

IBM INSTALLATION INSTRUCTIONS

FC 5229. Expansion Attachment Card for 3494 Tape Libraries without a High Availability Unit (Model HA1)

Document Number 05H4072 EC H28116A

SSD, Tucson

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Status: Field Use

Note: Install this Field Feature Bill Material (FFBM) only on the 3494 Tape Library for which it was shipped.

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Before Install (Sections 1 through 8)

1.0 Machines Affected

This FFBM affects all 3494 subsystems that require the “Expansion Attachment Card”(FC 5229), which is required to support the fifth through eighth tape control unit and host attachments.

Note: If this feature will be installed at the same time as FC 5227 ("32 Port Attachment"), DO NOT use this installation instruction. Use installation instruction PN 19P1379 ("Install FC 5227 - 32 Port Attachment") that was furnished in FFBM 19P1082.

Note: If this feature does not involve FC 5227 ("32 Port Attachment"), but will be installed in a 3494 subsystem that contains a 3494 Model HA1 ("High Availability"), DO NOT use this installation instruction. Use installation instruction 05H7343 to install FC 5229 in a 3494 subsystem that does contain a 3494 Model HA1.

2.0 Prerequisites / Concurrent / Companion

2.1 Prerequisites

3494 Library Manager Code must be at EC C88492 at Patch level LM50D.07 or higher.

Checkpoint for Microcode ECs: Check the EC level of the Library Manager by using the following steps:

1. From the **Mode** pulldown menu on the Library Manager, select **Service Menu....** If asked for, type the password **SERVICE**.
2. From the **Service** pulldown menu, select **View Code Levels....**
3. From the **View Code Levels...** window, scroll down to **LM EC Level is...** and read the current EC level.
4. From the **View Code Levels** window, scroll down to **LM Patch Level is...** and read the current Patch level.

2.2 Concurrent

Refer to Figure 1 on page 4 to determine if this 3494 subsystem contains a PS Value/Point Library Manager.

PS Value/Point Library Manager installations will require the installation of FC 5046 if either FC 5219 (“Token Ring LAN Attachment”) OR FC 5220 (“Ethernet LAN Attachment”) is **already installed**. If FC 5046 is required, **it must be ordered and installed PRIOR** to this MES.

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3.0 FFBMs To Be Installed

Note: The following FFBM will always be supplied.

FFBM	Description
05H4072	Installation Instructions and Hardware

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4.0 Preparation

Refer to Figure 1, Figure 2 on page 5, Figure 3 on page 5, and Figure 4 on page 6 to verify if you have the PS/Value Point System Unit; the Model 7585 Industrial Computer System Unit; the Model 7588 Industrial Computer System Unit; or the Model 7581 Industrial Computer System Unit currently installed.

Read and understand the purpose and details of this installation instruction.

Check all items listed on the bill(s) of material to determine that all parts have been received.

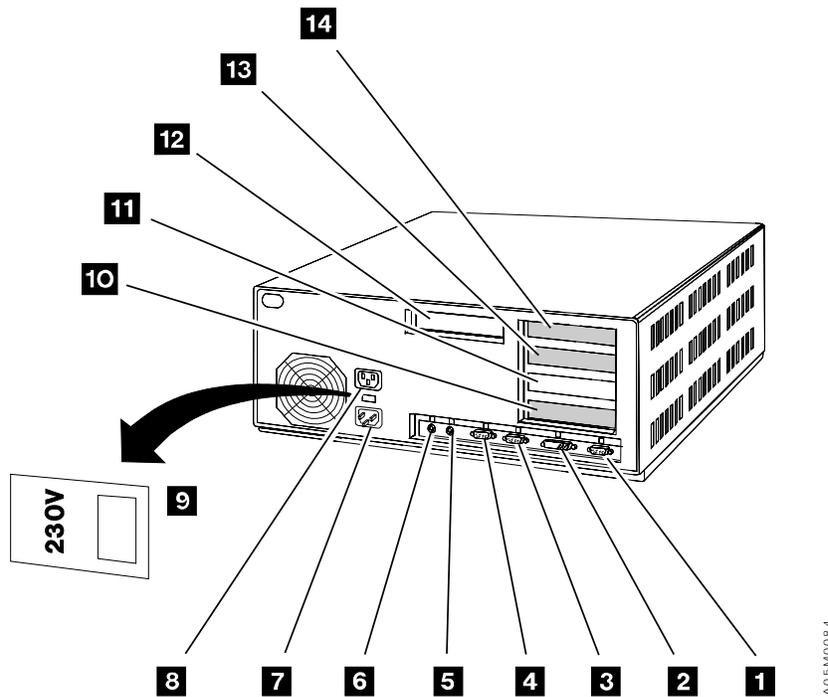
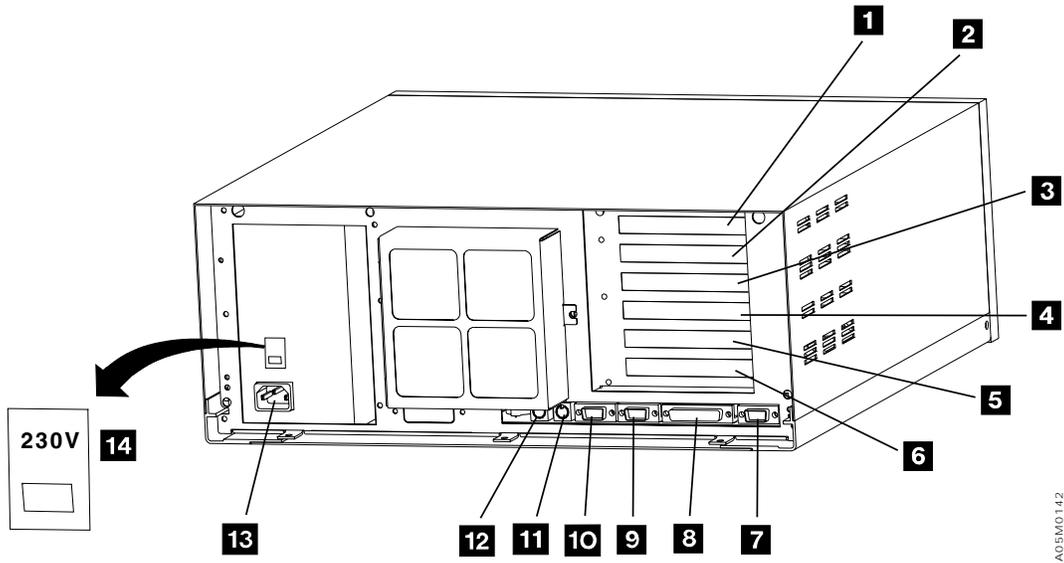


