IBM INSTALLATION INSTRUCTIONS

Dual Gripper (FC 5215)
For the 3494 Tape Library
Dataserver Models L10/L12/L14

Document Number 50G0973 EC F23133

SSD, Tucson

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Status: Field Use

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

Before Install (Sections 1 through 8)

1.0 Machines Affected

This FFBM affects all 3494 Control Units (Models L10/L12/L14) that require the “Dual Gripper” (FC 5215) function.

2.0 Prerequisites / Concurrent / Companion

2.1 Prerequisites

__ 1. 3494 Library Manager Code must be at EC C88492 (Patch level LM514.xx) or higher.

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

__ a. From the "Mode" pulldown menu on the Library Manager, select "Service Menu...". If asked for, type the password 'SERVICE'.

__ b. From the "View Code Levels..." window, scroll down to "LM EC Level is..." and read the current EC level.

__ c. From the "View Code Levels" window, scroll down to "LM Patch Level is..." and read the current Patch level.

__ 2. The Picker Card (GRI) must be at EC C88675 or higher.

Checkpoint for GRI2 Card EC’s: Check the EC level of the GRI2 Card by using the following step: **See Figure 3 on page 11 when doing the following step.**

__ a. If the Picker Card (GRI) **1** does not have the three large modules **2** as shown, you will have to replace the Picker Card. If the Picker Card is to be replaced, you should have received FFBM 50G0974.

__ 3. The Reach Card (RCH) must be at EC C88676 or higher.

Checkpoint for RCH2 Card EC’s: Check the EC level of the RCH Card by using the following step: **See Figure 1 on page 8 when doing the following step.**

__ a. If the the Reach Card (RCH) **1** does not have three connectors **2** as shown, you will have to replace the Reach Card. If the Reach Card is to be replaced, you should have received FFBM 50G0975.

2.2 Concurrent

If this 3494 subystem configuratin contains the 3494 Model HA1 (“High Availability Attachment”), a concurrent MES for the same “Dual Gripper” function must be received and installed at the same time as this MES order.

DO NOT ATTEMPT to install this MES if the HA1 MES has not been received at the start of this MES installation.

3.0 FFB/M's To Be Installed

3.1 Basic Dual Gripper Hardware

FFBM	Qty	Description
50G0973	1	Hardware and Instructions

3.2 Picker Card Replacement

Note: Refer to Section 2.0, step 2 on page 3 to validate if this FFBM is required.

FFBM	Qty	Description
50G0974	1	Picker Card Replacement

3.3 Reach Card Replacement

Note: Refer to Section 2.0, step 3 on page 3 to validate if this FFBM is required.

FFBM	Qty	Description
50G0975	1	Reach Card Replacement

3.4 Storage Inserts

Note: *The following FFBM will be supplied **ONCE FOR EACH** expansion frame that will be attached to the 3494 Control Unit that is installing this Dual Gripper function (FC 5215).

FFBM	Qty	Description
50G0976	1*	Cartridge Storage Inserts

4.0 Preparation

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

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

5.0 Programming Updates

None.

6.0 Purpose and Description

6.1 Purpose

This FFBM provides Dual Gripper function to enhance throughput.

6.2 Description

Provides a second reach assembly (gripper), bumper bracket, mounting hardware, storage inserts and Installation Instructions. New gripper and reach cards will also be provided if required.

7.0 Installation Time

Machine Hours	System Hours	CE Hours
2.5	0.0	2.8

8.0 Special Tools, Materials, and/or Procedures Required

The IBM 3494 Tape Library Dataserver Maintenance Information manual will be required for this install.

The installation of this feature will require the top 2 rows and the bottom 2 rows of the cartridge storage function to be removed from the 3494 subsystem. Contact the Customer to determine the disposition of any data cartridges removed from the top and bottom two rows.

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

Proceed to Section 1.0 “Machnes Affected” within installation instruction P/N 08L5919 (“Dual Gripper <FC 5215> for the 3494 Model HA1 High Availability Library”) **IF this subsystem contains a 3494 Model HA1; OR**

Proceed to Section 9.0, “Safety” on page 7.

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

9.0 Safety

9.1 Safety Notice

None

10.0 Details Of Installation

10.1 Subsystem Power

__ 1. Ask the operator to complete or cancel jobs in the queue.

__ 2. Ask the operator to vary all library devices offline.

__ 3. Place the library manager in **Offline** mode.

__ 4. Place the library in **Pause** mode.

Note: The installation of this feature will require the top 2 rows and the bottom two rows of the cartridge storage function to be removed from the 3494 subsystem. Any cartridges removed from the drive should not be placed in the top and bottom 2 rows.

__ 5. Remove cartridges left in drives and place them in the error recovery cell (1A3) or an empty storage cell.

__ 6. When you are ready to start this installation, use the library Unit Power switch on the library operator panel to power the library down.

Go to Section 10.2, “Cartridge Accessor Service Positions.”

10.2 Cartridge Accessor Service Positions

__ 1. Remove the control unit left side cover to provide additional access to the Cartridge Accessor.

__ 2. Follow procedures to position the Cartridge Accessor for service in CARR-1 "Cartridge Accessor Service Positions" in the 3494 Maintenance Information manual.

Proceed to Section 10.3, “Replace the Picker Card (GRI)” if you determined that the Picker Card (GRI) is **NOT** at EC C88675 or higher.; OR

Proceed to Section 10.4, “Replace the Reach Card” on page 8 if you determined that the Reach Card (RCH) is **NOT** at EC C88676 or higher.; OR

Proceed to Section 10.5, “Cable Loop Restraint” on page 9 if you determined that the Picker Card (GRI) is at EC C88675 or higher; **AND** that the Reach Card (RCH) is at EC C88676 or higher.

10.3 Replace the Picker Card (GRI)

Note: If you determined that the Picker Card (GRI) is at EC C88675 (or higher) go to Section 10.4, “Replace the Reach Card” on page 8. If you determined that the Picker Card (GRI) is not at EC C88675 or higher continue with the following step:

__ 1. Follow the procedures to replace the Picker Card (GRI) in CARR-1 "Picker Card (GRI)" in the 3494 Maintenance Information manual.

