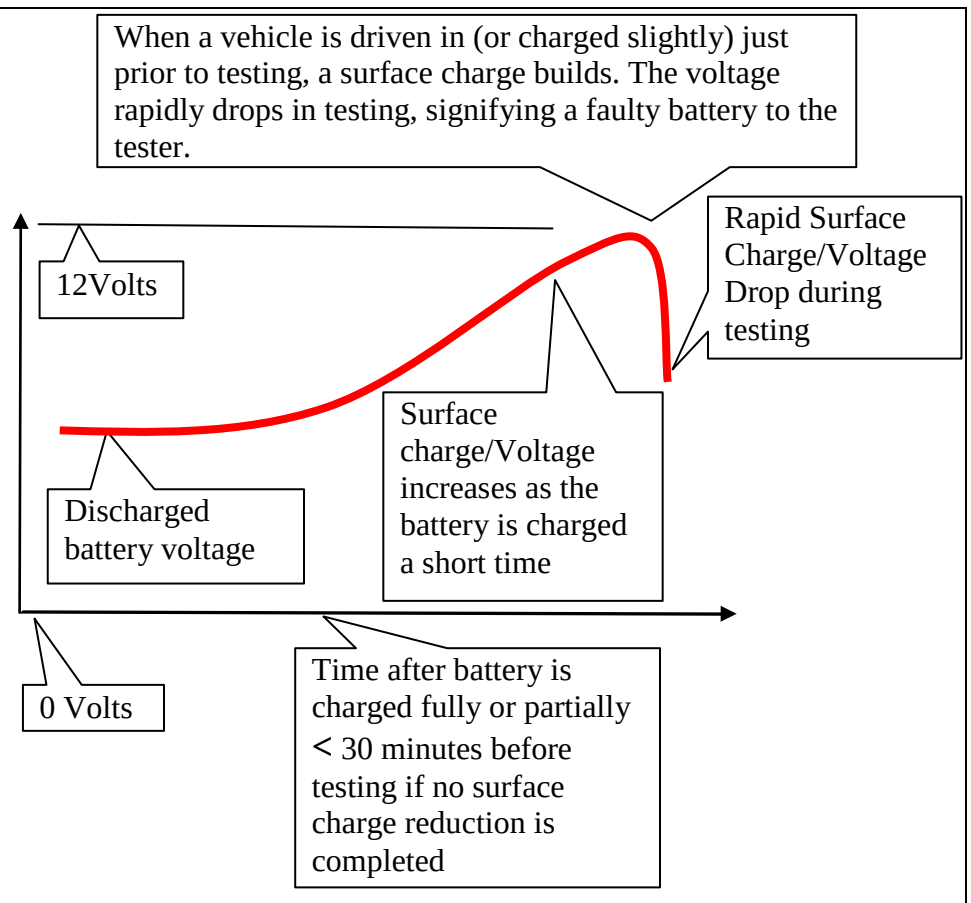
Surface Charge Reduction

Issue #	Part Info:	Group(s) Affected:
1	Testing procedure	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐

Condition
Battery testers can indicate “bad” battery judgment due to insufficient reduction of surface charge before testing.

Observed Situation:
Vehicle was brought in immediately after driving (providing some surface charge to battery.) V8150 handheld tester was used immediately to confirm battery status, which indicated bad/replace.

I turned the headlights on for 30 seconds, then reran the test, and the tester indicated a “recharge” recommendation



Concern:
Surface charge is not always detected by the GR8 or V8150. If you have to jumpstart a vehicle or it has a discharged battery and you drive it into the shop, you induced a surface charge regardless of whether surface charge was detected by the tester. You cannot rely upon it to detect surface charge in that condition.

When the battery has a surface charge built up, the handheld tester detects an immediate drop in voltage signifying a bad battery.

Surface charge also has an effect when the GR8 test is **aborted** and immediately **retested**. In this case the battery could show “replace” even though the battery truly needed charged if aborted and retested.

Suggested change	
1. When the vehicle has not been sitting for at least 30 minutes with engine off before testing, turn the headlights on for 30-60 seconds to reduce the surface charge before using the handheld tester. Or when you bring the car in turn on the headlamps then go get the tester.	2. When the GR8 starts the test process and charging is needed in a battery test, do not abort the test and immediately retry it again. A surface charge will build up and the subsequent test will fail, as the GR8 will not know you aborted the previous charge. You will need to deplete the surface charge and retest.

Concerns
In an attempt to satisfy customers, a free battery will be put into a customer’s vehicle through roadside service in an attempt to increase customer satisfaction and achieve better customer survey scores. Unfortunately if a battery is replaced, diagnosis of root cause often stops. If you replace a battery and the root cause is not found, the customer will return sometime with the same condition.

There are a wide variety of reasons a battery could fail or show discharged. Customers can leave lights on, manufacturing defects may occur, insufficient processes for keeping battery charged while

sitting on the lot waiting to be sold may be present. In addition there may be other hidden factors, corrosion of wiring, voltage drops, poor grounds?
Efforts to improve quality can be hampered by continuing to replace batteries which are not failed, providing warranty batteries back to TMS which are not bad, or failing to investigate/report factors for battery discharge. If there is a reason TMS is not meeting customer expectations we will not be able to determine the root cause and make effective countermeasure without your support and detailed information.

Additional information

The GR8 does a better job of detecting additional faults than the handheld tester. Because it has the capability to provide a load to the battery and charge it, it is a better tool. Significant improvements will be seen when properly used, especially when technicians forget to reduce surface charge with the handheld tester.

Adequate Charge Battery Using GR8

Issue #	Part Info	Group(s) Affected:		
2	**General Knowledge**	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition

The GR8 Battery charger should be used to rehabilitate batteries. The vehicle's charging system may not efficiently charge as the GR8 due to loads when the car is running.

Observed Situation:

Some technicians indicated they used the vehicle itself to recharge batteries. Some technicians indicated additional GR8 units were needed.

Concern:

The car should not be running in an attempt to get the battery fully charged. It is difficult to judge If a battery is fully charged without additional testing.
When a customer takes it home, if they are running all accessories in a high current load and under some driving conditions you can't guarantee the battery will be adequately charged.



Suggested Change

If a battery needs charged, use a GR8 to fully charge the battery. Consider the purchase of new units to assure a proper battery charger is available. Although the tester indicates multiple hours necessary to charge, it is usually a lot less. In addition in the future software will change to more accurate time estimation.

If you are charging the battery in the vehicle, consider cleaning the terminals and battery post prior to charging.

Battery terminal corrosion may make it difficult to charge and increase the time necessary to charge the battery.

1. Consider the purchase of additional GR8 units to assure a proper battery charger is available.

2. Consider dedicated space(s) for GR8 charging, out of your bay

Dealer Concerns:

Warranty Battery Label Not Present

Issue #	Part Info	Group(s) Affected:
3	Battery returns	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐

Condition
Roadside assistance replacement (goodwill) batteries may be mixed into warranty returns

Observed Situation:
As none of the batteries had orange warranty stickers, there appeared to be no easy way to indicate if it was a goodwill battery replaced for customer satisfaction, which would not be eligible for free replacement or regular warranty.

