary to remove the PCP assembly unless you find it easier to work with the control PCP out of the frame.



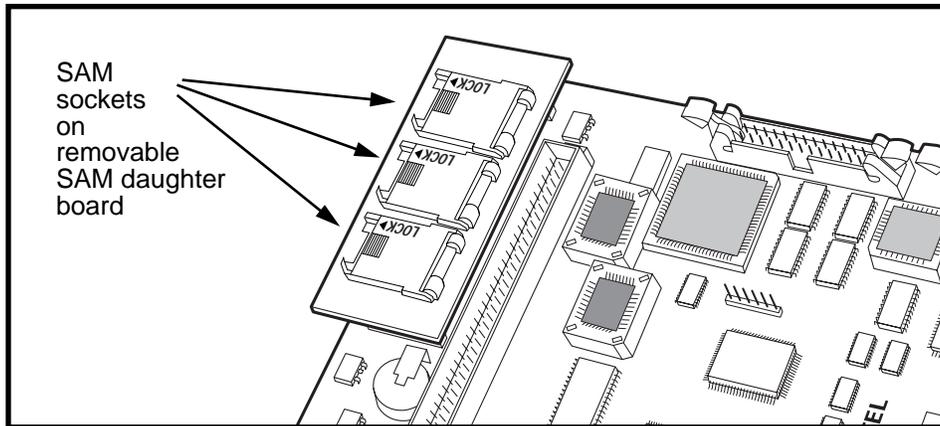


3-20 PCP assembly components

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Connect your ESD wrist strap to the ESD connection points inside the terminal. • Disconnect the power: Remove terminal block from rear terminal PCP. • Do not reconnect the power until you are ready to close the terminal. <p>Failure to follow these procedures may damage the electrostatic-sensitive boards.</p>
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Refer to Figure 3-10 to locate the SAM sockets.

Figure 3-10: Control PCP showing SAM sockets



2. Unlock the SAM socket by sliding the plastic lock tab toward the body of the unit.

<p>Warning</p> 	<p>If the power is not disconnected by this point, the control PCP and/or the SAM will be damaged when the SAM is installed or removed.</p>
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PCP assembly components **3-21**

3. Lift up the flap and remove the SAM by sliding it up and out of the housing.
4. Put the module you remove in a secure, static-free place.
5. Install the new SAM into the socket.

Refer to Figure 3-11 for proper positioning of the SAM into the socket.

Warning



Note: The SAM can only go in one way.

It should slide in easily and snugly.

Do not try to force it into the socket if it does not seem to fit.

If it is too loose, use another SAM or replace the daughter board.

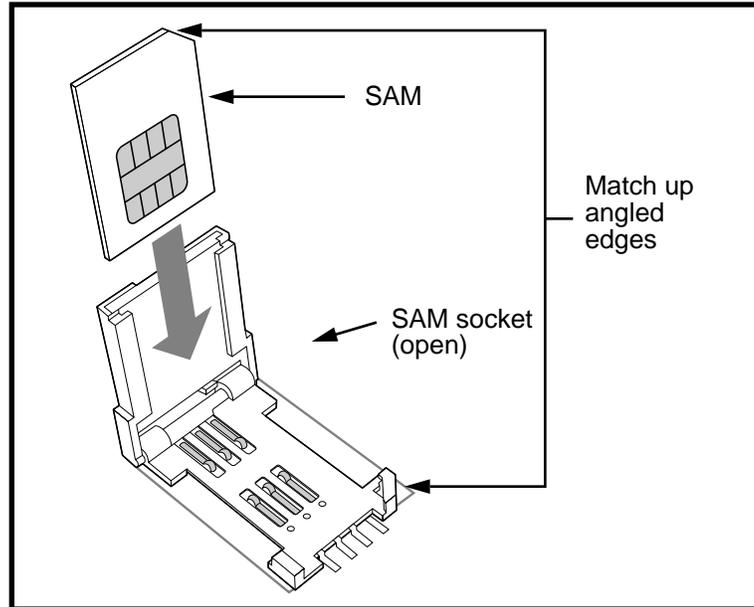
6. Close the socket and slide the lock back in place.
7. If you removed it, replace the control PCP into the PCP assembly and the PCP assembly into the terminal.
8. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
9. Follow the procedures in **SmartCity — checking SAM function** on page 3-25.





3-22 PCP assembly components

Figure 3-11: Inserting the SAM into the socket



Reinstalling the SAM daughter board

If the reason you are accessing the SAM is because of a bad control PCP, you may need to remove the SAM daughter board and reinstall it on the new control PCP.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

- **Pre-MTR 1.9 terminals:** if replacing the control PCP or firmware, a coin box pickup was arranged.

Upload CDRs before you start!

- uploaded the CDRs to the Millennium Manager since you are replacing the control PCP
- uploaded e-purse transaction records.





Uninstall the terminal

Since you are replacing the control PCP, uninstall the terminal before disconnecting the power.

- attached your ESD wrist strap to the ESD connection point inside the terminal
- disconnected the power from the rear terminal PCP

ESD and power warning



- Connect your ESD wrist strap to the ESD connection points inside the terminal.
- Disconnect the power: disconnect the terminal block from the rear terminal PCP.
- Do not reconnect the power until you are ready to close the terminal.

- removed the PCP assembly from the terminal
- removed the control PCP from the PCP assembly and place the PCP assembly in an anti-static bag

2. Grasp the daughter board firmly and pull straight up, off the control PCP.
3. Put the old control PCP in an anti-static bag for disposal or repair.
4. On the new control PCP, line up the daughter board connectors over the male connector pins on the control PCP.

Note: Position the SAM daughter board so that the sockets face to your left.

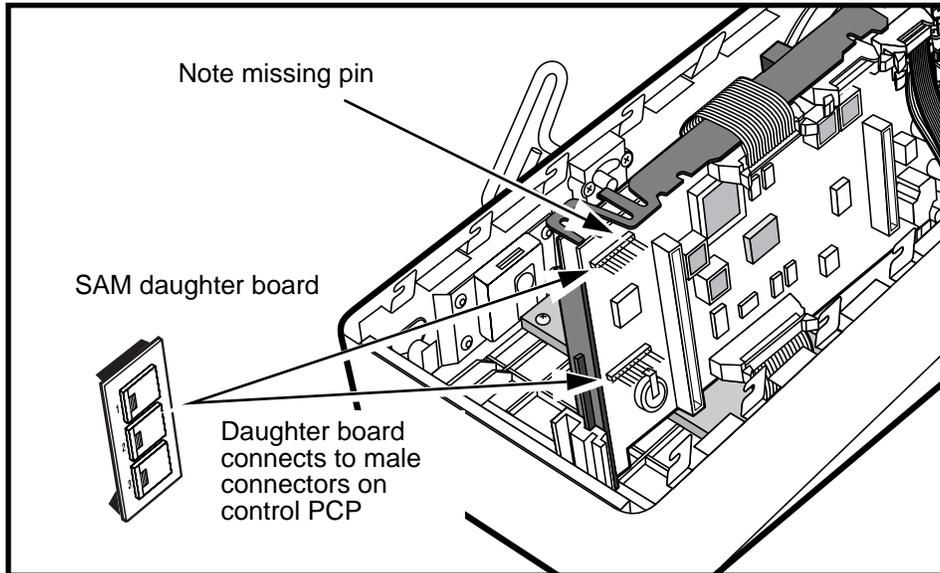
The connectors should match up so that the blocked part of the connector of the daughter board matches with the missing pin on the control PCP.





3-24 PCP assembly components

Figure 3-12: Installing SAM daughter board



5. Press the board straight down until the connectors are properly seated.
6. Replace the control PCP into the PCP assembly.
Refer to **Removing the telephony or control PCPs** on page 3-11, if necessary.
7. Replace the PCP assembly into the terminal.
Refer to **Removing the PCP assembly** on page 3-2, if necessary.
8. Reconnect all cables to the PCP assembly.
9. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.





10. If the terminal is running a SmartCity reloadable smart card application, go to **SmartCity — checking SAM function** on page 3-25.

SmartCity — checking SAM function

Once the daughter board is installed and the SAM is inserted into the socket, follow these steps to restore the terminal to operation and check that the SAM is working.

1. Check that all the cables are properly reconnected.
2. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
3. Perform the appropriate craft interface practice.
 - If you replaced the control PCP, perform an **INSTALL** routine.
 - If you just replaced the SAM or the daughter board, the terminal should have powered up normally.

Enter the craft interface and use menu item 277 to ensure that the terminal acknowledges the SAM.
4. Perform call tests on the terminal to make sure it is working as expected.





3-26 PCP assembly components

Installing smart card alert (SCA)

This procedure describes how to install a **smart card alert daughter board kit** into an existing terminal or replace an installed daughter board.

Note: This daughter board is only used on through-hole control PCPs. Multi-application control PCPs have smart card alert connectors directly on the board.

Warning:	Ensure the POWER IS DISCONNECTED before installing or removing this board, or unplugging the connectors.
	Failure to do so will result in damage to the boards.



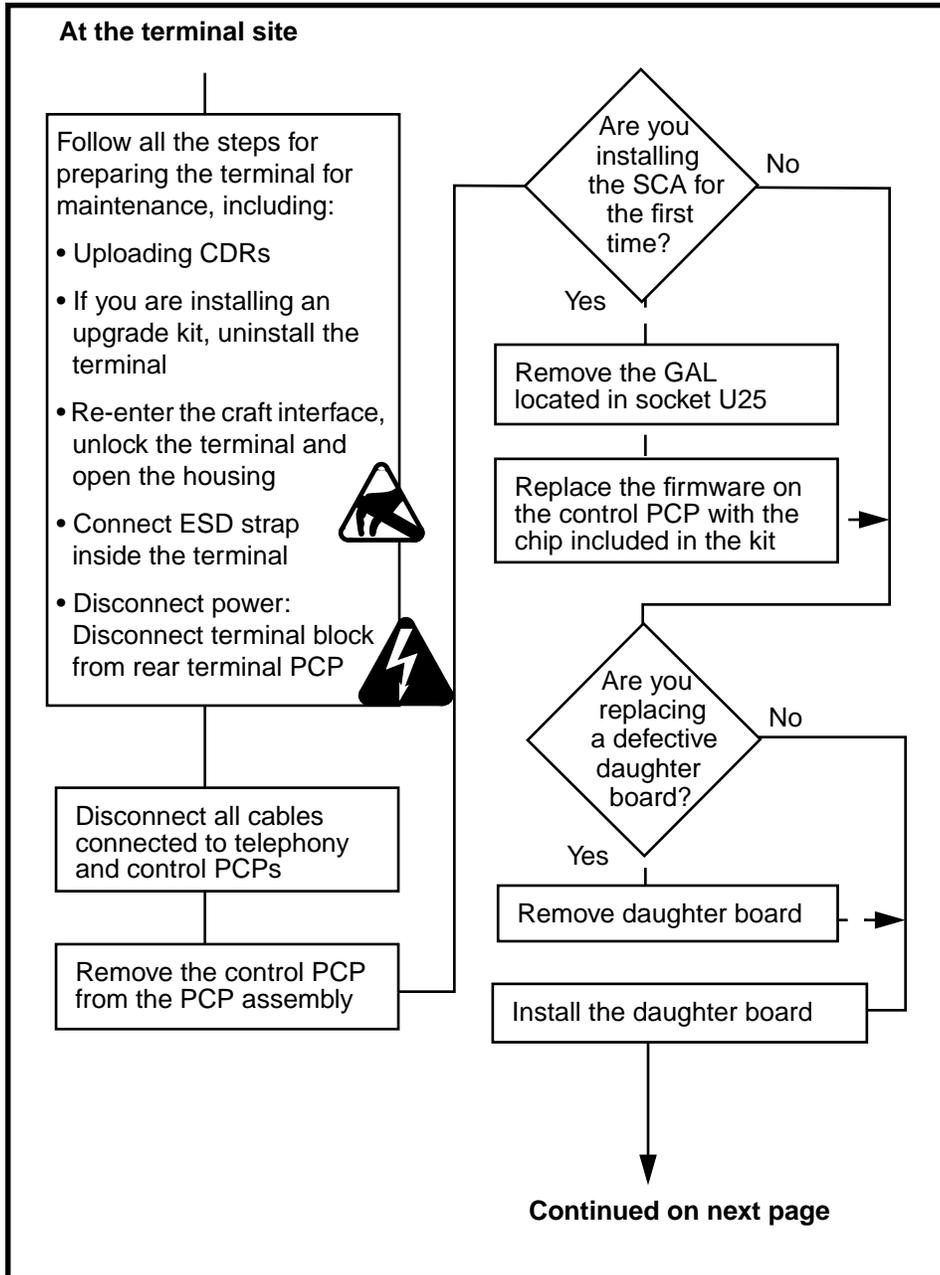
Flowchart

The flowchart in Figure 3-13 shows the key points to replacing the smart card alert daughter board on a through-hole control PCP.





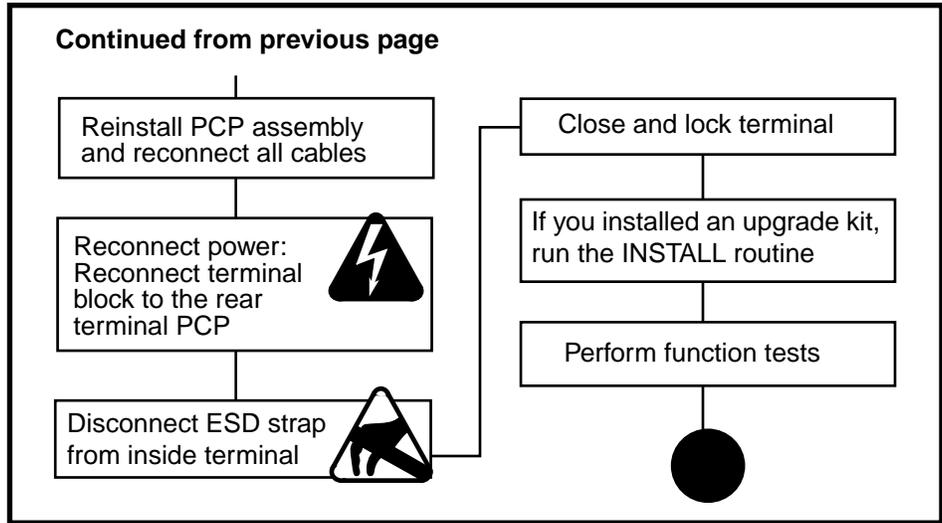
Figure 3-13: Flowchart — replacing smart card alert, page 1





3-28 PCP assembly components

Flowchart — replacing smart card alert, page 2



Replacing the SCA daughter board

The procedure given below describes the how to install a smart card alert daughter board.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you replace components.
<p>Uninstall the terminal</p>	<ul style="list-style-type: none"> • If you are installing a kit for the first time you will be installing new firmware, so remember to uninstall the terminal through the craft interface. • In this case, you will need to run the INSTALL routine when you are finished.





PCP assembly components **3-29**

- attached your ESD wrist strap to the ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

Electrostatic discharge (ESD)



- Connect your ESD wrist strap inside the terminal.
- Disconnect the power.
- Do not reconnect the power until you are ready to close the terminal.

Failure to follow these procedures may damage the internal boards

2. If you are installing the feature for the first time:
 - a) Remove the PCP assembly, as described in **Removing the PCP assembly** on page 3-2
 - b) Remove the control PCP as described in **Removing the telephony or control PCPs** on page 3-11.
 - c) Put the PCP assembly in an anti-static bag
 - d) Replace firmware, if there was any included in the kit

Refer to **Replacing firmware on the control PCP** on page 3-14 for directions for installing any new firmware.

- e) Remove the GAL chip currently in U25 socket.

Refer to Figure 3-14 to locate this socket on the control PCP.

Warning:



Ensure the **POWER IS DISCONNECTED** before installing or removing the GAL or the board.

Failure to do so will result in damage to the daughter board and the control PCP.





3-30 PCP assembly components

Use a chip puller and pull the GAL straight up until it comes free of the socket.

- f) Disconnect the alerter cable from wherever it is connected — keypad PCP or external interface hookswitch module.

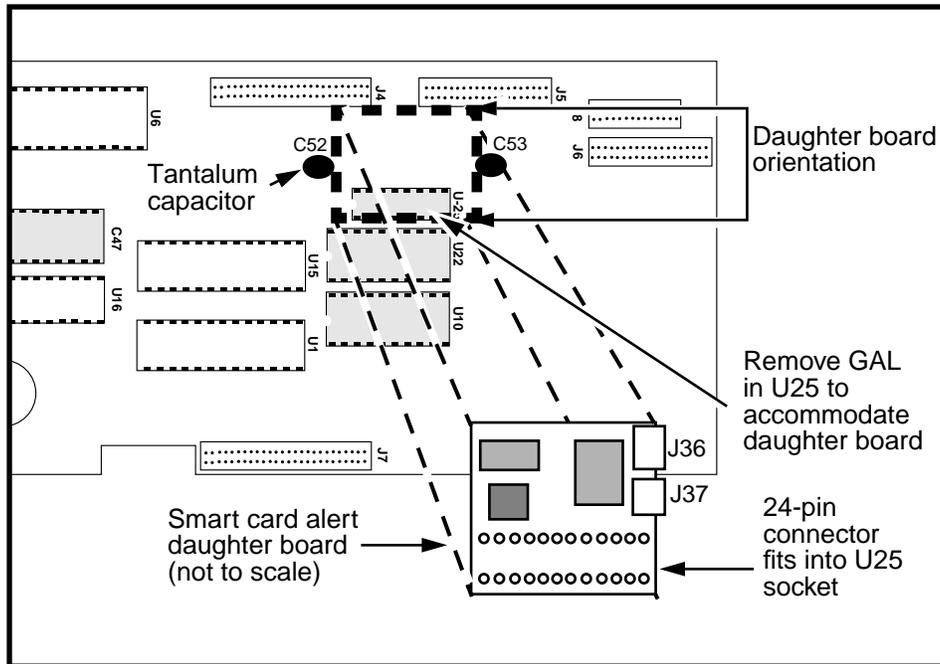
g) **Go to step 4.**

3. If you are replacing a daughter board:

- a) Locate the smart card alert daughter board on the control PCP.
Refer to Figure 3-14, if necessary.

- b) Grasp the board by the side edges and pull straight up, off the control PCP.

Figure 3-14: Positioning the SCA daughter board





4. Install the daughter board:
 - a) Line up the connector on the bottom of the daughter board with the U25 socket on the control PCP.

Refer to Figure 3-14.

Be very careful to keep the connectors straight when fitting them into the socket.
 - b) Press straight down to seat the board in the socket.

See this



Installation note

There are two small bead tantalum capacitors (C52 and C53) just above the U25 socket.

Very gently press them sideways, to allow the board to be properly seated.

Refer to Figure 3-14.

5. Replace the control PCP in the PCP assembly frame if you removed it.
6. Replace the PCP assembly into the terminal, if you removed it.
7. Reconnect all the cables, including:
 - a) Connect the J39 end of the smart card alert interconnect cable (Figure 3-15) to J52 on the keypad PCP (Figure 3-16) or to J52 on the external interface module (Figure 3-17).

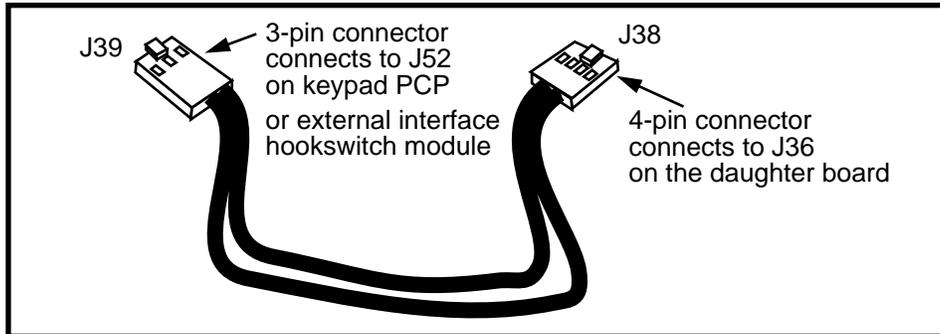
Note: This connection depends on what version of the upper bezel assembly is in the terminal.
 - b) Route the cable so it reaches the control-board side of the terminal.
 - c) Connect the J38 end of the interconnect cable, shown in Figure 3-15, to the connector on the smart card alert daughter board (J36).





3-32 PCP assembly components

Figure 3-15: Keypad PCP smart card alert cable



- d) Connect the alerter cable to connector J37 on the smart card alert daughter board. Refer to Figure 3-18 for daughter board connectors.

Figure 3-16: Alerter/keypad SCA connections

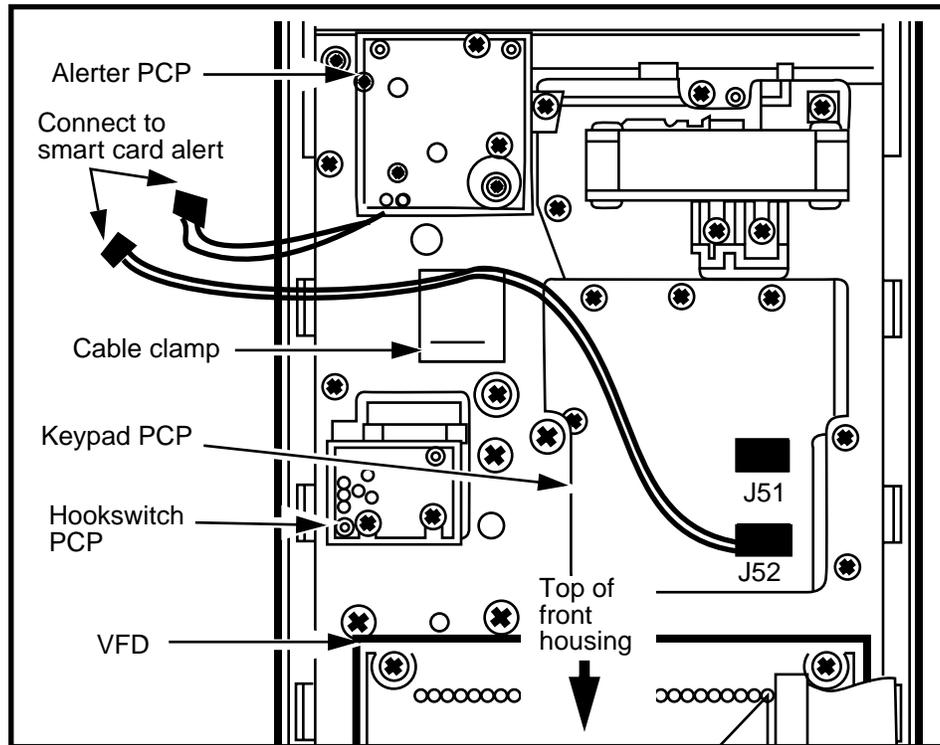




Figure 3-17: External interface hookswitch SCA connections

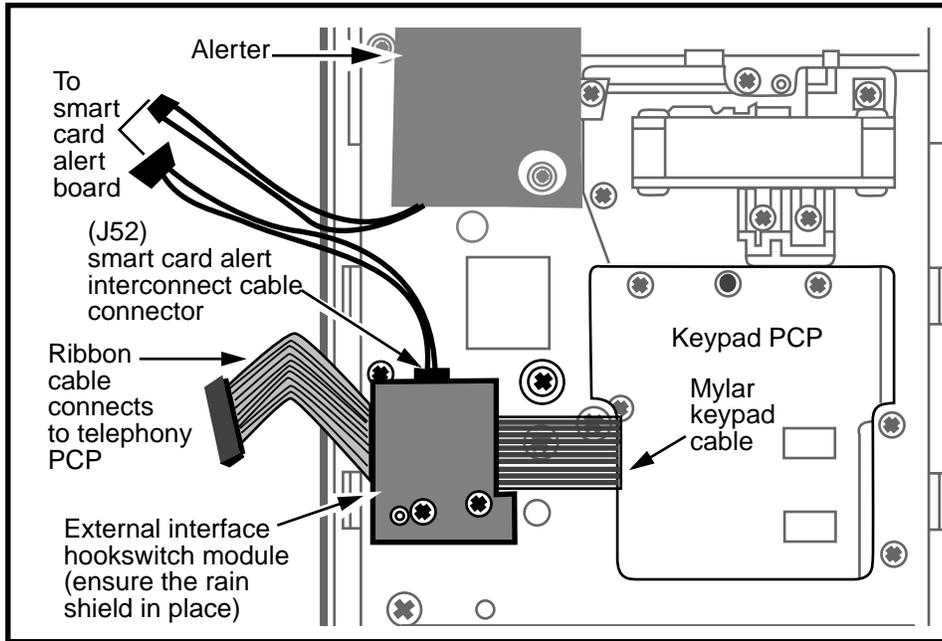
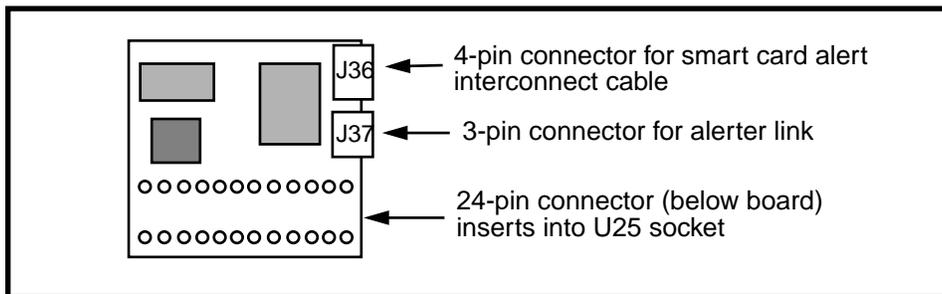


Figure 3-18: Smart card alert board connections



8. Ensure that all the connectors are properly seated.
9. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.





3-34 PCP assembly components

- c) Close and lock the terminal.
 - d) If you installed a kit for the first time and changed the firmware, run the INSTALL routine.
10. Test terminal function, including the smart card alert alarm:
- a) Take the handset off-hook.
 - b) Insert a smart card into the card reader.
 - c) Place the handset back on hook.
 - d) Wait for the alarm to sound.
 - e) Remove the smart card.

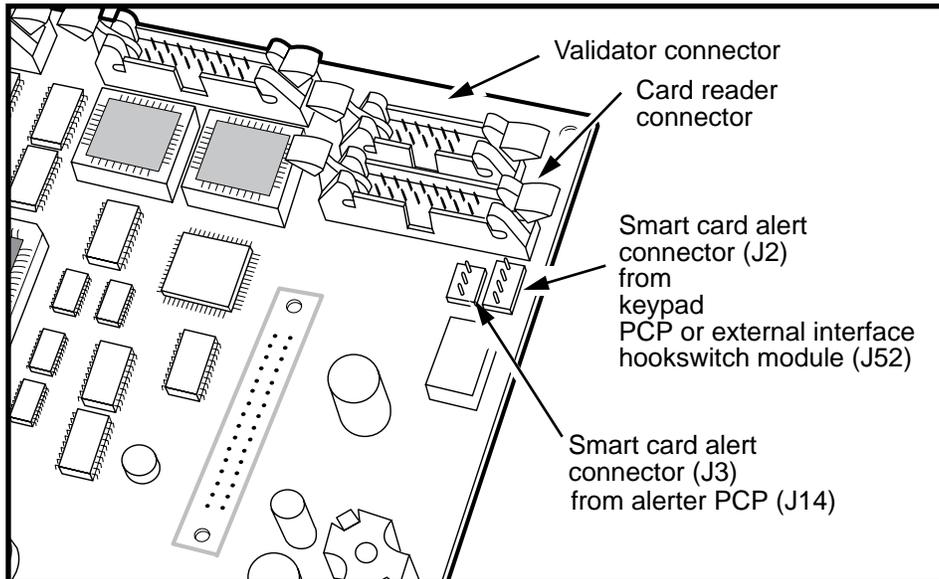
Connecting SCA to the multi-application PCP

If the terminal you are working with has a multi-application control PCP, the smart card alert connectors are on the main board, along the right edge.

Refer to Figure 3-19.



Figure 3-19: Smart card alert connectors





PCP assembly components **3-35**

To connect the cables which make up the smart card alert feature to a multi-application control PCP, follow this procedure:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you replace components.
---------------------------	------------------------------------------------------------------------------------------------------------------------------

- attached your ESD wrist strap to the ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Connect your ESD wrist strap inside the terminal. • Disconnect the power. • Do not reconnect the power until you are ready to close the terminal. <p>Failure to follow these procedures may damage the electrostatic-sensitive devices.</p>
---------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2. Connect the cable from the alerter module to J3 on the control PCP.
3. Connect the 4-pin connector of the smart card alert interconnect cable, shown in Figure 3-20, to the J2 connector on the control PCP.

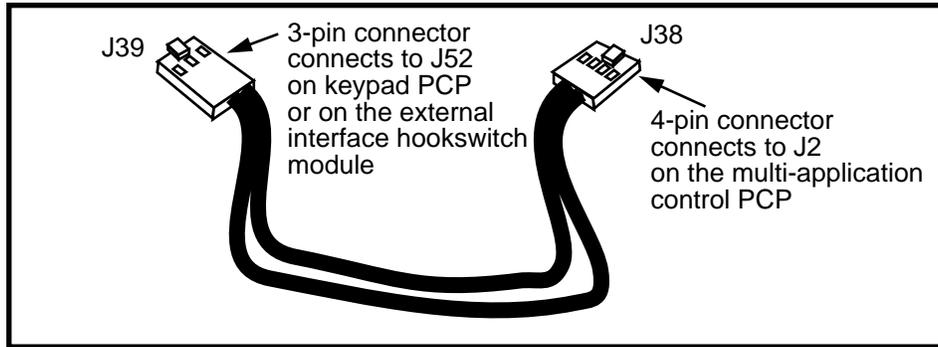
This cable will have a three-pin connection to either the keypad PCP (refer to Figure 3-21) or the external interface hookswitch module (refer to Figure 3-22), depending on the configuration of keypad/hookswitch in the terminal.





3-36 PCP assembly components

Figure 3-20: Keypad PCP smart card alert cable



4. Ensure that all the connectors are properly seated.

Figure 3-21: Alerter/keypad SCA connections

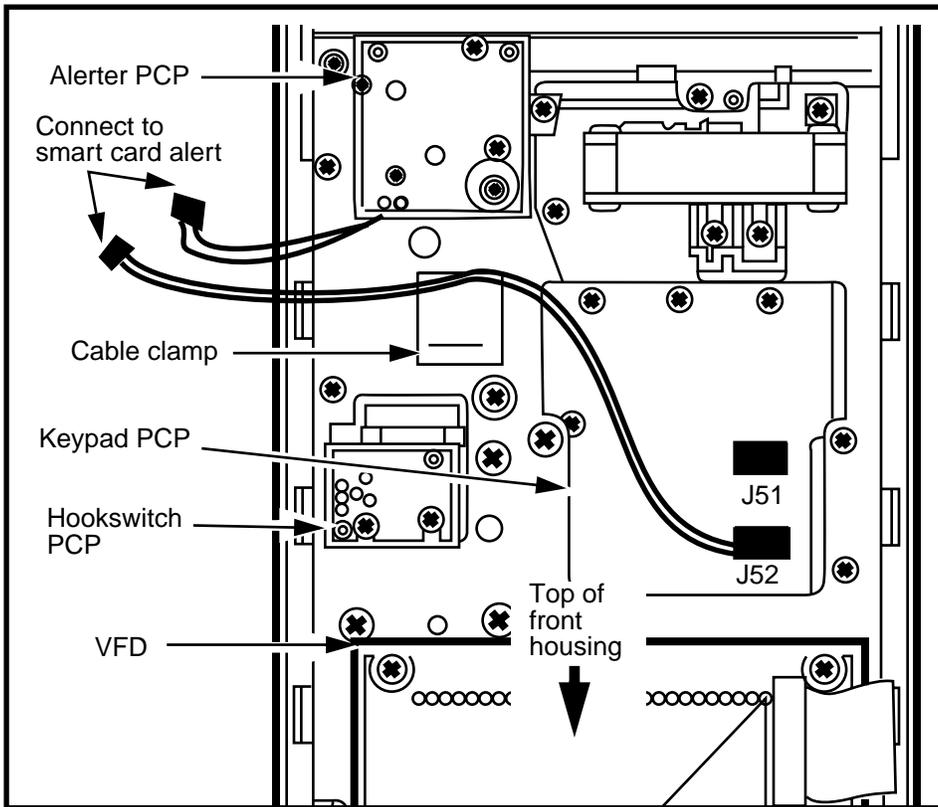
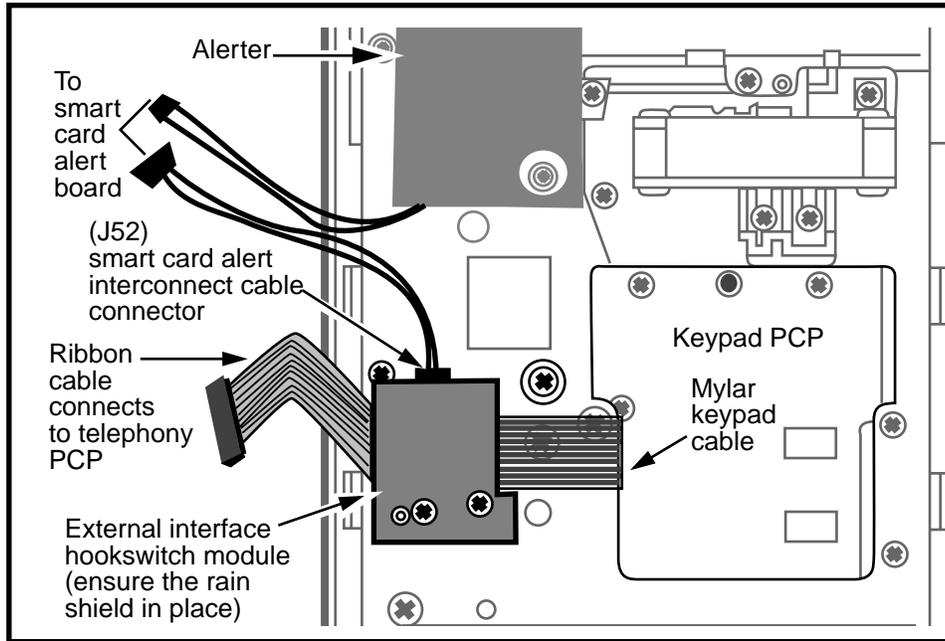




Figure 3-22: External interface hookswitch connections



5. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
6. Test the alarm:
 - a) Take the handset off-hook.
 - b) Insert a smart card into the card reader.
 - c) Place the handset back on hook.
 - d) Wait for the alarm to sound.
 - e) Remove the smart card.





3-38 PCP assembly components





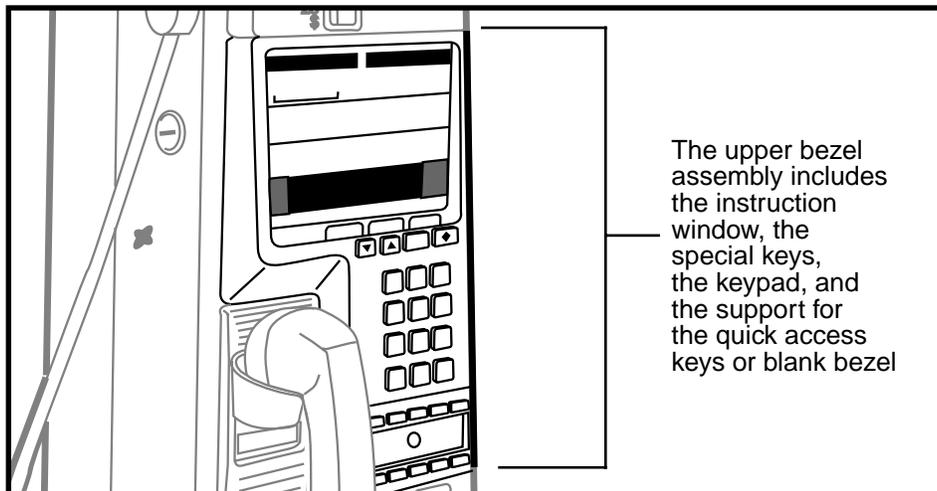
4 Upper bezel components

This section describes the replacement of the various parts which, as a whole, make up the upper bezel assembly.

These parts include the:

- vacuum fluorescent display (VFD), which is attached to the clamp plate or display assembly (large-screen terminals)
- upper bezel itself, which includes the keypad PCP
Note that there are two types of bezels
- display window and gasket
- quick access keys or blank bezel

Figure 4-1: Upper bezel assembly outside view





4-2 Upper bezel components

Replacing the VFD

The VFD (vacuum fluorescent display) is a two-line by 20-character display located behind the PCP assembly.

It is attached to a metal clamp plate, which provides some protection from the display being damaged through the display window.

See this:



Coin basic w/o display terminal

This terminal does not have a permanent display.

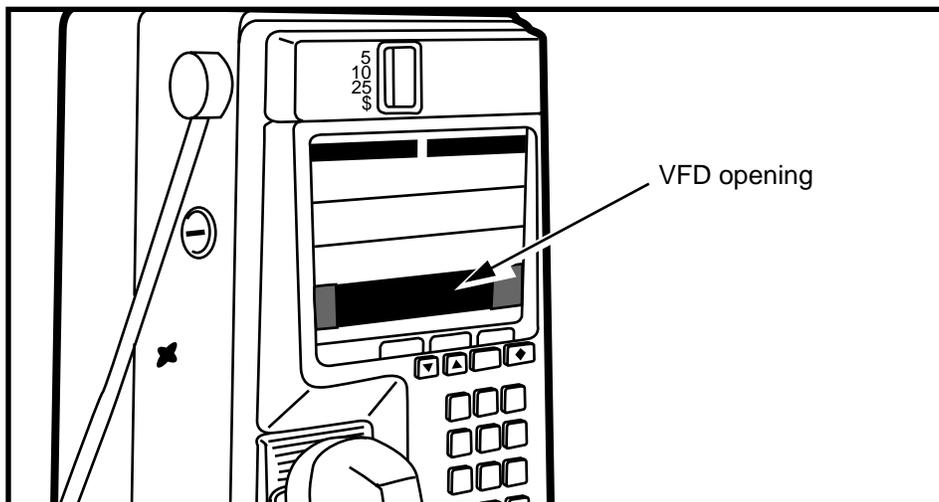
A black plastic shield covers this area during regular operation.

For maintenance procedures, you must install a Coin basic portable display.

For detailed instructions for installing this portable display, refer to Chapter 6.



Figure 4-2: Exterior aspect of two-line VFD

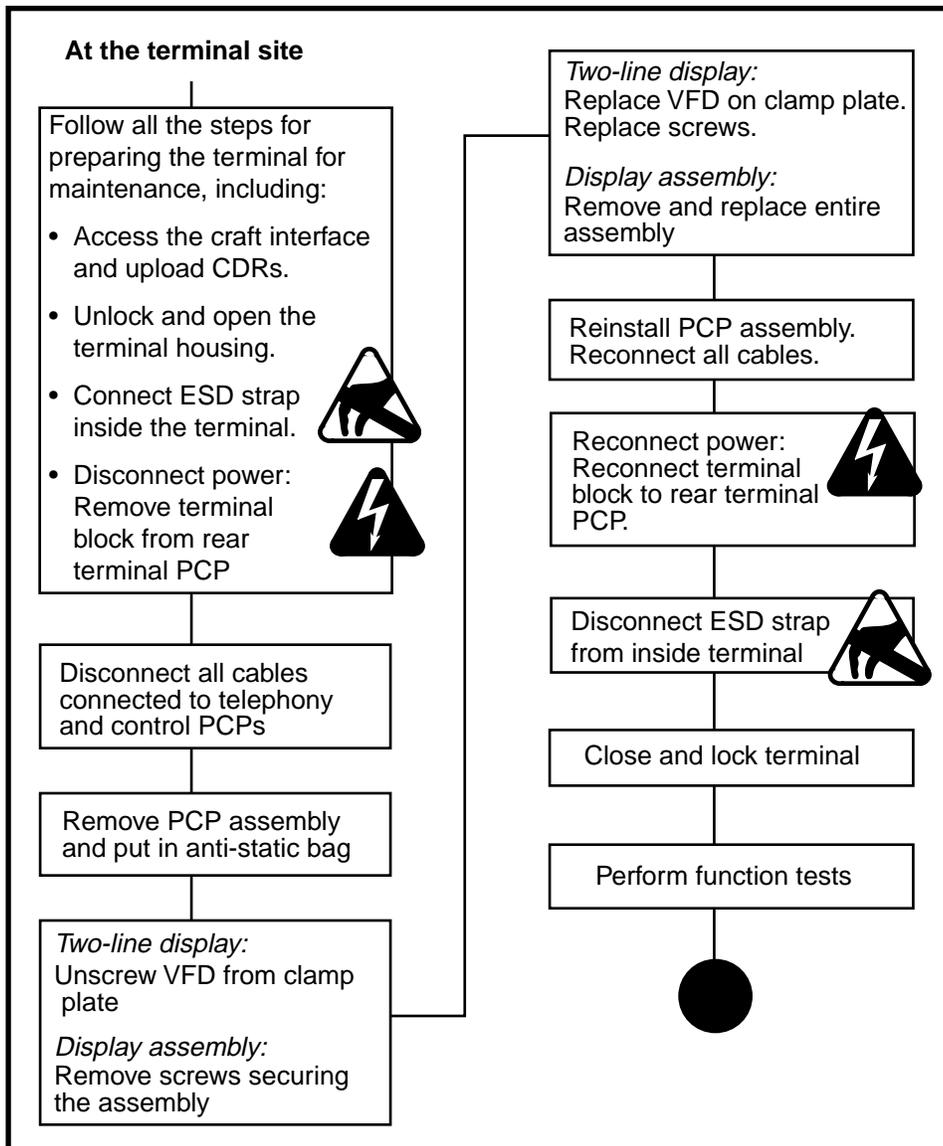




Flowchart

The following flowchart describes the key points to replacing the two-line VFD.

