IBM Magstar 3494 Tape Library

Maintenance Procedures

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1 Introduction

1.1 Overview

The procedures in this document ensure that a 3494 not under a TRT maintenance agreement has the necessary prerequisites installed and available to ensure a transparent transition and an uninterrupted maintenance service during the period of the TRT maintenance agreement.

1.2 Education

All service personnel must be trained on the general maintenance agreement qualification, tailored maintenance agreement qualification, and changed machine safety inspection procedures as part of becoming a TRT Technical Service Representative (TSR). In addition, service personnel must also be trained on the 3494 prior to servicing the equipment.

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2 Safety and Inspection

2.1 General Information

The safety checklist procedures in this topic ensure that a 3494 not under a TRT maintenance agreement has the necessary safety items installed and that no changes made it unsafe. Each 3494, as designed and assembled, has safety items installed to protect operators and service personnel from injury. These checklist procedures verify only these items.

The safety checklist procedures must be performed before the normal inspection for a maintenance agreement. *The 3494 must be considered unsafe until the presence and condition of all checklist items are verified*. If any unsafe conditions are present, you must decide how serious the hazard is and whether you can continue without first correcting the problem.

When performing the safety checklist procedures, consider the following conditions and the potential safety hazards they present:

- Electrical, especially primary power. For example, an electrically charged frame can cause serious or lethal electrical shock.
- Explosive. For example, damaged or expanding capacitors can cause serious injury.
- Mechanical hazards, such as missing safety covers, can cause injury to service personnel.

2.2 Preparation

The following reference items are useful during the inspection:

- The LOC section of the 3494 Maintenance Information manual
- Copies of safety service memorandums (SMs) (see Appendix B) and engineering change announcements (ECAs) (see Appendix A) for this machine type
- Parts catalog
- 3494 history
- *Electrical Safety for TRT Technical Service Representatives*

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2.3 Branch Circuit CB Switched Off Check

Task	Date	Owner	ü / û
1. Locate and switch off the circuit breaker (CB) for the 3494 branch circuit that supplies voltage to each receptacle		TRT / Customer	
2. Perform one of the following for each receptacle: **Note:** There is a line cord for each control unit frame and drive unit frame in the library. • If this is a metal clad connector, perform the "Safe-to-Handle Check" and the Disconnect Precautions" procedures in *Electrical Safety for TRT Technical Service Representatives*. (These procedures are described under "Miscellaneous Safety Tips.") • If the power cord has an insulated plug, grip the plug without touching any metal parts, and remove the plug from the customer power receptacle		TRT / Customer	
3. Perform the "Power Receptacle Safety Check" in Electrical Safety for TRT Technical Service Representatives		TRT	
4. **DANGER** Hazardous voltages are present. Do not touch the internal parts (pins and sockets) of the outlet. • Measure the phase-to-ground voltage at each receptacle • If a neutral is present, measure the phase-to-neutral voltage, phase-to-ground voltage, and the neutral-to-ground voltage • If all voltage values are not less than 1.0 V ac, have an electrician check the circuit		TRT	

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2.4 Branch Circuit CB Switched On Check

Task	Date	Owner	ü / û
1. Switch on the CB that supplies voltage to each receptacle for the library		TRT / Customer	
2. **DANGER** Hazardous voltages are present. Do not touch the internal parts (pins and sockets) of the outlet. • Measure the phase-to-ground voltage at each receptacle • If a neutral is present, measure the phase-to-neutral voltage, phase-to-ground voltage, and the neutral-to-ground voltage • Record the voltages for future reference in the checklist shown in the following table		TRT	
3. Switch off the branch circuit CB before connecting the machine power cord into the outlet		TRT / Customer	

Voltage Checklist				
Date	**Description of circuits checked**	**Voltage Values**	**Comments**	**TSR**

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2.5 Safety Labels and AC Grounds

Understand the meaning of the safety labels before beginning any repair of a component with a label.

The general caution symbol

identifies conditions where caution must be used.

The electrical caution symbol

identifies electrical hazards where extreme caution must be used. The electrical caution label locations may change.

The laser radiation label

shows that the 3494 contains a laser device. The bar-code reader contains the laser, which is a Class II laser.

Check that the labels are located where shown in following figures. Make any necessary corrections. See *IBM 3494 Tape Library Dataserver Parts Catalog* for part numbers of labels in the various languages.

2.6 Safety Labels and Grounds for the Model L1x

1. Laser caution label, bar-code reader
2. Laser caution label, on both sides of the cable guide
3. Hazardous area label, bulkhead
4. Hazardous area label, power supply
5. Hazardous area label, power supply
6. Hazardous area label, power control compartment (PCC)
7. Ground wire, PCC to frame member
8. High grounding current warning label
9. Multiple line cord hazard label

The following labels are for the 3490 tape subsystem. See the maintenance information manual for your tape or DASD subsystems for information on the subsystems in your library.

