

XD88 F1M/F1N MEMORY UPGRADE AND XD88 F1U CACHE MEMORY MANAGEMENT UNITS INSTALLATION

INTRODUCTION

This document contains instructions for the installation of the Memory Control board and the installation 16 Mbyte Memory Daughter cards to either the Compute Engine (CE) board or the Memory Control board. Instructions are also provided for the installation of four additional Cache Memory Management Units (CMMU's) on the CE board.

These F-kits apply to the XD8801 Applications Processor, and to the Compute module portion of a XD8820 and XD8830 Graphics Workstation.

WARNING

The following servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so.

CONFIGURATIONS

The standard XD88 workstation is shipped with an 8 Mbyte daughter card installed on the CE board and 4 CMMU's installed on the CE board.

Field memory upgrade consists of installing Memory Controller cards. For systems with 8 Mbyte daughter cards on the CE board, some performance improvement may be gained by swapping this 8 Mbyte card with one of the 16 Mbyte cards on a memory controller.

The XD88 F1U adds four additional CMMU's to the CE board.

The XD88 F1M is one Memory Controller board and one 16 Mbyte Memory Card.

Each XD88 F1N is one 16 Mbyte Memory Daughter Card.

CAUTION

Memory circuits are static sensitive. Perform these modifications only in a controlled static-free environment.

F1M AND F1N INSTALLATION

The procedures include the following:

- Optimal memory configuration
- Removing the CE Board
- Installing the 16 Mbyte Memory Card on the CE Board
- Replacing the CE Board
- Installing Memory Cards on the Memory Controller Board

Optimal Memory Configuration

The XD88 memory system runs at different speeds depending on physical location. The memory on the CE board is the fastest. Memory Controller boards immediately adjacent to the CE board on either side run slightly slower because of required off-board signal buffering. Additional Memory Controller boards run at Futurebus speed.

When upgrading a memory system, always put the maximum memory on the CE board. Put as many Memory Controller cards as possible adjacent to the CE board on either side subject to other system configuration constraints.

Removing the CE Board

To access and remove the CE board, perform the following steps while referring to Figures 1, 2, and 3.

1. Log off the system.
2. Turn off the system by pressing the power switch (on the front panel of the Compute module).
3. After the system has completely shut itself down, remove all power cords.
4. Carefully position the system to gain easy access to the rear panel. Do not stress any cables or connectors.
5. Remove the retainers covering the CE board assembly ejectors.
6. Unseat the CE board from its backplane socket by grasping both upper and lower ejectors.
7. Push outwards on the ejectors while pulling the board out of the chassis.

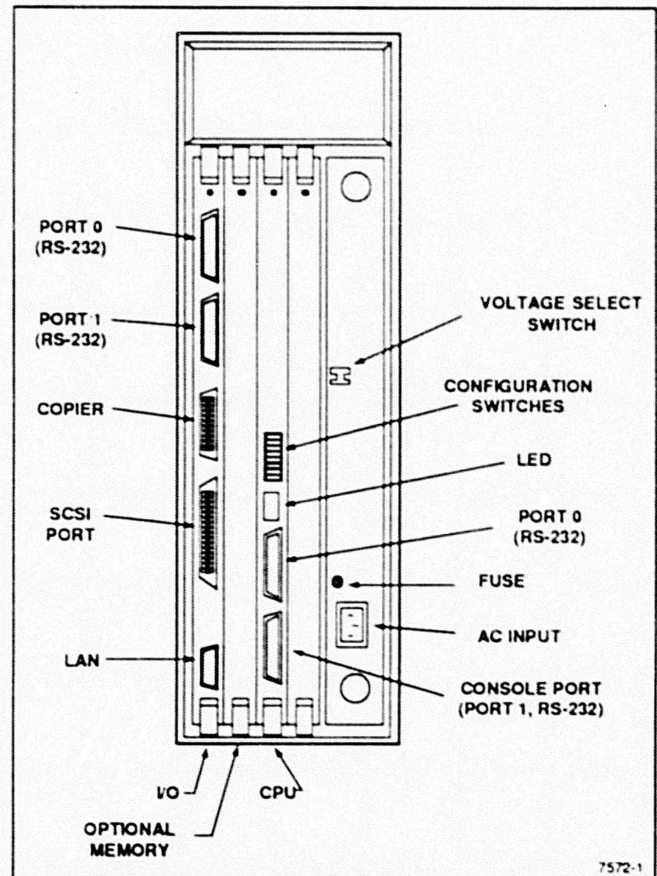


Figure -1. Compute Module Rear Panel.

