



TECHNICAL SERVICE BULLETIN

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 DATE: FEBRUARY 10, 1995
 MODEL: ALL MODELS

BATTERY MAINTENANCE FOR IN-STOCK VEHICLES

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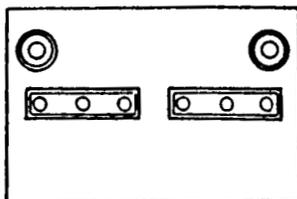
A battery in a stored vehicle is subject to conditions which can reduce its performance and life. These conditions include storage period, temperature, parasitic drain, and battery load. Because of these factors, battery inspection and maintenance are recommended in order to ensure proper operation and optimal battery life.

As a matter of policy, Toyota does not provide battery warranty coverage for excessively discharged and/or failed batteries due to lack of maintenance. It is considered the dealers responsibility to maintain the specified state of charge of the vehicle's battery while in stock.

BATTERY MAINTENANCE RECOMMENDATIONS:

1. A monthly battery inspection is recommended under normal conditions. If your dealership is located in an area subject to extreme temperatures (hot or cold), periodic maintenance may need to be performed on a more frequent basis. When maintenance requires removal of filler plugs on vehicles with "maintenance free" batteries, new labels are available via the following part numbers:

Part Number	Quantity	Applicable Battery Size
28898-11020	2	55D23R 55D23L 65D23L
28898-50130	2	75D26L 80D26L 80D26R
28898-50140	2	75D31L 105D31L



* The electrolyte cap should have this plate.

- To reduce battery drain during storage of in-stock vehicles, the dome light fuse of each vehicle should be removed. It is recommended that the fuse remain disconnected until time of delivery. This procedure can reduce battery discharge 60–80 percent. **Ideally, disconnecting the negative battery cable from the battery, will further reduce battery discharge.**

Note 1: For your reference, the electrical systems made inoperative by removing the dome light fuse, are indicated in the appropriate Electrical Wiring Diagram and current pre-delivery Technical Service Bulletin (TSB) for each vehicle model.

Note 2: Additional battery maintenance information is available in the Toyota Warranty Policy And Procedures Manual.

Two test procedures are available for evaluating battery performance. These include:

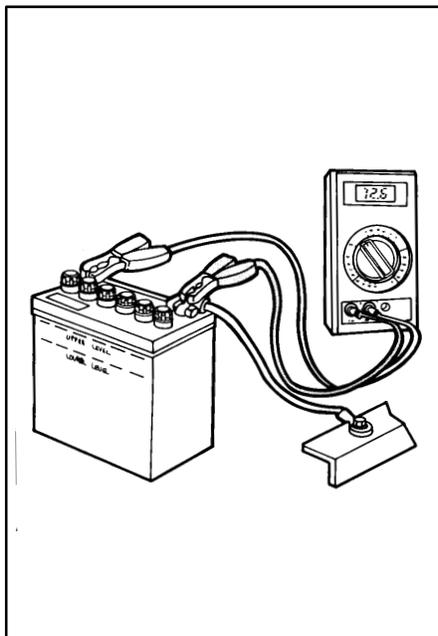
- Open-Circuit Voltage Test Procedure
- Specific Gravity Test Procedure

OPEN-CIRCUIT VOLTAGE TEST PROCEDURE:

- If the battery has recently been charged or if the engine has been run in the last 8 hours, there will be a surface charge on the battery. To remove the surface charge, turn on the head lights for two minutes.

NOTE: Turn off headlights before proceeding with test.

- With the key out of the ignition, all doors closed, and all electrical accessories off, connect the voltmeter across the battery terminals.
- Read the voltmeter.



Compare measured voltage to open circuit voltage chart:

OPEN CIRCUIT VOLTAGE (OCV CHART)

RESULTS	OPEN CIRCUIT VOLTAGE	% STATE OF CHARGE	EQUIVALENT SPECIFIC GRAVITY
OK	12.65 Volts	100%	1.265 @ 80° F
	12.40 Volts	75%	1.225 @ 80° F
NG	Less Than 12.40 Volts	< 50% =	1.190 @ 80° F

TEST RESULTS:

1. A fully charged battery will have an open-circuit voltage of at least 12.6 volts.
2. The minimum acceptable voltage is 12.4 volts. If the reading is less than 12.4 volts, charging is necessary. Use the slow charging procedure described below.