10. Hazardous area label, 3490E
11. Hazardous area label, 3490E
12. Excessive weight caution label, 3490E

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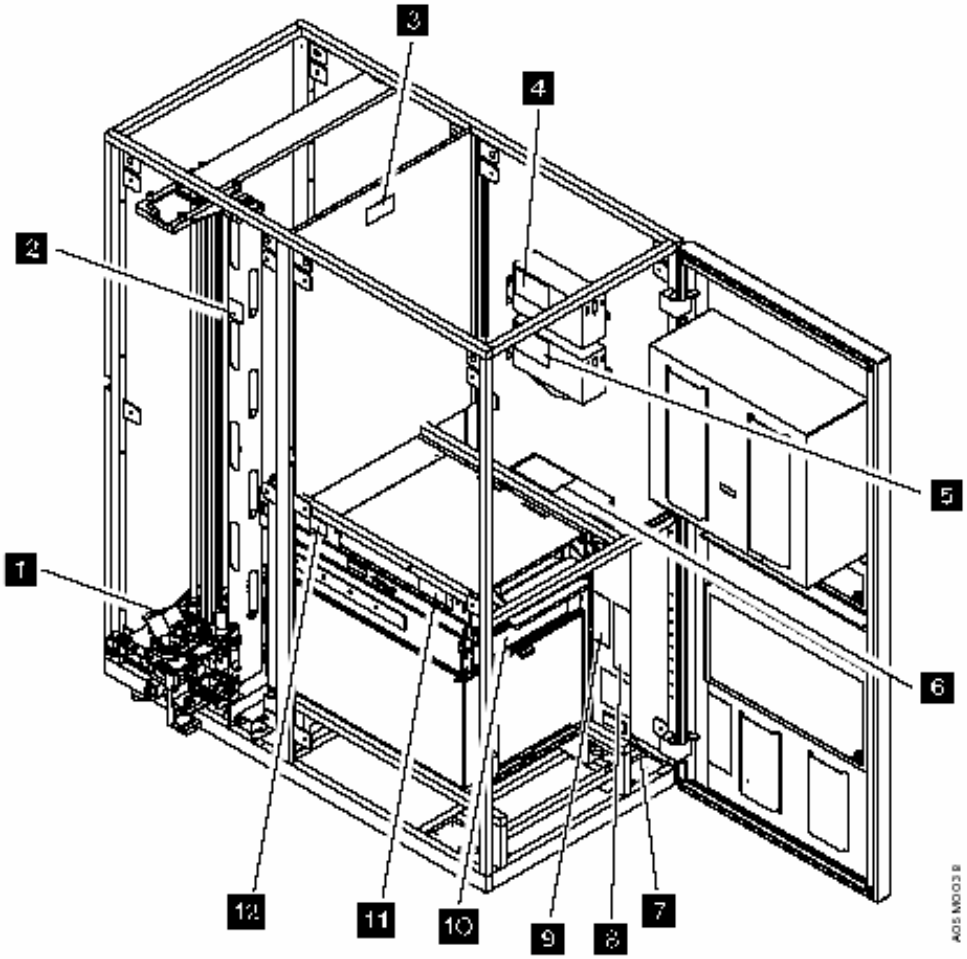

2.7 Safety Labels and Grounds for the Model D1x

Use the previous figure keys 6 through 8 and 10 through 12 for the locations of the safety labels and grounds in the drive unit frame.

2.8 Safety Labels and Grounds for the Model S10

The storage unit frame does not contain any safety labels or grounds.

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2.9 Safety Engineering Changes

Task	Date	Owner	ü / û
1. All safety engineering changes (ECs) have been installed correctly		TRT	
2. The location or list of engineering change announcements (ECAs) is accessible		TRT	

2.10 Safety Checks

The 3494 must be powered off with the power cable disconnected.

Task	Date	Owner	ü / û
1. All hinges and latches are in acceptable operating condition and are not broken or corroded		TRT	
2. All door interlocks and safety switches are operating and are not bypassed with jumpers or taped closed		TRT	
3. All ac line cords are not frayed or damaged		TRT	
4. All ac line cords have the correct part number **Note:** See *IBM 3494 Tape Library Dataserver Parts Catalog* for the correct part number for the power cables. See also *IBM 3494 Tape Library Dataserver Introduction and Planning Guide*		TRT	
5. All ground jumpers (normally green and yellow) are tightly attached. Check that all covers, housings, and metal box sides have proper ground continuity (less than 0.1 ohm)		TRT	
6. All ground connections are tightly attached		TRT	
7. Check from the library manager chassis to the control unit frame for proper ground continuity (less than 0.1 ohm)		TRT	
8. The resistance from the library manager line cord ground pin to the frame and to the power supply covers must not be more than 0.1 ohm. For the ground connection locations, see Figure 211 on page INSP-7		TRT	
9. All safety covers (operator and service areas) are in place including those protecting mechanical devices and hot surfaces. No sharp corners or edges should be unprotected. All access covers must be in place		TRT	
10. The customer's circuit breakers and circuit panels for the 3494 frames are identified as 3494 branch circuits		TRT	
11. All ac output safety covers are installed		TRT	
12. No obvious non-IBM changes have been made		TRT	
13. No metal filings, dirt, contaminants, water, or other fluids are present		TRT	
14. There are no marks from earlier smoke or burning		TRT	
15. The ac power supplies are attached tightly in place		TRT	
16. The ac line cords have no frayed or damaged wiring at the PCCs		TRT	
17. The resistance from the line cord ground pins and housings to all frames and to all power assembly grounds are: • Line cord ground pin to frame ground resistance		TRT	

