

# Pro-Flo<sup>®</sup> System — Digital Controller EPROM Upgrade

## 1. Introduction

See Figure 1. The EPROM chips are designed to upgrade your Pro-Flo system digital controller for expanded operation. The EPROM chips are available for the gun board and the CPU board. Each chip is labeled with its position designation number. Refer to Table 1 for chip designation numbers.

Table 1 Chip Designation Numbers

| Board Type | Designation Numbers |
|------------|---------------------|
| Gun        | U18, U19            |
| CPU        | U6, U7, U9, U13     |

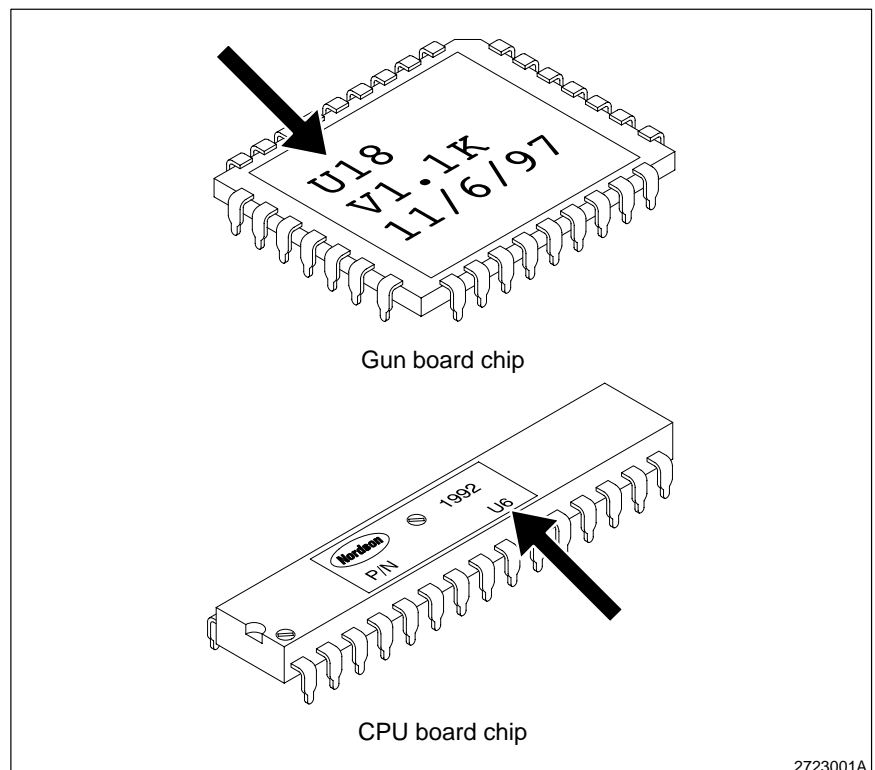


Fig. 1 Chip Designation Numbers

## 2. Removing the EPROM Chips

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See Figure 2. Use these procedures to remove the EPROM chips from the gun board or CPU board.