Proceed to Section 10.4, “Replace the Reach Card” on page 8 if you determined that the Reach Card (RCH) is **NOT** at EC C88676 or higher.; OR

Proceed to Section 10.5, “Cable Loop Restraint” on page 9 if you determined that the Reach Card (RCH) is at EC C88676 or higher.

10.4 Replace the Reach Card

Note: If you determined that the Reach Card (RCH) is at EC C88676 (or higher) go to Section 10.5, “Cable Loop Restraint” on page 9. If you determined that the Reach Card (RCH) is not at EC C88676 or higher continue with the following step:

See Figure 1 when doing the following step.

__ 1. Follow the procedures to replace the reach card (RCH) in CARR-1 "Reach Card" in the 3494 Maintenance Information manual.

Note: The reach motor cable connector **3** on the new reach card is located on the opposite side from the reach motor cable connector on the reach card removed.

__ 2. Connect the reach motor cable **5** to the reach card **1** as shown.

__ 3. Route the reach motor cable **5** as shown and secure with the existing cable clamp **4** as shown.

__ 4. If the calibration sensor cable does not reach, then replace the existing cable clamp **6** with the longer cable clamp (PN 05H7491) and washer (PN 1622304) that are supplied. Set aside all removed or unused parts for future processing as defined by Section 14.0, “Parts Disposition” on page 23.

Go to Section 10.5, “Cable Loop Restraint” on page 9.

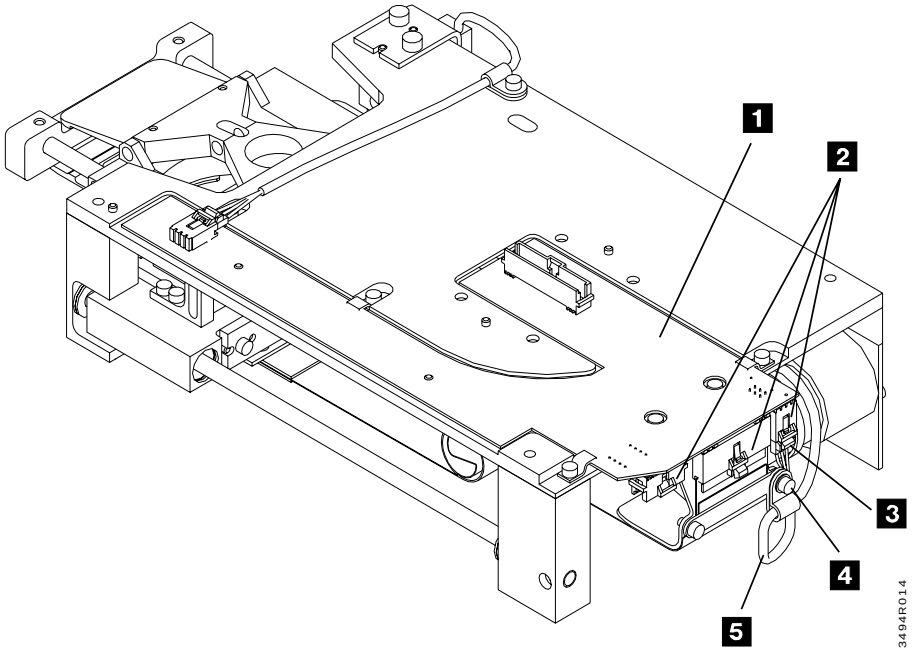

Figure 1. Reach Card

10.5 Cable Loop Restraint

See Figure 2 on page 9 when doing the following step.

__ 1. Remove two screws 3, install the plate 1 (PN 05H7400, supplied) between the cable assembly and the picker casting.

__ 2. Resecure with the two screws removed in the previous step.

Go to Section 10.6, “Remove the Y-Home Sensor/Bumper Assembly” on page 10.

