

**MOTION CONTROL ENGINEERING, INC.**

**11354 WHITE ROCK ROAD**

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*CAR CONTROLLER  
MAIN PROCESSOR BOARD*

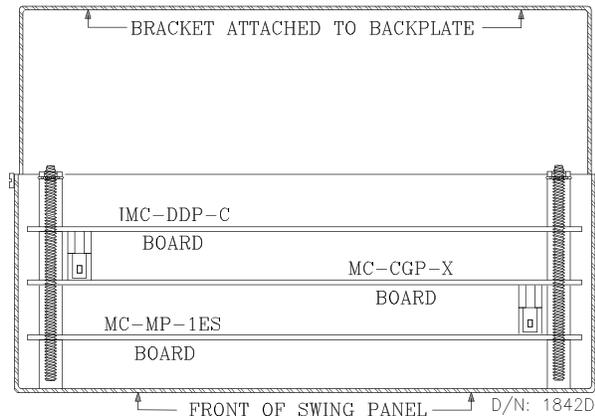
## **EPROM REPLACEMENT INSTRUCTIONS**



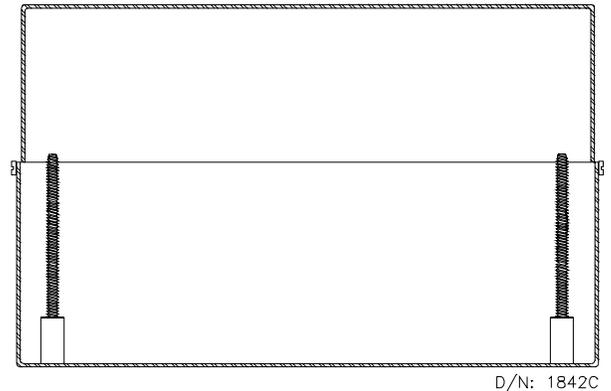
# CAR CONTROLLER MANUAL - APPENDIX A

## DISASSEMBLING THE COMPUTER SWING PANEL

**FIGURE A.1 Computer Swing Panel With Boards (Top View)**



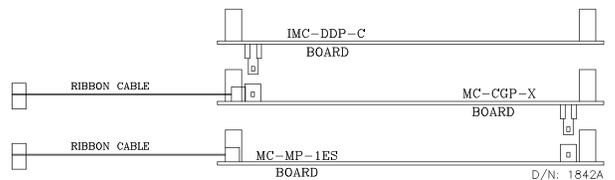
**FIGURE A.2 Computer Swing Panel Without Boards (Top View)**



**FIGURE A.3 Computer Swing Panel Boards Boards(Snapped Together)**

MCE Technical Support may advise an installer to remove a circuit board for troubleshooting reasons. If so, remove the thumbscrew holding the Swing Panel to the bracket on the back plate. Lower the Swing Panel so that it faces down.

**FIGURE A.4 Computer Swing Panel (Unsnapped)**



With the back of the Swing Panel facing up, loosen and remove the four nuts securing the back cover plate. This may require the use of a 11/32 nut driver.



**CAUTION:** Components on the PC boards can be damaged by ESD. Install a grounding strap on your wrist and connect it to ground before handling the PC boards.

Disconnect the 60 pin ribbon cable from the connector on the IMC-MB board in the IMC-Sxx drive. Disconnect the 20 pin ribbon cables from the HC-PIO and MC-RS boards.

Remove the circuit boards from the Swing Panel. Put the nuts back on the bolts for safekeeping.

Unsnap the boards from each other and replace/repair the boards as necessary.

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# CAR CONTROLLER MANUAL - APPENDIX B

## CHANGING PC BOARDS, EPROMS OR MICROCONTROLLERS

With directions from MCE Technical Support, a PC board, EPROMs or Microcontroller may need to be reinstalled in the field. Great care should be taken when changing any of these items. The EPROM stores the computer program, the microcontroller both stores and executes the program and all three are subject to damage by ESD (see CAUTION). These instructions should be followed step-by-step.



**CAUTION:** Components on the PC boards can be damaged by ESD. Install a grounding strap on your wrist and connect it to ground before handling the PC boards.

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### 1.0 REPLACING THE MC-MP-1ES BOARD OR EPROM

Normally the microprocessor on the MC-MP-1ES board is not replaced in the field. Sometimes the EPROM is replaced to upgrade the program and occasionally the complete board must be replaced due to a component failure.

**Replacing the EPROM** - The EPROM for the MC-MP-1ES board is labeled S-MP-xx-1. The “xx” represents the controller type. If the new EPROM has the same job number “fingerprint” as the old EPROM, the user settings for timers and adjustable control variables, etc., are retained. Any new timers or variables added to the new EPROM will be set to their default values.

If the job number fingerprint on the new EPROM is different from the job number fingerprint on the old EPROM, all of the timers and variables will be set to their default values. The user settings should be documented before the old EPROM is removed so that they can be re-entered when the new EPROM is installed.

