

Checkout Procedure

General

This procedure tests the functions of the monitor. For the Tram module and input module checkout procedures, refer to their appropriate service manuals.

Required Tools/Special Equipment

See the chart below for the equipment necessary to perform this checkout procedure. Equivalent equipment may be substituted.

| Item | Manufacturer and Part Number/Model |
|---------------------------------------|--|
| Tram 100-851N module | GE Medical Systems <i>Information Technologies</i> ; any model |
| Multifunctional Micro-simulator | MARQ-1 |
| Oscilloscope | Tektronix 2215 |
| External power supply for the monitor | PN 2012183-001 |
| Known good battery | PN 419068-004 |

Monitor Power-up Tests

1. Remove all batteries and unplug the monitor from the AC power source to turn the monitor off.
2. Restore the batteries to the monitor and plug the monitor into the AC power source to turn the monitor on.
3. Verify the monitor turns on and verify the DC power indicator is illuminated.
4. Verify all of the front panel indicators illuminate on power up.
5. Verify the DC power indicator on the monitor stays illuminated.

NOTE

If the DC power indicator stays on, but the screen is blank, the monitor is likely in “standby mode” (battery charging). Press and hold the **POWER** button for approximately 0.25 seconds to enter the normal mode.

- ◆ If the DC power indicator is on, continue with the tests.
 - ◆ If either of the **CHARGING STATUS** indicators is yellow, wait for the batteries to fully charge and the indicators to illuminate green. The batteries may require up to four hours to charge.
 - ◆ If the battery “fuel gauge” displays the word “ERROR,” the battery may be asleep. Refer to “[Battery Error Message](#)” on [page 5-23](#).
6. Verify an audio “Beep” tone sounds at the end of Boot up.
 7. Verify the operation of the **Trim Knob** control.
 - a. Rotate the **Trim Knob** control to scroll through several menus.
 - b. Press the **Trim Knob** control on a menu option to verify the menu is selectable.
 8. Verify the operation of the control keys.
 - ◆ Verify that an audio “Beep” tone sounds after each front panel key is pressed.
 9. Check battery power for both batteries.
 - a. Unplug the monitor from the AC power source. Verify one LED in the battery compartment is on (batteries must have more than 10% charge).
 - b. Pull that battery out and verify the other LED illuminates, thus indicating the unit is powered by the other battery.
 - c. Reinstall battery and plug the monitor into an AC power source.

Battery Tests

Function Test

1. Disconnect the power cord plug from the electrical power outlet.
2. Verify the **BATTERY** power indicator illuminates. This indicates operation from the monitor's battery power.
3. Insert a Tram module into the Tram chute.
4. Connect the Tram communication cable to the Transport Pro monitor and verify an ECG parameter box is displayed on the monitor screen. This indicates the Tram module can be run from battery power.
5. Connect the power cord plug to the electrical power outlet.
6. Verify the DC power indicator illuminates. This indicates the monitor is operating from the AC power source.
7. Verify the **CHARGING STATUS** indicator illuminates for a few minutes.
 - ◆ An amber glow indicates the monitor battery is charging.
 - ◆ A green glow indicates the monitor batteries are fully charged.

Real-time Battery Status

Use the monitor's Battery Service window to verify the operating condition of the battery.

1. Access the Service Mode menu starting from the Main menu.
 - a. Select *MORE MENUS > MONITOR SETUP > SERVICE MODE*.
 - b. Enter the password using the **Trim Knob** control to select the day and month from monitor screen with leading zeros. (e.g. July 4 = 0407).
2. Select *BATTERY SERVICE* to display the Battery Service window and review the battery data.

| BATTERY SERVICE | | |
|-------------------------|-------------|-------------|
| | BATTERY A | BATTERY B |
| MANUFACTURER NAME: | NPC | NME |
| DATE OF MANUFACTURE: | 10-FEB-2003 | 31-MAR-1999 |
| BATTERY CHEMISTRY: | LION | LION |
| SERIAL NUMBER: | 42661 | 335 |
| DESIGN CAPACITY (mAh): | 3800 | 3900 |
| FULL CAPACITY (mAh): | 3885 | 0 |
| PRESENT CAPACITY (mAh): | 2601 | 0 |
| AVERAGE CURRENT (mA): | -1081 | 0 |
| AVERAGE VOLTAGE (mV): | 11296 | 11572 |
| TEMPERATURE (°C): | 27.5 | 26.8 |
| TEMPERATURE OK: | YES | YES |
| CHARGE LEVEL (%): | 67 | 100 |
| CYCLE COUNT: | 1 | 86 |
| NEEDS CONDITION: | NO | YES |
| TIME TO EMPTY (H:M): | 02:18 | LOW |
| TIME TO FULL (H:M): | n/a | n/a |

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3. If necessary, condition the battery. See [“How to Condition the Battery”](#) on page 4-13.

Display Tests

Video Test Screens

1. Activate the Boot Loader program as follows:
 - a. Hold down **NBP GO/STOP** and **ZERO ALL** on the front panel.
 - b. Press and release the **Trim Knob** control.
 - c. Keep holding **NBP GO/STOP** and **ZERO ALL** until the Boot Loader information appears on the display.
2. From the Service Menu, select *Video Test Screens*.
3. Select and test each screen:
 - ◆ White Screen.
 - ◆ Red Screen.
 - ◆ Blue Screen.
 - ◆ Green Screen.
 - ◆ Vertical Bars.
4. Select Exit to exit Video Test Screens.
5. Manually reboot the monitor to exit the Boot Loader program.
 - a. Hold down the **NBP GO/STOP** and **ZERO ALL**.
 - b. Press and release the **Trim Knob** control.
 - c. Release **NBP GO/STOP** and **ZERO ALL**.

Brightness Level Test

1. Select *MORE MENUS > MONITOR SETUP > BRIGHTNESS*.
2. Verify the display brightness changes when setting the brightness level from 100% to 10%. Reset the brightness level to your default setting.

Speaker Test

1. Change the alarm volume of the monitor to 100%.
 - ◆ Select *MORE MENUS > ALARM CONTROL > ALARM VOL.:* to display the volume settings popup menu.
2. Verify the speaker volume of the monitor changes accordingly.
3. Return the volume of the monitor to the level it was previously set to, before you changed it for this test.

Tram Module Communication Test

Complete the following steps in the order presented. Failure to attain any of the listed results indicates a malfunction.

1. Confirm that all components of the monitoring system are correctly connected as described in Chapter 3, Installation.
2. Connect the Tram module interconnection cable to the Tram module and to the monitor.
3. Place the Tram module into the chute. Verify that the power indicator illuminates.
4. Configure the monitor display with as many waveforms as possible. Refer to the appropriate monitor operator's manual, if necessary.
5. The waveforms should look clean (no noise).

Checkout Procedures Completion

This completes the checkout procedure.

1. Disconnect all test equipment.
2. Return the monitor to service.

PM Form

Due to continuing product innovation and because specifications in this manual are subject to change without notice, a PM form is not included with this manual. For the latest PM form regarding this product, contact GE Service.

If repairs/adjustments were made or any parts replaced, describe this in the area provided on the PM form.

Also include comments regarding any unusual environmental conditions that may affect the operation or reliability of the equipment in the area provided on the PM form.

On the following page a repair log is included for your convenience to record the repair history of this product.

Repair Log

| Unit Serial Number: Institution Name: | | |
|--|--------------------|------------|
| Date | Maintenance/Repair | Technician |
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