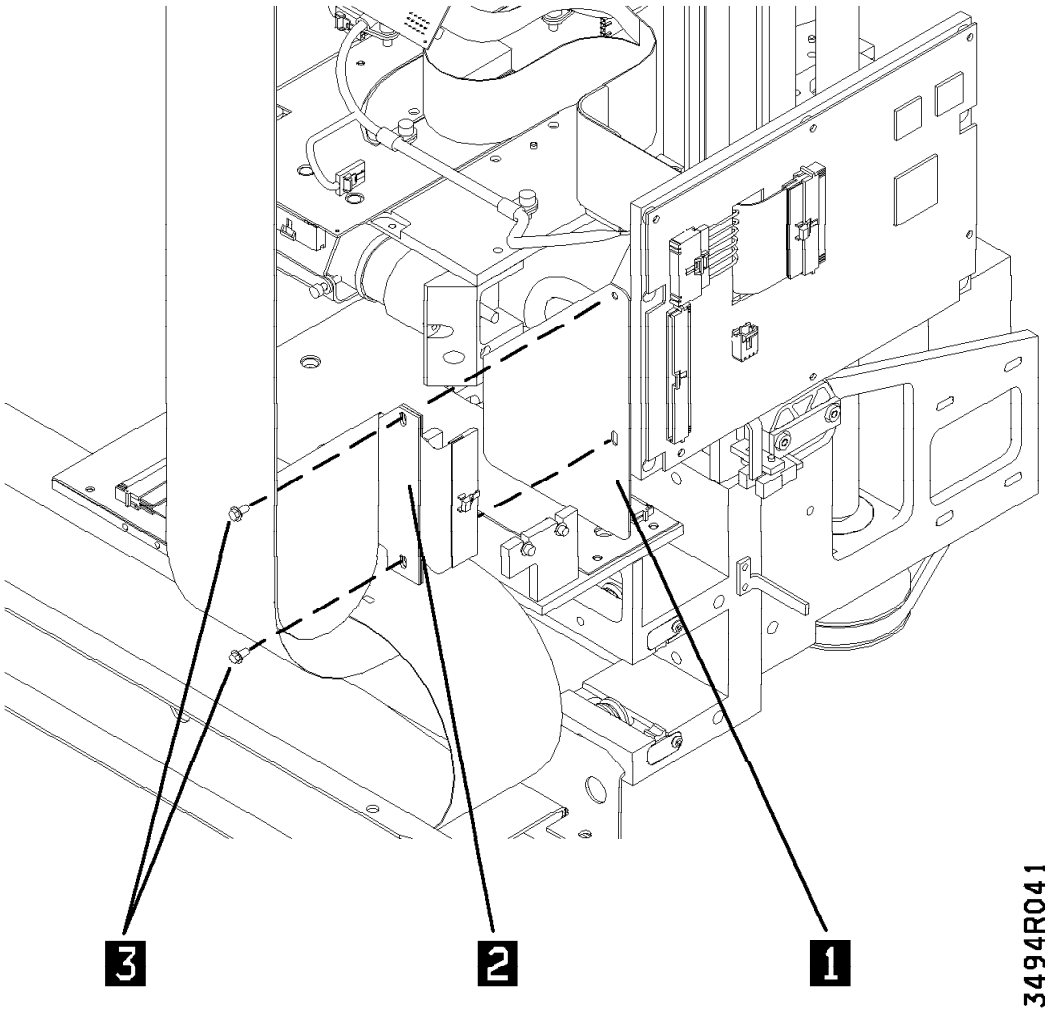

Figure 2. Install Cable Loop Restraint

10.6 Remove the Y-Home Sensor/Bumper Assembly

See Figure 3 on page 11 when doing the following step.

__ 1. Remove the Y-Axis home sensor/bumper assembly **5** by removing the two mounting screws **3** Retain hardware for later use.

__ 2. Remove the Y-home sensor cable clamp **4**. Retain the hardware for later use.

__ 3. Remove the bumper assembly **6** by removing the 2 screws **7** Removed hardware will not be used again. Set aside for proper parts disposition.

Go to Section 10.7, “Install the new Bumper Bracket” on page 12.

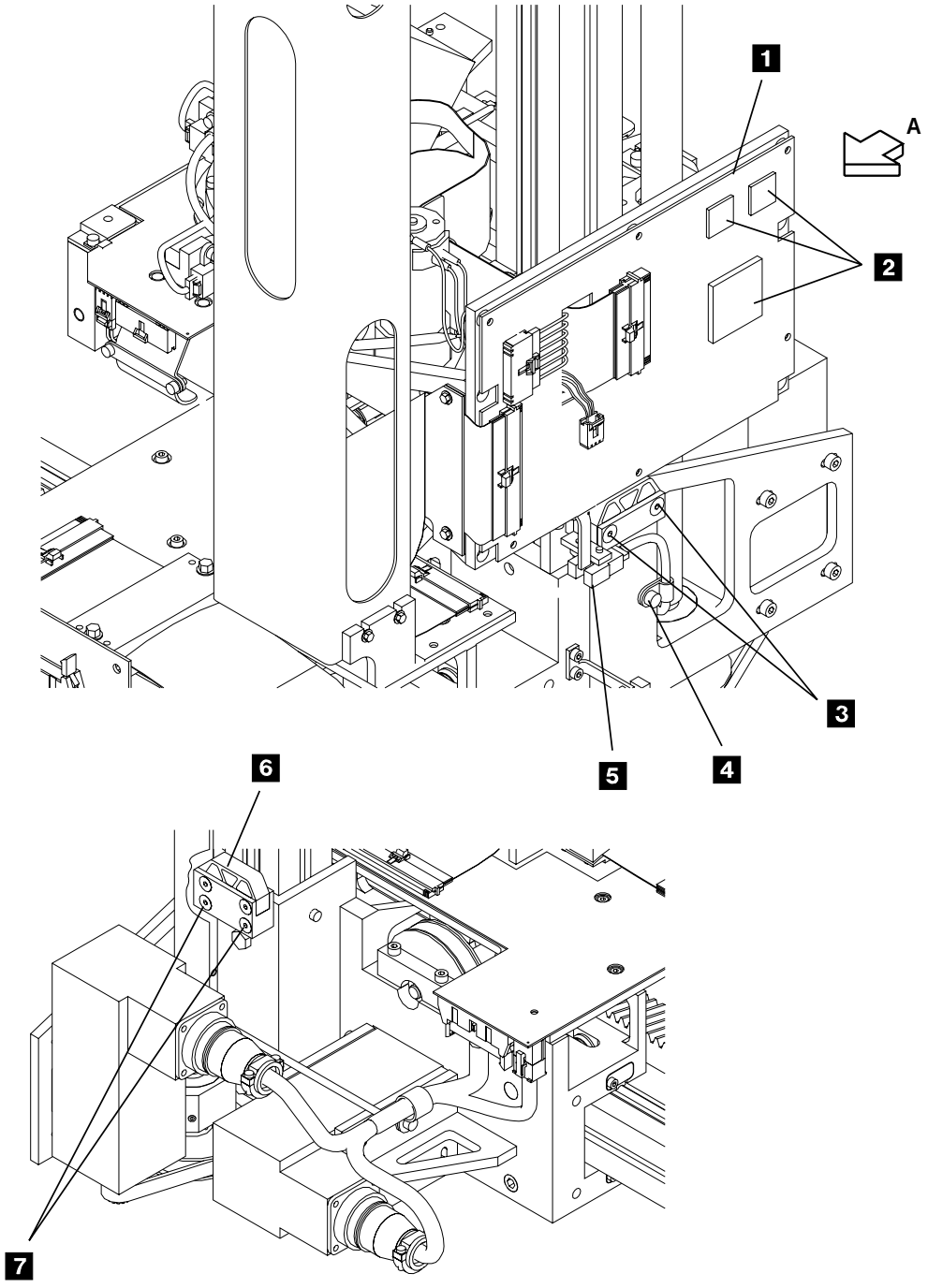

Figure 3. Picker Card and Y-Axis Bumper Asm.

