

IBM INSTALLATION INSTRUCTIONS

Install Functional Microcode for 3494 Models L10/L12/L14/L1S/L2S

Document Number 05H7135 EC F24300

SSD - Tucson

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Status: Field Use

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Before Installation (Sections 1 through 8)

1.0 Machines Affected

All 3494 libraries without functional microcode at Library Manager Patch Level 514.05 (EC C88764) or higher; running OS/2 level 2.11.

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, 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.

If EC C88763 or earlier (Library Manager Patch Level 513.xx or earlier) is displayed, then this EC can be installed.

2.0 Prerequisites / Concurrent / Companion

2.1 Prerequisites

- Perform the **Reach Compliance Sensor Test** found in Appendix B, prior to installing this code level. The Reach Compliance Sensor must be functioning correctly before this level of code can be installed.
- EC C88496 for IBM 3494 library. This EC insured that the 2.11 level of the Operating System was installed and updated the PC BIOS to the correct level. If the 50E.xx level

or above was found in checking the EC level in the previous section, then the prerequisite is satisfied. If not, P/N 05H7407 must be ordered from Mechanicsburg and installed prior to this FBM.

- If a VTS is involved in the library then 2.11.19 (EC F23190C) code or higher is required on the VTS.
 - If this 3494 library has a 3494 (Model B16) VTS installed, you **you must order** ECA 042 against the 3494 Model B16 serial number, and install it concurrently. The LM code 518.02/07 (in ECA 042) should be discarded, since ECA 032 installs LM code at 521.03/11.
 - Install the VTS microcode updates **before** proceeding within this LM update.

3.0 FBMs To Be Installed

3.1 Library Manager Code Update

Note: The following FBM will be supplied to all serial numbers that are without EC level C88764 (514.05) or higher.

FBM	Description
05H7383	Install LM514.05 code.

3.2 DB2/2 Update

Note: The following FBM will be supplied to all serial numbers that are without EC level C88763 (LM513.05), which included a DB2/2 update to level WR07042.

FBM	Description
05H7384	Install DB2/2 WR07042 CSDs

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4.0 Preparation

Read and understand the purpose and details of these installation instructions.

Check all items on the field bill of material to be installed to determine that all parts have been received.

Check to see if any patches are available for the level of Library Manager microcode that is shipped with this field bill of material. If available, download to a diskette.

4.1 Installation Order

1. Perform the **Reach Compliance Sensor Test** prior to installing this code level. The Reach Compliance Sensor must be functioning correctly before this level of code can be installed. The test instructions can be found in Appendix B.
2. Install Library Manager code and the Database Services (DB2/2) WR07042 CSDs (using these instructions).

Note: If you have been directed to these instructions because of losing a hard drive that required the re-install of the Operating System you will need to follow these additional steps after completing section 10.5, "Install 3494 Functional Code and WR07042 CSD (if needed)" on page 8.

 - a. If this 3494 has a 5219 or 5220 LAN Adapter feature, re-install the software using the 5219/5220 installation instructions.
 - b. If this 3494 uses the 5219 or 5220 feature for LAN host attachment complete section 10.6, "Install 3494 Host Device Driver Features" on page 9.
 - c. If feature 5214 (second hard drive) is not installed, then after com-

pleting section 10.6, "Install 3494 Host Device Driver Features" on page 9, use the "3494 Operators Guide" to add the LAN hosts to the Library Manager (if the feature is installed this is done automatically).

5.0 Programming Updates

None.

6.0 Purpose and Description

6.1 Purpose

This EC:

- Updates the 3494 functional microcode level to EC C88766 (Library Manager level LM521.11). Included in the package are:
 - These installation instructions.
 - 3494 Library Manager Functional Code.
 - Database Services (DB2/2) CSD WR07042 (if not currently at EC level C88763)

6.2 Description

This FBM provides functional code support for several new features.

- Refer to Appendix A for changes due to LM511, LM512, LM513, LM514, and LM516.
- Updates to Database Services via CSD WR07042. (If not currently at EC level C88763)
- Several fixes for problems. (See the EC status file for details by following these instructions:)
 1. From the **Mode** pulldown menu on the Library Manager, select **Service**

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- Menu...** If asked, type the password **service**.
- ___ 2. From the **Utilities** pulldown menu, select **Service Window**
 - ___ 3. Insert Library Manager diskette 1 into the A drive.
 - ___ 4. From the Service Window, type **a:\readme**.
 - ___ 5. The EC status file will be displayed on the screen.