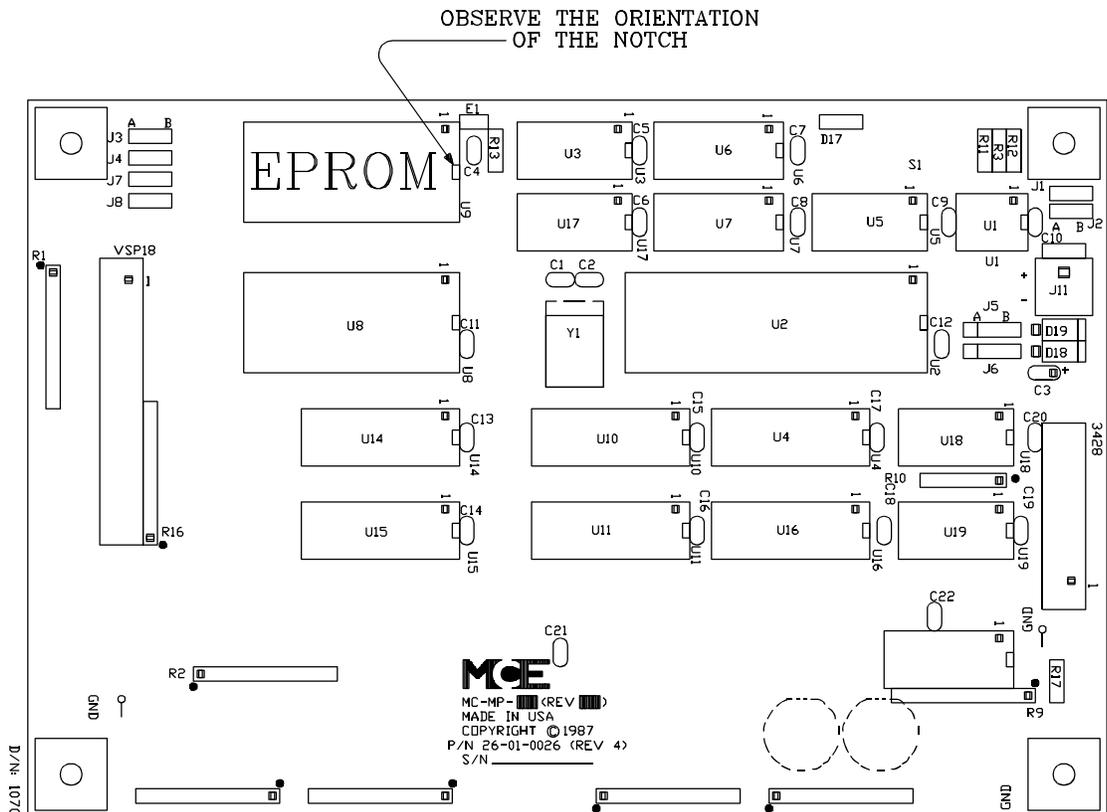
**Replacing the MC-MP-1ES board** - The user settings for timer and adjustable control variables are stored in battery backed RAM on the MC-MP-1ES board. If the new board was previously installed in another car controller, the user settings from that car will be retained. If the new board is a replacement from MCE, all of the user programmable values will be set to their default values. Therefore, the current user settings should be documented before the old board is removed so that they can be re-entered when the new board is installed. The following is a list of the user settings:

- Elevator Timers (see Section 5.2.4)
- Processor Clock Flags (see Section 5.2.5)
- Communications Port Settings (see Section 5.4.1)
- Security Codes (see Section 5.4.2)
- Master Software Key (MSK) (see Section 5.4.4)
- Software Options - Adjustable Control Variables (see Section 5.4.5)
- Learned values for the Load Weigher - if a load weigher is used for dispatching, the Load Weigher Learn Operation must be performed (see Section 5.4.6)

## Replacement Procedure

1. Document the current settings for the items listed above.
2. Turn power OFF at the main disconnect and verify that no lights are operating on the microprocessor panel. Install a grounding strap on your wrist and connect it to ground before handling the PC boards.
3. Remove the MC-MP-1ES board from the Swing Panel. Refer to Appendix A for instructions on unloading the boards from the Swing Panel. If you are replacing the PC board, proceed to step 6 below.
4. Using a small, thin-bladed screwdriver, place the tip between the EPROM chip and its socket, *not* between the socket and the board (see Figure A.5). Gently pry the existing EPROM out from the socket. Do this very slowly, taking care not to bend the leads. If they become bent, straighten them carefully with a needlenose pliers.

**FIGURE A.5 EPROM Location on the Main Processor Board (MC-MP-1ES)**



5. Place the new EPROM lightly (do not plug it in yet) into the socket and check to see that all pins are aligned with their corresponding holes in the socket. Also make sure that the notch on the end of the EPROM is correctly aligned with the notch on the socket (the orientation of the notch should also correspond to the notches on all of the other chips on the board). Now push the EPROM firmly into the socket and make sure that *none* of the pins are bent during the insertion. Inspect the EPROM to make sure that no pins are bent outward or under the EPROM.
6. Reassemble the Swing Panel assembly and close the Swing Panel. Refer to the instructions in Appendix A.

7. Turn power ON at the main disconnect. Verify the proper operation of all boards by inspecting the diagnostic indicators and Computer ON LEDs on the individual processor boards.
  - If the Computer ON LEDs are not illuminated on all three boards, the EPROMs may not have been installed properly. Repeat the above steps 2 through 7.
8. Re-enter the user settings documented in step 1 above.