10.7 Install the new Bumper Bracket

See Figure 4 on page 13 when doing the following step.

Note: Some early machines may not have a bumper bracket location hole **2** in the Y-rail assembly. If you do not have a location hole in the Y-rail assembly you will have to follow steps 1 and 2. If you have a location hole in the Y-rail go to step 3.

__ 1. Scribe a line **11** on the Y-rail assembly from the top of the Y-motor mounting casting up 76 +0/-1 mm as shown in "View A".

__ 2. Remove the locating pin that is pressed into the bumper bracket supplied.

__ 3. Insert some paper in the Y-axis rail T-nut slot above the Y-axis casting **4** to prevent the T-nut **3** from sliding down below the top of the of Y-axis casting. If the T-nut slides down below the top of the Y-axis casting it will be very difficult to retrieve.

__ 4. Locate the bumper bracket location hole **2** or scribe line **11** on the Y-rail assembly **1** .

__ 5. Insert the T-nut **3** supplied into the Y-rail assembly center slot within +/- 25mm vertically to the bumper bracket positioning hole **2** or scribe line **11** on the Y-rail assembly.

__ 6. Insert the bumper bracket mounting screw **8** through the bumper bracket **7** .

__ 7. Position the bumper bracket and the mounting screw **8** to the Y-rail assembly and engage the thread of the bumper mounting screw **8** into the T-nut **3** Do not tighten the screw.

__ 8. Remove the paper inserted in step 3.

__ 9. Position the bumper bracket **7** (with the mounting screw engaged into the T-nut) so the bumper bracket locating pin can be inserted into the Y-axis bumper locating hole **2** or position the top of the bumper bracket to the scribe line **11** . Tighten the bumper bracket mounting screw **8**

Go to Section 10.8, “Install the Y-Axis Home Sensor.”

10.8 Install the Y-Axis Home Sensor

See Figure 4 on page 13 when doing the following step.

__ 1. Reinstall the screws **10** and the Y-axis home sensor/bumper assembly **9** (that were both removed in Seciton 10.6, step 1 on page 10) into the bumper bracket just installed in step 9.

__ 2. Route the Y-home sensor cable **6** as shown and install the cable clamp **5** to the Y-axis casting using the cable clamp and screw removed previously.

Note: Ensure that the Y-home sensor cable is routed to prevent any contact with moving parts.

Go to Section 10.9, “Install the Second Picker Assembly” on page 14.

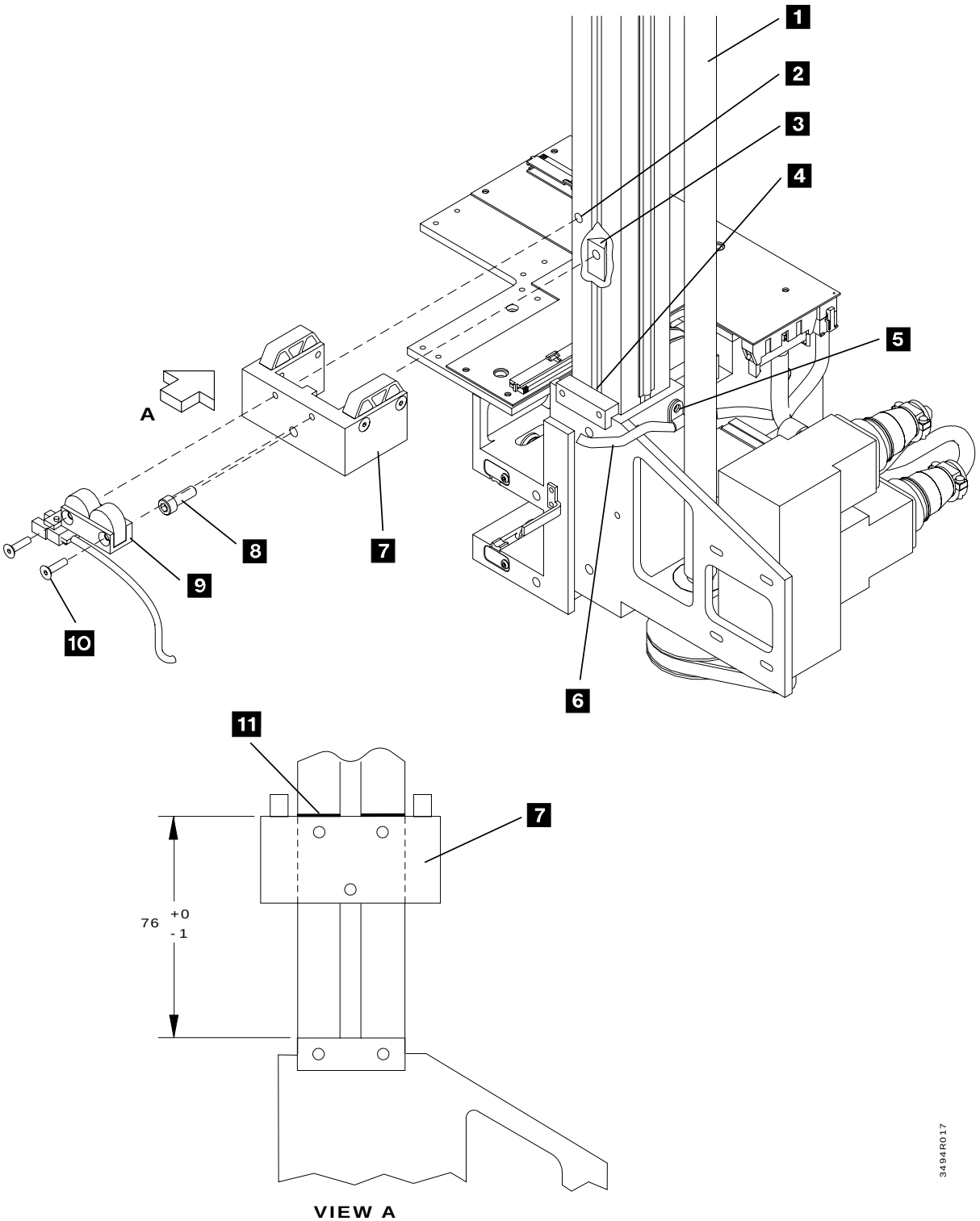

Figure 4. New Y-Axis Bumper and Sensor Asm.