Concern:
As batteries are tested by the battery manufacturer or Interstate, TMS warranty or the Interstate Distributor may chargeback for a battery which is merely discharged or good.

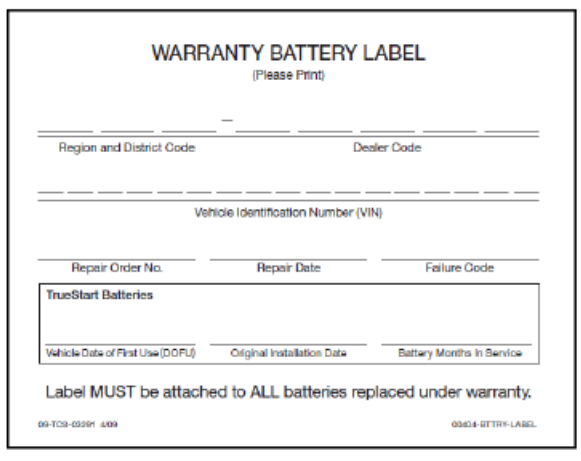
Suggested Change:
Assure only warranty batteries have orange stickers, other goodwill batteries need to go into “cores” pile.

The sticker should only be applied after verifying the battery tests bad. In addition having the parts department or technician verify test results is a good step towards self discovery of causes for battery indicating “failed” and later “good”

LEXUS WARRANTY POLICY & PROCEDURES — WARRANTY TEXT

Policy 4.11	Service Part Battery Warranty Coverage	10/12	Page 7 of 7

Battery Labeling
All warranty batteries must be properly labeled with a Warranty Battery Label (M/N 00404-BTTRY-LABEL) as shown below.



This label will be used to validate any remaining *vehicle warranty* coverage (if the battery is more than 24 months old, but still covered by the new vehicle warranty) and therefore must be completed entirely. Failure to completely fill out this new label may result in denial to cover the battery as a free exchange.

The MDC has these labels under part number 00404-BTTRY-LABEL

Required under warranty policy 4.10

Dealer Concerns
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Battery Tester Improper Repairs

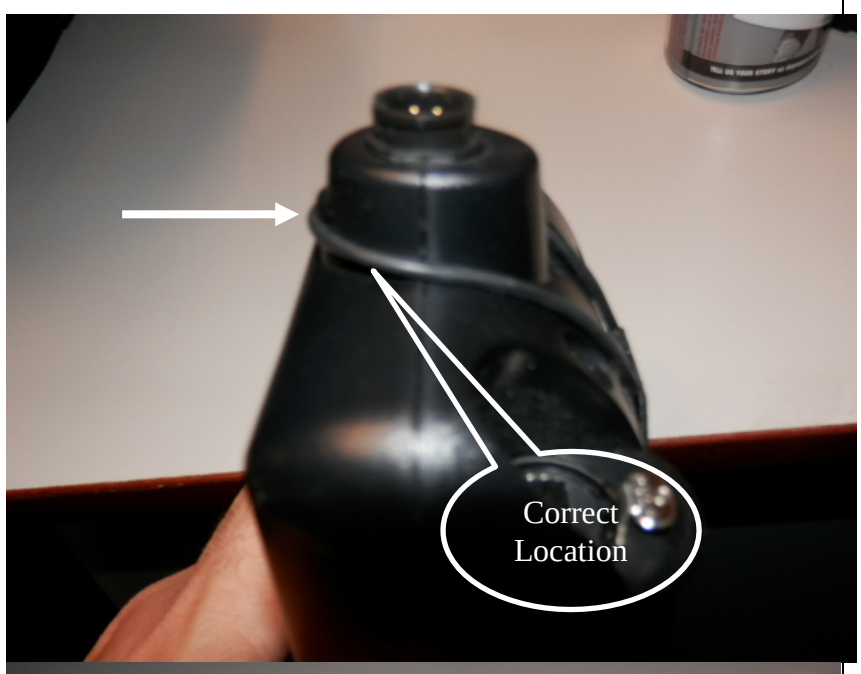
Issue #	Part:	Group(s) Affected:		
4	**Battery Tester**	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition

Tester had a zip tie used in an inappropriate location in place of rubber cord that is supposed to be used for the handle. Other questionable repairs with electrical tape or duct tape may cause premature tester failure

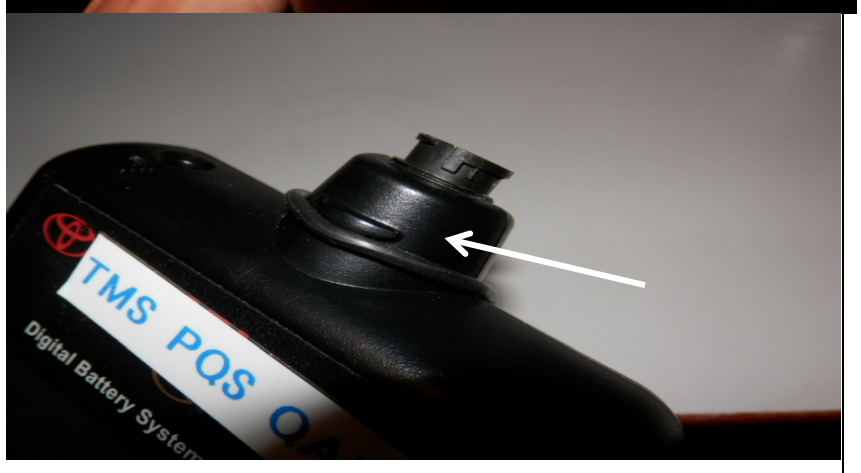
Observed Situation:

1. When examining the scan tool the cord had a zip tie placed on the scan tool so that it would put pressure against the cord, possibly leading to early failure against pin fit and solder joints in the wiring.
2. Some testers exhibited duct tape repairs, allowing debris to enter the battery compartment and tester.
3. Some cords may have been “repaired” using electrical tape, hiding underlying damaged wires.



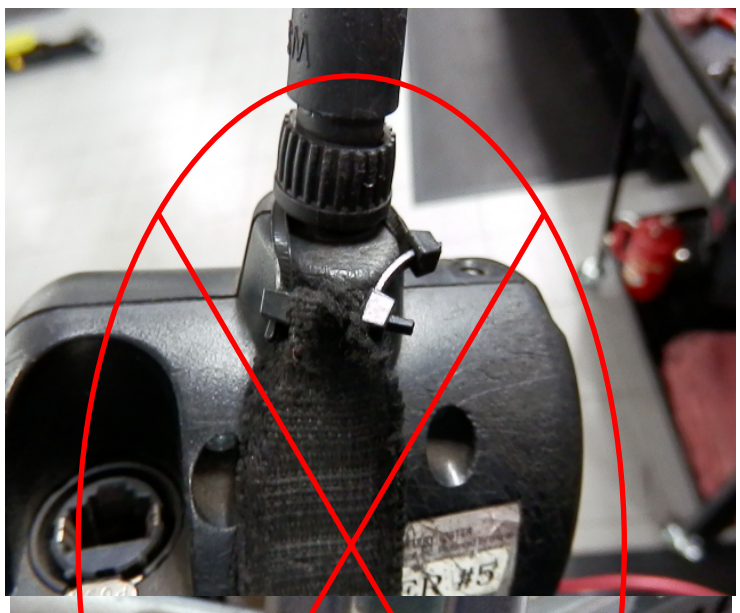
Concern:

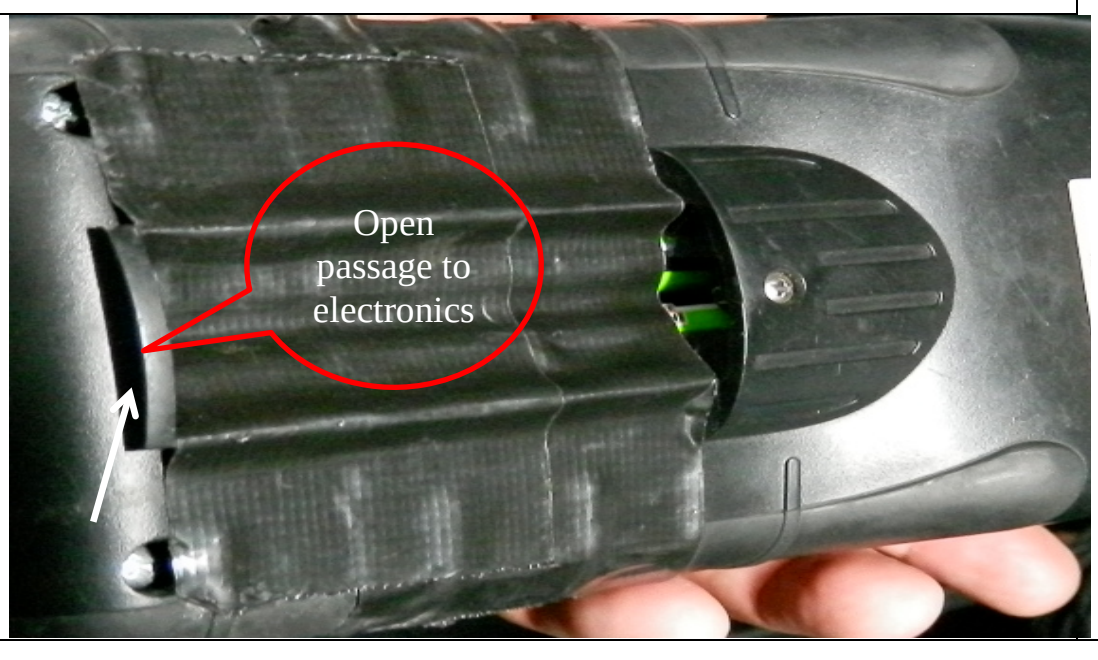
1.Intermittent failures, early degradation of tester, as every time the tester is picked up the zip tie puts a side load on the connector and pins.
2. Tester circuit boards can be damaged or affected by debris or liquids, if an entryway exists.
3. Regarding electrical tape repairs, If the cable was damaged enough to pierce or squeeze the outer insulation, and electrical tape is applied to the cord can you guarantee the wires in the cord are not damaged?
4. As one technician stated “the cord is not a leash, use the handle to carry it.”

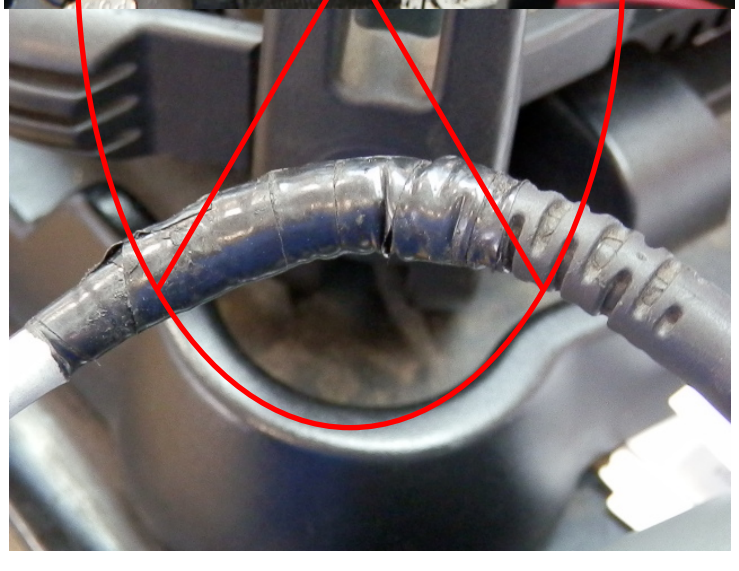


Suggested Change

1. Order a replacement rubber cord, and assure it is in place at the proper area of the scan tool. It should be at the notch, not against the cord.
2. Tester cables should be replaced rather than using electrical tape in attempt to repair. Duct tape and electrical tape should not be used to replace broken/lost/damaged parts, due to the difficulty of determining when testers are intermittently failing or providing inaccurate results.







Dealer Concerns:

In Vehicle/Out of vehicle testing Effects/Results

Issue #	Part Info:	Group(s) Affected:		
5	Battery	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
Corrosion can affect the battery test result. It is difficult to verify corrosion between battery terminal and battery cable without removing the cable or performing additional tests. Some batteries are being replaced because they have a corrosion buildup between post and clamp.

