MAS003090 (MSC 22-08)

Circular Letter
FROM Maserati TSO
TO Maserati Network

Maserati

PERSONAL SERVICE LAB

MASTERS OF CARE

New Policy for Battery Warranty Replacement – Maintenance and Recharging Rules

DATE: JUNE 13 2022

This Bulletin provides new information regarding the current warranty battery replacement/recharging Policy. The new policy will now require two battery test results for warranty claim reimbursement; a "before" and "after" test regardless of the battery condition.

The following documentation must be attached to the warranty claim:

- Results of the first battery test using the Pico Diagnostics upon vehicle arrival at the workshop (name the file "*Starting test*") (Ref. **DIAGNOSTIC PROCEDURES**)

- Results of the second battery test (Ref. **DIAGNOSTIC PROCEDURES**) using the Pico Diagnostics after fully recharging the battery and having waited for at least 4hours (name the file "*Final test*"). (Ref. **BATTERY MAINTENANCE AND RECHARGING**)

- Photographic documentation of battery Label (Part # and CCA must be visible)

Refer to the most recent published "Prior Approval Components List" to verify if a BOL Report is required for battery replacement.

ATTENTION:

BOL or Warranty Claims related to inconclusive Battery Test reports may be subjected to rejection/transferred

Operational Procedure Sections:

Follow the section guidelines below to perform conclusive documentation for battery warranty reimbursement:

1. **DIAGNOSTIC PROCEDURES**
   - A) Battery Pre-diagnostic Inspection
   - B) Visual Inspection
   - C) Performing a Battery test

2. **BATTERY MAINTENANCE AND RECHARGING**
   - A) Battery Maintenance
   - B) Battery charging - Safety
   - C) Battery charging - Procedures

3. **BATTERY TYPES**

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1. DIAGNOSTIC PROCEDURES

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A) Battery Pre-diagnostic Inspection

In case of first visit for a dead battery, follow the diagnostic steps below:

1. Ask the customer about his/her habits that may cause abnormal battery discharge, such as:
   - light switch left in the "PARK" position
   - light switch left in the "LOW" beam position
   - On M15X (QP and Ghibli) only, the internal backlight rheostat left in the "ceiling lights ON" position
   - Battery disconnected and reconnected by the customer in an area with no GPS signal coverage. Over time, this could cause the TBM to absorb more electrical power than normal while trying to communicate to the server.
2. Check for aftermarket components installed in the vehicle.
3. Perform a visual inspection of the battery including all components connected to it. See Section "**B) Visual Inspection**" for more details below.
4. Perform a complete vehicle scan report of all modules and save it. PDF format
5. If DTCs are present or if there are other faults, check the components/function causing the error and/or fault, by checking the condition of the connection/wiring/fuse relating to that specific component.
6. If the vehicle is in the workshop for frequent battery discharge or if the vehicle was recently serviced for the same problem. Perform a parasitic draw test (Battery drain in sleep condition should be below 70 mA). Open a BOL as "SUPPORT REQUEST" and attach, and report all the information collected throughout all the above checks.

B) Visual Inspection

1. Inspect the battery and BDU (Battery Distribution Unit) terminals for damage/corrosion, and ensure they are properly tightened including the negative cable connected to the chassis. (Loose contacts can visually be identified by electrical arcing burn marks or melted nylon lock nuts which may also set DTCs and prevent proper operation and adversely affect battery life).
2. Make sure the battery casing is not damaged and is properly fastened to the car.

C) Performing a Battery Test

If the vehicle can crank and start. A complete battery starting, and recharging test must be performed using the Pico Diagnostics application on Maserati MD EVO. Using any other instrument will not be accepted for warranty claims. However, If the battery is seriously damaged or discharged and the engine will not start (even after a complete recharging cycle) a generic battery diagnostic tool can be used instead.

1. Connect the MDVMM module to the EVO, run Pico Diagnostics software and select "Test battery".
2. Connect a standard test cable with BNC connector to channel A of MDVMM; use two alligator clamps to connect the test cable to battery positive and negative poles.
3. Connect 200/2000A current clamp (PN 900028375) to channel B of MDVMM, switch it on, set 2000 A, and reset it by pressing "Zero" button located on it. Connect it to the battery negative pole to measure starting and recharging current. (**See Example Pic. 1**)

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Picture 1

4. Select the correct battery specifications: lead acid-type battery (option "Lead-acid"), AGM, or EFB via the Pico Diagnostics software.