6.3 3490E/3590 Mixed Configuration

Beginning with Library Manager code level LM50E.0A, support was included for 3590 devices. However, CST and ECST cartridges cannot be mounted in 3590 devices and HPCT cartridges cannot be mounted in 3490E devices. If the HPCT is loaded on a 3490 device the device will require operator intervention to recover useage of the drive.

To insure the 3494 is able to correctly identify the media type of every cartridge, media type labels ("1" or "E" or "J") are now recommended on every cartridge in a library with both 3490E and 3590 devices installed in it. The VOLSER ranges described in Appendix A, "New Functions Provided in LM511, LM512, LM513" on page 15 has been provided to allow assigning a media type when the 7th character cannot be read (based on the VOLSER read).

The 3494 will eject a cartridge and post an intervention if it cannot identify the media type of a cartridge during an inventory, inventory update or insert operation.

Note: Step 5 on page 12 has been added to the instructions to check for VOLSERs that have a media type of "? - Unknown". These should be ejected and re-inserted to establish the correct media type. These

VOLSERs may have had the Unknown media type assigned when Library Manager code 50E or 50F was installed. With this media type they are assumed to be compatable only with the 3490E devices.

6.4 Screen Saver

Beginning with Library Manager code level LM50D.xx, a screen saver was implemented. The library manager display is shut off by the operating system software when there is no activity by the operator. This makes it appear that the Library Manager is powered off. This "snooze" function is provided to conserve power and to increase the reliability of the display hardware. If the library is powered on and the display is off, the operator can press any key on the keyboard to activate the display.

Note: If Remote Console support is installed and the remote console is active (it is in control of the Library Manager), it will not be possible to activate the screen in the normal way. Since the Remote Console has control, in this case, the keyboard and pointer device at the Library Manager are essentially locked.

However, an operator can take control of the Library Manager by pressing **Alt-T** and the display will activate. While the Remote Console is not in control, the "snooze" function will monitor the Library Manager's keyboard.

Control can be returned to the Remote Console again when the operator is finished at the Library Manager by:

1. Pressing **Ctrl-Esc** to bring up the window list.
2. Selecting the **DCAF** (which is the remote console program) window.
3. Selecting **Active** under the **Session** pulldown.

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7.0 Installation Time

CE Hours	Machine Hours	System Hours	No Of CEs
1.5	1.0	0	1

8.0 Materials Required

None

Installation (Sections 9 through 11)

9.0 Safety

Not applicable.

10.0 Details of Installation

10.1 Vary Drives Offline

- ___ 1. Inform/Request operations that the 3494 needs to be taken offline, and that all drives in that library need to be varied offline. Do not proceed until operations has verified that all drives in the library have been varied offline at all attached systems.

10.2 Vary Control Unit(s) Offline

- ___ 1. Verify all paths to the 3590/3490E Control Unit(s) are varied OFFLINE to the operating system.

10.3 Perform Reach Compliance Sensor Test

- ___ 1. The code to be installed with this FBM uses the reach compliance sensor. There is one reach compliance sensor for each grip assembly. This sensor is being used for the first time with this code level. With this code level, it will be difficult to restore the previous level. **THEREFORE, THE OPERATION OF THE REACH COMPLI-**

ANCE SENSOR(S) AND ITS SUPPORTING PATH OF CABLES AND ELECTRONICS MUST BE VERIFIED BEFORE THIS NEW CODE LEVEL IS INSTALLED.

- ___ 2. Perform the **Reach Compliance Sensor Test** found within Appendix B of this document.

10.4 Shut down 3494 Library Manager

If the Library Manager (LM) is active, it must be shut down.

