

TLS-450 Console

Board and Software Replacement/Upgrade

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Introduction

This manual contains instructions for replacing the following TLS-450 console components:

- CPU board
- RAM board
- Replacing Software/CF card
- Replacing iButton
- Installing software features
- Replacing CF card
- Replacing CF card version 3.X or earlier to latest version

This manual does not provide troubleshooting information.

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

Installer (Level 1) Certification: Contractors holding valid Installer Certification are approved to perform wiring and conduit routing; equipment mounting; probe, sensor and carbon canister vapor polisher installation; wireless equipment installation; tank and line preparation; and line leak detector installation.

ATG Technician (Level 2/3 or 4) Certification: Contractors holding valid ATG Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection. In addition, Contractors with the following sub-certification designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- Wireless 2
- Tall Tank

VR Vapor Products Certification: Contractors holding a certification with the following designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- ISD – In Station Diagnostics
- PMC – Pressure Management Control
- CCVP - Veeder-Root Vapor Polisher
- Wireless – ISD/PMC Wireless
- A current Veeder-Root Technician Certification is a prerequisite for the VR Vapor Products course.

Warranty Registrations may only be submitted by selected Distributors.

Related Manuals

577013-879 TLS-450 Site Prep Manual

577013-918 TLS-450 Troubleshooting Guide







Before You Begin





Before you begin component replacement, read the following guidelines:

- To avoid electrical shock, be sure AC power to the console is Off when performing the procedures in this manual.
- **FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.**

Safety Precautions

The following safety symbols may be used throughout this manual to alert you to important safety hazards and precautions.

 <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>	 <p>TURN POWER OFF Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>
 <p>INJURY Careless or improper handling of tools can cause bodily injury.</p>	 <p>STATIC SENSITIVE COMPONENTS Wear grounded anti-static wrist strap before handling printed circuit boards.</p>
 <p>READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>	 <p>WARNING Heed the adjacent instructions to avoid damage to equipment, property, environment or personal injury.</p>

 WARNING	
  	<p>This system operates on 120/240 Vac power. Serious injury or death from electrical shock could occur if the power ON/OFF warnings in this manual are not heeded.</p> <ol style="list-style-type: none"> 1. Read and follow all instructions in this manual, including all safety warnings. 2. Remove rings from hands, metal watch bands and bracelets, and loose hanging neck jewelry before performing these procedures. 3. Do not modify or use service parts other than those provided by Veeder-Root.

Precautions Against Static Electricity

Before removing electronic components from their antistatic bags read the following static electricity precautions.

1. Before handling any components, discharge your body's static electric charge by touching a grounded surface.
2. Do not remove parts from their antistatic bags until you are ready to install them.
3. Do not lay parts on the antistatic bags! Only the insides are antistatic.
4. When handling parts, hold them by their edges and their metal mounting brackets.
5. Avoid touching components or edge connectors that plug into slots and wear the antistatic wrist strap (Part No. 576010-908) included in your component replacement kit.
6. Never slide parts over any surface.
7. Avoid plastic, vinyl, and styrofoam in your work area.

System Backup

Before powering off the console perform a system backup:



WARNING! For all software maintenance functions in consoles you must use the CPU USB printer port.

PERFORM THE FOLLOWING STEPS.



1. Turn off power to the console.
2. Using a T-15 Torx driver, remove the two screws in the left door of the console (ref. item 2 in Figure 6).
3. Disconnect the Printer's USB cable from its connector on the CPU board and insert your V-R Backup thumb drive (P/N 330020-607) into the CPU USB connector as shown in Figure 1 below.
4. Close the door. Turn on power to the console.

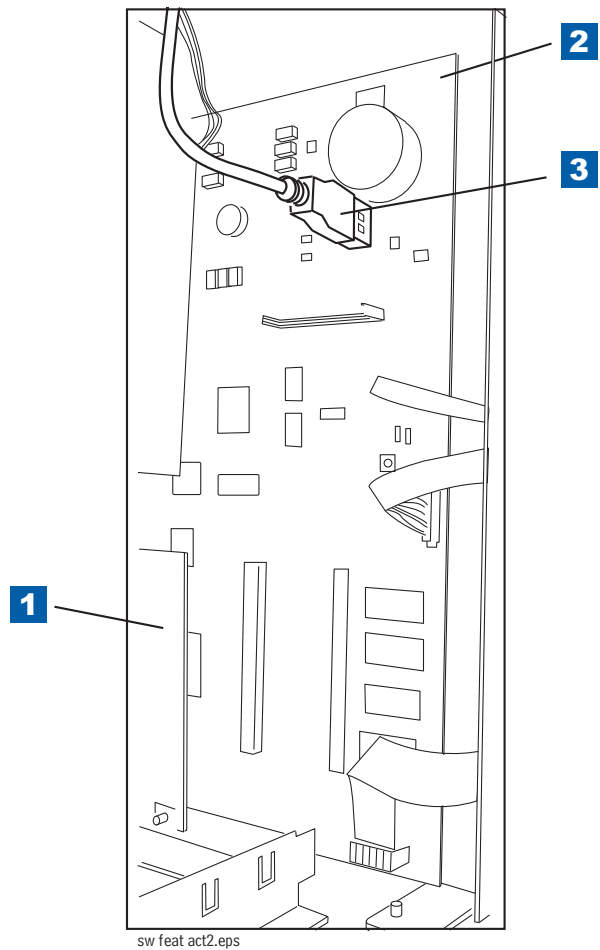


Figure 1. Locating Printer's USB connector

LEGEND FOR NUMBERED BOXES IN Figure 14	
1. Comm module	3. Printer USB connector
2. Top of CPU board	