10.9 Install the Second Picker Assembly

See Figure 5 on page 15 when doing the following step.

__ 1. Install the dual gripper attachment brackets, P/N 05H1998,(4X) **2** to the underside of the reach assembly **1** using screws, P/N 1621509 and lockwashers, P/N 1622259, **3** provided.

Note: You can use two hex wrenches **7** of appropriate size to support the picker assembly to the attachment brackets just installed while you install the mounting screws and lockwashers on the opposite side during the next step. You can also rotate the Picker Assembly to gain access to the mounting screws.

__ 2. Install the picker assembly, P/N 05H7196, **6** using screws, P/N 1621509 and lockwashers, P/N 1622259, **5** provided.

__ 3. Install the dual gripper interface cable assembly, P/N 05H4058, **4** between the upper and lower reach card assembly.

__ 4. Replace the Control Unit left side cover removed in Section 10.2, “Cartridge Accessor Service Positions” on page 7.

Go to Section 10.10, “Install the Control Unit Cartridge Storage Inserts” on page 16.

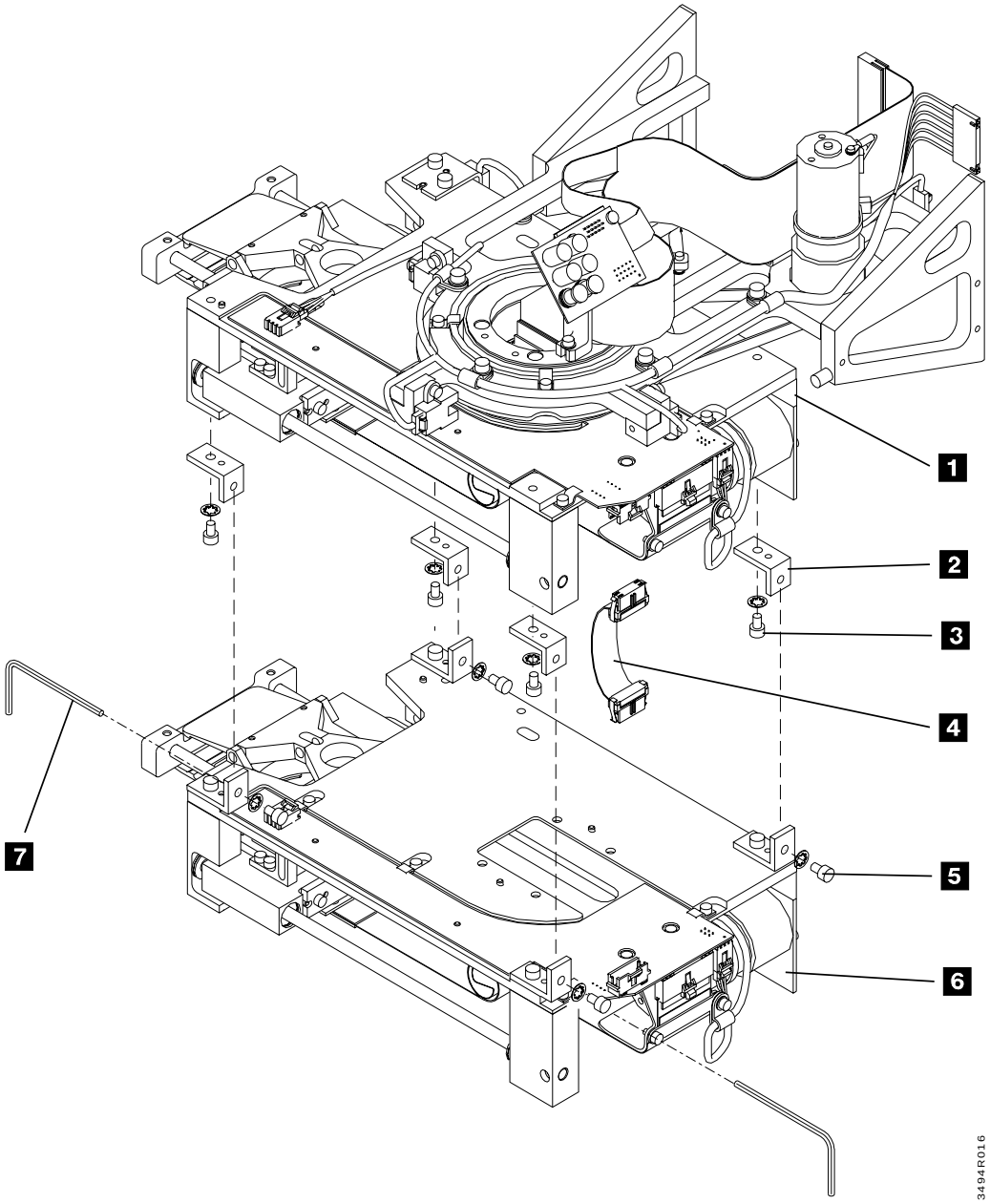

Figure 5. Dual Gripper Assembly

10.10 Install the Control Unit Cartridge Storage Inserts

See Figure 6 on page 17 when doing the following step.

Note: The installation of this feature will require the top two rows and the bottom two rows of the cartridge storage function to be removed from the 3494 subsystem (control unit and expansion frame units).

Contact the customer to determine the disposition of any data cartridges removed from the top and bottom two rows.