Do the following steps:

- ___ 1. Place the Library Manager Offline by selecting the **Offline** option from the **Mode** pull-down menu. Click on **OK** and wait for the Offline to complete. If Demounts are blocked, use **Promote Commands** to unblock them. (This will take a few minutes for the Library Manager to complete actions in progress.)
- ___ 2. When the machine is offline, place the Library Manager in Pause Mode by selecting the **Pause** option from the **Mode** pull-down menu. Click on **Yes**, wait for the Pause to complete.
- ___ 3. Shut down the Library Manager by selecting **Shutdown** from the **Mode** pull-down menu.
- ___ 4. Click on **YES**.
- ___ 5. **DO NOT POWER OFF** the PC.

When the Library Manager completes its shutdown, the **3494 Tape Library Dataserver Shutdown** panel is displayed.

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10.5 Install 3494 Functional Code and WR07042 CSD (if needed)

___ 1. 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 prompted for a password enter: **service**

___ 2. Insert Library Manager Disk 1 in the diskette drive and enter **a:lminst** in the Service Window. Follow the displayed instructions, selecting the defaults by pressing the enter key.

Note: During the install process, the question about "library type" allows selection of which library code (IBM 3494 or OEM libraries) is to be installed.

At the end of the Library Manager code install, three steps will be displayed.

Ignore these instructions and continue with the next step.

___ 3. If needed, install any available Library Manager Fix Packs at this time using the Service Window.

___ 4. If the Library Manager was already at code level LM513.05 or greater (before beginning this installation) skip to step 16. The DB2/2 WR07042 CSD should have already been applied.

If the Library Manager was not at level LM513.05 or greater, proceed to the next step.

___ 5. Insert disk 1 of 5 of the Database Services (DB2/2) WR07042 fix pack.

___ 6. Enter **a:install** from the command prompt and follow the instructions to install the fix pack.

___ 7. When window appears select **Action**.

___ 8. Then select **Service**.

___ 9. Make sure the check boxes for the DB2/2 Engine, Query Manager and Database Tools are checked and then select **Ok**.

___ 10. Select **Ok** without checking the box to backup the files.

___ 11. Continue to insert Corrective Service Diskettes as they are requested.

If the install process stops along the way indicating that a current file has a later date than the one being installed, select **Yes** to replace the file anyway.

File transfer completes and indicates that system needs to be shutdown and rebooted.

___ 12. Select **Ok** to use the new installation.

___ 13. Remove the last diskette but **DO NOT REBOOT**.

___ 14. Close the DB2/2 Service window by double clicking on the upper left corner of the window (or single click and select **Close**).

___ 15. At the OS/2 prompt enter **db2bind** to bind new files to the LM database.

___ 16. Now perform the next four steps to shutdown the Library Manager.

___ a. Enter **exit** at the prompt ([C:\]).

___ b. Select **Shutdown Computer for reboot** from the Shutdown dialog box.

___ c. Click on **Yes**.

___ d. Remove the Installation Disk from the diskette drive.

___ 17. Reboot the Library Manager by pressing Ctrl-Alt-Del simultaneously.

___ 18. The Library Manager code has now been installed. Proceed to section 11.0, "Test Procedure" on page 12.

10.6 Install 3494 Host Device Driver Features

This section is used when you are reinstalling features due to a re-install of the OS/2 Operating System (possibly due to a lost hard drive) or when you have been directed here by a new host LAN attachment (device driver) such as:

1. AS/400 Device Driver (feature code 5211 or 5213)
2. VSE Device Driver (feature code 9203)
3. SUN Device Driver (feature code 9204)
4. RISC System/6000 Device Driver (feature code 5212 or 5224)

If you are not installing at least one of these new host attachment features, proceed to section 11.0, "Test Procedure" on page 12.

Note: The next steps assume that either feature 5219 or 5220 (Token-Ring or Ethernet card) has already been installed. If one of these features has not been installed, proceed to those installation instructions and install the card first. Then return here to continue the installation.

If the 3494 Tape Library Dataserver is attached to the host via LAN, do the following steps:

- ___ 1. If the Library Manager is active, it must be shutdown as described in section 10.4, "Shut down 3494 Library Manager" on page 7. Return here after performing those steps.
- ___ 2. If a Service Window is not open, 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, type the password: **service**
- ___ 3. Type **HOSTINST** in the Service Window. Follow the displayed instructions, selecting any defaults by pressing the enter key.

Note: If you are reinstalling the 3494 code, information about the unique LAN names may have already

been assigned and saved in section 14.0, "Parts Disposition" on page 13. Review this section to see if this information is already available.