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must not be more than 0.1 ohm • Line cord housing to frame ground resistance must not be more than 0.1 ohm			
18. All power wiring does not have frayed or damaged wires		TRT	
19. The dc power supplies are attached tightly in place		TRT	
20. All circuit breakers are the correct size. See *IBM 3494 Tape Library Dataserver Parts Catalog*		TRT	
21. All cables, connections, and plugs do not have frayed or damaged wiring		TRT	
22. All latches or clamps are in acceptable condition		TRT	

2.11 Completion Report and Signature

- Safety inspection for machine type 3494
- General safety inspection
- Maintenance agreement qualification

After the inspection, sign and date the checklist and store it with the maintenance job paperwork.

Name Date

2.11.1 Safety Hazards

List all safety hazards, if there are none, write none.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

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3 Library Information Tables

3.1 General Information

The following library information tables are provided to record vital library information for new maintenance agreements or new TSRs that may not be familiar with this account.

Complete the following general information tables for this library and place the following sheets (or a copy) in the clear plastic envelope P/N 1470207 located inside the Model L1x rear door on the top of the display compartment along with any appropriate local information:

- ARTIC Port Assignments. See Figure 272 or INST-98
- Teach Configuration. See Figure 284 or INST-124
- General Library Information. See Figure 285 or INST-135
- Device Attachment Configuration. DIAG-6
- Remote Support Information. See Figure 286 or INST-137
- LAN Information. See Figure 287 or INST-139

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3.2 ARTIC Port Assignments – Figure 272

Figure 272. 3494 ARTIC Breakout Box Port Assignments, Single Accessor Library

ARTIC 1 Port/Type	ARTIC 2 Port/Type	Teach Configuration (1)	Library Frame # /Model	Device Type	Converter Required (2)
0/RS-232					
1/RS-232					
2/RS-232					
3/RS-232					
4/RS-422					
5/RS-422					
6/RS-422					
7/RS-422					
	8/RS-232				
	9/RS-232				
	A/RS-232				
	B/RS-232				
	C/RS-422				
	D/RS-422				
	E/RS-422				
	F/RS-422				

Note:

1. Refer to "ARTIC Port Configurations" on page INST-90.
2. Refer to "ARTIC Port Connection Rules" on page INST-93.

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3.3 Teach Configuration – Figure 284

Figure 284 (Page 1 of 2). Teach Configuration	
Teach Parameter	**Value for Library S/N _____**
Total number of boxes	
High-Capacity I/O Facility	_____, Rack ____, ____ cells
RTIC Card Configuration	Card 1 - ____DAs ____CUs, Card 2 - ____DAs ____CUs
Box 1	Model L_____-_____ ____RTIC ____LAN
Box 2	Model _____-_____ ____RTIC ____LAN
Box 3	Model _____-_____ ____RTIC ____LAN
Box 4	Model _____-_____ ____RTIC ____LAN
Box 5	Model _____-_____ ____RTIC ____LAN
Box 6	Model _____-_____ ____RTIC ____LAN
Box 7	Model _____-_____ ____RTIC ____LAN
Box 8	Model _____-_____ ____RTIC ____LAN
Box 9	Model _____-_____ ____RTIC ____LAN
Box 10	Model _____-_____ ____RTIC ____LAN
Box 11	Model _____-_____ ____RTIC ____LAN
Box 12	Model _____-_____ ____RTIC ____LAN
Box 13	Model _____-_____ ____RTIC ____LAN
Box 14	Model _____-_____ ____RTIC ____LAN
Box 15	Model _____-_____ ____RTIC ____LAN
Box 16	Model _____-_____ ____RTIC ____LAN
Non-VTS Library sequence number	
VTS 1 Library sequence number	
VTS 2 Library sequence number	
Plant of manufacture	13
Customer Identifier	
Dual Grippers	____Installed ____Not Installed
Default Cartridge Type	____CST ____ECCST ____HPCT ____EHPCT ____None
Convenience I/O	____Installed (10) ____Installed (30) ____Not Installed
Password required?	____Yes ____No
Home Cell Mode	____Fixed ____Floating
Dual Accessors	____Installed ____Not Installed
Adjacent frame inventory update?	____Yes ____No

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Figure 284 (Page 2 of 2). Teach Configuration