__ 1. Remove the data cartridges from the top two rows **1** within the storage wall (opposite the door); **AND** from one of the following pertinent door configurations:

__ a. FC 5210 (“10-Cartridge Convenience I/O”): From column-row locations *A1-B2*, *A39-B40* and *C39-D40*; OR

__ b. FC 5230 (“30-Cartridge Convenience I/O”): From column-row locations *A1-B2* and *A39-B40*; OR

__ c. **Neither** FC 5210 or FC 5230 is installed: From column-row *A1-B2*, *C1-D2*, *A39-B40* and *C39-D40*.

__ 2. In the column-row locations **1** vacated within step 1, install the provided cartridge storage inserts.

__ a. You will have extra inserts if either Convenience Input/Output feature (i.e. FC 5210 or FC 5230) is installed.

__ b. Set any extra cartridge storage inserts to the side for the parts disposition defined within Section 14.0, “Parts Disposition” on page 23.

Proceed to Section 10.11, “Install the Drive Unit Cartridge Storage Inserts” on page 18 if this 3494 subsystem has any Drive Units (i.e. 3494 Models D10/D12/D14) OR Drive Expansion Frames (i.e. FC 5300/5302/5304/5500/5502) installed or recently shipped; OR

Proceed to Section 10.12, “Install VTS/Storage Unit Cartridge Storage Inserts” on page 20 if this 3494 subsystem has a Storage Unit (i.e. 3494 Model S10) OR Storage Expansion Frame (i.e. FC 5400) installed or recently shipped; OR

Proceed to Section 11.0, “Test Procedure” on page 22 if this 3494 subsystem **DOES NOT HAVE** any drive or storage unit devices attached.

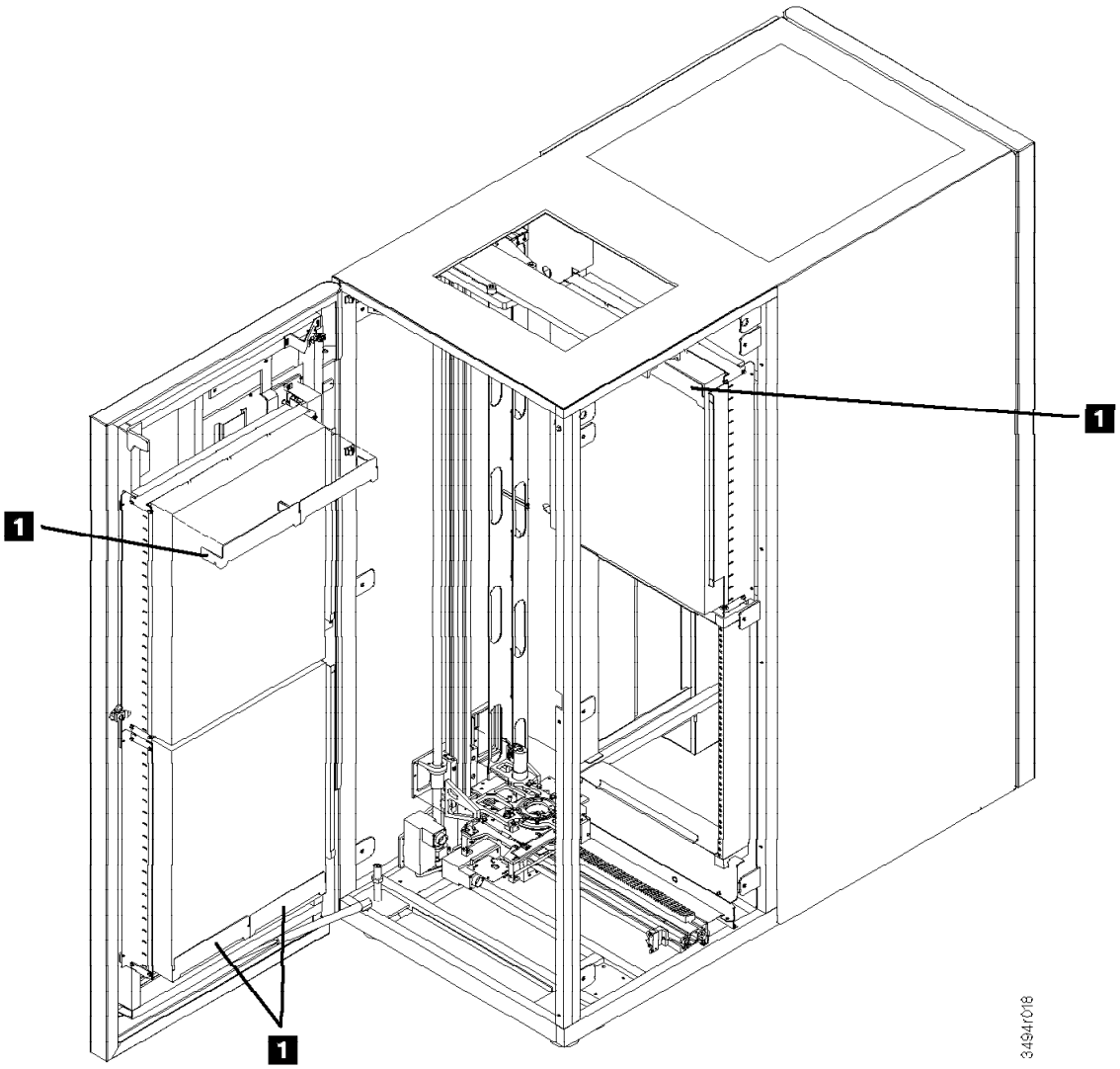

Figure 6. Cartridge Storage Insert (control unit shown)

10.11 Install the Drive Unit Cartridge Storage Inserts

See Figure 7 on page 19 when doing the following step.

Note: The installation of this feature will require the top two rows and the bottom two rows of the cartridge storage function to be removed from the 3494 subsystem drive units.

Contact the Customer to determine the disposition of any data cartridges removed from the top and bottom two rows.

__ 1. Remove the data cartridges from the following pertinent locations:

__ a. The top and bottom two rows of cartridge storage on the door; AND

__ b. from the top two rows on the opposite storage wall; AND

__ c. from the bottom two rows of the opposite storage wall if this is an all-storage (i.e. NO 3490E/3590 mounting hardware installed) drive unit.

