
INSTALLATION INSTRUCTIONS

Original Issue Date: **2/00**

Model: **340 Generator Set Controller and Power Monitor**

Market: **Industrial**

Subject: **Display Circuit Board Kit GM13616**

Introduction

This kit covers the installation of the display circuit board. The kit also includes a 28-pin integrated circuit (IC) chip that requires installation on the unit's circuit board. The kit includes both IC chips for the following:

- Install IC chip part number 352252 on the 340 controller A-352162 circuit board

or

- Install IC chip part number 353386 on the power monitor A-353308 circuit board

Read the entire installation procedure and compare the kit parts with the parts list at the end of this publication before beginning installation. Perform the steps in the order shown.

See Figure 1 for an illustration of the installed display circuit board GM41780.

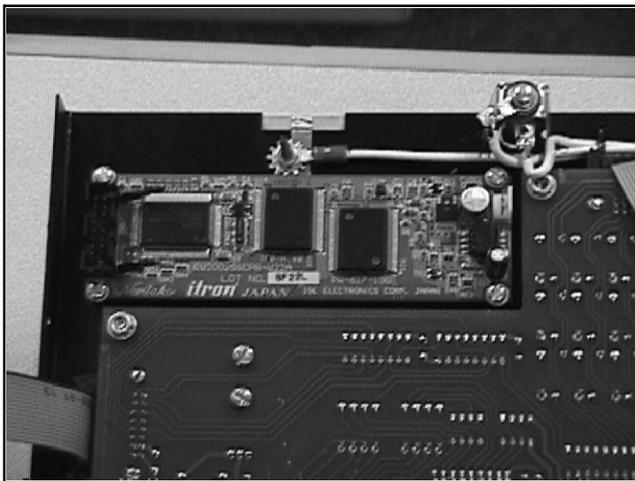


Figure 1 Display Circuit Board (340 Controller)

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

Electrostatic discharge damage. Electrostatic discharge (ESD) damages electronic circuit boards. Prevent electrostatic discharge damage by wearing an approved grounding wrist strap when handling electronic circuit boards or integrated circuits. An approved grounding wrist strap provides a high resistance (about 1 megohm), *not a direct short*, to ground.

Circuit Board and Electronic Component Handling

Improper removal, installation, transportation, or storage can damage circuit boards containing sensitive electronic components. Observe the following guidelines when working with circuit boards or electronic components to avoid damage.

- Store circuit boards or electronic components until installation in the antistatic, cushioned factory packaging in a clean environment away from moisture, vibration, static electricity, corrosive chemicals, solvents, and fumes.
- Disconnect all power sources to the controller before removing or installing circuit boards or electronic components.
- Wear an approved, grounded, antistatic wrist strap when handling circuit boards or electronic components.
- Carefully hold the circuit board by its edges and not by any of its components or electrical contacts.
- Do not bend or drop the circuit board or electronic components. Do not bend electronic components or leads.
- Do not strike the circuit board or electronic components with or against a hard object.
- Clean a dusty or dirty circuit board with a vacuum cleaner or soft brush.
- Except for the replacement of plug-in service parts, never attempt circuit board repairs or modifications.

340 Controller Display Installation Procedure

- 1. Remove the generator set from service.**
 - 1.1 Place the generator set master switch in the OFF position.
 - 1.2 Disconnect the power to the battery charger, if equipped.
 - 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.
- 2. Access the controller.**
 - 2.1 Remove the five screws holding the top cover of the controller. Remove the cover.
 - 2.2 Remove the upper screws (2) on each side of the controller that hold the front panel to the controller.
 - 2.3 Remove the bottom-center screw holding the front panel to the bottom of the controller.
 - 2.4 Loosen the remaining screws (2) on each side of the controller to allow the panel to tip away from the controller for the display board installation. See Figure 2.