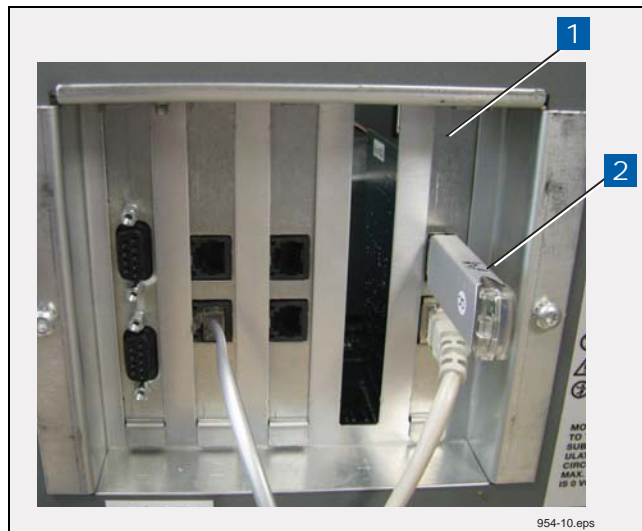


Figure 2. USB/Ethernet board - V-R thumb drive ports

LEGEND FOR NUMBERED BOXES IN Figure 2

1. USB/Ethernet board bracket
2. V-R thumb drive plugged into USB port

5. Touch the Diagnostics button on the Home Screen (see item 2 in Figure 3).

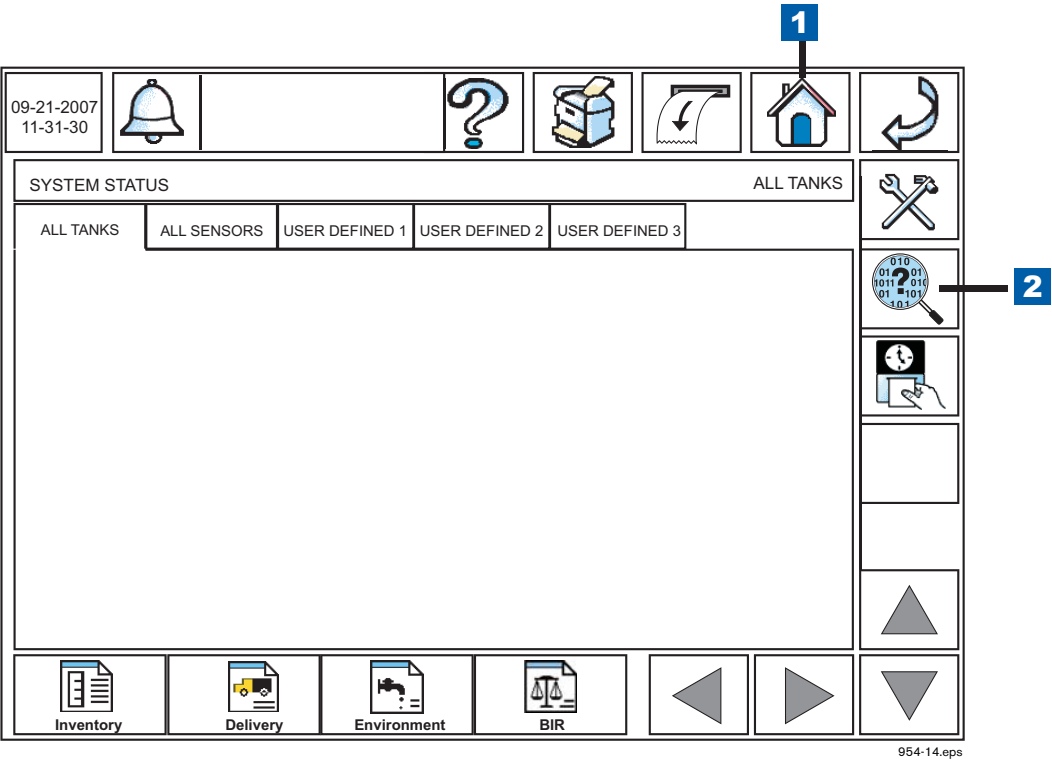


Figure 3. Accessing Diagnostic Main Screen from the Home Screen

LEGEND FOR NUMBERED BOX IN Figure 3	
1.	Home Screen access button
2.	Diagnostic Main Screen access button

6. Touch the Software Maintenance button on the Diagnostic Maintenance screen (see Figure 4) to open the Software Maintenance - Backup Restore tab screen (see Figure 5).



Figure 4. Software Maintenance button

- 7. Touch the Backup button (item 1 in Figure 5) to begin the system backup process.

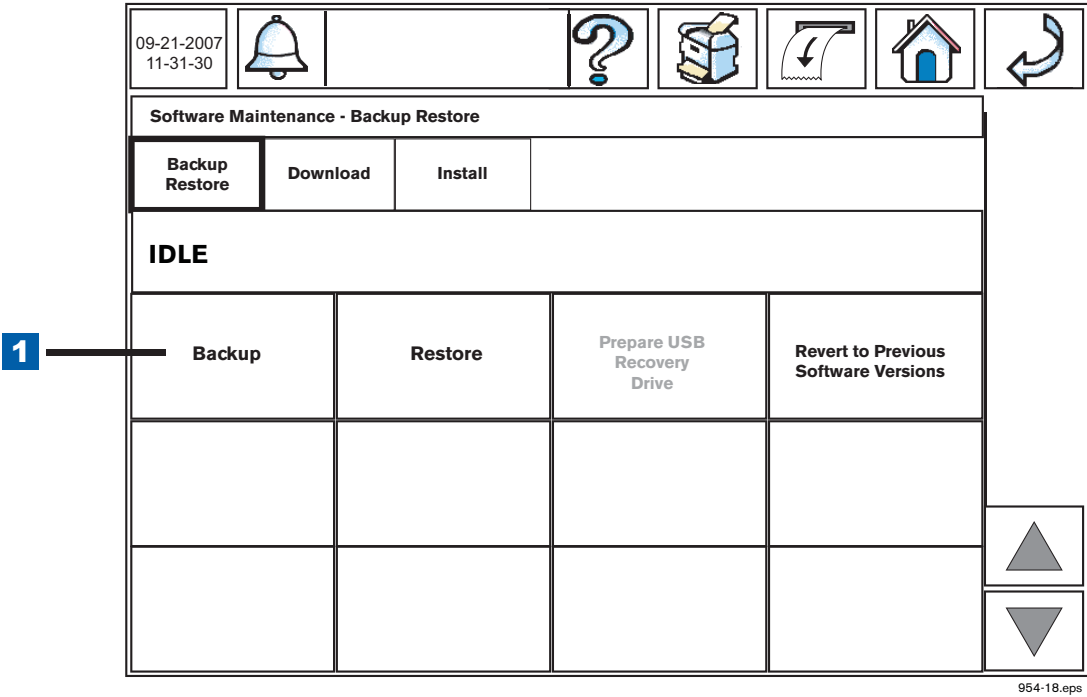


Figure 5. Initiating a System Backup

LEGEND FOR NUMBERED BOX IN Figure 5	
1.	Backup button

- 8. After the 'Backup Completed Successfully' message displays power off the console, open the left door and remove the thumb drive from the CPU printer USB port, replace the printer cable USB connector in the port, close the door and replace the two screws.