Figure 4-3: Flowchart — replacing the display





4-4 Upper bezel components

Replacing the two-line VFD

To replace a two-line VFD, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start!</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you perform maintenance inside the terminal.
---------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you perform maintenance inside the terminal.

- confirmed that your ESD wrist strap is connected to an ESD point inside the terminal
- removed the terminal block from the rear terminal PCP to disconnect the power.

<p>Electrostatic discharge (ESD)</p>	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points. • Disconnect the power. • Do not reconnect until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag.
---------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Failure to follow these precautions may damage ESD-sensitive components.

- removed the PCP assembly as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.

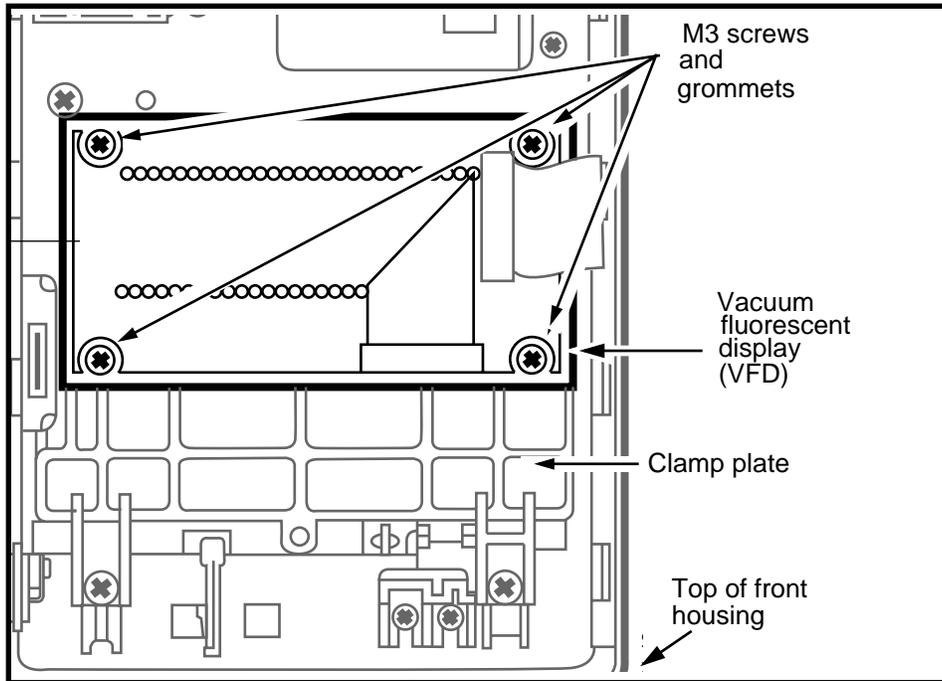




Upper bezel components 4-5

2. Remove the four M3 screws that attach the display to the clamp plate.
Use a #1 type 1A cross-recess screwdriver.
Refer to Figure 4-4.

Figure 4-4: Locating the VFD screws



3. Remove the display from the terminal.
4. The display is surrounded by a clear ESD shield. If the new display does not have this shield, transfer it from the damaged VFD to the new VFD.

Refer to Figure 4-5.

5. To replace the display:
 - a) Insert the rubber grommets between the VFD PCP and the top leaf of the ESD shield.
 - b) Place the assembly over the clamp plate and reattach the screws in all four corners.

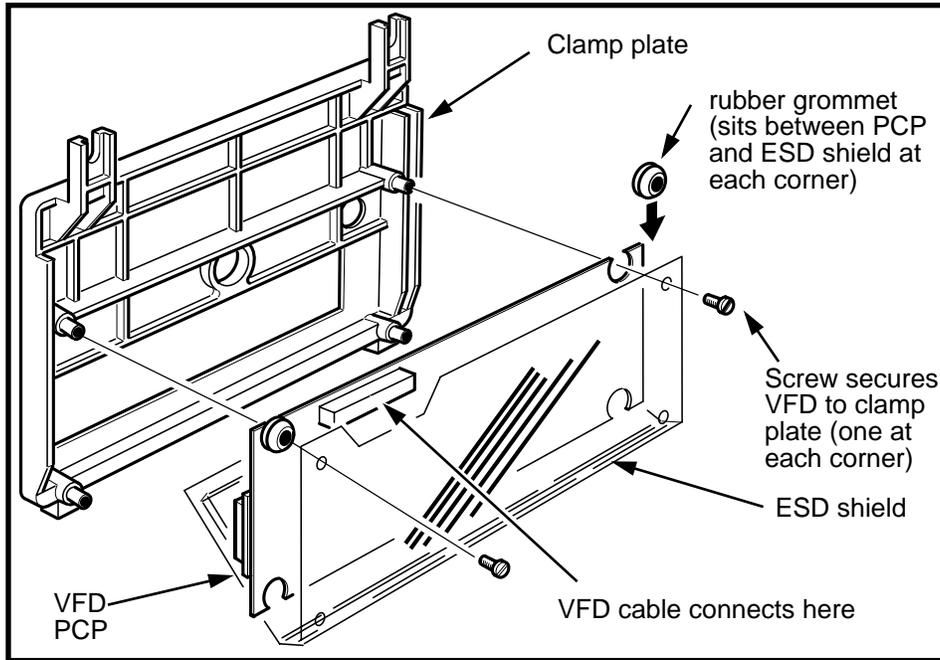
Refer to Figure 4-4.





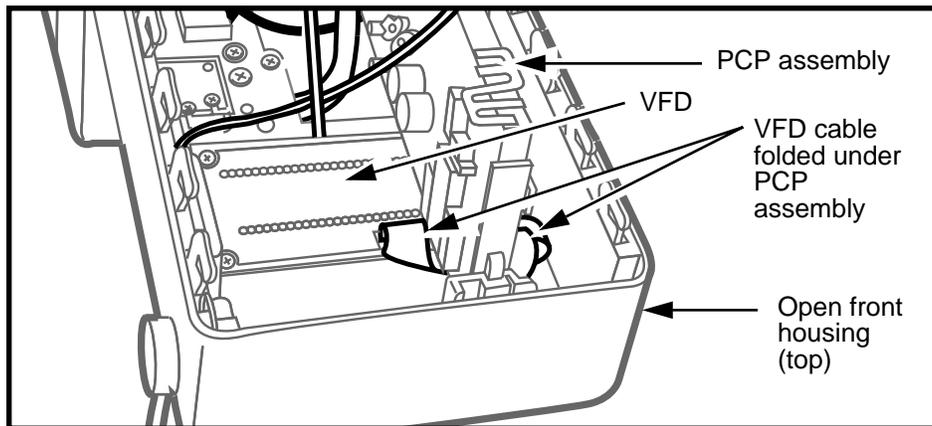
4-6 Upper bezel components

Figure 4-5: Attaching the VFD to the clamp plate



- c) Maintain the bend in the cable so it sits under the PCP assembly.
- d) Connect the cable to the J20 connector on the control PCP.

Figure 4-6: Folding the VFD cable under the PCP assembly





6. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.
7. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
 - d) Perform craft interface display test.
8. Perform function tests.

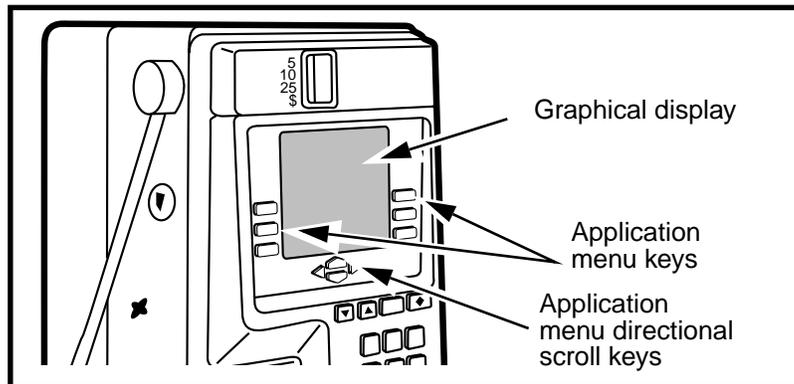
Replacing the graphical display assembly

Some applications for Multi-pay-based terminals require an extended **display assembly** which fits into the entire display window area of the terminal. Refer to Figure 4-7.

This display is 10 lines deep by 22 characters wide. However, for call processing, only the top two lines are used to display the standard prompts and advertising.

Six keys on either side of the screen and four directional keys below the screen allow navigation through application menu screens. The buttons are application-specific.

Figure 4-7: Exterior parts of the graphical display assembly





4-8 Upper bezel components

To replace the graphical display, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.
--------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.

- attached your ESD wrist strap to an ESD connection point inside the terminal
- confirmed that the power has been disconnected from the rear terminal PCP

<p>Electrostatic discharge (ESD)</p>	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points. • Disconnect the power. • Do not reconnect until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag.
---------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Failure to follow these precautions may damage ESD-sensitive components.

- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the power.
- **Do not reconnect until you are ready to close the terminal.**
- Place any components you remove from the terminal into an anti-static bag.

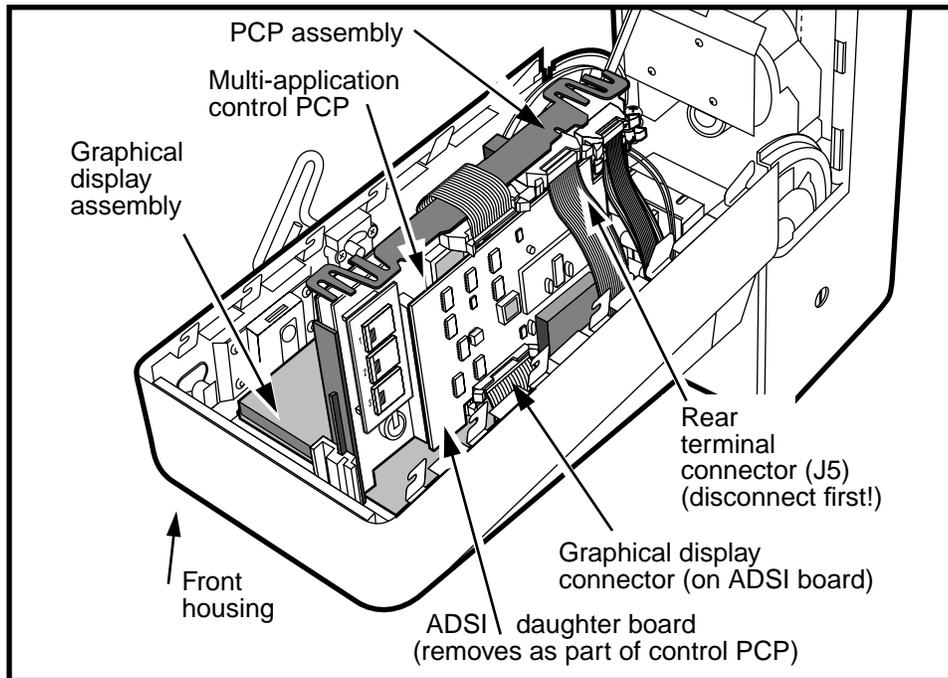
- removed the PCP assembly as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.

Note display cable connections in Figure 4-8





Figure 4-8: ADSI board display connection



WARNING



Connectors:

To disconnect cable connectors from PCP connectors, press down on the tabs on the sides of the connectors.

2. The display assembly cable can be replaced separately from the module if only the cable is damaged.

Follow these steps to replace a damaged cable:

- a) Remove the black, plastic cover from the back of the display assembly.

There are four tabs holding it on, two at the top, and one on either side.

- b) Press down on the tabs on either side of the connector attached to the ribbon cable to release the cable connector.





4-10 Upper bezel components

- c) Grasp the cable connector firmly and pull up.
- d) Install a new cable:
 - Line the cable connector up straight with the connector on the display PCP.
 - Ensure that both ends of the cable connect so that the number one pin connects in the same place for both connectors.

WARNING	Crossing the connections on this cable will damage the components.
----------------	--------------------------------------------------------------------



- Press firmly down on the cable connector until the tabs re-engage.

- e) Replace the black plastic cover over the back of the display assembly. Ensure that all four tabs are properly hooked under.

- 3. If the assembly itself is damaged, follow these steps to remove the display assembly:

- a) Use one hand to support the ID bezel on the outside of the terminal.
- b) Remove the two screws which attach the assembly and the ID bezel to the terminal.

Use a #1 type 1A cross-recess screwdriver.

Refer to Figure 4-9.

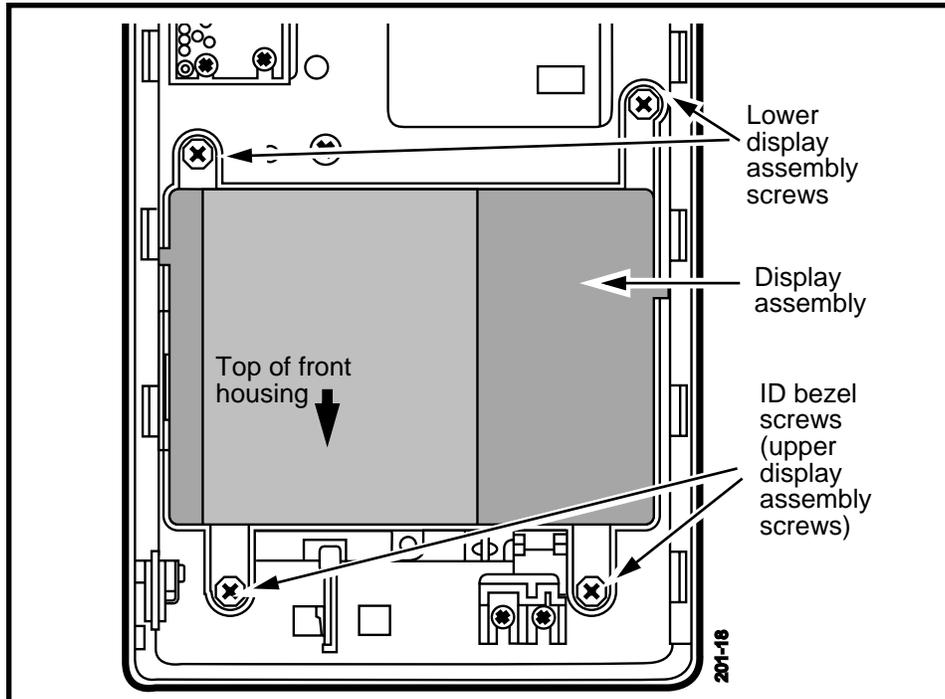
- c) Remove the ID bezel and set it aside.
- d) Remove the two screws attaching the bottom of the assembly to the terminal.

Refer to Figure 4-5.





Figure 4-9: Graphical display and ID bezel screws



- e) Grasp the assembly at the top and bottom and lift up the right side to about 45 degrees. Refer to Figure 4-10.

Note: The assembly sits under the lock and swivel. To remove or replace it, angle the assembly so it slides under these components.

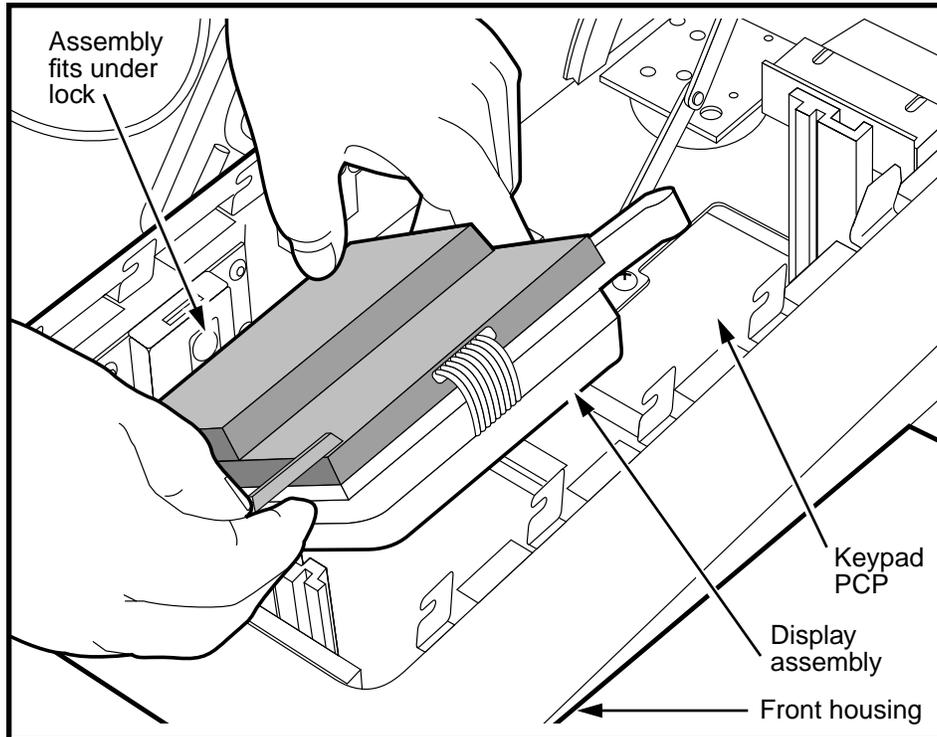
- f) Pull the assembly out of the terminal.





4-12 Upper bezel components

Figure 4-10: Removing the graphical display assembly



4. Install the display assembly into the terminal.
 - a) Hold the display assembly at the top and bottom at about a 45-degree angle and fit it under the lock and swivel casings.
 - b) Shift the assembly until it sits flat in the window area of the front housing.
 - c) Reattach the bottom two screws to hold the assembly in place.
 - d) Replace the ID bezel on the front of the terminal. Replace the top screws which hold the display assembly and the ID bezel to the housing.
5. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.





WARNING



Reversing or crossing this connection could result in damage to the boards.

Cable connections:

Ensure that the cable between the VFD and the ADSI board is correctly connected.

This means that the connectors at either end of the cable should be connected with the same orientation. For instance, the #1 pin should connect to the same opening at both ends.

This orientation is shown in Figure 4-12.

Figure 4-11: Display connection on ADSI board

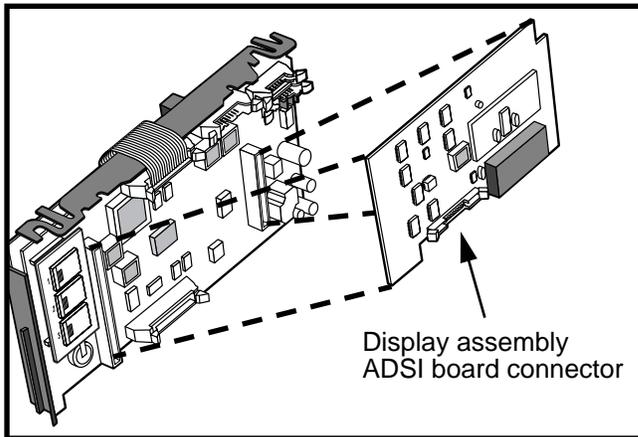
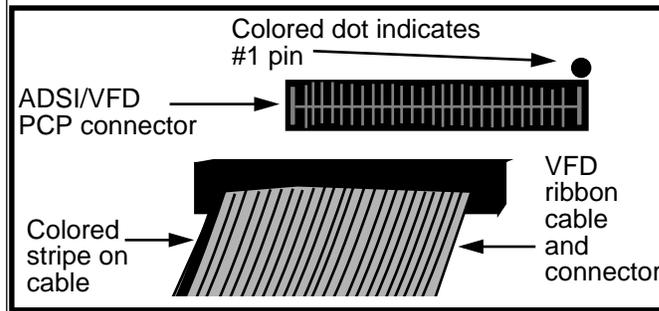


Figure 4-12: Connecting graphical display cable





4-14 Upper bezel components

6. Reconnect the power at the rear terminal PCP.
7. Close and lock the housing assembly as explained in **Restoring the terminal to operation** on page 2-10.
8. Re-install or replace the abrasion shield if necessary, as described in **Replacing the abrasion shield**, below.

Replacing the abrasion shield

The abrasion shield is the clear, 0.5 mm Lexan sheet which fits over the external VFD area of the large-screen terminal.

This covering is replaced from outside the terminal, as described below:

1. Make sure the terminal is closed and the abrasion shield to be removed is clean.
2. Press the suction cup firmly on to the center of the VFD window.
3. Pull on the suction cup until the window bends enough to pop out of the enclosure.

See this:



A vacuum forms between the abrasion shield and the VFD window.

To break this seal, you must pull on the suction cup with a steady, even pressure until the vacuum releases and the abrasion shield buckles away from the display window.

Once this happens, you can pull quickly on the suction cup to remove the abrasion shield from the frame.

4. Discard the removed sheet according to your company procedure.

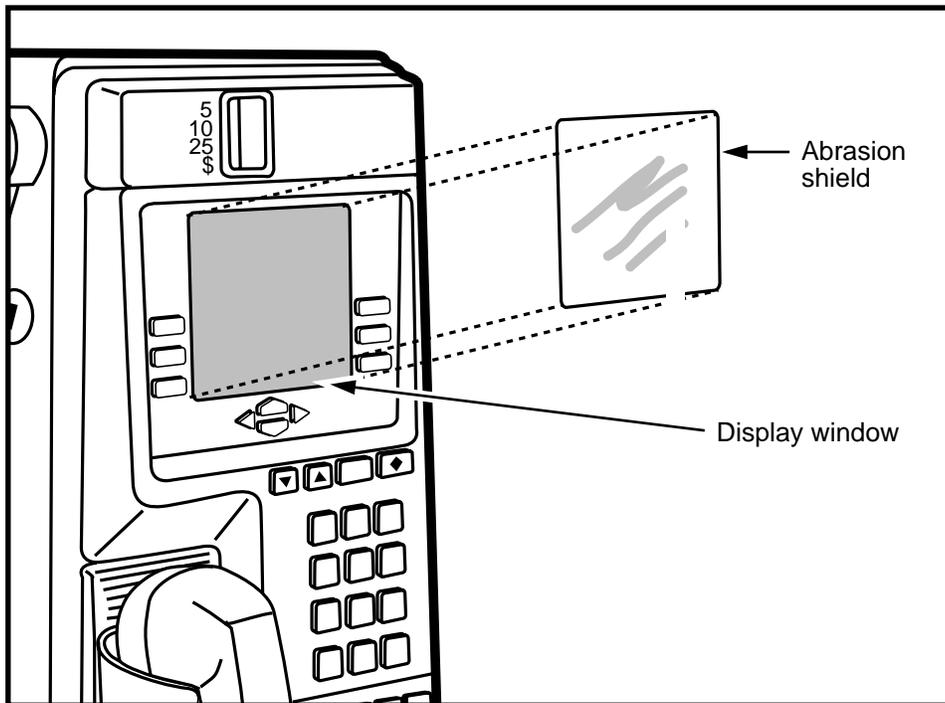




5. To install the new abrasion shield:
 - a) Ensure the track around the window is clear of any debris.
 - b) Clean the display area, if necessary. Remove all dust and fingerprints to optimize readability.
 - c) Hold the new abrasion shield by the edges and remove the protective plastic.
 - d) Place the lower edge under the bottom lip of the window opening.
 - e) Apply pressure to the outer edges of the shield, bending it until it snaps under all four edges.

Figure 4-31 shows the positioning in the window.

Figure 4-13: Installing the abrasion shield



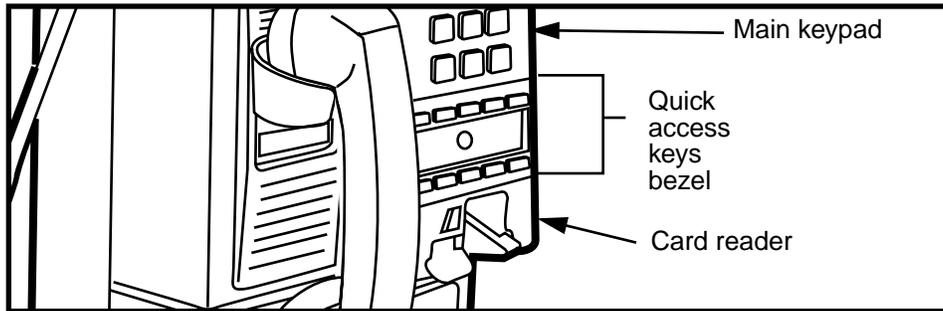


4-16 Upper bezel components

Replacing the quick access keys bezel

The factory equips each Millennium multi-pay terminal with ten- or five-button quick access key sets or a blank dialer bezel. This bezel is attached to the bottom of the keypad PCP, above the card reader.

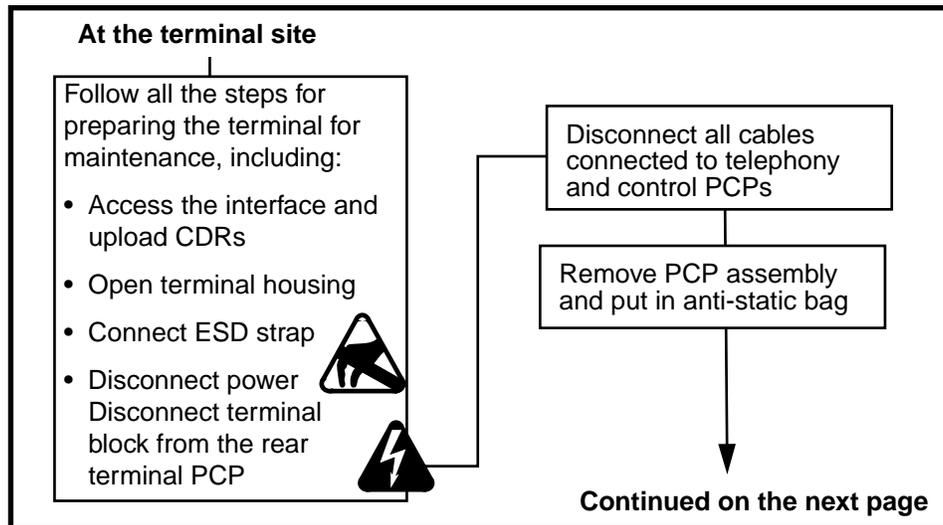
Figure 4-14: Quick access keys fit below keypad



Flowchart

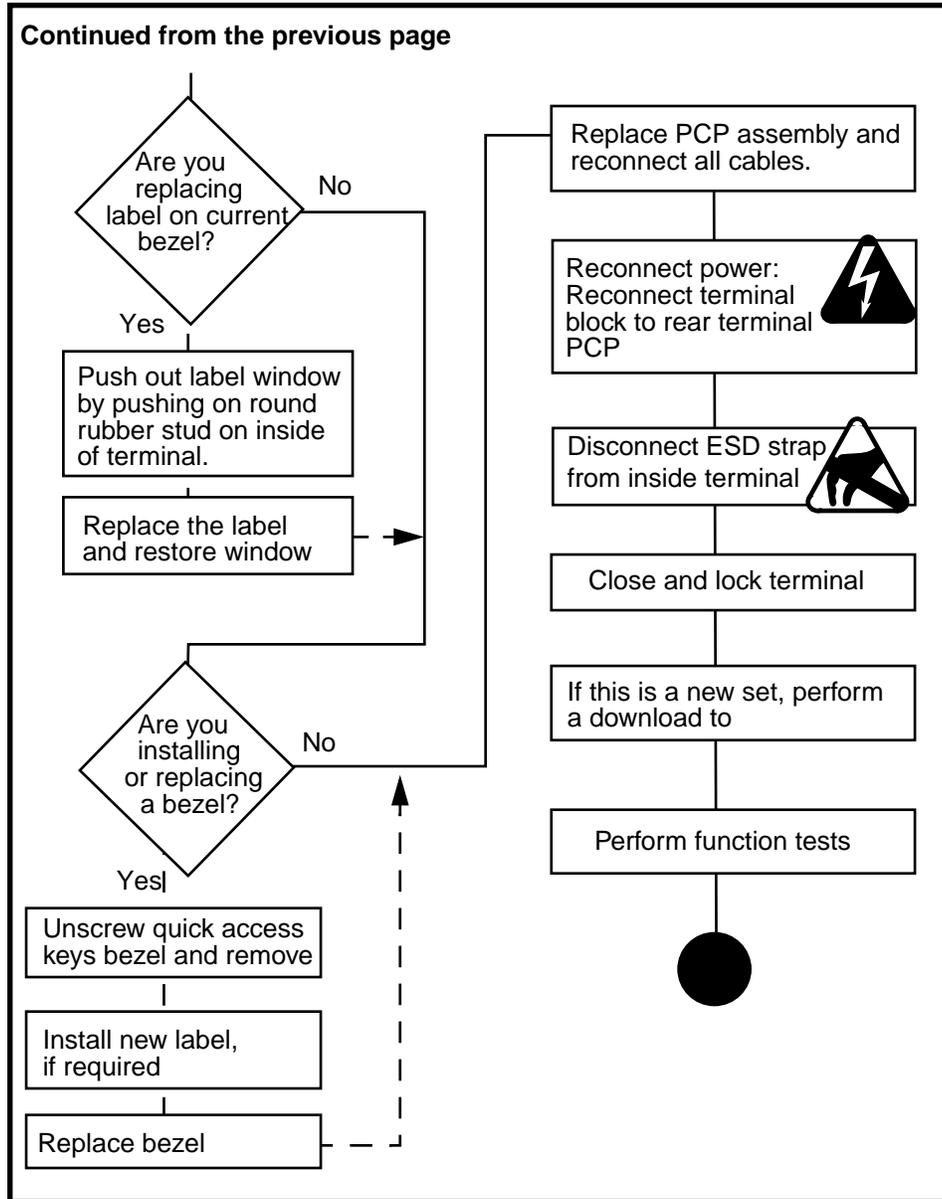
The following flowchart describes the key points to replacing the quick access keys bezel.

Figure 4-15: Flowchart — replacing the quick access keys, page 1





Flowchart — replacing the quick access keys, page 2





4-18 Upper bezel components

Replacing quick access keys

To replace the quick access keys bezel, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start!

- Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.

- connected ESD strap to an ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

Electrostatic discharge (ESD)



Failure to follow these precautions may damage ESD-sensitive components.

- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the power.
- **Do not reconnect until you are ready to close the terminal.**
- Place any components you remove from the terminal into an anti-static bag.

- removed the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside





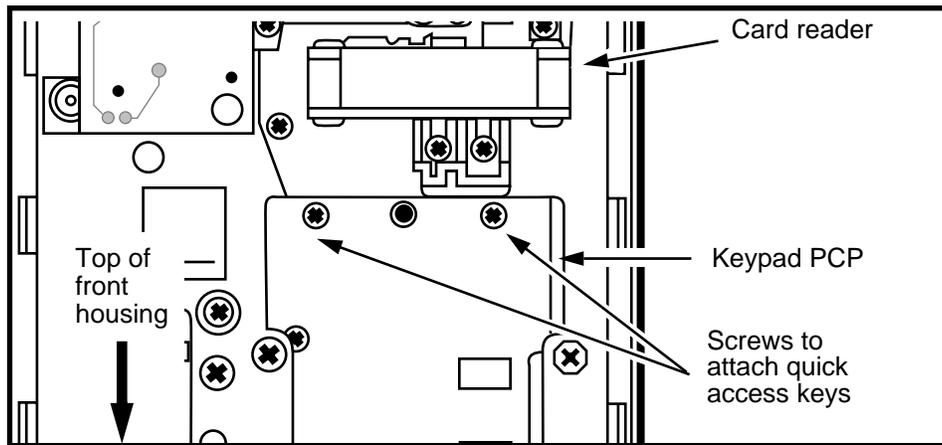
Upper bezel components 4-19

2. Remove the two M3.5 tapping screws securing the quick access keys bezel above the card reader on the inside of the upper housing.

Use a #2 type 1A cross-recess screwdriver.

These screws are labelled in Figure 4-16.

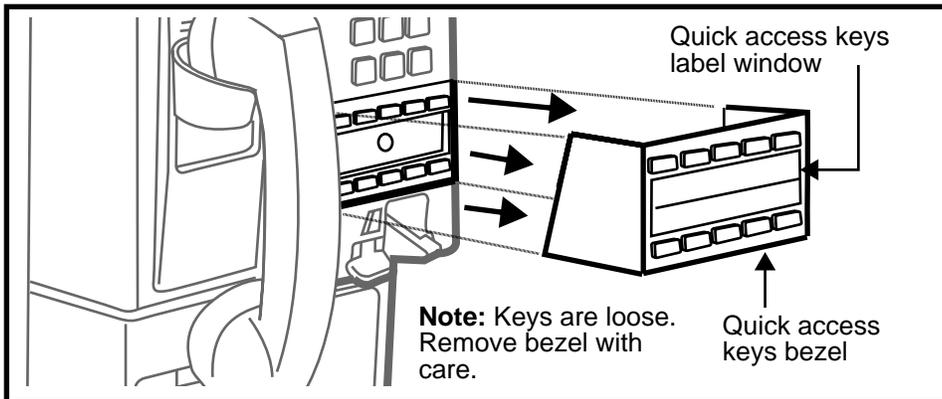
Figure 4-16: Quick access keys screws



3. Lift the upper housing until you can remove the quick access keys bezel by pulling it from the front of the terminal. Refer to Figure 4-17.

Note: Keep the bezel slightly tilted forward to prevent the keys from falling out of it.

Figure 4-17: Removing the quick access keys bezel





4-20 Upper bezel components

4. Install the new quick access keys bezel by pushing it into position on the front of the terminal.
5. Secure the quick access keys bezel from inside the front housing using the two M5 tapping screws.
6. Remove the button retainer, if there is one, from the quick access keys set bezel and discard.
7. Insert the keys label card under the quick access keys bezel window.

Replacing the label card

- a) From inside the front housing, push on the round rubber stud between the two screws securing the dialer bezel.

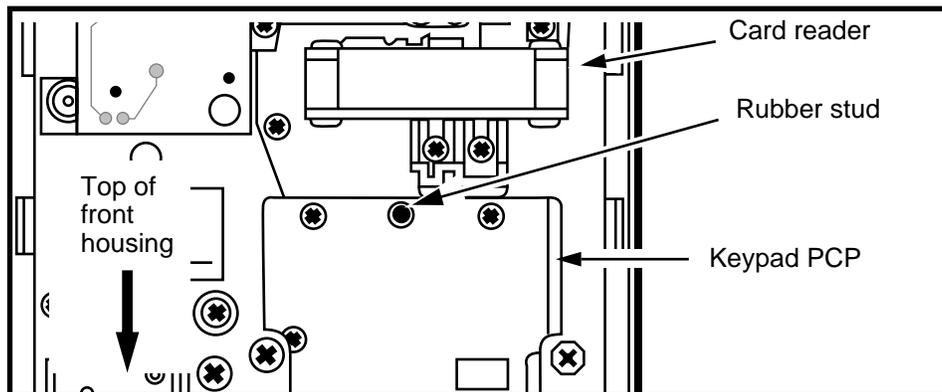
This stud is labeled in Figure 4-18.

Note: On newer terminals, this stud may not be accessible. In that case, use a penknife to pry the window out from the outside of the terminal.

- b) Bend the window outward until the center of the window is high enough to grasp.
- c) Pull the window out of its slot. Insert the label card behind the place where the window was.
- d) Insert one end of the window in position in the opening in the dialer bezel. Bend the window outward and insert the opposite end into position and then release it.



Figure 4-18: Quick access keys screws





8. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.
9. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
 - d) Force a download to acquire the table which activates the buttons.
10. Perform function tests.

Replacing the upper bezel assembly

The upper bezel assembly attaches to the front housing.

It contains the keypad assembly and the frame for the display window. The keypad assembly is sealed into the upper bezel assembly, so if there is a keypad problem, you usually replace the whole assembly.

Note: There are two types of upper bezel assemblies, based on a keypad PCP upgrade. For the purposes of this procedure, they will be described as bezel A and bezel B.

The two types of upper bezel assemblies look identical from the outside. They can be distinguished by how the keypad and hookswitch modules connect.

- **Bezel A:** the hookswitch connects to a connector (J51) on the keypad PCP.

If the smart card alert feature is present, a cable connects the keypad PCP connector (J51) to the smart card alert on the control PCP

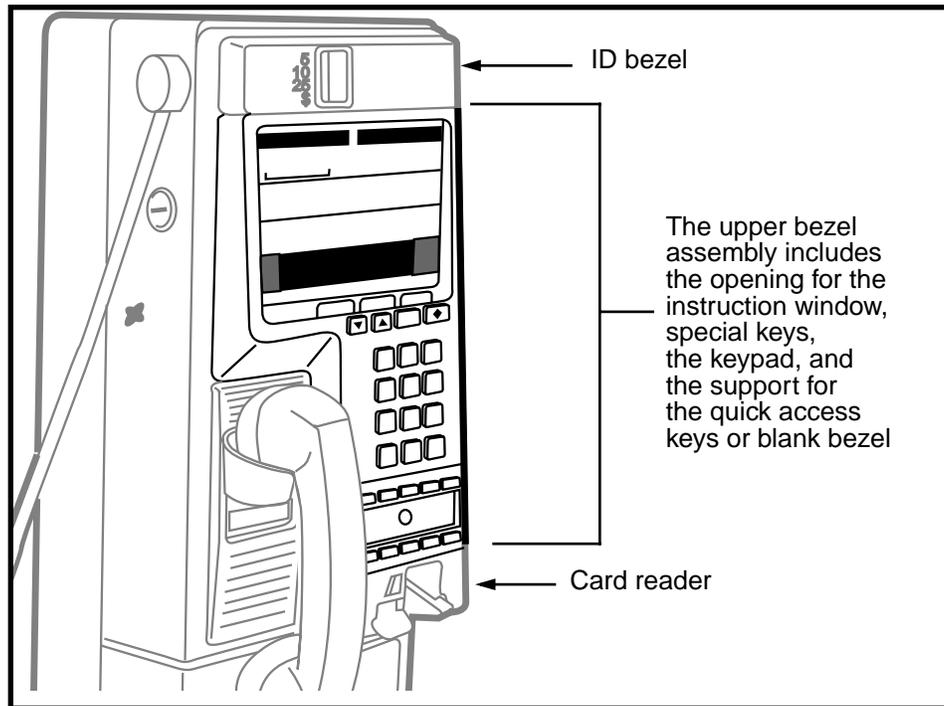
- **Bezel B:** the keypad connects to the external interface hookswitch PCP with a clear, mylar ribbon cable.