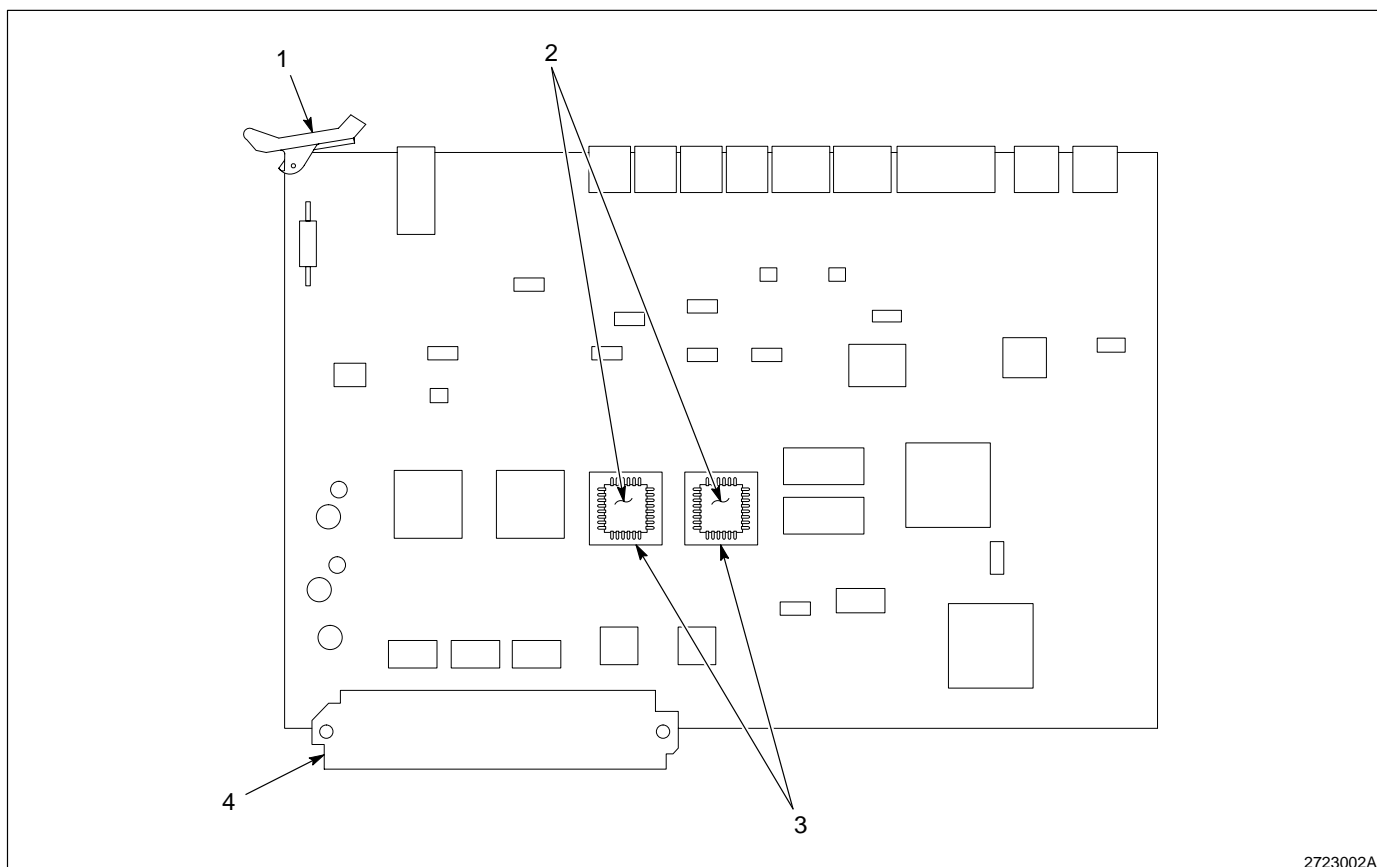


**WARNING:** Allow only qualified personnel with proper training to service the Pro-Flo system components and controller. Failure to observe this warning could expose the worker to hazardous electrical potentials, leading to component damage, possible injury, or death.

### Removing the Circuit Board

Follow these steps to remove the gun board or CPU board from the enclosure.

1. Remove all power from the enclosure and ensure the cabinet has been properly wired and grounded according to all applicable electrical codes.
2. Open the enclosure and remove the circuit board retaining strip at the base of the card cage assembly.
3. See Figures 2 or 3. Locate the gun board or CPU board using the following identifiers:
  - The gun board has nine connectors on the front edge
  - The CPU board has a large CONN2 on the upper edge of the board and three LEDs just below the CONN2 connector
4. Disconnect all the cables from the circuit board(s) and use the card ejector (1) to remove the circuit board(s) from the card cage.
5. Gently place the circuit board(s) on anti-static foam or a conductive surface. It is recommended that the technician also use a static discharge wrist strap to ground any charges in the body.
6. Locate the EPROM chips (2) in their receptacle sockets (3).
7. Remove the EPROM chips. Refer to *Chip Removal*.