Teach Parameter	Value for Library S/N _____
Device Identifiers:	
Box 1	0_____ 1_____
Box 2	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 3	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 4	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 5	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 6	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 7	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 8	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 9	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 10	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 11	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 12	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 13	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 14	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 15	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
Box 16	0_____ 1_____ 2_____ 3_____ 4_____ 5_____
VTS 1 Virtual Device Identifiers:	
Virtual Subsystem 1	0 _____
Virtual Subsystem 2	0 _____
Virtual Subsystem 3	0 _____
Virtual Subsystem 4	0 _____
VTS 2 Virtual Device Identifiers:	
Virtual Subsystem 1	0 _____
Virtual Subsystem 2	0 _____
Virtual Subsystem 3	0 _____
Virtual Subsystem 4	0 _____

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3.4 General Library Information – Figure 285

Figure 285. General Library Information	
Description	Library S/N _____
LM Hardware Configuration:	MT_____ Model_____ Processor_____ (chkfins) Memory_____ (qphymem) Disk_____ (chkdsk) Disk_____ (chkdsk) Disk_____ (chkdsk) Disk_____ (chkdsk)
Optional LM Features:	FC 5050, Dual Active Accessor --------- Yes____ No____ FC 5214, 2nd Disk Drive for LM ----- Yes____ No____ FC 5219, Token Ring Adapter ---------- Yes____ No____ (lancheck) FC 5220, Ethernet Adapter ---------- Yes____ No____ (lancheck) FC 5226, LM Remote Console -------- Yes____ No____ FC 5229, Expansion Attachment Card - Yes____ No____ FC _____ FC _____ FC _____
3494 Manuals/Tools: 3494 Operator's Guide 3494 LIC 3494 MI 3494 VTS MI 3494 Tool Kits 3490 _____ MI 3490 _____ MI 3590 _____ MI 3590 _____ MI	 Location: _____ Location: _____ Location: _____ Location: _____ Location: _____ Location: _____ Location: _____ Location: _____ Location: _____ Location: _____
ECA's Installed:	ECA _____ Date _____ Comments: ECA _____ Date _____ Comments:

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LM code level:	OS/2_____ (syslevel) LM_____ (chkfins)
Drive code level:	Model _____-_____ Code_____ Location_____ Comments: Model _____-_____ Code_____ Location_____ Comments:

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3.5 Device Attachment Configuration

Select **Device Attachment Configuration** on the Teach Pull-down for the ARTIC port assignments for the library. Detail the configuration in the space provided below.

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3.6 Remote Support Information – Figure 286

Figure 286. Remote Support Information

Description	Library S/N _____
Remote Support Modem	Type: _____ Location: _____ Phone Number: _____ Password: _____ (if used)
Remote Support Switch	Type: WTI APS-16 or _____ Location: _____ Password: _____ (if used) Port Connections: Port 1: Modem Port 2: LM A or _____ Location: _____ Port 3: LM B or _____ Location: _____ Port 4: Type _____ Location: _____ Port 5: Type _____ Location: _____ Port 6: Type _____ Location: _____ Port 7: Type _____ Location: _____ Port 8: Type _____ Location: _____ Port 9: Type _____ Location: _____ Port 10: Type _____ Location: _____ Port 11: Type _____ Location: _____ Port 12: Type _____ Location: _____ Port 13: Type _____ Location: _____ Port 14: Type _____ Location: _____ Port 15: Type _____ Location: _____ Port 16: Type _____ Location: _____

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3.7 LAN Information – Figure 287

Figure 287. LAN Information

Description	Library S/N _____
LAN Feature Installed Library Manager A Library Manager B	Token-ring FC 5219 _____ or Ethernet FC 5220 _____ Feature Diskette Location: _____ Card UAA _____ or LAA _____ Card UAA _____ or LAA _____ Type = APPC _____ or TCP/IP _____ If APPC: Network ID _____ Network Location _____ If TCP/IP: IP Address _____ Subnet mask _____ Hostname _____ Domain name (if any) _____ Router (if any) _____ Nameserver address (if any) _____
Remote Console FC 5226	Installed Yes _____ No _____ Feature Diskette Location: _____ If installed, type = APPC _____ or TCP/IP _____
LAN Attached Hosts	Yes _____ No _____ Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host: Host:

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4 Library Verification Checklist

4.1 General Information

Use the following checklist to verify that the library is installed correctly and ready for TRT maintenance.