Replacing the CPU Board

Removing the CPU Board



1. Switch Off power to the console.
2. Open both front doors of the console (see Figure 6).

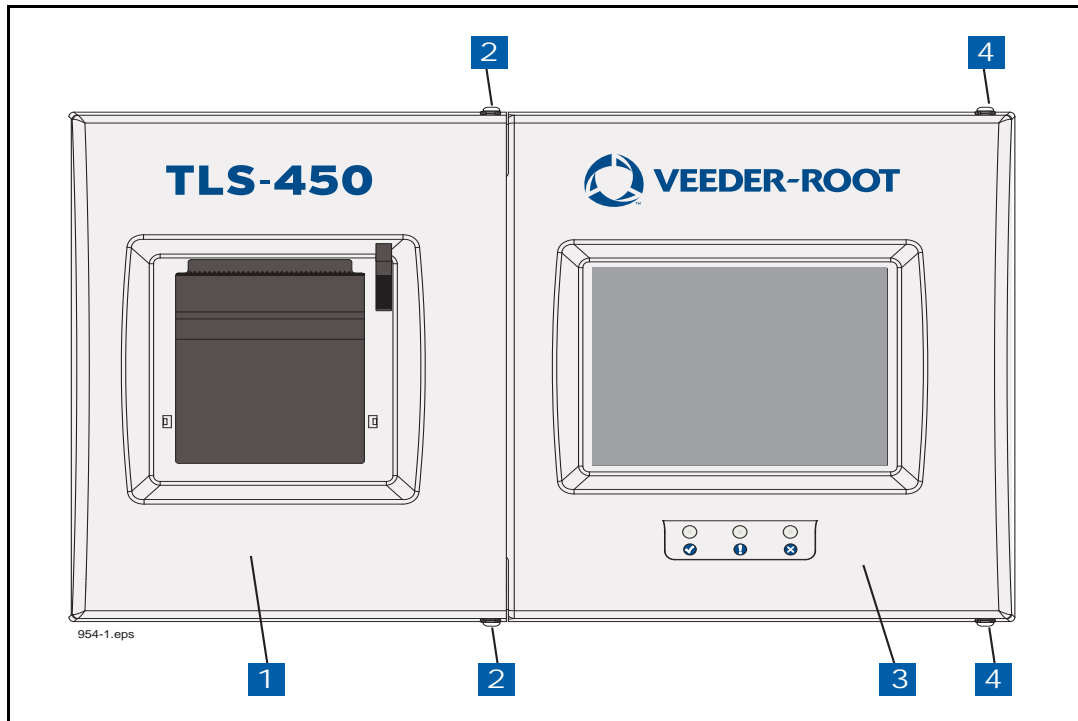


Figure 6. Front doors

LEGEND FOR NUMBERED BOXES IN Figure 6

- | | |
|--|---|
| 1. Left (Printer) door | 3. Right (Display) door. |
| 2. Top and bottom #8 taptite screws securing left door | 4. Top and bottom #8 taptite screws securing right door |

3. Locate the three retention snap pins along the front of the CPU board (see Figure 7).

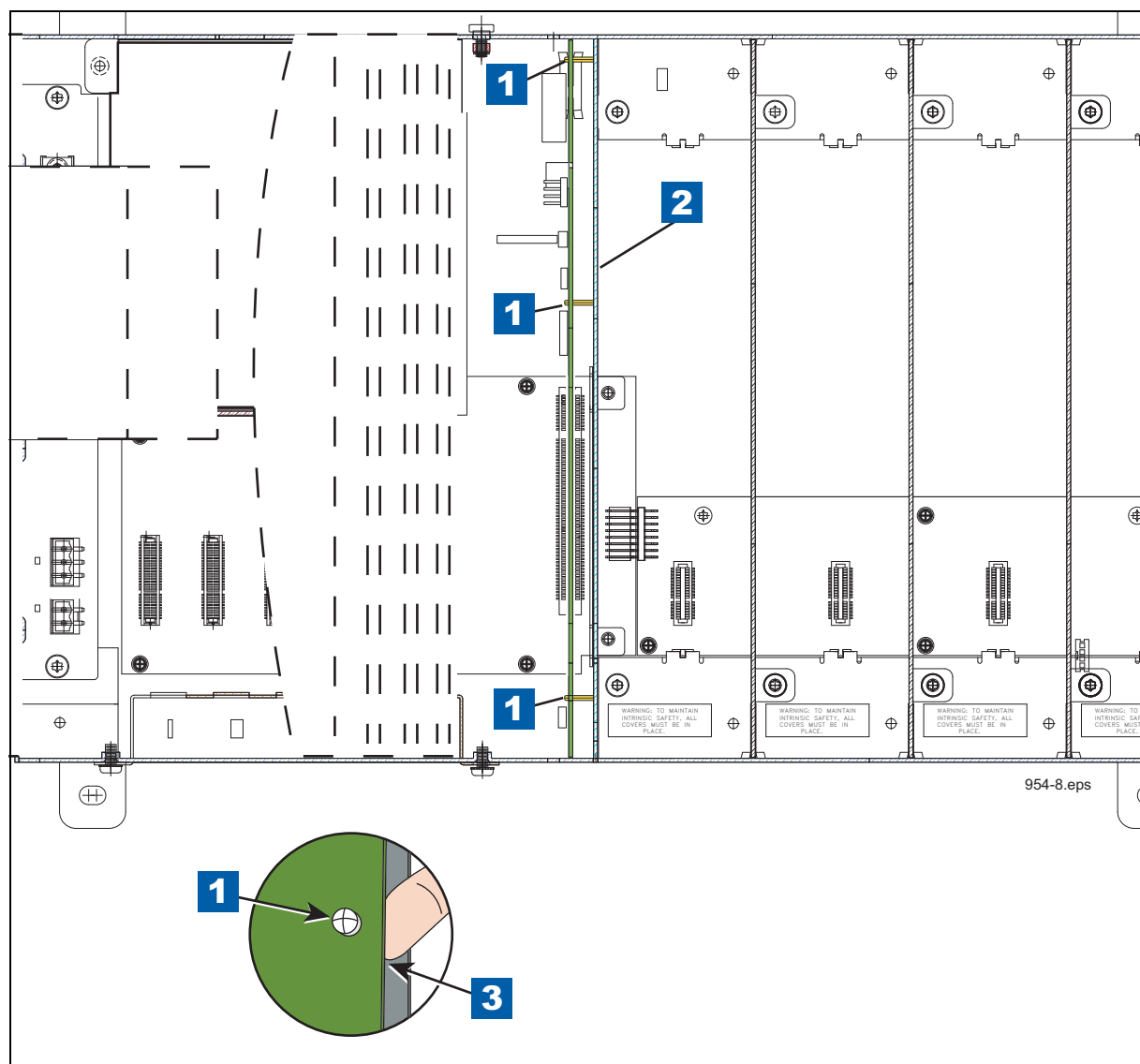


Figure 7. Locating CPU board hold-down pins

LEGEND FOR NUMBERED BOXES IN Figure 7

- | | |
|------------------------------|---|
| 1. Board retention snap pins | 3. At each retention pin, slide forefinger in between board and bulkhead and pry board away from bulkhead to release pin. |
| 2. Compartment bulkhead. | |

4. Remove the grounding wrist strap (Part No. 576010-908) from its package and wrap one end around your wrist. Adhere the other end to the metal plate on the inside of the Printer door.
5. Disconnect the four cables from the Display door along the front edge of the CPU board (see Figure 8).
6. Position your forefinger beneath one of the pins and press up releasing the CPU board (see item 3 in Figure 7). Repeat at each of the remaining two retention pins.