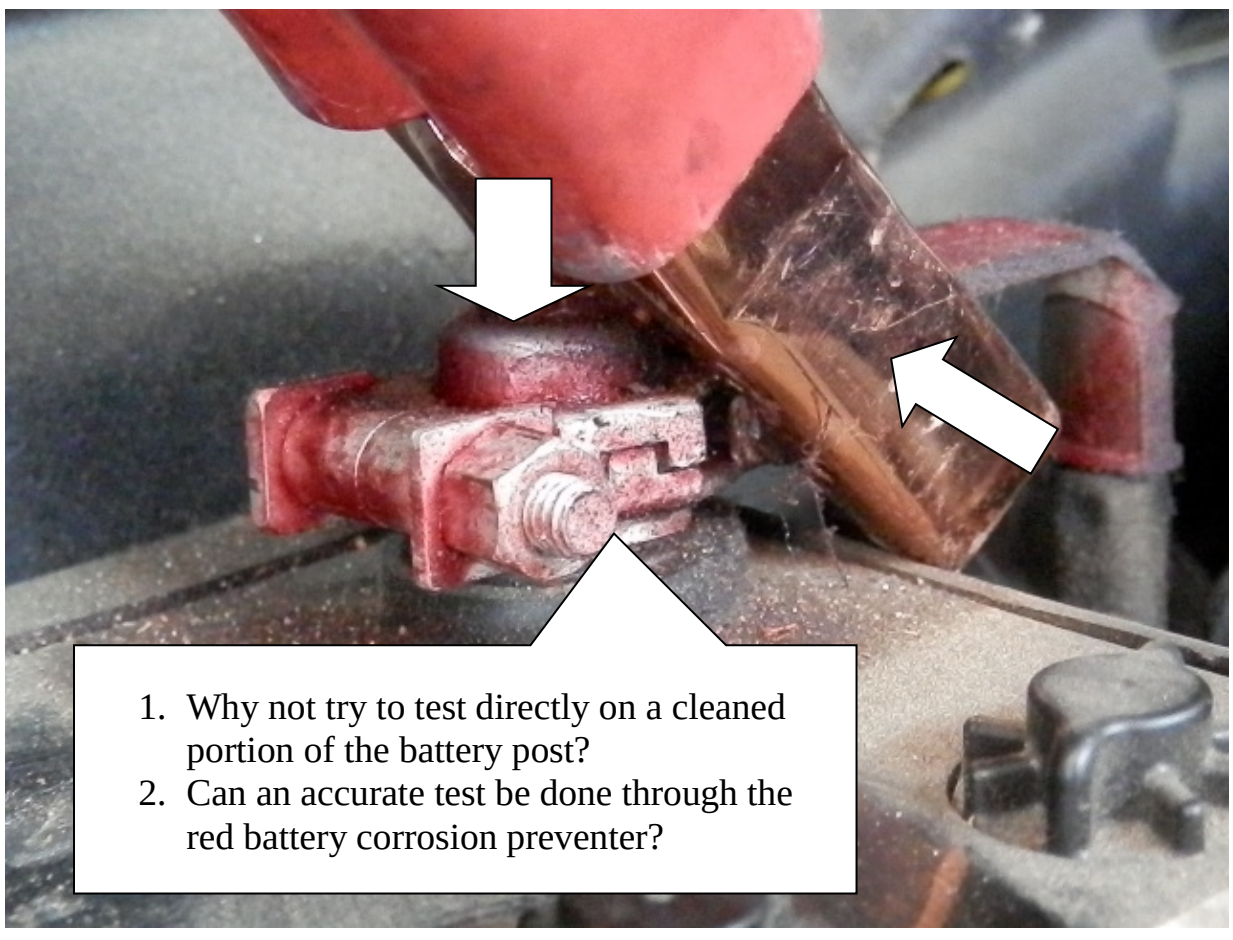
Observed Situation:
Some battery terminals were corroded. When the technician tested the battery the tester indicated it failed. Immediately when a recheck was done after removing the cable and checking directly on the lead terminals, it indicated the battery needed recharged instead of needing replaced.

Concern:
The battery may not have failed. This will not be known until the second test is performed out of the vehicle. If a battery audit indicates the battery is only discharged a chargeback can result.

Suggested Change:
Continue to check batteries in the vehicle, but confirm using GR8 the battery is actually bad **when the battery is out of the car.** If you can touch a clean part of the lead post on the initial test the result may be different than through the metal battery clamp.

Assure cleaning the terminals of the battery and battery clamps is completed as preventative maintenance. If the car was driven in (possibly without a jumpstart,) and the CCA of the test indicates very low during the initial test, question if the problem is actually the battery or corrosion.





Dealer Concerns:

Dynamic Test Consistently

Issue #	Part Info	Group(s) Affected:		
6	Battery Tester	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
1. Battery voltage reading indicated on tester was 12 volts, then went to zero volts, then 12 volts or could not get a reading at all.
2. Tester goes into dynamic test most of the time and battery fails consistently

Observed Situation:
The technician indicated every time a battery was tested it went into the “Dynamic Test” mode with the handheld tester. This would occur unless the tester was held at a certain angle. In another situation the tester was hooked up to a battery and would not detect a battery was present. Intermittently it would show 12v then zero volts.

Concern:
Either the cord or tester was faulty.

Suggested Change
It should be recognized when a tool has to be held a certain way for tests to proceed, or always provides a dynamic test there is probably something wrong with either the cable or tester. If the tester shows no battery connected, it is probably not a battery issue. If this is the condition, test against a known good battery.

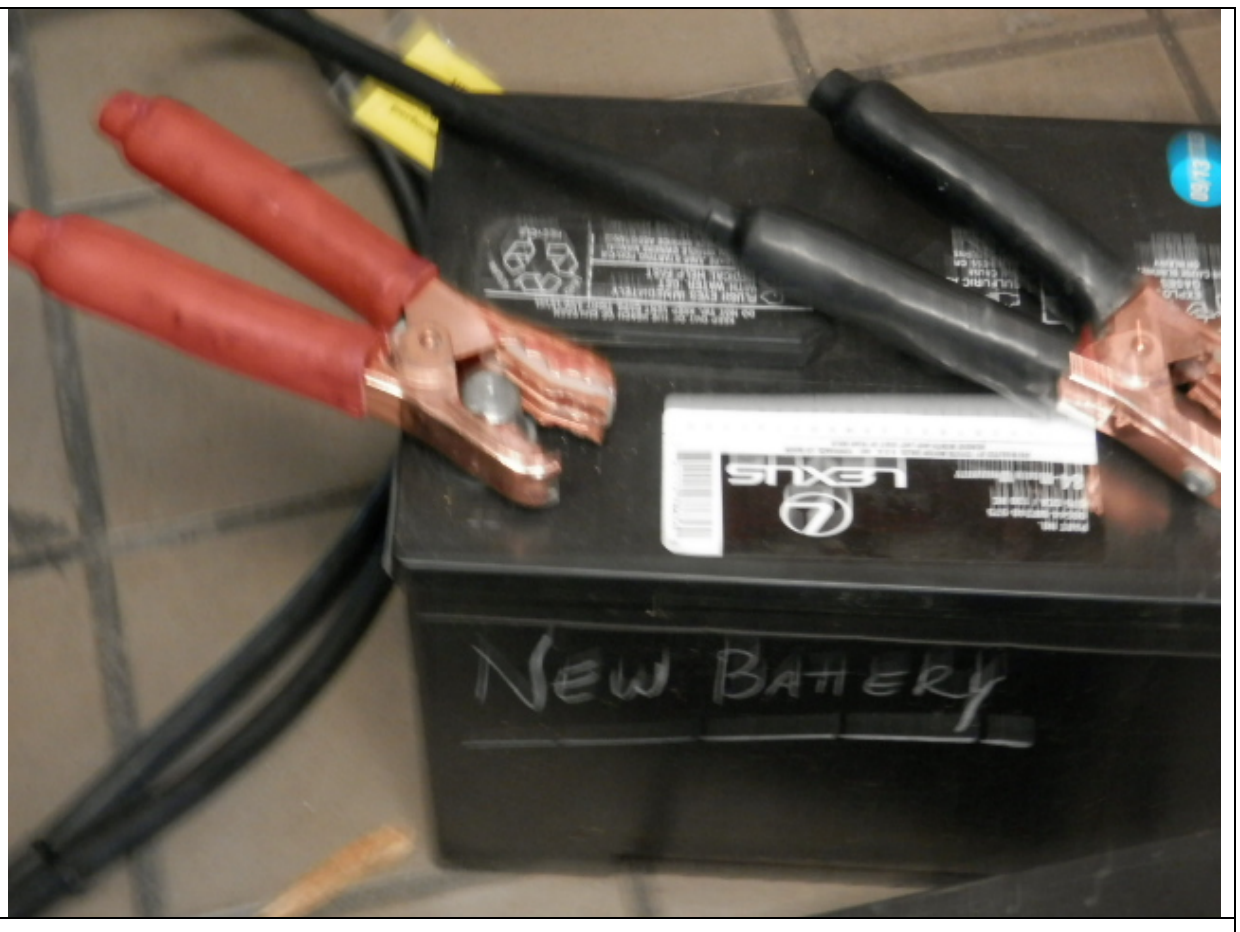
Have the equipment refurbished if necessary.
If using a GR8, be mindful of using the proper gauge of an extension cord, as too small gauge could cause problems.