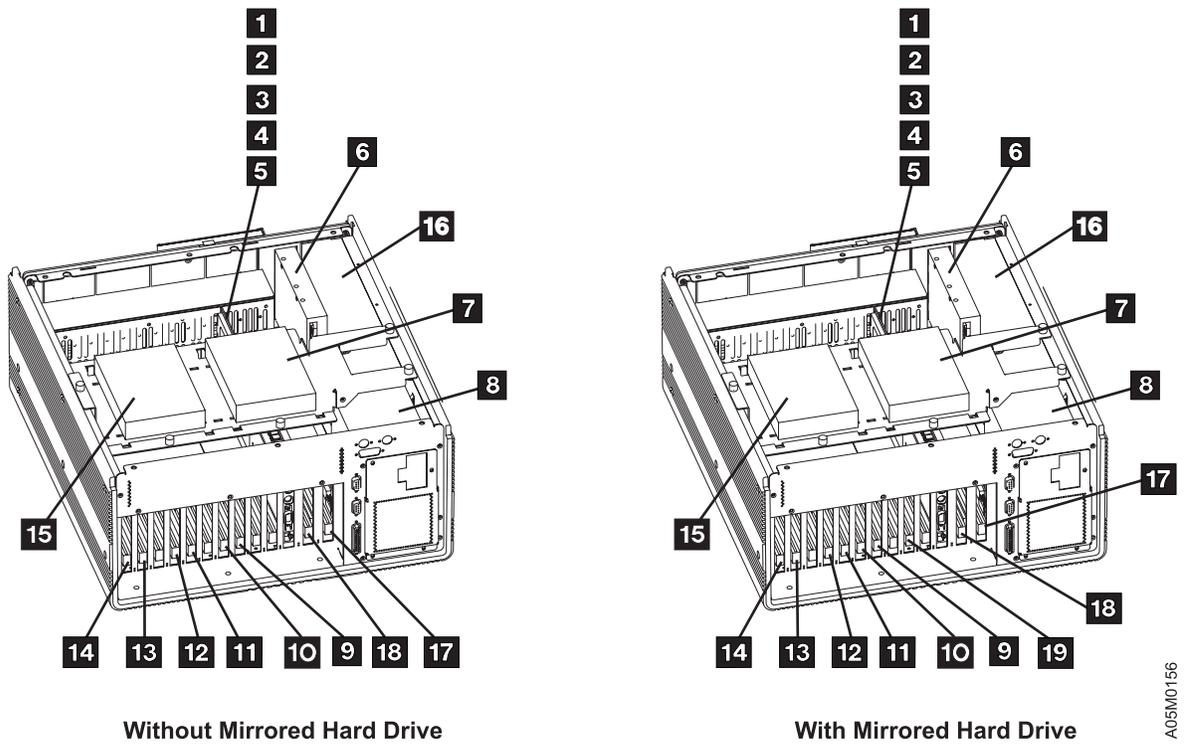
Figure 1. PS/ValuePoint System Unit

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A05M0142

Figure 2. Model 7585 Industrial Computer System Unit



A05M0156

Figure 3. Model 7588 Industrial Computer System Unit

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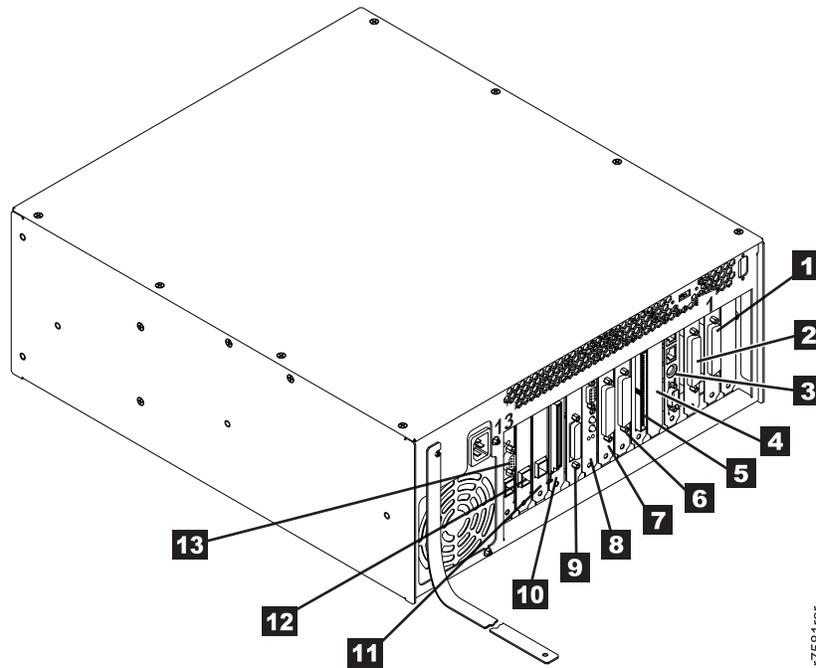


Figure 4. Model 7581 Industrial Computer System Unit

Slot	Type	Adapter
1	PCI/ISA	ARTIC 0
2	PCI/ISA	ARTIC 2
3	Combo	SBC
4	ISA	Not Used (SBC needs this slot)
5	ISA	Servo
6	ISA	ARTIC 3
7	ISA	ARTIC 1
8	PCI/ISA	DupliDisk-2
9	PCI	Display
10	PCI	DI/DO
11	PCI	Ethernet (Alternate)
12	PCI	Ethernet (Primary)
13	PCI	Token Ring/Ethernet (FC 5219/5220)

5.0 Programming Updates

None.