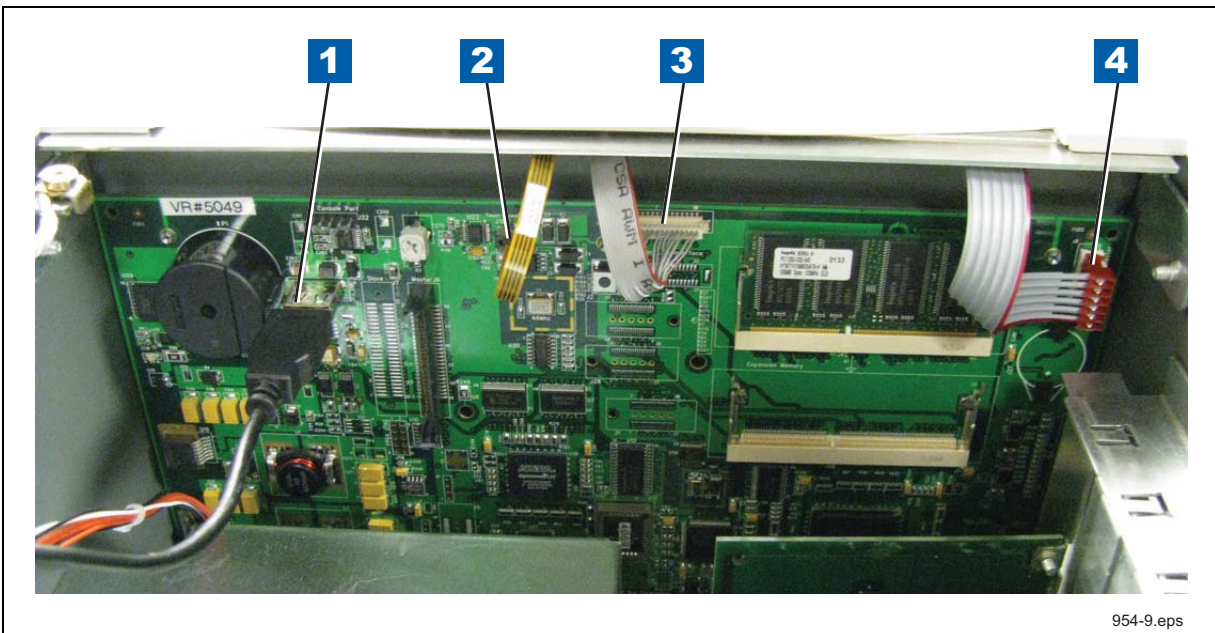


Figure 8. Cable connections to CPU board

LEGEND FOR NUMBERED BOXES IN Figure 8

- | | |
|-------------------------------|-----------------------|
| 1. USB printer cable | 3. Display data cable |
| 2. Touch screen control cable | 4. LED/display cable |

7. Tilt the board a little away from the bulkhead (item 2 in Figure 7) and grasping the edge of the board pull out firmly to remove the board from its backplane board connector. Once the CPU board is free from the connector, slowly remove the board from the console being careful not to hit the CF card against the door.
8. Place the old and new CPU boards side by side on a clean work surface.
9. Remove the iButton from the old CPU board and install it in the same socket on the new CPU board (see Figure 9). Make sure the flanged side of the iButton is up in its socket (see Figure 10).
10. Remove the CF card from the old board and install it in the same connector on the new CPU board. Orient the CF card so the large/small grooves in the side of the CF card align with large/small guides on the sides of the connector (see Figure 11).
11. Remove the RAM board by pushing the retaining clips away from the notches in the side of the RAM board allowing it to spring up about 30 degrees from the CPU board (see Figure 12). When board springs up it may be removed (handle the RAM board by its edges). Place the RAM board in the same (top) connector on the new CPU board, aligning the notch in the board's connector edge over the rib in the CPU RAM board connector. Push the RAM board in at a slight angle to seat the connector, then gently push down on the RAM board until the retention clips snap into the notches in both edges of the RAM board (see Figure 12).
12. Once the iButton, CF card and RAM board are installed in the new CPU board, lift the CPU board by its outer corners and slide the board into the console until the CPU board connector is entering the backplane board's connector, then push firmly down to seat the CPU board in the connector.
13. Make sure the holes in the CPU board for the three retention pins are aligned over the three pins. With your thumb, push against the CPU board at each retention pin until they are all snapped into place.

14. Connect each of the four cables in their respective CPU board connectors (see Figure 8).
15. Close the right door and replace the two #8 taptite screws.
16. Close the left door and replace the two #8 taptite screws.
17. Turn on the power to the console.