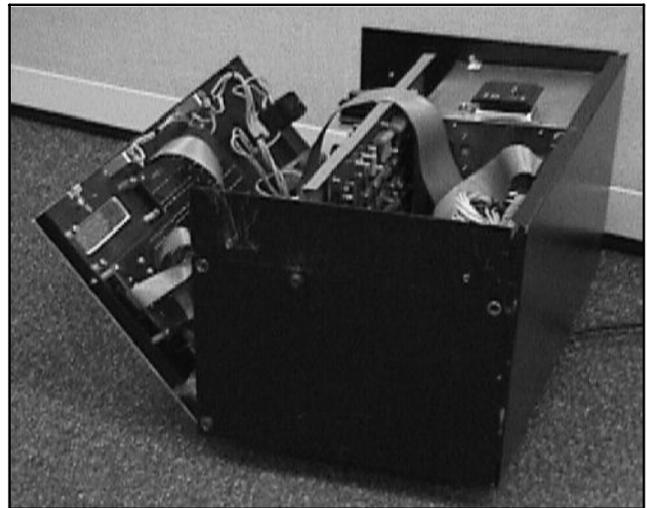


Figure 2 Front Panel Access

3. Replace the display circuit board.

- 3.1 Read and understand guidelines given in Circuit Board and Electronic Component Handling.
- 3.2 Disconnect the ribbon connector at the display circuit board by releasing the hold-down clips and pulling the ribbon connector from the socket.
- 3.3 Locate the four threaded standoffs (mounting studs or posts) in the upper right corner of the front panel. Remove the display circuit board by removing the screws, metal washers, and insulating rubber washers.

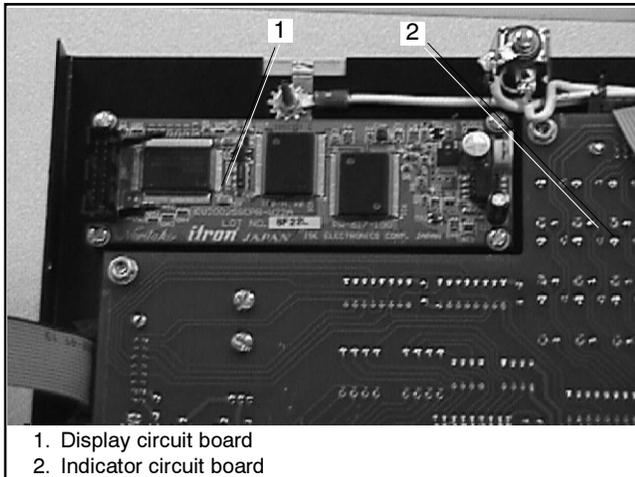


Figure 3 Display Circuit Board (340 Controller)

- 3.4 Position the new display circuit board with the ribbon cable socket located toward the outside edge of the front panel. See Figure 3.
- 3.5 Align the slotted holes in the display circuit board with the threaded standoffs.
- 3.6 Install the four screws with the metal washer placed on the screw first and then the insulating rubber washer second so that when the screw is installed, the rubber washer will make contact with the display circuit board.
- 3.7 Tighten the four display circuit board screws.

4. Connect the display circuit board cable.

- 4.1 Locate the ribbon cable connector attached to the indicator circuit board and insert the ribbon cable connector into the display circuit board socket.

Note: The connector is keyed so that it will only fit in the connector port one way.

- 4.2 Press down on the ribbon cable connector until it is seated into the socket and secure using the hold-down clips.

5. Replace the IC chip.

- 5.1 Locate the main logic circuit board in the 340 controller. See Figure 4.

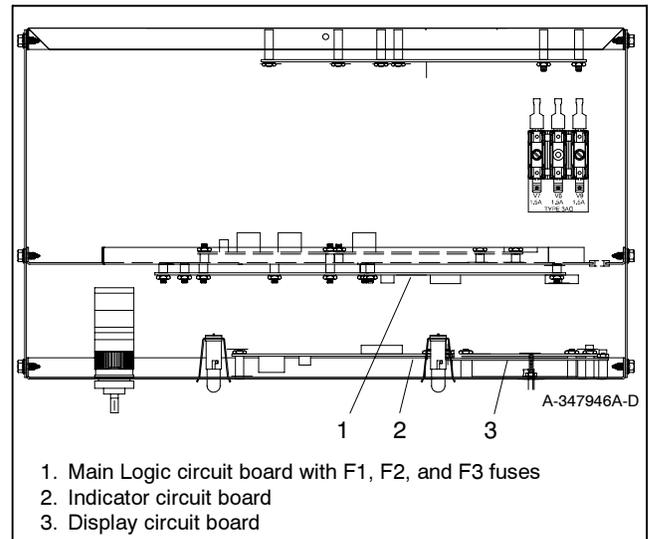


Figure 4 Controller Circuit Boards, Top View

- 5.2 Locate IC chip U14 on the main logic circuit board. See Figure 5.