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Fig. 2 Gun Board

1. Card ejector
2. EPROM chip

3. Receptacle socket

4. Backplane connector

### Removing the Circuit Board (contd)

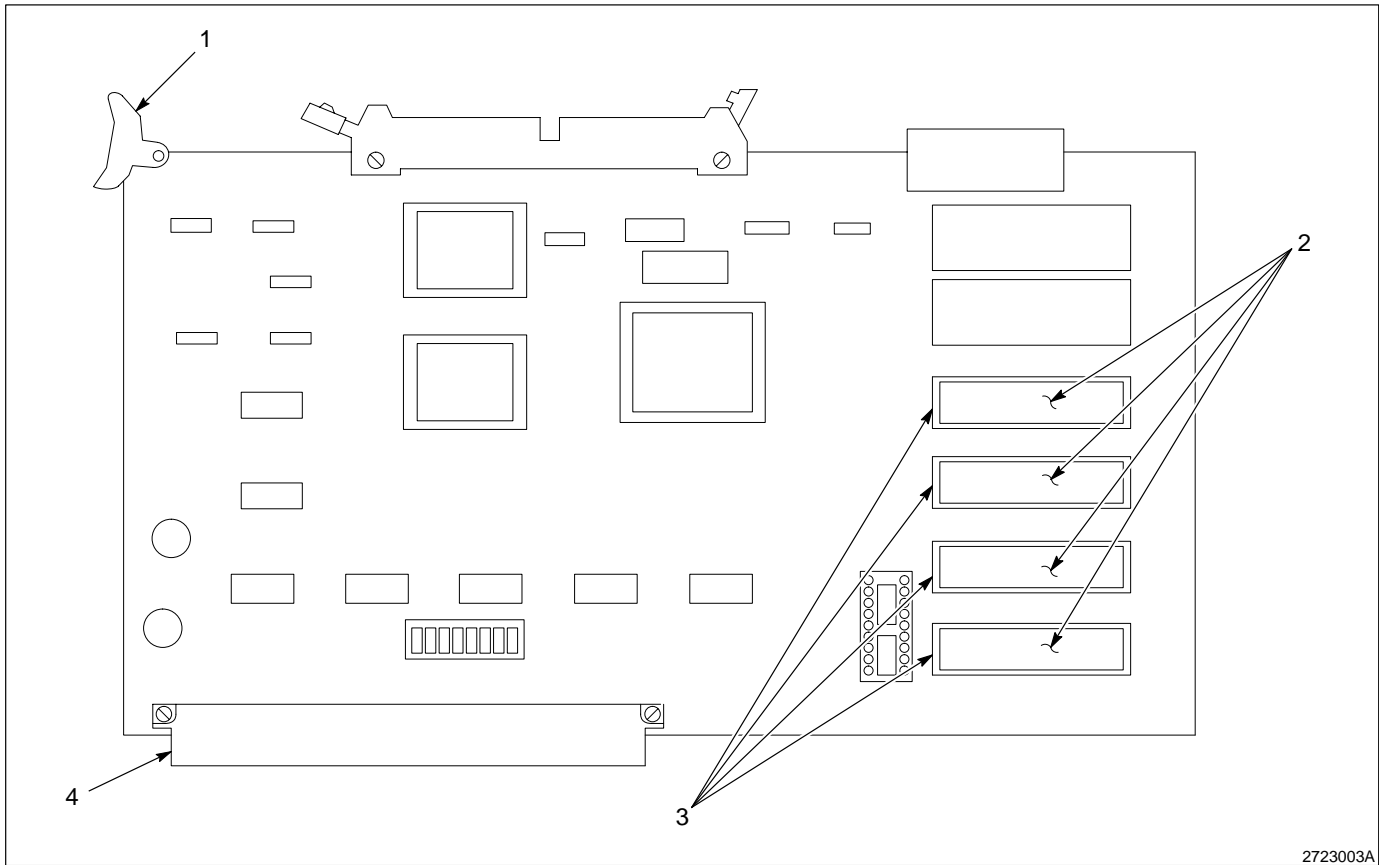


Fig. 3 CPU Board

- 1. Card ejector
- 2. EPROM chip

3. Receptacle socket

4. Backplane connector

### Chip Removal

Follow these steps to remove the EPROM chips from the gun board or circuit board.