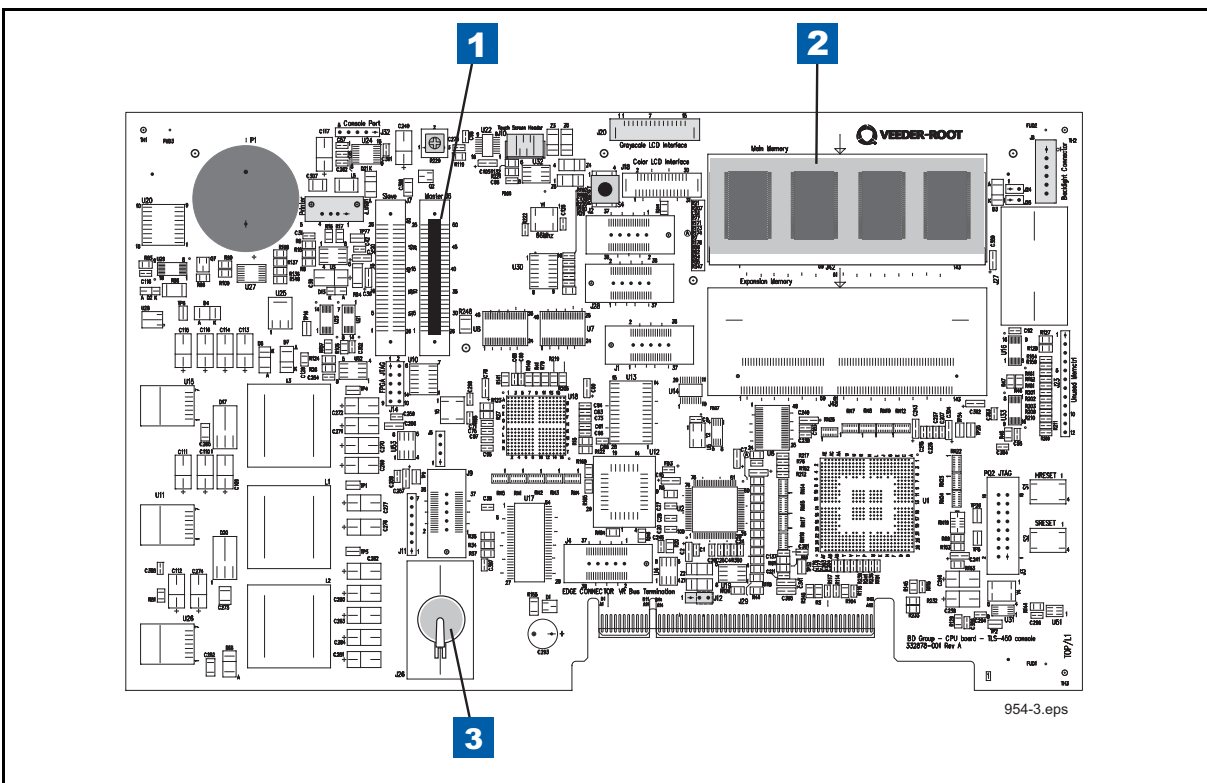


Figure 9. Locating CPU board components

LEGEND FOR NUMBERED BOXES IN Figure 9

1. Compact Flash (CF) card
2. RAM board
3. iButton

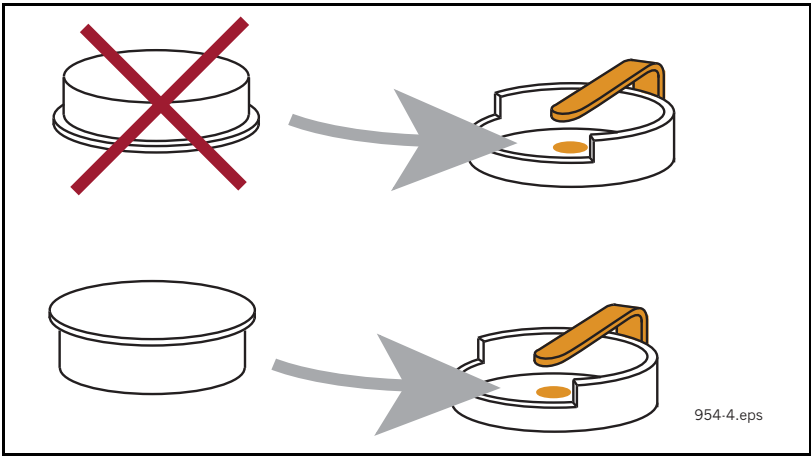


Figure 10. Installing iButton flanged end up

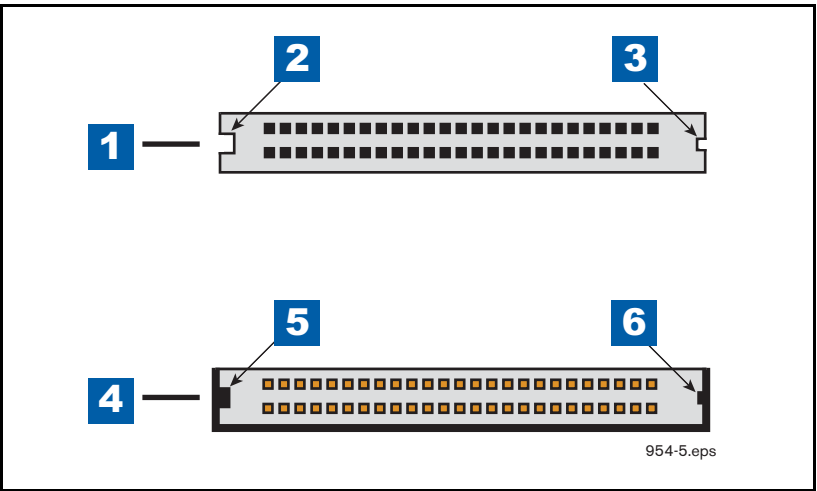


Figure 11. Orient CF card side grooves to the CF card connector guides

LEGEND FOR NUMBERED BOXES IN Figure 11	
1. CF card connector (female)	4. CPU board's CF card connector (male)
2. Large groove	5. Large guide
3. Small groove	6. Small guide

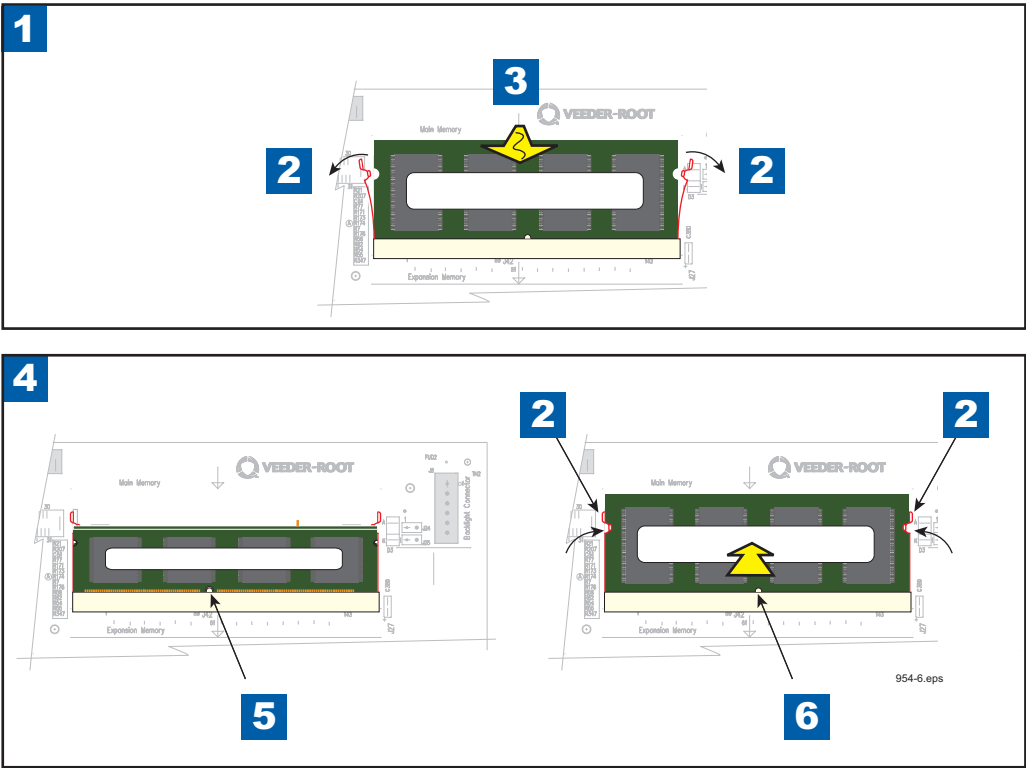


Figure 12. Removing/replacing RAM board

LEGEND FOR NUMBERED BOXES IN Figure 12	
1. Removing RAM board	5. Position notch in bottom of board over rib in connector
2. Retaining clip	6. Rotate RAM board down until the retaining clips snap into place
3. RAM board will spring up as you push retaining clips away notches in sides of board	
4. Replacing RAM board	

Replacing Software CF Card



1. Switch Off power to the console.
2. Open the left (Printer) door of the console (see Figure 6).
3. Remove the grounding wrist strap (Part No. 576010-908) from its package and wrap one end around your wrist. Adhere the other end to the metal plate on the inside of the Printer door.
4. Remove the CF card from the CPU board (see item 1 in Figure 9 for location) and install the new CF card. Orient the card so the large/small grooves in the side of the card align with large/small guides on the side of the socket base (see Figure 11).
5. Close the left door of the console, reversing the procedures followed in Step 1.
6. Reapply power to the console. The software upgrade is complete.

Replacing CF Card from Version 3.X or Earlier to Latest Version



When replacing a software CF card with Version 4.a or later, refer to the section System Backup before replacing CF card. The backup thumb drive is used to save data from the installed CF card and then will be used to restore existing setup and historic data to the new CF card.

If the label on the RAM board indicates it has 128 MB memory, it must be replaced with the 256 MB RAM board from the CF Card Upgrade kit. To replace the RAM board, follow the instructions for Removing/Replacing RAM board in Figure 12.

1. Switch Off power to the console.
2. Open the left (Printer) door of the console (see Figure 6).
3. Remove the grounding wrist strap (Part No. 576010-908) from its package and wrap one end around your wrist. Adhere the other end to the metal plate on the inside of the Printer door.
4. Remove the CF card from the CPU board (see item 1 in Figure 9 for location) and install the new CF card. Orient the card so the large/small grooves in the side of the card align with large/small guides on the side of the socket base (see Figure 11).
5. Disconnect the printer's USB cable from its connector on the CPU board and insert the V-R backup thumb drive into the CPU USB connector.
6. Close the left door of the console, reversing the procedures followed in Step 1.
7. Touch the Software Maintenance button on the Diagnostic maintenance screen (Figure 4) to open the Software Maintenance Backup Restore tab screen (Figure 5).
8. Touch the Restore button to begin restore. The message 'operation requires an interruption in service' appears. Select okay (✓) to restore data.
9. When you have finished, complete steps 1 and 2, then remove the thumb drive and reattach the printer cable to its CPU board USB connector.