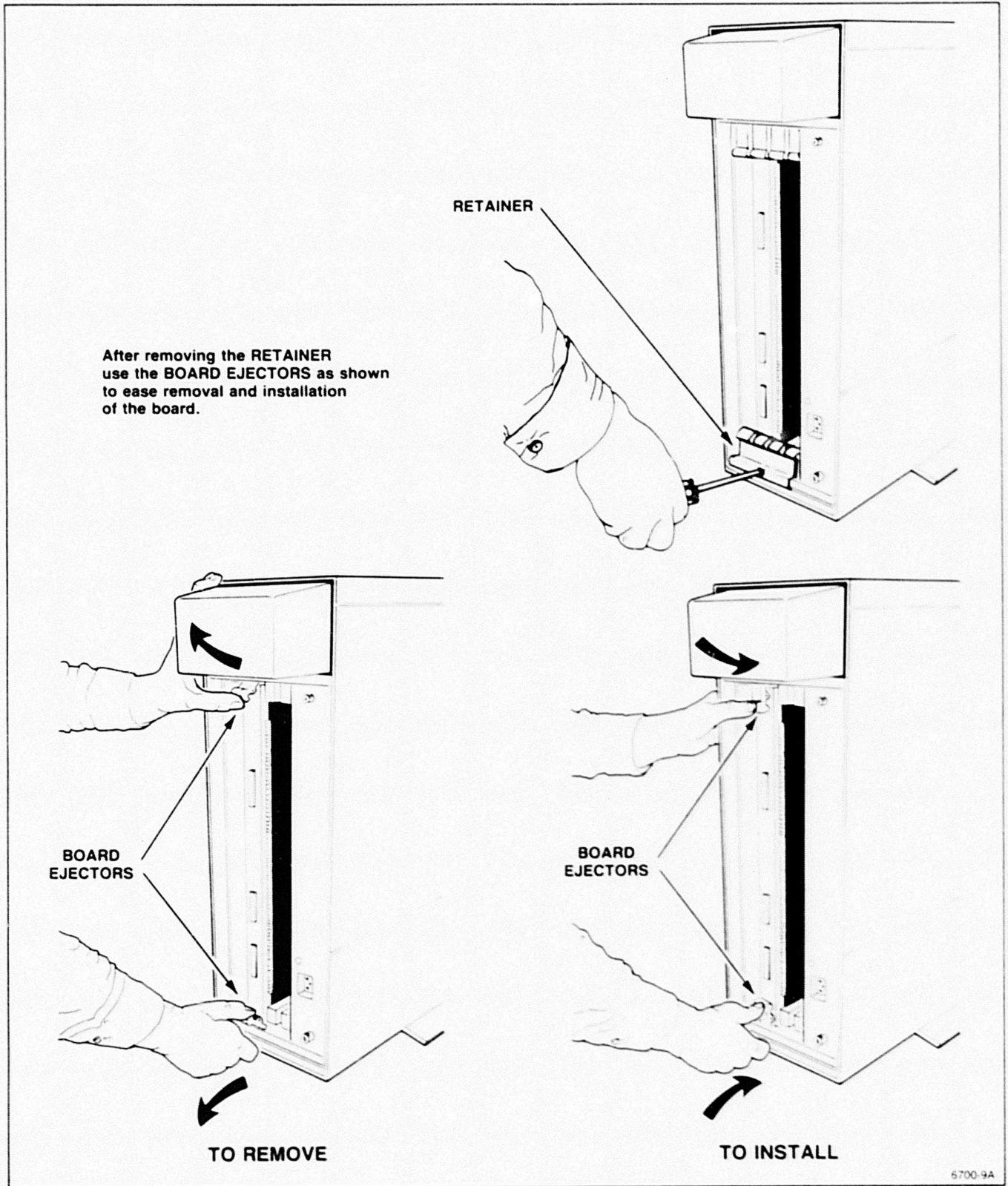


Figure -2. Removal and Installation of a Board Assembly.