6.0 Purpose and Description

6.1 Purpose

This FFBM provides additional ports. The default configuration of the expansion card provides four RS-232-C ports that are (host) direct attachment ports "8" through "B" and four RS-422-A ports that are (3490E/3590) control/tape unit ports "C" through "F".

6.2 Description

Provides a second ARTIC adapter, ARTIC breakout box, mounting fasteners, configuration diskette and installation instructions to allow installation of the Expansion Attachment Card for the Library Manager.

7.0 Installation Time

Machine Hours	System Hours	CE Hours
2.2	0.0	2.5

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8.0 Special Tools, Materials, and/or Procedures Required

Warning: Some parts handled during this installation are sensitive to electrostatic discharge (ESD). See "Working with ESD-Sensitive Parts" in the Checks, Adjustments, Removals, and Replacements (CARR) section of the 3494 Maintenance Information Manual.

If your LM is at 525.04 or higher you need a CD, otherwise you will require Disk 1 of the Library Manager microcode. In either case you will need wrap plugs (P/N 6425494 for breakout box positions 0 and 1, and P/N 09F1799 for breakout box positions 2—7) that were both shipped with the 3494 for installation of this feature.

If you have a PS/ValuePoint, you will require a copy of the **PS/ValuePoint Installing Options** manual that was shipped with the 3494. Familiarize yourself with Chapter 1, "Option Installation Overview", located in the **PS/ValuePoint Installing Options** manual.

If you have a Model 7585 Industrial PC you will require a copy of the **Model 7585 Industrial Computer Information: Installation, Operation, Hardware Maintenance** manual (S06H-2298) that was shipped with the 3494. Familiarize yourself with Chapter 3, "Installing Options", located in the **Model 7585 Industrial Computer Information: Installation, Operation, Hardware Maintenance** manual.

If you have a Model 7588 Industrial PC you will require a copy of the **Model 7588 Industrial Computer Information: Installation, Operation, Hardware Maintenance** (S20L-2782 or PN 11N9565) that was shipped with the 3494. Familiarize yourself with Chapter 3, "Installing Options", located in the **Model 7588 Industrial Computer Information: Installation, Operation, Hardware Maintenance** manual.

If you have a Model 7581 Industrial PC you will require a copy of the **IBM 7581 Library Manager Console Maintenance Information** manual (PN 18P7157) that was shipped with the 3494.

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Details of Installation (Sections 9, 10, and 11)

9.0 Safety

9.1 Safety Notice

Refer to 10.1 Subsystem Power and follow steps 10.1.1 through 10.1.13.

10.0 Details Of Installation

10.1 Vary Drives Offline

- ___ 1. Inform customer operations that the 3494 needs to be taken offline.
- ___ 2. If the Library **IS NOT** in a **Peer-to-Peer** Copy environment, request from customer operations that all drives (and logical drives if attached to a VTS) in this library need to be varied offline from the host.
- ___ 3. Do not proceed until operations has verified that the appropriate drives in the library have been varied offline at all attached systems.
- ___ 4. If the Library Manager is in a **Peer-to-Peer** environment, put the VTS in **service prep mode** by referring to the **Service Allocation** section of the **Start** chapter of the *IBM TotalStorage 3494 Peer-to-Peer Virtual Tape Server Maintenance Information* manual.

Do not proceed until the VTS is in Service Prep Mode.

Proceed to Section 10.2, "Vary Control Unit(s) Offline."

10.2 Vary Control Unit(s) Offline

- ___ 1. Vary Offline any B10/B16/B18/B20 via the Service pulldown.
 - ___ a. Select **Service**.
 - ___ b. Select **VTS Subsystem Management**.
 - ___ c. Select **Online/Offline**.
 - ___ d. Select **VTS1->Offline**.
 - ___ e. If applicable select **VTS2->Offline**.
 - ___ f. Wait for the message **VTS is now Offline** before proceeding.

10.3 Subsystem power

- ___ 1. Place the library manager in **Offline** mode by selecting the **Offline** option from the **Mode** pull-down menu.
- ___ 2. Place the library in **Pause** by selecting the **Pause** option from the **Mode** pull-down menu.
- ___ 3. Shut down the library manager by selecting the **Shutdown** option from the **Mode** pull-down menu.
- ___ 4. Open a Service Window by selecting the "**Service Window**" button on the "3494 Tape Library Dataserver Shutdown" panel. A Service window is opened for you. If asked for, type the password: '**SERVICE**'.
- ___ 5. Insert the Library Manager microcode disk 1 or CD into the drive.
 - a. If the code level is below 525.04, type **A:\RTICINST** (media - Floppy)
 - b. If the code level is 525.04 through 527.01, type **H:\RTICINST** (media - CDROM)
 - c. If the code level is 527.01A or higher, type **H:\52701\RTICINST** (media - CDROM)
- ___ 6. Follow the displayed instructions, selecting the defaults by pressing the Enter key. You will be prompted to insert the expansion attachment feature install diskette during this process.
- ___ 7. Remove the expansion attachment feature install diskette or CD from the drive after completion of the previous step
- ___ 8. Type **exit** at the prompt ([C:\]).
- ___ 9. Select **Shutdown computer for power off** from the Shutdown panel.
- ___ 10. After the Shutdown completes, use the library **Unit Power switch** on the library operator panel to power the library down.
- ___ 11. Turn off **CB1** on the 3494 Control Unit power control compartment (PCC).