Replacing the iButton



1. Switch Off power to the console.
2. Open both front doors of the console (see Figure 6).
3. Locate the three retention snap pins along the front of the CPU board (see Figure 7).
4. Remove the grounding wrist strap (Part No. 576010-908) from its package and wrap one end around your wrist. Adhere the other end to the metal plate on the inside of the Printer door.
5. Disconnect the four cables from the Display door along the front edge of the CPU board (see Figure 8).
6. Position your forefinger beneath one of the pins and press up releasing the CPU board (see item 3 in Figure 7). Repeat at each of the remaining two retention pins.
7. Tilt the board a little away from the bulkhead (item 2 in Figure 7) and grasping the edge of the board pull out firmly to remove the board from its backplane board connector. Once the CPU board is free from the connector, slowly remove the board from the console being careful not to hit the CF card against the door.
8. Place the old and new CPU boards side by side on a clean work surface.
9. Remove the iButton from the old CPU board and install it in the same socket on the new CPU board (see Figure 9). Make sure the flanged side of the iButton is up in its socket (see Figure 10).
10. Once the iButton is installed in the new CPU board, lift the CPU board by its outer corners and slide the board into the console until the CPU board connector is entering the backplane board's connector, then push firmly down to seat the CPU board in the connector.
11. Make sure the holes in the CPU board for the three retention pins are aligned over the three pins. With your thumb, push against the CPU board at each retention pin until they are all snapped into place.
12. Connect each of the four cables in their respective CPU board connectors (see Figure 8).
13. Close the right door and replace the two #8 taptite screws.
14. Close the left door and replace the two #8 taptite screws.
15. Turn on the power to the console.

Installing Software Features

Before installing a software feature upgrade, perform a system backup using a V-R Backup thumb drive (P/N 330020-607) following the procedure described in "System Backup" on page 3.

NOTE The V-R Backup thumb drive is different from a V-R Software Upgrade thumb drive - the two are not interchangeable.

Software Features Installation Procedure

1. Get the USB Adapter and upgrade i-button from the upgrade kit. Remove the plastic end cap from the USB Adapter and Insert the i-button in the adapter as shown in Figure 13 below.

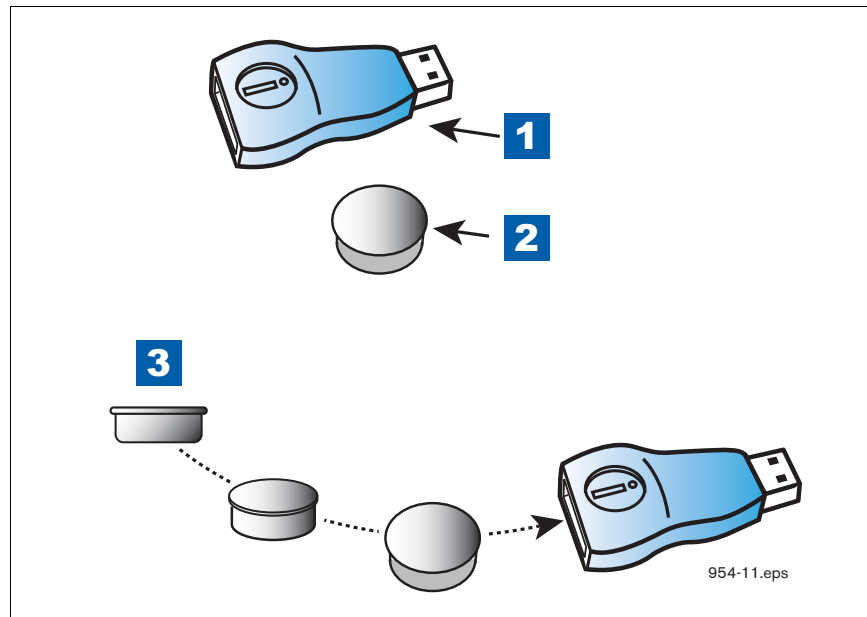


Figure 13. Inserting i-Button into USB Adapter

LEGEND FOR NUMBERED BOXES IN Figure 13

- | | |
|----------------|----------------------------------|
| 1. USB adapter | 3. Insert i-Button, large end up |
| 2. i-Button | |



2. Replace the plastic retaining cap on the adapter after inserting the i-Button.
3. Turn off power to the console.
4. Using a T-15 Torx driver, remove the two #8 taptite screws the left door of the console (ref. item 2 in Figure 6).
5. Disconnect the Printer's USB cable from its connector on the CPU board and insert the USB Adapter into the CPU USB connector as shown in Figure 14 below.
6. Close the door.

7. Turn on power to the console and follow the required Feature Upgrade procedure. When you have completed the Feature Upgrade procedure reverse the steps 3 through 6 above to remove the thumb drive and reattach the printer cable to its CPU board USB connector.
8. Close the door and replace the two #8 taptite screws.

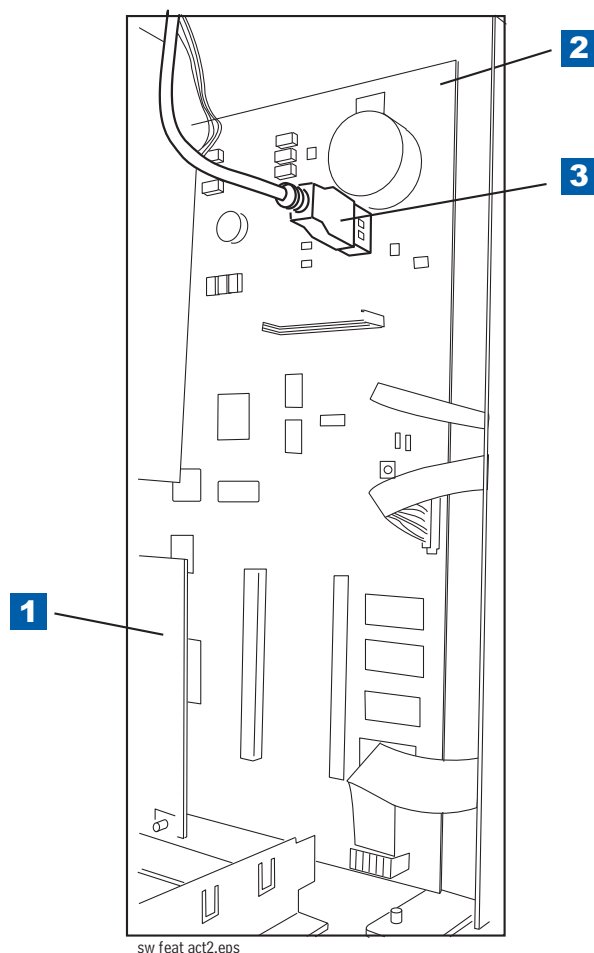


Figure 14. Locating Printer's USB connector

LEGEND FOR NUMBERED BOXES IN Figure 14

- | | |
|---------------------|--------------------------|
| 1. Comm module | 3. Printer USB connector |
| 2. Top of CPU board | |

Feature Upgrade Procedure

1. On the console's Home Screen, touch the Diagnostics button to display the Diagnostics Main Screen (see Figure 3).
2. Touch the Software Maintenance button on the Diagnostic Maintenance screen (see Figure 4).

- 3. When the Software Maintenance - Backup Restore screen displays touch the Download tab. Touch the check boxes beside the feature(s) you wish to download to the console from the i-button (item 1 in Figure 15).
- 4. Once you have selected the desired features to download, touch the Download button to begin the download process (item 2 in Figure 15).