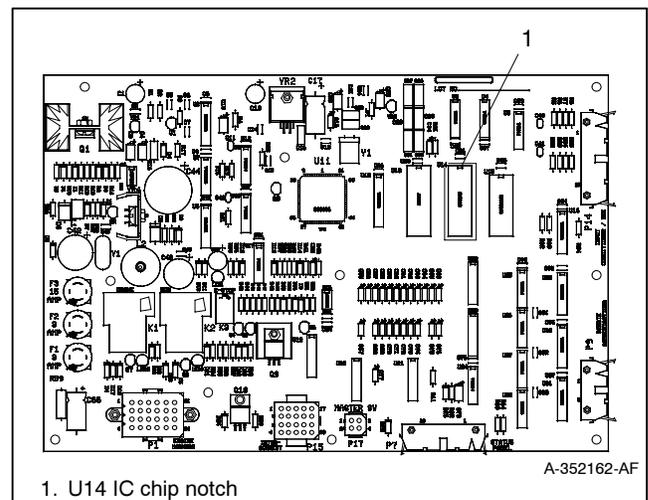


Figure 5 Main Logic Controller IC Chip

- 5.3 Note the position of the notch in the IC chip. Carefully pry up the IC chip. If necessary, use a small non-magnetic screwdriver.
- 5.4 Select IC chip 352252 in the kit. Discard the original IC chip on the main logic circuit board and the remaining IC chip in the kit.
- 5.5 Place IC chip 352252 with the notch in the same position as the original, and carefully align the IC chip pins with the circuit board socket. Press the IC chip firmly in the socket.

6. Reinstall the panels.

6.1 Position the front panel to its normal location and secure it by installing and tightening all of the front panel screws.

6.2 Place the cover on the controller and fasten it in place with the five cover screws.

7. Restore the generator set to service.

7.1 Check that the generator set master switch is in the OFF position.

7.2 Reconnect the generator set engine starting battery, negative (-) lead last.

7.3 Reconnect power to the battery charger, if equipped.

7.4 Verify that the display is operational and continue with the generator set startup procedure.

Power Monitor Display Installation Procedure

8. Remove the power monitor from service.

8.1 Disconnect power source to the power monitor.

Disconnect the generator set engine starting battery(ies), negative (-) lead first.

or

Open the AC power circuit breaker.