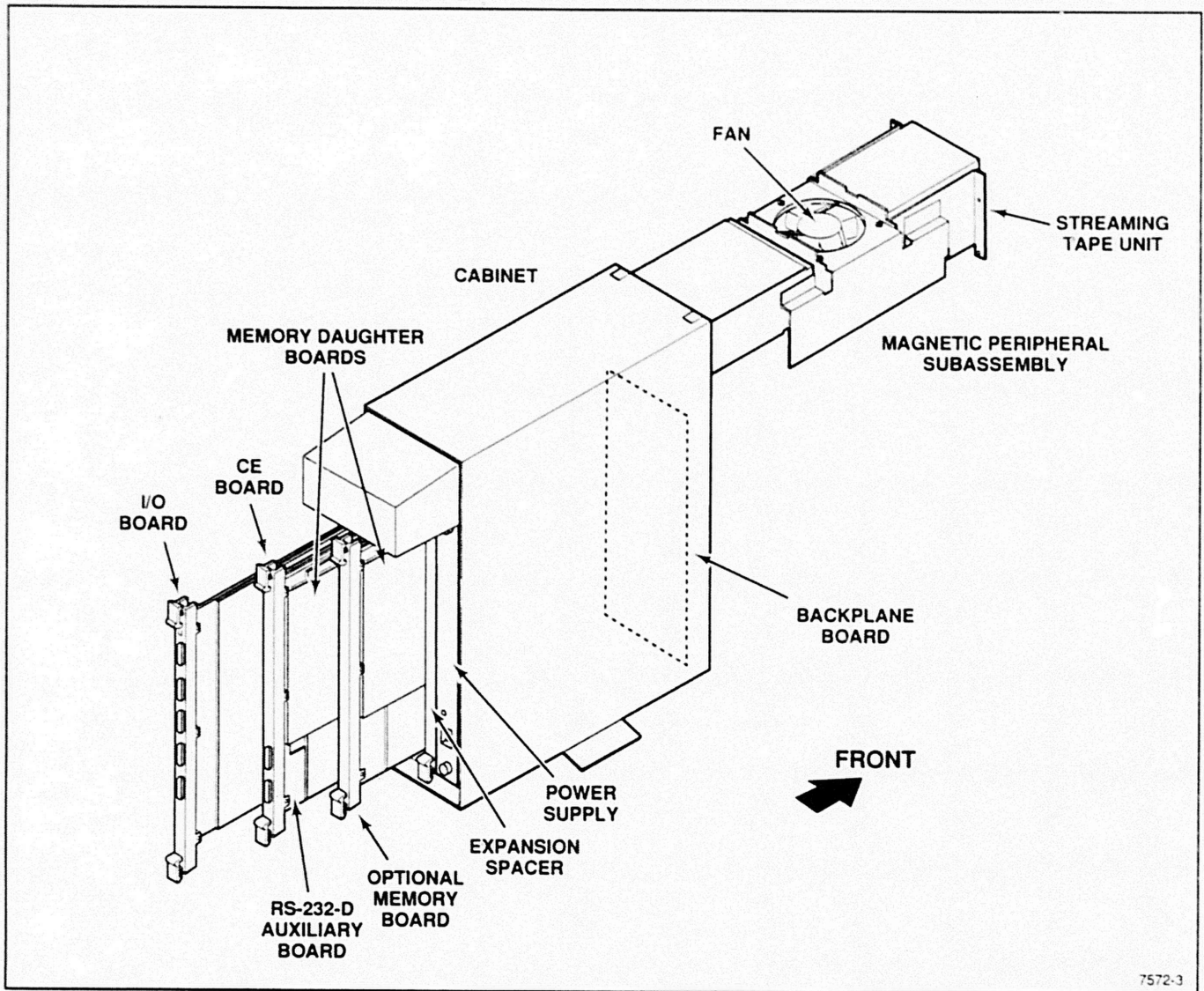


Figure -3. CEM FRU's.