- ___ 4. When asked, insert the first disk of the Library Manager code into the diskette drive.
- ___ 5. The following question will be asked when **HOSTINST** is started:

Is this a TCPIP LAN, an APPC LAN, or both? (t/A/b)

Use the information in the next three steps to help answer the question.

- ___ a. If the following feature either is installed or is being installed, make a note that this is an APPC LAN.
 - AS/400 Device Driver (5211 or 5213)
- ___ b. If the following feature either is installed or is being installed, make a note that this is an APPC LAN. (APPC/VTAM)
 - VSE Device Driver (9203)
- ___ c. If the following feature either is installed or is being installed, make a note that this is a TCP/IP LAN.
 - RISC System/6000 Device Driver (5212 or 5224)
 - SUN Device Driver (feature code 9204)

Press **t** if only TCP/IP is being used, **A** if only APPC is being used or **b** if both TCP/IP and APPC are being used. Then press the **Enter** key.

Note: Reading the next two steps will provide help for the questions that will be asked on the screen during **HOSTINST**.

- ___ 6. If APPC communications, or Both, is selected, it will be necessary to enter the Network ID and the Network Location that uniquely identify the Library Manager on

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the LAN. This information can be obtained from the LAN administrator. The definitions are:

Network ID This specifies the name of the remote network in which the adjacent control point (the Library Manager) resides.

The common Programming Interface (CPI) Communications partner LU name of the Library Manager consists of the remote network identifier and the remote location. For example, if the Library Manager partner LU name is USIBMSU.LIBMGR01 then the Network ID is USIBMSU.

Network Location Name This specifies the remote location name of the host to which the Library Manager will communicate.

The Common Programming Interface (CPI) Communications partner LU name of the Library Manager consists of the remote network identifier and the remote location. For example, if the Library Manager partner LU name is USIBMSU.LIBMGR01 then the Network Location Name is LIBMGR01.

- ___ 7. If TCP/IP communications, or Both, is selected, it will be necessary to enter the IP Address, the subnet mask, and the host name that uniquely identify the Library Manager on the LAN. This information can be obtained from the LAN administrator. The definitions are:

IP Address The 32-bit dotted decimal notation Internet Protocol (IP) address that is to be used for the Library Manager. For example 9.67.43.126 is an IP Address.

Note: The IP address is **NOT** the same as the

Ethernet or Token-Ring "burned-in" card address. That type of address is a twelve digit address of the form:

10005A123456

Subnet Mask The Subnet Mask field specifies how much of the local address portion of the IP address to reserve for a sub-network address.

Host Name The name that is to be used for the Library Manager, such as **libmgr01**.

In addition, if the LAN is anything other than a simple configuration such as a Thinnet Ethernet where there are only a few machines on the LAN, you may also need more information. This will be obtained from a LAN administrator. The extra needed information might be:

Domain name In a larger TCP/IP installation, a particular machine might have a machine name of **libmgr01.vnet.ibm.com**. The domain name, in this example, is **vnet.ibm.com**.

Nameserver In a larger installation, there may be a machine that is dedicated to resolving a 'nickname'. This is called a Nameserver. Sometimes, there are two nameservers; one as a primary and a second as a backup.

Router In a larger installation that consists of several networks in the overall LAN, a router may be used to direct traffic.

- ___ 8. If TCP/IP is being installed, the **TCP/IP Configuration** notebook will appear. Enter the following data:

- ___ a. On the **Network** tab (page 1), place a checkmark in the **Enable LAN Adapter 0** box.