4-22 Upper bezel components

Figure 4-19: Upper bezel assembly, outside view



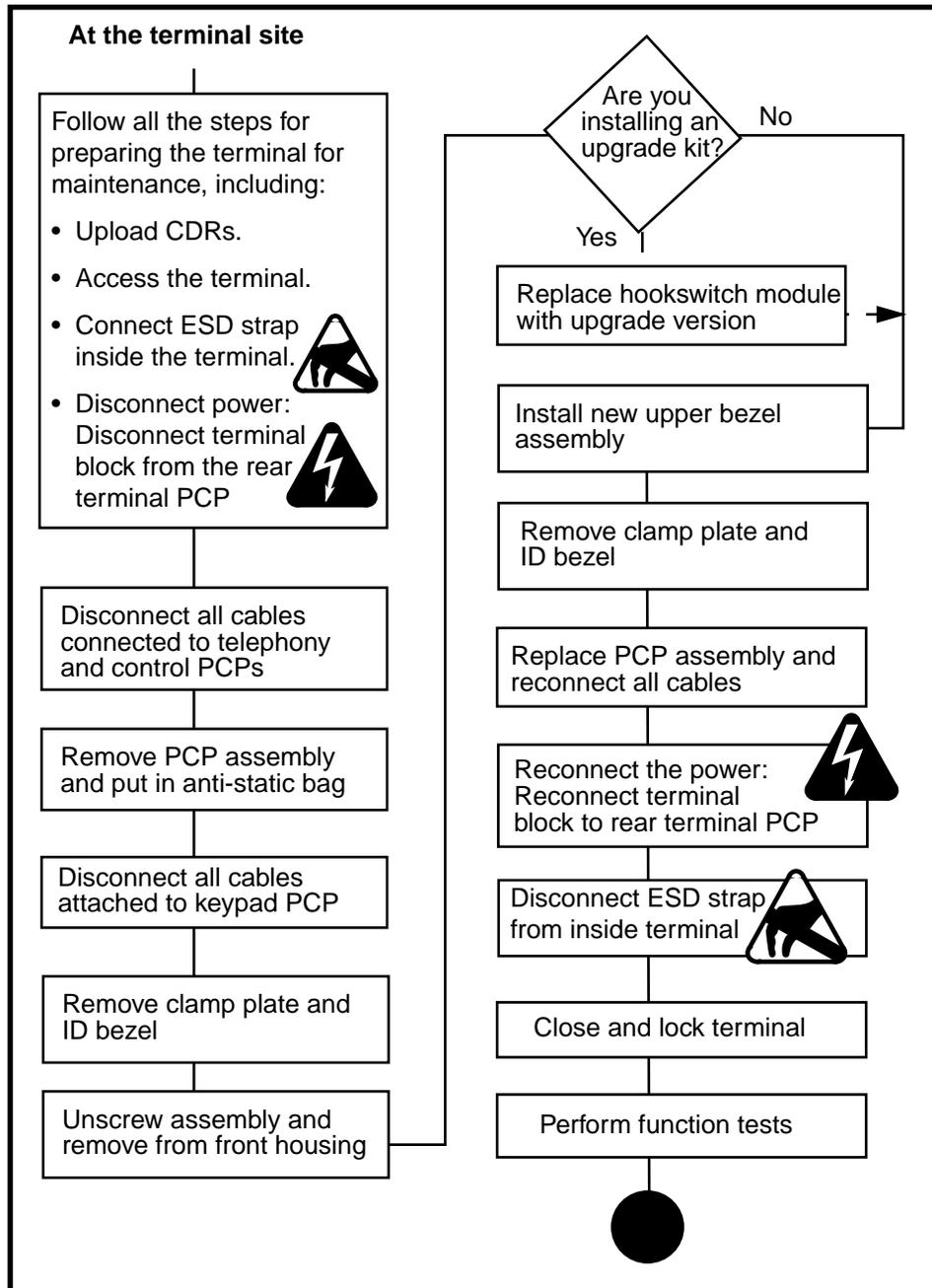
Flowchart

The flowchart in Figure 4-20 shows the key points to replacing the upper bezel assembly.





Figure 4-20: Flowchart — replacing the upper bezel assembly





4-24 Upper bezel components

Replacing the upper bezel assembly

The following procedure describes replacing the upper bezel assembly.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start!</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.
---------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.

- connected your ESD strap to an ESD connection point inside the housing
- disconnected the terminal block from the rear terminal PCP to disconnect the power.

<p>Electrostatic discharge (ESD)</p>  <p>Failure to follow these precautions may damage ESD-sensitive components.</p>	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points. • Disconnect the supplementary power supply. • Do not reconnect until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag.
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- Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.
- Disconnect the supplementary power supply.
- **Do not reconnect until you are ready to close the terminal.**
- Place any components you remove from the terminal into an anti-static bag.

- removed the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.
- **Bezel A:** the keypad connector is disconnected from the telephony PCP





Bezel B: the keypad connector is disconnected from the external interface hookswitch PCP

2. **Bezel A:** Disconnect the hookswitch cable (J13) from the connector on the keypad PCP (J51). Refer to Figure 4-21.

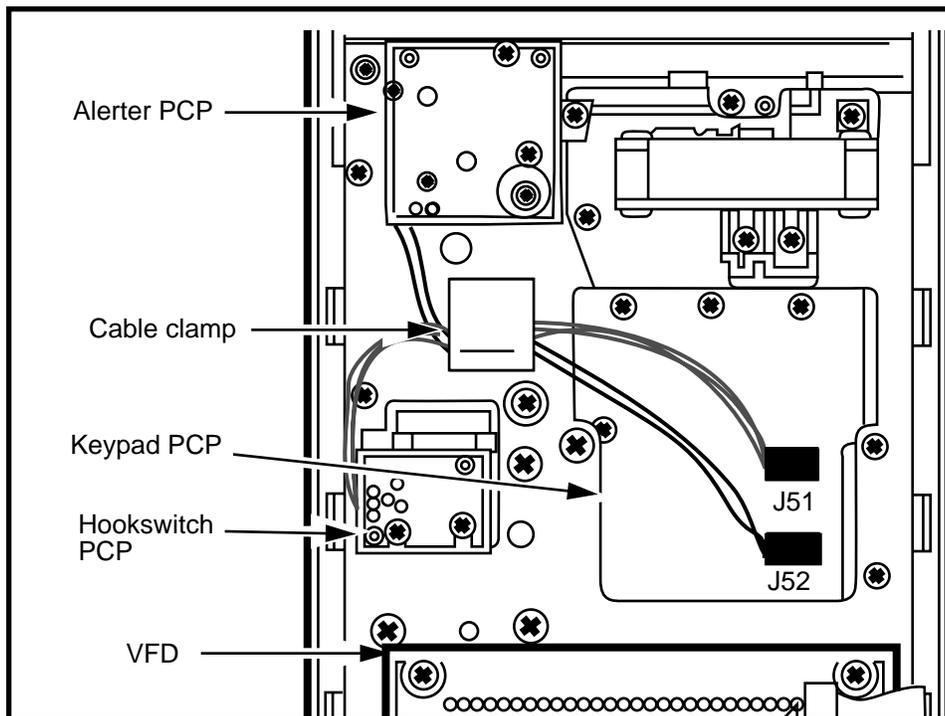
Bezel B: Disconnected in step 1.

3. **Bezel A:** Disconnect the alerter cable (J14) from the connector on the keypad PCP (J52). Refer to Figure 4-21.

If there is a smart card alert, the cable is connected to the smart card alert connector instead and should have been disconnected when the control PCP was removed.

Bezel B: No connections.

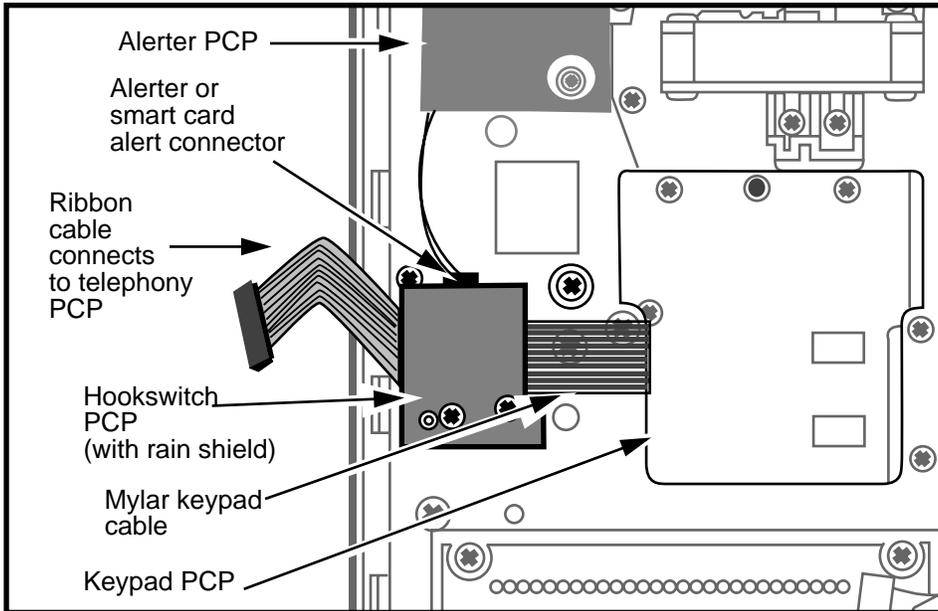
Figure 4-21: Bezel A — alerter/hookswitch connect to keypad





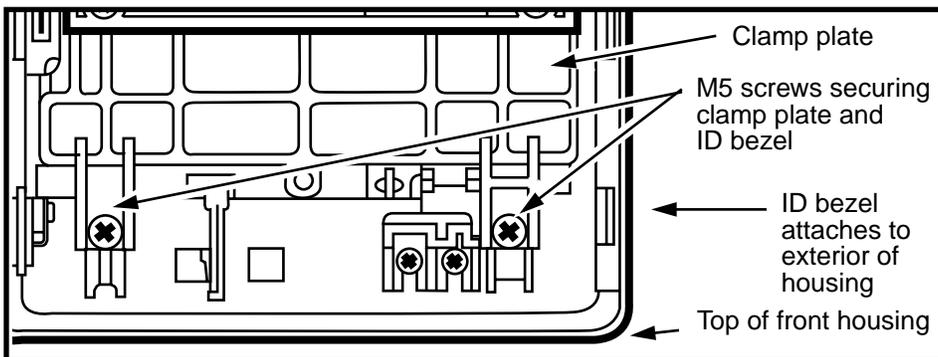
4-26 Upper bezel components

Figure 4-22: Bezel B — keypad/alerter connect to hookswitch



4. Remove the ID bezel.
 - a) With one hand, support the ID bezel on the outside of the terminal.
 - b) With the other hand, remove the two screws from inside the terminal. Refer to Figure 4-23.
 - c) Remove the ID bezel from the front of the terminal.

Figure 4-23: Locating the ID bezel screws



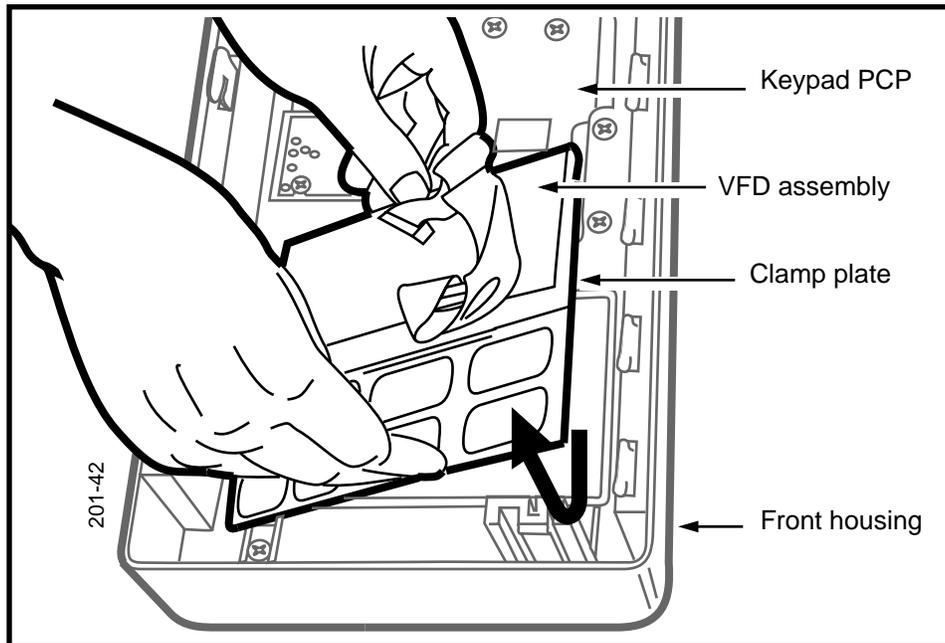


5. Lift out the clamp plate, with the VFD attached.

Refer to Figure 4-24.

For instructions for working with the large-screen graphical display assembly, refer to **Replacing the graphical display assembly** on page 4-7.

Figure 4-24: Removing the clamp plate



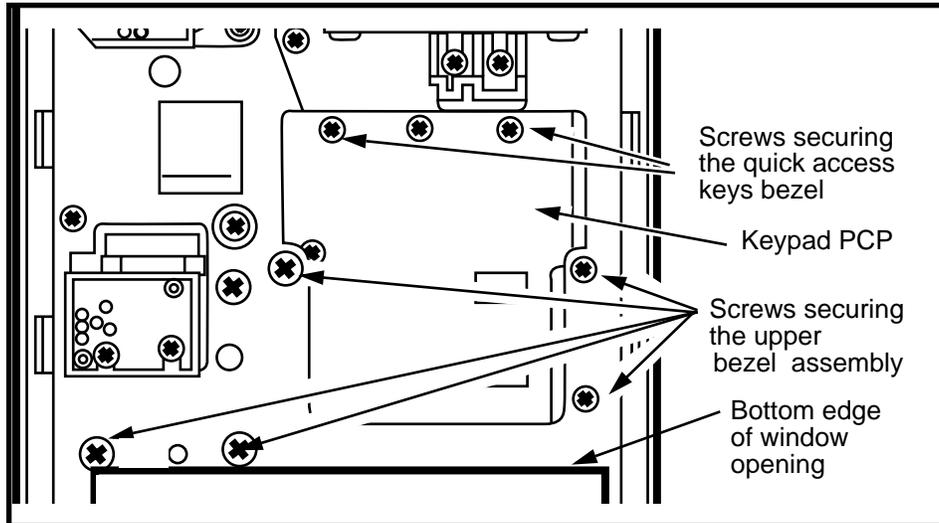
6. Use Figure 4-25 to locate the five M5 tapping screws which secure the upper bezel assembly.
7. Remove four of the five screws. Use a #2 type 1A cross-recess screwdriver.





4-28 Upper bezel components

Figure 4-25: Screws for the upper bezel assembly



8. With one hand, hold the upper bezel assembly.
9. Do the following to completely release the bezel from the terminal housing:
 - a) Remove the last M5 screw.
 - b) Loosen three turns the bottom two screws on the keypad PCP; this releases the dialer bezel interlock.

These screws are indicated in Figure 4-25.

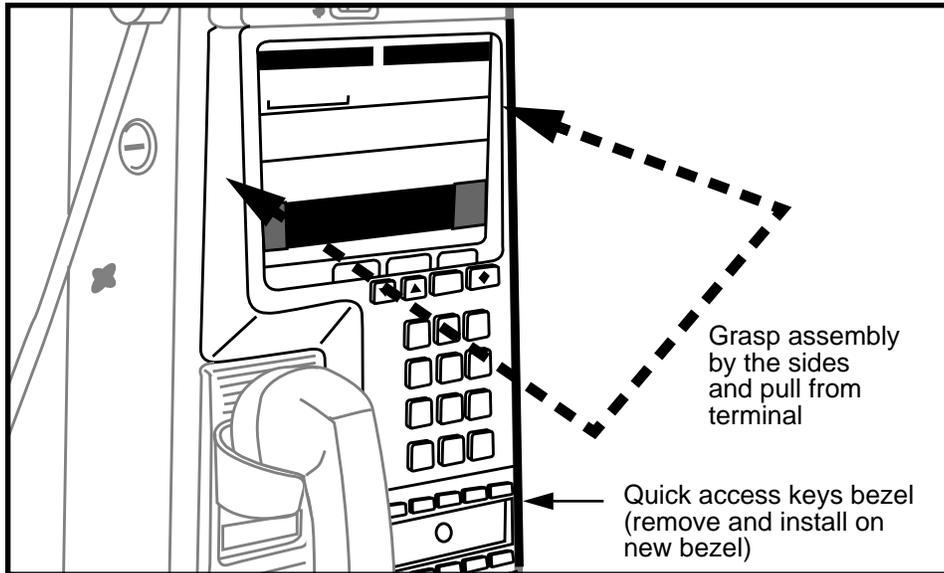
- c) Remove the upper bezel assembly by moving it down from the front of the terminal.

Refer to Figure 4-26.





Figure 4-26: Removing the upper bezel assembly



10. Remove the quick access keys or blank bezel from the upper bezel assembly as described in **Replacing the quick access keys bezel** on page 4-16.



11. Install the quick access keys bezel on the new upper bezel assembly.

Remember to loosen the screws three turns so the upper bezel assembly fits over the tab on the card reader.

12. Replace the upper bezel assembly by reversing the preceding steps.

Remember to tighten the two screws behind the quick access keys bezel.

13. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.

14. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

a) Reconnect the power to the terminal by recon-





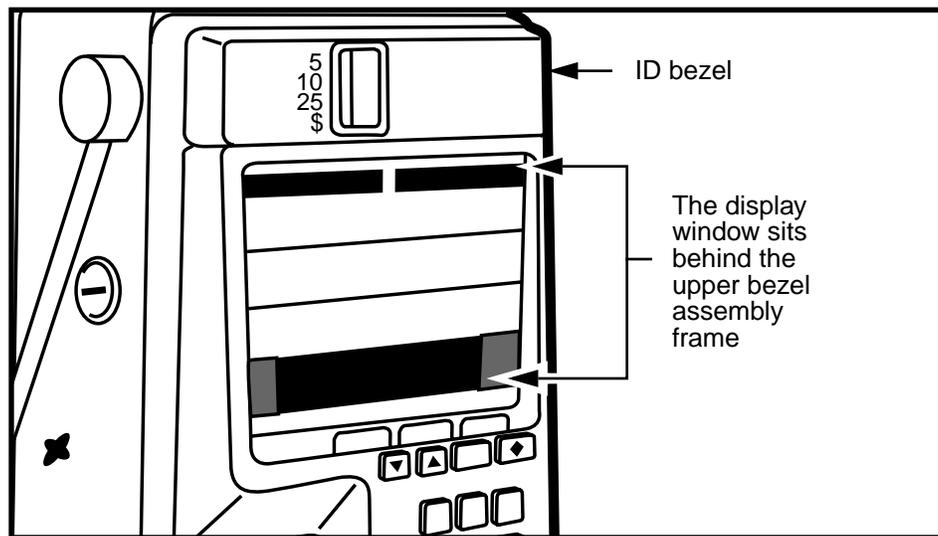
4-30 Upper bezel components

- necting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
15. Run the keypad test in the craft interface.
 16. Test terminal function.

Replacing the display window

The display window is the clear, high-impact plastic covering that sits in front of the clamp plate and under the upper bezel assembly. This window is replaced from inside the terminal, as described below.

Figure 4-27: Exterior aspect of display window



See this



Vintage alert!

Large-screen terminals

Graphic terminals with large screens do not require this component.

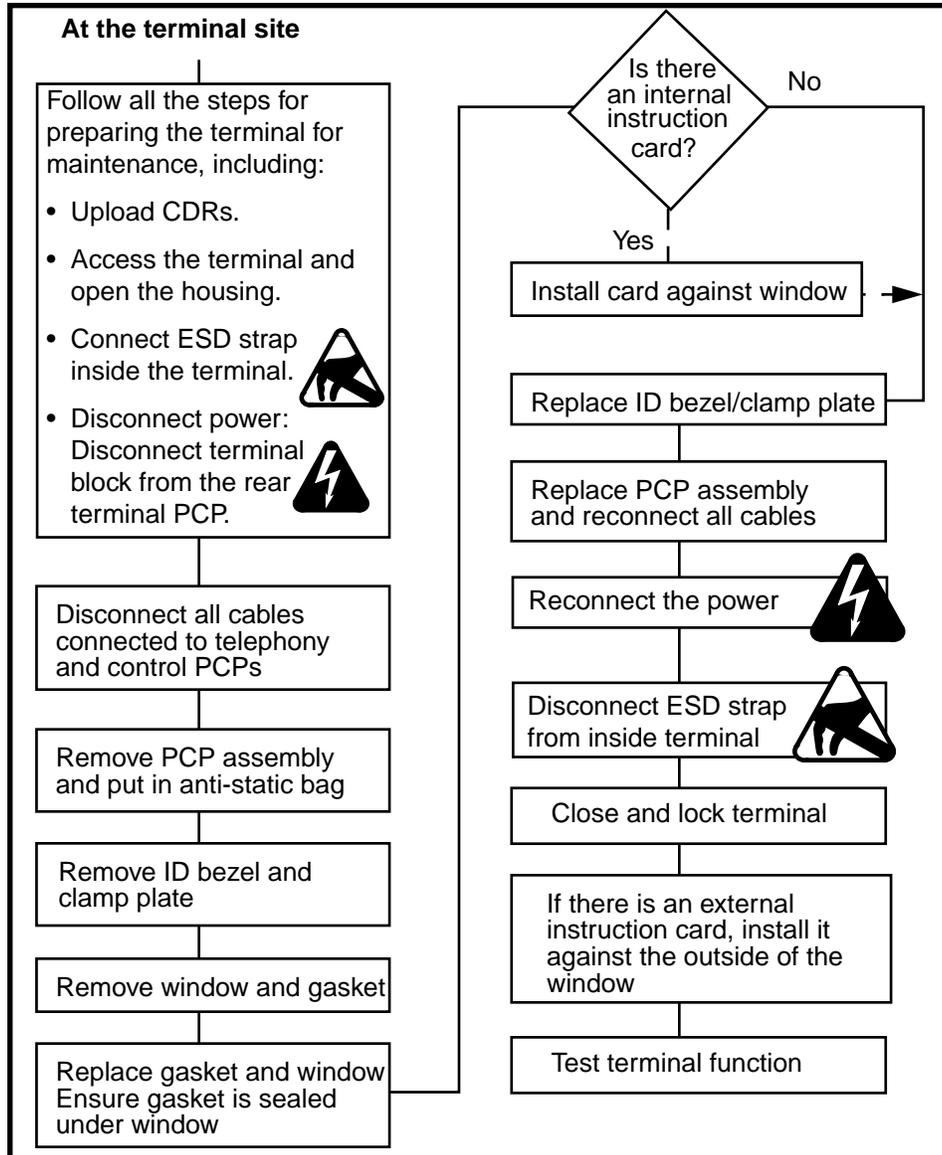




Flowchart

The flowchart in Figure 4-28 shows the key points to replacing the display window.

Figure 4-28: Flowchart — replacing the display window





4-32 Upper bezel components

Replacing the window

To replace the display window, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start!</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.
---------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.

- connected ESD wrist strap to an ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

<p>Electrostatic discharge (ESD)</p>	<ul style="list-style-type: none"> • Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points. • Disconnect the power. • Do not reconnect until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag.
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Failure to follow these precautions may damage ESD-sensitive components.

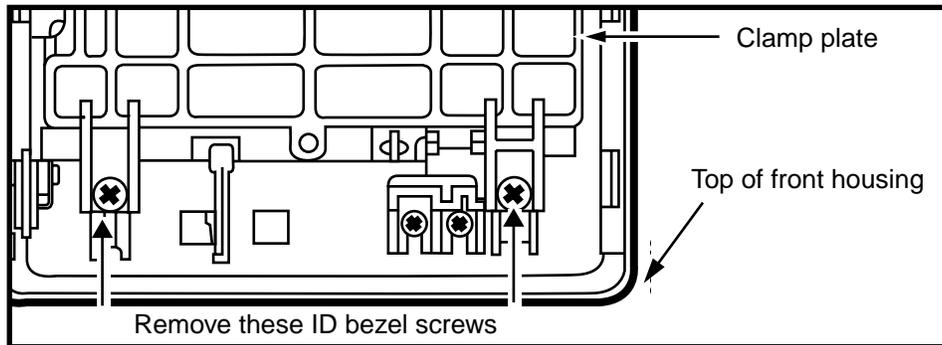
- removed the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.
2. On the outside of the terminal, hold your hand over the ID bezel. Refer to Figure 4-27.





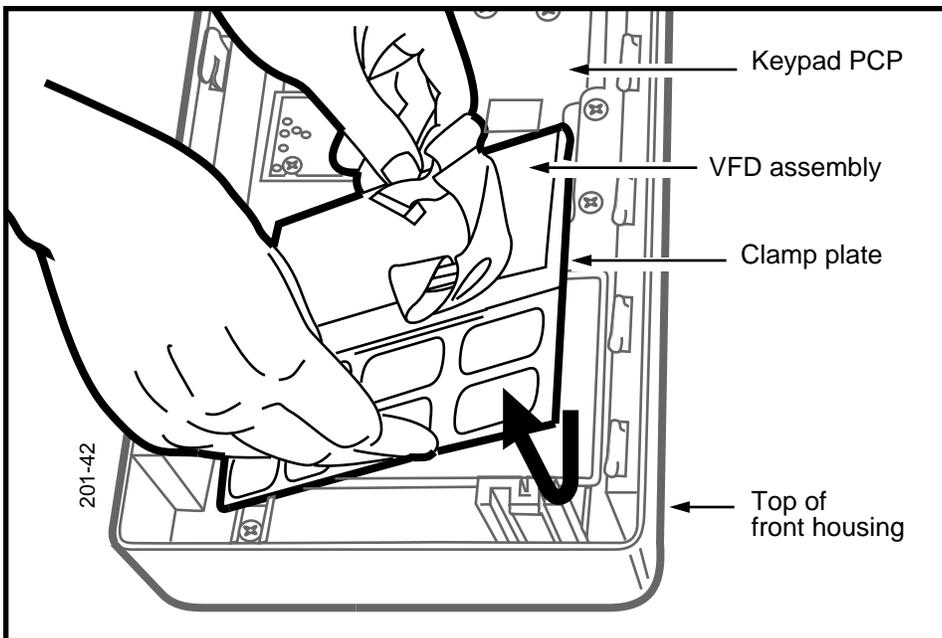
3. On the inside of the terminal, remove the two screws holding the ID bezel in place. Refer to Figure 4-29.

Figure 4-29: Locating ID bezel screws



4. From the front of the housing, remove the ID bezel.
5. On the inside of the terminal, remove the clamp plate and attached VFD assembly, shown in Figure 4-30.

Figure 4-30: Removing the clamp plate





4-34 Upper bezel components

Installing an internal instruction card

6. Remove the window by pushing it inward from the outside of the terminal.
7. Lift the window and gasket away from the terminal.
8. To replace the window, ensure that the tab on the gasket of the new window is positioned to the top right, the handset side.
9. If there is an internal instruction card, insert it now.
 - a) Position the internal instruction card on the window.
 - b) Ensure that the notch in the lower edge of the card and the hole in the tab at the top of the card are properly located over the corresponding pins on the housing.
10. Reassemble the components by reversing **steps 2 to 5**.

Ensure that the locating pin of the window bezel fits into the location hole in the top center of the clamp plate.
11. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.
12. Restore the terminal to operation.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.

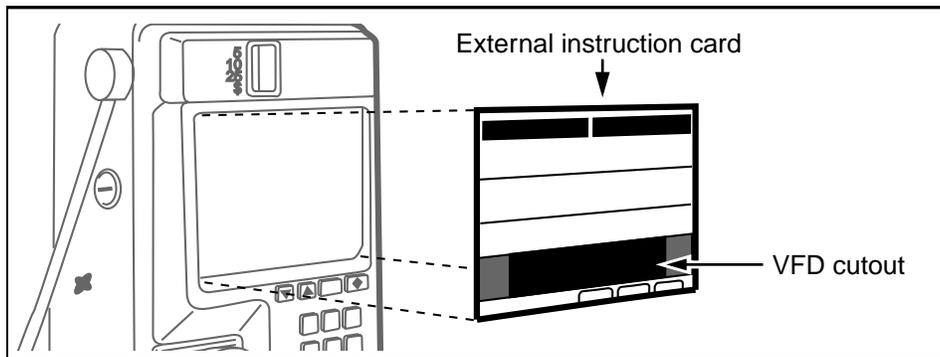




Replacing the external instruction card

The operating company may choose to use external instead of internal instruction cards. Refer to Figure 4-31.

Figure 4-31: Installing the external instruction card



To remove and install an external instruction card:

1. Ensure the terminal is closed.
2. Ensure that the card to be removed is clean.
3. Press the suction cup firmly on to the center of the card on the terminal.
4. Pull on the suction cup until the card bends enough to pop out of the window.
5. Install the new card:
 - a) Place the lower edge of the card under the bottom lip of the window opening.
 - b) Apply pressure to the outer edges of the card, bending it until it snaps under all four edges.
Figure 4-31 shows the position.
 - c) Position the new card so all its outer edges are covered.





4-36 Upper bezel components



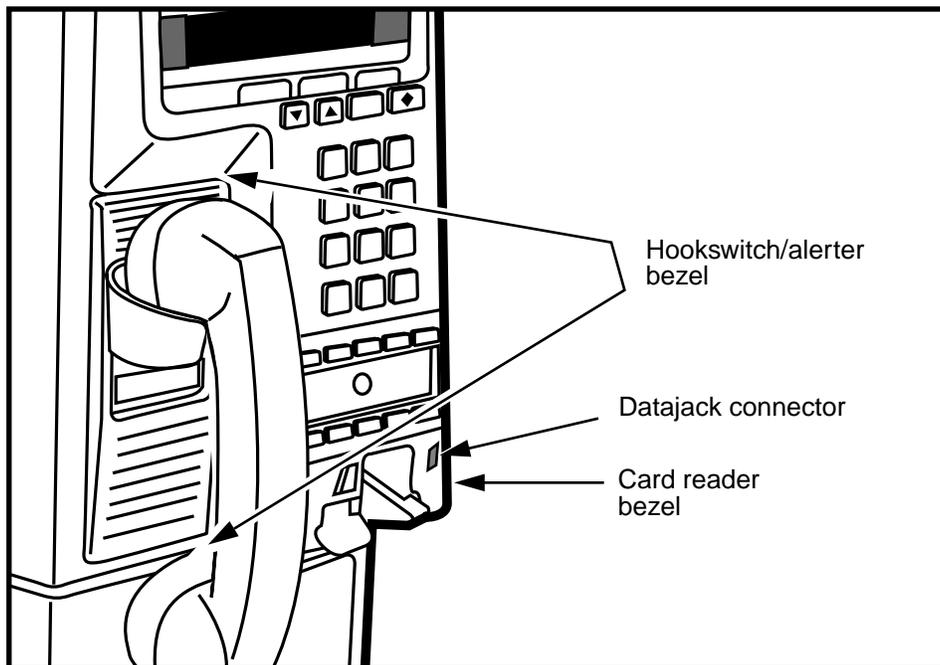


5 Card and hookswitch parts

This section includes procedures for replacing:

- card reader and bezel (card reader assembly), data-jack connector (optional)
- alerter and hookswitch modules (two versions)
- hookswitch alerter bezel assembly

Figure 5-1: Hookswitch and card reader bezels





5-2 Card and hookswitch parts

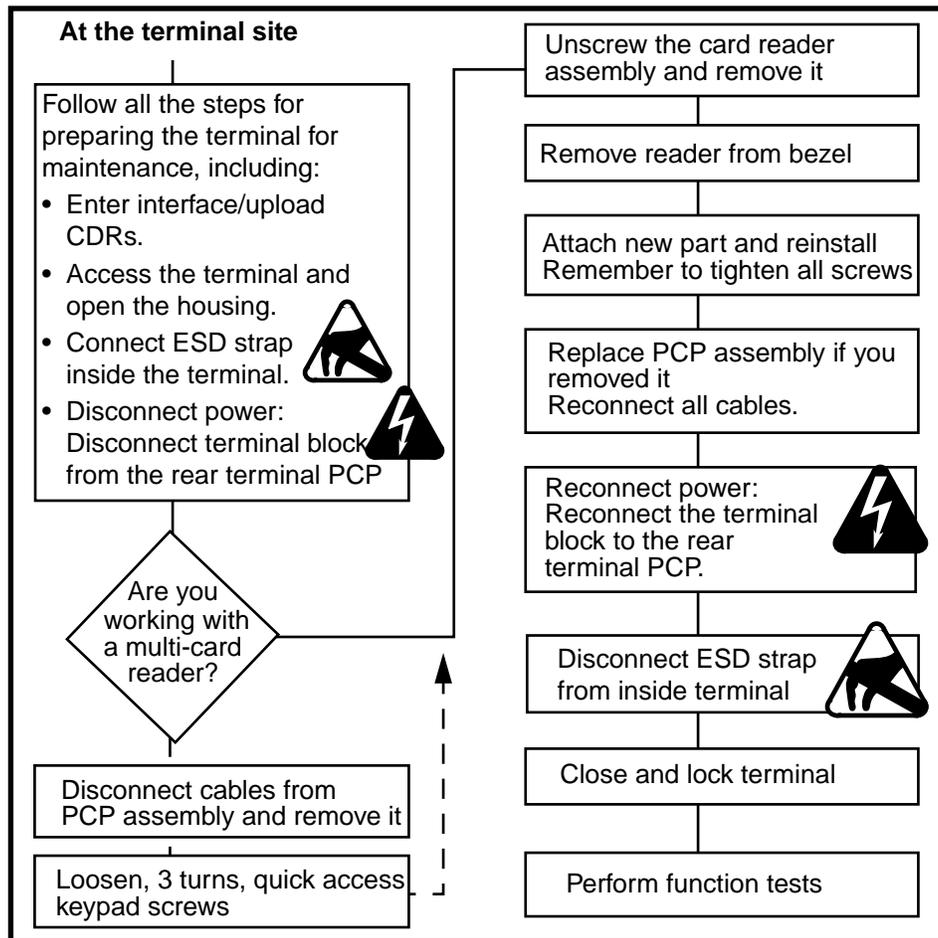
Working with the card reader assembly

The card reader is attached to the exterior card reader bezel. Together they are referred to as a card reader assembly. The card reader assembly is inserted into the terminal housing and is then secured to the housing.

Flowchart

The flowchart in Figure 5-2 shows the key points to replacing the card reader assembly.

Figure 5-2: Flowchart — replacing the card reader assembly





Replacing card reader assembly parts

To replace either the card reader or card reader bezel, you need to remove the assembly from the terminal.

Follow this procedure to work with the card reader assembly:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start</p>	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start internal maintenance procedures.
<p>Uninstall the terminal: Changing card reader types</p>	<ul style="list-style-type: none"> • If you change the type of card reader, for example from a mag-stripe-only reader to a multi-card reader, uninstall the terminal before you start because you will need to replace the firmware. • In this case, when you are finished, run an INSTALL to activate the new card reader. • If you are replacing the card reader with the same type of reader, you do not need to do either procedure.

- connected ESD strap to an ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power





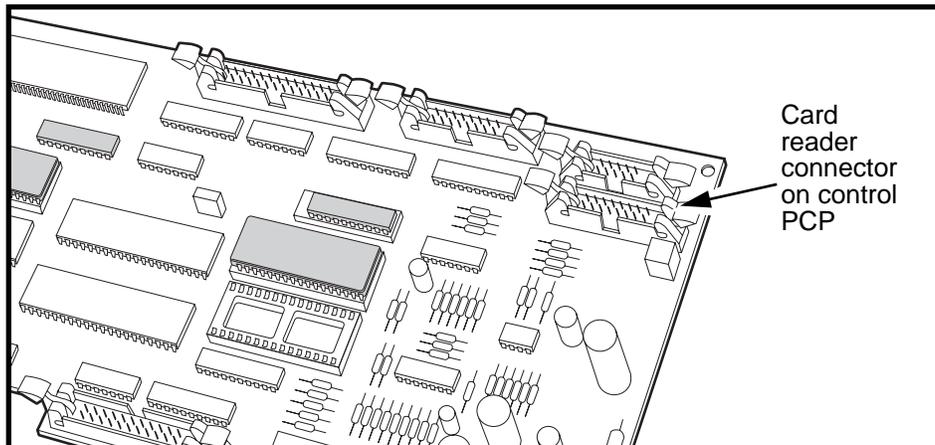
5-4 Card and hookswitch parts

<p>ESD precautions</p>  <p>Failure to follow these precautions may damage ESD-sensitive components.</p>	<ul style="list-style-type: none">• Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points.• Disconnect the power.• Do not reconnect until you are ready to close the terminal.• Place any components you remove from the terminal into an anti-static bag.
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2. **Terminals with multi-card readers only:** Remove the PCP assembly as explained in **Removing the PCP assembly** on page 3-2, place in an anti-static bag and set aside.
3. Disconnect the card reader connector (J19) from the control PCP connector (J6), if you did not remove the PCP assembly.



Figure 5-3: Card reader connector on control PCP



4. If the card reader has a rain shield, remove this now. Rotate the top of the rain shield down and away from the card reader and gently pull it free.





Card and hookswitch parts **5-5**

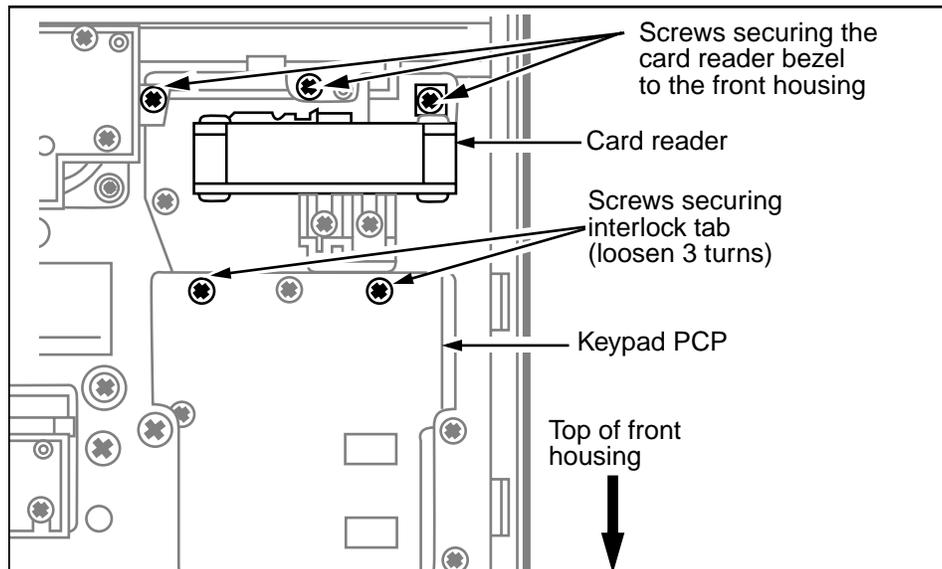
5. Remove the assembly from the housing:
 - a) Remove the M5 tapping screw located under the card reader, in the middle. Use a #2 type 1A cross-recess screwdriver. Refer to Figure 5-4.
 - b) Remove the two M3.5 tapping screws located on either side of the M5 screw. Use a #1 type 1A cross-recess screwdriver. Refer to Figure 5-4.

These three screws attach the card reader bezel to the front housing assembly.

- c) If you are removing a multi-card reader, loosen three turns the bottom two screws on the keypad PCP, which hold the quick access keys bezel.

This releases the interlock tab at the top of the card reader bezel. Refer to Figure 5-4.

Figure 5-4: Card reader screws



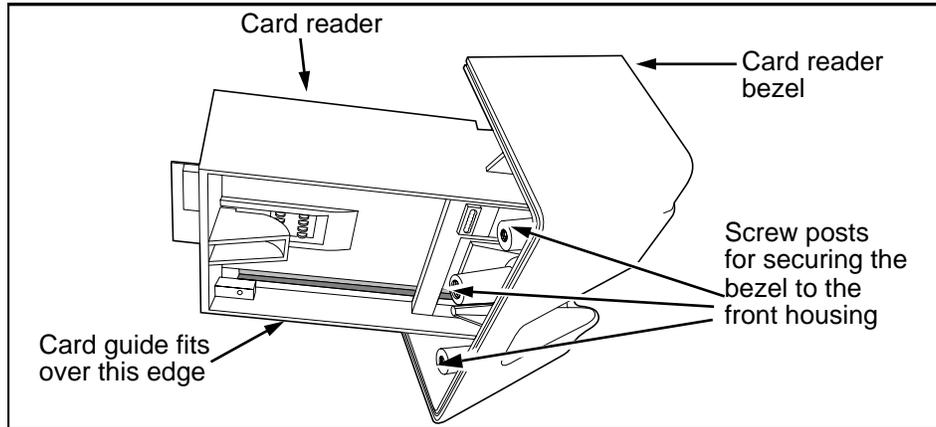
- d) Lift the front housing and remove the card reader assembly from the front of the terminal. An example of the card reader assembly is shown in Figure 5-5.





