



**27-19-01 - Battery Testing and Charging Using Midtronics VAS6161 and or GRX3000VAS Charger**

Release date: 6/28/2023

## Condition

Applicable Vehicles					
Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
All (except Routan)	1998-2024	All	All	All	All

Revision Table			
Instance Number	Published Date	Version Number	Reason For Update
2011894/24	6/28/23	27-19-01	Metadata adjustment and update to model year applicability.
2011894/22	12/6/22	27-19-01	Update to model year applicability.
2011894/20	6/8/22	27-19-01	To remove obsolete testers MCR340 and In-Charge 940.
2011894/19	5/16/22	27-19-01	To include information regarding VAS 6161 usage.
2011894/1	10/6/06	V270603	Original publication.



**Note:**

This technical bulletin covers testing and repair procedures for multiple vehicle lines, model years and engine combinations. To prevent mis-diagnosis, you must ensure that the testing/repair procedure is applicable to the vehicle you are servicing and the correct battery type is entered in the tester.



**Tip:**

- Make sure software levels on the testing equipment are at their latest levels.
- Enhanced Flooded Battery (EFB) function only available on VAS6161 and GRX3000VAS.



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## Technical Background

The VAS6161 and GRX3000VAS are the only VW approved battery testers and chargers that can be used to test and charge batteries in VW vehicles. Use of non-approved battery testers and chargers is not allowed, as internal battery damage may occur.



**Note:**

GFF is NOT approved to pass/fail the 12volt battery.

## Production Solution

No production change required.

## Service



**WARNING**

**Danger of injury! Prior to handling or servicing batteries, read, understand and observe all Warnings and Safety Measures for lead-acid batteries.**



**Note:**

In order to prevent damage to battery or vehicle, observe battery type descriptions and notes.



**Tip:**

- Switch off all electrical consumers.
- Switch ignition OFF and remove ignition key.

### Battery Testing/Charging Sections:

2-1 All Models 1998 - 2022, Except Passat/CC 3.6L, Eos 3.2L, Golf VR4/R32, Touareg and Phaeton

2-2 Passat, Passat Wagon and CC with 3.6L 2006-2013 (Rear Battery)

2-3 Eos 3.2L 2006 - 2008

2-4 Golf VR4/R32 2008

2-5 Touareg 2004 - 2017

2-6 Phaeton 2003 - 2006

2-7 VAS6161, GRX3000VAS Trouble Shooting Error Messages



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**2-1 All Models 1998 - 2022, Except Passat/CC 3.6L, Eos 3.2L, Golf VR4/R32, Touareg and Phaeton**

When testing or charging a battery either installed or removed from vehicle select appropriate battery type:

- Select “Standard” (Lead-Acid) function for **ALL NON-AGM** batteries.
- Select “AGM” function for “Absorbent Glass Mat” (AGM) batteries with “AGM” on battery label.
- Select “EFB” function for “Enhanced Flooded Battery” (EFB) batteries with “EFB” on the battery label.



**Tip:**

- EFB function only available on VAS6161 and GRX3000.
- Make sure software levels on the testing equipment are at their latest levels.



Always use actual DIN rating as shown on battery label - arrow-.



**Tip:**

Label shown is for example only. DIN or SAE specifications may vary from battery to battery.

If DIN rating is not shown:

- Use SAE value as printed on the battery label.

If using SAE value rating:

- Midtronics tester menu option **must be** changed to achieve accurate results.
- A change from DIN to SAE can be made from the “Other” menu option on Midtronics tester.

**2-2 Passat Wagon 2006-2010, Passat and CC with 3.6L 2006-2018 (Rear Battery).**

**Testing/Charging at Battery**

Passat Sedan, CC, 3.6L only 2006-2018:

- Select Lead Acid Battery for 3.6L engine (located in left side of trunk). **450 DIN.**

B6 Passat Wagon 3.6L only 2006-2010:

- Select Regular or AGM (Absorbed Glass Mat) for 3.6L engine (located in left side of trunk) as specified on the battery label. **480-520 DIN AGM.**



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When testing or charging battery installed in vehicle:

- **DO NOT Test/Charge from Remote Location.**



- (3.6L) **DO NOT** use remote location (+) -arrow-.



- (3.6L) **DO NOT** use engine bracket (-) -arrow-.



Always use actual DIN rating as shown on battery label:

- (3.6L) Test/charge battery located in left rear trunk - arrow-.
- Passat Sedan / Passat CC 3.6L uses a lead acid battery **450 DIN**.
- B6 Passat Wagon 3.6L uses an AGM battery. **480 or 520 DIN**.



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**2-3 Eos 3.2L 2006 - 2008**

**Testing/Charging at Battery (Two 6-Volt batteries)**

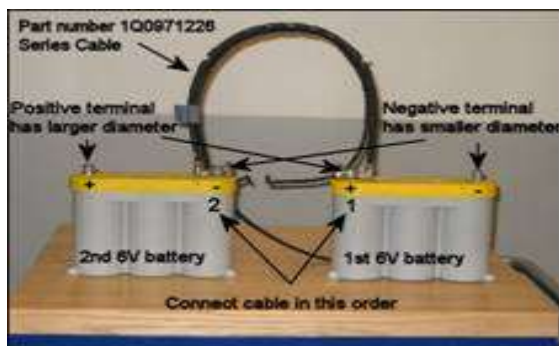
Eos 3.2L engine is equipped with two 6-volt AGM batteries which are connected in series to achieve 12-volts. The battery system must always be treated as a 12-volt battery system. Never attempt to charge only one 6-volt battery. **If battery replacement is necessary, never replace one 6-volt battery; both batteries must be replaced as a pair!**



- Eos 3.2L AGM batteries shown are connected in series.

**Testing/Charging 6-Volt Batteries Out of Vehicle:**

If batteries have been removed from vehicle, never attempt to test/charge one 6-volt battery; as stated above. Treat batteries as a 12-volt system.



- Connect cable (Part No: 1Q0971226) to inner battery terminals.



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- Connect battery tester.



**Tip:**

Cable has (+) and (-) stamps on each terminal. Positive (+) terminal is a larger diameter than Negative (-) terminal. DO NOT attempt to force the wrong terminal of harness onto a battery terminal if it does not fit.

1. Connect cable with positive (+) stamp to inner positive (+) terminal of 1st battery. When doing so, ensure that the other end of the cable (negative) does not make contact with ground or any object. Tighten to 6Nm.
2. Connect the negative (-) terminal of the cable to the inner negative (-) terminal of the 2nd battery. Tighten to 6Nm (53 in. lbs).
3. Connect Midtronics tester positive (+) clamp (red color) to outer positive (+) terminal of 2nd battery.
4. Connect Midtronics tester negative (-) clamp (black color) to outer negative (-) terminal of 1st battery.

When testing/charging is completed:

1. Remove Midtronics tester negative (-) clamp (black color).
2. Remove Midtronics tester positive (+) clamp (red color).
3. Remove battery cable negative (-) connection at 2nd battery negative (-) terminal.
4. Remove battery cable positive (+) connection at 1st battery positive (+) terminal.



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**Testing/charging 6-Volt Batteries in Vehicle:**



**GRX3000VAS**

1. Connect Midtronics tester positive (+) clamp (red color) to outer positive (+) terminal of battery.
2. Connect Midtronics tester negative (-) clamp (black color) to outer negative (-) terminal of other battery.



**VAS6161**

1. Connect Midtronics tester positive (+) clamp (red color) to outer positive (+) terminal of battery.
2. Connect Midtronics tester negative (-) clamp (black color) to outer negative (-) terminal of other battery.

**Testing/Charging In or Out of Vehicle:**

Always verify using DIN rating as shown on battery label.

- Select AGM for 3.2L engine (located in the trunk, one 6-volt battery on each side of the ski-chute). **380 DIN.**



**Tip:**

Label shown is for example only. DIN or SAE specifications may vary from battery to battery.



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**Tip:**

Two 6-volt batteries are connected in series to achieve 12-volts, the same current value will flow through each battery. As a result, only use a DIN value of 380A, **DO NOT** double or halve this value when entering data into Midtronics tester.

If DIN rating is not shown:

- Use SAE value as printed on battery label.

If using SAE value rating:

- Midtronics tester menu option **must be** changed to achieve accurate results.
- A change from DIN to SAE can be made from the “Other” menu option on Midtronics tester.

When testing or charging battery installed in vehicle:

- **DO NOT Test/Charge from Remote Location (3.2L).**



- (3.2L) **DO NOT** use remote location (+) -arrow-.



- (3.2L) **DO NOT** use engine bracket (-) -arrow-.





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- (3.2L) Test/charge AGM battery located in trunk - one 6V battery located on each side of ski chute, as shown.

**2-4 Golf VR4/R32 2008**

**Testing/Charging at Battery**

When testing or charging battery either installed or removed from vehicle:

- Select Standard (Lead-Acid) battery. Located in right trunk area under spare tire and tool kit.
- Always use actual DIN rating from battery label.

When testing or charging battery installed in vehicle:

- **DO NOT Test/Charge from Remote Location (3.2L).**



- (3.2L) **DO NOT** use remote location (+) -arrow-.



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- (3.2L) **DO NOT** use engine bracket (-) -arrow-.



Always use actual DIN rating from battery label.

- (3.2L) Test/charge (Lead Acid) battery located in the trunk.

**2-5 Touareg 2004 – 2017**

**Testing/Charging at Battery**

**Single System – 3.0L (TFSI), 3.0L (TDI), 3.2L, 3.6L, and 4.2L Engines.**



**2.51 Start/Accessory battery**

Always use actual DIN rating as shown on battery label.

Select Standard (Lead-Acid) for 3.0L TFSI 3.0 TDI, 3.6L, and 4.2L engines (Battery located under driver's seat).

 **Tip:**

MY 2003-2010 3.2L, 3.6L, 4.2L (450DIN)

MY 2004-2008 5.0L TDI (520DIN)

MY 2009-2016 3.0L TDI (520DIN)

MY 2011-2017 3.6L (520DIN)

MY 2011-2015 3.0L TFSI Hybrid (420DIN)



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### Dual System – 5.0L (TDI) Engine (2004-2008)



#### Accessory battery

Select Standard (Lead Acid) for 5.0L (TDI) (located under the driver seat). **520 DIN**



#### Starter battery

For 5.0L (TDI) engine (battery in trunk without rim). AGM **520 DIN (PR J2R)**.

For 5.0L (TDI) engine (battery in trunk located under spare tire). Standard (Lead Acid) **450 DIN (PR J2Q)**.

**Note:**

Starter battery must be checked independently of accessory battery.

Starter battery cannot be tested or charged via the remote location in engine compartment. To test or charge starter battery, go directly to battery terminals.



Always use actual DIN rating as shown on battery label - arrow-

**Tip:**

Label shown is for example only. DIN or SAE specifications may vary from battery to battery.



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If DIN rating is not shown:

- Use SAE value as printed on battery label
- If using SAE value rating:
  - The Midtronics tester menu option **must be** changed to achieve accurate results.
  - A change from DIN to SAE can be made from the “Other” menu option on Midtronics tester.

**Testing/Charging from Remote Location (Reduced DIN Rating Requirement)**



When using remote location terminals -arrows-, located in engine compartment, always reduce DIN rating on VAS6161 and GRX3000VAS testers.

- 3.6L, and 4.2L engines: **270 DIN.**
- 3.0L TDI, 5.0L (TDI) engine: **295 DIN.**
- MY2011-2017 3.6L engine: **295DIN**



**Note:**  
For 5.0L (TDI) engine (dual battery system), starter battery cannot be tested or charged via remote location in engine compartment. **To test or charge starter battery, go directly to battery terminals.**



Use of these reduced DIN ratings are required to compensate for the internal battery manager and/or the extended length of cable due to battery location.

**2-6 Phaeton 2003 - 2006**

**Testing/Charging at Battery**

When testing or charging battery either installed or removed from vehicle:

- Select Standard (Lead-Acid) for 4.2L and 6.0L engines (located in right front trunk).
- Select AGM (Absorbed Glass Mat) for 4.2L and 6.0L engines (located in left side trunk).



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Always use actual DIN rating as shown on battery label - arrow-



**Tip:**

Label shown is for example only. DIN or SAE specifications may vary from battery to battery.

If DIN rating is not shown:

- Use SAE value as printed on battery label.

If using SAE value rating:

- Midtronics tester menu option **must be** changed to achieve accurate results.
- A change from DIN to SAE can be made from the “Other” menu option on Midtronics tester.

### Dual System



Starter battery in right side trunk

#### Starter battery

Always use actual DIN rating as shown on battery label.

- Starter battery (Standard) located in right side trunk, as shown: **330 DIN**.



(AGM) On-board accessory battery in left side trunk.

#### On-board accessory battery

Always use actual DIN rating as shown on battery label.

- (AGM) On-board accessory battery located in left side trunk, as shown: **480 DIN or 520 DIN**.