Dealer Concerns:

Replacement Batteries Not Adequately Charged

Issue #	Part Info	Group(s) Affected:		
7	Battery	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition
New replacement batteries may not be adequately charged coming off the Interstate Truck



Observed Situation:
Low battery voltage was observed on brand new batteries just delivered.

Concern:
Low voltage during storage may impact long term durability.

Suggested Change
Monitor incoming new replacement batteries for voltage, if low, address concern with Interstate supplier and notify TMS of the situation via DPR.

Dealer Concerns:

Indicating a Battery Is Fully Charged When It Is Not

Issue #	Part Info	Group(s) Affected:		
8	Input incorrect test data in the tester for “uncharged” batteries	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition
If a true battery condition is to be detected it is important to follow all tester steps and enter information accurately.

Observed Situation:
At a dealer, a technician and roadside person indicated when they do battery tests they always choose **YES** when prompted by the tester “Was the battery was just fully charged?”

This is immediately followed by a “bad Battery” test result and a warranty code is generated.

Neither the technician or roadside person indicated the battery had **not** been recently fully charged even though they knew no charging had taken place.

Both had indicated they were advised to choose “yes” in order to get the repair covered under warranty.

Concern:
When the tester prompts if the battery was fully charged it will expect to test a battery with a full charge. It will fail the battery regardless of battery condition, because the reality is the battery is **not charged fully**.

Suggested Change
The recommendation is to choose “NO” when the tester pops up with the question “Was the battery was just fully charged?”

The answer is “No” unless you personally fully charged the battery.

1. If conditions exist that our batteries are not meeting our customer demands, we need that disclosed in a product report.

2. Customer input is important, if there was a case where the battery was not sufficient for the customer’s needs and we continue to replace batteries without notifying TMS, no quality improvement can be done.

3. If it is not a failed battery and the battery was discharged, and no reasonable answer can be found, arrange for TMS to inspect it.

4. There may be quality issues with the vehicle, never investigated because the recovered battery was NTF or merely discharged.

5. Future audits will occur and the battery will be charged back to the dealer.

Dealer Concerns:

TMS Product Quality & Service Support

Encourage The Use of GR8 as Primary or Backup Test

Issue #	Part Info	Group(s) Affected:		
9	Tester (2)	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition
The handheld V8150 tester is not as thorough of a tester as the GR8. The GR8 also has the capability to apply load to the battery. Although the initial V8150 test may be good, if a load type test is not applied to the battery, you have a greater chance of failure to detect additional problems.

Observed Situation:
Based upon Midtronics expertise and dealer experience, there is value in using the GR8 exclusively, or as a follow up tester. Unlike the V8150 it has the ability to test the battery under load.

Concern: Possibility of not as effectively picking up low state of health where loading the battery may have indicated an issue.

This may be the reason some customers return for a battery repair when during the previous service it tested ok with the handheld V8150 tester.



Suggested Change
1. If a vehicle is going to have the battery tested that did not come in for a complaint of battery discharged, the GR8 is a better test for State of Health.

2.If the V8150 tester indicates a failed battery, consider using the GR8, and doing a subsequent test. Not only is a different tester used (if problems with the original tester exist they may be discovered) but the second test has a greater chance of indicating true battery condition since the vehicle's battery cables are not attached to the battery.

3. An extra twist of the tester clamp against the lead battery post can make a solid connection rather than testing through the battery cable which may have corrosion on it**.**

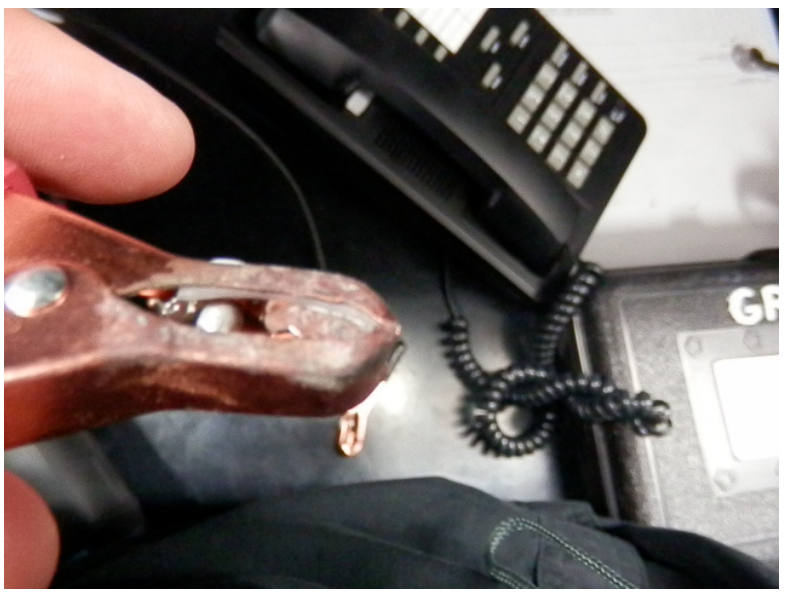
An analogy is if you break all the wires inside a battery cable and test it with a volt meter you may still read battery voltage, but under load the voltage will drop off dramatically, revealing a problem.

Dealer Concerns:

Tester Clamps Require Maintenance or Replacement

Issue #	Part Info	Group(s) Affected:		
10	GR8 Tester V8150 Handheld	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
Tester has damaged, corroded or bent/worn clamps on V8150 or GR8 testers preventing good contact with battery.



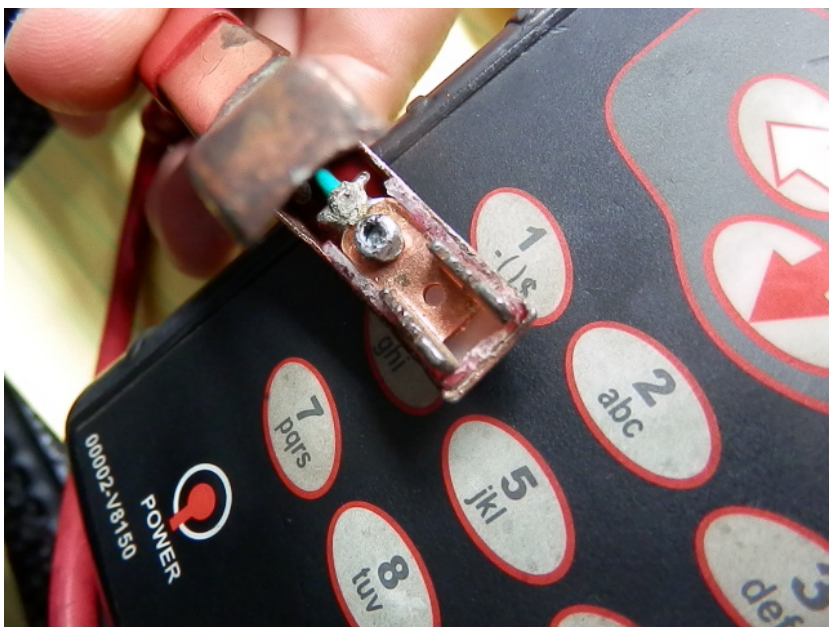
Observed Situation:
Corrosion or damage on GR8 or handheld tester, bent clamps.