__ 2. Install the provided cartridge storage inserts **1** and **2** in the following pertinent locations:

__ a. In the top and bottom two rows of cartridge storage on the door; AND

__ b. In the top two rows on the opposite storage wall; AND

__ c. In the bottom two rows of the opposite storage wall if this is an all-storage (i.e. NO 3490E/3590 mounting hardware installed) drive unit.

__ 3. If the drive unit is NOT an all-storage unit, you will have two extra inserts. Set the extra inserts aside for proper parts disposition as defined within Section 14.0, “Parts Disposition” on page 23.

Proceed to Section 10.12, “Install VTS/Storage Unit Cartridge Storage Inserts” on page 20 if this 3494 subsystem has a Storage Unit (i.e. 3494 Model S10) OR Storage Expansion Frame (i.e. FC 5400) installed or recently shipped; OR

Proceed to Section 11.0, “Test Procedure” on page 22.

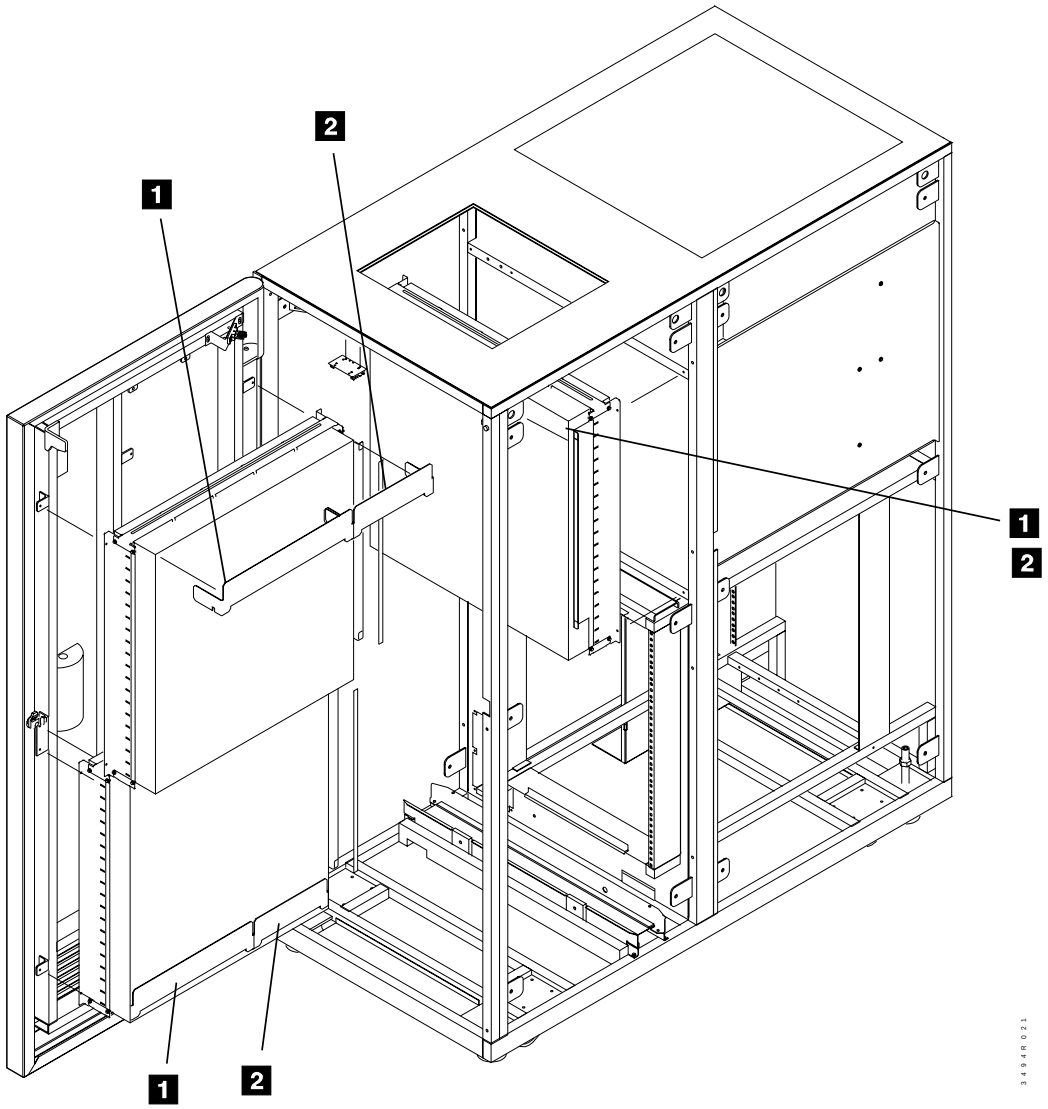

Figure 7. Cartridge Storage Insert (drive unit shown)

10.12 Install VTS/Storage Unit Cartridge Storage Inserts

See Figure 8 on page 21 when performing the following steps:

Note: The installation of this feature will require the top two rows and the bottom two rows of the cartridge storage function to be removed from the 3494 subsystem storage units.

Contact the customer to determine the disposition of any data cartridges removed from the top and bottom two rows.

__ 1. Remove the data cartridges from the top and bottom two rows of the cartridge storage on both walls (door and opposite wall).

__ 2. Install the provided cartridge storage inserts **1** and **2** in the top and bottom 2 rows of cartridge storage on the door and opposite storage wall.

Note: Repeat Steps 1 and 2 for any 3494 Model B16 (“3494 Virtual Tape Storage unit”) and each of the 3494 Storage Unit devices (i.e. FC 5400, FC 5401 and 3494 Model S10) contained within this 3494 subsystem.

Proceed to Section 11.0, “Test Procedure” on page 22.