The type of battery is indicated on the labels on the battery

5. Input the remaining data: nominal voltage drops, CCA nominal value (EN or SAE value), and battery temperature. **NOTE:** Incorrectly inputting these values may cause inconclusive readings resulting in warranty claim rejection.

Example of Maserati battery specifications on the most recent models:

Maserati Spare PN	PN Co.De.P	TYPE	Specification	Standard
673000080	670008110 670002027	EFB	100AH-800A	EN
673001440	670005523	AGM	95AH-850A	EN
673005577	670037337	EFB	95AH-800A	EN

6. Make sure the KIN is in the OFF position and the vehicle is in sleep mode (i.e. the IPC central display is off) before clicking the "Start" button of the application and proceeding with the engine cranking.

7. Click Start on the screen and crank the engine.

The program will analyze voltage and current data from the battery, both during starting and recharging. This data provides useful information on battery status and its starting and recharging circuit. Results are shown on the display, Voltage and current are also displayed in a chart. In the battery test outcome report, only "Condition" must be evaluated according to the instructions provided below.

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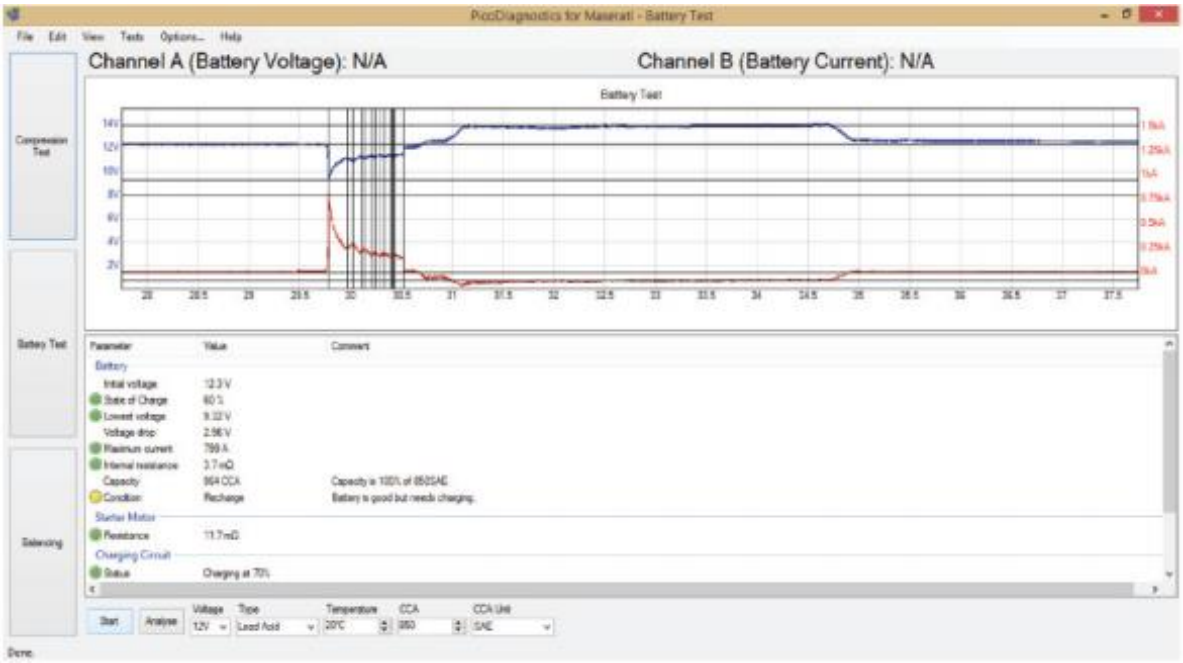

State of Charge	60 %
Lowest voltage	9.32 V
Voltage drop	2.96 V
Maximum current	799 A
Internal resistance	3.7 mΩ
Capacity	964 CCA
Condition	Recharge
Starter Motor	
Resistance	11.7 mΩ

Green: Battery OK

Yellow: Battery needs recharging. Recharge the battery and repeat the test.

Red: Battery NOT OK. Before changing the battery, run a complete recharging cycle and repeat the test again to confirm initial diagnosis

8. If the State Of Charge (SOC) is correct but the Cold Cranking Amps (CCA) is low, check battery connections. A loose, dirty, or oxidized connection could create additional resistance in the circuit. In such cases, restore at first the normal status of the connections before executing the test.