Proceed to Section 10.4, "Prepare the Library Manager System Unit for Service" on page 11.

10.4 Prepare the Library Manager System Unit for Service

- ___ 1. See step 1d before doing this step. Loosen the screw holding the braided strap to the MIC card metal stiffener and remove the strap.
 - a. If you have a PS/ValuePoint System Unit, refer to Figure 1 on page 4 and proceed to step 2.
 - b. If you have a Model 7585 Industrial Computer System Unit, refer to Figure 2 on page 5 and proceed to step 3.
 - c. If you have a Model 7588 Industrial Computer System Unit, refer to Figure 3 on page 5 and proceed to step 4.
 - d. If you have a Model 7581 Industrial Computer System Unit, do not remove the braided strap. Refer to Figure 4 on page 6 and proceed to step 5.
- ___ 2. For the PS/ValuePoint System Unit, remove the cover by following the instructions below. For additional detail on removing the cover, see **PS/ValuePoint Installing Options** manual.
 - ___ a. With the front of the computer facing you, unlock the cover lock.
 - ___ b. Push down and hold the cover-release latch (on the top left-hand side of the unit) as you slide the cover toward you until it separates from the computer.
 - ___ c. Proceed to step 6 on page 12.
- ___ 3. For the Model 7585 Industrial Computer System Unit, remove the cover by following the instructions below.
 - ___ a. Unscrew the two knurled thumbscrews near the top on the back of the system unit, until they release (the two thumbscrews are retained inside the top cover; and they will not come out).
 - ___ b. Slide the top cover toward the back approximately 50mm, and then lift it off.
 - ___ c. Proceed to step 6 on page 12.
- ___ 4. For the Model 7588 Industrial Computer System Unit, remove the cover by following the instructions below.
 - ___ a. Loosen the six screws on the top cover of the system unit, and place the cover to the side for future reinstallation.
 - ___ b. Disconnect the IDE ribbon cables and the power cables from the front of each hard disk drive (HDD).
 - ___ c. Loosen the three knurled thumbscrews that secure the HDD carrier to the sheet metal chassis, and then gently place the HDD carrier assembly to the side for future reinstallation.
 - ___ d. Proceed to step 6 on page 12.
- ___ 5. For the Model 7581 Industrial Computer System Unit, remove the cover by following the instructions below.
 - ___ a. Remove the eight screws on the top cover of the system unit, and place the cover to the side for future reinstallation.
 - ___ b. Proceed to section 10.5, "Prepare the Second ARTIC Adapter for Installation" on page 12.

- ___ 6. Open the cable clamps that secure the library manager signal and power cables to the control unit frame.
- ___ 7. Remove the cables from the cable clamps to allow enough slack in the cables.
- ___ 8. Rotate the library manager counter clockwise 90 degrees.

Go to Section 10.5, "Prepare the Second ARTIC Adapter for Installation."

10.5 Prepare the Second ARTIC Adapter for Installation

- ___ 1. Verify that the JP01 jumper **11** is located on the ARTIC card as shown.
- ___ 2. Verify that the JP02 jumper **12** is located on the ARTIC card as shown.
- ___ 3. Verify that the JP03 jumper **13** is located on the ARTIC card as shown.
- ___ 4. Verify that the JP04 jumper **10** is located on the ARTIC card as shown.
- ___ 5. Verify that the SW1 switch settings **9** are set as shown.

Note: The following two steps will install the ARTIC adapter with the default configuration of PORT0, PORT1, PORT2 and PORT3 connected as RS-232 and PORT4, PORT5, PORT6 and PORT7 connected at RS-485 (this is the same as RS-422). Other configurations are possible; see **ARTIC Port Configurations** in the **INST** section of the 3494 Maintenance Information manual for allowable configurations. Note that no external RS-232 to RS-422 converters are required when the ARTIC card is correctly jumpered.

- ___ 6. Verify that the JP05 **1**, JP06 **2**, JP07 **3**, and JP08 **4** jumpers (also labelled PORT0, PORT1, PORT2, and PORT3) are located on the ARTIC card as shown (in the RS-232 position).
- ___ 7. Verify that the JP09 **5**, JP10 **6**, JP11 **7** and JP12 **8** jumpers (also labelled PORT4, PORT5, PORT6, and PORT7) are located on the ARTIC card as shown (in the RS-485 position).

Go to Section 10.6, "Install the Second ARTIC Adapter" on page 14.

