ALTOS
COMPUTER SYSTEMS

ACS 8600 and ACS 68000 Computer Systems

UK-12/14 Upgrade Kit Installation Manual

Part Number: 690-13408-001

February 1983

ACS 8600 AND ACS 68000 COMPUTER SYSTEMS

UK 12/14 UPGRADE KIT INSTALLATION MANUAL

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FEDERAL COMMUNICATIONS COMMISSION NOTICE

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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CHAPTER 1

GENERAL INFORMATION

1-1. INTRODUCTION

This manual provides step-by-step procedures for unpacking, inspecting, and installing the UK-12/14 Upgrade Kit for an ACS 8600-12 and -14 or ACS 68000-12 and -14 computer system. The UK-12 kit provides an additional 20-Megabytes of unformatted hard disk storage for both 20-Megabyte (-12) and 40-Megabyte (-14) systems. The UK-14 kit provides an additional 40-Megabytes of unformatted hard disk storage for both -12 and -14 systems. Both kits include one eight-inch hard disk drive mounted in a peripheral chassis. Figure 1-1 shows the front panel of the hard disk peripheral chassis including the power switch/indicator. The procedures in this manual are the same for either the -12 or -14 kit but vary slightly depending on whether the base system is an ACS 8600 or an ACS 68000. Table 1-1 summarizes storage capacity and device characteristics for the two drives.

NOTES

The UK-12/14 hard disk upgrades can only be installed in ACS 68000 systems that contain the Intelligent 8-inch Hard Disk Controller (Part No. 615-12244-001). Early ACS 68000 systems with the original controller (Part No. 615-11123-001) must be upgraded with the new controller before installing a disk upgrade.

After you have completed installation, store this manual in the binder along with your User Manual.

1-2. CONVENTIONS AND TERMINOLOGY

Altos Computer Systems manufactures equipment designed for 120VAC 60 Hz and 220VAC 50 Hz. The 120VAC Hz systems are designated with an A after the model number; the 220 VAC systems are designated with an E after the model number.

This manual uses the following abbreviations:

UK-12/14 Kit	Refers to the total UK-12/14 Upgrade Kit and includes everything contained in the shipping container. Components are listed in section 2-2.
HDC -	Hard Disk Controller Board
CPU -	Central Processing Unit
PCB -	Printed Circuit Board
Mbyte -	Megabyte (One million bytes)
Mbits -	Megabits (One million bits)