CHARGING PROCEDURE:

1. If the test results indicate a charge is necessary, a slow-constant 10-amp or less charge rate is recommended until the battery reaches a full state of charge. Be sure to periodically check and maintain the proper electrolyte levels during charging.

CAUTION:

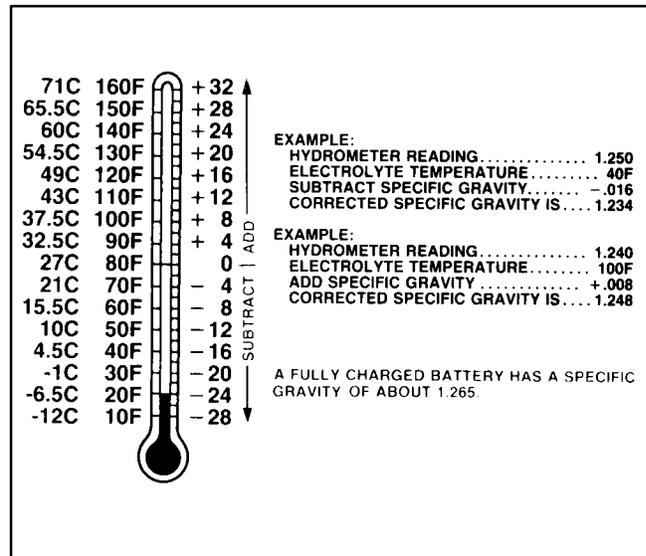
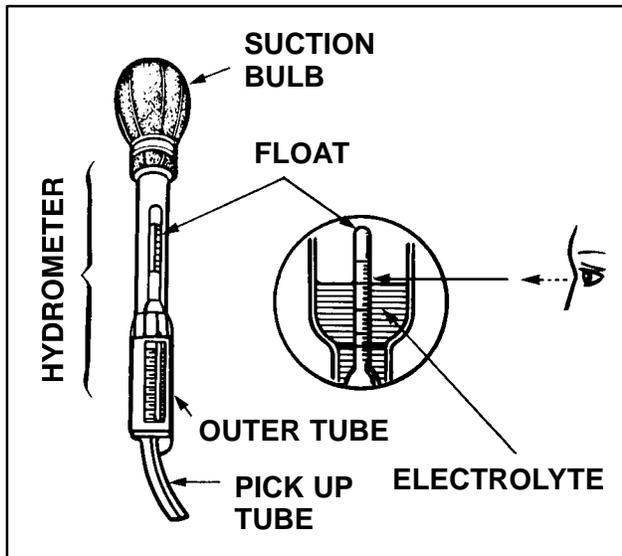
Insure that the charger is turned off before connecting or disconnecting the leads. Always connect the negative lead last. When disconnecting, always disconnect the negative lead first.

NOTE:

For additional information on battery inspection and testing procedures, see "Battery / Starter Circuit Inspection And Testing Procedures" in the Technicians Reference Manual (MDC # 00414-42962).

SPECIFIC GRAVITY TEST PROCEDURE:

1. Remove the vent caps or plugs from the battery cells.
2. Take the specific gravity readings with a temperature corrected hydrometer. Follow the procedure described by the manufacturer of your hydrometer.
3. Record the specific gravity of each cell.



TEST RESULTS:

1. A fully charged battery will have a specific gravity reading of approximately 1.265 at 80° F.
2. The minimum standard for this test is a specific gravity reading of 1.190. If the reading is less than 1.190, charging is necessary. Use the slow charging procedure described in this TSB.
3. A difference of 0.050 or more between highest and lowest cell readings indicates a problem battery. Should you encounter this situation, attempt one recharge using the slow charging procedure described in this TSB. Allow the battery to stabilize at least 20 minutes after the charge cycle is complete. Recheck the specific gravity of each cell. If the deviation in cell readings still exceeds 0.050, the battery must be replaced.
4. After battery service is complete, reinstall the battery caps / plugs and replace the plug labels as applicable.