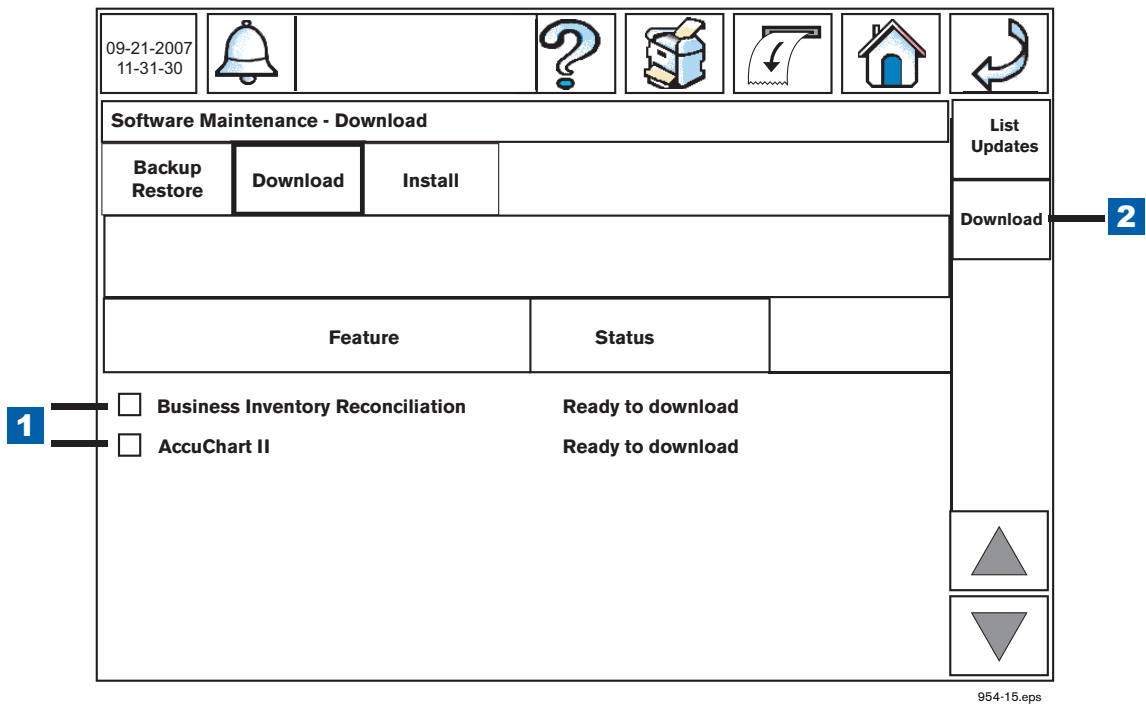


Figure 15. Downloading Software Features from the USB Adapter

LEGEND FOR NUMBERED BOXES IN Figure 15	
1.	Select Feature(s) to download
2.	Download button

- 5. Once the download process completes, touch the Install tab. Touch the check boxes beside the feature(s) you wish to install (item 1s in Figure 16). Once you have selected the desired features to install, touch the Install button (item 2 in Figure 16).

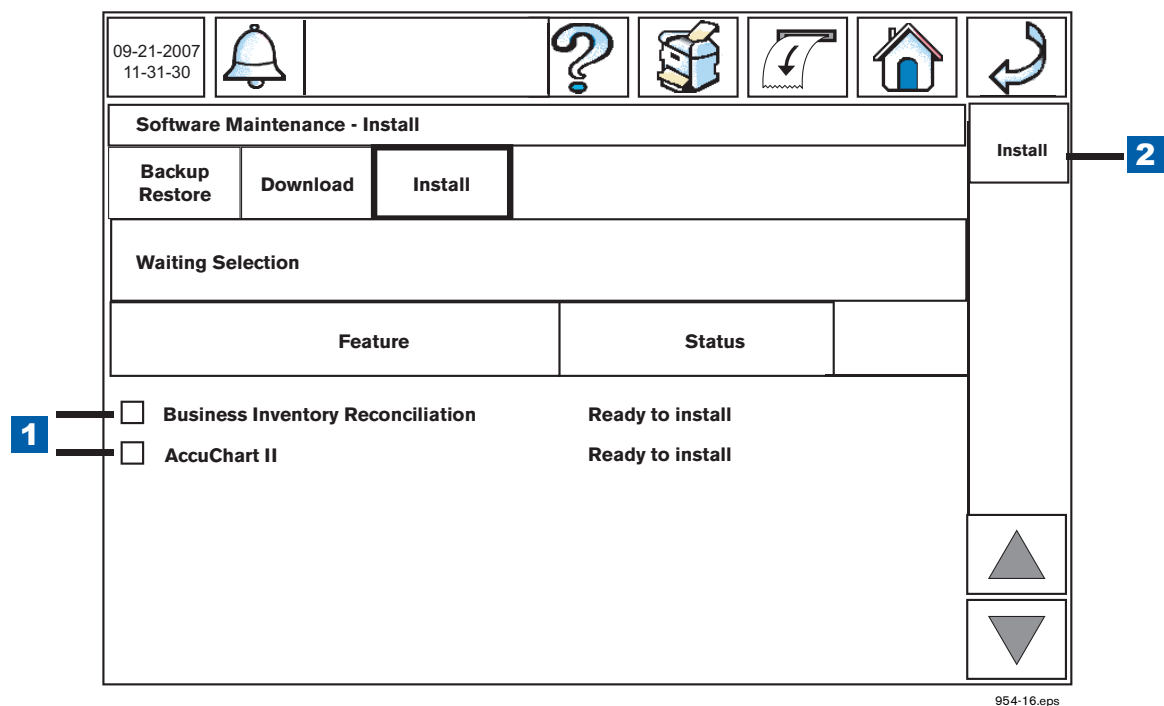


Figure 16. Installing Software Features

LEGEND FOR NUMBERED BOXES IN Figure 16	
1.	Select Feature(s) to install
2.	Install button

6. After the selected features are installed the console will need to restart. Allow the console to restart.

Verify Features Installed

- 1. Touch the Home screen button. Touch the Diagnostic Main Screen Access button on the Home Screen (see Figure 3).
- 2. Touch the About button on the Diagnostic Main Screen (see Figure 17).



