

Date:

# **RVICE BULLETIN** Reference:

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# **NISSAN BATTERY/STARTING/CHARGING SYSTEM TESTER**

This bulletin supersedes NTB94-009 and amends NTB99-044 & NTB99-044a. This version contains updated Service and Warranty Information including alternator and starter diagnostics. Please discard all paper copies of the earlier bulletins.

**APPLIED VEHICLE(S): APPLIED DATE(S):** 

All Nissan All years

### SERVICE INFORMATION

A new Special Tool has been issued to aid in diagnosis of battery, starting system, and charging system incidents. Using Kent-Moore tool #J-44373 Model 620 (see Figure 1), several comprehensive diagnostic tests can be performed on these systems in a matter of minutes. This will help isolate and identify the incident faster, improving Customer Satisfaction and Fixed Right First Time performance.



Figure 1

The Model 620 tool is specifically calibrated for use with Nissan vehicles. It uses two phases of testing and will provide diagnosis and a 12 character test output code. This method of testing can save time as the entire battery/starting/charging system can be quickly scanned to identify the particular area of concern.

**Claims Bulletin WB/99-022**, dated **September 2, 1999**, announced that technicians must use this essential tool for all **battery** replacement claims for warranty, service contract, goodwill or service campaign (except when specific instructions for component replacement without testing apply) effective with repair order open dates of **September 15, 1999**, and greater.

**Claims Bulletin WB/99-028**, dated **October 28, 1999**, announces that this essential tool must now also be used for all **alternator** replacement claims for warranty, service contract, goodwill or service campaign (except when specific instructions for component replacement without testing apply) effective with repair order open dates of **November 8, 1999**, and greater.

Claims Bulletin WB/99-030, to be dated November 11, 1999, will announce that this essential tool must also be used for all starter replacement claims for warranty, service contract, goodwill or service campaign (except when specific instructions for component replacement without testing apply) effective with repair order open dates of November 22, 1999, and greater.

The 12 character test output code for each of the two phases of testing must be recorded in the Technician Remarks field on the hard copy of the repair order for all battery, alternator or starter replacement claims. Refer to the respective Claims Bulletin for claims procedure information.

#### SERVICE PROCEDURE

#### **Tester Preparation**

NOTE: The date and time MUST BE accurately set on the tester. If the date and time are incorrect, the suspension or denial of repairs claimed as warranty, service contract, goodwill or service campaign will result.

#### Verifying date and time.

- A. With the tester clamps disconnected, press and hold the "MENU" button until the "OPTION SELECT-PRINT RESULTS" display appears.
- B. Use either of the blue up/down arrows to scroll until the "SET DATE & TIME" display appears.
- C. Press "ENTER." The day of the week, calendar date, "STD" (standard) or "MIL" (military) time, the hour/minute and "AM/PM" (if "STD" is displayed) will appear.
- D. If the date and time displayed are correct, continue to press "ENTER" repeatedly until the "OPTION SELECT-PRINT RESULT" display appears. Proceed to **Tester Usage** on page 3. If the date and time are **not correct**, proceed to **Adjusting the date and time**, step A.

#### Adjusting the date and time.

- A. The underscore (\_) symbol will be present under the day of the week.
  - If this is correct, press "ENTER" to move the underscore symbol to the month.
  - If the day of the week display is incorrect, use the blue up/down arrows to select the correct day of the week, then press "ENTER."
  - Continue to set the month/day/year in this fashion.
- B. The underscore symbol should now be under the "STD" display. If "MIL" is displayed use the blue arrow keys to select "STD", then press "ENTER" to move the underscore symbol to the hour adjustment.
- C. Using the "ENTER" button and the blue arrow keys, continue to adjust the hour, minute and "AM/PM" display.
- D. After you have adjusted the "AM/PM" display and pushed "ENTER", the "OPTION SELECT-PRINT RESULT" display will appear. The date and time are now set.

#### Tester Usage.

To ensure a complete and thorough diagnosis, the battery, starter and alternator test segments must be done as a set from start to finish (unless the bulletin instructs otherwise). In most cases it will take less than five minutes.

**WARNING:** When working with batteries always wear appropriate eye protection.

#### NOTES:

- If battery surface charge is detected while testing, the tester will prompt you to turn on the headlights to remove the surface charge. Follow the instructions on the display. After detecting the removal of the surface charge, the tester will automatically resume testing.
- If necessary, the tester will prompt you to determine if the battery temperature is above or below 32 degrees F. Choose the appropriate selection by pressing the up or down arrow button, then press ENTER to make the selection.
- When testing older model diesel engines in cold weather, operation of the glow plugs may cause incorrect test results. Warm the engine to operating temperature first, then proceed with testing.
- 1. Record the radio presets for reprogramming after the test (if needed).
- 2. Using CONSULT or CONSULT II (where applicable) ENGINE DATA MONITOR mode, check the engine coolant temperature. Write this value onto the repair order.
- 3. Confirm the engine oil level is correct and that the Nissan recommended weight of engine oil (such as 5W30) is being used.

**NOTE:** Steps #2 and #3 need to be checked as support data for the starter test.

4. Turn off all loads on the vehicle electrical system. They must **remain** off until step 15. Make sure the ignition is in the "off" position.

#### **Battery Test Segment**

5. Visually inspect the battery, battery terminals and cable ends. Clean as necessary. If the battery case is cracked or the terminals damaged, replace the battery.

**NOTE:** The contact surface between the battery terminals, cable ends and tester leads must be clean for a valid test. A poor connection will prevent testing and a **CHECK CONNECTION** message will appear during the test procedures. If this occurs, clean the battery post and terminals, reconnect them and restart the test.

- 6. Connect the red tester lead clamp to the positive battery terminal, and the black to the negative. Wiggle the lead clamps so the clamp teeth bite into the cable ends.
- 7. The tester will turn on automatically. Using the arrow keys select "In Vehicle" on the tester then press the ENTER key.
- 8. Locate the battery type and rating stamped or written on the top case of the battery to be tested. It will have either of the following ratings:
  - CCA: Cold Cranking Amps (490 CCA, 550 CCA, etc.)
  - JIS: Japanese Industrial Standard. Battery is stamped with a number such as:
    80D26L = 80 (rank of output), D (physical size depth), 26 (width in cm). The last character L (post configuration) is not input into the tester

**NOTE:** The tester requires the rating for the battery be entered **exactly** as it is written or stamped on the battery. **Do not** attempt a CCA conversion for JIS stamped batteries. JIS must be input directly.

9. Using the arrow and ENTER keys alternately, select the battery type and rating determined above.

**NOTE:** The tester lists five choices here; CCA, JIS, IEC, DIN, and EN. **Only** use CCA or JIS.

10. Press ENTER to begin the test. Write the diagnosis and the test values displayed on the tester onto the repair order.

#### NOTES:

- If necessary, the tester will ask the user to determine if the battery has just been charged. Choose the appropriate selection by pressing the up or down arrow button then press the ENTER button to make the selection.
- When testing a battery installed in a vehicle that has recently been driven, **select BEFORE CHARGE**.
- If the battery has just been slow charged **due to a "CHARGE & RETEST" decision** by the tester, and the tester asks the user BEFORE CHARGE/AFTER CHARGE, select AFTER CHARGE.

- 11. Once the battery test result is viewed, follow the tester prompt and press ENTER to obtain the 12 character test output code (this coding does not use the letters I or O). Write the 12 character test output code (for example BATCC-L9CPGGG) on the repair order, then toggle back to the diagnostic screen. One of five diagnostic results will be displayed on the tester screen:
  - **GOOD BATTERY:** Go to step 12.
  - **REPLACE BATTERY:** Clean the battery cable clamps and battery posts if it has not already been done earlier. Return to step 6 and recheck the results. If the second test shows **REPLACE BATTERY**, do so and return to step 6.
  - **BAD CELL-REPLACE:** Replace the battery and return to step 6 above.
  - **GOOD-RECHARGE:** Perform the Slow Battery Charging Procedure on page 7 of this bulletin. Once the charging is done, return to step 6, above.
  - CHARGE & RETEST: Perform the Slow Battery Charging Procedure on page 7 of this bulletin. Once the charging is done, return to step 6, above. If the tester asks the user BEFORE CHARGE/AFTER CHARGE, select AFTER CHARGE.

**CAUTION:** <u>Never</u> fast charge batteries. See Slow Battery Charging procedures and cautions on page 7 of this bulletin.