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- ___ b. Enter the IP Address in the appropriate field.
- ___ c. Enter the Subnet Mask, if used, in the appropriate field.
- ___ d. If a router is to be used (a LAN administrator must supply this information):
 - ___ 1) Select the **Routing** tab.
Use the **Help** button for further help.
 - ___ 2) Click on **Insert Before** to enter a router.
 - ___ 3) Under **Route Type**, enter the router type to be used. To use a default router, type **D**.
 - ___ 4) The next parameter to enter is the IP address in the **Router** section.
 - ___ 5) When finished, click on **Insert**.
- ___ e. Select the **Services** tab.
- ___ f. Enter the host name in the **This Machines' Hostname** field.
- ___ g. If a Domain Name is to be used (a LAN administrator must supply this information), put this information in the **Domain Name** field.
- ___ h. If a Domain Nameserver is to be used (a LAN administrator must supply this information):
 - ___ 1) Click in the **Domain Nameserver** field.
 - ___ 2) Click on **Add** to add a nameserver.
 - ___ 3) Enter the primary nameserver's IP address in the **Nameserver Address** field.
 - ___ 4) Click on **Add** to add this nameserver to the list of nameservers.
- ___ i. If a second Domain Nameserver is to be used:
 - ___ 1) Click on **Add** to add the second nameserver.
 - ___ 2) Enter the secondary nameserver's IP address in the **Nameserver Address** field.
 - ___ 3) Click on **Add** to add this nameserver to the list of nameservers.
- ___ j. Click on the system icon to the left of the **TCP/IP Configuration** title.
- ___ k. Click on **Close** to end the configuration.
- ___ l. Click on **Save** to save the configuration.
- ___ m. A **Configuration Tool** window will appear that asks if you want to update the **CONFIG.SYS** file. Click on **Yes**.
- ___ 9. At the end of the 3494 Host Device Driver Features install, three or four steps will be displayed. Ignore the steps displayed on the screen and follow these four steps instead:
 - ___ a. Type **exit** at the prompt ([C:\]).
 - ___ b. Select **Shutdown Computer for reboot** from the Shutdown dialog box.
 - ___ c. Click on **Yes**.
 - ___ d. Remove the Installation Disk from the diskette drive.
- ___ 10. Reboot the Library Manager by pressing Ctrl-Alt-Del simultaneously.

The 3494 Host Device Driver Feature is now installed on the Library Manager side. When the Library Manager restarts, a LAN attached host or hosts can be added to the Library Manager configuration. The Operator's Guide documents how to do this.

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11.0 Test Procedure

- ___ 1. If you were told to go to these instructions from the **Install OS/2 Operating System Update for all 3494 Models** installation instructions (ie. lost hard drive), return to those instructions after doing sections 13.0, 14.0, and 15.0.
- ___ 2. The Library Manager will be initialized with the Operator screen on the display.
- ___ 3. Select **Service** from the **Mode** pulldown menu. If prompted for a password enter: **service**.
- ___ 4. Select **Verify Installation** from the **Service** pulldown menu and follow the instructions. If a failure is detected, select **Start Service Call** and follow the instructions.
- ___ 5. Clean up the "Unknown" media type associate with any VOLSER in the library.
 - ___ a. Under **Database** pulldown perform a search specifying only the ? - **Unknown** media type as the search parameter.

- ___ b. Record any VOLSERS having M.T. of "?". You should have these ejected from the host (after giving the subsystem back to the customer) and then re-insert them via the Convenience or High-Capacity I/O stations. This will cause a valid media type to be assigned. These VOLSERS will be assumed to be compatible with only the 3490E device until this is done.

WARNING Do not manually remove the cartridges because they must be ejected by the host to eliminate the record from the database to cause it to read the media character when it is re-inserted.

- ___ 6. Put the Library Manager in **Auto, Online** mode.
- ___ 7. Return the subsystem to the customer.
- ___ 8. Provide Appendix A, "New Functions Provided in LM511, LM512, LM513" on page 15 to the customer to make them aware of the new features that are now available with this level of code.

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After Installation (Sections 12 through 15)

12.0 Field Updating

No changes.

13.0 Field Support Publications

- ___ 1. Replace the old level of Function Microcode install instructions in the "3494 LIC (Licensed Internal Code)" binder with these instructions for future reference.

If the hard drive fails, these instructions may be needed to re-install this feature.

- ___ 2. Update the 3494 MI, PN 05H7566, using the instructions provided with the new pages (PN 05H7768).

14.0 Parts Disposition

- ___ 1. Replace the old level of Library Manager diskettes in the "3494 LIC (Licensed Internal Code)" binder with the new diskettes (EC C88764) for backup.

If the hard drive fails, these diskettes will be needed to re-install this code.

- ___ 2. Place the Database Services (DB2/2) WR07042 CSD diskettes in the "3494 LIC (Licensed Internal Code)" binder.