5-6 Card and hookswitch parts

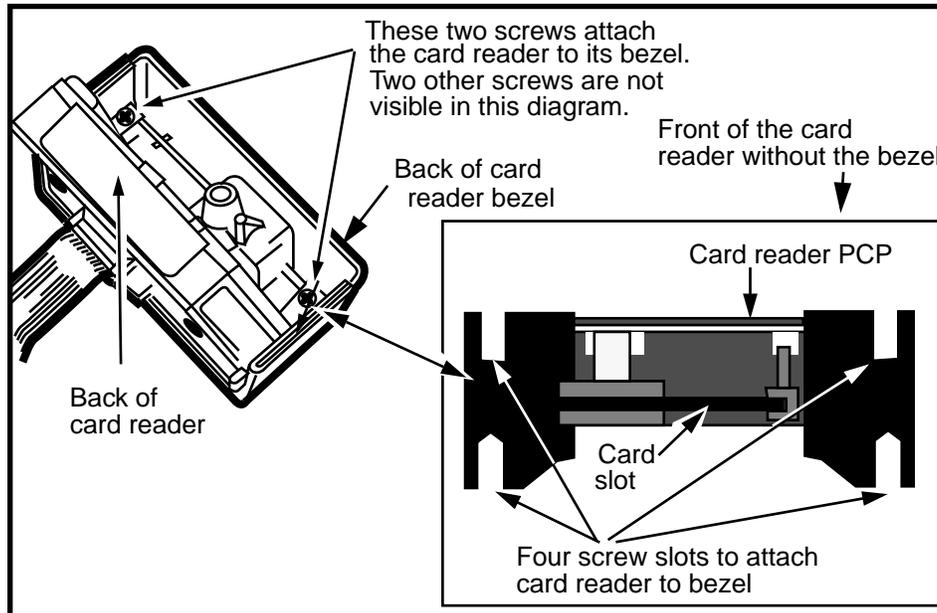
Figure 5-5: Card reader assembly, lower view



6. Change whatever part of the assembly needs to be changed:
 - a) Remove the four M3.5 screws which attach the card reader to its bezel. Refer to Figure 5-6.



Figure 5-6: Card reader removal and replacement

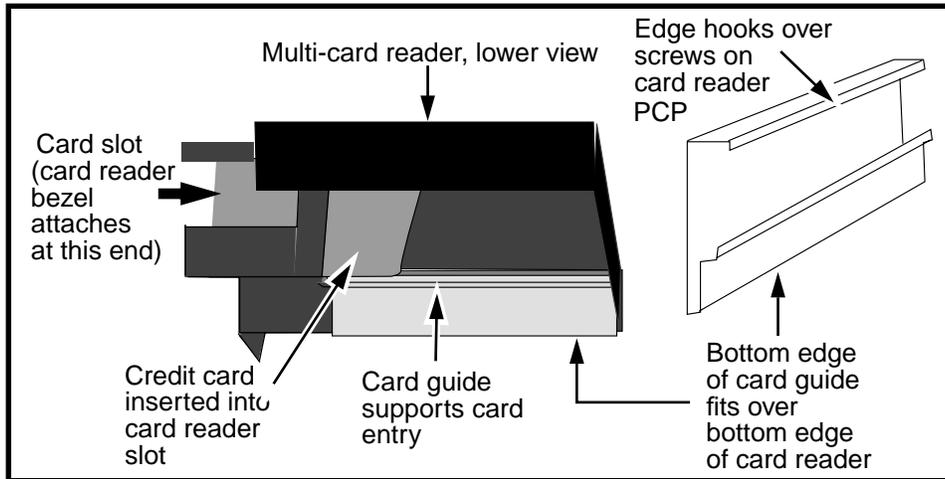




Card and hookswitch parts **5-7**

- b) If a new multi-card reader does not have a card guide as part of the card reader housing, check the old reader for this piece and snap it on to the new card reader. Refer to Figure 5-7.

Figure 5-7: Positioning a bent card guide



7. Reassemble the card reader assembly by reversing the process in **step 6**.
- Ensure that the card reader slot on the card reader is centered with the card reader slot of the bezel. Refer to Figure 5-8.
 - Ensure that the gasket around the card reader bezel is sitting properly in its channel.

Multi-card reader:

- a) Ensure that the micro-switch actuator of the rail is operational.

To test: Insert a smart card part way into the reader. When the card first enters the slot and when it is removed, you should hear a click. Figure 5-8 shows the switch actuator.

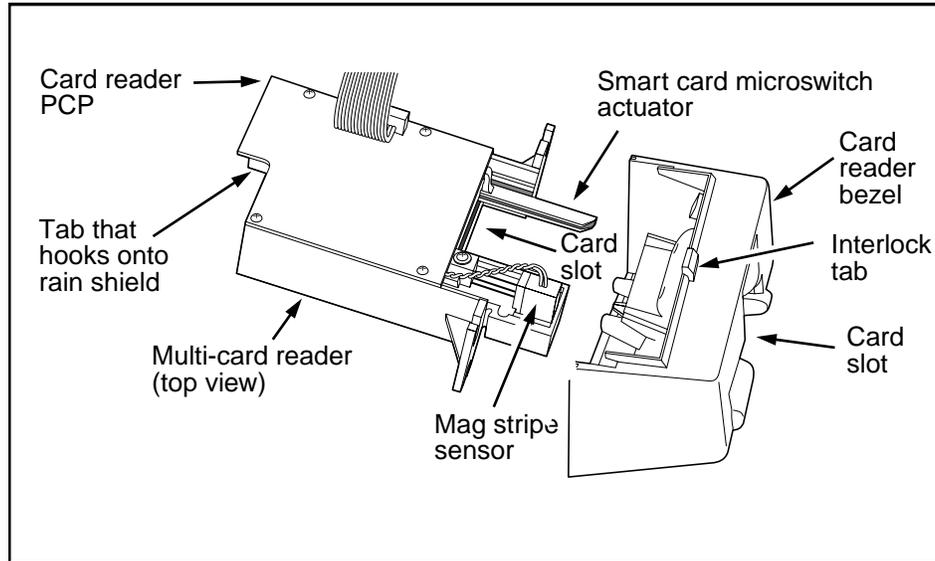
- b) Remember to re-tighten the two screws on the keypad PCP that hold the interlock tab in place. Refer to Figure 5-4.





5-8 Card and hookswitch parts

Figure 5-8: Multi-card reader, exploded view

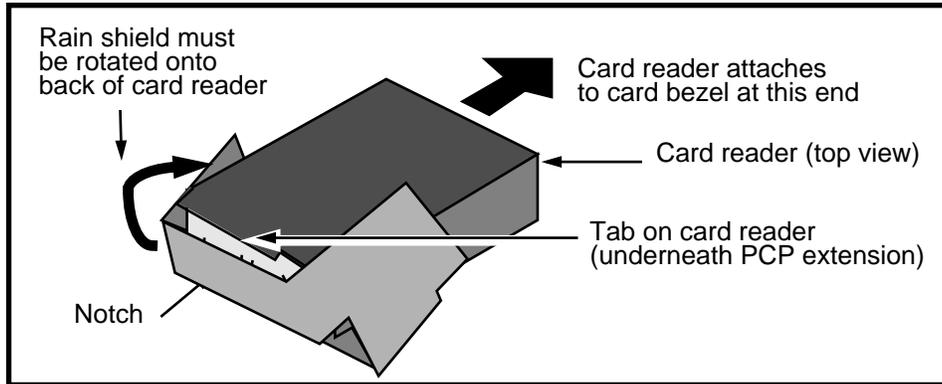


8. Replace the card reader assembly in the housing and reattach to the housing with the three screws. Refer to **step 5**, if necessary.
9. Replace the rain shield if there is one:
 - a) Position the **card reader rain shield** around the back end of the card reader.
 - b) There is a shelf formed by the extension of the top half of the rain shield.
 - Fit this shelf onto the end of the card reader.
 - Slip the card reader bottom edge over the two tabs located on the shelf.
 - The rain shield will be at a slight angle down from the card reader, similar to the position shown in Figure 5-9.





Figure 5-9: Positioning the card reader rain shield



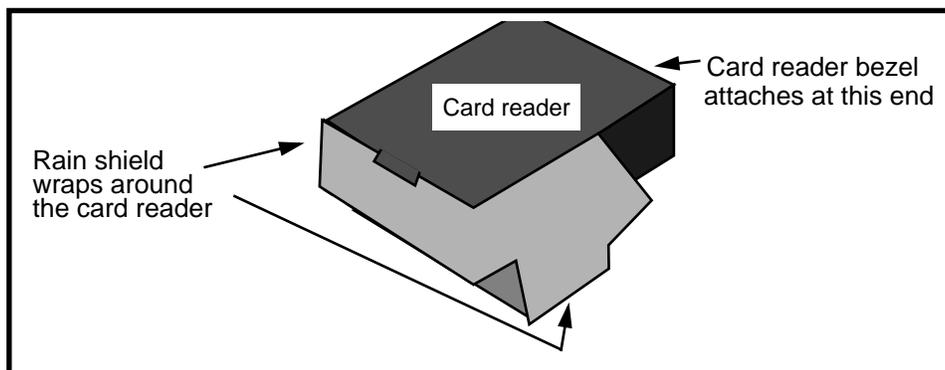
- c) Align the notch in the top edge of the rain shield with the tab on the card reader PCP.

This tab extends from below the card reader PCP in the middle of the back end of the card reader. Refer to Figure 5-8 and Figure 5-9.

- d) Rotate the top of the rain shield upwards.
 - Move the rain shield towards the card reader, until the notch in the rain shield clicks onto the tab on the card reader.
 - The rain shield should fit snugly against the back end of the card reader.

Refer to Figure 5-10.

Figure 5-10: Rain shield in place





5-10 Card and hookswitch parts

10. Replace the PCP assembly as explained in **Removing the PCP assembly** on page 3-2, if you removed it in **step 2**.
11. When you reconnect the cables to the PCP assembly, ensure that any excess lengths are folded away from the terminal housing.

This is especially important for the card reader cable. Refer to **Folding the card reader cable** on page 5-11 for specific instructions.
12. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
 - d) If you upgraded the card reader from a mag-stripe only to a multi-card reader, do an **INSTALL**.
 - e) If you replaced the card reader with the same type of reader, run the craft interface card reader test.
13. Do functional tests to ensure the card reader and the terminal are working properly.

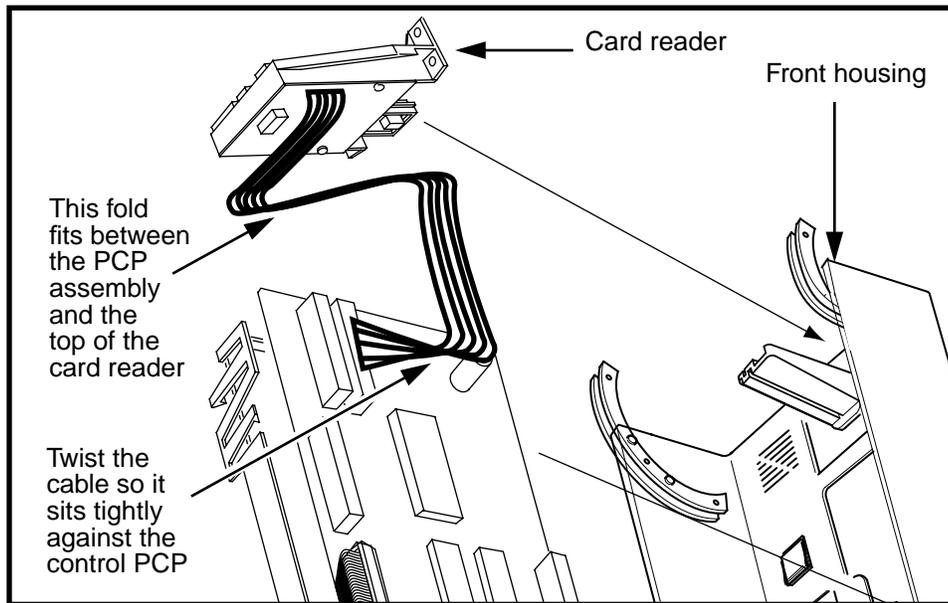




Folding the card reader cable

As additional ESD protection, the card reader cable must be folded so it does not touch the terminal housing. Refer to Figure 5-11.

Figure 5-11: Folding the card reader cable



The steps below give a brief description about how to fold the cable.

1. Fold a loop of the ribbon cable across the top of the card reader.
2. The PCP assembly holds this fold in place.
3. Hold the cable connector and twist the cable around until the connector faces the PCP assembly.
4. Plug the connector into the control PCP connector.

Note that the cable rests along the control PCP and does not touch the housing at any point.





5-12 Card and hookswitch parts

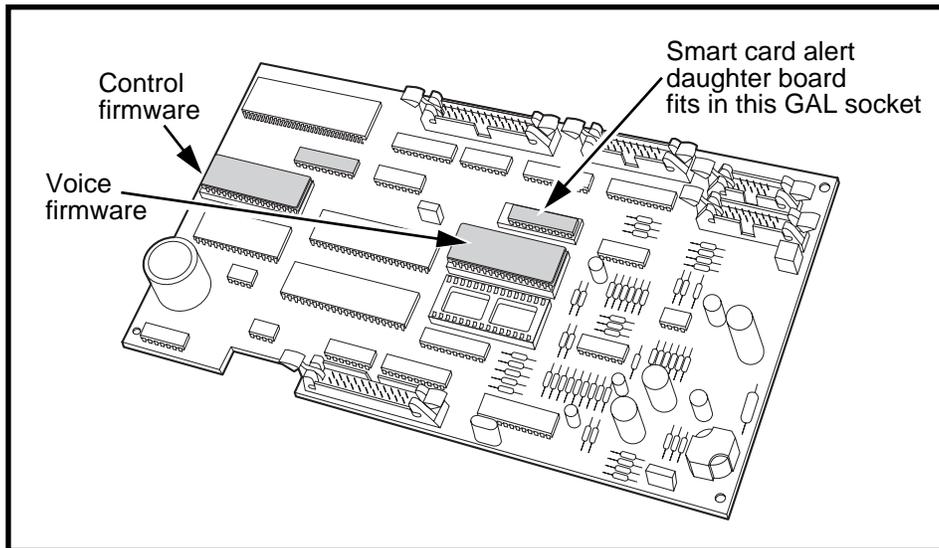
Identifying datajack hardware

There are two considerations in regards to using datajack connectors on Multi-pay-based terminals.

- First, terminals with through-hole control PCPs of MTR 1.7 or later vintage can have either datajack functionality or the smart card alert feature.

To add the feature as an upgrade also requires a firmware and, possibly, a telephony PCP upgrade for these terminals.

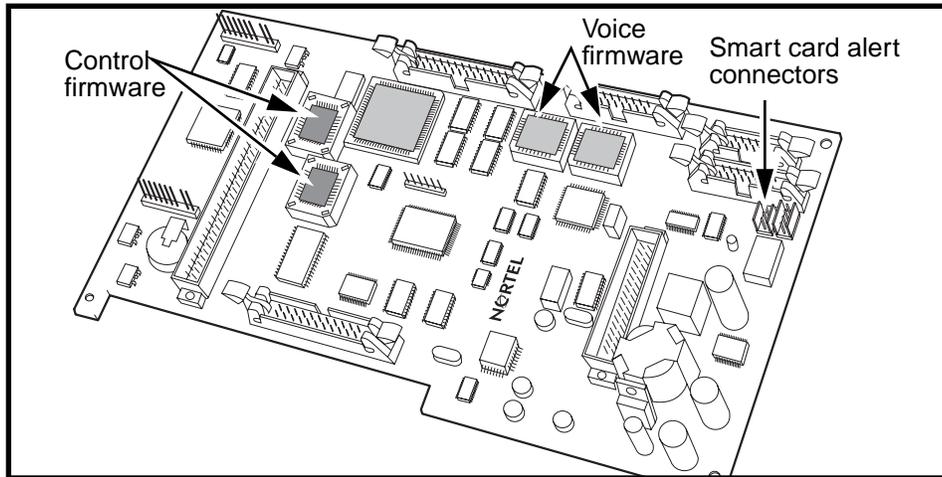
Figure 5-12: Identifying a through-hole control PCP





- Terminals with the multi-application control PCP can have either or both features, which are turned off or on through a software update. For these terminals, the datajack telephony board is standard equipment.

Figure 5-13: Identifying a multi-application control PCP



See this:



Coin basic terminals

Datajack calls cannot be made with coins.

- Secondly, there are two types of datajack connectors.
 - The Nortel-supplied datajack is an external teladapt installed in the card reader bezel.
 - The terminal may also have an external, Telco-provided jack. In this case, refer to the documentation supplied by the Telco for servicing the jack.





5-14 Card and hookswitch parts

Installing a card reader datajack bezel

This bezel attaches in the same manner as a card reader bezel.

1. Assemble the datajack bezel upgrade kit.

The datajack bezel consists of two pieces:

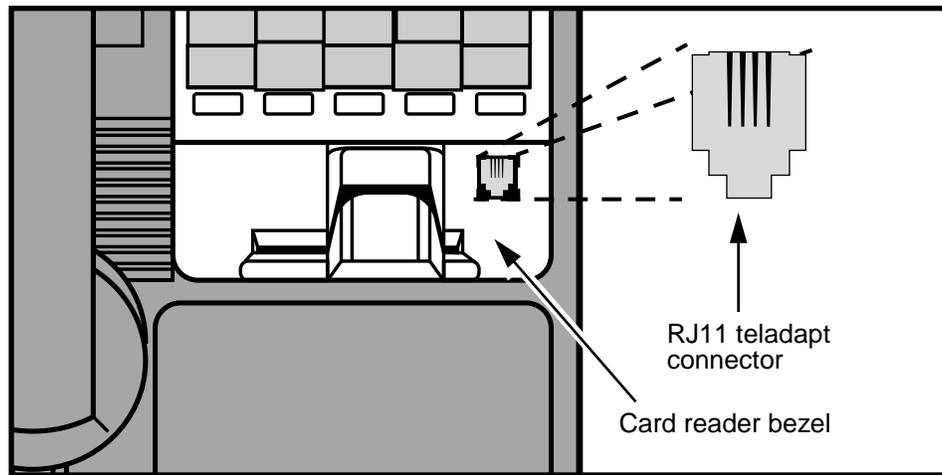
- the bezel itself, which has a square hole in it, above the card slot
- the teladapt connector with a two-wire cable, which is the datajack plug-in.

If the connector has not been installed into the bezel, install it before you open the terminal:

- a) From the inside of the card reader bezel, insert the datajack connector into the hole.
- b) Ensure that the opening of the connector faces the outside of the bezel, with the metal prongs of the connector at the top. Refer to Figure 5-14.



Figure 5-14: Datajack plug fits into card reader bezel





- Follow the standard procedures for opening the terminal explained in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs</p> <p>Uninstall the terminal</p>	<ul style="list-style-type: none"> Upload the CDRs to the Millennium Manager before you start this procedure. If this is an upgrade, remember to uninstall the terminal before you start maintenance If you uninstall the terminal, run the INSTALL routine when you are finished the upgrade.
----------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- connected ESD strap to an ESD connection point inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> Before working with the PCP assembly, put on your ESD wrist strap and connect it to the ESD connection points inside the terminal. Place any components you remove from the terminal into an anti-static bag. <p>Failure to follow these precautions may damage ESD-sensitive components.</p>
<p>Warning</p> 	<ul style="list-style-type: none"> Disconnect the power before disconnecting any cables inside the terminal. Do not reconnect the power until you are ready to close the terminal.





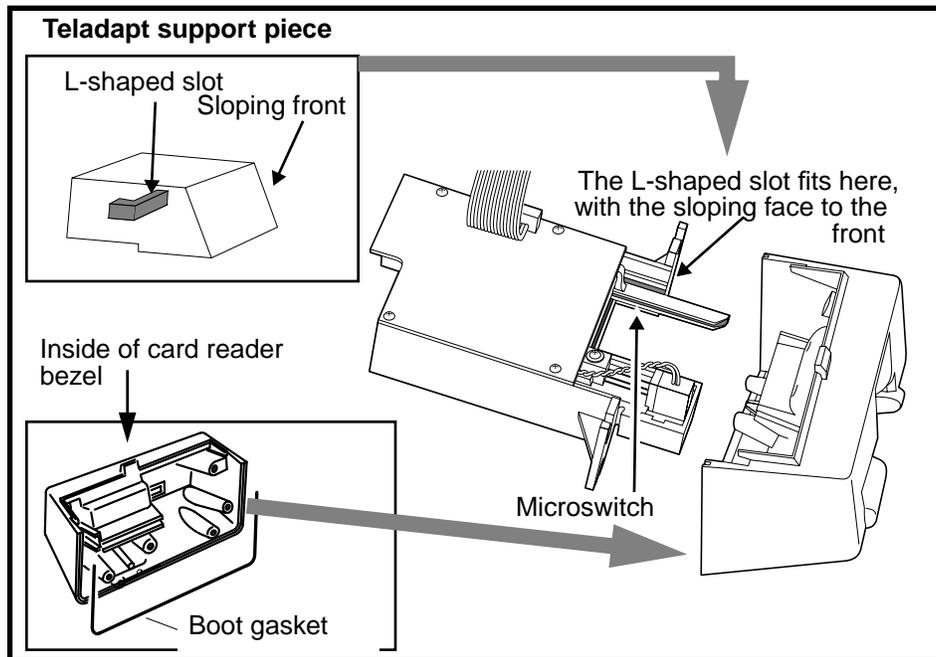
5-16 Card and hookswitch parts

3. Remove the PCP assembly.
Refer to **Removing the PCP assembly** on page 3-2.
4. Remove the card reader assembly.
Refer to **Working with the card reader assembly** on page 5-2.
5. Unscrew the card reader from the bezel.
6. Attach the black rubber datajack support piece to the card reader so it sits behind the teladapt plug. Refer to Figure 5-15.
7. Attach the new bezel to the card reader.
Ensure that you do not pinch the datajack cable.
8. Reinstall the card reader into the terminal.
Ensure that the gasket around the card reader bezel is in place and in good condition.

Note: You may have to remove it from the old bezel and install it on the new one. Refer to Figure 5-15.



Figure 5-15: Installing the teladapt support inside the bezel





See this



Upgrade board changes

If this is an upgrade, at this point you need to:

1. Change the firmware or control PCP, depending on what you got with the kit.
2. Change the telephony PCP, if you received one in your kit.
3. Replace the PCP assembly into the terminal and connect all cables.

References for upgrading firmware

Refer to **Replacing firmware on the control PCP** on page 3-14 and **Removing the telephony or control PCPs** on page 3-11, and **Removing the PCP assembly** on page 3-2, as necessary.

9. Once the bezel is installed, the datajack connector is plugged into connector J34 on the lower right corner of the telephony PCP.

Warning



Ensure the **power IS NOT CONNECTED** at this point.

Connecting cables to a live board can cause damage to the components or the boards.

The datajack connector cable is shown in Figure 5-16.

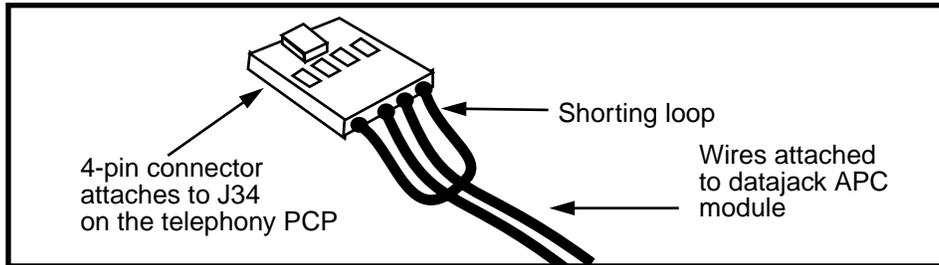
Note that there must be a loop between the two outside points. This shorting loop prevents the modem from drawing excess current off the line during data-jack operation.





5-18 Card and hookswitch parts

Figure 5-16: Datajack connector with shorting loop



10. Reconnect the card reader cable to the control PCP.
11. Reconnect the power to the terminal at the rear terminal PCP.
12. Close and lock the terminal, as normal.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
13. Test the datajack. Refer to **Making a datajack call** on page 5-18.



Making a datajack call

Datajack calls are data calls made from such devices as portable computers or fax machines through the datajack teladapt.

1. Datajack calls are initially set up in the same manner as other calls: the user either dials a number or inserts a card.
 - Coins cannot be used to make a datajack call.
 - Credit, calling, and smart cards are validated and treated the same way as during a voice call.
2. The user presses # twice (##) to initiate a data call.
3. The modem in the equipment dials the number and proceeds with the data call.



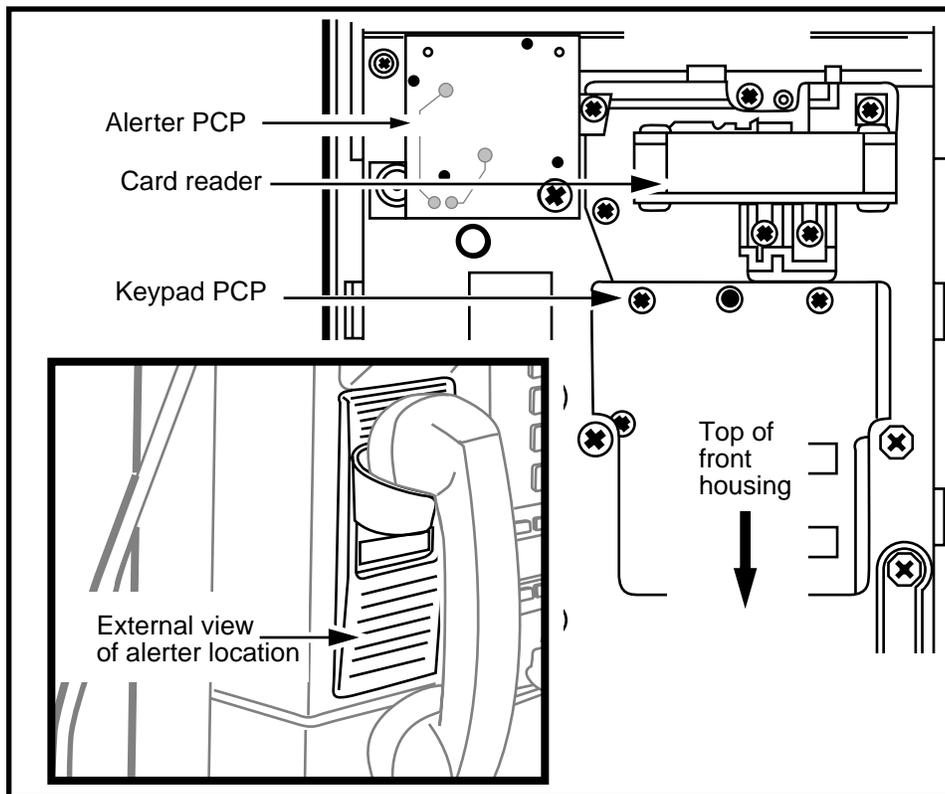


4. The terminal prompts the user to return the handset on-hook.
This prevents the data from being interrupted by outside noise.
5. The call is complete when the modem hangs up.

Replacing the alerter module

The alerter module is located on the handset side of the terminal, beside the card reader. This module produces the alerter tones.

Figure 5-17: Locating the alerter module



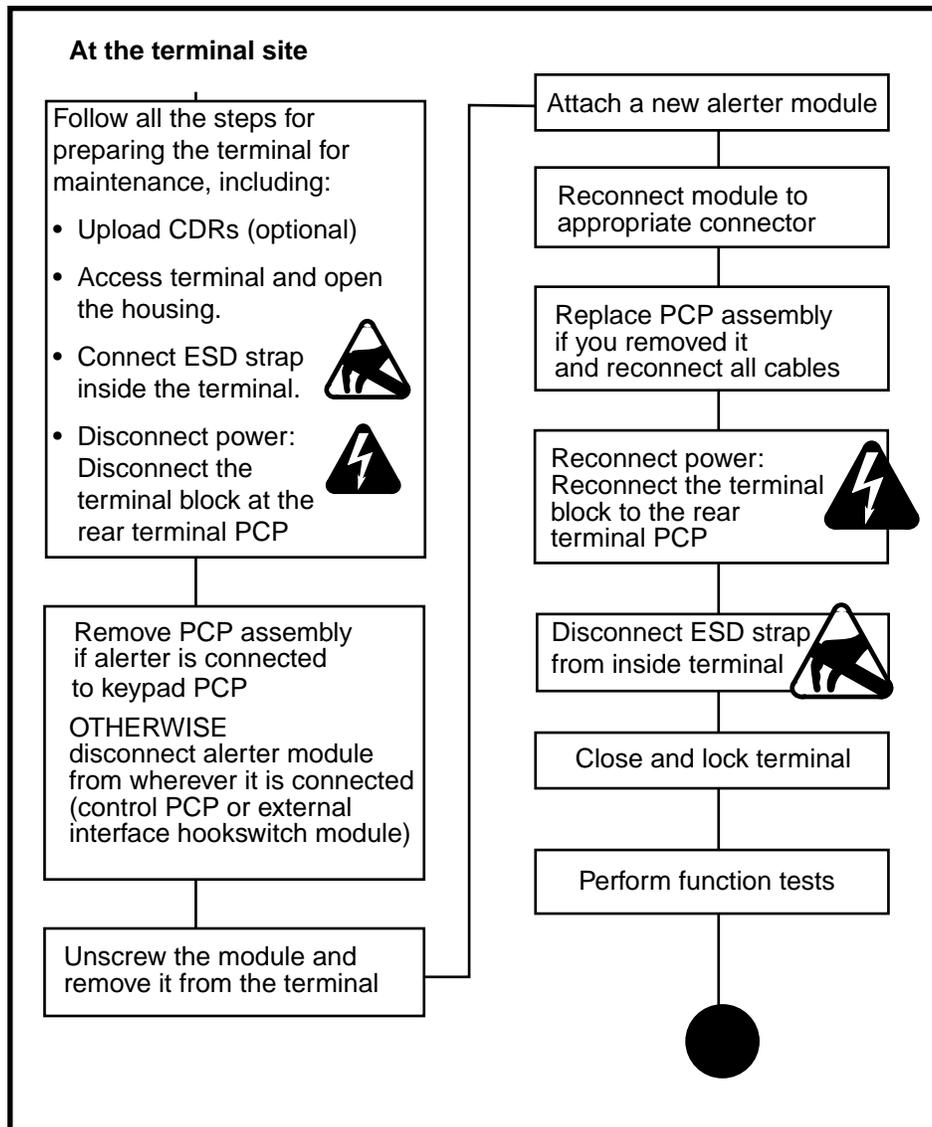


5-20 Card and hookswitch parts

Flowchart

The flowchart in Figure 5-18 shows the key points to replacing the alerter module.

Figure 5-18: Flowchart — replacing the alerter module





Steps for replacing the alerter module

To remove the alerter module from inside the terminal, follow these steps:

1. This procedure assumes you have, followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start!	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start.
--------------------------------------	-----------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you start.

- attached your ESD strap inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

Electrostatic discharge (ESD) 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>
Warning 	<ul style="list-style-type: none"> • Disconnect the power before disconnecting any cables. • Do not reconnect the power until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.



- Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal.

Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.

Warning



- Disconnect the power before disconnecting any cables.
- Do not reconnect the power until you are ready to close the terminal.
- Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.



5-22 Card and hookswitch parts

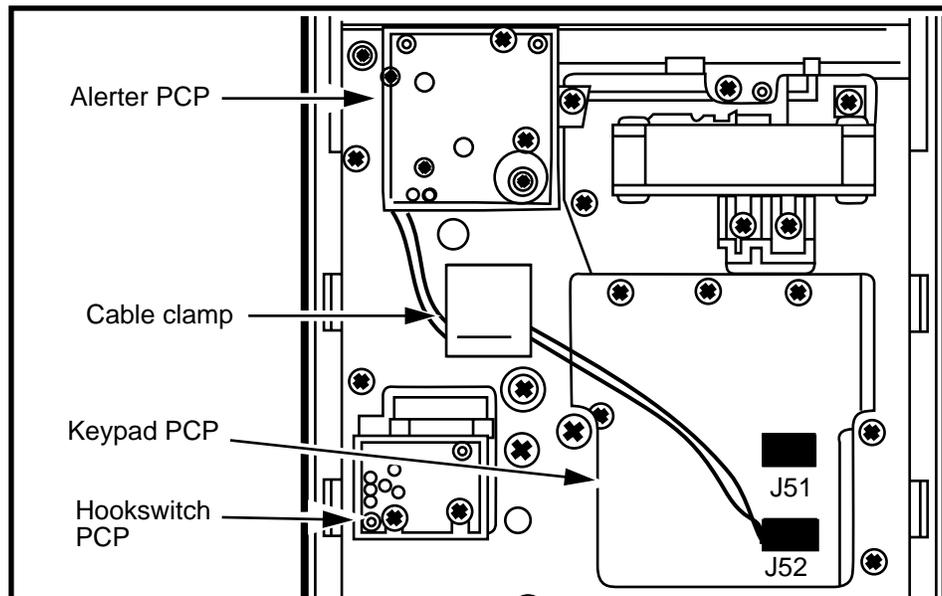
2. Disconnect the alerter cable.

- If the alerter cable (J14) is connected to the keypad PCP: remove the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.

Refer to Figure 5-19.

Note: If the alerter is connected to a smart card alert daughter board disconnect J14 from J37 on the smart card alert daughter board.

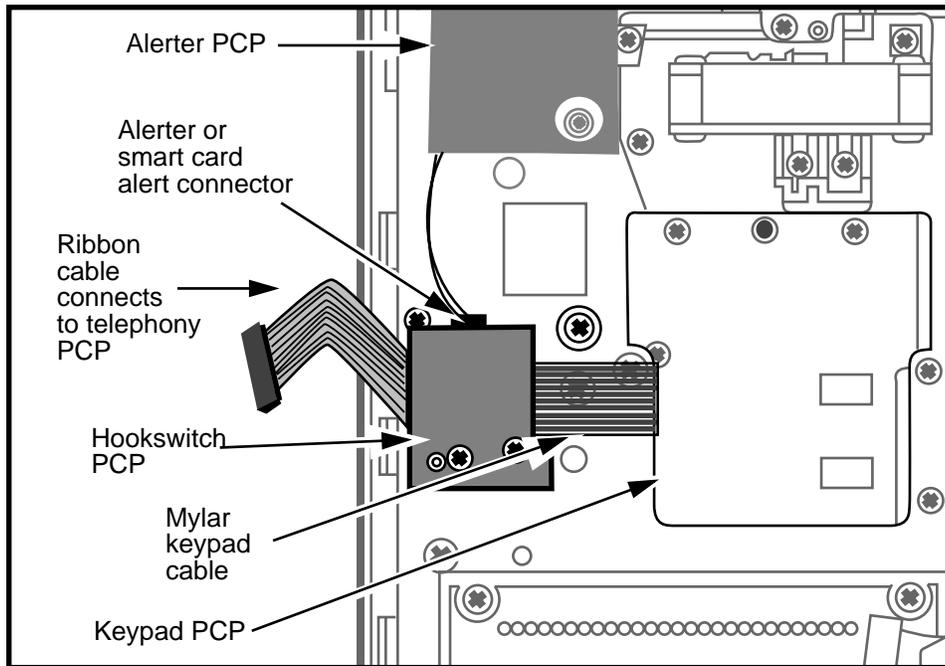
Figure 5-19: Bezel A alerter connector on keypad PCP



- If the keypad PCP is attached to the external interface hookswitch module with a mylar ribbon cable, then the alerter is connected to the hookswitch module if there is no smart card alert.

Refer to Figure 5-20.

Figure 5-20: Bezel B alerter connection to hookswitch

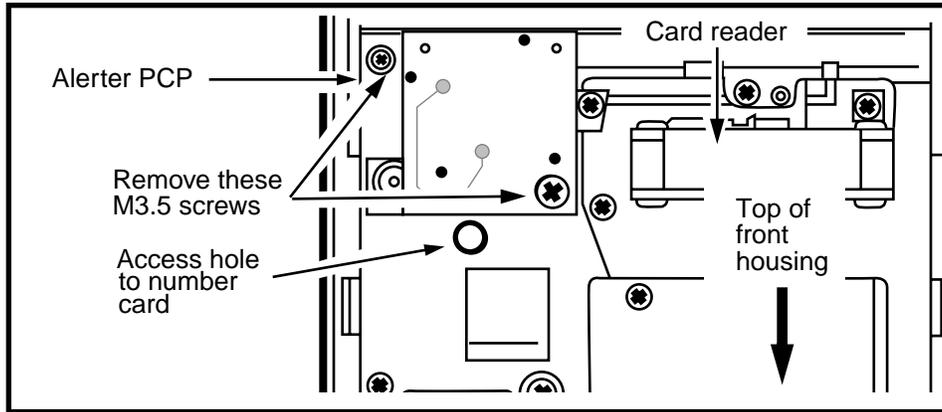


- If the terminal has the smart card alert feature and a multi-application control PCP, disconnect J14 from the J2 connector located on the right edge of the multi-application control PCP.
3. To remove the alerter bezel, remove the two M3.5 tapping screws securing the alerter module to the bezel.
 - Refer to Figure 5-21.
 - Use a #2 type 1A cross-recess screwdriver.
 - Ensure that the acoustic membrane held between the alerter and housing assemblies remains in place when replacing the alerter module.



5-24 Card and hookswitch parts

Figure 5-21: Locating the alerter module



4. To replace the alerter module, reverse the preceding steps. Ensure you connect the cable to the correct connection point.
5. If you removed it, reinstall the PCP assembly.
Refer to **Removing the PCP assembly** on page 3-2, if necessary.
6. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
7. Perform function tests.



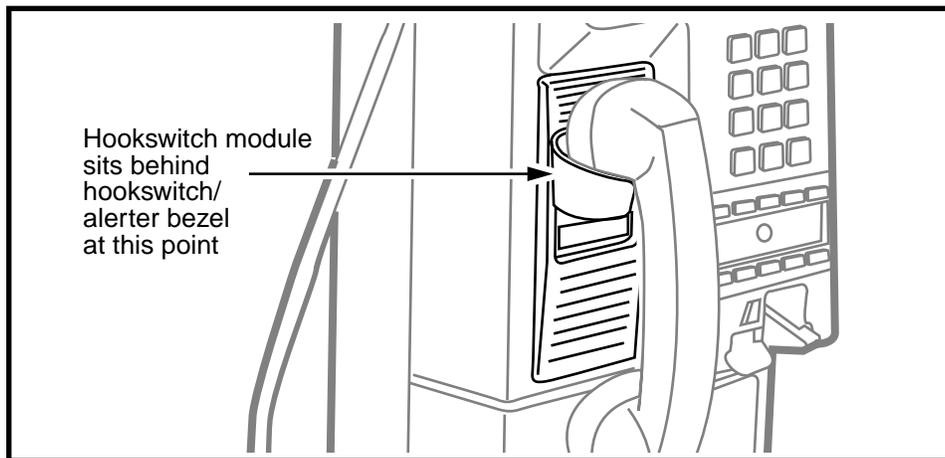


Replacing the hookswitch module

The hookswitch PCP is located on the handset side of the terminal, beside the keypad PCP, which it connects to.

Figure 5-22 shows the positioning of the hookswitch behind the hookswitch/alerter bezel on the terminal exterior.

Figure 5-22: External aspect of the hookswitch



Note: There are two types of hookswitch modules. They can be identified by what they connect to.

For the purposes of this procedure, they will be labelled module A and module B (updated external interface hookswitch module).

Module A can be distinguished because it connects to J52 on the keypad PCP with a wire cable. Refer to Figure 5-23.

Module B must always be teamed with the upgraded keypad PCP upper bezel assembly. Refer to Figure 5-24.

This module is distinguishable because the keypad connects to it with a ribbon cable. The hookswitch module then connects to the telephony PCP to complete the circuit. This module also has a rain shield. The procedures for installing this rain shield are given after this section.





5-26 Card and hookswitch parts

Figure 5-23: Module A — identifying the hookswitch

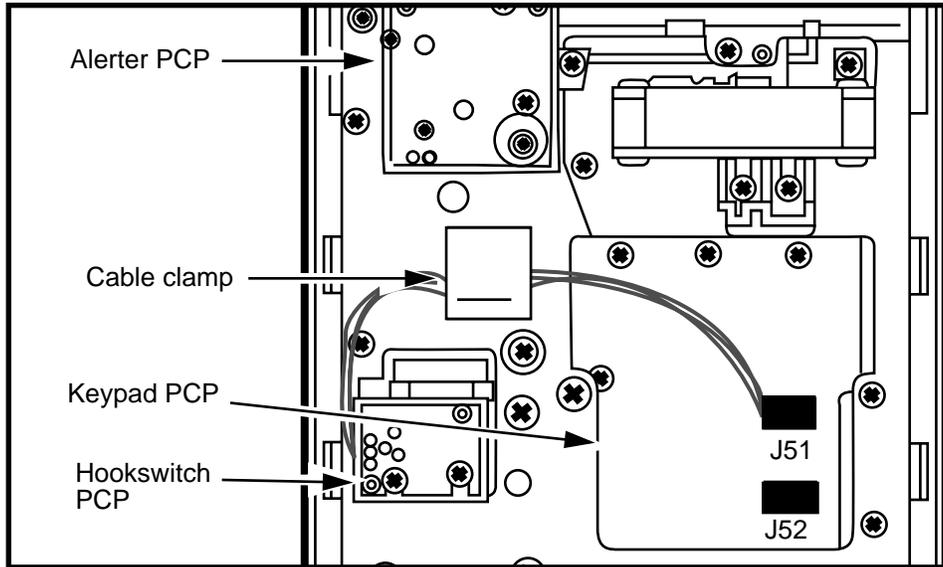
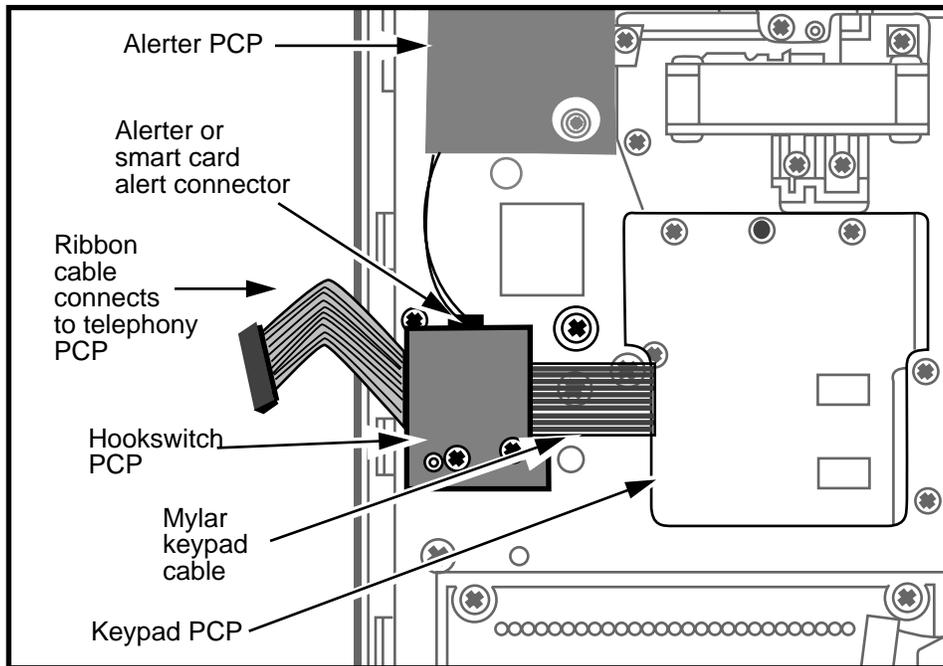


Figure 5-24: Module B— identifying the external interface hookswitch

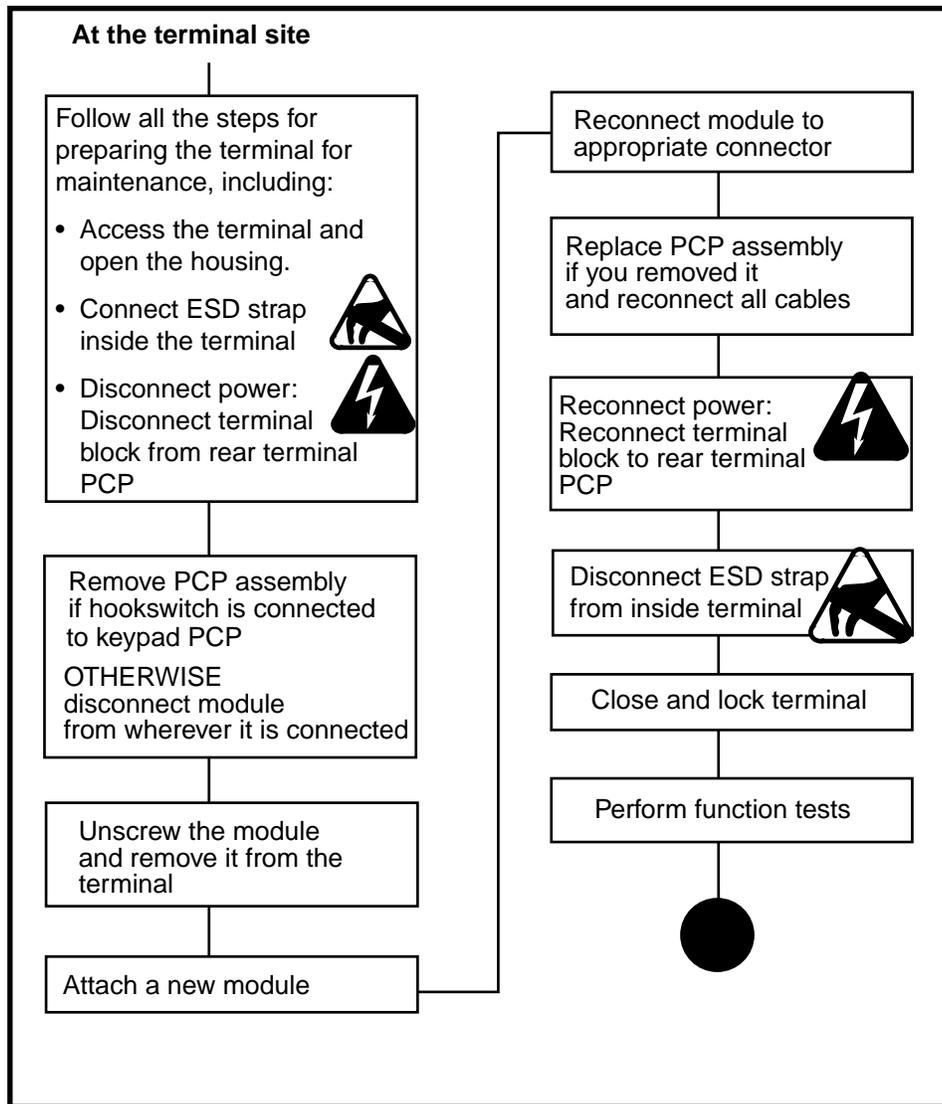




Flowchart

The following flowchart describes the key points to replacing the hookswitch module.

Figure 5-25: Flowchart — replacing the hookswitch module





5-28 Card and hookswitch parts

Replacing the hookswitch

To replace the hookswitch module, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start!	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you start.
--------------------------------------	-----------------------------------------------------------------------------------------------------------------

- Upload the CDRs to the Millennium Manager before you start.

- connected your ESD wrist strap inside the terminal
- confirmed that the power has been disconnected.
- removed the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2 and put it in an anti-static bag and set it aside.

<p>Electrostatic discharge (ESD)</p>  <p>Warning</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p> <ul style="list-style-type: none"> • Disconnect the supplementary power supply. • Do not reconnect the power until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Warning



- Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal.

Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.

- Disconnect the supplementary power supply.
- Do not reconnect the power until you are ready to close the terminal.
- Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.





2. Disconnect the hookswitch from other modules:

- **Module A:** Disconnect the hookswitch cable (J13) from the connector on the keypad PCP (J51).
- **Module B:** Disconnect the mylar cable connecting the hookswitch to the keypad PCP (J53).

Disconnect the cable to the alerter (J52).
If this module is connected to a smart card alert daughter board or a multi-application control PCP, this connector will have been disconnected when you removed the PCP assembly cables.

Figure 5-26: Module A — hookswitch connects to keypad PCP

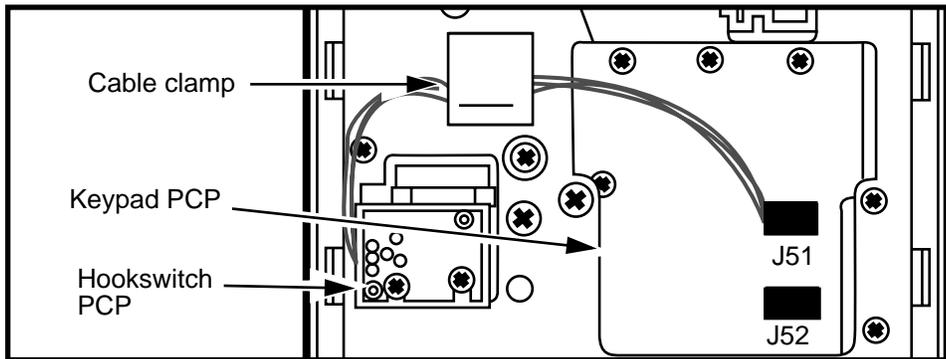
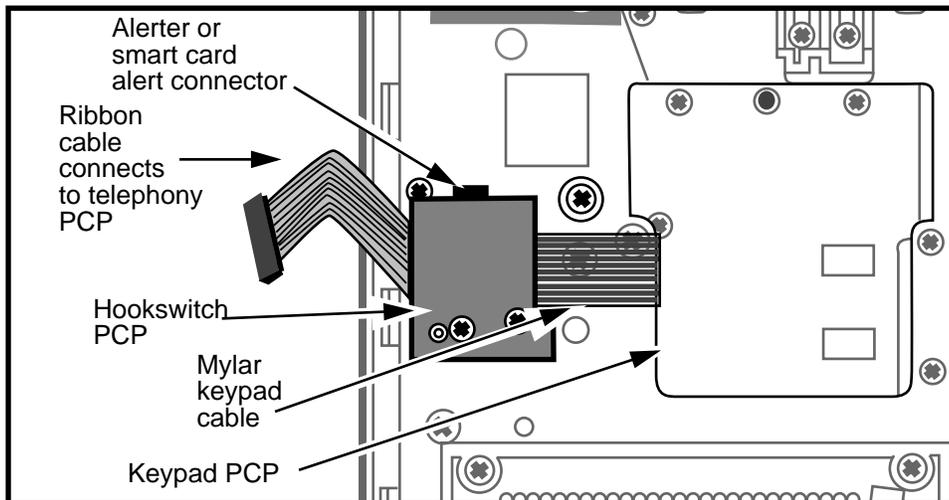


Figure 5-27: Module B— keypad connects to hookswitch

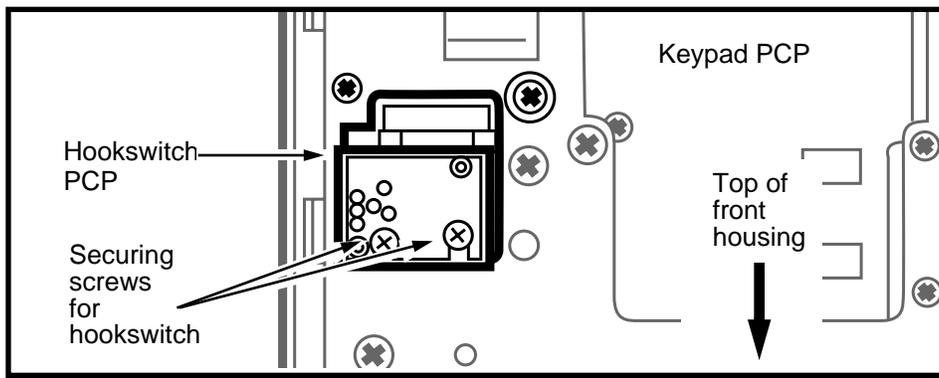




5-30 Card and hookswitch parts

3. Loosen the two M3.5 tapping screws securing the hookswitch PCP assembly.
 - This allows the hookswitch PCP to be lifted over the locating pin.
 - Use a #2 type 1A cross-recess screwdriver.
 - Figure 5-28 shows these screws.

Figure 5-28: Hookswitch PCP screws



4. Slide the hookswitch PCP assembly until the slots on the module clear the screw heads.
5. Remove the hookswitch PCP assembly.
6. Install the new assembly:

Module A: Reverse the preceding steps.

- Take care not to damage the switch actuator on the plunger cam. Refer to Figure 5-30.
- To ensure the switch actuator is not damaged while you are installing it, depress the plunger while assembling the hookswitch module into position.

Module B:

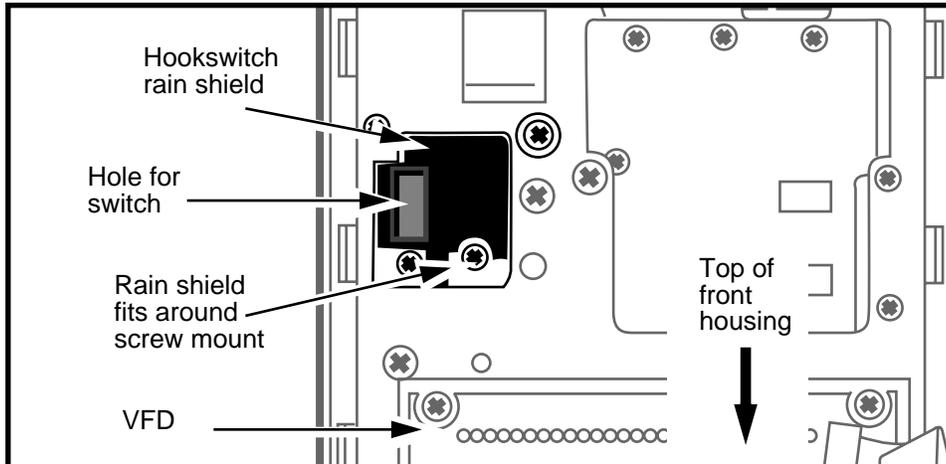
- a) Install the rain shield:

Set the hookswitch rain shield in the recess in the terminal housing located under the assembly, as shown in Figure 5-29.





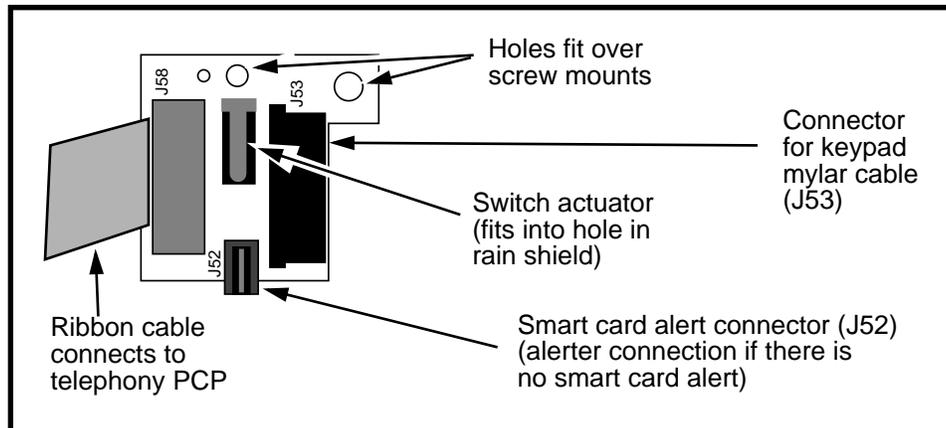
Figure 5-29: Positioning the hookswitch rain shield



b) Install the external interface hookswitch assembly:

- Fit the hookswitch on the module into the rectangular hole in the rain shield. This switch is located on the underside of the hookswitch PCP, shown in Figure 5-30.
- Hold the hookswitch PCP so that the connectors are facing down and install it in the terminal by reversing the **steps 2 to 4**.

Figure 5-30: Underside of Module B (external interface)





5-32 Card and hookswitch parts

7. **Module A:** Route the cable from the hookswitch module through the cable clamp below the module and reconnect the module to the keypad connector.

Module B: Reconnect the mylar keypad PCP cable to the hookswitch module (J53).

Reconnect the alerter cable or the smart card alert cable to J52.

8. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.
9. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
10. Test the terminal function to ensure the new components work.



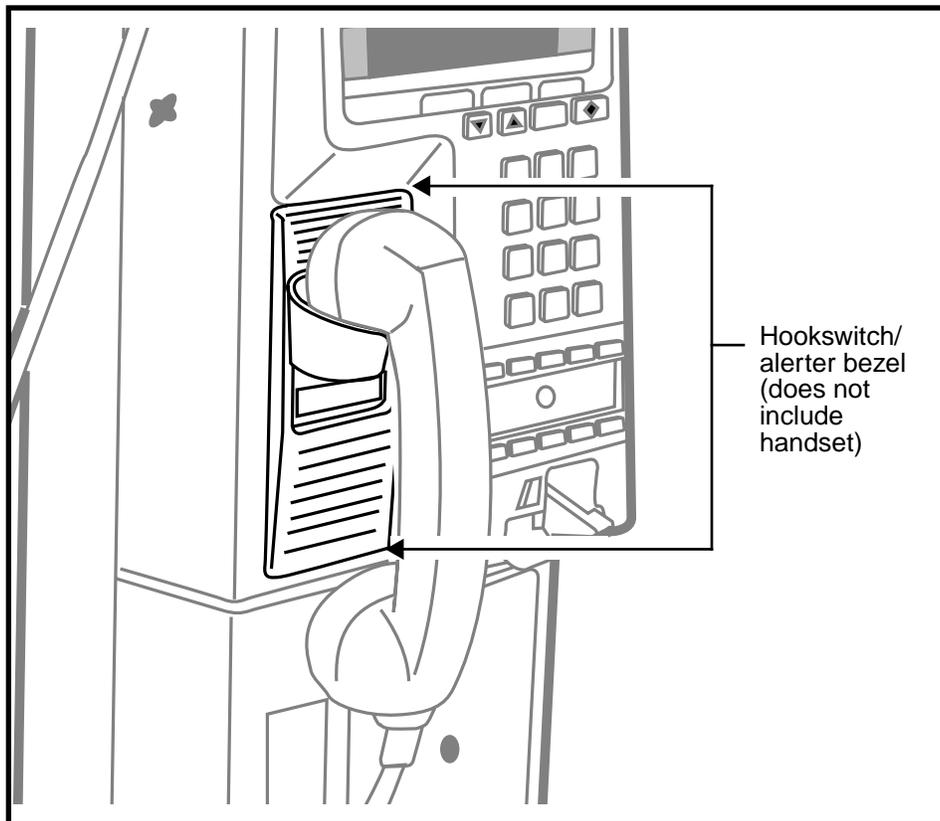


Replacing the hookswitch/alerter bezel

The hookswitch/alerter bezel is attached to the left side of exterior of the terminal. It covers the alerter and hookswitch modules and contains the cradle that holds the handset.

Figure 5-31 shows the bezel from the outside of the terminal.

Figure 5-31: Hookswitch/alerter bezel, exterior view



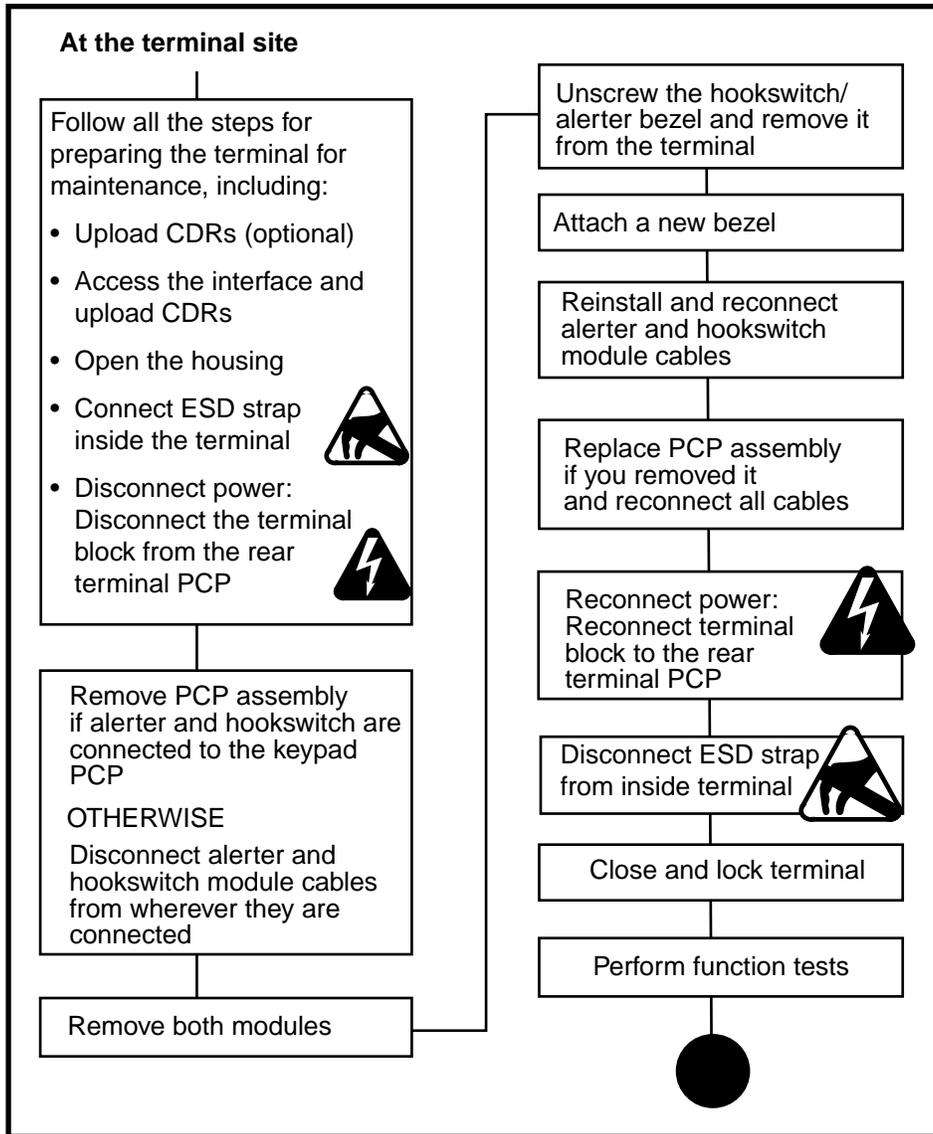


5-34 Card and hookswitch parts

Flowchart

The flowchart in Figure 5-32 shows the key points to replacing the hookswitch/alerter assembly.

Figure 5-32: Flowchart — replacing the hookswitch/alerter bezel





Replacing the bezel

Follow these steps to replace the hookswitch/alerter bezel:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start	<ul style="list-style-type: none"> • Upload the CDRs to the Millennium Manager before you replace any component.
-------------------------------------	---------------------------------------------------------------------------------------------------------------------------------

- attached your ESD wrist strap inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the power before disconnecting any other cables. • Do not reconnect the power until you are ready to close the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.



- Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal.
- Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.**

Warning



- Disconnect the power before disconnecting any other cables.
- Do not reconnect the power until you are ready to close the terminal.
- Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.

- removed the PCP assembly bracket as explained in **Removing the PCP assembly** on page 3-2, and put it in an anti-static bag and set it aside.

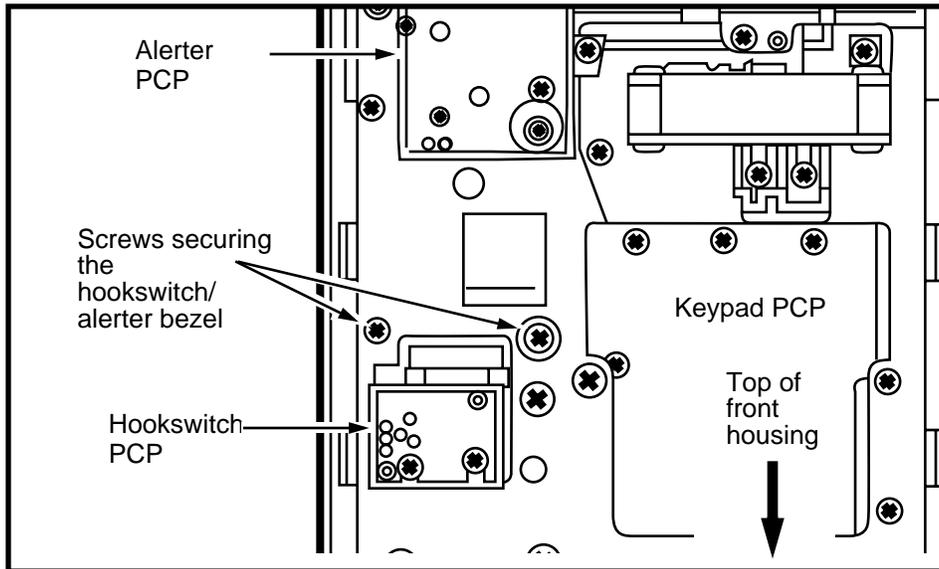




5-36 Card and hookswitch parts

- removed the alerter module as explained in **Replacing the alerter module** on page 5-19
 - removed the hookswitch module as explained in **Replacing the hookswitch module** on page 5-25
2. Remove the hookswitch/alerter bezel:
 - a) Support the bezel from the front of the terminal, then remove the two M3.5 tapping screws securing the hookswitch/alerter bezel.
 - Use a #2 type 1A cross-recess screw-driver.
 - Refer to Figure 5-33 to locate the screws.
 - b) Remove the hookswitch/alerter bezel by pulling it from the front of the terminal.

Figure 5-33: Hookswitch bezel screws



3. To replace the hookswitch/alerter bezel, reverse the preceding steps.
4. Reassemble and reconnect the alerter module and hookswitch module.





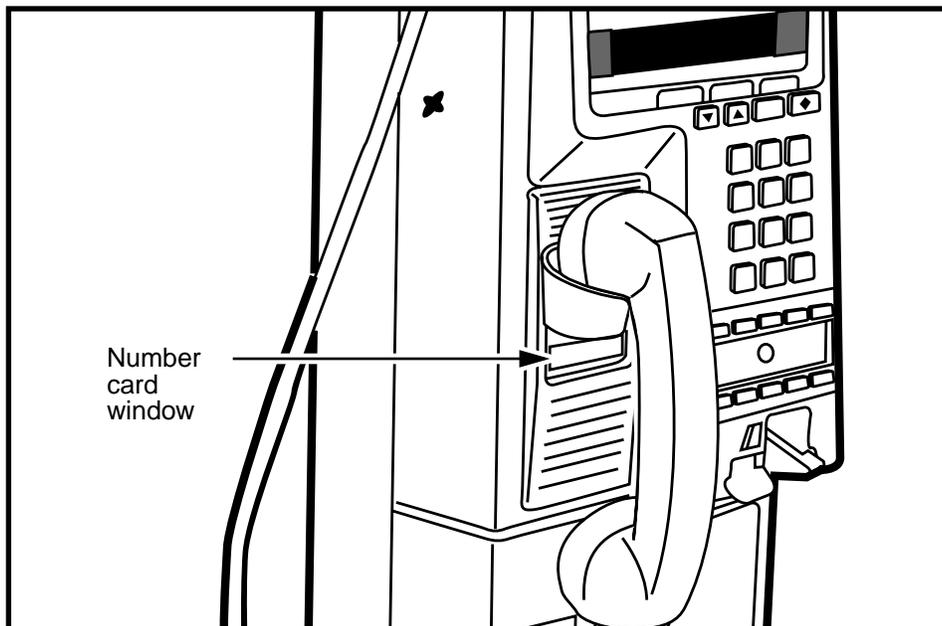
5. Reinstall the PCP assembly as explained in **Removing the PCP assembly** on page 3-2.
6. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
7. Test the terminal functions.

Replacing the number card

The number card is supplied by the operating company and is the terminal ID number. The number card holder is in the hookswitch/alerter bezel.



Figure 5-34: External view of number card window





5-38 Card and hookswitch parts

To replace the number card, follow this procedure:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

- attached your ESD wrist strap inside the terminal

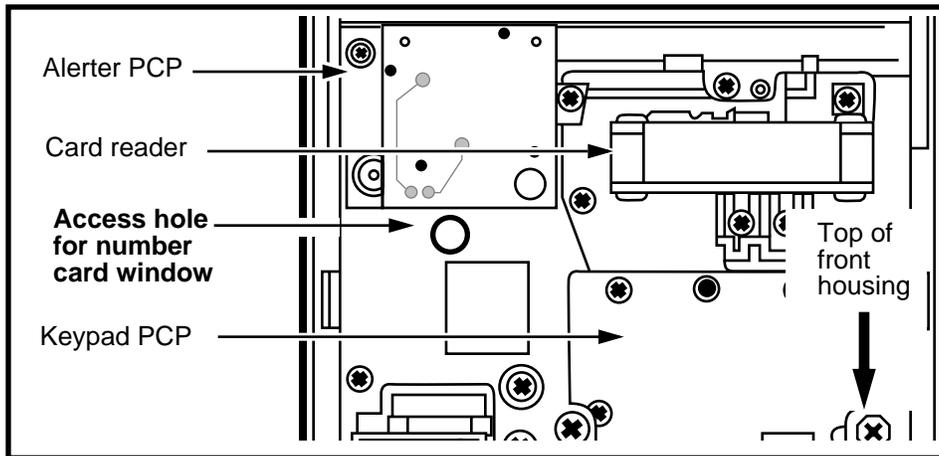
Note: It is not necessary to upload CDRs or disconnect the power for this procedure.

2. Remove the number-card window.
 - a) Push the window from behind through the access hole inside the terminal. Refer to Figure 5-35.

Use a type1A cross-recess screwdriver of less than 8 mm diameter or an equivalent instrument.

Note: If this hole is not accessible, pry the window out from the exterior of the terminal.

Figure 5-35: Number card access hole



- b) Push until the number-card window bends enough for you to grab it from the outside and pull it off.

3. Insert or remove the number card so the number sits against the window.





Card and hookswitch parts **5-39**

4. Replace the number-card window:
 - a) Insert one end of the window in position in the opening in the alerter bezel.
 - b) Bend the window outward.
 - c) Insert the opposite end into position, and release.
5. Remove your ESD strap connection.
6. Close and lock the terminal.





5-40 Card and hookswitch parts





6-1

6 Coin path modules

The following section describes replacing the various components which make up the coin path of the terminal.

Instructions in this section include how to:

- perform a coin box collection
- replace the gasket on the coin entry slot
- replace the coin validator
- replace the escrow
- replace the vault door
- replace the coin box rail
- replace the vault security PCP
- replace the vault lock with either a mechanical or an electronic lock (e-lock)
- replace the coin return chute and security bracket

Figure 6-1 and Figure 6-2 show the coin path components on the exterior and inside the terminal.





6-2 Coin path modules

Figure 6-1: External aspects of the coin path

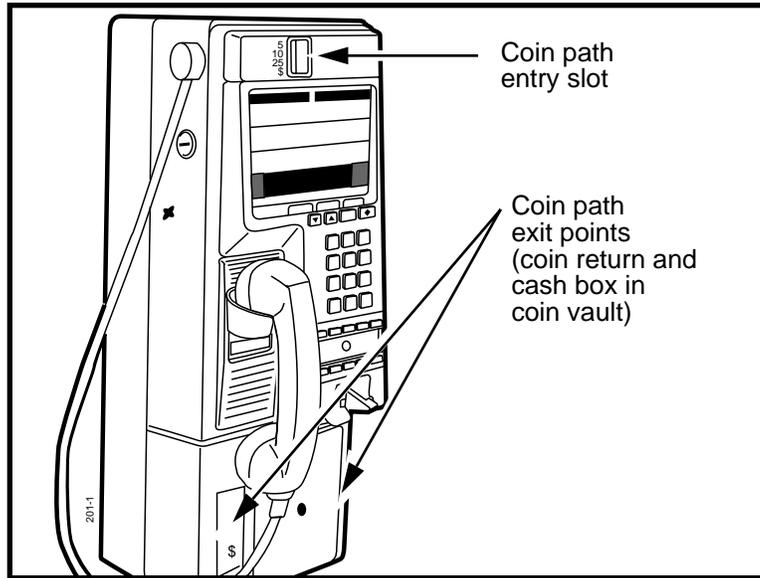
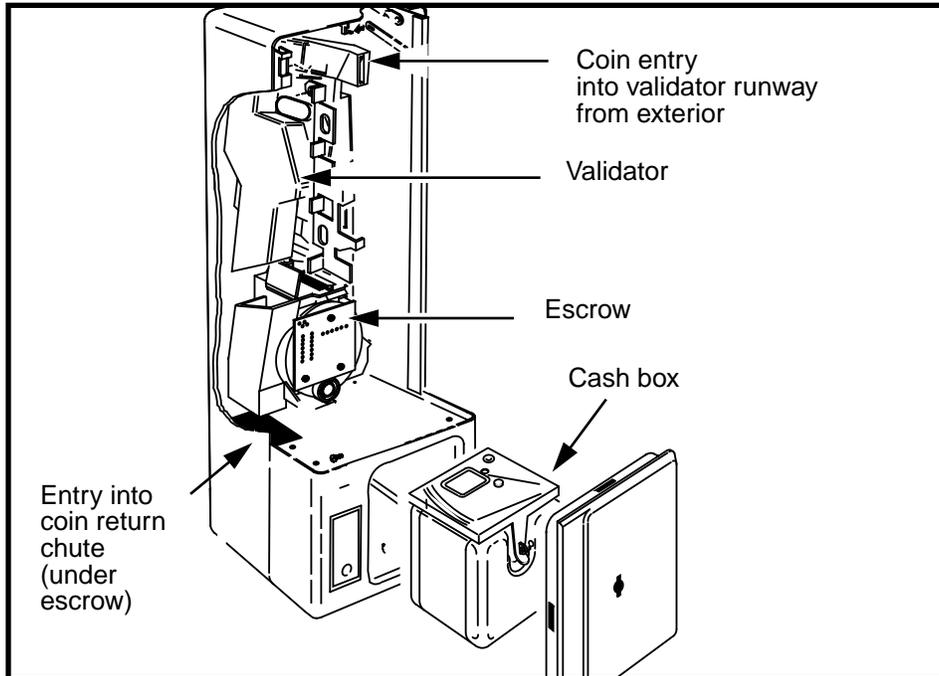


Figure 6-2: Internal aspects of the coin path





Performing a coin box collection

The coin box can be removed and replaced without taking the terminal out of service.

- You should not do a collection if the supplementary power is off.

If you do a collection when the power is off, do not replace the box until the power is restored. At that time, do a simulated coin box collection as described in **Simulating a coin collection** on page 6-37

- If the coin box is full, the terminal will display either **Coin service is not available** or **Card service only**.
- If the coin vault is closed without a coin box in it, the terminal displays **Out of service** and will not function until a cash box is installed.

When to do a collection

Here are some of the circumstances when you would do a coin collection:

- during a regular route of coin collections
- if the coin box sends an alarm that it is full
- if you need to do maintenance inside the coin vault
- if the control PCP memory corrupts and the board must be replaced
- if you are replacing firmware on MSR 1.6, 1.7, or 1.8 terminals

Collecting the coin box

The following procedure describes how to make a coin box collection:

1. Unlock the lower housing lock.
2. Use a T-tool to open and remove the coin vault cover.
3. Remove the cash box, using the handle to pull it out of the coin vault.





6-4 Coin path modules

The Millennium Manager registers that a collection has taken place and resets the status to zero.

4. Insert an empty cash box, ensuring it sits squarely in the coin vault.

Note: The right side of the coin box must be in contact with the switches on the security module.

5. Replace the vault door and turn the T-tool to relock it.
6. Relock the lock on the side of the terminal.

See this:



This procedure must take less than five minutes or the terminal will send an alarm to the Millennium Manager to indicate an illegal entry.

Replacing coin modules flowchart

The flowchart in Figure 6-4 shows the key points to replacing the validator and/or escrow.



Figure 6-3: Flowchart — replacing the validator or escrow, page 1

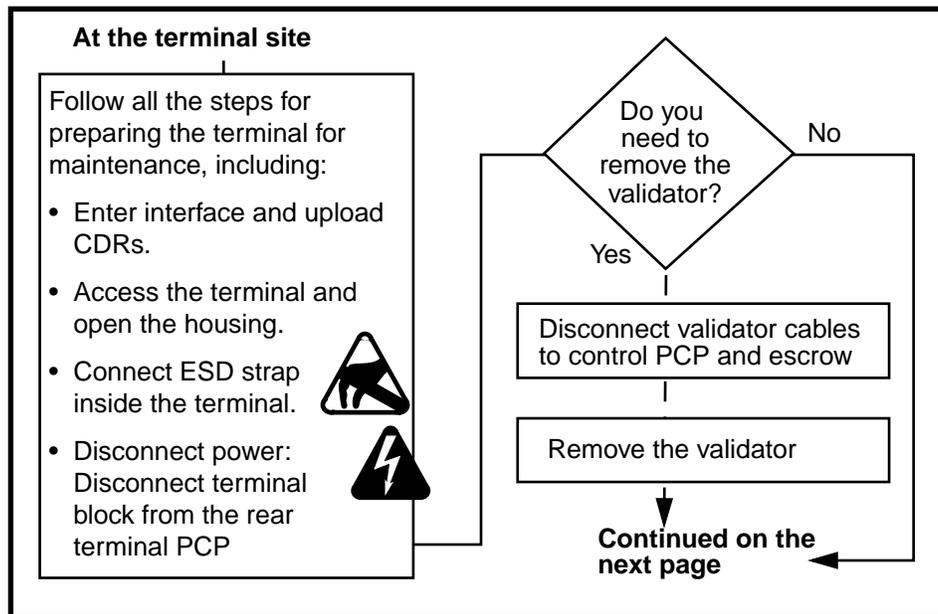
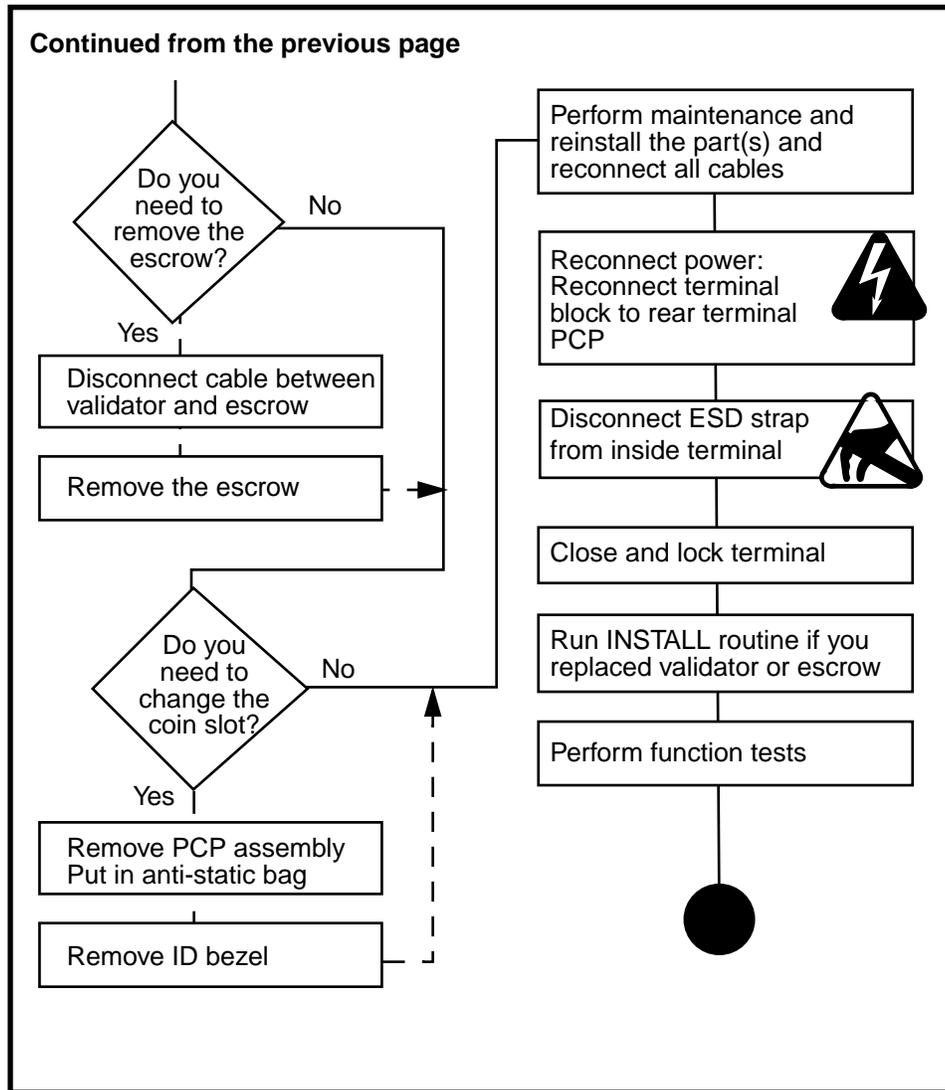




Figure 6-4: Flowchart — replacing the validator or escrow, page 2





6-6 Coin path modules

Replacing the coin validator

The coin validator has sensors which check inserted coins to make sure they are valid for the terminal. The operating company determines which coins the terminal will accept.

To remove the validator and clear it or replace it, follow these steps:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including

Upload CDRs before you start

- Upload CDRs before you do this procedure.
- You will need to run the INSTALL routine if you replace this unit.

See this:



Vintage alert

**Pre-1.9-based terminals:
Arrange for a coin box pickup before you replace this module.**

- attached your ESD strap inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power
- It is not necessary to remove the PCP assembly to work with the validator, however, you might find it more convenient to do so.

Follow the instructions in **Removing the PCP assembly** on page 3-2.

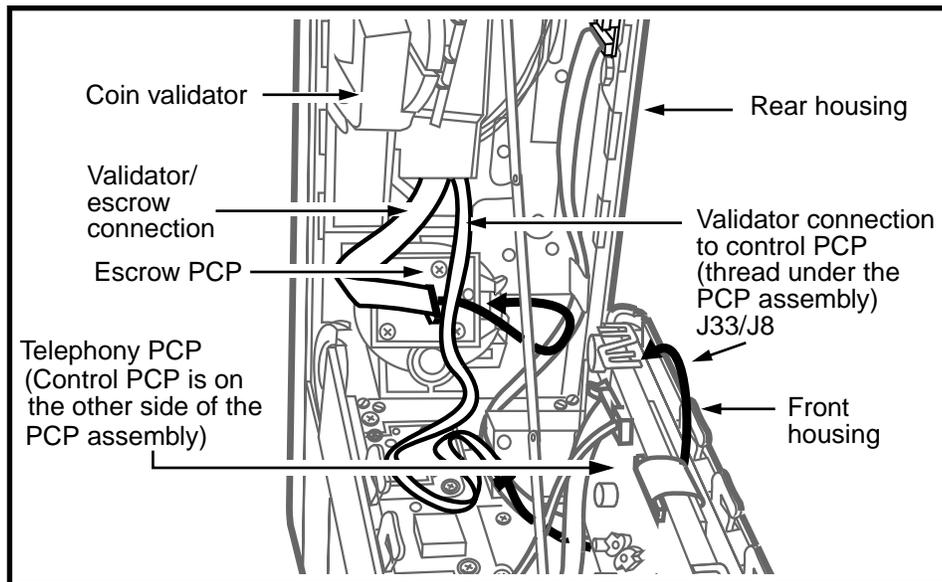




<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • BEFORE YOU DISCONNECT ANY CABLES, disconnect the power. • Do not reconnect power until you are ready to close the terminal.
<p>Failure to follow these precautions may damage the ESD-sensitive components.</p>	

Refer to Figure 6-5 for validator cable locations.

Figure 6-5: Validator cable connections

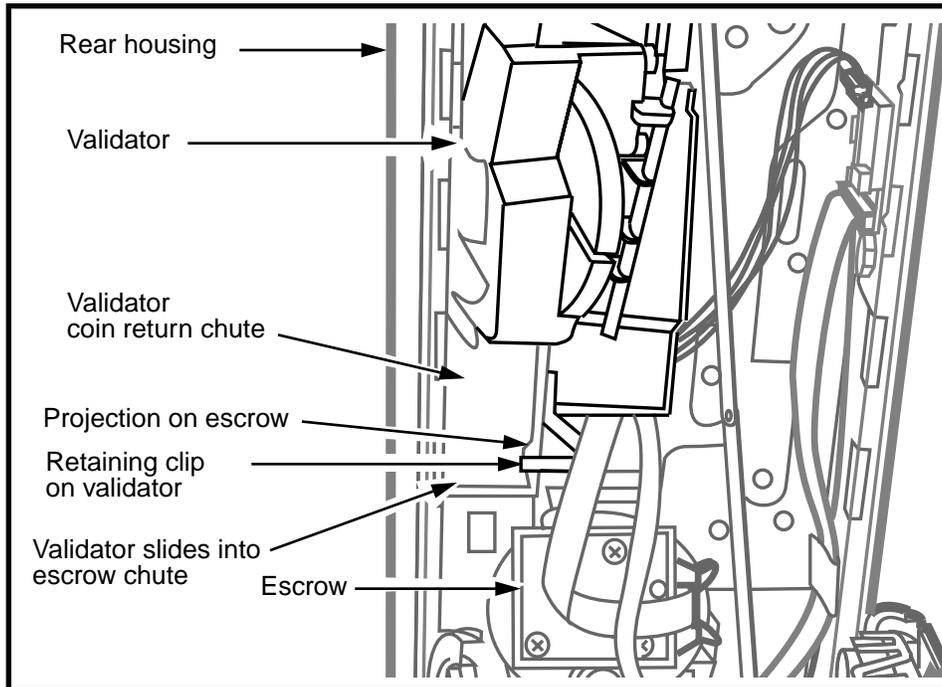




6-8 Coin path modules

2. Disconnect the validator cable (J33) from the control PCP connector (J8).
3. Feed the cable under the PCP assembly.
4. Disconnect the validator cable (J21) from the escrow connector (PL5)
5. Remove the packing foam block above the validator and discard.
6. Release the retaining clip securing the validator to the escrow, indicated in Figure 6-6.

Figure 6-6: Locating the validator retaining clip



7. Slide the validator up until the large portion of the key-hole is aligned with the validator retaining screw.

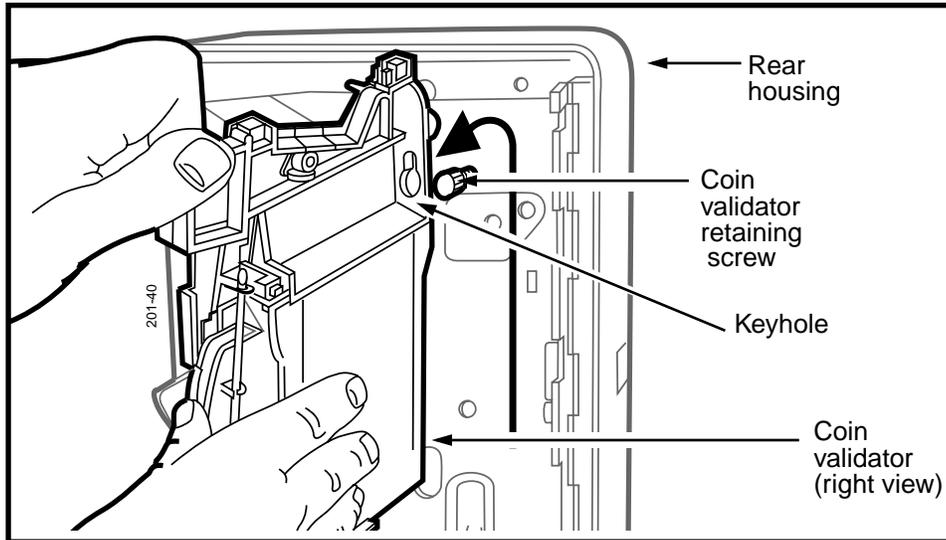
Refer to Figure 6-7.

8. Remove the validator by tilting the top back and then lifting it up and out of the housing.



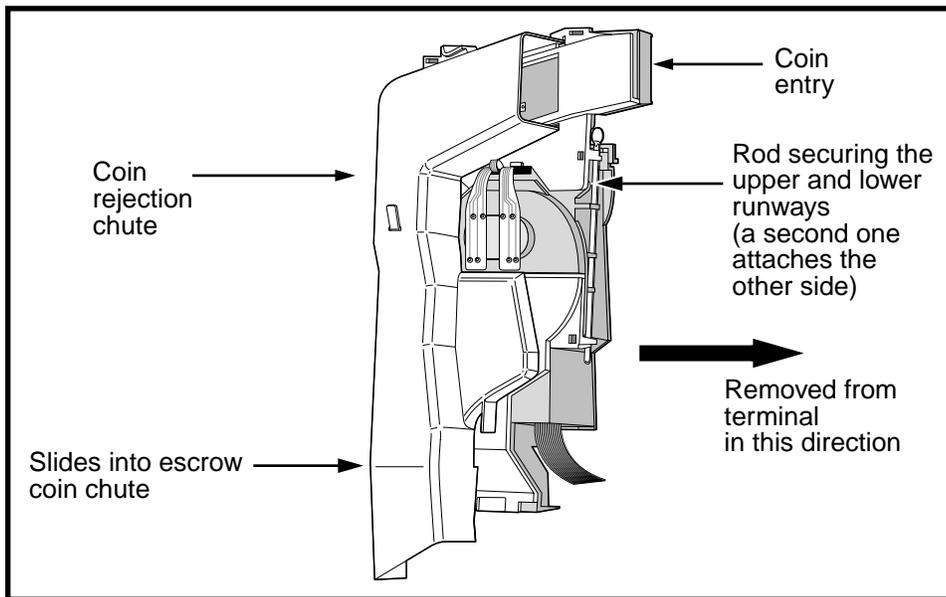


Figure 6-7: Lifting the validator off the retaining screw



The left side of the validator is shown in Figure 6-8.

Figure 6-8: Showing the coin rejection chute on the validator



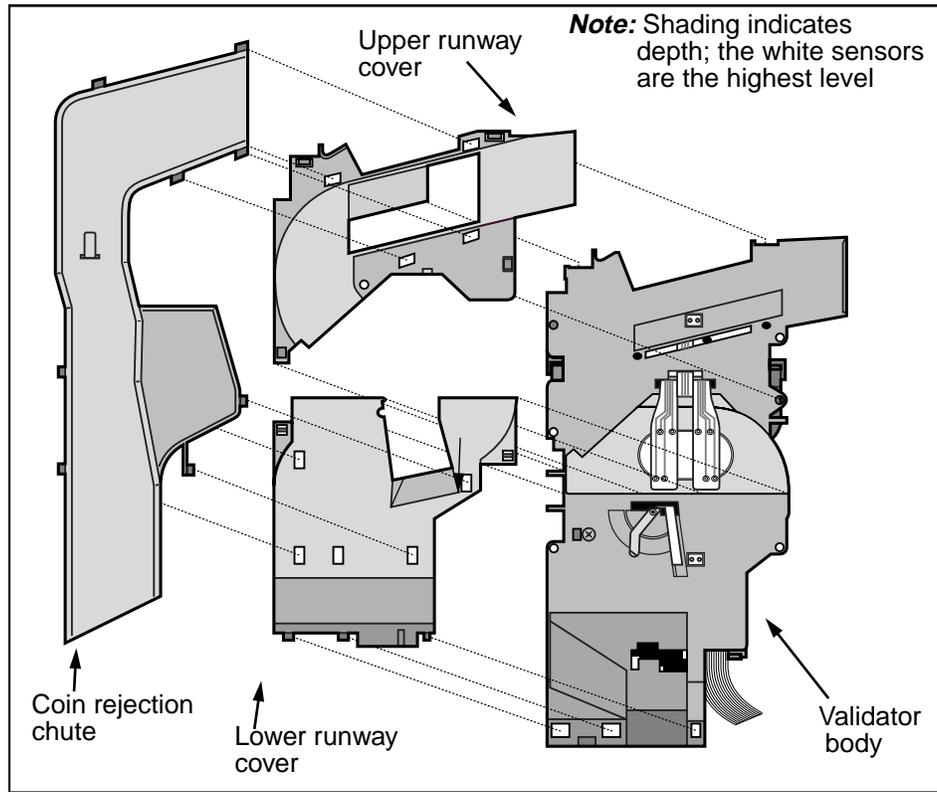


6-10 Coin path modules

To troubleshoot a validator jam or to remove the internal partition that prevents such jams, the validator comes apart, as shown in Figure 6-9.

Two steel hinge rods, one on either side of the validator, release the upper and lower runways. Refer to Figure 6-8.

Figure 6-9: Exploded view of the coin validator



See this



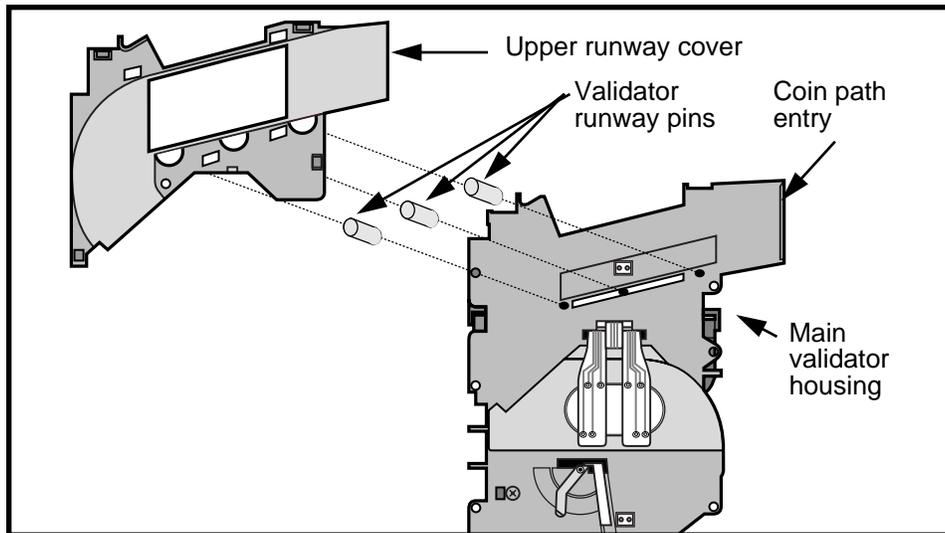
Vandalism deterrent pins

Be careful when removing the upper runway housing if the validator has the three validator runway pins located beneath the upper runway. Refer to Figure 6-10.





Figure 6-10: Exploded view of the validator with runway pins



9. When you remove the validator from the terminal, do a visual check first to see if the coin chute is clear.
10. Clear it, if necessary.
11. If the coin is stuck further down, you may need to remove the coin rejection chute and the upper and/or lower runway covers to clear the coin path. Refer to Figure 6-9.

To remove these parts:

- a) To remove the coin rejection chute, squeeze the long sides to free the tabs and pull it off.
- b) To remove the upper and/or lower runway covers, remove both steel hinge rods found on either side of the validator housing.

See this



If the terminal has the three validator runway pins, either remove them or tape them down until you are ready to replace the upper housing assembly.

Refer to Figure 6-10.





6-12 Coin path modules

- c) When you have cleared the jam, replace the runway covers.

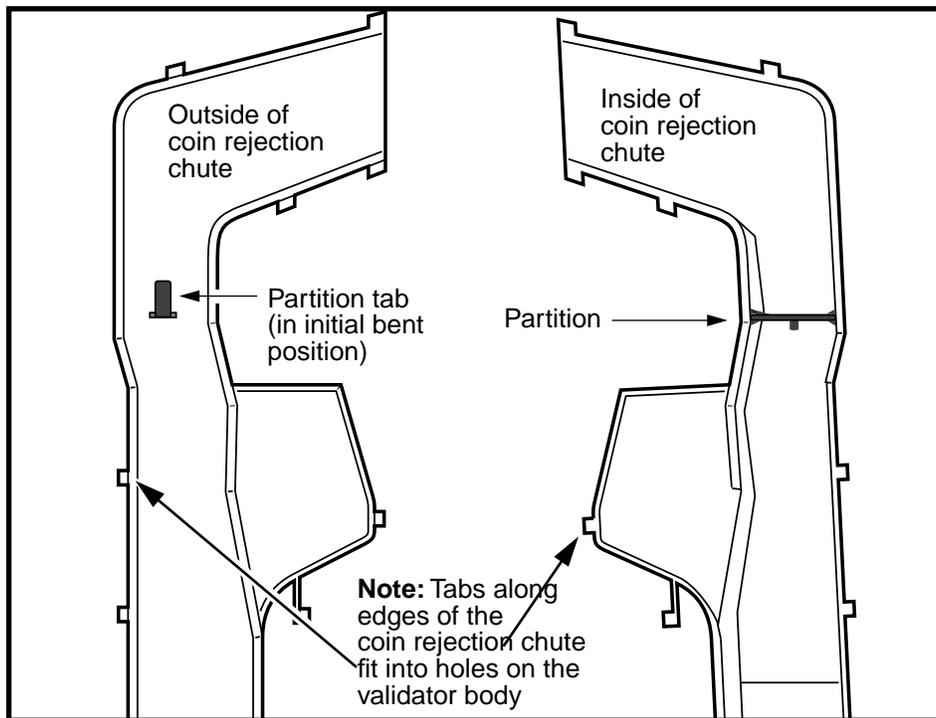
Vandal-deterrent validator:

- If the validator has the three runway pins ensure they are properly in place in the sockets on the validator body.
- Fit the upper runway cover over the pins so that it sits flush to the validator body.
- Replace the steel rods which secure the covers.

12. Remove the partition from inside the coin rejection chute validator, if desired. Refer to Figure 6-11.

- a) Detach the coin rejection chute by gently squeezing the sides together to free the tabs and pulling it away from the terminal.

Figure 6-11: Locating the coin rejection chute partition



NTP: 506-6501-203 Issue: 00.01 Status: Standard Date: June 1998





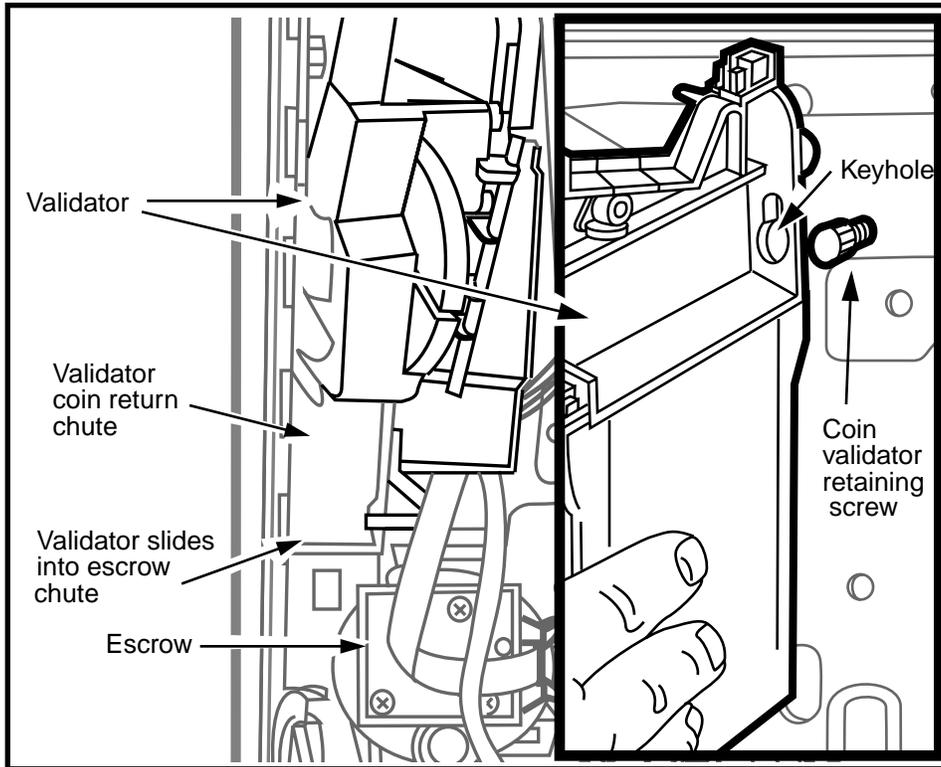
Coin path modules **6-13**

- b) Locate the partition tab which extends through the wall of the rejection chute. Refer to Figure 6-11.
 - c) Bend the tab straight.
 - d) Slide the partition out and discard.
 - e) Re-attach the coin rejection chute to the validator body, making sure all the tabs are inserted in the proper holes.
13. To replace the validator in the terminal, reverse the preceding steps.
- a) When replacing the validator, it may be necessary to detach the link assembly.
If necessary, refer to **Replacing the front housing assembly** on page 2-13.
 - b) Slide the bottom of the validator coin chute into the top of the coin chute on the escrow.
Refer to Figure 6-12.
 - c) At the same time, slip the large part of the keyhole over the retaining screw.
Refer to the inset in Figure 6-12.
 - d) Slide the validator into position.
 - e) Replace the front housing if you removed it in **step 13a**.
 - f) Reinstall the PCP assembly if you removed it at the beginning of this procedure.
Ensure that you route the ribbon cable from the validator (J33) under the PCP assembly.
Refer to **Removing the PCP assembly** on page 3-2, if necessary.



6-14 Coin path modules

Figure 6-12: Reinstalling the validator



14. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
 - d) If you replaced the validator with a new one, run the INSTALL routine.
 - e) If you installed the original validator back into the terminal, run the craft interface coin tests to ensure the coin path is clear.
15. Perform function tests.



Replacing the coin escrow

The coin escrow holds the coins until a call is connected or not completed.

- If the call is connected, the escrow dumps the coins into the coin box.
- If the call does not go through, the coins are deposited in the coin return.

See this:

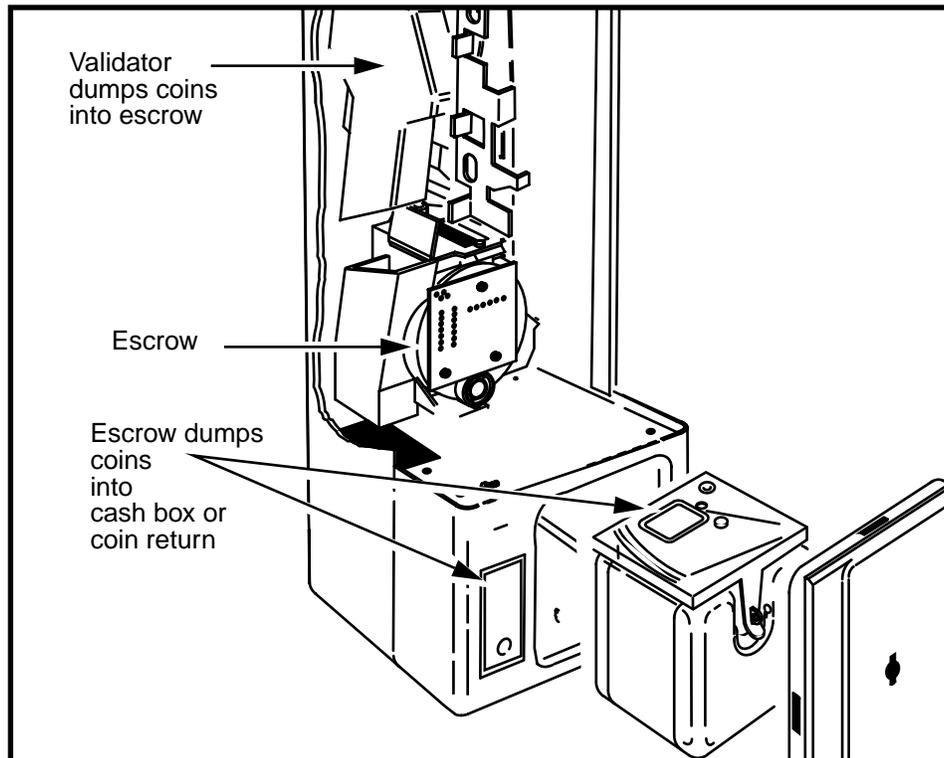


Vintage alert

Pre-MTR-1.9 terminals

Arrange for a coin box pickup before you replace this module.

Figure 6-13: Locating the escrow in the coin path





6-16 Coin path modules

To remove the escrow for replacement or to clear a coin jam, do the following:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

<p>Upload CDRs before you start</p>	<ul style="list-style-type: none"> • Be sure you upload CDRs before you do this procedure.
--------------------------------------------	-----------------------------------------------------------------------------------------------------------

- attached your ESD wrist strap inside the terminal
- confirmed the power is disconnected at the rear terminal PCP
- removed the coin validator as explained in **Replacing the coin validator** on page 6-6

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the power before disconnecting any other cables. • Do not reconnect the power until you are ready to close the terminal.
<p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>	

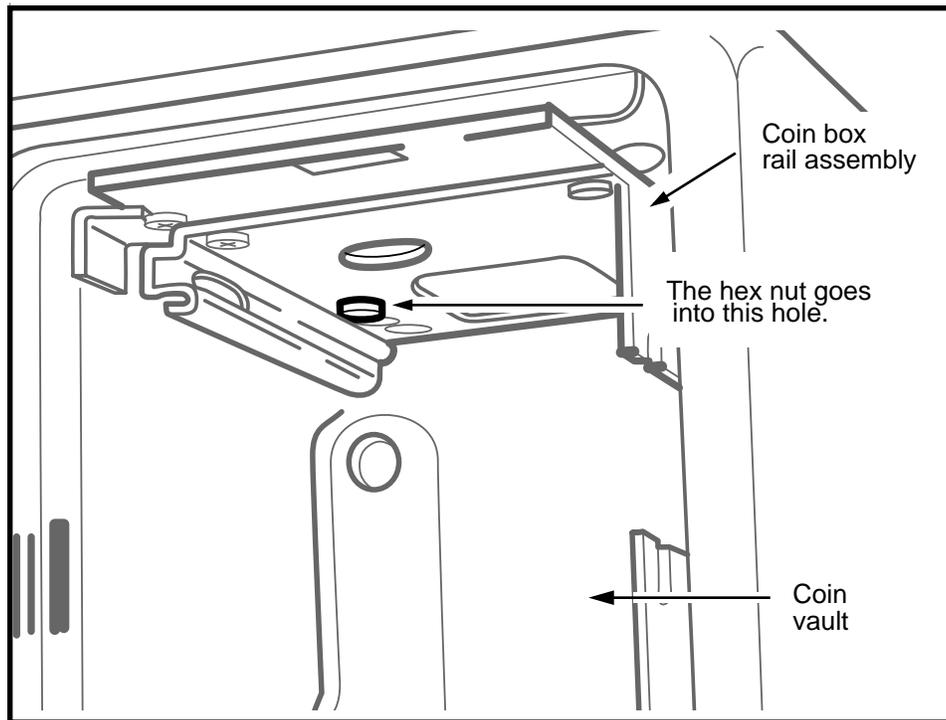




Coin path modules **6-17**

2. Remove the escrow module.
 - **Top-mounted escrows:** Start at step 3.
 - **Escrows secured through the coin vault:**
 - Remove the coin box as explained in **Replacing the vault door or the coin box** on page 6-25
 - Remove the hex nut accessed through the coin vault on the underside of the vault top through the coin box rail, as indicated in Figure 6-14.

Figure 6-14: Coin escrow hex nut inside the coin vault



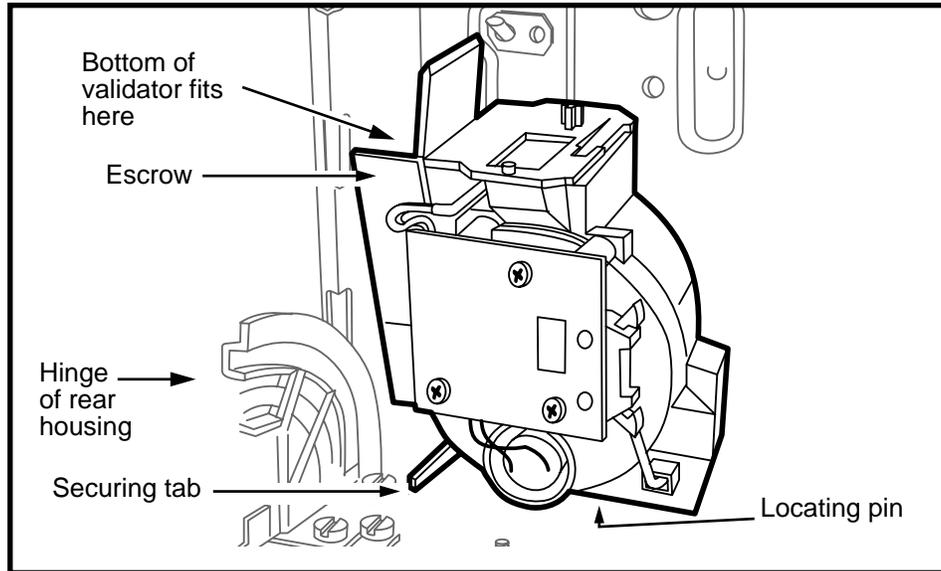
3. Push the securing tab, labelled in Figure 6-15, so it clears the vault top in the return cutout.
4. Lift the escrow until the locating pin on the bottom clears its rectangular hole in the vault top.





6-18 Coin path modules

Figure 6-15: Positioning the escrow module



5. To clear a jam, do the following:

- a) Turn the escrow upside down, and rock the unit from side to side. Coins or debris will empty out, clearing the blockage.

WARNING



- **Do not** under any circumstances insert any object, such as screwdrivers, metal rods, or fingers, into the escrow unit.
- Attempting to clear the jam in this manner may cause permanent damage to the escrow.

- b) If the jam cannot be cleared, replace the escrow and send the jammed escrow for repair.

6. To replace the escrow, reverse Steps 1 to 4.

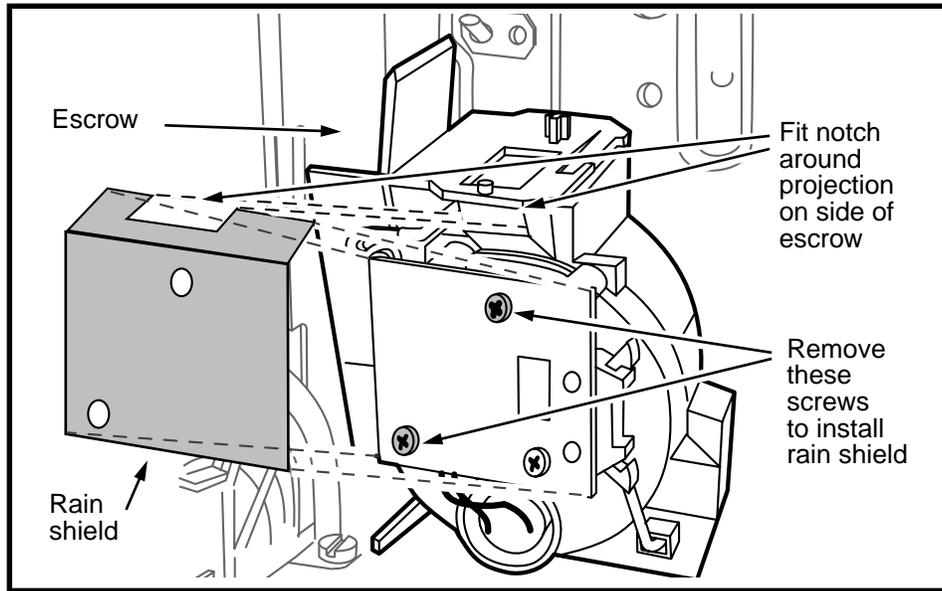
- Align the locating pin with the cut-out on the vault top.
- Tighten the escrow retaining lock nut only until the escrow becomes slightly snug.





7. If you are installing a new escrow, attach the rain shield to the escrow once it is seated back in the terminal. The positioning of the rain shield is shown in Figure 6-16.

Figure 6-16: Positioning the escrow rain shield



- a) Remove the top screw and the bottom left screw from the escrow PCP board.
 - b) Position the shield over the PCP and replace the screws.
8. Restore the coin path:
 - a) Replace the coin box.
Refer to **Replacing the vault door or the coin box** on page 6-25.
 - b) Replace the validator.
Refer to **Replacing the coin validator** on page 6-6.
 - c) Reconnect the cables, including the validator-to-escrow connection.





6-20 Coin path modules

9. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
 - d) If you replaced the module with a new one, perform the INSTALL routine to store coin data in the terminal memory.
 - e) If you replaced the same module after clearing it, go into the craft interface and perform the coin test several times to confirm that the coin path is clear.

If any of the coin tests fail, replace the escrow.
10. Perform function tests once the terminal is back in operation.

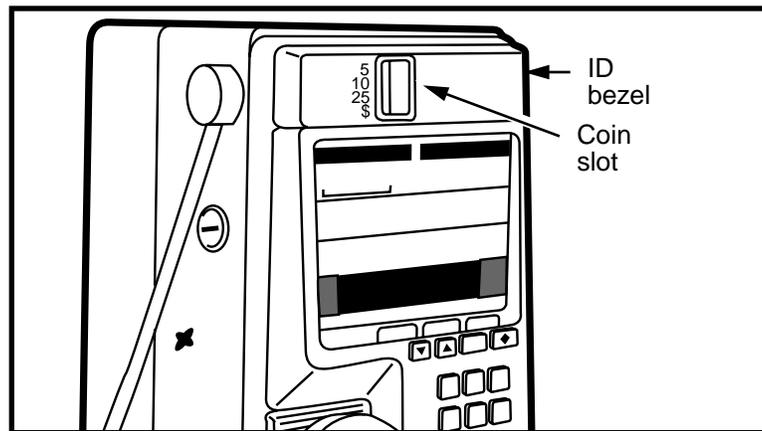




Replacing the coin guide

The coin guide is located on the ID bezel. It is the slot where coins are inserted and is the entry to the coin validator. Refer to Figure 6-17.

Figure 6-17: Locating the coin guide on the terminal exterior



The following steps describe how to remove and replace the coin guide:

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6, including:

Upload CDRs before you start	Since you will be removing the PCP assembly, upload CDRs before you do this procedure.
-------------------------------------	----------------------------------------------------------------------------------------

- attached your ESD wrist strap inside the terminal
- disconnected the terminal block from the rear terminal PCP to disconnect the power
- removed the PCP assembly as explained in **Removing the PCP assembly** on page 3-2



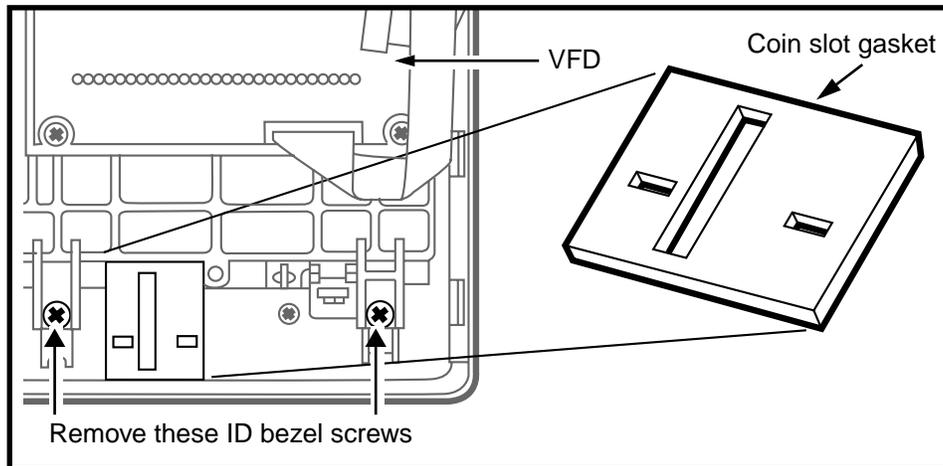


6-22 Coin path modules

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the supplementary power supply. • Do not reconnect the power until you are ready to close the terminal.
<p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>	



Figure 6-18: Locating ID bezel screws inside the front housing



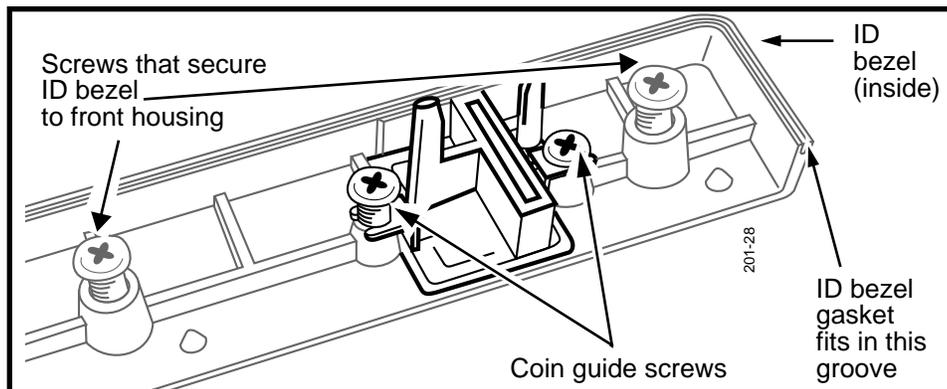
2. Remove the coin slot gasket, shown in Figure 6-18, and set aside.
3. Use one hand to support the ID bezel from the outside of the terminal.





4. Remove the two screws securing the ID bezel. Refer to Figure 6-18.
5. Remove the ID bezel from the terminal.
6. Remove the coin guide from the ID bezel by unscrewing the two M3.5 screws securing the guide to the bezel. Refer to Figure 6-19.
7. To replace the coin guide, reverse the preceding steps.
8. Ensure that both the coin guide gasket and the ID bezel gasket are in good condition.
Replace any damaged gasket.
9. Reinstall the PCP assembly. Refer **Removing the PCP assembly** on page 3-2, if necessary.

Figure 6-19: Locating coin guide screws



10. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
11. Perform coin tests to ensure the coin slot is properly lined up with the validator runway.





6-24 Coin path modules

Working inside the coin vault

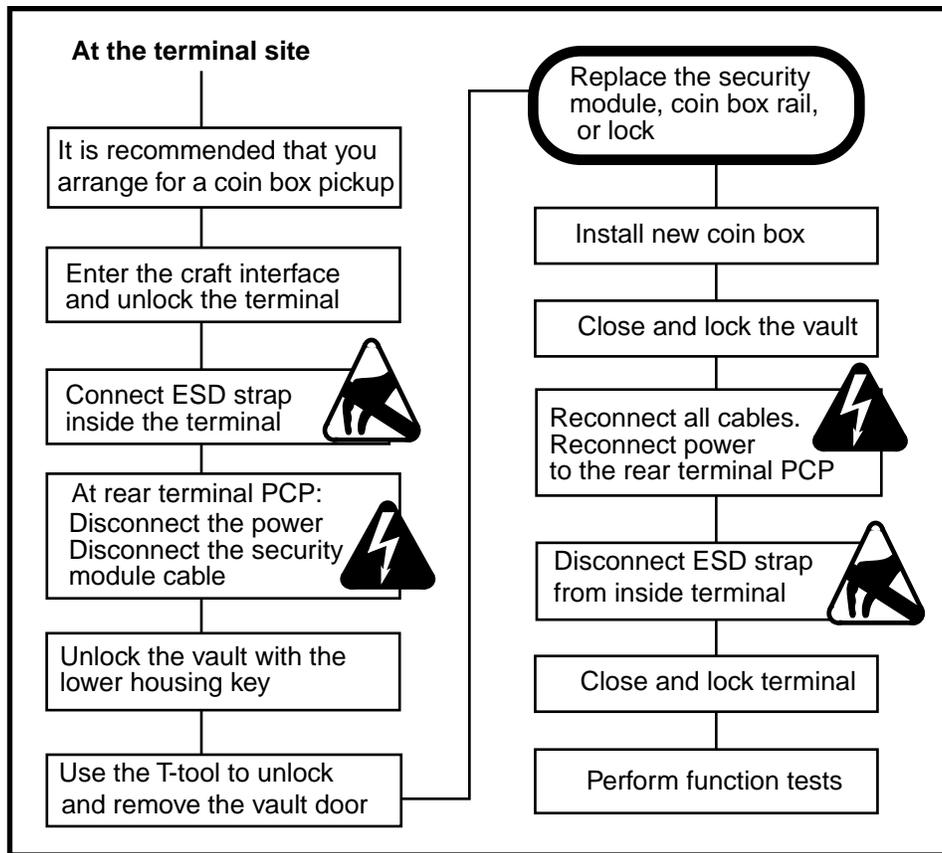
The coin vault contains several components which may require changing. In some cases, such as the coin box, this may happen fairly frequently. In other cases, such as the security switch or the coin box rail, changes are rare.

This section will describe the components inside the coin vault and how to replace or maintain them.

Flowchart

The following flowchart describes the key points to working inside the coin vault.

Figure 6-20: Flowchart — working inside the coin vault





Replacing the vault door or the coin box

The terminal collects the coins used to make a call into a coin box inside the coin vault of the terminal.

There are various components to the coin vault that may need to be replaced. This section describes how to access the vault and remove and replace the coin box.

Figure 6-21: Coin vault components

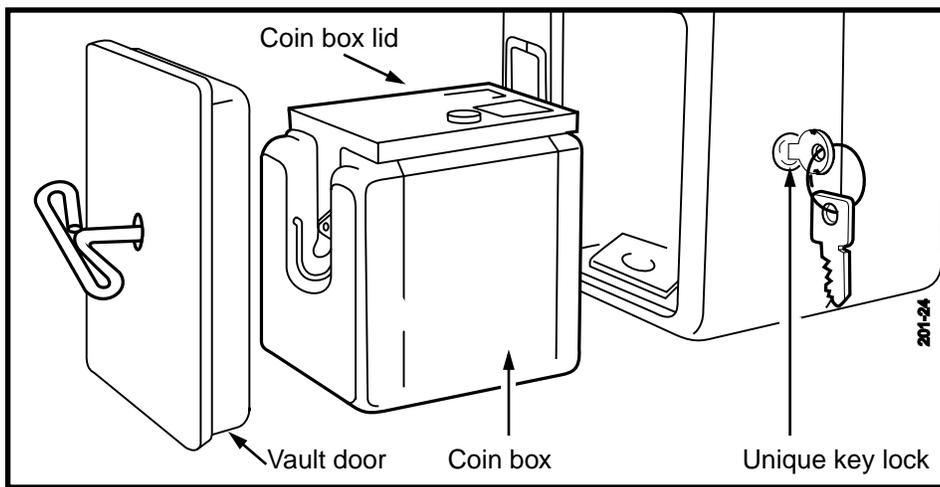
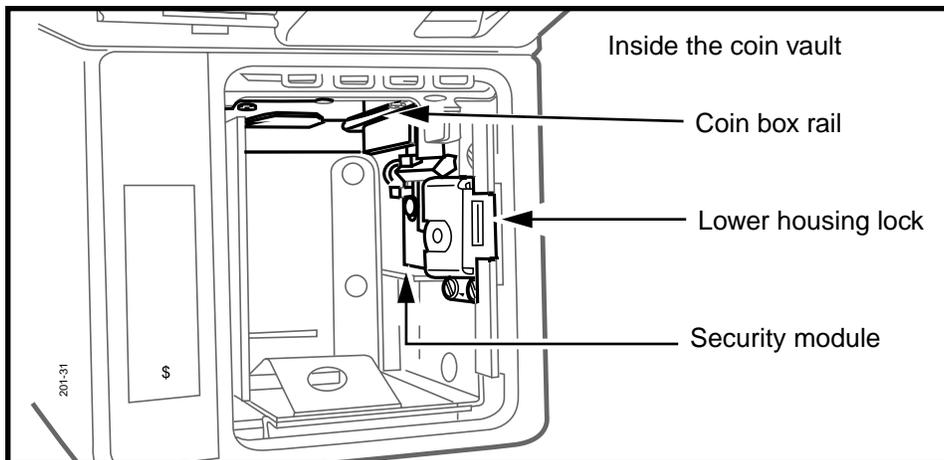


Figure 6-22: Replaceable parts inside the coin vault





6-26 Coin path modules

Accessing the coin vault

The following procedure explains how to access the coin vault and replace the vault door or the coin box.

See this:



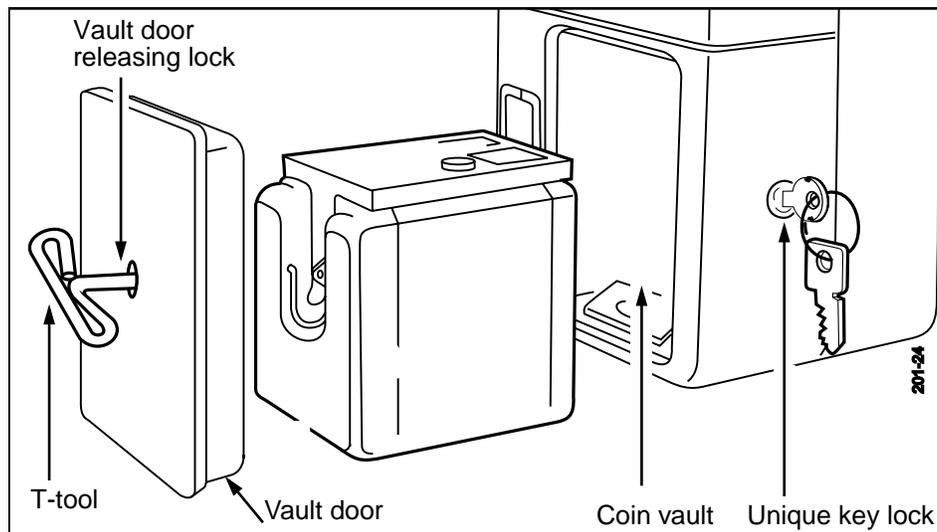
Coin box status

- The terminal keeps track of the coin box contents.
- A coin box should not be reinserted once it is removed from the terminal.
- Arrange for a coin pickup before the terminal power is disconnected so that the terminal coin box status memory resets to zero.
- Do not put in a new coin box until you complete the maintenance.

1. Insert the coin compartment key into the lock on the lower side of the terminal, as shown in Figure 6-23.
2. Rotate the key clockwise to unlock the coin vault lock.



Figure 6-23: Tools to unlock the coin vault





Coin path modules **6-27**

3. Insert the T-tool or L-tool into the slot on the front of the vault door.
4. Turn the tool counterclockwise until it stops.
5. Use the tool as a handle to pull the vault door away from the terminal.
6. The coin box is now exposed and can be removed by pulling on its handle. Refer to Figure 6-24.

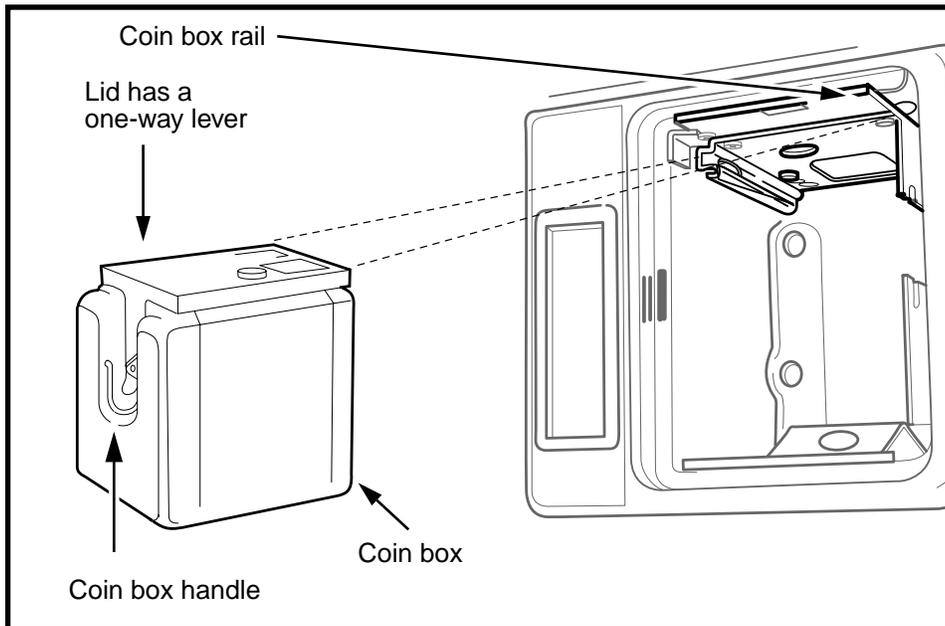
Note: When you remove the coin box, a notification is sent to the Millennium Manager.

7. To replace the vault door or coin box, reverse the preceding steps.

Make sure you align the lid lever of the coin box with the slot in the coin box rail.

See Figure 6-24.

Figure 6-24: Inserting the coin box into the coin vault



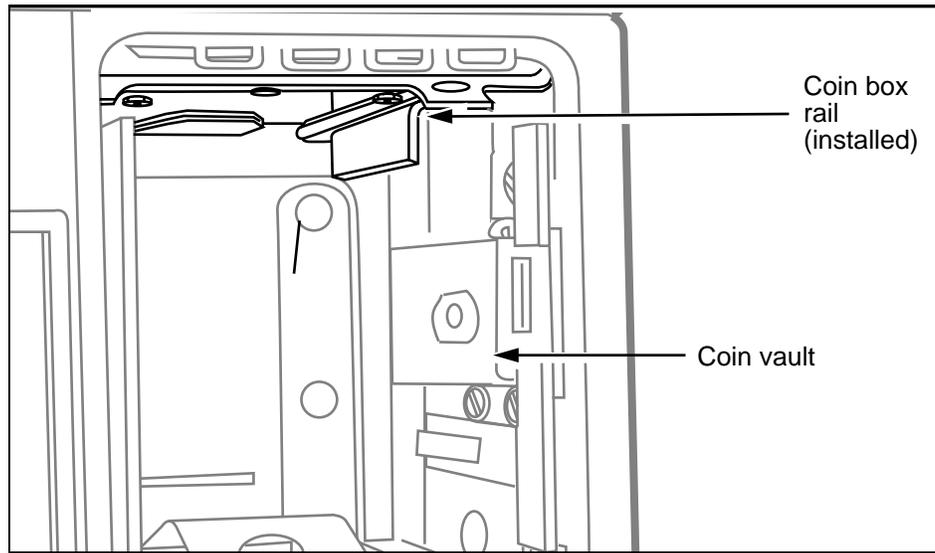


6-28 Coin path modules

Working with the coin box rail

The coin box rail supports the lid of the coin box. It will seldom, if ever, need to be replaced. Not all models of terminal have it.

Figure 6-25: Locating the coin box rail in the coin vault



See this:



Coin box status

- The terminal keeps track of the coin box contents.
- A coin box should not be reinserted once it is removed from the terminal.
- Arrange for a coin pickup before the terminal power is disconnected so that the terminal coin box status memory resets to zero.
- Do not put in a new coin box until you complete the maintenance.





Replacing the coin box rail

To replace the coin box rail, follow these steps:

1. This procedure assumes you have:
 - arranged for a coin pickup, and have not replaced the coin box
 - followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6
 - attached your ESD wrist strap inside the terminal
 - confirmed the power is disconnected at the rear terminal PCP

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the power before you disconnect any other cables. • Do not reconnect the power until you are ready to close the terminal.
<p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>	

2. If the escrow needs to be removed to access the upper rail screws, do the following:
 - a) Remove the coin validator as explained in **Replacing the coin validator** on page 6-6 and put it aside





6-30 Coin path modules

- b) Remove the escrow as explained in **Replacing the coin escrow** on page 6-15 and put it aside in an anti-static bag

See this



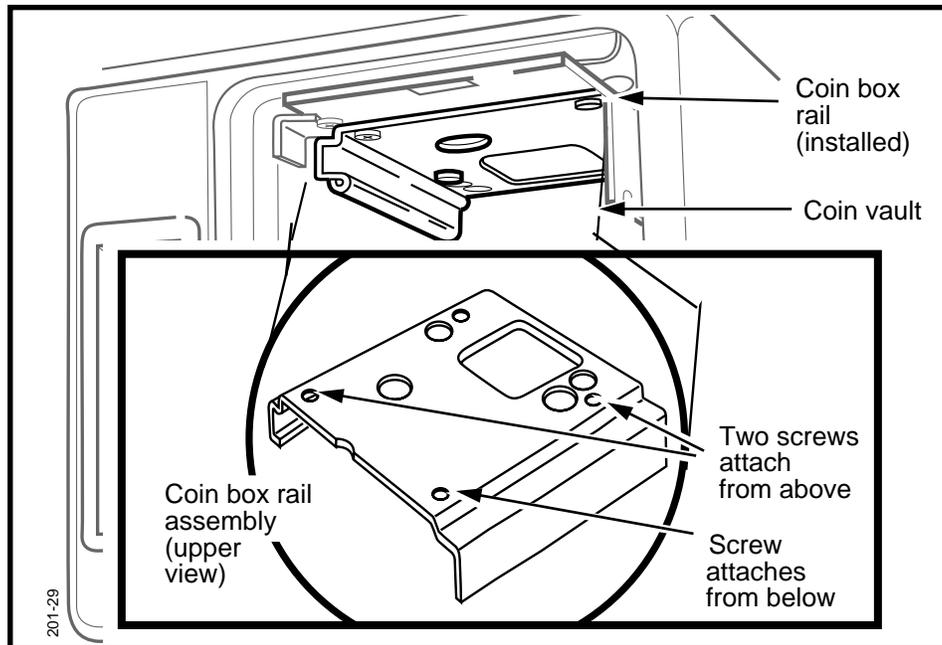
Newer versions of terminal hardware may not require the removal of the validator and escrow to access the screws. In that case, skip step 2.

3. Enter the coin vault as described in **Replacing the vault door or the coin box** on page 6-25.
4. Inside the rear housing:
 - a) Disconnect the vault security cable (J31) from the rear terminal PCP (J30).
 - b) Remove the two screws holding the coin box rail to the vault top.

Refer to Figure 6-26 to locate screw positions.



Figure 6-26: Removing the coin box rail





5. Close the front housing, but do not lock it.
6. From inside the coin vault, remove the screw(s) holding the coin box rail to the vault top.

There may be one or two screws, depending on the vintage of terminal.

Refer to Figure 6-26 to locate screw positions.

7. To replace the coin box rail, reverse the preceding steps.

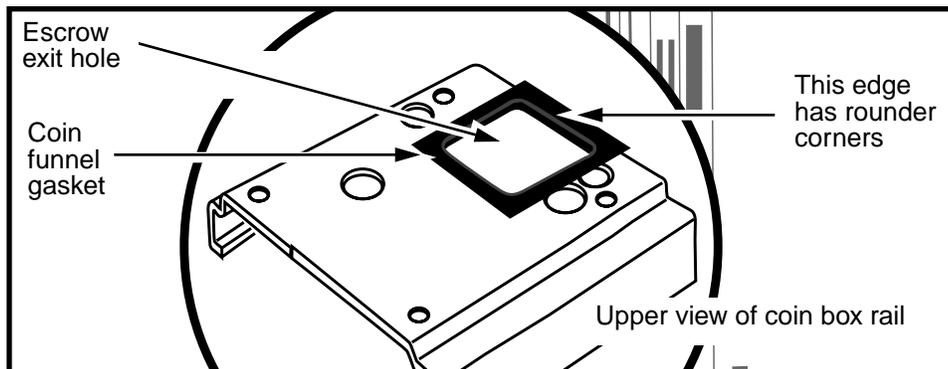
Note: The **coin funnel gasket** is used for instances where the coin box lid being used is not Nortel-issued. In this case, the hole in the coin box rail may not exactly match the hole in the lid of the coin box. The purpose of the funnel is to compensate for this discrepancy.

- a) If you are installing a coin funnel gasket, set it into the coin box rail hole from above before you re-attach the rail to the vault housing.
- b) The gasket should sit flat when it is correctly inserted. There is only one way it can fit into the hole to do this.

Note: The edge at the back of the coin box rail has rounder corners than the other edges.

Refer to the section **Upgraded coin box rail** on page 6-32 and to Figure 6-27.

Figure 6-27: Positioning the coin funnel gasket





6-32 Coin path modules

8. Replace the coin box, following the procedures in **Replacing the vault door or the coin box** on page 6-25.
9. Restore the terminal to operation. Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.

Upgraded coin box rail

If your company is using coin boxes and coin box lids which are not Nortel issue, there may be a compatibility issue in regards to how the lid fits under the escrow exit hole in the coin box rail.

The following are some of the discrepancies experienced:

- Since the Millennium Multi-pay terminal was designed to accommodate Canadian \$1 coins, the hole in the coin box rail from the escrow is large enough to accommodate this large coin.
- Many non-Nortel-issued lids are designed only to accommodate a coin as big as a quarter, so there is a size discrepancy between the hole in the coin box rail and the hole in this type of lid.
- The coin box rail and the lid do not sit tightly against each other.
- The design of the catch mechanism on the rail is such that the lids may not sit fully under the hole, leaving an overhang.

The combination of these problems makes it possible for coins to get caught in the space between the bottom of the coin box rail and the top of the lid.

In an effort to reduce this possibility a new coin box rail has been developed.

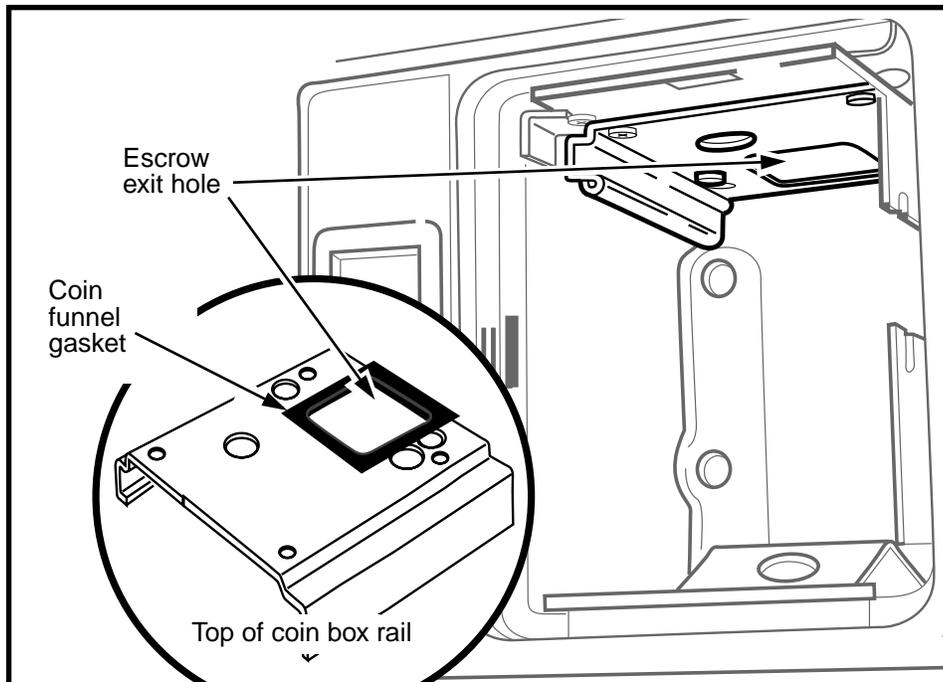




As well, a coin funnel gasket can be added to close up the space between the rail and the lid.

Figure 6-28 shows these features.

Figure 6-28: Adjusting the coin box rail coin opening



To distinguish this coin box rail from the old model, the new model has been painted a silver color.





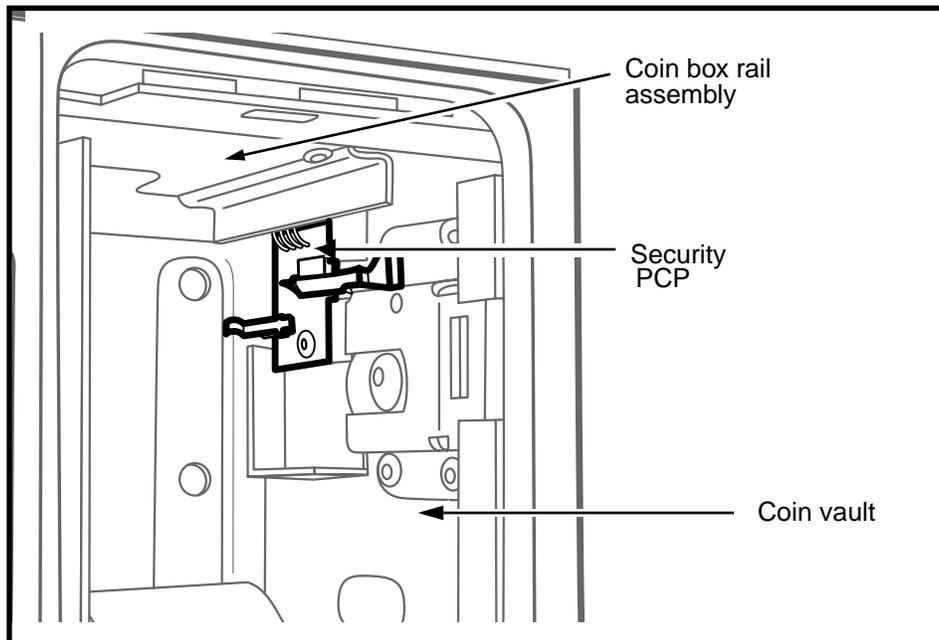
6-34 Coin path modules

Replacing the security PCP

The security PCP is located inside the coin vault. It has two microswitches. One monitors the coin box and the other, the coin vault lock. This module seldom fails, so there are no specific alarms to indicate a security PCP failure.

A failure can be deduced if all other coin box factors have been eliminated as the cause of alarms or collection problems.

Figure 6-29: Locating the security PCP in the coin vault





Follow these steps to replace the security PCP:

1. This procedure assumes you have:
 - arranged for a coin box pickup
 - followed the directions in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6
 - connected your ESD wrist strap inside the terminal
 - disconnected the terminal block from the rear terminal PCP to disconnect the power

<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the power before disconnecting any cables inside the terminal. • Do not reconnect the power until you are ready to close the terminal.
<p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>	

2. Locate the cable that comes up through the bottom of the housing from the security PCP and connects to the rear terminal PCP.

Refer to Figure 6-30.

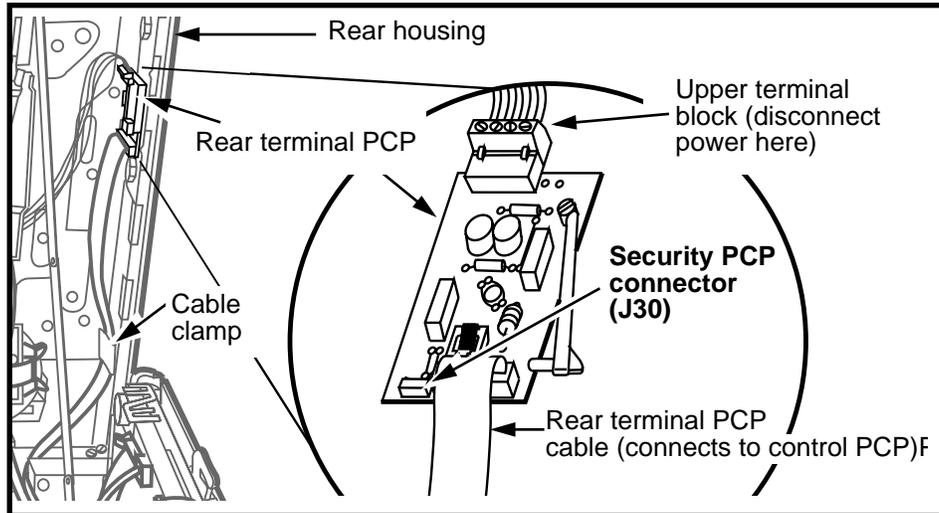
- a) Disconnect the coin box security PCP cable (J31) from the rear terminal PCP connector (J30).
- b) Remove the wires from any cable clamps.





6-36 Coin path modules

Figure 6-30: Rear terminal PCP security connector



3. Carefully guide the security PCP wires and connector through the opening in the vault top.
4. Close, but do not lock, the front housing assembly.
5. Remove the security PCP by removing the screw holding the security PCP and the PCP support on the inside of the coin compartment.

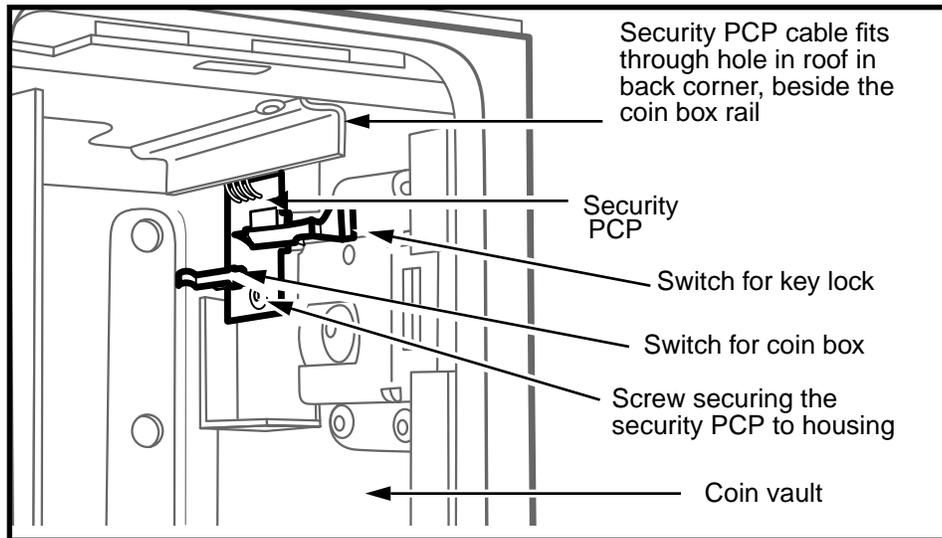
Refer to Figure 6-31.

6. To replace the security PCP, reverse the preceding steps.
Remember to connect the module cable (J31) to the connector on the rear terminal PCP (J30).
7. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.





Figure 6-31: Security PCP, installed



- b) Simulate a coin collection in order to reset the counter in the terminal.

To do this, follow these steps:

- i) Turn the coin box key to the locked position.
- ii) Push in the coin box microswitch with your left hand, or use a lid-less coin box.
Do not use a new coin box for this purpose.
- iii) Open the terminal and reconnect the power.
- iv) Close the terminal and lock it.
- v) Turn the lower housing key to the open position. Release the microswitch, or remove the lid-less coin box.
The terminal will see this as a legitimate collection and reset its coin box status to zero.
- vi) Insert a new coin box and close the vault.

Simulating a coin collection





6-38 Coin path modules

Note: Be sure to follow procedure for notifying the coin collection service that maintenance took place involving removing the coin box.

- c) Remove your ESD strap connection.
 - d) Close and lock the terminal.
8. Test terminal function.

Replacing the coin vault lock

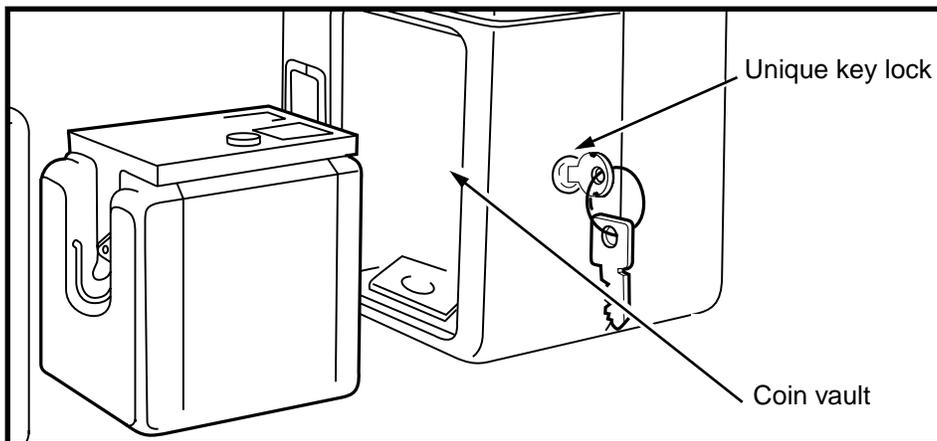
The lower housing lock, described here as the coin vault lock, secures the coin vault door.

This lock can either be a mechanical lock or an electronic lock (e-lock).

These locks are customer-specific and each lock has a unique key. In the case of the e-lock, this key is a software code.



Figure 6-32: Unlocking the coin vault





Replacing a mechanical lock

The procedure below describes how to replace a mechanical lock.

1. This procedure assumes you have followed these procedures described earlier in this chapter:
 - opened coin vault and removed the coin box as explained in **Replacing the vault door or the coin box** on page 6-25 or arranged for a coin pickup
 - followed the steps in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6
 - attached your ESD strap to an ESD point inside the terminal
 - disconnected the terminal block from the rear terminal PCP to disconnect the power
 - removed the security PCP assembly as explained in **Replacing the security PCP** on page 6-34



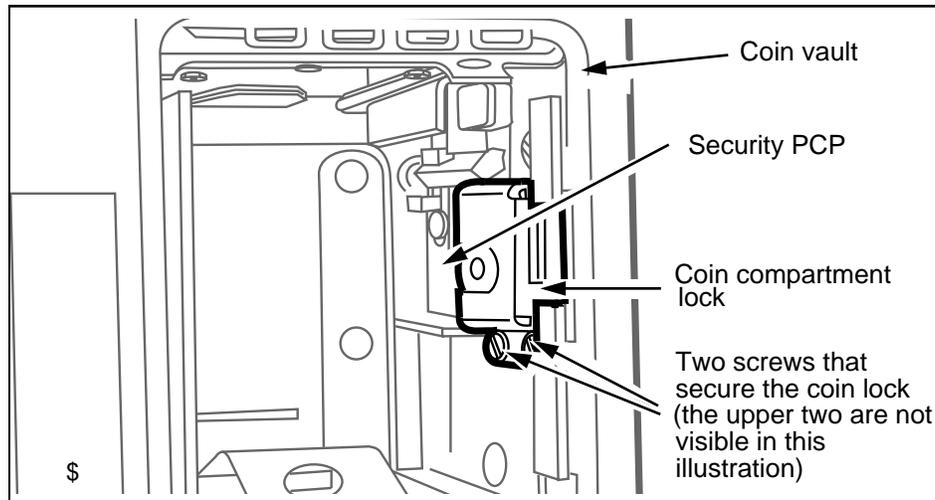
<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the supplementary power supply. • Do not reconnect the power until you are ready to close the terminal. <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>



6-40 Coin path modules

2. Remove the key from the coin compartment lock.
3. Remove the four screws securing the coin compartment lock. Refer to Figure 6-33.

Figure 6-33: Replacing the coin vault lock



4. Reverse **steps 1 to 3** to replace the coin compartment lock.
5. Replace the security PCP as explained in **Replacing the security PCP** on page 6-34.
6. Reconnect the terminal block to the rear terminal PCP to reconnect the power.
7. Test the switches to ensure that the lock is positioned so its micro-switch actuator is activated by locking the coin compartment and deactivated by unlocking it.
8. Restore the terminal to operation. Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Remove your ESD strap connection.
 - b) Close and lock the terminal.
9. Insert a new coin box into the coin vault.



10. Replace the vault door and lock the vault, as explained in **Replacing the vault door or the coin box** on page 6-25.

Coin vault lock upgrade

This procedure describes how to install extra lock plates on the coin vault lock.

To upgrade the lock, you need:

- one lock plate with big screw holes
- one reinforcement plate with smaller screw holes
- two spacers
- two M2.5 Phillips or Pozidriv #1 screws

Upgrading the lock

1. If the terminal has a lock installed, remove the lock.

Follow the instructions in **Replacing the coin vault lock** on page 6-38.

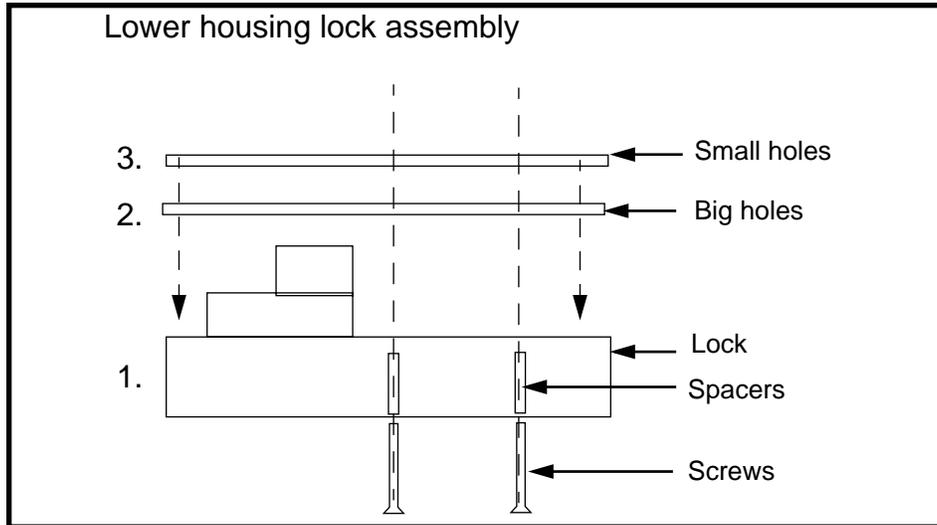
2. Fit the pieces of the lock together as shown in Figure 6-34 and described below:
 - a) Place the lock in front of you, with the bolt facing to your right.
 - b) Place one of the spacers in the top right-hand hole.
 - c) Place the other spacer in the bottom centre hole.
 - d) Place the U-shaped plate with the bigger holes on the lock plate.
 - e) Place the second plate on top of the first one.
 - f) Flip the assembly over, holding it tightly together with your fingers.
 - g) Insert the screws in the screw holes and tighten them securely.





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Figure 6-34: Vault lock upgrade side view



3. Reassemble the lock by following the instructions in **Replacing the coin vault lock** on page 6-38.



About the e-lock security switch

Installing electronic locks in the coin vault area of Millennium Multi-pay-based terminals requires an adjustment to the way the terminal will sense vault activity.

To accommodate the extended projection of the e-lock housing, a security switch and bracket assembly has been designed specifically for the e-lock. Instead of having two switches to monitor the vault, as the mechanical lock security switch does, the bolt monitor function has been wired into the coin box switch so that both activities are monitored at the same time, while only creating one alarm if the switch is activated.

This switch and bracket can be ordered installed on new terminals, or it can be ordered as a kit to replace the security module used in terminals already in the field.





Installing the switch and bracket

The following procedure describes how to install an e-lock, and an e-lock security switch and bracket.

1. This procedure assumes you have:

- arranged for a coin box pickup

Note: Do not put a new coin box into the coin vault, unless otherwise instructed

- put the terminal out of service
- followed the steps in **Preparing the terminal for maintenance** on page 2-3 and **Opening and closing the terminal** on page 2-6
- attached your ESD strap to an ESD point inside the terminal
- confirmed the power is disconnected at the rear terminal PCP



<p>Electrostatic discharge (ESD)</p> 	<ul style="list-style-type: none"> • Before working with the internal boards, put on your ESD wrist strap and connect it to an ESD connection point inside the terminal. • Place any components you remove from the terminal into an anti-static bag or onto an anti-static surface.
<p>Warning</p> 	<ul style="list-style-type: none"> • Disconnect the power before you disconnect any other cables. • Do not reconnect the power until you are ready to close the terminal. <p>Failure to follow these precautions may damage the ESD-sensitive components of the PCPs.</p>





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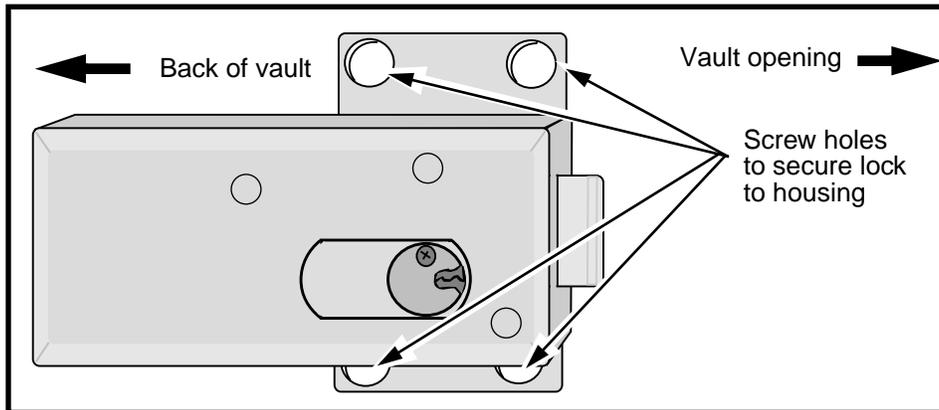
2. Close the terminal housing, but do not lock it.
3. Open the coin vault as explained in **Replacing the vault door or the coin box** on page 6-25.
4. Remove the security module as described in **Replacing the security PCP** on page 6-34.
5. Remove the mechanical lock as described in **Replacing the coin vault lock** on page 6-38.
6. Position the e-lock on the inside of the vault.

The four holes will line up with the screw holes on the terminal shell, allowing the keyhole to fit through the appropriate hold in the housing.

Refer to Figure 6-35 for screw hole locations.

7. Replace the two screws above the lock.

Figure 6-35: Vault-side (inside) view of e-lock



8. Feed the connector and cable of the security switch up through the hole between the vault and the terminal chassis.

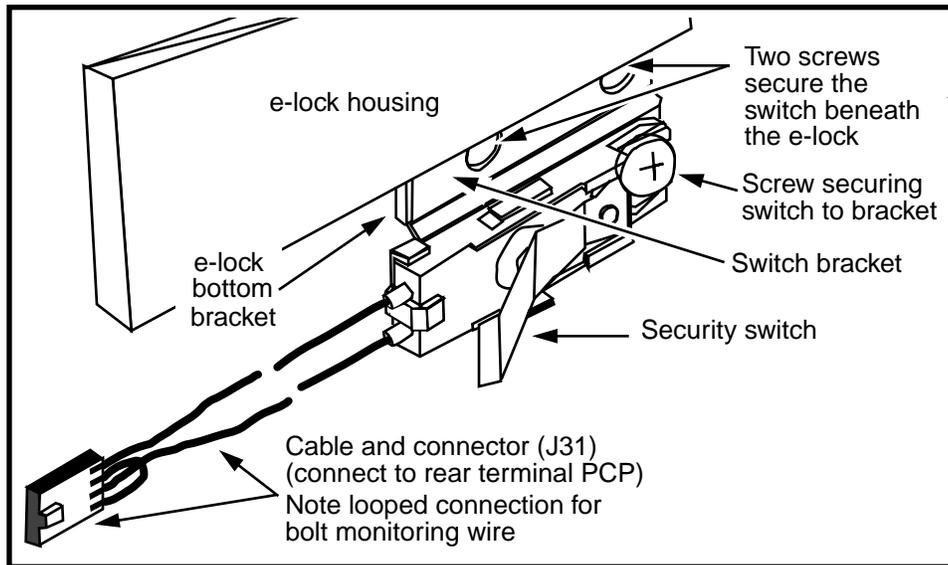
The hole is located in the back, right-hand corner of the vault between the coin box rail and the interior wall of the vault.

9. Position the security switch and mount underneath the e-lock.





Figure 6-36: Switch fits under e-lock housing



The two holes in the switch mount will match the two bottom holes of the lock.



Refer to Figure 6-36.

10. Insert the two screws under the e-lock that hold the switch in place.
11. Open the terminal housing and locate where the switch cable was pushed up through the floor of the rear housing.
 - a) Thread the cable through the cable clamp located on the side of the rear housing.
 - b) Connect the cable connector to the connector on the rear terminal PCP.
 - c) Ensure the connector is properly seated.
12. Insert the coin box into the vault.

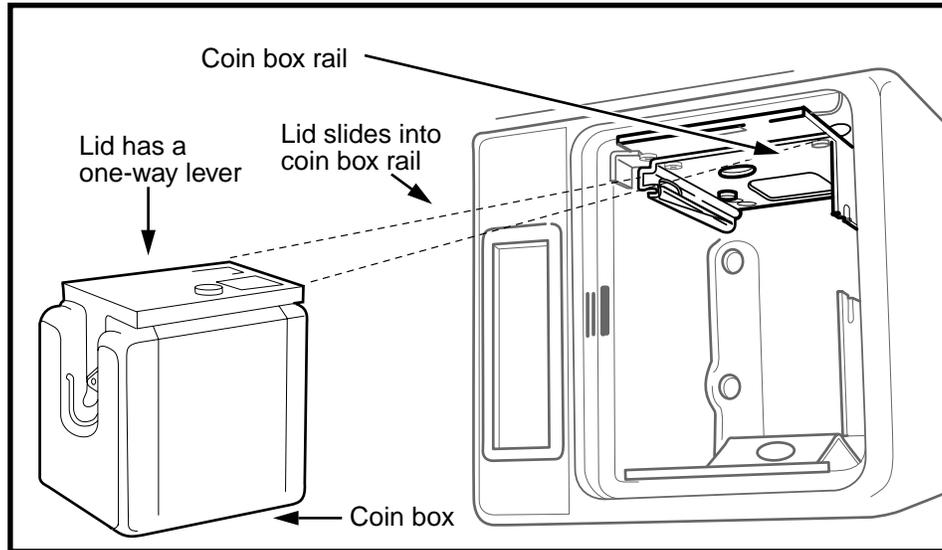
Refer to Figure 6-37.





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Figure 6-37: Inserting the coin box into the coin vault



13. Close and lock the coin vault.

See this:



Once the vault is closed and locked, you will not be able to get back in without resetting the electronic key.

14. Restore the terminal to operation.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.

- a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
- b) Remove your ESD strap connection.
- c) Close and lock the terminal.
- d) If you manually removed the terminal from service through the craft interface, re-enter the craft interface and restore the terminal to service.

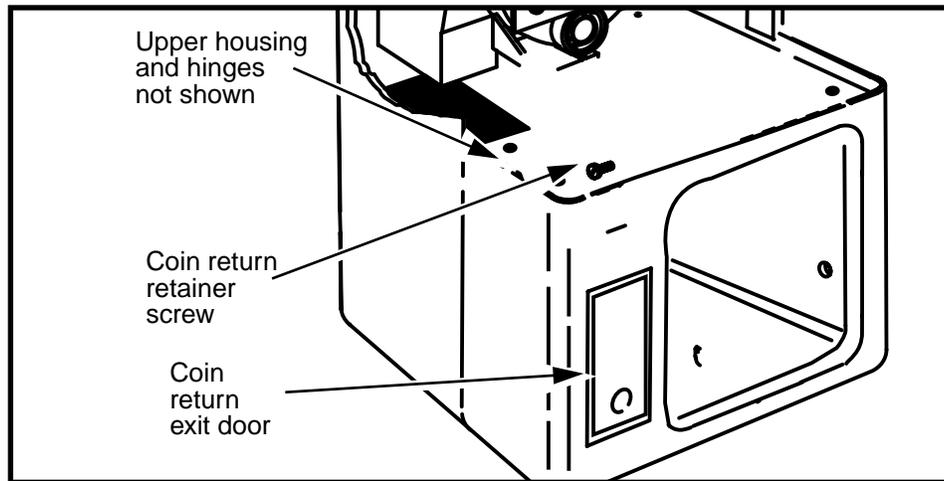




Working with the coin return assembly

The coin return assembly is replaceable as a single unit, which is secured through the floor of the rear chassis.

Figure 6-38: Exterior aspect of the coin return assembly



Flowchart

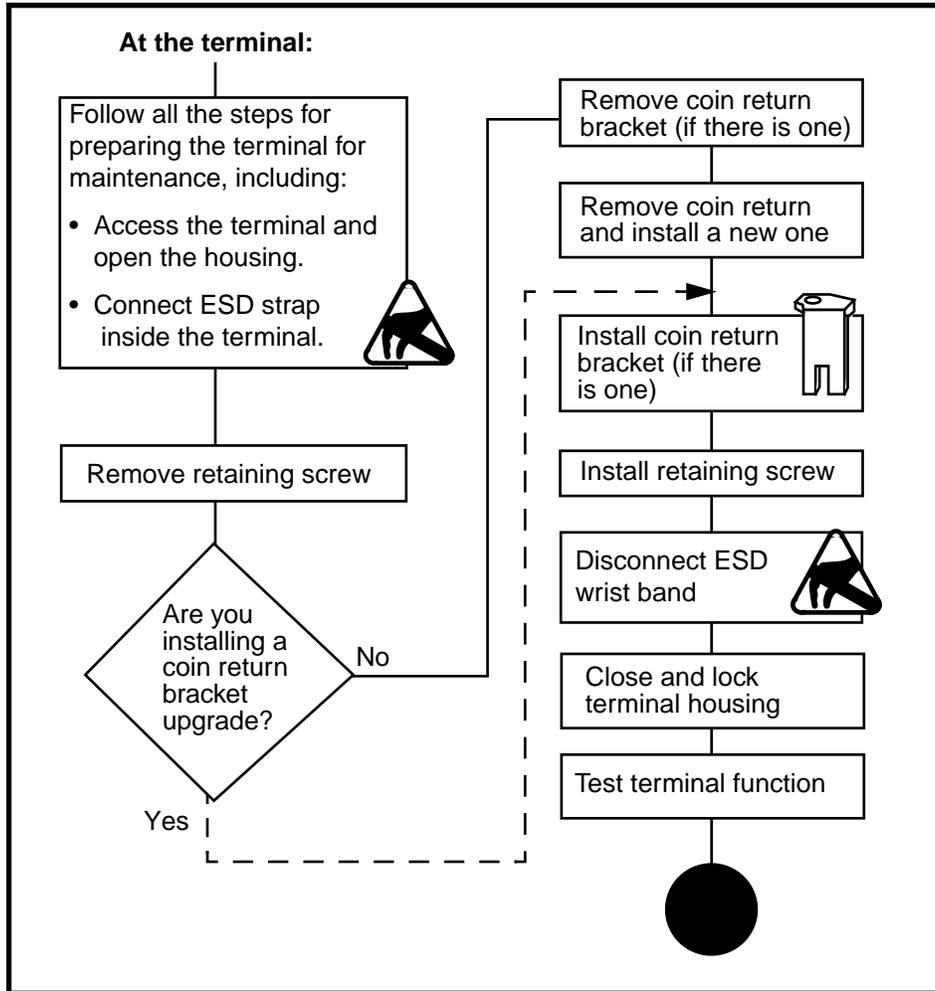
Figure 6-39 shows a flowchart of the steps for installing the coin return assembly and the coin return bracket.





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Figure 6-39: Flowchart — installing the coin return and bracket





Replacing the coin return assembly

The following steps tell you how to remove and replace the coin return assembly.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3.

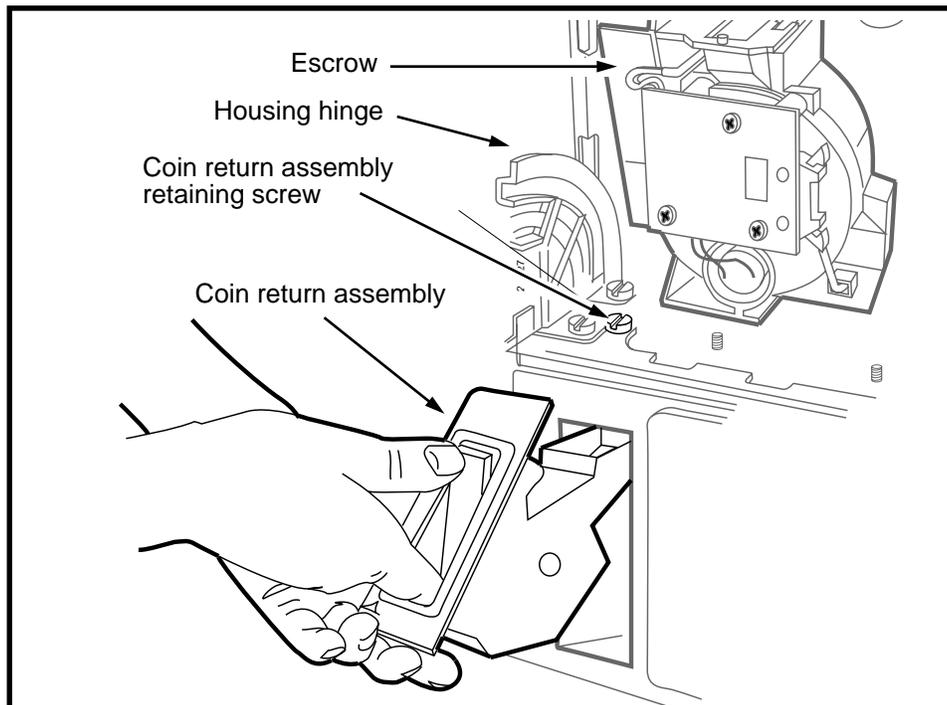
Note: It is not necessary to upload CDRs or disconnect the power to do this procedure.

DO CONNECT your ESD wrist strap to an ESD point inside the terminal.

2. Loosen the coin return assembly retaining screw, which is located near the set hinge on the left side on the floor of the rear housing.

See Figure 6-40.

Figure 6-40: Removing the coin return assembly





6-50 Coin path modules

3. If the terminal has a coin return bracket, remove it and set aside.

Refer to **Coin return bracket upgrade** on page 6-51, if necessary.

Note: Older terminals may not have this part.

4. Close the front housing cover to allow access to the front of the coin return assembly.
5. Grasp the coin return assembly by placing your index finger into the coin return door and your thumb on the upper surface of the coin return door.

Refer to Figure 6-40.

6. Lift the coin return assembly up about 3 mm, and then pull it away from the terminal as much as possible.
7. Lift and rotate the coin return assembly above the upper end of the coin return bezel and remove.
8. To replace the coin return assembly, reverse the preceding steps.
9. When you are ready to close the housing, remove your ESD strap connection and close and lock the housing assembly.

Refer to **Restoring the terminal to operation** on page 2-10, if necessary.





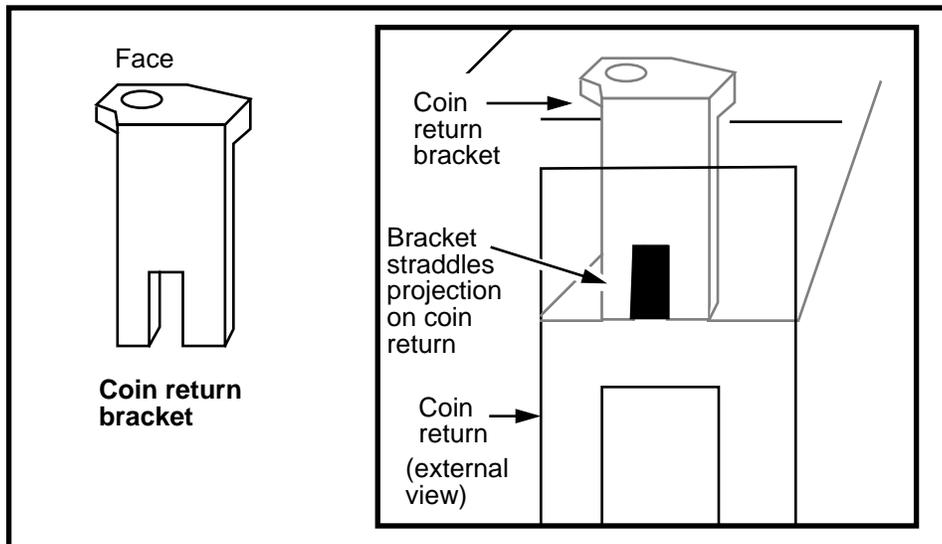
Coin return bracket upgrade

This procedure describes installing a **coin return bracket** for Millennium Multi-pay terminals.

This bracket provides a vandalism/fraud-deterrent solution.

Refer to Figure 6-41 to see how the bracket fits over the coin return assembly.

Figure 6-41: Identifying the coin return bracket



The following procedure describes in detail how to install the coin return assembly bracket.

1. This procedure assumes you have followed the directions in **Preparing the terminal for maintenance** on page 2-3.

Note: It is not necessary to upload CDRs or disconnect the power to do this procedure but it is recommended that you do so.

DO CONNECT your ESD wrist strap to an ESD connection point inside the terminal.

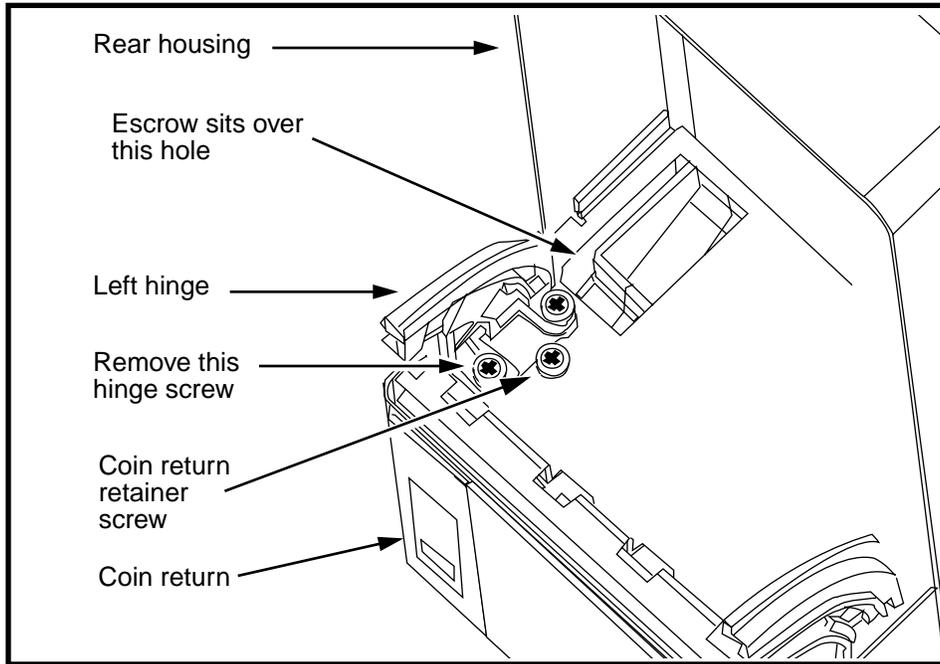




6-52 Coin path modules

2. Remove the screw at the front of the hinge located on the left side of the rear housing. Refer to Figure 6-42.

Figure 6-42: Remove forward screw from hinge



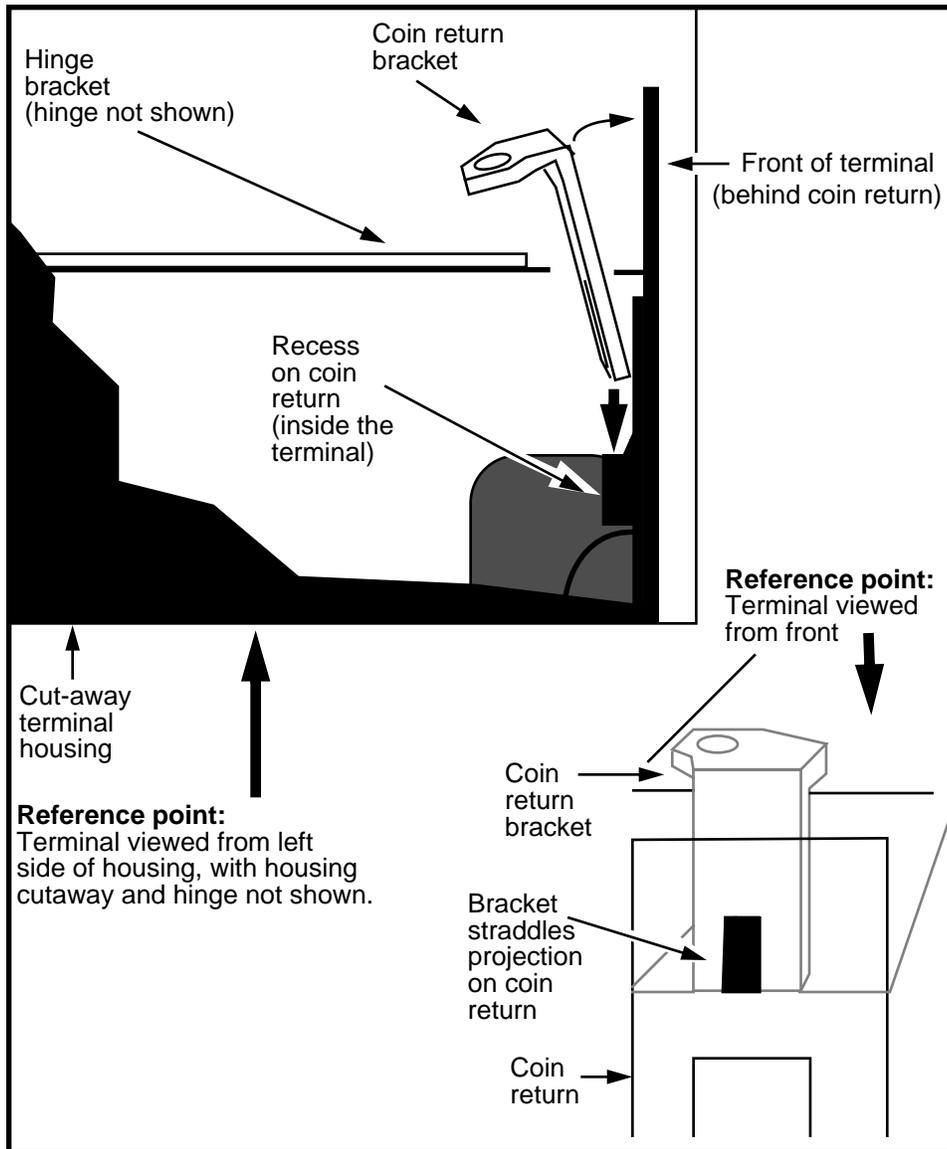
3. Install the coin return bracket.
 - Slide the coin return bracket at a slight forward angle into the hole in front of the hinge bracket.
Refer to Figure 6-43, top inset.
 - As you slide the bracket in, straighten it so it straddles the projection on the coin return housing. Refer to Figure 6-43, bottom picture.
 - When the bracket sits flat on the hinge bracket it is properly installed.

If it does not sit flat, remove it and try again at a slightly different angle.





Figure 6-43: Angling the coin return bracket

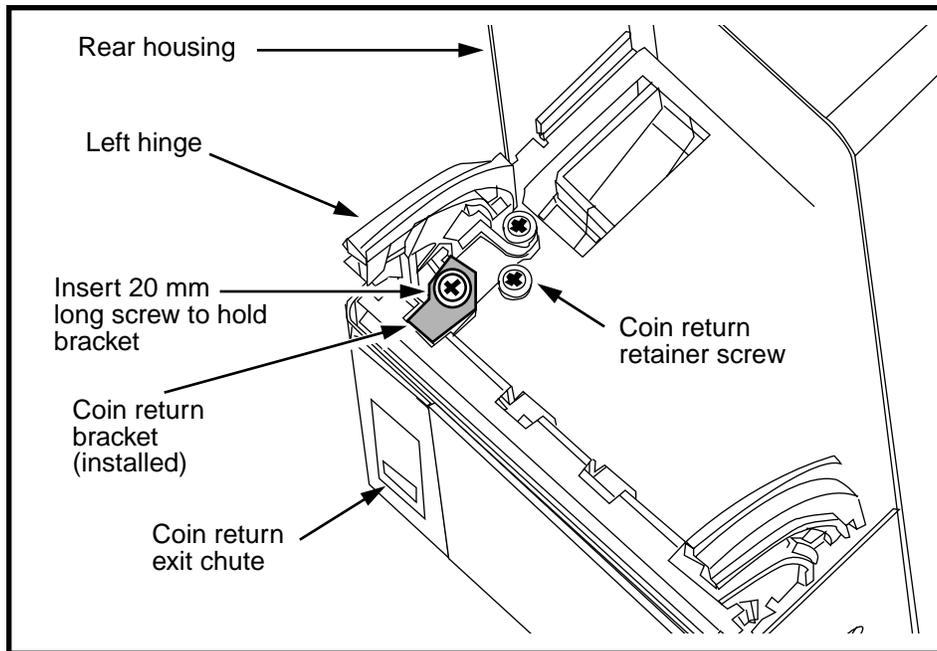




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4. **Optional step:** Check proper positioning of the bracket:
 - a) Unscrew the coin return retainer screw.
Refer to Figure 6-44.
 - b) Insert two fingers into the coin return chute and hook them around the flap.
 - c) Attempt to lift the coin return assembly up and at the same time swing the bottom away from the terminal. If the bracket is positioned properly, the assembly may move slightly, but you will not be able to pull it forward.

Figure 6-44: Coin return bracket in place



5. Once the bracket is properly positioned, insert and tighten the long 20 mm screw into the hinge bracket.
6. Re-insert the coin return retainer screw and screw in until it sits tightly against the top of the coin return.





Coin path modules **6-55**

7. Attempt once again to move the coin return assembly. This time it should sit solidly, without moving.
8. Ensure all cables and cords are tucked inside the terminal housing.
9. Restore power to the terminal at the rear terminal PCP.
10. Remove your ESD strap connection to the terminal.
11. Close and lock the terminal.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
12. Perform operation tests to ensure the terminal works properly.





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7-1

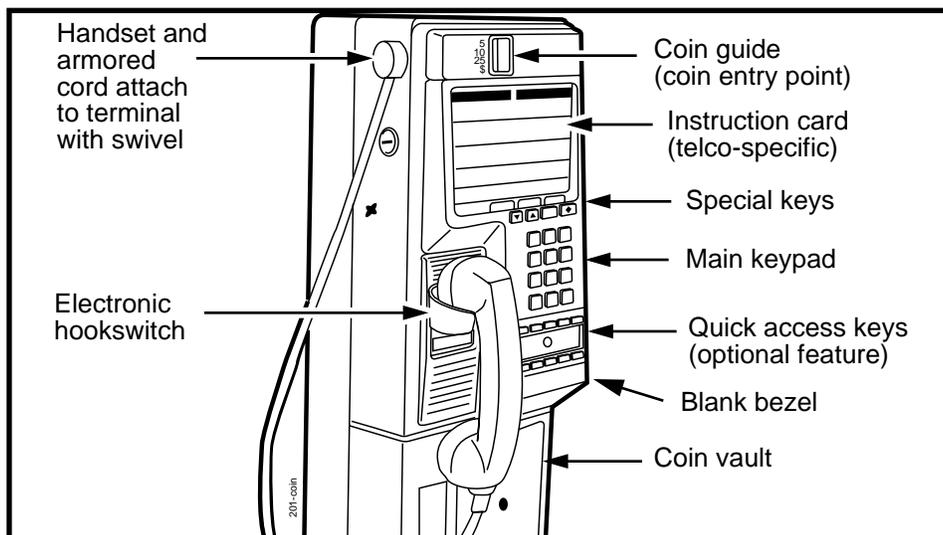
7 Coin basic w/o display

This terminal is the base-line Multi-pay-based terminal.

- It does not have a VFD (vacuum fluorescent display) or a card reader.
- It only accepts coins and manually-entered calling card numbers as payment methods.
- Vocal prompts through the handset guide the caller through the call process.

Figure 7-1 shows an exterior view of the **Coin basic w/o display** terminal.

Figure 7-1: Coin basic w/o display terminal



Millennium Multi-pay-based terminals: replacing parts





7-2 Coin basic w/o display

A **Coin basic portable display** must be installed in the terminal to provide the craft interface visual prompts to allow the terminal to be properly installed and maintained.

When the craftsman is finished the installation or maintenance procedure, the display is removed from the terminal.

Coin basic with display: The Coin basic w/o display terminal is also available with a display installed. Otherwise the features are the same.

About the coin basic portable display

When you are doing maintenance on a Coin basic w/o display terminal, you need to install a Coin basic portable display to be able to see craft interface prompts.

The state of the VFD can also be a good indicator of whether power is connecting to the terminal or not.

This display looks the same as the VFD found in Multi-pay sets which come with VFDs. However, it is encased in a clear plastic case to protect it from wear and tear.

It is recommended that the display be kept in an anti-static bag between uses.

Inside the terminal, a black plastic cover is installed in the VFD opening of the clamp plate during normal operation.

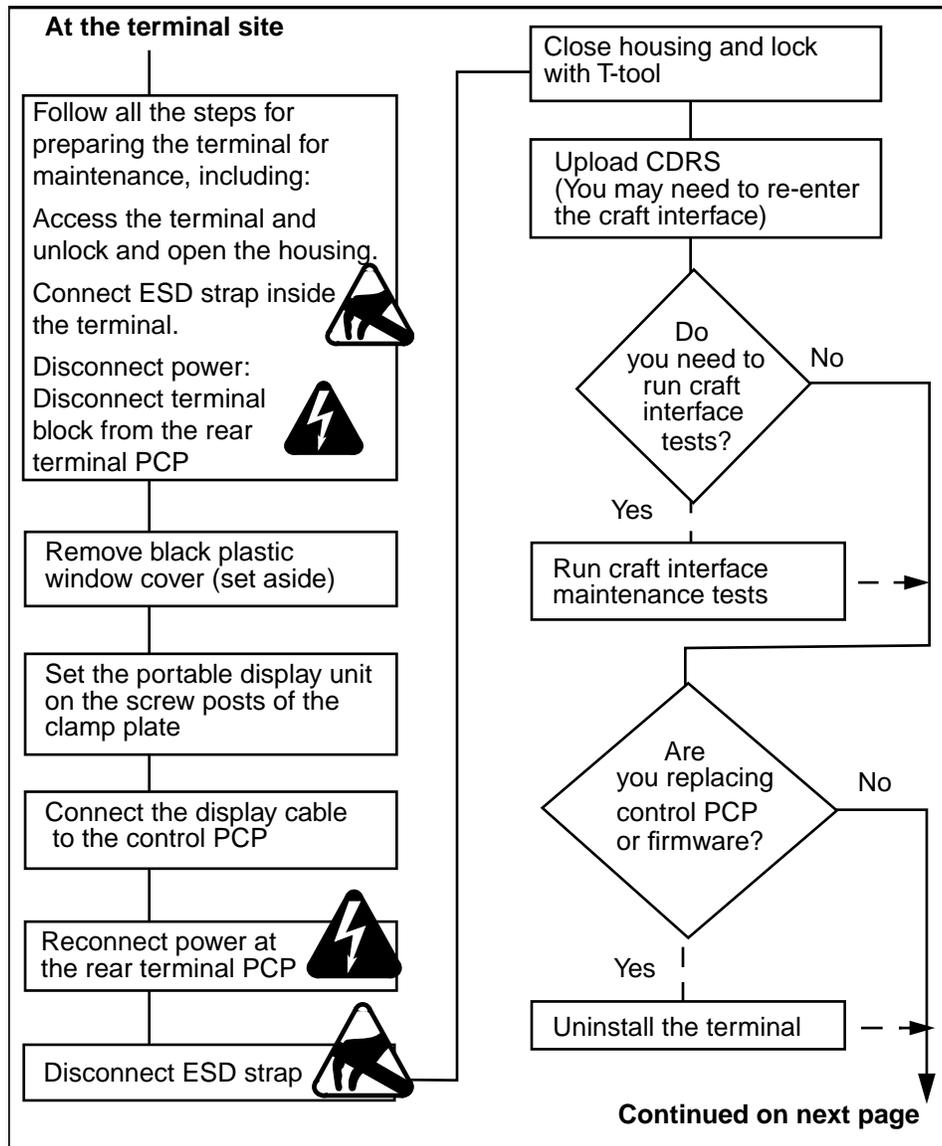




Flowchart

The following flow chart describes the process of installing and removing the Coin basic portable display.

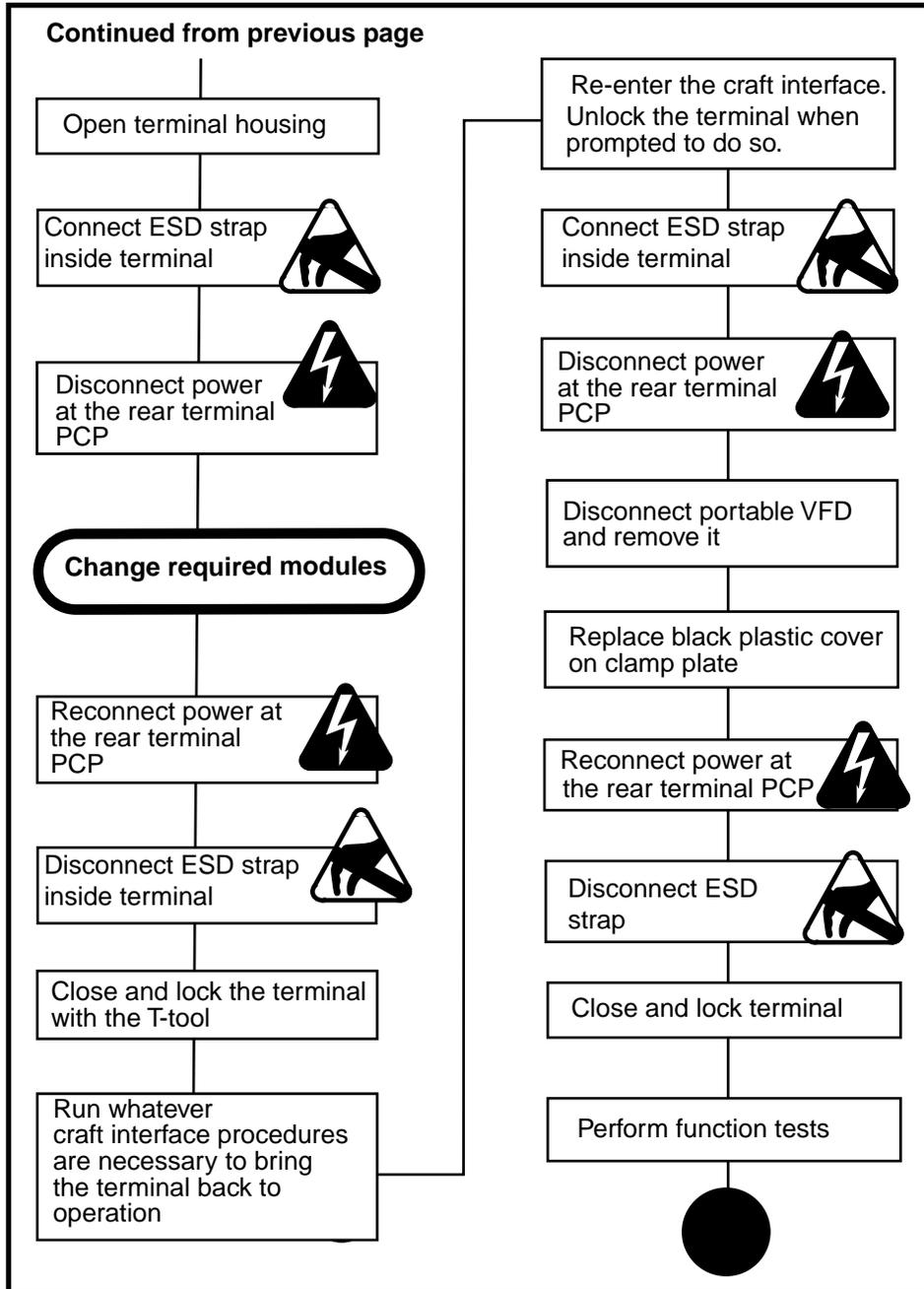
Figure 7-2: Flowchart — installing/removing internal display, page 1





7-4 Coin basic w/o display

Flowchart: installing/removing internal display, page 2





Installing a portable display

The following instructions describe how to install a **Coin basic portable display** prior to maintenance procedures.

1. These first steps will be taken without benefit of a display, so enter the numbers carefully.
 - a) Enter your access code.
 - b) Enter your PIN code.
 - c) Press *.
 - d) At the prompt, unlock the terminal with the key and the T-tool.
 - e) Open the terminal.

See this:



It is important to unlock and open the terminal quickly after entering your PIN. If you do not open the terminal within three minutes, the terminal times out.

If this happens, re-enter the craft interface and try again.

2. Ensure that your ESD strap is connected inside the terminal — either to the right or left locking tiebars.
3. Disconnect the power by disconnecting the terminal block from the rear terminal PCP.

Electrostatic discharge (ESD)



- Before working with the PCP assembly, put on your ESD wrist strap and connect it to an ESD connection point.
- Disconnect the power before you disconnect any cables.
- **Do not reconnect the power until you are ready to close the terminal.**





7-6 Coin basic w/o display

4. Attach the display:

- a) Lift the PCP assembly by the plastic frame.

Note: You may need to disconnect the keypad cable (J1A) and the handset teladapt plug (J10B) if these cables are not long enough to allow you to lift the PCP assembly sufficiently to reach the display connector.

See this



If there is an internal instruction card with no cutout for the VFD, you need to remove the PCP assembly to access the clamp plate.

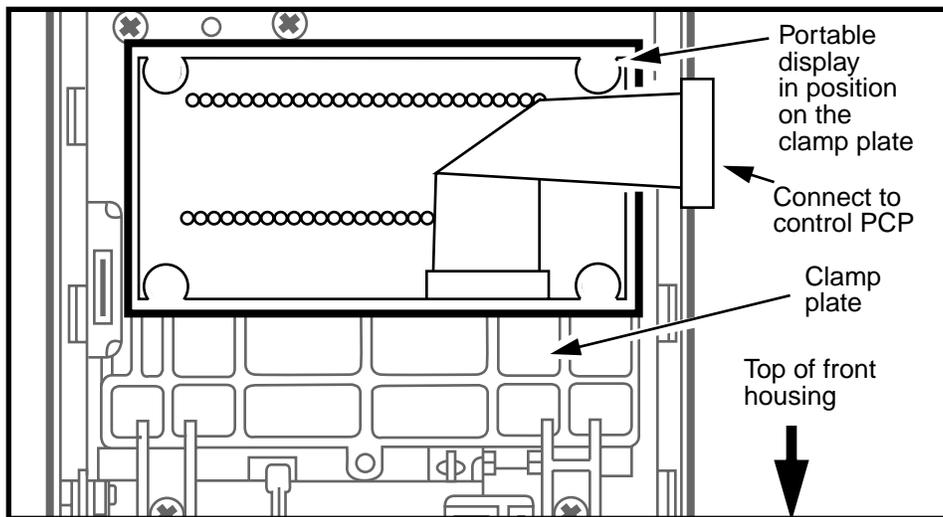
Refer to **Installing an internal instruction card** on page 4-34 for a detailed procedure.

- b) Remove the black plastic window cover from the clamp plate and set aside.
- c) Seat the temporary display over the four screw posts on the clamp plate.

The edge of the display with the cable connector should be closest to the top of the terminal.



Figure 7-3: Positioning the portable display over the clamp plate

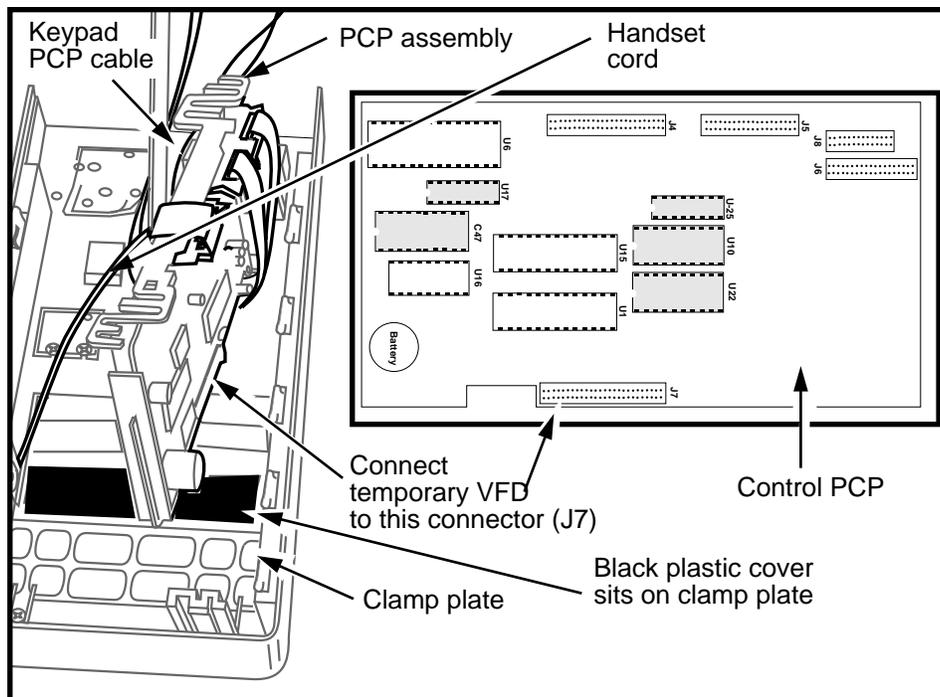


- d) Feed the cable under the PCP assembly.
- e) Connect the **Coin basic portable display** cable to the connector on the control PCP (J7).

Refer to Figure 7-4.

- f) Reseat the PCP assembly in the brackets.
- g) Reconnect any cables you disconnected.

Figure 7-4: Connecting the display to the control PCP



- 5. Restore the terminal to the craft interface level. Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
 - a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close the terminal but **do not lock it**.



7-8 Coin basic w/o display

6. If required, use the knuckle-saver suction cup to remove the external instruction card from the front of the terminal.

7. Check the display.

If you are still in the craft interface, continue with your maintenance procedures.

If the terminal has timed out, refer to **Re-entering the craft interface** and re-enter the craft interface.

Re-entering the craft interface

If the craft interface timed out while you were installing the portable display, follow the steps in this section to re-enter the craft interface:

See this:



Before you enter the craft interface:

- Ensure that the handset is on-hook.
- Close the housing and turn the T-tool counterclockwise to lock the terminal housing

If either of these conditions are not correct, you will not be able to enter the craft interface.



1. Enter the access code.

This message appears on the VFD:



If you make a mistake, press the ◆ button and re-enter the number.

2. Enter your PIN code.





Coin basic w/o display **7-9**

As you enter the digits, they appear on the VFD.
If you make a mistake, press the **◆** button and re-enter the number.

3. Press *****.

This message appears on the VFD:

**Please use key now
& open the terminal**

See this



If you do not open the terminal within three minutes, the terminal times out and the idle prompt, **Please lift receiver**, reappears on the VFD.

If you attempt to open the terminal at this point, the terminal sends an alarm to the Millennium Manager that an illegal entry is occurring.

4. Turn the T-tool clockwise to unlock the housing.
DO NOT open the front housing.
5. Continue with the INSTALL, CDR upload, or maintenance tests as you would with any other Millennium terminal.
6. To end the procedure at any time, close the housing and lock the terminal with the T-tool.
7. When you are ready to remove the portable display, follow the procedure in **Removing the Coin basic portable display** on page 7-10.





7-10 Coin basic w/o display

Removing the Coin basic portable display

When you are ready to return the terminal to service, you need to remove the portable display.

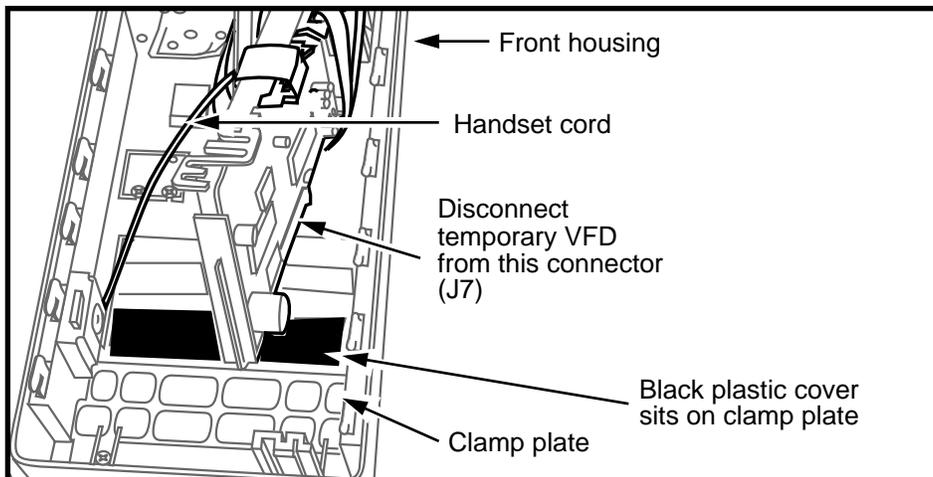
1. Enter your access number and PIN and press *.
2. At the unlock prompt, unlock the terminal.
3. Take the handset off-hook and lower the front housing.
4. Connect your ESD strap inside the terminal.
5. Disconnect the power from the terminal by disconnecting the terminal block from the rear terminal PCP.
6. Grasp the PCP assembly by the plastic frame and lift it out of the brackets just enough so you can disconnect the VFD connector.

Note: You may need to disconnect the keypad or handset cable from the telephony PCP. Refer to Figure 7-5.

7. Disconnect the Coin basic portable display cable from the control PCP. Refer to Figure 7-5.



Figure 7-5: Disconnecting the display





8. Remove the **Coin basic portable display**.

Note: If the instruction card is an internal card, do the following:

- a) remove the ID bezel
 - b) lift the clamp plate
 - c) replace the card
 - d) replace the clamp plate and ID bezel.
9. Set the black plastic window cover over the screw posts of the clamp plate, covering the display cutout in the clamp plate.
10. Reseat the PCP assembly securely in its brackets.
11. Reconnect whichever cables you disconnected to lift the assembly.
12. Check that all the cables are fully seated in their connectors and excess cable is folded and tucked out of the way of the edges of the terminal.
13. Restore the terminal to operation.
Refer to **Restoring the terminal to operation** on page 2-10, if necessary.
- a) Reconnect the power to the terminal by reconnecting the terminal block to the rear terminal PCP.
 - b) Remove your ESD strap connection.
 - c) Close and lock the terminal.
14. If required, replace the external instruction card.
15. Perform operations tests to ensure the terminal is working.





7-12 Coin basic w/o display





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Millennium Multi-pay-based terminals:

Replacing parts

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