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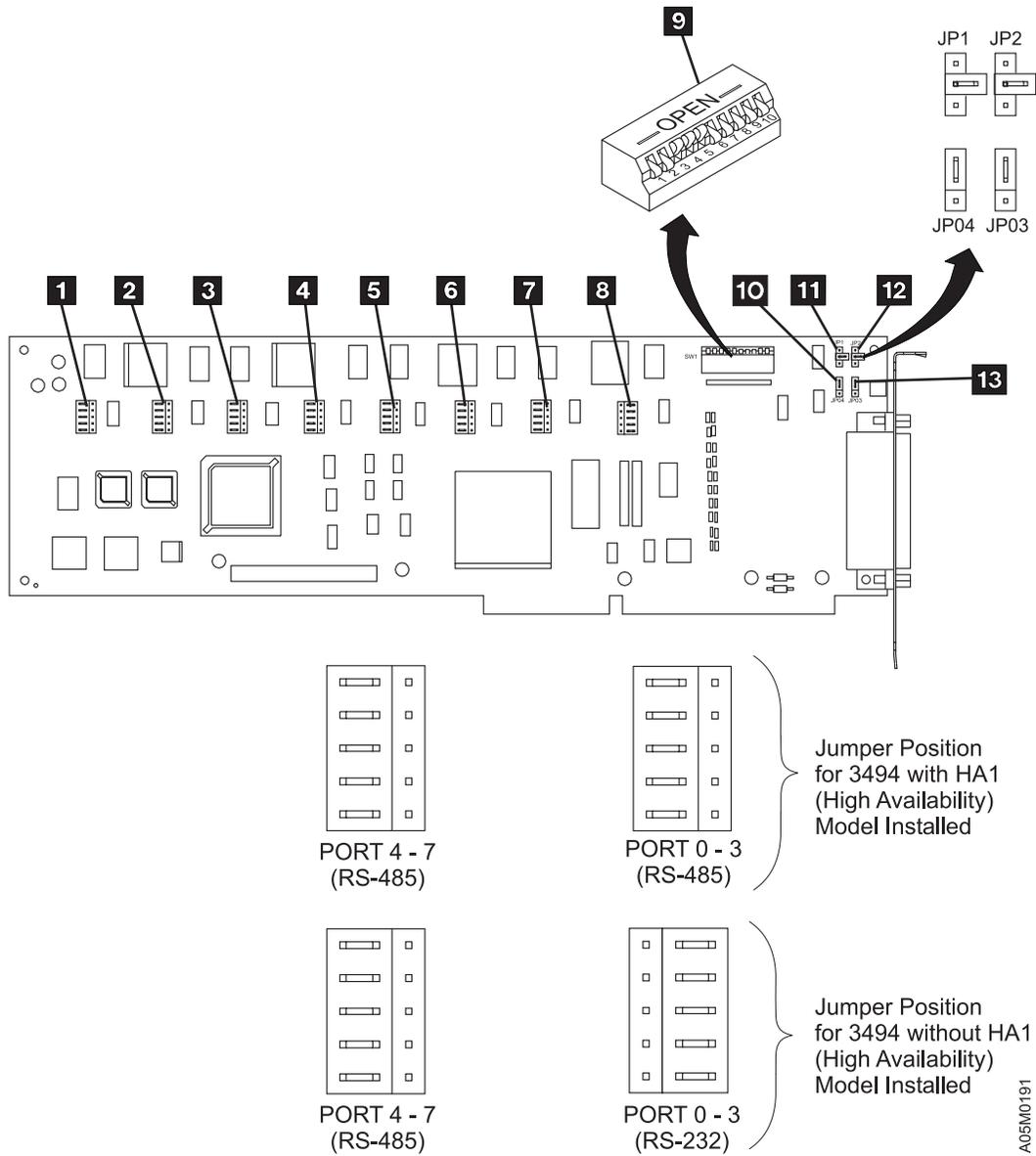


Figure 5. ARTIC186 8-Port Adapter Version 2

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10.6 Install the Second ARTIC Adapter

- ___ 1. If you will be installing the ARTIC adapter in a PS/ValuePoint System Unit, use the *Installing Adapters* instructions found within the **PS/ValuePoint Installing Options** manual, install the second ARTIC adapter in the remaining empty slot (**11** within Figure 1 on page 4). Go to Section 10.7, "Reinstall the Computer Cover."

- ___ 2. If you will be installing the ARTIC adapter in an Model 7585 Industrial Computer System Unit, use the *Installation, Operation and Hardware Maintenance* instructions (S06H-2298, Chapter 3) found within the **Model 7585 Industrial Computer Information** manual, install the second ARTIC adapter in the designated slot (**5** within Figure 2 on page 5). Go to Section 10.7, "Reinstall the Computer Cover."

- Note:** If appropriate to this installation, retighten the screws that you previously loosened on the back of the **Model 7585 Industrial Computer System Unit**.

- ___ 3. If you will be installing the ARTIC adapter in an Model 7588 Industrial Computer System Unit, use the *Installing Adapters* instructions from the **7588 Installation, Operation, Hardware Maintenance** manual, Chapter 3, install the second ARTIC adapter. Determine if you have a hard drive mirroring card plugged into card slot 5 of the 7588. The hard drive mirroring card has two cables that connect to the two hard drives.

 If a hard drive mirroring card is installed, install the second ARTIC adapter card in card slot 8 (**10** in With Mirrored Hard Drive Figure 3 on page 5). If a hard drive mirroring card is not installed, install the second ARTIC adapter card in card slot 7 (**10** in Without Mirrored Hard Drive Figure 3 on page 5). Go to Section 10.7, "Reinstall the Computer Cover."

- ___ 4. If you will be installing the ARTIC Adapter in a Model 7581 Industrial Computer System Unit, use the *Installing Adapters* instructions from the **7581 Library Manager Console Maintenance Information** manual, install the second ARTIC adapter into slot 7. (**7** within Figure 4 on page 6).
 - ___ a. Disconnect the DupliDisk-2 Host IDE cable connecting to the SBC.
 - ___ b. Disconnect the Status LED cable at the front and move the cable out of the way.
 - ___ c. Install the adapter card.
 - ___ d. Reconnect the DupliDisk-2 Host IDE cable and the Status LED cable.

Go to Section 10.7, "Reinstall the Computer Cover."

10.7 Reinstall the Computer Cover

Note: Based upon the Library Manager installed within this 3494 subsystem, proceed to one of the following appropriate steps to reinstall the computer cover:

- ___ 1. If you have a PS/ValuePoint System Unit do the following procedures:
 - ___ a. Align the glides of the cover with the tracks on the front of the computer.
 - ___ b. Slide the cover to the back of the computer until it snaps into place.
 - ___ c. Lock the cover lock.