Installing the 16 Mbyte Memory Card on the CE Board

NOTE

To help identify memory size on cards, note that 8 Mbyte Daughter cards have memory chips installed on only one side while 16 Mbyte Daughter cards have memory chips installed on both sides.

Before attempting to remove the 8 Mbyte Daughter card it will be necessary to obtain a small narrow open end wrench (maximum 3/16-inch thick) to use as a lifting tool (a 3/8-inch ignition type wrench will work). See Figures 4 and 5 during the following procedures.

CAUTION

To separate the memory daughter card from the CE board (in the next step) it will be necessary to position the wrench in several places along the edge of the connector to avoid damage to either the CE board or the Memory card.

1. Use a Torx 15 driver to remove the screw from the center of the memory card.

2. Carefully insert one blade of the wrench under the connector edge of the memory card, (being careful to keep the wrench between the IC's on the CE board).
3. Now, use the wrench to gently pry the memory card from the connectors on the CE board.
4. Squeeze each of the metal mounting studs together and gently lift the memory card until it is free.
5. Carefully align the 16 Mbyte Memory Daughter card over the connectors (J14 and J23) on the CE board and apply gentle even pressure to the connectors until they are fully seated.
6. Press the daughter card over the mounting studs until the snap securely.
7. Install the Torx 15 screw.