If the hard drive fails, these diskettes will be needed to re-install this code.

- ___ 3. Library Manager diskettes (at EC C88763 or below) should be discarded.
- ___ 4. Record Network ID and Network Locations if the Install 3494 Host Device Driver Fea-

tures for an APPC or APPC/VTAM host was performed (or **retain** the data from previous instructions).

___ a. Network ID

___ b. Network Location

- ___ 5. Record the IP address, subnet mask, and host name if the Install 3494 Host Device Driver Features for a TCP/IP host was performed (or retain the data from previous instructions).

___ a. IP Address

___ b. Subnet mask (if applicable)

___ c. Host name

___ d. Domain name (if applicable)

___ e. Nameserver #1 (if applicable)

___ f. Nameserver #2 (if applicable)

___ g. Router (if applicable)

15.0 Machine Records

- ___ 1. Update field records to reflect that ECs C88764, C88765, C88766 and F24300 have been installed.
- ___ 2. Using existing procedures, report installation and quality.

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Appendix A. New Functions Provided in LM511, LM512, LM513

LM514, and LM516

Further description and details on how to use the new functions can be found on the Help screens associated with these functions.

A.1 Going to Auto mode with Unavailable Accessor components

A change has been added to allow the attempt to switch to Automatic mode even if the accessor or gripper components are marked as Unavailable because of a previous failure. This will allow the Operator to attempt recovery of the library without having to wait for the CE to mark components available. If the transition to Automatic is successful the components will be marked Available.

Note: If the components have been marked Unavailable by the CE in Service mode the transition to Automatic will not be attempted.

A.2 High-Capacity Input and Output Station capability

A High-Capacity Input/Output option has been added to the inside wall (drive side walls) so that both inserts (Input) and ejects (Output) can be performed at the station. High-Capacity Output can still be configured on the CU door of wall 2 but only for Output mode (current design).

Storage (SU) or Drive unit (DU) walls, 3 through 15 (odd only), can be configured as High-Capacity Input/Output. A SU configured as High-Capacity I/O can contain 100 (upper half) or 200 (whole wall) cells. A DU configured as High-Capacity I/O contains from 50 (6 3590 drives) to 135 (2 3590 drives) and uses all available cells in the wall. Only a single wall can be configured at any time (single High-Capacity station).

The station will now be scanned on the first transition to Automatic mode even if Inventory Update is disabled or on any transition to Automatic mode if the door associated with the frame containing the station has been opened.

Once scanning is complete, host commands will be released. This allows mounts and demounts to occur while High-Capacity inserts are being processed.

Volumes not previously in the library are added to the database soon after scanning is complete. This means that volumes in the High-Capacity facility are accessible by a host before they are moved to a storage cell. The volumes can have their categories changed and can be mounted directly from the High-Capacity facility.

New volumes found in the station will be inserted and those already existing in the station will be left ejected. Volumes are inserted from the station in a right to left and top to bottom sequence (E 01 to A

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xx). Volumes are ejected to the station in a left to right and top to bottom sequence (A 01 to E xx). Configuring the High-Capacity I/O facility is done by doing a teach operation under the **Teach** pull-down in Service mode.

Note: There should be enough free cells in the library to hold the volumes that must be moved when High-Capacity I/O is configured. If the library becomes full during the insert processing, the remaining volumes will be left in the High-Capacity I/O facility.

Also, following a Teach operation where the High-Capacity facility has been moved to a different frame, the previous and new locations will be scanned.

A.3 Enable/Disable Inventory Update

This feature under the **Commands** pull-down and under the **Inventory Update** item allows the Inventory Update function that occurs on initialization or if doors are opened to be enabled or disabled. This setting will be saved through Library Manager power cycles or reboots.

Note: If Inventory Update is **Disabled** no VOLSERS should be added or removed from the library unless they go through a Convenience or High-Capacity Input/Output station.

A.4 16 Tape Subsystems per Library

The LM510 level of code will support the feature (FC 5228) that allows up to 16 Tape subsystems to be configured in a single library. The hardware feature converts 4 direct host attach ports (RS232) to Control Unit ports (RS422). This will allow configuring up to 16 3590 drives in the subsystem when the Hosts are LAN attached.