- ___ 2. If you have a Model 7585 Industrial Computer System Unit do the following procedures:

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- ___ a. Place the cover over the computer, and slide the cover toward the front of the computer.
- ___ b. Tighten the two knurled thumbscrews near the top rear of the cover.
- ___ 3. If you have a Model 7588 Industrial Computer System Unit do the following procedures:
 - ___ a. Reinstall the HDD carrier assembly by tightening the three knurled thumbscrews that secure the HDD carrier to the sheet metal chassis.
 - ___ b. Connect the IDE ribbon cable(s) and the power cable(s) to the front of each HDD. If a mirrored hard drive card is installed, ensure that the IDE cable labelled 'Primary' is plugged into the Primary hard drive (**7** in Figure 3 on page 5) and that the IDE cable labelled 'Mirrored' is plugged into the Mirror hard drive (**15** in Figure 3 on page 5).
 - ___ c. Reinstall the cover, and tighten the six screws on the top cover of the system unit.
- ___ 4. If you have a Model 7581 Industrial Computer System Unit do the following procedures:
 - ___ a. Reinstall the card hold-down bracket.
 - ___ b. Reinstall the cover and tighten the eight screws on the top cover of the system unit.

Proceed to Section 10.8, "Install the Second ARTIC Breakout Box" to install the second ARTIC breakout box.

10.8 Install the Second ARTIC Breakout Box

Note: Refer to Figure 6 on page 16:

- Proceed to Section 10.8.1, "Breakout Box Adapter NOT Installed" on page 17 if the breakout box bracket **3** is **NOT ALREADY INSTALLED** within the control unit.
- Proceed to Section 10.8.2, "Breakout Box Adapter Installed" on page 18 if the breakout box bracket **3** **IS ALREADY INSTALLED** within the control unit.

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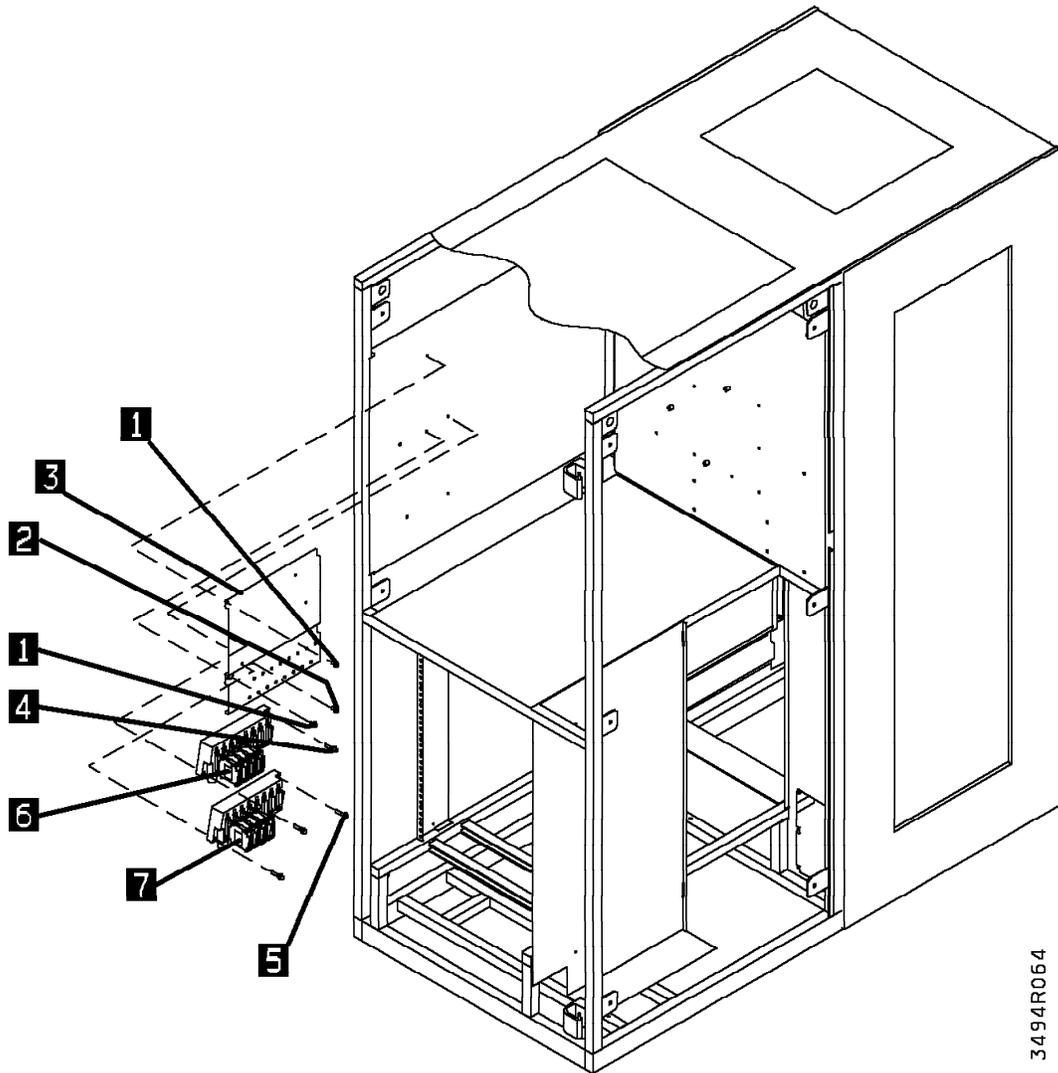


Figure 6. Breakout Boxes With Tape Control Expansion

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10.8.1 Breakout Box Adapter NOT Installed

See Figure 7 when doing the following steps.

- 1. Using two screws **2** (P/N 1624782), install the second ARTIC Breakout Box **1** (P/N 00F5531) under the existing ARTIC Breakout Box on the left side of the Control Unit frame.
- 2. Route the ARTIC Breakout Box cable to the Library Manager, and connect the cable to the second ARTIC adapter you just installed.

Go to Section 10.9, “Secure the Library Manager Cables” on page 19.