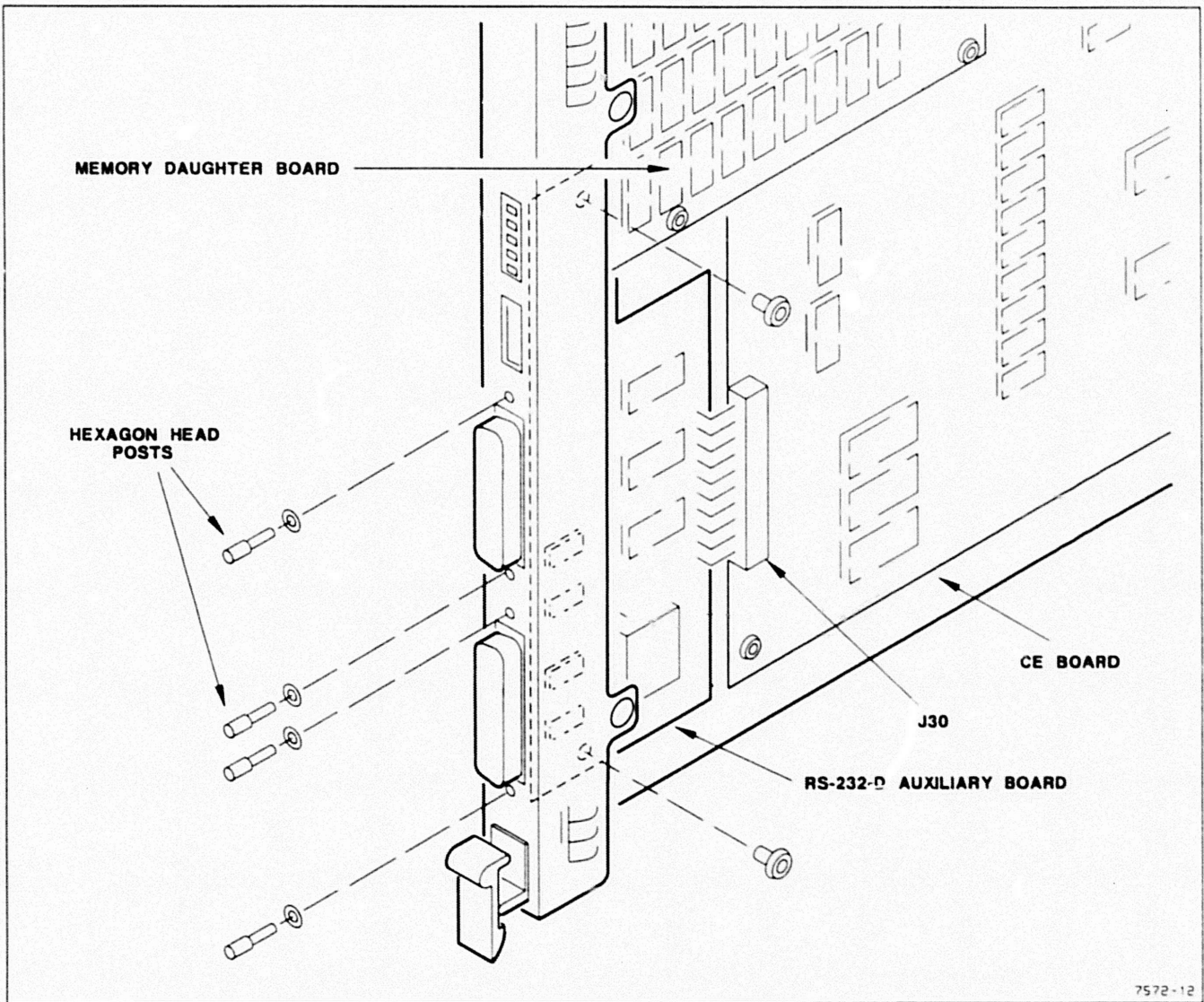


Figure -4. Installing the 16 Mbyte Memory Card.