### Gun Board

See Figure 4. Use the extraction tool, which is included with the EPROM upgrade kit to remove chips U18 and U19 from the gun board.

1. Insert the extraction tool (1) into one of the extraction slots (2) of the receptacle socket (3). These are located diagonally from each other and are wider than the other two corners.

2. Gently pry up the chip (4) to release it from the socket.

**NOTE:** It may be necessary to pry up the chip from both extraction slots.

3. Repeat these steps to remove the second EPROM chip and discard.

4. Install new EPROM chips into the sockets. Refer to *Installing the EPROM Chips*.

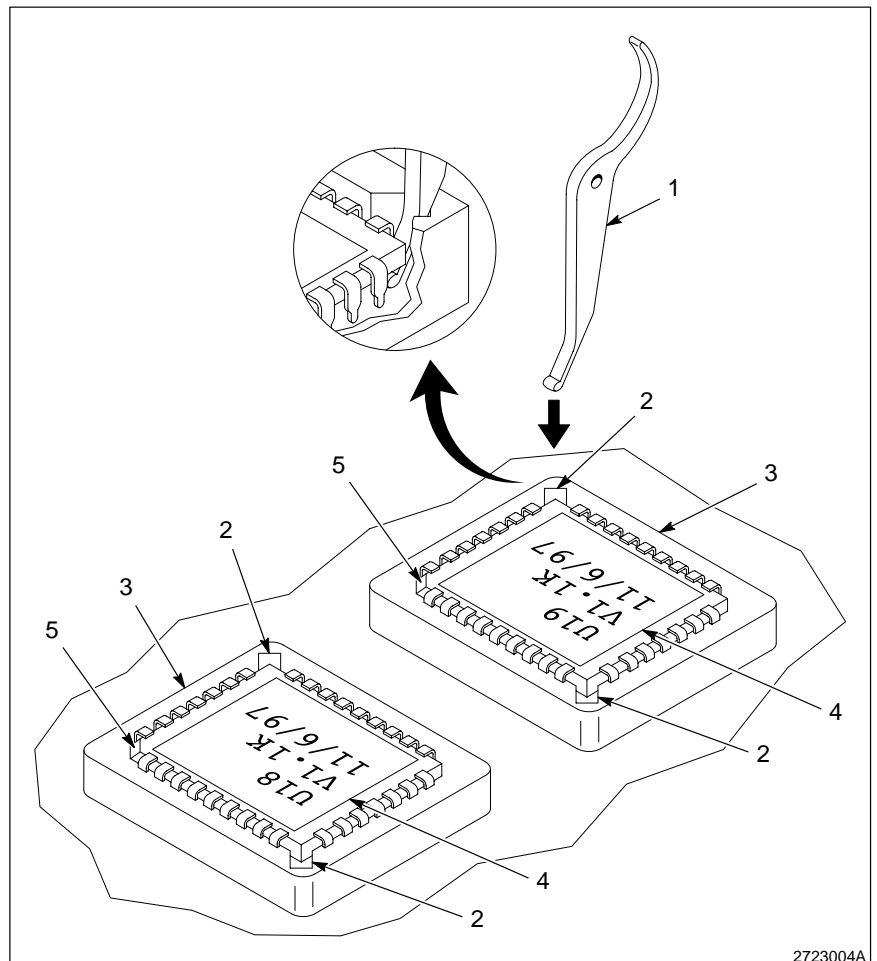


Fig. 4 Removing the Gun Board Chips

- |                      |                   |
|----------------------|-------------------|
| 1. Extraction tool   | 4. EPROM chip     |
| 2. Extraction slot   | 5. Beveled corner |
| 3. Receptacle socket |                   |

### CPU Board

Use the chip removal tool to remove chips U6, U7, U9, and U13 from the CPU board. The chip removal tool is not included with the EPROM upgrade kit.