Concern:
Tester clamps should be kept clean and periodically wire brushed in order to provide accurate results. If the tester clamps are corroded or damaged any resistance from corrosion of the clamps will interfere with proper testing.

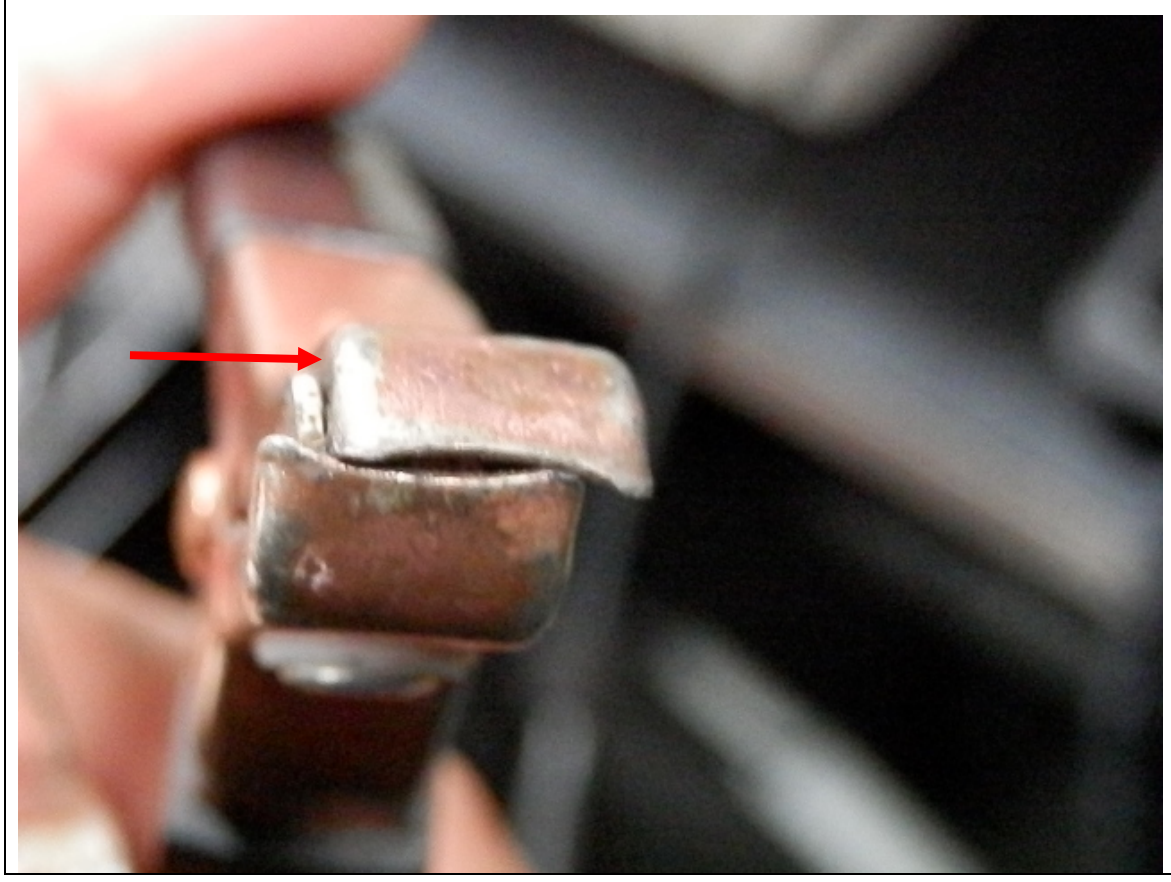
Suggested Change
1. Suggest as part of battery test, corrosion is removed from the clamps, and if they exhibit signs of fatigue or “bending” they are replaced. Note: On the GR8, the Temp sensor wire is the small wire inside the clamp and may be difficult to detect damage or repair.

2. It will be necessary to spread the clamp jaws and examine that area as well as the jaws. Wire brush periodically to remove corrosion.

3. Consider scheduled maintenance at an interval (monthly/weekly etc) to inspect for damage, order appropriate replacement parts, or arrange for repairs.



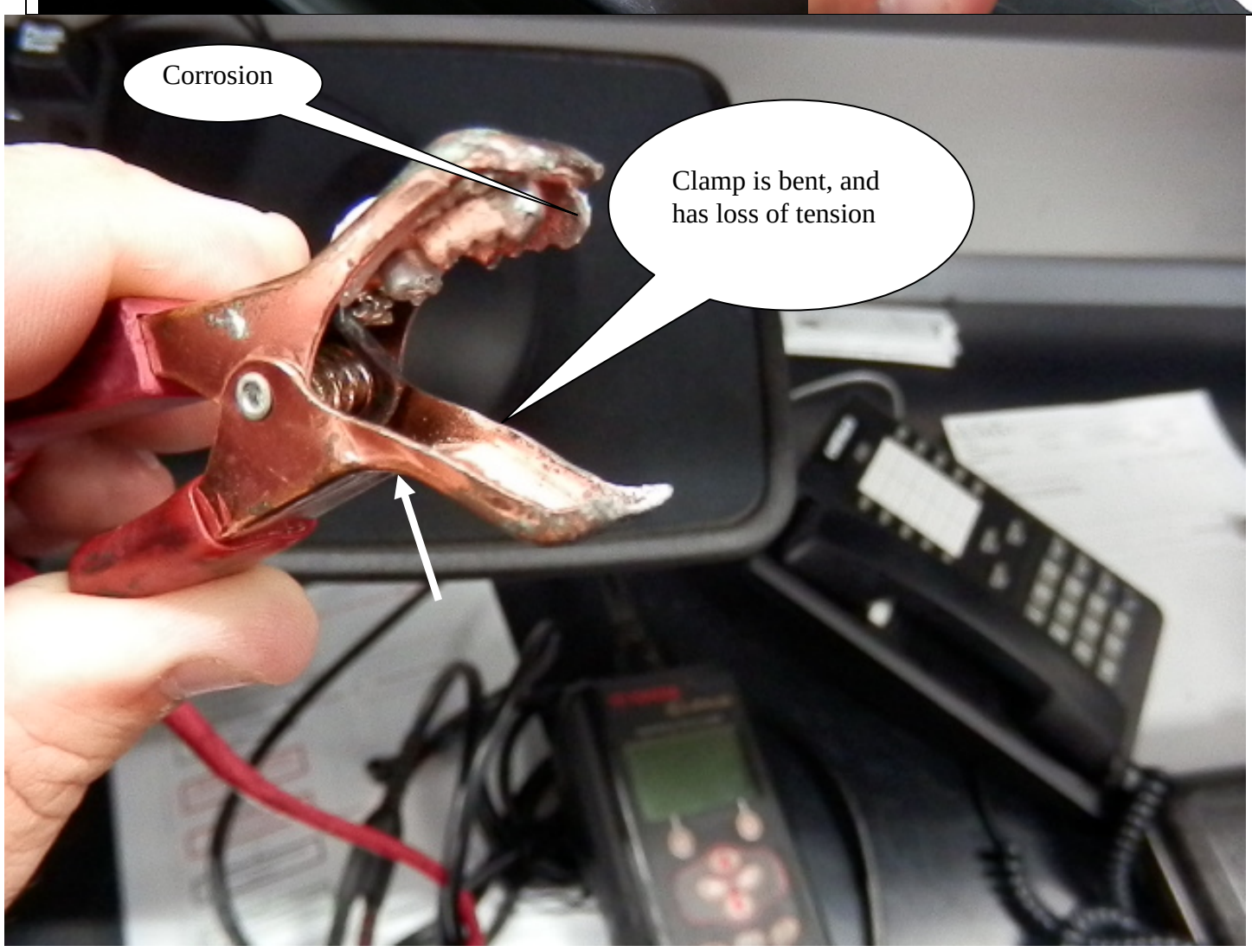
Dealer Concerns:

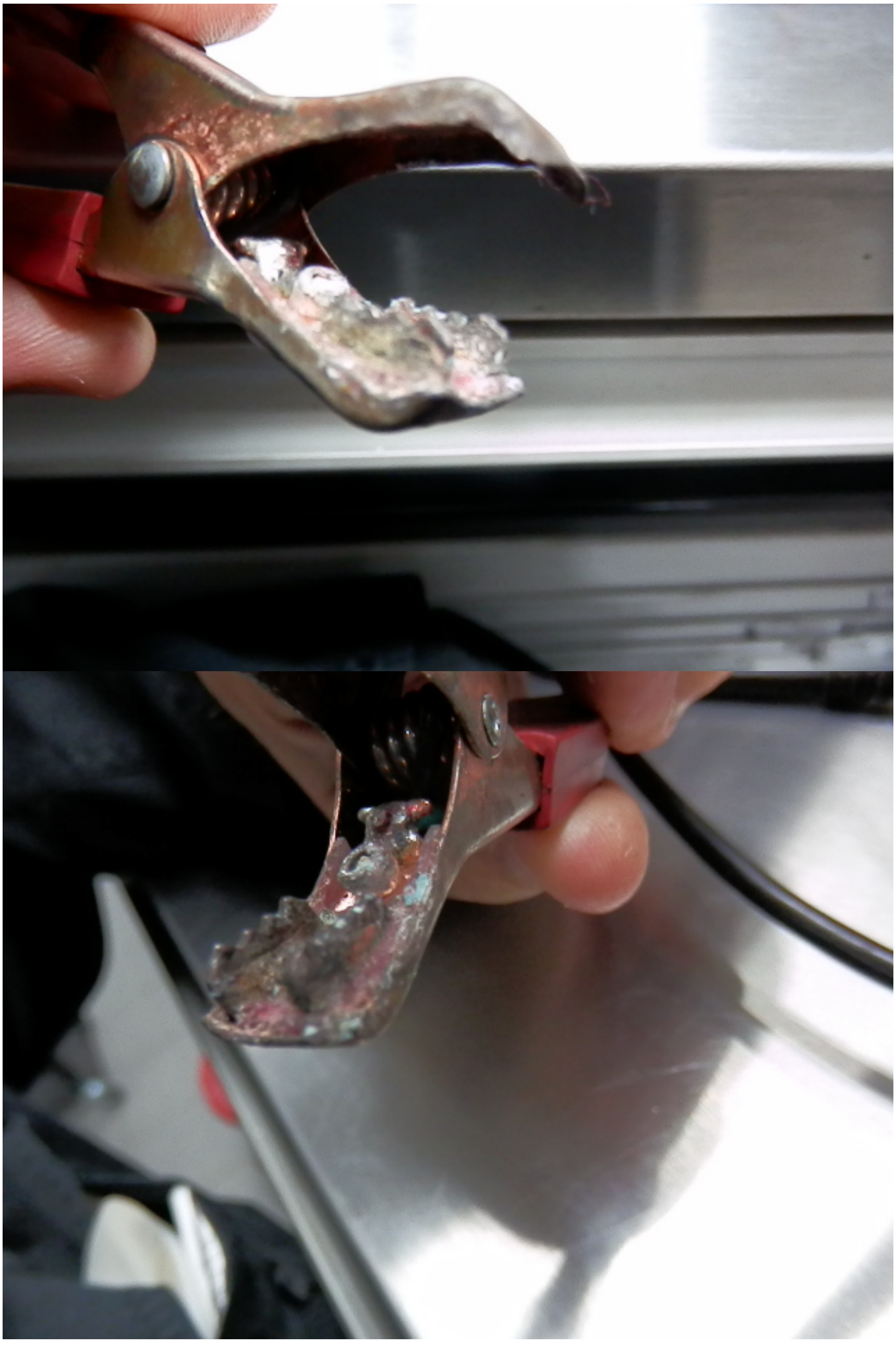


TMS Product Quality & Service Support




Bent/worn clamp


Corrosion
Clamp is bent, and
has loss of tension



TMS Product Quality & Service Support

Sales Request Battery Replaced prior to Warranty End

Issue #	Part Info:	Group(s) Affected:		
11.	Replacement before failure	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition
Some salespersons may request customer's battery to be replaced if it is near the end of the warranty period even though the battery has not failed.

Other conditions at the dealer may affect battery service life.

Observed Situation:
Technicians should not be requested to replace a battery by simply because it is near the end of warranty.

Concern:
Asking a technician to do something like this puts them in a difficult position.

Suggested Changes
1. Some dealers have had good experience with explaining to the customer that the battery will fail at some point beyond warranty, and we cannot predict when that will occur. No battery lasts forever, they do wear out. Consider adopting this process.

The customer should decide if they want to pay for the "peace of mind" that comes with a new battery if near end of warranty. Consideration should also be given to those customers who barely drive their vehicles except on weekends, short distances, or the vehicle sits around a lot (low mileage.) In these circumstances the customer could choose to wait until the battery fails, but they should be aware when a car battery sits with low state of charge from not being driven, it affects battery life.

3. In addition slow moving vehicles which sit on the dealer's lot for a significant amount of time also affect battery life. Suggest to confer with new car sales and have them absorb the cost to install a new battery when a vehicle is sold with over a month (or some period) of sitting on the lot if no charging process is to be adopted as per TMS TSB/warranty guidelines. Many dealers do this as a customer satisfaction effort.

Studies suggest the longer a vehicle sits on the lot the greater the chance the customer will have a battery repair either right after purchase or towards the end of warranty.

Please consider the customer satisfaction/ownernship experience after sale is affected, as they could come in with a discharged battery. There is a correlation between leaving the car sit too long and battery life.

Dealer Concerns:

Temp Sensor Held Too Far Away

Issue #	Part Info	Group(s) Affected:
12	Test Procedure	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐

Condition
The V8150 handheld battery tester relies on temperature reading to judge the current flow for accuracy, if not accurate, battery test result can vary.