Task	Date	Owner	ü / û
1. All leveling pads are snug against the floor		TRT	
2. The X-rail in each frame is aligned vertically and horizontally		TRT	
3. The X-rail is straight and level within 3 mm over 4 frames		TRT	
4. The X-rail upper and lower bearing rods on each frame are touching the previous rods		TRT	
5. The rear aisle frame member of the end frames is plumb within 4 mm		TRT	
6. Four frame attach brackets are installed between each expansion frame		TRT	
7. All frame spacer bolts are installed between each expansion frame		TRT	
8. The upper rail in each frame is locked and aligned from side-to-side		TRT	
9. The center upper rail rollers do not touch the rail in any frame		TRT	
10. The accessor can reach the last column of cartridges on each side without touching the X-axis bumper		TRT	
11. The accessor moves freely and quietly along the length of the library		TRT	
12. The lower and middle storage arrays are sitting down tight against the support bracket or drive sleeve		TRT	
13. The upper storage arrays are sitting down tight against the lower storage array (or bracket)		TRT	
14. There is no gap between the upper and lower storage array side brackets on either side		TRT	
15. The storage array cells in each frame are not damaged or nicked and all empty cell labels are present		TRT	
16. If the library has a dual gripper, storage inserts are installed and fully seated in the upper and lower two rows of each frame		TRT	
17. All screw heads behind the storage array fiducials are covered with a black plastic sleeve		TRT	
18. The door pin (if adjustable) touches the door support bracket on each frame when the door is closed. All doors should open and close freely		TRT	
19. Each door latch is adjusted so the door is tight against the frame when the door is locked		TRT	
20. If your library has an X cable with a metal band, ensure the X-axis cable tracks correctly without touching the drive covers, cable trough edge, or X-rail		TRT	
21. Each 3490 CxA deck is pulled forward in the sleeve and the retaining screws are tight		TRT	

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22. Each 3490 CxA drive sleeve has a retaining screw installed in the rack at the rear of the sleeve		TRT	
23. Each 3490 F1A drive has both slide retaining screws installed		TRT	
24. Each 3590 drive has a slide retaining screw installed at the rear of the drive		TRT	
25. Verify that the distance between the front of the picker reach platform and the cartridge label surface is 35 mm or less on each frame at the drive unload point and at the storage rack		TRT	
26. All screw heads behind the 3490 drive fiducials are black		TRT	
27. All fiducials were located successfully during the Teach operation		TRT	
28. The library manager microcode and all microcode in the 3490 and/or 3590 tape subsystems is at the latest released level		TRT	
29. The Verify Installation tests ran successfully on each new frame and drive		TRT	
30. If the customer does not need the library immediately, run 10 cycles of the Frames Alignment test with all new frames selected and 5 cycles of the Drive Get/Put test with all new drives selected. Check the logs for errors after each test completes		TRT	
31. Check the customer has sufficient cleaning cartridges that were shipped with the library		TRT	
32. Ensure that the Licensed Internal Code (LIC) backup diskettes and library manager diagnostic diskettes are stored in the supplied binder SA37-0300		TRT	
33. Ensure the front and rear door keys, 3494 tools and books are close to the library for service activity		TRT	
34. If external surfaces of the library require cleaning, use a mild detergent solution. Do not use abrasives, solvents, or alcohol based cleaners		TRT	

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5 Preventive Maintenance (PM)

5.1 General Information

Wash your hands after applying the lubricants to avoid any possible adverse reaction to one of the lubricants. Refer to the chemical safety data sheet with each lubricant for more information.

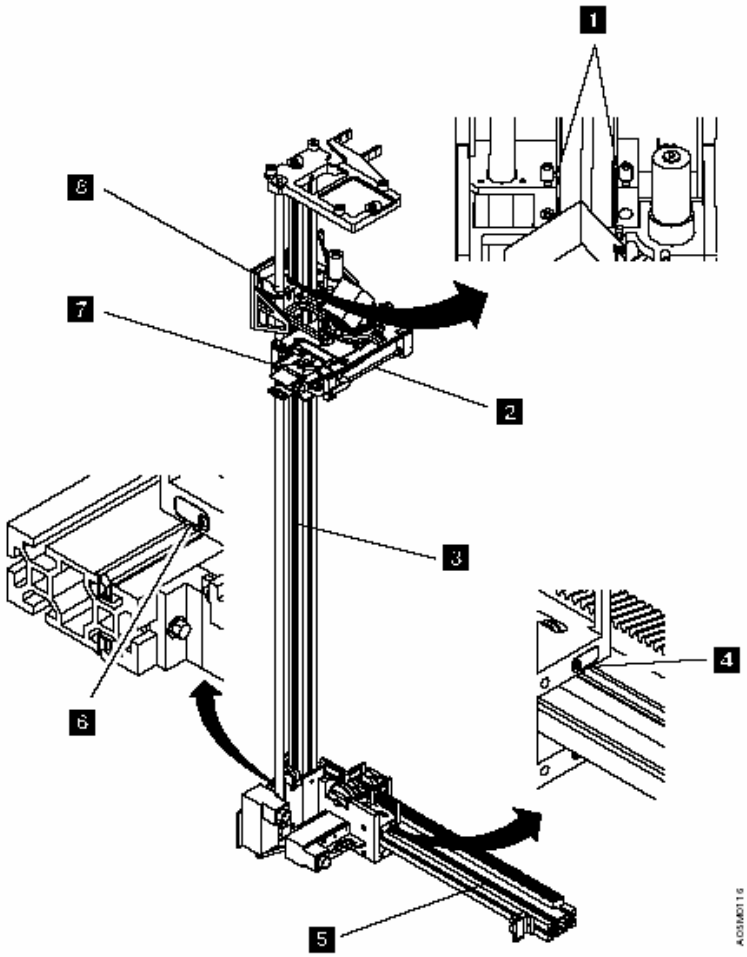
If cleaning of the external surfaces of the 3494 is required, it is recommended that you use a mild detergent solution. Do not use abrasives, solvents, or alcohol based cleaners.