**NOTE:** If a chip removal tool is not available use a small screwdriver and gradually pry up each end of the chips.

**NOTE:** Before removing the chips from the CPU board, verify that the RAM chips U16 and U18 have been upgraded to 32-pin devices. If U16 and U18 are 28-pin devices, there will be two labeled chips for this upgrade. If an upgrade is required, these two chips are replaced in the same manner as the U6, U7, U9, and U13 chips.

Steps 1–4 of this procedure refer to the callouts in Figure 5.

1. Position the chip removal tool directly over the chip.
2. Press the chip removal tool into place
3. Lift the handle on the chip removal tool to grasp the chip.
4. Lift the entire chip removal tool to remove the chip.
5. Repeat this procedure until all four chips are removed from the CPU board.
6. After each of the four chips has been removed, check each receptacle on the board to make sure that no legs from the chips remain in any of the sockets.

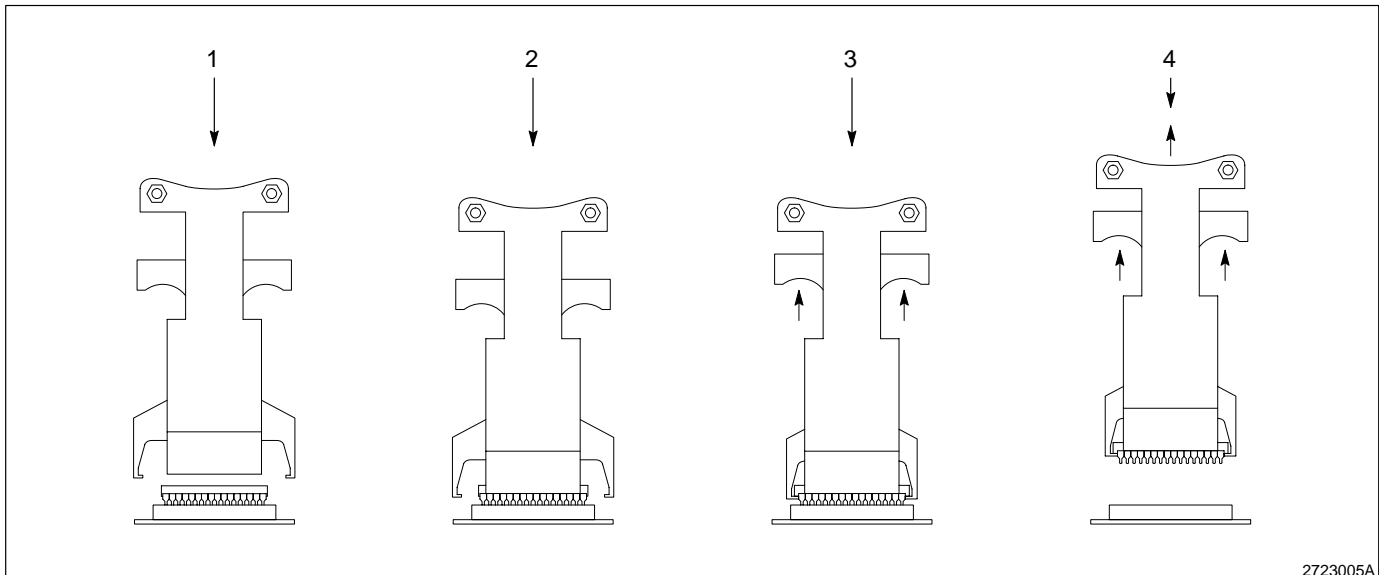


Fig. 5 Removing the CPU Board Chips

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### 3. Installing the EPROM Chips

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Use these procedures to install the EPROM chips on the gun board or CPU board.

#### Gun Board

See Figure 4. Use these steps to install the EPROM chips onto the gun board.

1. Be sure that the number on the EPROM chip (4) matches that of the receptacle socket (3).



**CAUTION:** If the beveled corners on the socket and the EPROM chip are not aligned when the chip is put in place, the chip will be ruined when power is restored.

2. Place the EPROM chip onto the receptacle socket so that the beveled corner (5) on the chip and the beveled corner on the receptacle socket (3) are aligned.
3. Gently push the chip with your thumb until the chip is fully seated.