Observed Situation:
Holding the handheld tester temp sensor too far away (more than 2”) from negative battery terminal due to interference by underhood engine covers.

In some cases it was held around 5 inches from the engine cover, and the battery was at least a couple inches below the cover.

Concern:
If a colder than normal reading is used for a hot battery a comeback could result.

As temperature increases, current flow should increase. As temperature decreases current flow decreases. Both are factors used to determine through software if a battery is failed.

If the handheld battery tester sensor is held too far away from the battery it may not indicate the true temperature of the battery.

Although engine covers hamper this test, it is critical to accurately determine battery temperature.

Comebacks may result because you are indicating the battery is providing more current than it actually is.

Suggested Change
Move the tester within 2” of the negative terminal, remove the engine covers if necessary to get an accurate reading.

If you see the temperature indicated on the tester is low or room temperature, but the battery is warm to touch, the distance between the terminal of the battery and the tester sensor may be too far or the sensor may be damaged.

Dealer Concerns

Testing Anomaly

Issue #	Part Info	Group(s) Affected:		
13	**Battery tester awareness of Anomaly**	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
Battery Tester parts wear out, and can become damaged. Damage is difficult to detect in some cases if the technician keeps moving the tester cable around until the test proceeds. Due diligence should be made to determine if a tester is producing accurate tests.

Observed Situation:
Battery tester would not indicate battery voltage. The tester cables were moved around, and then the battery would show a charge. It did not appear to be caused by a poor fit from tester clamp to battery post, only moving the cable around allowed the test to proceed. This could lead to false bad battery readings if the tester picks up a high resistance reading of the tester cable, or if the tester itself is damaged.

Concern:
Some batteries may not indicate a failed reading if the tester was providing accurate results.

Suggested Change
Encourage technicians to report conditions where equipment is working erratically, and have appropriate repairs completed.

Although the general thought was the GR8 tester failure would be permanent, the condition can be intermittent. Suggest to not rely on total inability to use the tester, if signs it are present the tester is not working properly, replace the cables or have it refurbished.

Consideration may be given to preventative cable replacement at some interval instead of waiting for erroneous results.

Dealer Concerns:

CCA Rating in Tester Does Not Match Vehicle Battery

Issue #	Part Info	Group(s) Affected:
14	Tester information entry	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐

Condition:
Be sure the model of battery in the car (CCA) matches the rated capacity indicated by the tester and materials provided to Lexus.

Observed Situation:
A battery was tested by entering a lower CCA than the actual CCA rating. The effect assured the battery had to meet less than the minimum spec to pass. In addition OEM and replacement batteries installed in the vehicle may have different specifications depending upon which battery was actually installed.

Concern:
This could lead to a comeback when the battery is truly in a reduced capacity state.

When the battery passed it was because insufficient CCA rating was used to judge it as a “Good” battery. Had the actual CCA rating been used the test result may have been different.

Additional information:
An example of vastly different CCA ratings is the factory OE battery for 2005 SC300. It is rated at 447 CCA, but the replacement battery is rated at 675 CCA.

If you test a replacement battery (675 CCA rating) at 447 CCA and it passes the battery at 475 CCA the battery has actually degraded significantly. This is easy to do by entering the wrong CCA if testing by CCA, or by using the original model battery test instead of the

It may not show a “good” rating if was tested at 675 CCA since it has dropped roughly 1/3 of the actual capacity. The test strip or tester screen and the Lexus battery stock number chart should agree on the rated CCA.

Suggested Change:
If not already available print out and laminate the battery ratings sheet (available Via TIS) and keep it with each GR8 and handheld testers. Be sure technicans are aware the CCA rating is critical.

Examine the rated CCA on the tester and the Lexus battery Stock number chart to assure the correct CCA was utilized.

Dealer Concerns

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Tester Software Version

Issue #	Part Info:	Group(s) Affected:		
15	Tester Software	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
Tools were up to date on software versions.

Observed Situation:
Extra effort had been in place to update the software versions of the battery tester GR8 and V8150, and this is commendable!

Concern:
None on the dealer side.

A possibility exists on distributor side to miss updates to Tester software. If necessary, offer to update their tester software.

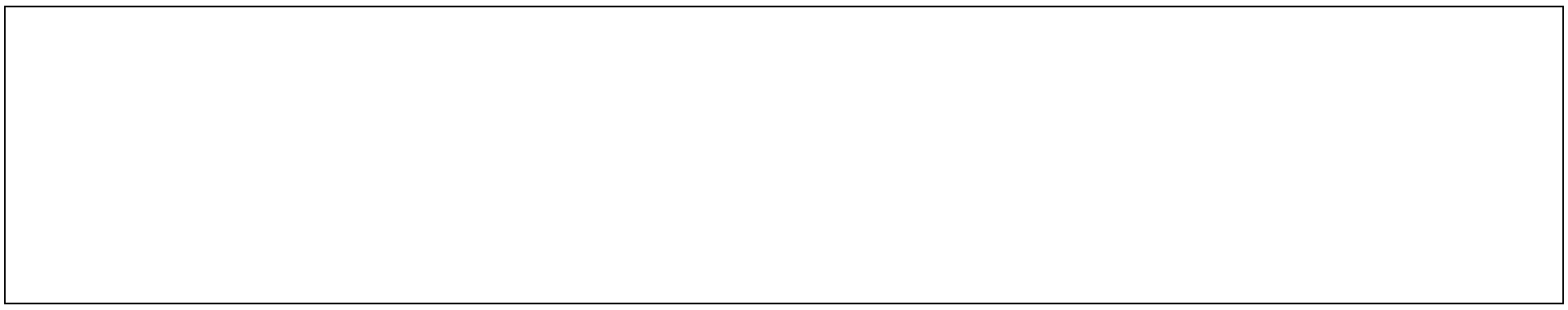


Suggested Change:
No change on the dealer side, but ensure the Interstate driver's battery tester is up to date.

FYI: New versions of software in the future will focus on CCA as the primary test instead of model or JIS. Continue to use the "model" method to generate codes as currently that is the best way to get the warranty code. When doing a second test, use CCA and in the second test.

The CCA by "Model" should be very similar on the original test and subsequent tests by CCA on the printout.

Dealer Concerns:



Monitor Comebacks

Issue #	Part Info:	Group(s) Affected:		
16	Changes in Policy	Service ☐ Parts ☐ Roadside Assistance ☐ Sales ☐ Vehicle delivery/Logistics ☐		

Condition:
Because changes are suggested in policy that may mean less batteries are replaced, there is a concern that “comebacks” may result.

Concern:
This is a commendable concern.

At other dealers who earnestly implemented changes at the technician level, and included multiple tests of batteries had few customers who returned, even though significant changes in test procedures took place.

Suggested Change
Monitor the situation, if customers come back consider if more goodwill is appropriate with your district representative.

TMS is willing to investigate causes and offer suggestions. We also welcome your suggestions and hearing what works for you.

Be aware through you are judged by your peer’s warranty, and TMC is monitoring warranty on batteries more closely than in the past.

You may wish to implement the recommended changes for 1-2 months, then evaluate the results.

Dealer Concerns: