1 SAFETY PRECAUTIONS

WARNING: FOLLOW ALL SAFETY INSTRUCTIONS WHEN HANDLING BATTERIES! ALWAYS WEAR SAFETY GLASSES AND A FACE SHIELD WHEN WORKING ON OR NEAR BATTERIES.

All batteries generate explosive hydrogen gas. Keep sparks, flames and cigarettes away from batteries at all times.

- Cracked or broken cases
- Loose cable connections
- Leaking case-to-cover seal
- Corrosion
- Damaged or leaking terminals

Neutralize any corrosion with a baking soda/water paste or large quantities of water. Be careful!

- Damaged or cracked terminals and related accessories

CAUTION: EXPLOSIVE GASES. KEEPS SPARKS, FLAMES AND CIGARETTES AWAY FROM BATTERIES AT ALL TIMES.

2 IN-VEHICLE SERVICE AND TESTING

Follow safety precautions — WEAR PROPER EYE PROTECTION!

Prior to any testing, visually inspect the battery. Look for:

- Broken or cracked case
- Loose cable connections
- Leaking case-to-cover seal
- Corrosion
- Damaged or leaking terminals

Make sure your variable load tester is working properly. When testing AGM batteries, make sure the tester has an AGM setting.

1. You can’t load a test discharged battery.
2. If the voltage is below 12.4, be sure to completely charge it before continuing. Refer to the charging chart under “Charging Tips” section. If fully charged, perform a load test. PROTECT YOUR EYES!

3 LOAD TESTING

Follow safety precautions — WEAR PROPER EYE PROTECTION!

First perform an open circuit voltage test, then an adjustable load test. A load test is the best way to determine if the battery is delivering adequate electrical performance.

Make sure your variable load tester is working properly. When testing AGM batteries, make sure the tester has an AGM setting.

1. You can’t load a test discharged battery. If the voltage is below 12.4, be sure to completely charge it before continuing. Refer to the charging chart under “Charging Tips” section for important information.
2. To avoid sparking and explosive gasses, be sure load tester is OFF and battery is disconnected before hook-up. Use computer memory saver to retain the vehicle’s electronic memory while the battery is disconnected.
3. Connect the positive (+) test clamp to the positive (+) battery terminal. Then connect the negative (-) test clamp to the negative (-) battery terminal. Always protect your eyes.
4. If the battery did not meet the required voltage and if it was loaded in Step 3, completely recharge the battery and repeat the test. If it still fails to meet requirements, replace the battery.

4 CONDUCTANCE TESTING

Follow safety precautions — WEAR PROPER EYE PROTECTION!

Conductance uses the battery’s response to a very small signal in an attempt to predict the effects of a much larger current. Conductance testing is ineffective on a discharged battery. If the battery is known to be discharged or if the tester tells the operator to charge before testing again, the battery must be completely recharged.

1. It may not be required to turn a conductance tester on or off. If off, you must turn on immediately when connected to a battery. Most will turn off automatically if ignored long enough. Some have no battery of their own and get all their power from the battery being tested.
2. Connect the positive (+) test clamp to the positive (+) battery terminal. Then connect the negative (-) test clamp to the negative (-) battery terminal. If the battery has more than one pair of terminals (e.g., top posts and side terminals) always perform the testing on the terminals that are used in the vehicle. Use the proper charging adapters for side or terminal batteries. Never connect tester to a bolt or stud.
3. Turn on needed. Enter the requested Information. Be sure to distinguish between a CCA rating and a CA or MCA rating. If no rating is available, use the minimum O.E. battery CCA requirement of the vehicle.
4. If the tester says to replace a battery that was tested in the vehicle, repeat the testing after removing the cables and cleaning the posts.

5 CHARGING TIPS

Follow safety precautions — WEAR PROPER EYE PROTECTION!

1. To avoid a battery explosion, never attempt to charge a frozen battery. Allow it to warm up to room temperature before placing on charge.
2. Warning: Gel and AGM (Absorbed Glass Mat) batteries require a voltage-limited charger. Charging a Gel or AGM battery on a typical shop charger that exceeds 15.4 volts — even one time — may greatly shorten its life.
3. Important: Never overcharge batteries. Excessive charging will shorten battery life.
4. Prior to charging, read the manufacturer’s instructions for proper charger hook-up and use.
5. Turn charger off prior to hook-up to avoid dangerous sparks. PROTECT YOUR EYES!
6. WARNING: If the electrolyte is accessible, verify that plates are covered before beginning to charge. At the end of charge, add distilled water as needed to bring levels to the proper height. If water is added, charge for an additional 30 minutes to mix. If electrolyte levels are low, but battery is not accessible, remove battery from service.
7. The maximum charge rate in amperes should be no more than 1/3 of the battery’s reserve capacity rating. If the terminal voltage exceeds 14.0 volts while charging, reduce the charge rate.
8. Continue charging and reduce the rate as needed until a two-hour period results in no increase in voltage or decrease in current.
9. If violent gassing or spewing of electrolyte occurs, or the battery case feels hot to the touch, intermittently reduce or halt charging.

6 ROTATE BATTERY STOCK

Use oldest batteries first. Batteries require periodic stock rotation and routine charging. Always rotate stock using the FIFO (First In, First Out) method. NOT FISH (First In, Still Here).

Date Code Example: (Refer to chart at right)
L2 - Battery shipped November 2012
Always use oldest batteries first.

REMEMBER...WET OR DRY...ALWAYS ROTATE YOUR STOCK!

SHIPPING DATE CODE
MONTH          YEAR
A – January     7 – 2007
B – February    8 – 2008
C – March       9 – 2009
D – April       0 – 2010
E – May         1 – 2011
F – June        2 – 2012
G – July        3 – 2013
H – August      4 – 2014
J – September   5 – 2015
K – October     6 – 2016
L – November    7 – 2017
M – December    8 – 2018

7 BATTERY STORAGE TIPS

Batteries should be stored in a cool, dry area in an upright position. Never stack batteries directly on top of each other unless they’re in cartons. Do not stack more than 3 high (2 high if battery type is heavy commercial).

Test wet batteries every 4–6 months and recharge if necessary. Always test and charge if necessary before installation. (See “Charging Tips” section)