9. Access the power monitor enclosure.

9.1 Remove the power monitor access front panel screws. See Figure 6.

9.2 Open the power monitor front panel. See Figure 7.

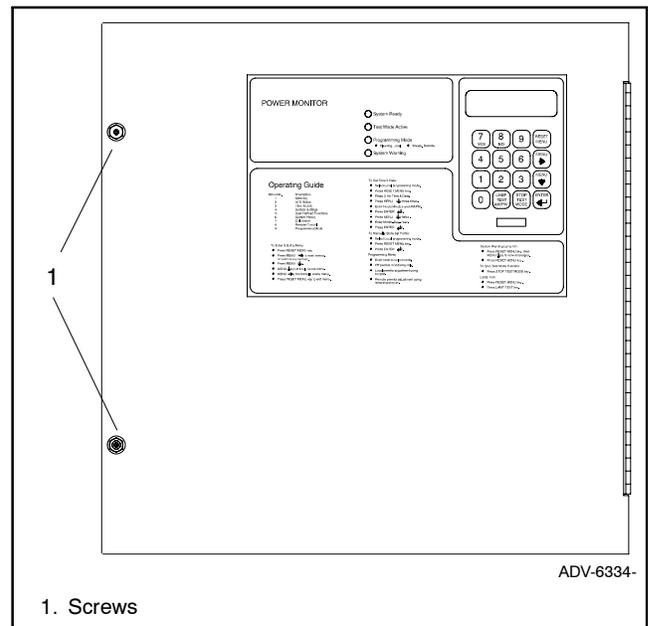


Figure 6 Power Monitor Enclosure Access

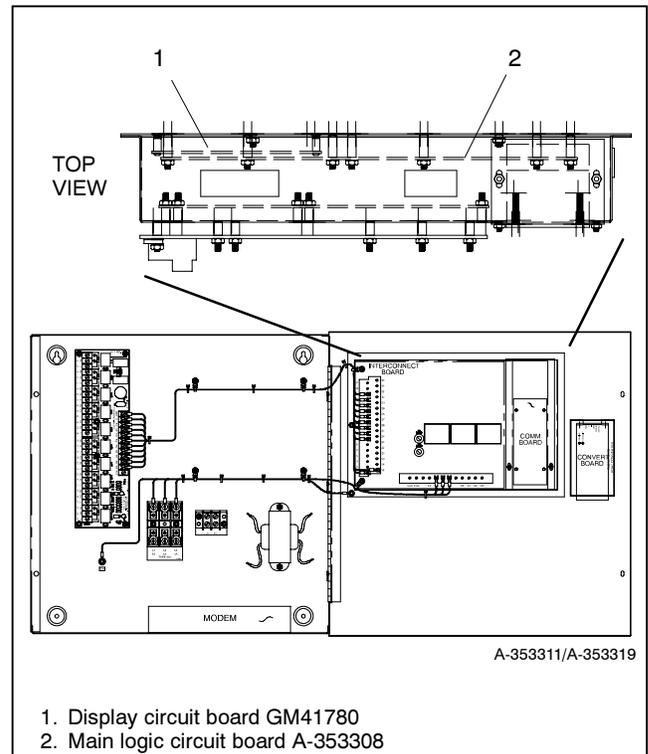


Figure 7 Power Monitor Inside Components

10. Replace the display circuit board.

- 10.1 Read and understand the guidelines given in Circuit Board and Electronic Component Handling.
- 10.2 Disconnect the ribbon connector at the display circuit board by releasing the hold-down clips and pulling the ribbon connector from the socket.
- 10.3 Locate the four threaded standoffs (mounting studs or posts) in the upper right corner of the front panel. Remove the screws, metal washers, and insulating rubber washers used to mount the display circuit board.
- 10.4 Position the new display circuit board with the ribbon cable connection port located toward the outside edge of the front panel.
- 10.5 Align the slotted holes in the display board with the threaded standoffs.
- 10.6 Install the four screws with the metal washer placed on the screw first and then the insulating rubber washer second so that when the screw is installed, the rubber washer will make contact with the display circuit board.
- 10.7 Tighten the four display circuit board screws.

11. Connect the display circuit board cable.

- 11.1 Locate the ribbon cable connector attached to the main logic circuit board and insert the ribbon cable connector into the display circuit board socket.

Note: The connector is keyed so that it will only fit in the connector port one way.

- 11.2 Press down on the ribbon cable connector until it is seated into the socket and secure using the hold-down clips.

12. Replace the IC chip.

- 12.1 Locate the main logic circuit board in the power monitor enclosure. See Figure 7.
- 12.2 Locate IC chip U12 on the main logic circuit board. See Figure 8.
- 12.3 Note the position of the notch in the IC chip. Carefully pry up the IC chip. If necessary, use a small nonmagnetic screwdriver.
- 12.4 Select IC chip 353386 in the kit. Discard the original IC chip on the main logic board and the remaining IC chip in the kit.

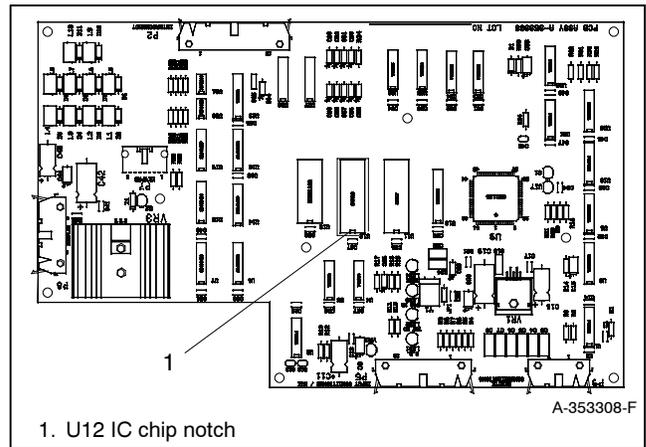


Figure 8 Power Monitor IC Chip Location and Orientation

- 12.5 Place IC chip 353386 with the notch in the same position as the original and carefully align the IC chip pins with the circuit board socket. Press the IC chip firmly in the socket.

13. Reinstall the power monitor front panel.

- 13.1 Close the power monitor front panel and install the screws.

14. Restore the power monitor to service.

- 14.1 Connect the power source to the power monitor.

Connect the generator set engine starting battery(ies), negative (-) lead first.

or

Close the AC power circuit breaker.

- 14.2 Verify that the display is operational and continue with the generator set startup procedure.

Parts List

Display Circuit Board Kit

Parts List		
Kit: GM13616		
Qty.	Description	Part Number
1	Display circuit board	GM41780
1	28-pin IC (for 340 controller A-352162 circuit board)	352252
1	28-pin IC (for power monitor A-353308 circuit board)	353386