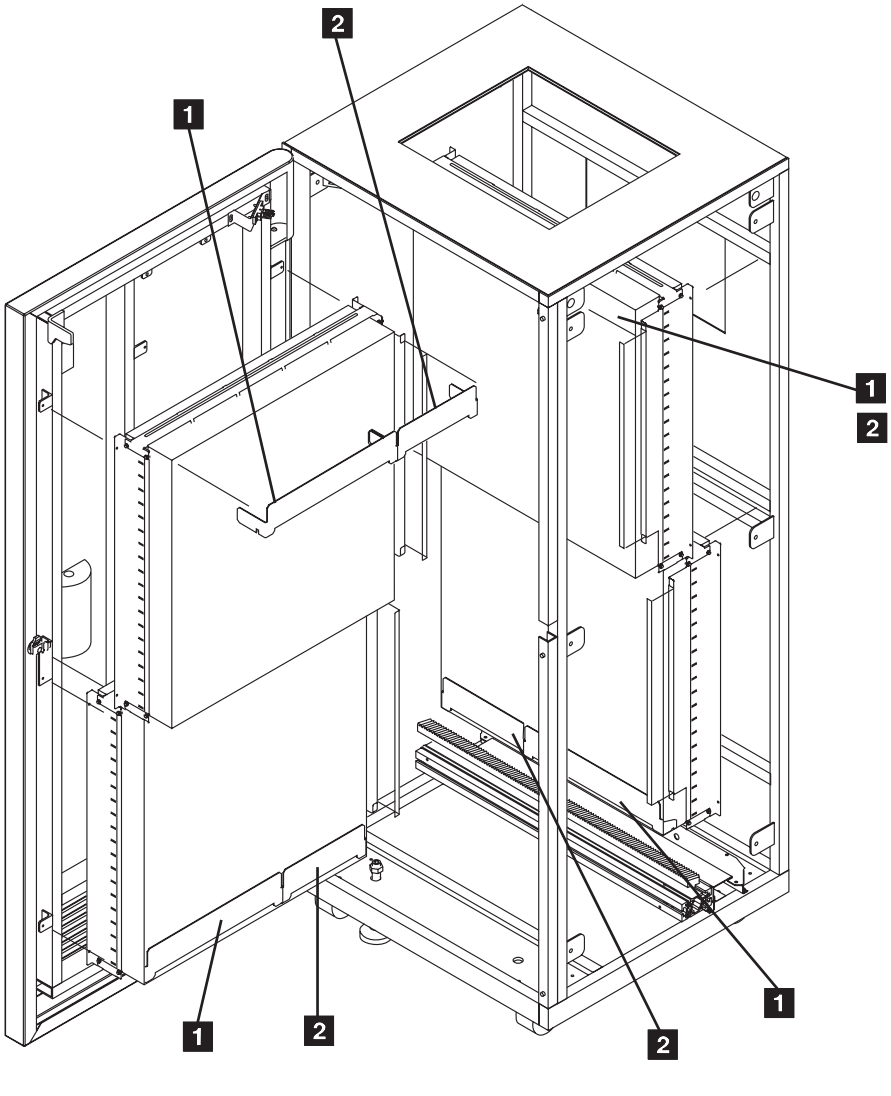

Figure 8. Cartridge Storage Insert (Storage Unit shown)

11.0 Test Procedure

__ 1. Power on using the library Unit Power switch.

__ 2. Select **Auto/Offline** when the Library Manager initializes.

__ 3. Select **Service Menu** from the mode pulldown on the Operator Action Bar. If requested, enter the password "SERVICE".

__ 4. **ATTENTION**: Selection of **Teach New** will erase the customer's data base. Therefore, it is important that you **DO NOT** automatically select the default option when performing step 5.

__ 5. Select **Teach Current Configuration** from the *Teach Pulldown* on the action bar.

__ 6. Select **Dual Gripper Installed** on the teach panel, then select **OK**.

__ 7. Select **OK** on the following panels until the **Teach** operation begins.

__ 8. After *Teach* completes, shut down the Library Manager by selecting **OK** at the message panel.

__ 9. Select **Pause/Offline** when the library manager initializes.

__ 10. Select **Service menu** from the Mode pulldown on the Operator Action Bar. If requested, enter the password "SERVICE".

__ 11. If the gripper card (RCH) was replaced, go to CARR-1 (*Bar-Code Reader Assembly*) of the machine MI's. Follow instructions for adjusting the bar-code reader assembly.

__ 12. Select **Verify installation** from the Service Pulldown on the Service Action Bar.

__ 13. When the "Rack Get/Put" test is selected, run the test with Gripper 1 and Gripper 2 using the CE cartridge (default).

__ 14. If the library does not have a Convenience I/O station, also run the "Rack Get/Put" test using a cell on the door that contains a cartridge and both grippers. The cartridge cell you select must be in the inventory.

__ 15. If the library has a Convenience I/O Station, run the Input/Output Station "Get/Put" test (when it is selected) using both grippers and input/output slot 10.

Note: You can not use Gripper 2 for slots 1 or 2.

__ 16. When the "Drive Get/Put" test is selected, run the test to all drives with Gripper 1 and Gripper 2.

__ 17. If a failure is detected, select **Start Service Call** from the Service pulldown to analyze the problem.

Go to Section 12.0, "Field Updating" on page 23.

After Installation (Sections 12 through 15)

12.0 Field Updating

None

13.0 Field Support Publications

None

14.0 Parts Disposition

See the *Ownership of Parts Matrix*, to determine the correct owner of removed or unused parts. Process all parts determined to be IBM property as follows:

USA

Provide all parts to the IBM Branch Office for potential return in accordance to existing return, recovery, and reclamation programs.

World Trade

Return removed parts to Country Central Stock per existing procedures.

15.0 Machine Records

__ 1. Update machine history provided. Using existing procedures, update all appropriate field records to reflect that Feature Code 5215 was installed:

   __ a. Within the 3494 Model L10/L12/L14 serial number; **and if appropriate**

   __ b. Within the 3494 Model HA1 serial number.

__ 2. Using existing procedures, report installation and quality.