#### Starting System and Charging System Test Segment

- 12. Follow the tester prompt and press ENTER to begin the starting system test. Then start the engine. Write the diagnostic results and the test values displayed on the tester onto the repair order. One of the following diagnostic results will be displayed:
  - CRANKING VOLTAGE NORMAL: Click <u>here</u> or refer to "CRANKING VOLTAGE NORMAL" in Attachment I of this bulletin
  - CRANKING VOLTAGE LOW or if the starter does not run: Click <u>here</u> or refer to "CRANKING VOLTAGE LOW" in Attachment I of this bulletin.
  - CHARGE BATTERY: Return to step 11, GOOD-RECHARGE/CHARGE & RETEST.
  - **REPLACE BATTERY:** Return to step 11, **REPLACE BATTERY**.

**NOTE:** If the starter performs normally but the engine does not start, perform engine diagnosis. Once resolved, return to step 6.

**NOTE:** For intermittent NO CRANK / NO STARTER OPERATION incidents, click <u>here</u> or refer to "NO CRANK / NO STARTER OPERATION" in Attachment I of this bulletin.

13. Press ENTER to begin the charging system test. When complete, the tester will prompt you to press ENTER again.

14. Raise and hold the engine speed to 1500 - 2000 RPM for about 5 seconds, then return the engine to idle. Press ENTER to continue once the rev is detected.

**NOTE:** If after 30 seconds an increase in engine idle speed is not detected, **RPM NOT DETECTED** will display. Press ENTER and redo step 13.

**NOTE:** Some engines may have a higher idle initially after starting, particularly when the engine is cold. The tester may detect this without any other action being taken. If this occurs, continue on with the testing process. The final results will not be affected.

- 15. The tester will now check the engine at idle and perform the Diode/Ripple check. When complete, the tester will prompt you to turn on electrical loads. Turn on the following:
  - Heater fan on Manual systems to High. On Auto A/C systems set to highest heat, floor duct. **Do not** run the A/C or windshield defroster.
  - Headlights on high beam.
  - Rear window defogger (if equipped).
  - **Do not** run the windshield wipers or any other cyclical loads.
- 16. Press ENTER to continue. Raise and hold the engine speed to 1500 2000 RPM for about 5 seconds, then return the engine to idle. The tester will show that it detected the increased engine speed. Press ENTER to continue.

**NOTE:** If after 30 seconds an increase in engine idle speed is not detected, **RPM NOT DETECTED** will display. Repeat step 16.

17. The tester will analyze all the readings and provide the results of the charging system test.

**NOTE:** The option **PRESS ENTER FOR CHARGING CODE** will toggle with the charging system test results. First press ENTER and write the 12 character test **output code (for example ALTST-2UQ3Q28) on the repair order** (this coding does not use the letters I or O). Then toggle back to the diagnostic screen. It will display some of the following possible test results:

- CHARGING SYSTEM NORMAL, DIODE RIPPLE NORMAL: Go to step 18.
- **IDLE VOLT/LOAD VOLT:** Write these values on the repair order, then continue reading results of testing.
- CHARGING SYSTEM INCIDENT: If this is displayed, one of the four following results will also be displayed: NO CHARGING VOLTAGE, LOW CHARGING VOLTAGE, HIGH CHARGING VOLTAGE or EXCESS RIPPLE DETECTED. For these results click <u>here</u> or refer to Attachment II of this bulletin. Once resolved, return to step 6.

18. Turn off the engine and disconnect the tester.

19. Reprogram radio presets if necessary.

#### SLOW BATTERY CHARGING PROCEDURE

- 1. Appearance check:
  - If the battery case is cracked or the terminals damaged, replace the battery.
- 2. Electrolyte Level check (if applicable):
  - Remove the vent caps with a suitable tool. Add distilled water to the "MAX" level.
- 3. **Requirement:** Initial rate of charge is 10 Amps for twelve (12) hours.

CAUTIONS:

- Continue charging for twelve (12) hours, even though the current will decrease as the battery charges.
- Charge battery one at a time. Do not charge batteries in a parallel circuit.
- During charging, keep open flames away from the battery.
- When connecting the charger, connect the leads first; then turn on the charger.
- Stop charging if the battery electrolyte temperature exceeds 140 degrees F (60 degrees C).

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