5.2 Supplies needed

P/N 0223980 - IBM Lubricant #6
P/N 0435682 – Lubriplate
P/N 1706205 - Swabs (foam tipped)
P/N 34G9329 - Reach Belt
P/N 34G9342 - Pivot Belt
P/N 34G9629 - Y-Axis Drive Belt
P/N 62G1424 - IBM 3495 Track Cable Lubricant (only for leadscrew w/o teflon)
P/N 65F5228 - Krytox Lubricant
Lint-free cloth

5.3 Procedure

Perform the following procedure once a year (or as needed) during a service call. For a high-usage library, perform PM every 500,000 meters traveled on the Y-axis. Select **View usage information** on the Service Pull-down for the current Y-axis usage.



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Task	Date	Owner	ü / û
1. Lubricate the 8 wiper pads 1, 4 and 6 on the X-axis (2 top and 2 bottom) and Y-axis (2 front and 2 back) with IBM Lubricant #6		TRT	
2. Put a few drops of IBM Lubricant #6 on a cloth and wipe the top and bottom X-rail rods 5 and the front and back Y-rail rods 3		TRT	
3. Move the grip assembly 7 to the middle of the shafts and apply Krytox lubricant to the shaft 2 on each side of the bearings by using foam-tipped swabs		TRT	
4. Move the grip assembly back and forth on the shafts to load the bearings with lubricant. Wipe off the excessive lubricant on the shafts by using a clean lint-free cloth		TRT	
5. If the library has a teflon-coated (black) leadscrew, **DO NOT** lubricate the leadscrew. Go to step 7		TRT	
6. If your library **DOES NOT** have a teflon-coated leadscrew, lubricate the leadscrew as follows: • With the picker assembly at the bottom, wipe the Y-axis leadscrew with a clean lint-free cloth • Soak a clean lint-free cloth with IBM 3495 Track Cable Lubricant and apply the lubricant to the exposed length of the leadscrew threads above the leadscrew nut 8. **You should see small beads of lubricant on the leadscrew after you have applied it** • Move the picker assembly up and down the Y-axis to load the leadscrew nut with lubricant		TRT	
7. Apply a thin coat of Lubriplate grease to the front door bracket and pin. The bracket is mounted on the door and the pin is mounted on the frame near the top of the door opening		TRT	
8. If you have a 6 to 8 frame library with the metal band X-axis cable, apply a small amount of Lubriplate grease with a toothpick to the plastic roller shaft of each X-axis long cable support. The long cable supports are located between frames 5 and 6 and between frames 6 and 7		TRT	
9. Replace the pivot belt, reach belt, and Y-axis drive belt. Refer to “Pivot Belt” on page CARR-31“Reach Belt” on page CARR-42, and “Y-Axis Drive Belt” on page CARR-66		TRT	
10. Record the date and Y-axis meters traveled for this PM in log book in the clear plastic envelope P/N 1470207 located inside the Model L1x rear door on the top of the display compartment. (See **View usage information** on the Service Pull-down)			

Meters Travelled Date

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5.4 Operational Logs

The logs of the 3494 capture error and transaction data. This data is used for error recovery, for debugging software, and for aiding in the development and support of the product. Of these logs, the service representative uses only the error log and, to some extent, the transaction log. Logs are rotated by using a *push-down* method. The most current log is at the top of the log group of the Service menu. When the log is full, it is pushed down, and the oldest log in the stack is overwritten and rotated to the top of the stack to become the new current log. View the transaction and error logs by selecting **View Logs** from the Utilities menu of the library manager.

5.4.1 Error Logs

To display an error log, select **Analyze Error Log** from the Service pull-down. Select this option to analyze the library manager error log entries. This selection identifies the record group for an event, separates the information records, and displays the error code for the most important error record. The last five error records are displayed. Please record all recent errors are there details.

Error Logs				
Date / Time	**Component**	**ECOD – ERPC – LMM**	**Optional Message**	**TSR**
04.123 14:04	EH21	8604 – 75E0 – 00110	ERP CHECK1 is being processed.	CS

Refer to REPORTS-10 for further information in analyzing the error log entries.