9. If a failed battery test is displayed, run a complete recharging cycle, and repeat the test after waiting at least 4 hours.
10. Use a suitable battery charger for various types of batteries fitted on Maserati vehicles. Select the correct battery specifications and comply with recharging time and methods as indicated by the instrument.

11. If the second battery test fails or if an abnormal battery drain is identified in the vehicle causing a dead battery with consequent recharging needed, it will be possible to request in warranty a refund of the diagnosis carried out using the following operation code:

OP CODE for BATTERY TEST 0.20.046.0 => 0.50h
(Additional straight time for diagnosis will not be supported unless approved in a BOL)

NOTE: For a conclusive Battery Test result. Please pay great attention to the following items:

- Make sure the current clamp is not turned OFF, after a given time, this might happen because of the auto-off settings of the tool. Additionally, If the current clamp is not securely connected, the value of the "maximum current" measured by the tool might be too low or null. (**See Example 1**) Below
- Do not connect any battery maintainer/booster or similar device(s) while performing the test. This might alter the estimated value of the maximum current. (**See Example 2**) Below

- Wait at least 4 hours until the next battery test to obtain a reliable test result.

If the above items are not correctly followed, the battery test result may falsely suggest battery replacement is required.

It is important to note that the State of Charge (SOC) from the test should NOT be used to estimate the residual charge after several rest and recharge cycles of the battery.

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EXAMPLE 1 - CURRENT CLAMP NOT CONNECTED OR OFF

Battery

Initial voltage	12.8 V
State of Charge	100 %
Lowest voltage	12.8 V
Voltage drop	-76.2 mV
Maximum current	15 A
Internal resistance	-17.6 kΩ
Capacity	0 CCA Capacity is 0% of 850EN
Condition	Replace Battery has failed.

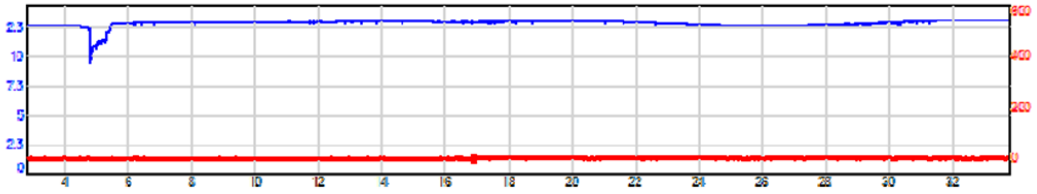
Starter Motor

Resistance	-123 kΩ

Charging System

Status	Charging at 20%
Voltage	13 V
Ripple	202 mV
Current	99.1 mA

Graph



EXAMPLE 2 - BATTERY MAINTAINER/BOOSTER CONNECTED TO THE VEHICLE

Battery

Initial voltage	12.1 V
State of Charge	30 %
Lowest voltage	5.3 V
Voltage drop	6.83 V
Maximum current	43 A
Internal resistance	157 mΩ
Capacity	21 CCA Capacity is 2% of 850EN
Condition	Replace Battery has failed.

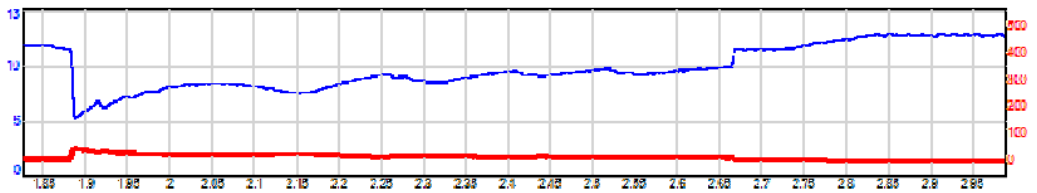
Starter Motor

Resistance	122 mΩ

Charging System

Status	Charging at 100%
Voltage	14.5 V
Ripple	310 mV
Current	4.22 A

Graph



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2. BATTERY MAINTENANCE AND RECHARGING

A) Battery Maintenance

To preserve battery life, it is important to maintain and recharge it appropriately.

It is important to avoid operating the battery at low charge levels. Holding a battery at less than 50% of the charge level for a long period will lead to sulphation and reduce the battery's capacity and starting current. The battery will also become more prone to freezing. Use a digital multimeter to measure battery open-circuit voltage; if lower than 12.40V, recharge the battery. If the car is held in stock, check battery voltage monthly. Before delivery to the Owner, fully recharge the battery if open-circuit voltage is lower than 12.40V.