Figure 17. About button

3. Verify that the features you installed are listed in the About screen's feature list (see example in Figure 18).

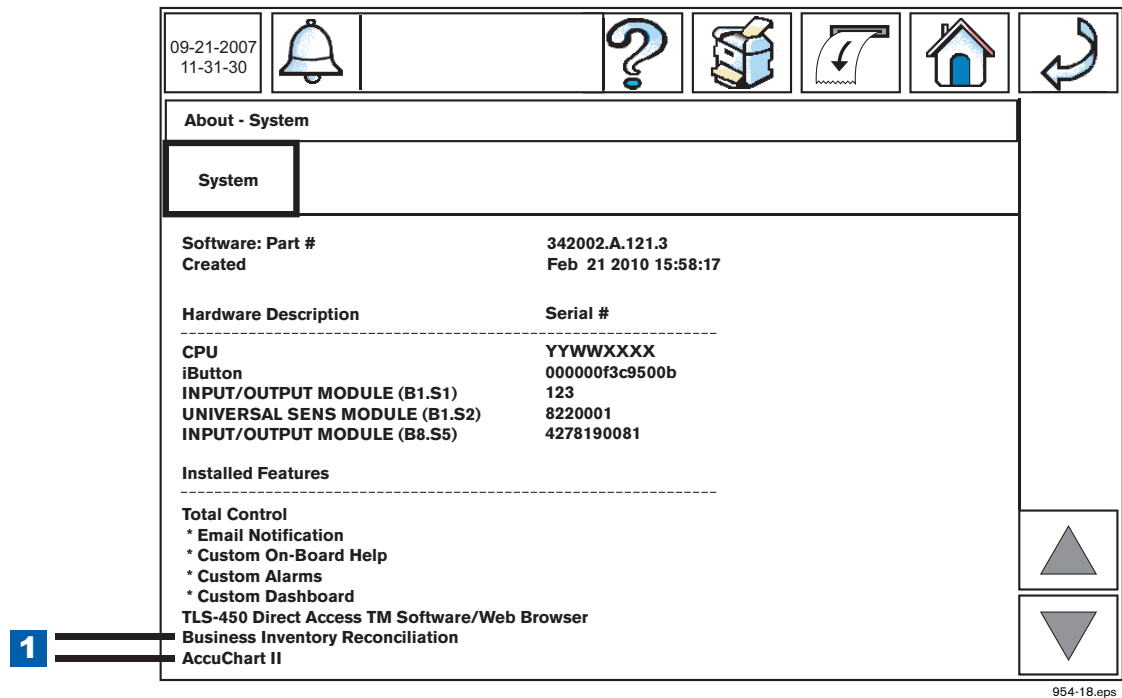


Figure 18. Verifying Installed Software Features

LEGEND FOR NUMBERED BOXES IN Figure 18	
1.	Check to see that installed features are visible in the System installed Features list.

4. After completing a software feature upgrade, perform a system backup using the V-R Backup thumb drive (P/N 330020-607).

NOTE The V-R Backup thumb drive is different from a V-R Software Upgrade thumb drive - the two are not interchangeable.

Software Maintenance

Before installing a software upgrade, perform a system backup using a V-R software thumb drive P/N 330020-604 following the procedure described under System Backup in “Before You Begin” on page 2.

NOTE The V-R Backup thumb drive is different from a V-R Software Upgrade thumb drive - the two are not interchangeable.

When installing a CF card upgrade, follow the instructions in the ‘Replacing Software CF Card’ section of this manual.

Software Thumb Drive Connection

NOTE A 2 GB CF card must be installed in the console before using a thumb drive to upgrade to V4.b or later software.



1. Get the software update thumb drive from the upgrade kit.
2. Turn off power to the console.
3. Using a T-15 Torx driver, remove the two screws the left door of the console (ref. item 2 in Figure 6).
4. Disconnect the Printer's USB cable from its connector on the CPU board and insert the software thumb drive into the CPU USB connector as shown in Figure 14 below.
5. Close the door.
6. Turn on power to the console and follow the required Download and Install procedures. When you have finished, reverse steps 2 through 5 above to remove the thumb drive and reattach the printer cable to its CPU board USB connector.
7. Close the door and replace the two screws.

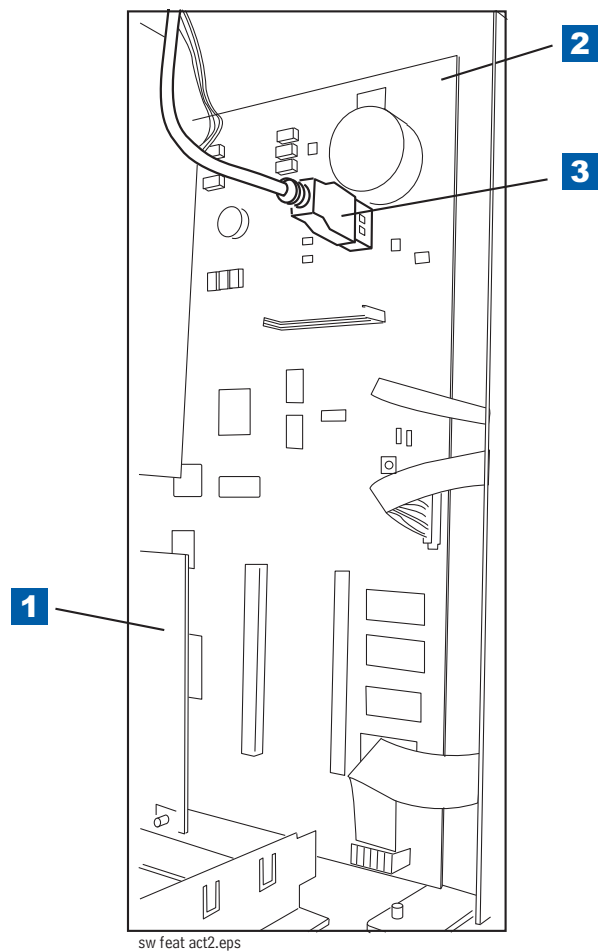


Figure 19. Locating Printer's USB connector

LEGEND FOR NUMBERED BOXES IN Figure 14	
1. Comm module	3. Printer USB connector
2. Top of CPU board	

Software Download Procedure

The Download tab screen is used to control USB downloads from either a valid V-R Code/Features USB thumb drive or a V-R Recovery USB thumb drive that is plugged into a USB port in the console.

When the Download tab is selected, the software thumb drive will automatically be queried for updates that are available. 'Reading Update List' is displayed in the status bar while the list is being acquired.

When the list is acquired, the status bar will display 'Waiting selection'. Updates and statuses will be displayed in the Feature/Status columns. A check will be made to see which updates have already been installed. A check will be made to see if a compatibility problem exists for any update. If a version compatibility problem exists, a dialog box will be displayed instructing you to contact customer service to obtain the proper version.

Touch the box beside one or more of the desired selection(s) in the Feature column that you want to download. Touch the Download button and the screen's status bar will read 'Downloading'. If pending updates are already on the CF card and were never activated, you will be asked if you want to delete the pending updates, or to abort the operation. When the download is complete, the screen will display a dialog box notifying you of the results of the download and the status bar will return to 'Waiting Selection'.

Software Install Procedure

The Install tab screen is use to control the installation of downloaded software. During the installation process, several dialog boxes will be displayed to inform you of key events.

During Installation there must be no dispensing. However, the installation process only takes a few minutes. Following installation, the console converts the setup databases. If new features are installed and activated, setup(s) relevant to the new feature(s) will be required.

1. Touch the feature on the list you want to install and then touch the Install button on the right side of the screen.
2. Touch the OK button on the System Restart dialog box, or touch Cancel to abort the installation or to reselect the feature(s) you want to install. The console will restart with the newly installed features.
3. If you used the USB port of the Ethernet/USB module to install the new features, remove the software thumb drive and put it in a safe place. Perform setup for the newly installed features.\
4. If you used the CPU board printer's USB port to install the new features, turn off power to the console. Open the left door of the console and remove the software thumb drive from the printer port and reconnect the Printer cable. Close the left door and replace the two screws. Turn on power to the console and perform setup for the newly installed features.

NOTE Keep V-R Code/Feature and Recovery USB thumb drives in a secure location.