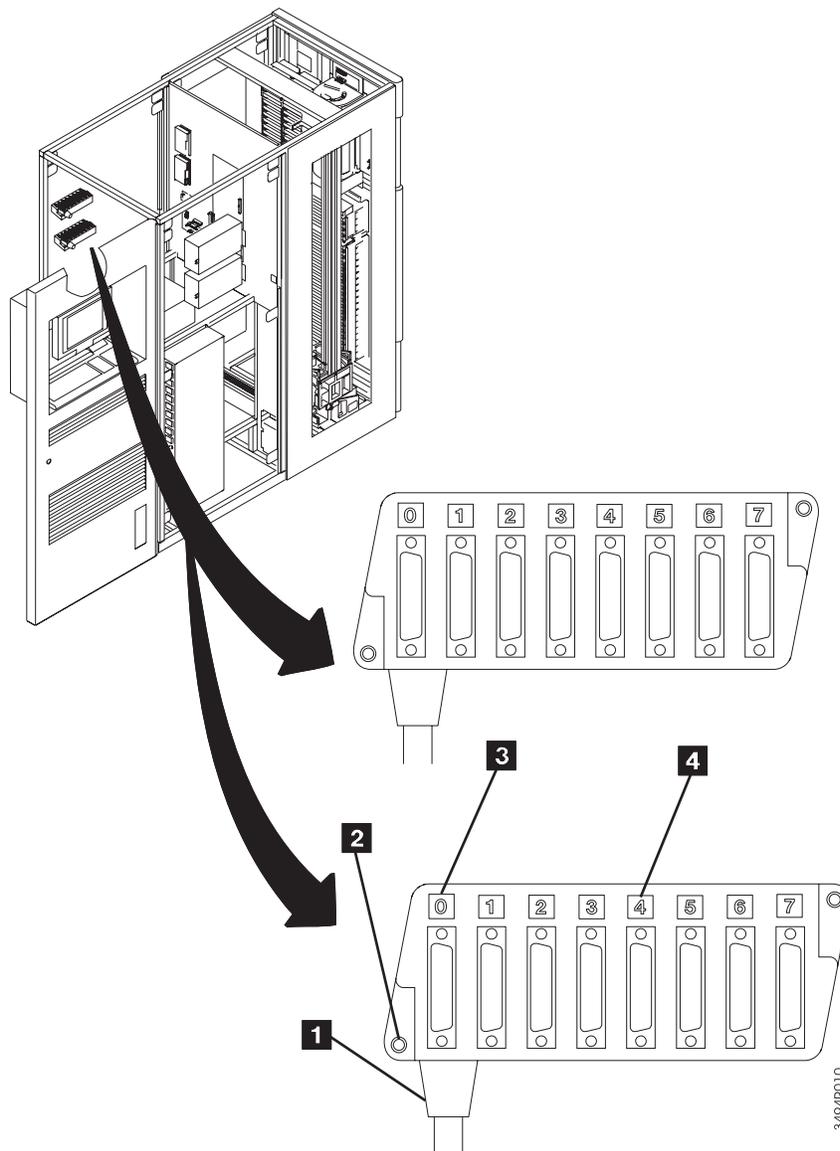


Figure 7. Expansion Attachment Card Breakout Box

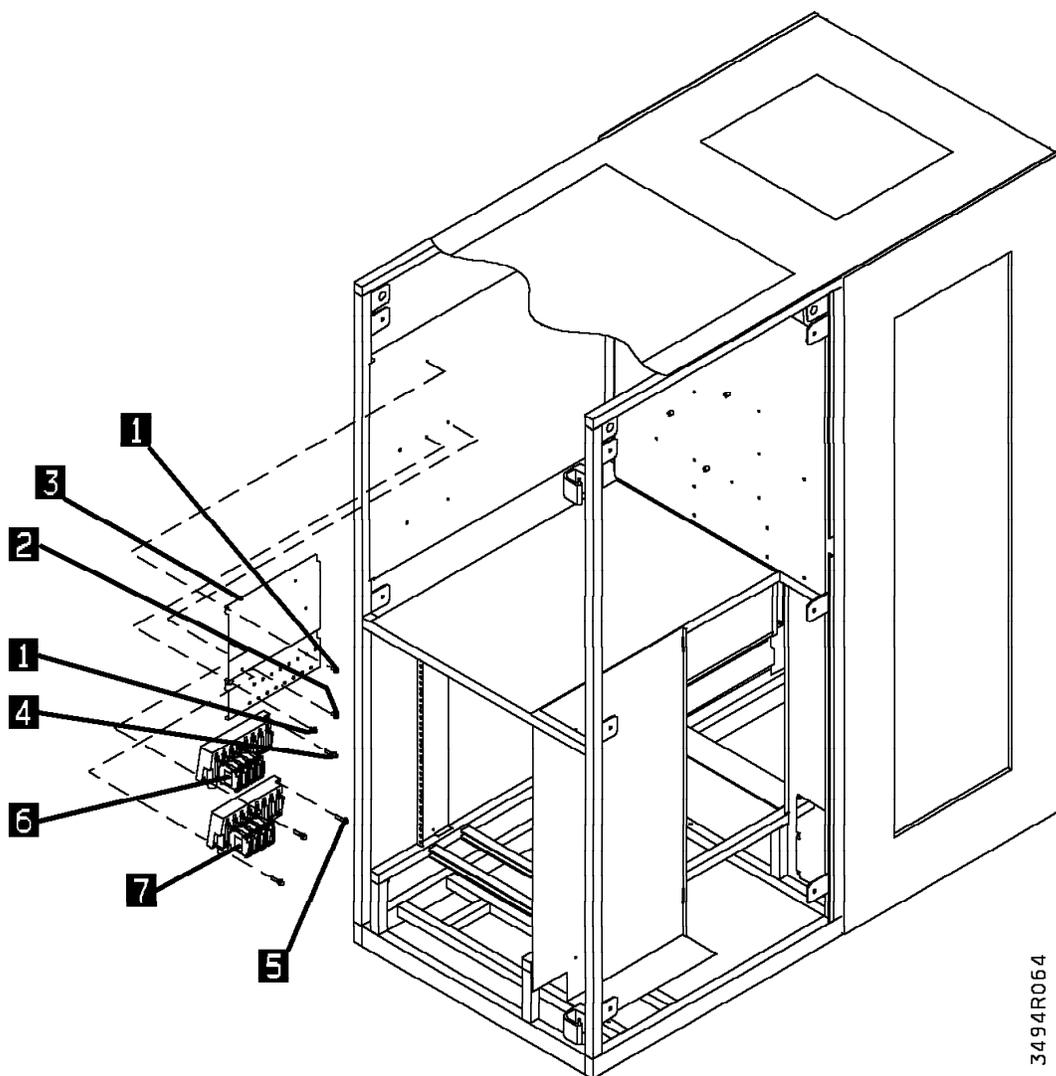
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10.8.2 Breakout Box Adapter Installed

See Figure 8 when performing the following steps..