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6 Appendix A – ECAs

6.1 Engineering Change Announcements (Sept-2004)

ECA	EC NUMBER	B/M #	DATE	TIME	DESCRIPTION
			MM-YY		
001	C88489 ***	OBSOLETE	06-94	1.0	LM50A.09
002	C88494 ***	OBSOLETE	06-94	0.5	LM BACKUP DISKETTES
003	C88711	05H1968	07-94	1.0	MIC CARD FUSES
004	C88708 ***	OBSOLETE	07-94	0.2	MI UPDATE/PARTS CATALO
005	C88491 ***	OBSOLETE	09-94	1.0	LM50C.00
006	C88722 ***	OBSOLETE	09-94	0.2	AIX DRIVER
007	C88746 ***	OBSOLETE	01-95	0.2	UPDATE MI TO -02 LVL
008	C88492A ***	OBSOLETE	04-95	4.0	UPDATE OS2 2.1-LM50D03
009	C88496 ***	OBSOLETE	04-95	1.0	OS2 2.11 49 DAY FIX
010	C88693 ***	OBSOLETE	04-95	0.2	***obsoleted by eca015
011	C88694 ***	OBSOLETE	05-95	0.5	UPDATE AS400 LAN DDRV
012	C34939 ***	OBSOLETE	09-95	0.2	***obsoleted by eca026
013	c34952	05h7608	09-95	0.5	line cord safety check
014	c34962	05h7622	12-95	3.0	leadscrew replacement
015	c34966 ***	OBSOLETE	11-95	0.2	Risc Lan Dev Drvr
016	c88758 ***	OBSOLETE	12-95	***	Upgrade to LM50f03
017	d19118	05h7700	12-95	0.5	3590 code update >3494
018	c34974	05h7725	04-96	2.0	clips/insp barcode/gri
019	c88739a	05h7726	04-96	2.0	replace barcode reader
020	C88675A	05H7706	04-96	1.5	replace GRI gripper cd
021	c88592a	05h4800	03-96	0.3	Jap/German User's gds
022	c88846	05h7700	06-96	0.5	Update 3590 code 3f2
023	c34994	05h3944	06-96	0.2	Device Driver lan risc
024	c88760 ***	OBSOLETE	06-96	5.0	mcode lm511.05
025	c34997	05h7757	07-96	1.3	barcode module eeprom
026	c35056	05h8189	02-97	0.2	replace mi >> 5th edit
027	c35091 ***	OBSOLETE	07-97	4.2	hw hardening fixes
028	c70576	05h9290	08-97	0.5	30 CTG IO SENSOR FIX
029	OBSOLETE ***	OBSOLETE			OBSOLETE
030	d19291	05h7249	10-97	0.6	insp cable trough spcr
031	c34970	05h7193	10-97	2.5	rmt lm code/ii's
032	c88764	05h7135	10-97	1.5	lm code 51405/db2 csd
033	C35078A	05h4047	11-97	0.5	B16 MI UPDATE
034	C70608B	-------	-----	-.-	dummy ec xcable 5-8frm
035	C70671	05H8637	03-98	1.3	inbay magnet repl ha1
036	F23117 ***	OBSOLETE	06-98	1.6	insp repl 7133 fan+pwr
037	F23153	05H8810	07-98	2.6	amex x+pivot flex cabl
038	F23117A ***	OBSOLETE	08-98	1.6	fan pwr sup repl7133
039	F23185 ***	OBSOLETE	08-98	2.5	lm 51802 warp 4 fix ha
040	F23216	08L6129	08-98	0.7	ha1 door inlk cbl fr89
041	ECA041 obsolete **********				obsoleted by eca042
042	F23190C	05H8871	10-98	2.0	pga3 vts 518 os2 mims
043	F23158	05H8800	11-98	2.3	ha1 repl mic3 w mic4
044	F23227A	08L5910	11-98	3.0	ha1 enable on b18
045	F23299	08L6052	01-99	3.0	Mem upgrade ha1 lm prf
046	D19270B	08L6020	11-98	2.5	Replace rear and side black covers w/white
047	D19270B	08L6020	11-98	2.5	Replace rear black covers w/white
048	F23223A	35L0573	10-99	1.5/12.5	LM_CU_DRV Code plus
049	F24227A	09L5297	08-99	2.0/3.0	Relace Pivot Cam Asm
050	F24350	35L0162	10-99	0.5	Power cord inspection
051	F24350A	35L0207	10-99	1.5	Power cord replace US
		35L0208	10-99	1.5	Power cord replace WT