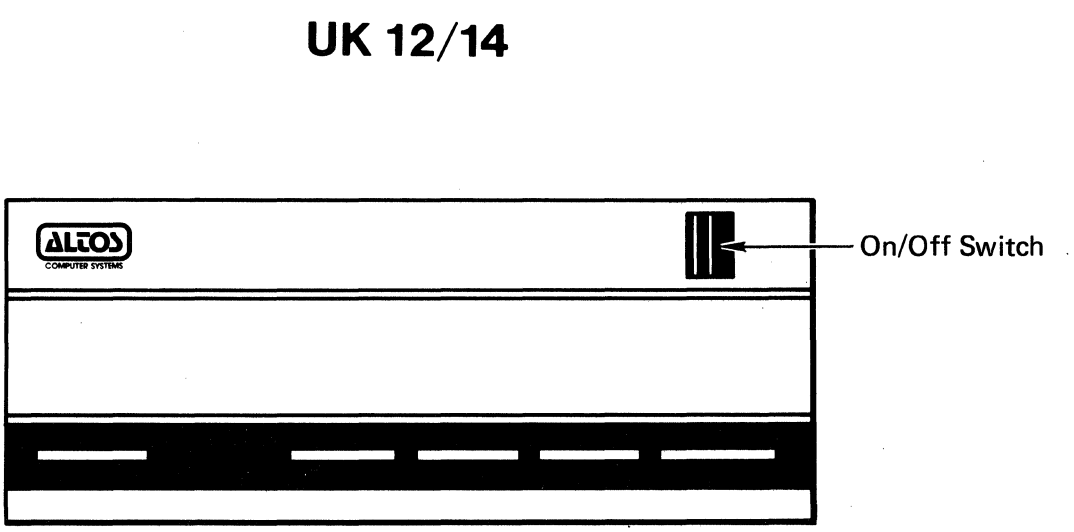

Figure 1-1. Hard Disk Peripheral Chassis Front Panel

Table 1-1. Hard Disk Drive Performance Specifications

	UK-12	UK-14
Platters	2	4
R/W Heads	4	8
Tracks	2048	4096
Cylinders	512	512
Access Times		
Trk to Trk (max)	15 ms	15 ms
Average (max)	55 ms	55 ms
Full Stroke (typ)	100 ms	100 ms
Avg. Latency	10 ms	10 ms
Transfer Rate/Sec.	4.34 Mbits	4.34 Mbits
Capacity - Unformatted		
Drive	21.33 Mbyte	42.66 Mbyte
Capacity - Formatted		
ACS 8600	17.82 Mbyte	35.65 Mbyte
ACS 68000	16.77 Mbyte	33.55 Mbyte

CHAPTER 2

INSTALLATION

This chapter provides step-by-step procedures for unpacking, inspecting, and installing the UK-12/14 Hard Disk Upgrade Kit.

2-1. UNPACKING

Proceed as follows to unpack your upgrade kit:

1. Turn the shipping container right side up. Carefully cut the binding tape and open the container.

CAUTION

Use reasonable care when opening the shipping container; sharp or pointed instruments may pierce the protective cover and scratch the finish on the hard disk peripheral chassis.

2. Note the method of packing, and remove the kit components. Store paperwork in a safe place for future reference.

3. Gently tip the container on its side to slide out the hard disk peripheral chassis along with the foam packing pieces. Remove and save the plastic cover and packing materials. Place the chassis on a suitable work surface and return the foam pieces to the shipping container.

4. Store the shipping container and the packing materials in a safe place. You will need them if you wish to ship the kit in the future.

5. As you unpack the kit, compare the contents with those listed under section 2-2. Consult your dealer if any parts are missing from the kit,

2-2. KIT DESCRIPTION

This section lists and describes major parts contained in the UK-12/14 Upgrade Kit. Also included is a list of tools required to install the kit.

COMPONENTS

Your upgrade Kit (either a UK-12, Part No: 540-11646 or UK-14, Part No: 540-11647) provides all the components necessary to add one eight-inch Hard Disk Drive Unit onto an ALTOS ACS 8600-12 or -14 or ALTOS ACS 68000-12 or -14 Computer System. The following parts should be included:

a. This Installation Manual (Part No: 690-13408-001).

b. Either a UK-12 Chassis (Part No: 530-11640) containing a 20-megabyte eight-inch hard disk drive

or

a UK-14 Chassis (Part No: 530-11641) containing a 40-Megabyte eight-inch hard disk drive

c. One 72-inch, 25-conductor shielded, external interconnect cable (Part No: 510-11443) used to connect the main chassis rear panel to the hard disk peripheral chassis rear panel.

d. One 72-inch, 50-conductor shielded, external interconnect cable (Part No: 510-11448) used to connect the main chassis rear panel to the hard disk peripheral chassis rear panel.

e. One ac power cord (Part No: 230-10223) used to connect the hard disk peripheral chassis to the ac power source (wall plug, etc.).

f. One ADX Diagnostic Diskette (Part No: 583-12119-005 for 8600 systems; Part No: 583-12880-001 for 68000 systems).

g. One 21 1/2-inch, 50-conductor internal flat cable (Part No: 510-12270) used to connect the HDC board, Drive PCB, and the rear panel inside the ACS 8600 main chassis (depending on the configuration of the system, this cable may not be needed; not included in UK-12/14 for ACS 68000 systems).

h. One Hardware Kit (Part No: 540-11727-001) that includes one two-position configuration shunt (not included in UK-12/14 for ACS 68000 systems).

TOOLS REQUIRED

The following tools are required to install the hard disk peripheral chassis:

a. A socket wrench with 1/4-inch, 3/16-inch, 5/16-inch, and 11/32-inch attachments, or equivalent hex nut drivers.

b. One medium flat blade screwdriver.

c. One number 2 cross blade (phillips) screwdriver.

d. One Pair 6-inch needlenose pliers.

e. One Scotchflex Tool No. 3438 (or equivalent)

2-3. MAIN CHASSIS MODIFICATION

This section provides a step-by-step procedure to disassemble, modify, and reassemble the main system chassis to accommodate the upgrade kit. Proceed as follows:

1. Back up system files. Refer to the system User Manual or Operating System Manual(s) for instructions.

2. Remove the flexible disk from the flexible disk drive and turn off power to the display terminal, printer, and main chassis.