1. Using two screws **5** (P/N 1624782, provided), install the "Expansion Attachment Card" ARTIC breakout box (P/N 00F5531, provided) on the bracket directly below the basic library manager ARTIC breakout box.
2. Route the new ARTIC breakout box cable to the Library Manager, and connect the cable to the second ARTIC adapter you just installed.

Proceed to Section 10.9, "Secure the Library Manager Cables" on page 19



3494R064

Figure 8. Breakout Boxes With Tape Control Expansion

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10.9 Secure the Library Manager Cables

- ___ 1. Ensure that the front of the library manager is facing you.
- ___ 2. Reinstall the cables that were removed from their cable clamps, and route the breakout box cable just installed.
- ___ 3. Secure the cable clamps.

Proceed to Section 10.10, "3494 Power-up."

10.10 3494 Power-up

- ___ 1. Turn **CB1** on.
- ___ 2. Ensure the **Power-on switch** is activated on the Library Manager.
- ___ 3. Power the 3494 on using the **Library Unit power switch**.

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11.0 Test Procedure

- ___ 1. After the LM finishes its initialization, select **Auto, Offline**.
- ___ 2. Run **Teach Current Configuration** if you have **not added** a frame to the library. If you have **added a frame**, run **Teach Additional Box**.

Note: In the interface tests below, the ARTIC ports are numbered as follows:

 - ARTIC Breakout Box 1 ports 0–7 = ARTIC ports 0–7
 - ARTIC Breakout Box 2 ports 0–7 = ARTIC ports 8–F
- ___ 3. From the **Mode** pulldown menu on the Library Manager, select **Service**. If requested, type the password **service**.
- ___ 4. If new drives or control units have been installed and are ready for use, connect the RS-422 cables to the appropriate breakout box ports. Refer to the 'ARTIC Adapter Cables' section and following in the 3494 MI **Installation** chapter.
- ___ 5. Run the **Interface Test - Direct Attach** on any direct attach RS-232 ports that have been added.
 - ___ a. From the **Service** pulldown menu, select **Test interface**. Then select **Direct attach**.
 - ___ b. Select the first direct-attach RS-232 port to test.
 - ___ c. Install wrap plug PN 6425494 (which can be used on all breakout ports) onto the corresponding breakout box port.
 - ___ d. Select **OK** to initialize the direct attach interface test.
 - ___ e. If the message "Unable to initialize port. Do you want to run the wrap test?" appears, select **Yes**. A successful wrap test will display "Test completed with no errors".
 - ___ f. If the test is successful, continue testing the remaining newly added direct attach RS-232 ports.
- ___ 6. Run **Drive Get/Put** on each drive attached to newly added and Teach-configured ARTIC RS-422/485 ports or ARTIC ports that were changed from RS-232 to RS-422 with converters (PN 50G0947).
 - ___ a. From the **Service** pulldown menu, select **Exercise cartridge accessor**. Then select **Drive Get/Put**.
 - ___ b. Select the first drive-connected control unit ARTIC port that was added and Teach-configured, or was changed from RS-232 to RS-422.
 - ___ c. Select **OK** to initialize the Drive Get/Put test.
 - ___ d. If the test is successful, continue testing the remaining added or converted drive-attached ports. If the test is not successful, isolate the problem by running the control unit interface test (see step 7 below) with the cable to drive control unit disconnected from the ARTIC breakout box.
- ___ 7. Run the **Interface test-Control unit** on each newly added and Teach-configured ARTIC RS-422/485 port or ARTIC port that was converted from RS-232 to RS-422 with converter (PN 50G0947) if the port does not have a drive connected to it yet.
 - ___ a. From the **Service** pulldown menu, select **Test interface**. Then select **Control unit**.

- ___ b. Select the first non-drive connected control unit ARTIC port that was added and Teach-configured or was changed from RS-232 to RS-422.
 - ___ c. Install wrap plug PN 6425494 (which can be used on all breakout box ports) onto the RS-232 to RS-422 converter (PN 50G0947) if installed, or directly onto the breakout box port if the converter is not installed.
 - ___ d. Select **OK** to initiate the control unit interface test.
 - ___ e. If the message "Unable to initialize port. Do you want to run the wrap test?" appears, select **Yes**. A successful wrap test will display "Test completed with no errors".
 - ___ f. If the test is successful, continue testing the remaining added and Teach-configured control unit ports, or converted control unit ports that do not have drives attached.
- ___ 8. If new RS-232 direct attach ports are being added, connect the RS-232 cables to the appropriate breakout box ports. Refer to the 'ARTIC Adapter Cables' section and following in the 3494 MI **Installation** chapter.
- ___ 9. Return the subsystem to the customer.

Go to Section 12.0, "Field Updating" on page 22.

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After Installation (Sections 12 through 15)

12.0 Field Updating

None

13.0 Field Support Publications

Save these instructions and the feature install diskette with the 3494 manuals and tools. If the database is lost, they may be needed to re-install this feature.

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14.0 Parts Disposition

None

15.0 Machine Records

- ___ 1. Using existing procedures, update all field records to reflect that FC 5229 (“Expansion Attachment Card”) has been installed.
- ___ 2. Using existing procedures, report installation and quality.

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