Maserati recommends using a battery tender if customer does not drive the vehicle often. Please review the Owner's Manual for further details.

Note: Around 12V measured at the battery while the engine is idling may be normal due to the Smart Alternator Management (SAM) equipped in Maserati vehicles. Further details available in Maserati training material (Core vehicle electronic systems Advanced diagnosis & repair booklet)

B) Battery Charging – Safety

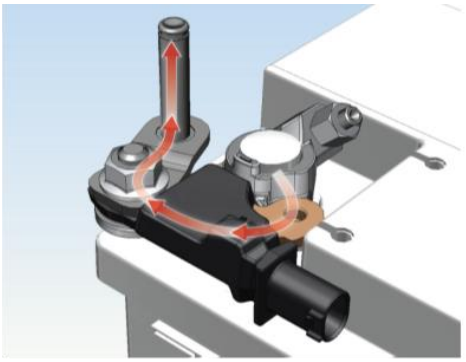
Please remember that the recharging process generates hydrogen, a potentially hazardous gas. Please wear the appropriate Personal Protective Equipment.

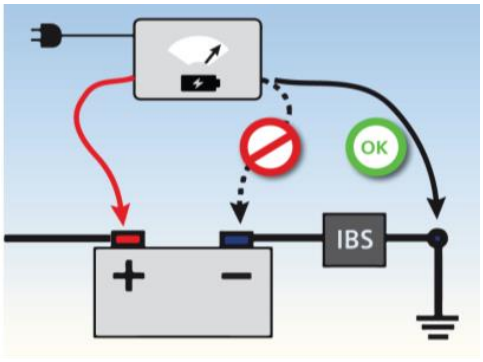
Always follow these precautions when recharging a battery:

- Recharge the battery in a well-ventilated environment.
- Never recharge a battery that has frozen.
- Ensure that the area is well away from sparks and/or bare flames.
- Do not interrupt battery charge until the instrument confirms charge completion.

C) Battery charging –Procedure

When charging the vehicle's battery using an external battery charger, be sure to connect the charger clamps correctly so that the IBS can monitor the negative charger clamp (see arrows). Any point on the chassis and IBS is acceptable with the only exception of the clamp on the negative battery terminal. Refer to the picture below:





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The device for recharging batteries allowed by MASERATI is the following one:

Description	Use
ACCTIVA PROFESSIONAL 35 A	Charger for: Lead-acid flooded batteries, Pb Heavy Duty, Pb AGM

As an alternative to the above charger, it is also possible to use other devices if they comply with the minimum requirements below:

Parameter/Condition	Minimum Requirement
Operating condition	The device must be able to operate outdoors. Minimum level of protection against water: IP23
Operating Temperature	0 °C to +50 °C
Storage Temperature	-20 °C to +70 °C

Power supply voltage	230V AC – 50Hz /16A
Type of rechargeable batteries	Flooded type, AGM Spiral, AGM
Charging Mode	Automatic / Manual
Test Standard	IEC, EN1, EN2, SAE, DIN
Protections	Device must NOT work if: - Not connected to battery - Not properly connected to battery (reversed polarity)
Cable length	Between 1.5 and 3 metres
Compliance to	- CEN/CENELEC EN 45014 - ISO/IEC Guide 22
Information on ID label	- Trademark - Voltage (V) - Charging current (A)
Outfit documents	Recharge instructions and relevant warnings

Note: For recharging the batteries, the use of devices not meeting the minimum requirements will not allow nor ensure proper battery recharge and can even seriously damage vehicle electric/electronic components. To correctly use the device, please refer to its Manual.

3. BATTERY TYPES

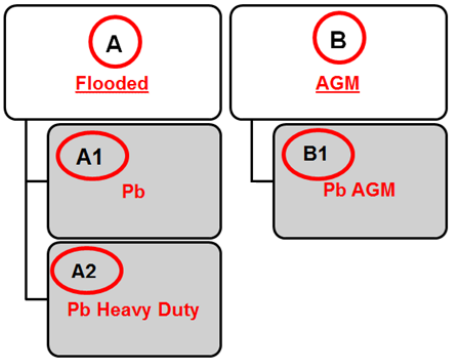
Batteries can be:

- A – Flooded.
- B – AGM (Absorbed Glass Mat).

Flooded batteries can be broken down into:

- A1 – Pb for standard applications.
- A2 – Pb Heavy Duty for Start &Stop applications.

Please find here below an overview.



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