**NOTE:** The surface of the chip should be slightly below the surface of the receptacle socket when the chip is fully seated.

**NOTE:** If the chip will not seat fully, stop and verify that the chip is properly aligned with the receptacle socket.

4. Repeat these steps until both chips are firmly seated in their sockets. Replace the gun board in the enclosure. Refer to *Installing the Circuit Board*.

#### CPU Board

A chip installation tool is available to install the EPROM chips onto the CPU board. This chip installation tool is not included with the EPROM upgrade kit. The following procedures explain how to install the new chips with the installation tool or without the installation tool.

Properly align each chip before you press it onto the CPU board. Each chip has a slot or small notch that corresponds to a respective notch on the board receptacle.

**With the Chip Installation Tool**

**NOTE:** Steps 1–4 of this procedure refers to the callouts in Figure 6.

1. Place the EPROM chip into the chip installation tool.
2. Align the chip with the receptacle socket.
3. Press the chip into place on the CPU board.
4. Release the chip onto the CPU board by pressing the button on the top of the chip installation tool.
5. Repeat these steps until all chips are firmly seated in their respective receptacle sockets. Replace the CPU board into the enclosure. Refer to *Installing the Circuit Board*.

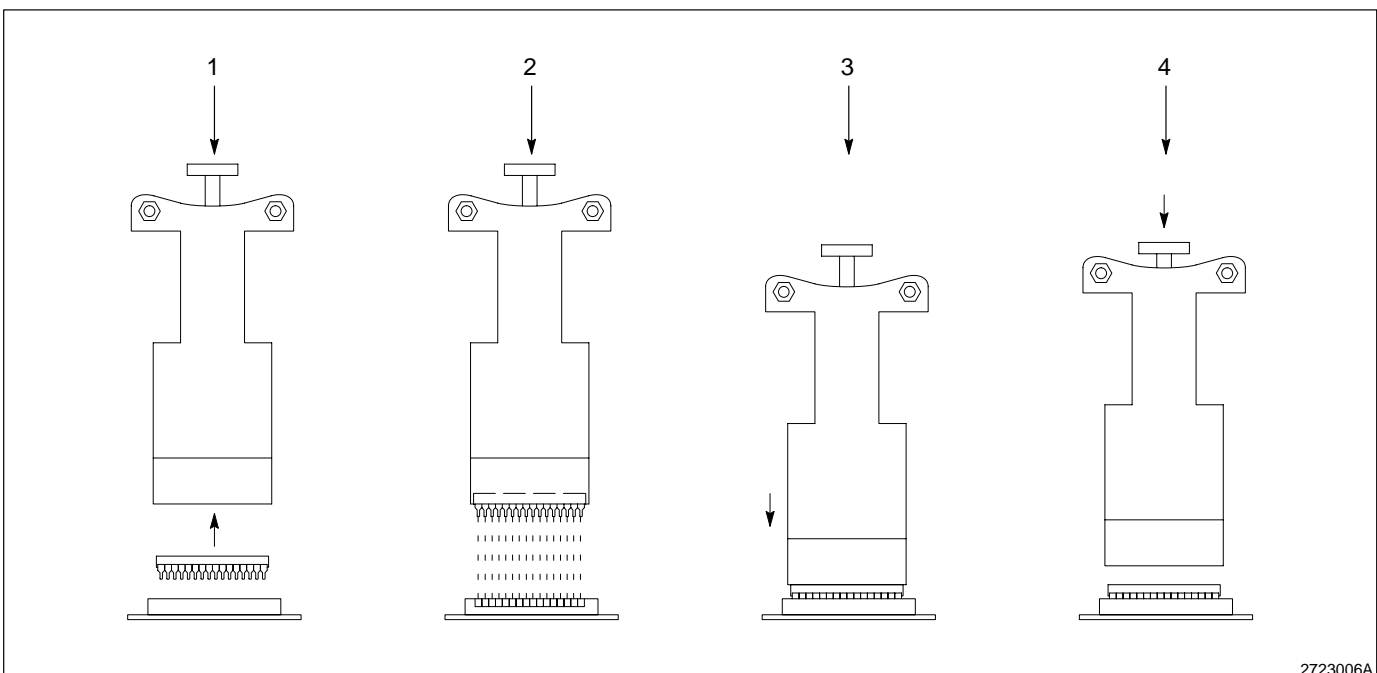


Fig. 6 Installing CPU Board Chips with the Installation Tool



**Without the Chip Installation Tool**

1. See Figure 7. Make sure the chip notch (1) and the receptacle notch (4) are aligned. Position the legs of one side of the EPROM chip (2) against that side of the receptacle socket (3).