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052	CANCELLED				
053	CANCELLED				
054	CANCELLED				
055	F23223C	35L0819 35L0820 09L5135 09L5136 09L5137	01-00	2.8 to 8.8	LM/B16/Axx/B1A/E1A code
056	D19426	35L1630	03-00	1.5	3590 sars code library A_429 B_7B2 C_747
057	H27341	19P0546	07-00	1.5	Disable SCSI term on A60 D14 Adjacent Frame
058	H27357B	19P1055	10-00	0.3	Replace CE null modem cable
059	H27392	19P0716	10-00	1.5	Replace 8M SCSI cable adjacent frame 6M
060	H27739	19P2753	03-01	5.7	Install VTS code 2.22.19.1 B18 AX0
061	H27497	19P1385	05-01	5.7	VTS 2.17.22.3 LM 523.01 + EF .18 OS2 Version 3 AIX 4.3.2 + FixPak 6
Note:	If VTS code is currently below 2.17.14.X and AIX 4.3.2, this EC will enable VTS CALLHOME				
062	H27497A (w code 2.17.14.5 up to 2.21.12.1)	19P2109	05-01	5.7	Same as ECA061
063	H27493A	19P2943	06-01	2.0	7588 > 400Mhz > 256 meg mem
064	H27689B ***	OBSOLETE	10-01	2.0	Install HW memory,Hard drv,NIC
065	H27924	19P3939	10-01	4.5 9.5	B18 2.22.25.2 code PtP
066	H28056	19P4724	11-01	0.8	B10 IO drawer rails missed in mfg
067	H27452C	19P4852	12-01	1.0 -3.5	Resize D: f: drives optimize dump +logging
068	H80030	19P5442	03-02	2.0	Replaces ECA064 Install hw memory,Hard Drv,nic
070	H80001A	18P6421	08-02	0.1	Update VTS MI and in some cases ESCON card
071	CANCELED				
072	CANCELED				
073	H80001D	Multiple	12-02	8.5	VTS to 2.23.36.0 or higher
074	H80001D	Multiple	12-02	8.5	VTS PtP to 2.23.36.0 or higher
075	H80070	18P7184	05-03	1.5	A50 Code 1.10.10.3 A60 Code 1.15.14.6
076	H80486	18P7635	04-03	6.0	VTS replaces early 2.26.x levels with 2.26.26.0
077	H80450	18P7678	04-03	3.0	LM527.15 to solve 49.7 day hang
079	H80118B	24R0290	02-04	0.5	3590 E1A/H1A Code Time is per drive
080	H80743A	Multiple	04-04	1.5 8.0 ***	LM/CU/Drive code for 3592 support. See IIs for actual times.
081	H80911	24R0912	04-04	0.5	D22 service panel mounting hardware replacement/move.
500	H80001	None	05-02	N/A	Used for reporting install of VTS code 2.23.31.88 shipped from PFE

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501	H80486	None	03-03	N/A	Used for reporting install of VTS code 2.26.26.0 shipped from PFE
502	H80450	None	03-03	N/A	Used for reporting install of LM527.15 code shipped from PFE
503	None	None	10-03	N/A	Used for reporting inst of AIX Fixpack 11 for VTS 2.26 or 2.27
504	None	None	11-03	N/A	Used for reporting inst of R7 for memory leak problem corrected in fixpack 11.
733	None	None	08-00	N/A	Used for PFE Hardware action plan
910	Pseudo	None	10-03	N/A	Used for PFE directed code load to fix mach problem. Includes leveling all machines in one acct.
920	Pseudo	None	10-03	N/A	Used when code load is required/recommended during new machine install.
930	Pseudo	None	10-03	N/A	Used when 3494 code update is required for add/alteration of another mach type in library. Example:3590/3592 upgrade which requires 3494 LM code update.
940	Pseudo	None	10-03	N/A	Used when code has to be updated for FRU usage. Example:PFE_Execs or fixlevel required for SSA Pdisk FRU.

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7 Appendix B – SMs

7.1 Safety Service Memorandums (Sept-2004)

```
Abstract:  SAFETY 3494 L1X AND D1X LINE CORD CONNECTOR INSPECTION

 ***** SAFETY ****

TEXT: A potential line cord safety exposure exists on
      frames with single-phase line cords.

Subject: Potential Safety Exposure on 3494 Machines

           ************************************************
           * This is a "compliance to safety standards"    *
           * alert which requires mandatory action.  This  *
           * action needs to be completed within 90 days.  *
           ************************************************

Machine Types:   3494
Models Affected: L10, L12, L14

Problem:
-------
A defect may exist with the ground pin in the plug of the input power cord for
the models listed above.  This power plug can be recognized by the Russellstoll
3750DP designation on the plug end. The Russellstoll 3750DP plug has three
pins.  On a normal (non-defective) plug, the ground pin has a larger diameter
than the two phase pins. On a defective plug all three pins have the same
"small" diameter.

With all of the pins being the same size, the "keying" mechanism that would
normally ensure correct "phase-to-phase" and "ground-to-ground" connections is
defeated.

Defect Impact:

 1) If a defective plug is connected in the CORRECT
    orientation, the safety ground may not be making a
    proper connection.

 2) If a defective plug is connected in the WRONG
    orientation, the machine will NOT power-on.
    However, it is possible for the machine frame to be
    at a HAZARDOUS VOLTAGE LEVEL.

  ********************************************************
  *   The following inspection procedure MUST be performed:   *
  *      * Prior to powering-on ANY newly-installed or        *
  *        relocated machines.                                *
  *      * For ALL machines already installed.                *
  ********************************************************

Time and materials associated with this inspection and the correction of any
defect can be accounted for by using ECA029.
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