3. Disconnect the ac line cord from the chassis rear panel.

4. Use a flat blade screwdriver to remove the six screws (three each side) that secure the black trim strips to the chassis. Remove the trim strips and lift off the top cover.

CAUTION

Exercise extreme care to prevent metallic objects from falling inside the computer chassis. If any metallic objects do fall into the chassis, lock the hard disk unit (covered in section 2-4) to protect the heads from damage due to excessive movement. Gently tip and shake the chassis to move the objects to the rear where they can be more easily retrieved. Do not use a magnet near the hard or flexible disk drives.

5. Use a flat blade screwdriver to loosen the four captive screws that secure the hinged CPU assembly to the chassis. Refer to figure 2-1 and raise the CPU assembly (includes CPU board, EMI tray, and side brackets) and lock it into an upright postion.

6. Refer to figure 2-2 and locate resistor pack terminator (J6) on the Drive PCB. Use a flat blade screwdriver to remove the resistor pack from J6. (Note that figure 2-2 shows only one of the two versions of the Drive PCB; the resistor pack terminator is located in approximately the same place on both versions of the Drive PCB.)

7. Proceed directly to step 15 when adding the hard disk peripheral chassis to an ACS 68000 system. Proceed to step 8 when adding the peripheral chassis to an ACS 8600 system.

8. Check the flat cable that connects the HDC, Drive PCB, and the rear panel. If it is part number 510-11447, then it must be replaces with the cable supplied in the upgrade kit (510-12270-001). If it is not necessary to replace the flat cable then proceed directly to step 15.

9. If it is necessary to replace the flat cable, then refer to figure 2-1 and gently pull the connector from the Drive PCB, being careful to support the board with your fingers to prevent warping. Lower the CPU Assembly to its normal horizontal position. Itis necessary to lift up on the assembly to release it from its latched postion.

10. Use the Scotchflex tool to remove the cable from the HDC board.

11. Use a 3/16" nut driver and needlenose pliers to remove the two standoffs from the 50-pin back panel connector (labelled B in figures 2-4 and 2-5). **Placing tissue directly under the nuts before their removal can prevent their dropping into the chassis should they slip from the needlenose pliers.**

12. Install the new flat cable into the vacant connector slot (see figure 2-1), ensuring that the broad side of the D connector faces down. Use the standoffs and nuts that were removed in the previous step. Remove the tissue.

13. Attach the other end of the flat cable to connector J1 on the HDC board, ensuring that pin 1 on the cable connector is oriented correctly. Support the board from the bottom while making the connection.

14. Raise the CPU assembly and lock it in an upright position. Route the cable under the CPU assembly and attach the last connector to the Drive PCB.