A.5 VOLSER ranges for determining VOLSER media type

This feature under the **Commands** pull-down is used to establish what media type should be used on a VOLSER when the vision system is unable to read the media type (7th) character (like the 7th character is missing (has not been added) or is just unreadable). If the VOLSER is included in a range that has been setup and vision cannot read the 7th character then the media type assigned to the range will be used for this VOLSER. This works for insert, inventory or inventory update operations for newly added VOLSERS. This eliminates the requirement to have a 7th character indicating media type on all VOLSERS in a mixed media (3490/3590) library.

Note: In a mixed media library, if a VOLSER gets assigned the wrong media type it can result in drive failures (especially if a 3590 cartridge gets loaded on a 3490E drive). If the VOLSER range assignment for controlling media type is not possible the 7th character should be placed on all cartridges in the library.

A.6 Multi-Process LAN Attach

Multi-process LAN attach which has the Library Manager starting a separate process for each Host LAN connection. This prevents one Host from impacting performance on other LAN host attachments.

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A.7 Default Media Type

Allow default media type to be specified during Teach even in a mixed (3490 and 3590 drives) media library.

A.8 Error Recovery Hardening

Hardening of the recovery procedures associated with accessor errors that will keep it available when possible (also allows the transition to be attempted to Automatic mode even if components of the accessor are marked as unavailable).

A.9 Common Code Load for IBM and OEM Libraries

Common code load for the IBM and OEM libraries. Steps in the code install process allow selection of which library the code will be executing on. This provides the unique logo, device model numbers, library model numbers and help text required for each specific library.

A.10 Add Virtual Tape Server (VTS) Support

Starting with the LM513.05 level of code the Virtual Tape Server (VTS) is supported.

A.11 Inventory Update Performance Enhancements

In LM514.05 Inventory Update was redesigned to significantly improve the time required to update the database when cartridges have been moved within the library. In most cases inventory update will now only take 4 minutes per frame being scanned. In a sixteen frame library the time required will go from 2+ hours down just over 1 hour. Partial inventory update has been updated to let the operator select which doors get scanned. The operator may choose to run with inventory update disabled and when doors have been opened, perform a partial inventory update on only the doors where cartridges were moved. This will save time on the transition to auto/online mode. Also, a new status window has been added. When inventory update is in progress the window is present and indicates what rack is being inventoried and how many of the total have been done. Previously, a percentage complete was shown.

A.12 High Availability Option

Starting with LM516.01 the High Availability (Dual Library Managers and Dual Accessors) option is supported.

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Appendix B. Reach Compliance Sensor Test Instructions

The code to be installed with this FBM uses the reach compliance sensor. There is one reach compliance sensor for each grip assembly. This sensor is being used for the first time with this code level. With this code level, it will be difficult to restore the previous level. **THEREFORE, THE OPERATION OF THE REACH COMPLIANCE SENSOR(S) AND ITS SUPPORTING PATH OF CABLES AND ELECTRONICS MUST BE VERIFIED BEFORE THIS NEW CODE LEVEL IS INSTALLED.**

B.1 Checking the Reach Compliance Sensor

- ___ 1. Find the location of the reach compliance sensor on the grip assembly by referring to Grip Assembly, listed on page LOC-1 of the IBM 3494 Tape Library Dataserver Maintenance Information manual.
- ___ 2. Follow the procedure in the 3494 Maintenance Information manual: Prepare the Library Subsystem for Service.
- ___ 3. After the 3494 is in **Pause / Offline**, go to **Auto / Offline**. Grip 1 is now approximately in front of cell location 1A1.