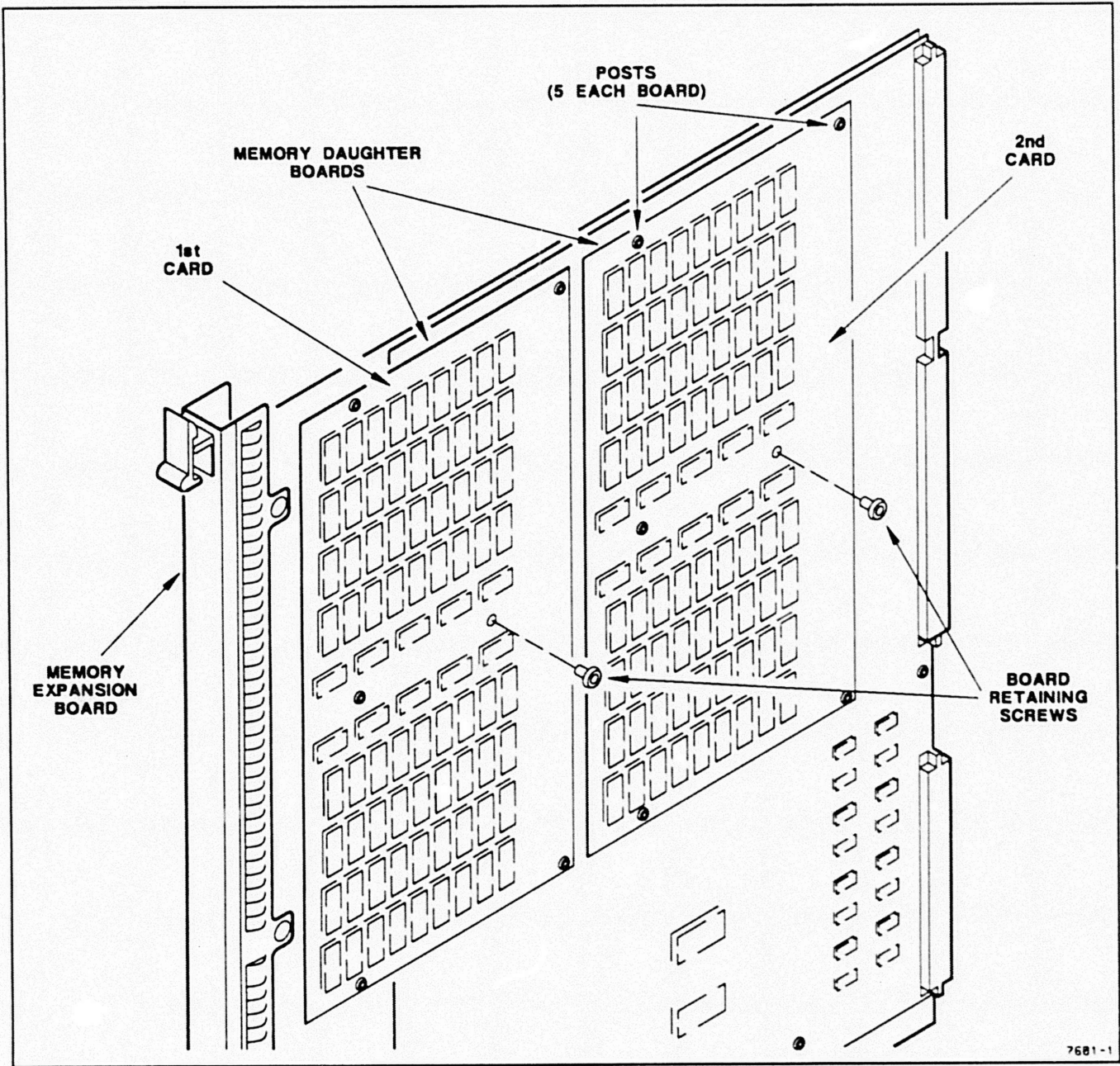


Figure -5. CE Board Component Locations.

Replacing the CE Board

Refer back to Figure 2 while performing the following:

1. Place the top and bottom of the board in the rail slot.
2. *Carefully* push the center of the assembly inwards as far as possible while holding the ejectors in the horizontal position.
3. Grasp the front of the module frame for support, and *carefully* push the assembly inwards until the board is seated in the mother board socket.
4. Push the ejectors inward to finish seating the board.
5. Make sure that the ejectors are lined up vertically when the boards are seated.
6. Install the ejector retainer over the ejectors after the board assembly is seated.
7. Plug the power cord in and start up the system.

Installing Memory Cards on the Memory Controller Board

The procedure for installing Memory Cards on the Memory Controller board is identical to the procedure for the CE board. The Memory Controller board can hold either one or two Memory Daughter Cards.

The preferred configuration when installing only one memory module is to place it at the "Memory Module 0" location as shown in Figure 5.

F1U INSTALLATION

The procedures include the following:

- Removing the CE Board
- Installing the four CMMU's (88200)
- Replacing the CE Board

Removing the CE Board

To access and remove the CE board, perform the following steps while referring back to Figures 1, 2, and 3.

1. Log off the system.
2. Turn off the system by pressing the power switch (on the front panel of the Compute module).
3. After the system has completely shut itself down, remove all system power cords.
4. Carefully position the system to gain easy access to the rear panel. Do not stress any cables or connectors.
5. Remove the retainers covering the CE board assembly ejectors.
6. Unseat the CE board from its backplane socket by grasping both upper and lower ejectors.
7. Push outwards on the ejectors while pulling the board out of the chassis.

Installing the Four CMMU's (88200)

To install the CMMU's, follow these steps (see Figure 6):

1. Lay the CE board face up on the anti-static surface with the backplane connectors away from you. There will be four empty CMMU sockets in the upper left corner of the board.
2. Remove the CMMU's (88200) from their protective packaging and carefully inspect them for bent pins. Notice that the four existing 88200's are all installed with the same orientation. The new 88200's must also be installed with the same orientation. Note that the 88100 CPU is installed with 180 degree rotation.
3. Make sure the guide pin on the CMMU aligns with the extra pin-socket on the upper left inside row.
4. Carefully insert the CMMU into the socket. Use the heel of the hand to rock the CMMU into the socket. Considerable force is required.