2. Gently push against that side of the chip until the legs of the opposite side start to enter their sockets.
3. Check to make sure all legs of the chip are seated in their socket holes. If they are bent, remove the chip, straighten the leg and repeat step 2.
4. When all the legs are beginning to seat properly, push down on the chip until it is firmly seated in the receptacle socket.
5. Repeat these steps until all chips are firmly seated in their receptacle sockets. Replace the CPU board into the enclosure. Refer to *Installing the Circuit Board*.

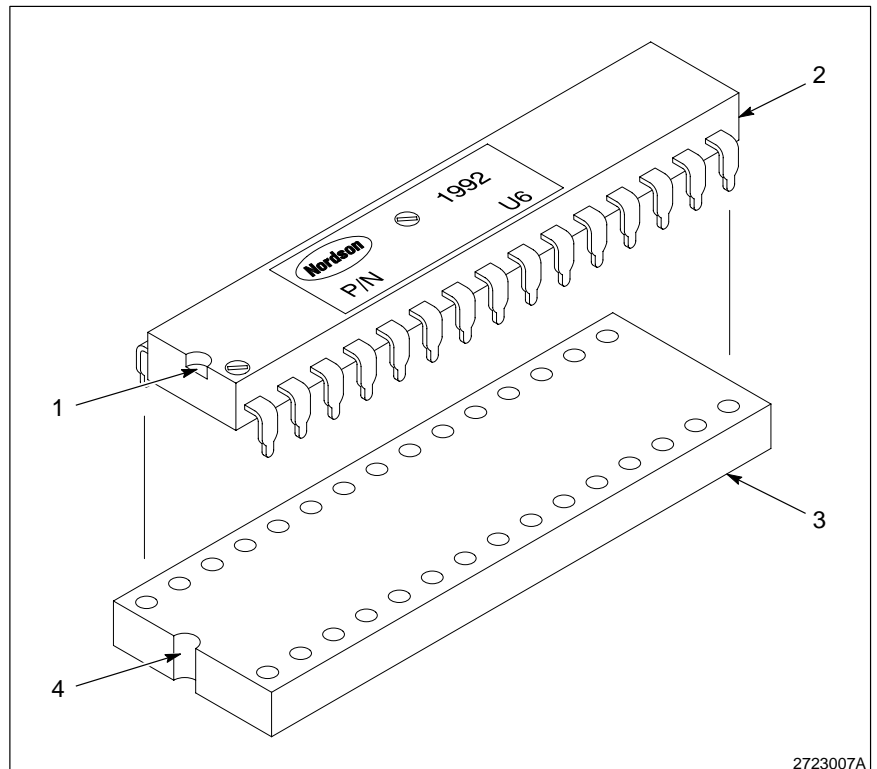


Fig. 7 Installing the CPU Board Chip Without the Chip Installation Tool

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|---------------|----------------------|
| 1. Chip notch | 3. Receptacle socket |
| 2. EPROM chip | 4. Receptacle notch  |

### **Installing the Circuit Board**

Use this procedure to install the gun board and the CPU board into the enclosure.

1. Install the circuit board(s) into the card cage and press in place until it is fully seated with the backplane connector.
2. Connect all cables to the circuit board(s).
3. Install the circuit board retaining strip at the base of the card cage assembly.
4. Close the enclosure door and restore power to the unit. The operator will be prompted to press **ENTER** on the controller so the previous defaults will be loaded.

**NOTE:** If the controller does not power up properly, check the chips for proper orientation and installation, and damage. If proper power up still does not occur, contact your Nordson service representative for assistance.