Visual Check of Reach Compliance Sensor LED - On State

- ___ 4. Visually check that the Reach Compliance sensor red LED is on for each grip assembly. Stand in front of the window on the left side cover. Position yourself so that you are eye level with and in front of cell location 2D18. Look up at the grip assembly(s) in the area between the Y-axis mast extrusion and the lead screw. You should now see the red LED lit on the reach compliance sensor for each grip assembly. If a sensor LED is not on, perform the reach compliance sensor adjustment procedure. Refer to the 3494 Maintenance Information manual page CARR-1 for Grip Assembly Sensors - Reach Compliance Sensor. If the LED still is not lit, do not proceed with the installation of this new code level until you can replace one at a time, the following FRUs until the LED is lit:
 - Reach compliance sensor
 - GRI card
 - Grip card/cable assembly
 - Pivot flex cable

Logical Check of Reach Compliance Sensor LED - On State

- ___ 5. **For a 3494 with only one grip assembly, do the following:**
 - a. From the **Service** pull-down menu, select **Test interface**, then select **DI/DO card**.
 - b. In the left hand column of Digital inputs, **-GRPRCRASH** should show a state of 1. If it is a 0, do not proceed with the installation of this new code level until you can replace one at a time, the card and cable FRUs for error code 2B92 until -GRPRCRASH is a 1. Refer to the FRU list for error code 2B92 in the FSI section of the 3494 Maintenance Information manual.
- ___ 6. **For a 3494 with two grip assemblies, do the following:**
 - a. From the **Service** pull-down menu, select **Exercise cartridge accessor**, then select **Picker**. In the Picker test, select **Gripper 1**, then **Pivot**, then **Cancel**.

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- b. From the **Service** pull-down menu, select **Test interface**, then select **DI/DO card**.
- c. In the left hand column of Digital inputs, **-GRPRCRASH** should be a state of 1. If it is a 0, do not proceed with the installation of this new code level until you can replace one at a time, the card and cable FRUs for error code 2B92 until -GRPRCRASH is a 1. Refer to the FRU list for error code 2B92 in the FSI section of the 3494 Maintenance Information manual.
- d. From the **Service** pull-down menu, select **Exercise cartridge accessor**, then select **Picker**. In the Picker test, select **Gripper 2**, then **Cancel**. (Do not select Pivot.)
- e. From the **Service** pull-down menu, select **Test interface**, then select **DI/DO card**.
- f. In the left hand column of Digital inputs, **-GRPRCRASH** should be a state of 1. If it is a 0, do not proceed with the installation of this new code level until you can replace one at a time, the card and cable FRUs for error code 2B93 until -GRPRCRASH is a 1. Refer to the FRU list for error code 2B93 in the FSI section of the 3494 Maintenance Information manual.

Position the Reach Compliance Sensor(s) for Off State

- ___ 7. Cause the reach compliance sensor(s) and its LED(s) to be in the off state by doing the following:
 - a. Put the 3494 in **Pause / Offline**.
 - b. Open the control unit frame front door.
 - c. Move the cartridge accessor to the middle of the X-axis in the control unit frame.
 - d. Lift the picker assembly above the top Y-axis service position and insert an allen wrench in the opening on the left side of the Y-axis assembly. The allen wrench should not protrude through the Y-axis assembly enough to interfere with pivoting the picker assembly.
 - e. Pivot the picker assembly so that the grip fingers face the front of the 3494.
 - f. Move the accessor back to the left side of the X-axis.
 - g. While pushing on the grip finger so it moves backwards, place a small strip of 20# (copier) paper folded at least to 6 thicknesses between the tip of the reach compliance sensor and the grip body plate in front of the sensor. Release the grip finger while the paper is in between the sensor and grip body plate. If there is a second grip assembly, repeat this step for its reach compliance sensor.
 - h. Pivot the picker assembly to the back of the 3494. Remove the allen wrench from the Y-axis assembly and allow the picker assembly to go to the bottom Y-axis position. Close the front door.
 - i. Put the 3494 in **Auto / Offline**.

Visual Check of Reach Compliance Sensor LED - Off State

- ___ 8. Using the procedure described above, visually check that the reach compliance sensor red LED is off for each grip assembly. If a sensor LED is on, repeat the previous steps listed to turn it off while increasing the paper thickness. An alternate method is to unplug the sensor from the grip card.

Logical Check of Reach Compliance Sensor LED - Off State

- ___ 9. Using the procedure described above, check to see that -GRPRCRASH is at a 0 state for each grip assembly. If it is a 1, do not proceed with the installation of this new code level until you can replace one at a time, the card and cable FRUs for error code 2B92 (grip 1) or 2B93 (grip 2) until -GRPRCRASH is a 0.
- ___ 10. Use the procedure described above to remove the paper from in front of the reach compliance sensor(s).

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