15. Lower the CPU assembly and tighten the four captive screws to secure the assembly to the chassis.

16. Replace the top cover, and secure the black trim strips to the chassis with the 6 screws removed in step 4.

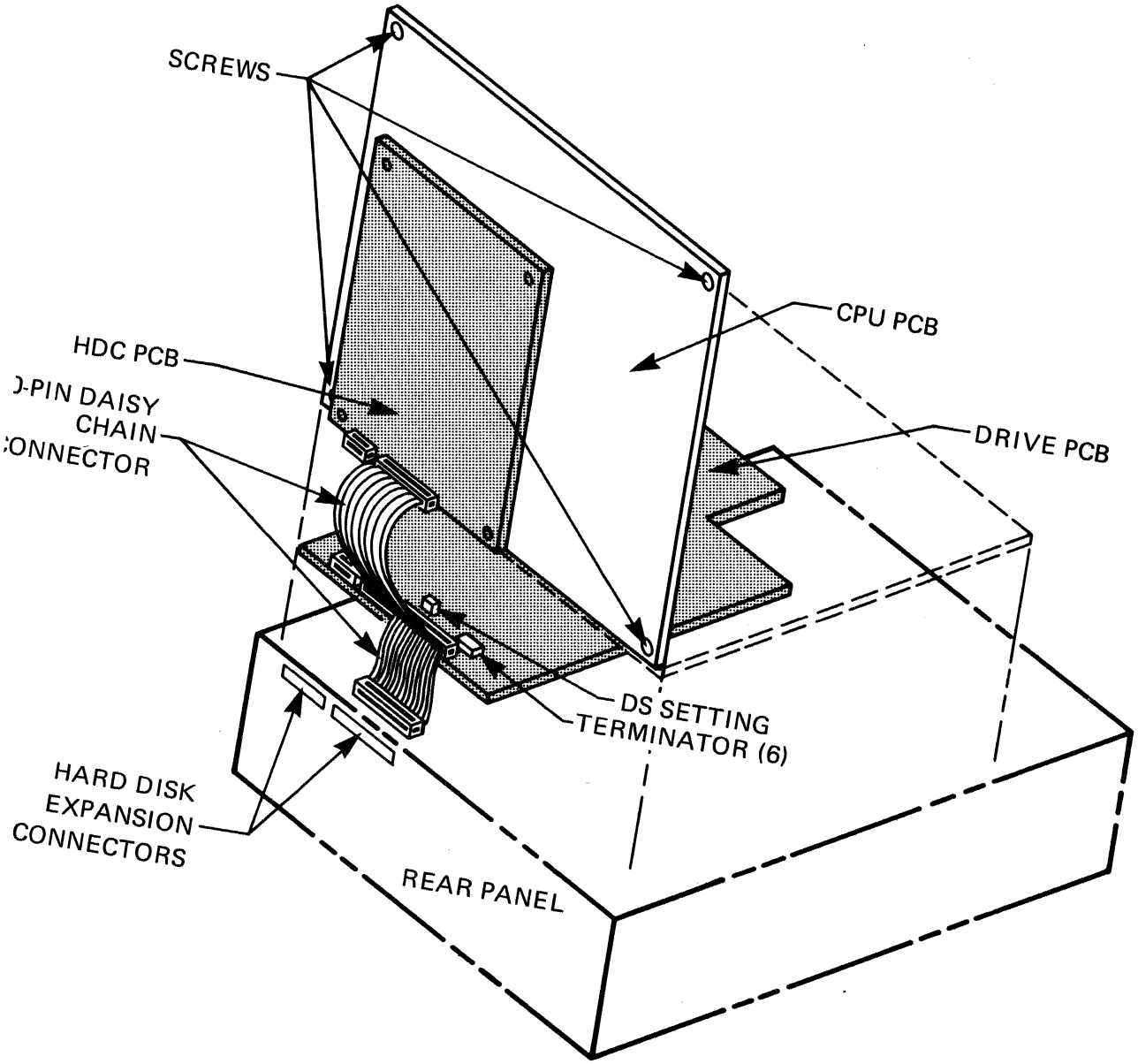

Figure 2-1. Main Chassis Disassembly and Cabling

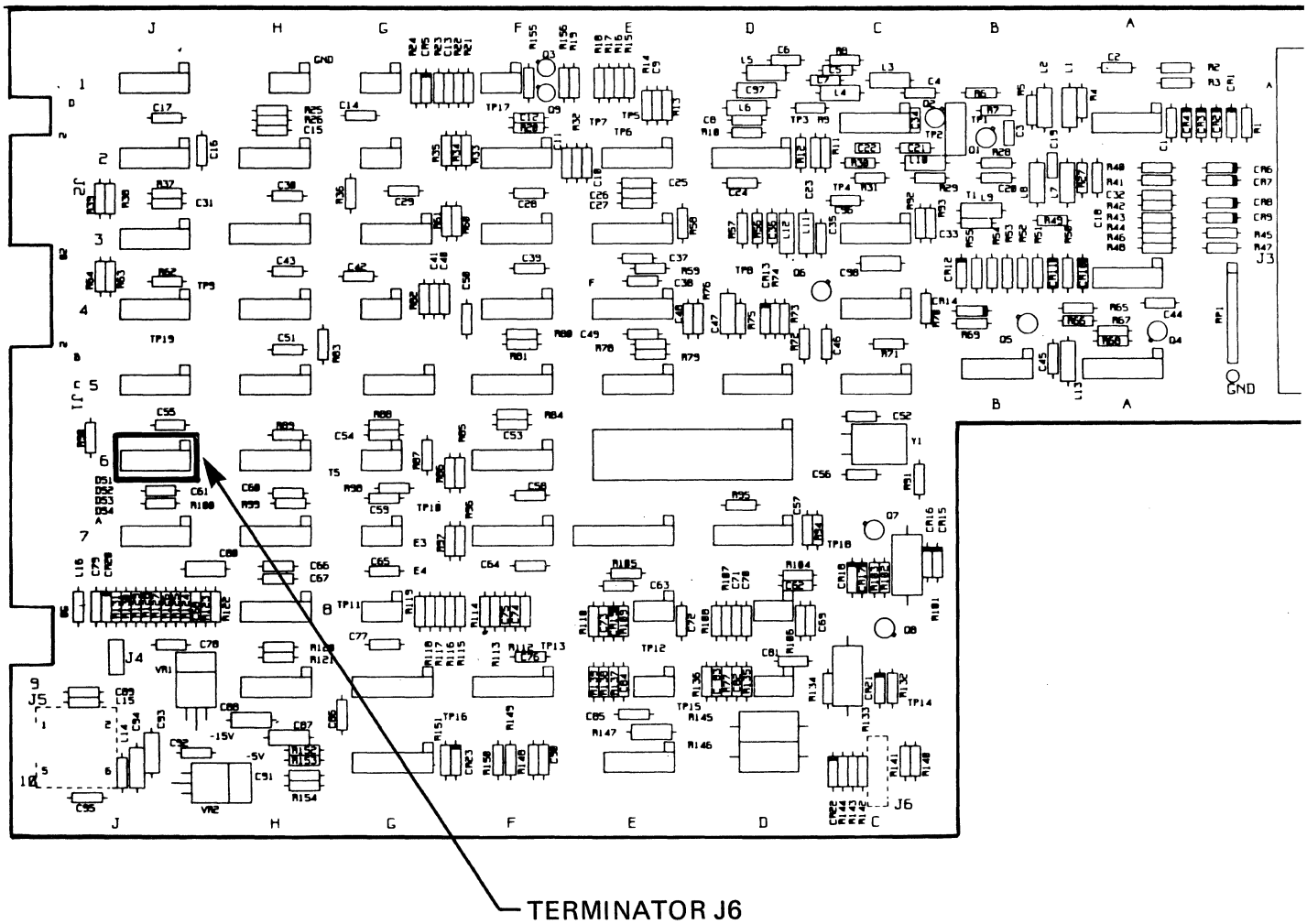

Figure 2-2. Drive PCB (Version A) Matrix Map

2-4. DRIVE CHASSIS MODIFICATIONS

This section provides a step-by-step procedure to prepare the hard disk peripheral chassis for integration into an ACS 8600 or ACS 68000 Computer System. Proceed as follows:

1. Carefully turn the hard disk peripheral chassis upside down or on its side on a non-abrasive work surface.

2. Use a cross blade (phillips) screwdriver to remove the four screws that secure the rubber feet. Save the rubber feet and screws.

3. Remove the bottom cover plate and set it aside.

4. Locate the disk drive spindle lock access cut-out (Figure 2-3). Use an 11/32-inch hex nut driver or socket to loosen the spindle locking clip nut. Rotate the locking clip away from the pulley, into the unlocked position. **DO NOT ROTATE THE PULLEY.** Tighten the 11/32-inch nut. **DO NOT OVER-TIGHTEN.**

CAUTION

Reinstall the locking clip and the actuator lock in their locking positions any time the disk chassis is moved farther than the distance it is convenient to carry it by hand. Reverse the unpacking instruction procedure presented in section 2-1 to repack your disk drive unit for shipping.

5. Locate the actuator lock access cutout (Figure 2-3). Use a flat blade screwdriver to rotate the actuator lock 1/4 turn anti-clockwise from the **LOCK** position to the **RUN** position.

6. Replace the bottom cover on the hard disk peripheral chassis and secure the four rubber feet with the four screws removed in Step 2 (above).

7. Carefully return the unit to its upright position.

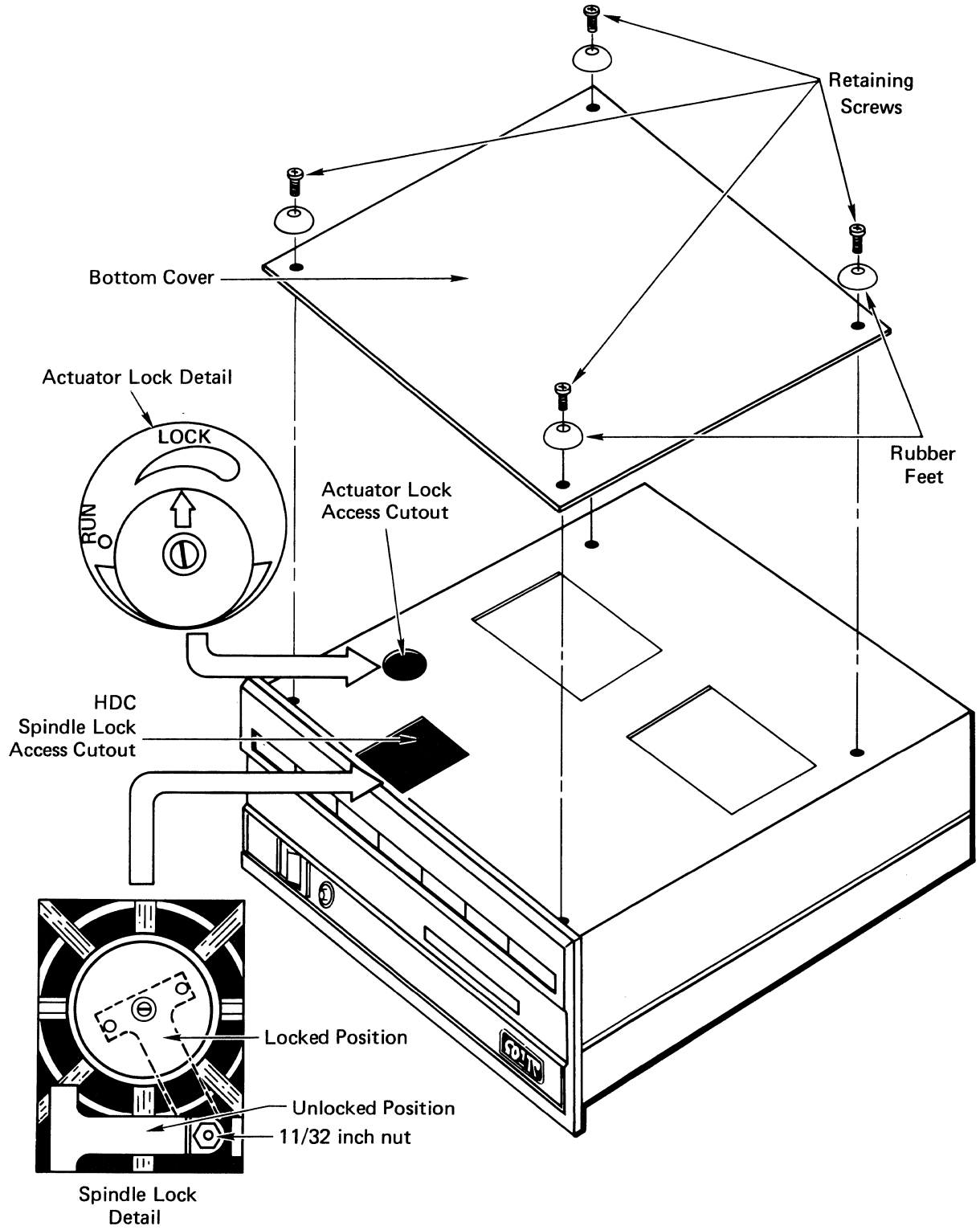

Figure 2-3. Hard Disk Drive Actuator and Spindle Locks

2-5. EXTERNAL CONNECTIONS

This section provides step-by-step instructions for connecting the hard disk peripheral chassis to the main chassis, for connecting both chassis to ac power, and for powering up the system in preparation for a diagnostic checkout. Proceed as follows:

NOTE

The two external, jacketed, shielded cables referenced in this procedure have male D-type connectors at each end. Keep the broad side of the D connector DOWN while connecting the cables to the rear panels.

1. Attach the 72-inch, 25-conductor interconnect cable from the 25-pin hard disk expansion connector on the main chassis (labelled A in the main chassis figures) to the 25-pin connector on the peripheral chassis rear panel (labelled A in the peripheral chassis figure). Figure 2-4 shows the rear panel of the ACS 8600 main chassis. Figure 2-5 shows the rear panel of the ACS 68000 main chassis. Figure 2-6 shows the hard disk peripheral chassis rear panel.

2. Attach the 72-inch, 50-pin interconnect cable from the 50-pin hard disk expansion connector on the main chassis rear panel (labelled B in figures 2-4 and 2-5) to the 50-pin connector on the peripheral chassis rear panel (labelled B in figure 2-6).

3. Re-connect the three-pronged power cord to the main chassis rear panel (Figures 2-4 and 2-5), and plug the other end into an ac power source (wall plug, etc.).