Replacing the CE Board

Refer back to Figure 2 while performing the following:

1. Place the top and bottom of the board in the rail slot.
2. *Carefully* push the center of the assembly inwards as far as possible while holding the ejectors in the horizontal position.
3. Grasp the front of the module frame for support, and *carefully* push the assembly inwards until the board is seated in the mother board socket.
4. Push the ejectors inward to finish seating the board.
5. Make sure that the ejectors are lined up vertically when the boards are seated.
6. Install the ejector retainer over the ejectors after the board assembly is seated.
7. Plug the power cord in and start up the system. System diagnostics report the number of CMMU's installed.

CAUTION

Do not attempt to remove the CPU or CMMU's without the proper extraction tool. While it is possible to use a pry bar and a metal plate of the proper size and thickness to distribute the force, an inexperienced technician will fracture the circuit board about 50% of the time.

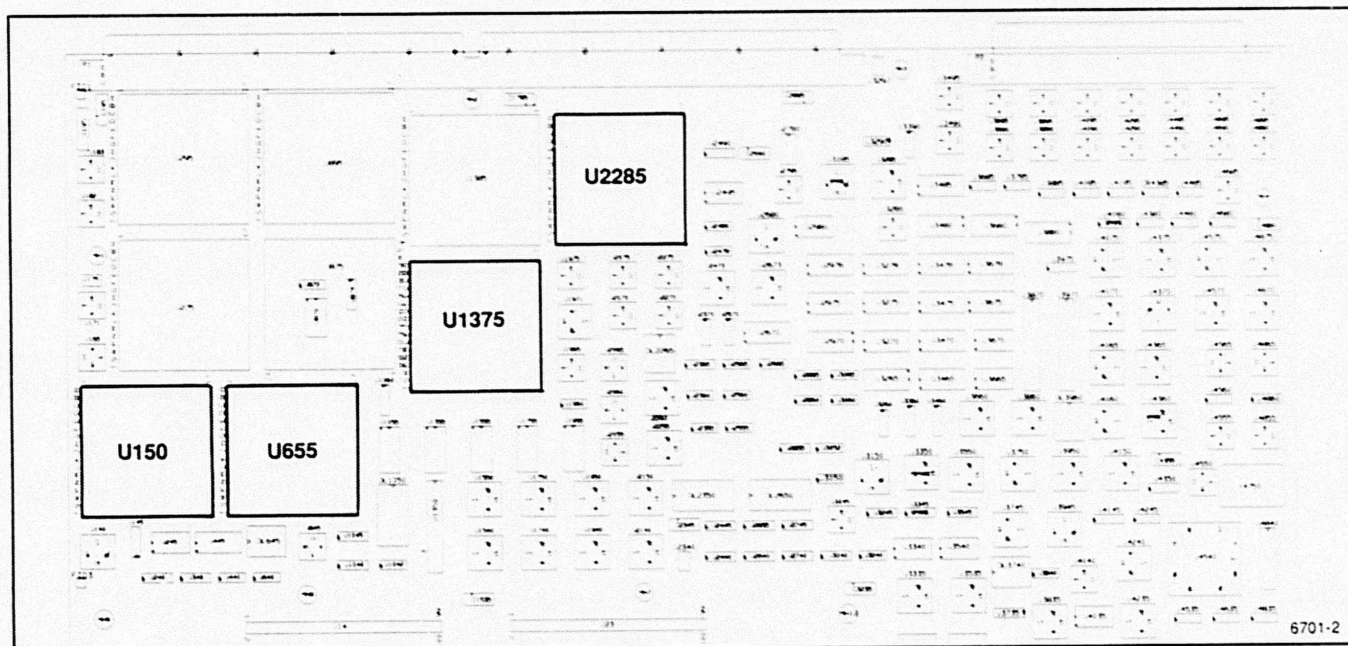


Figure -6. Installing Option F1U.