4. Connect the three-pronged power cord to the peripheral chassis rear panel and plug the other end into an ac power source (wall plug, etc.).

5. Reconnect all interface cables between display terminals, printers, etc. and the main chassis rear panel.

6. Power up the main chassis, the console terminal, and the peripheral chassis. The front panel power indicator for both chassis should be lit.

7. Load the Altos Diagnostic Executive (ADX) program and specify the hard disk test. When asked to specify which hard disk drive unit to test, select the drive in the peripheral chassis. When asked for the capacity of the drive, select either 20 or 40 Megabytes, depending on the drive that was

installed. The hard disk main menu will appear and you may run diagnostics to test the new drive unit. Refer to the ADX Diagnostic Manual that applies to your system for detailed informtion on verifying the hard disk drive in the peripheral chassis.

8. Consult your user reference manual to determine if software modifications are required as a result of adding the second hard disk unit.

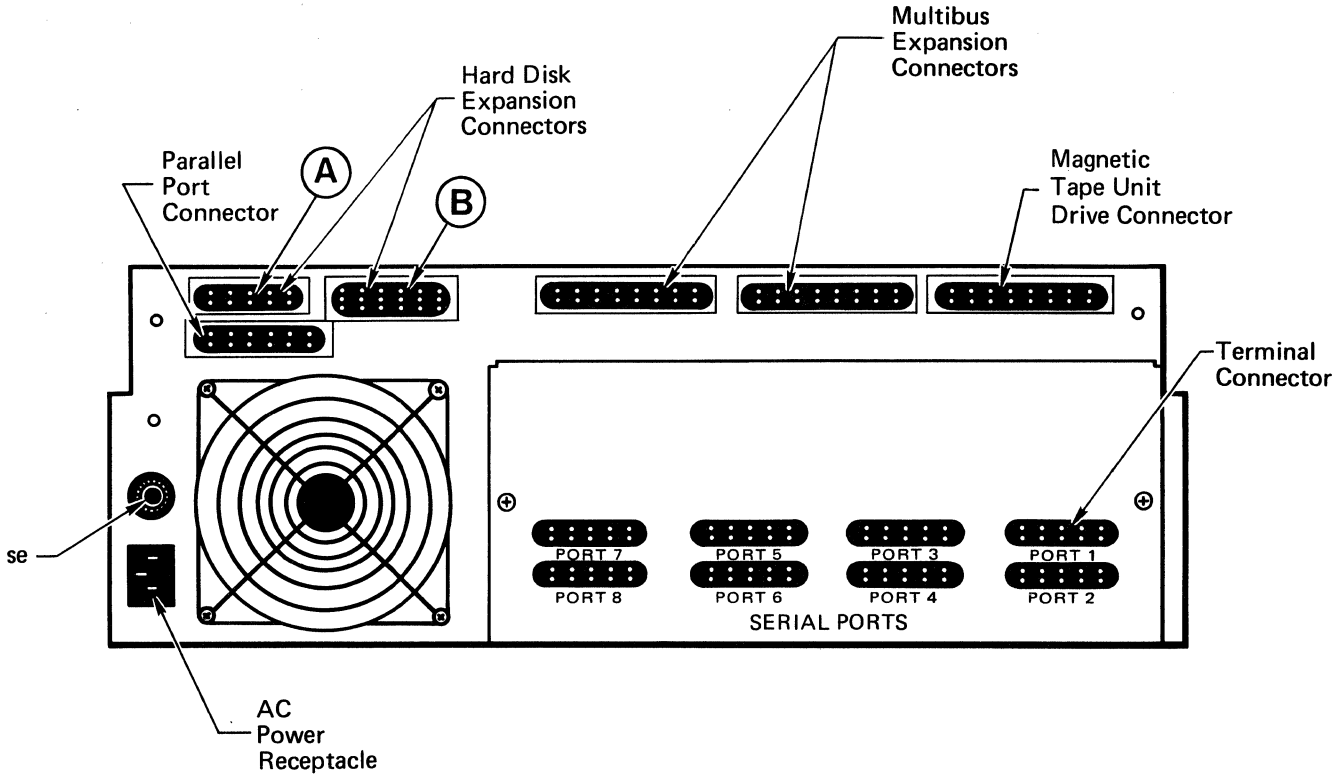

Figure 2-4. ACS 8600 Main Chassis Rear Panel

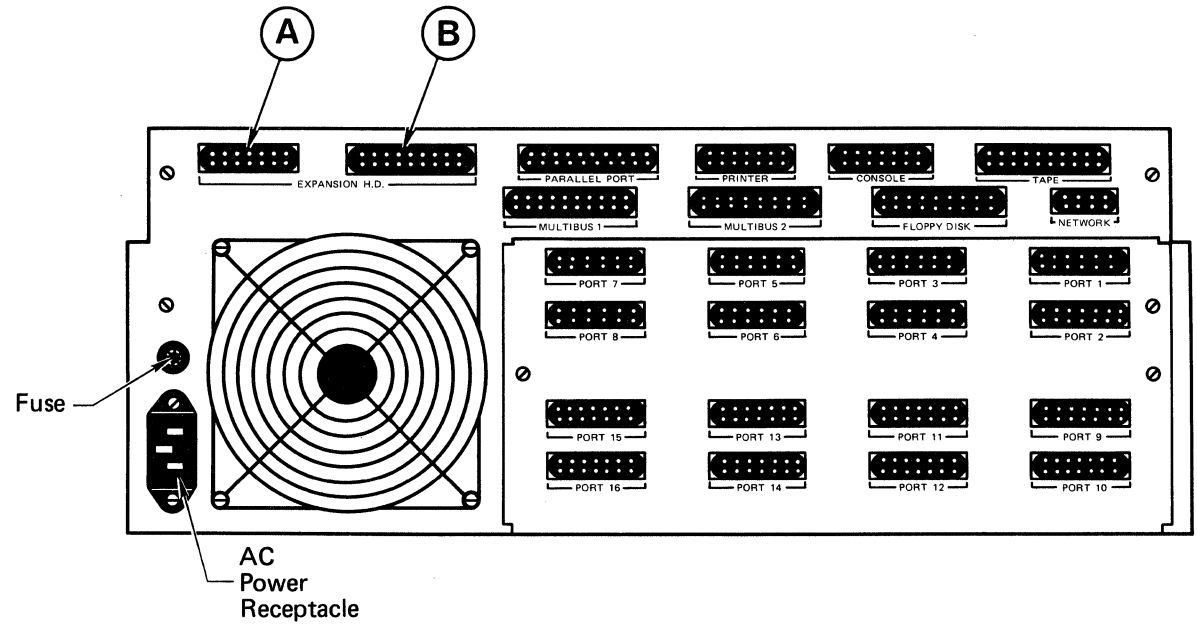

Figure 2-5. ACS 68000 Main Chassis Rear Panel

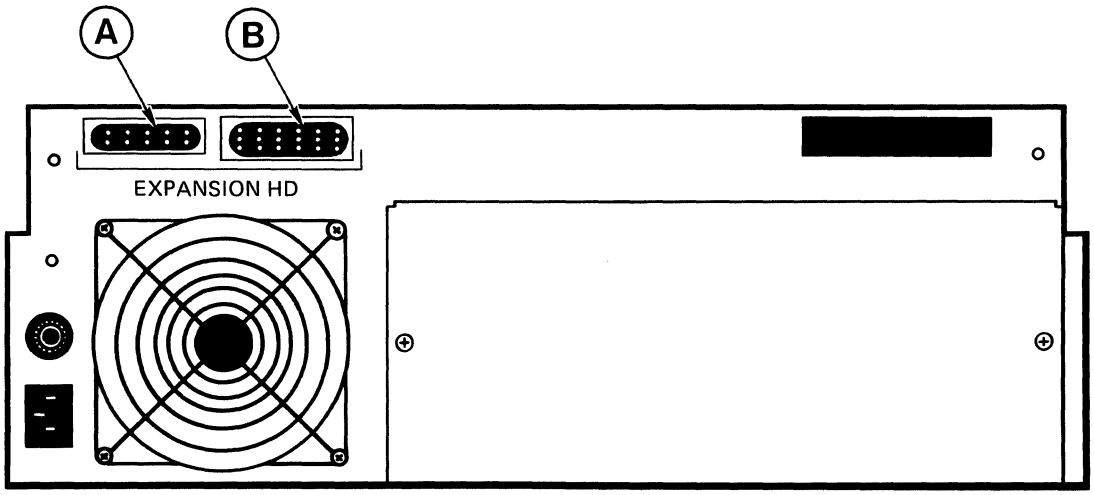

Figure 2-6. Hard Disk Peripheral Chassis Rear Panel

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