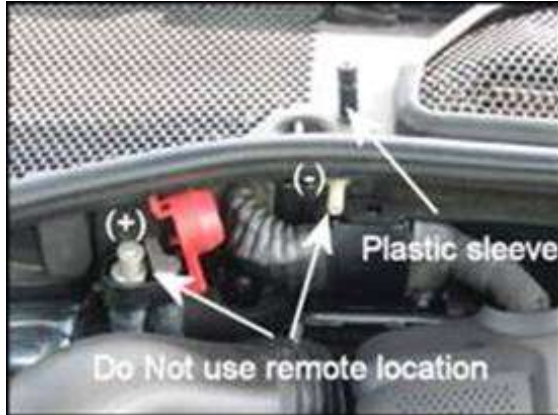


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When testing or charging battery installed in vehicle:

- **DO NOT Test/Charge from remote location**



- **DO NOT** use remote location (+) or (-), -arrows-, as shown.
- **Test/charge batteries directly, located in trunk.**



**Tip:**

There is a plastic sleeve on remote location (-), -arrow-.

**Warranty Battery Test Types and Description for the VAS 6161**

**Inventory Test:** Use this test mode only for vehicles in dealer inventory before the customer warranty start date.

**Warranty Test:** Use this test mode only for vehicles under the current customer vehicle warranty. VIN number input and battery information is a mandatory input for proper claim submittal. Always provide the battery test code for all battery warranty claims.

**Service Test:** This test **IS NOT** to be used for any warranty battery testing. It is designed for out of warranty battery testing only and for customer pay maintenance.



**Note:** For PDI vehicles, use only the GRX3000VAS for testing as per the PDI check list and the 'Ready Set Go' documents on ServiceNet.

**2-7 VAS6161 and GRX3000VAS Trouble Shooting Error Messages**

**VAS6161 and GRX3000VAS\_Displays "System Noise" at Beginning of Test**

VAS6161 and GRX3000VAS may display "System Noise" at beginning of battery test when testing directly at battery.

This is an infrequent and a normal message which may be caused by:

- Ignition left in "ON" position.
- Accessories or loads turned ON, with key in "ON" position.
- Loads running with ignition switched "OFF" such as: cooling fan or after-run coolant pump.
- Aftermarket equipment (due to improper installation), such as entertainment, security, remote starters, televisions, lighting, etc.).



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This may be overcome by verifying:

- Ignition is switched "OFF".
- All loads (cooling fan or after-run coolant pump) are OFF prior to testing.
- Any aftermarket equipment is disconnected from vehicle's electrical system.

Wait a few minutes, and then retest battery again.

**Battery Testing Results: Midtronics VAS6161 Analyzer vs. GRX3000VAS Charging Station**

In some cases, when **testing** a battery using the VAS6161 tester:

Test results may be "Good Battery - Recharge".

However, when attempting to **charge** the same battery with GRX3000VAS Charger:

Results may be to "Replace Battery" either after testing or during charging process.



**Tip:**

This is normal since VAS6161 and GRX3000VAS use a conductance test, but the GRX3000VAS also incorporates use of a 150A load test and "sophisticated" charging algorithm which monitors charging state of the battery.

In this case, results of GRX3000VAS should always be used instead of VAS6161.

**Testing/Charging: GRX3000VAS Charging Station -Automatic Mode-**

When using GRX3000VAS Battery Charging Station in "Automatic Mode", and testing or charging a deeply discharged battery:

GRX3000VAS may continuously display a message "Are clamps connected?"

In order to test battery:

- Manually charge battery for 30 minutes and perform test again.

**Testing/Charging: GRX3000VAS Charging Station -Manual Mode-**

When using GRX3000VAS Battery Charging Station in "Manual Mode", and testing or charging a deeply discharged battery:

GRX3000VAS may display a message "Are clamps connected?" twice.

This is not a result of defective GRX3000VAS test equipment, but is a safety feature of the GRX3000VAS to ensure cables are connected to battery before power is turned **ON**.



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**GRX3000VAS Charging Station Always Displays “Check Connections”**

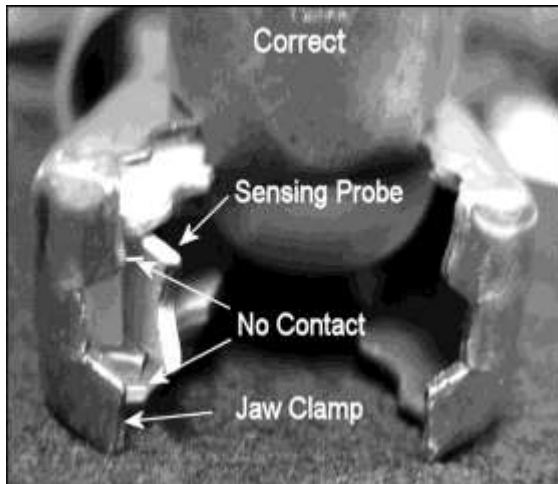
GRX3000VAS may constantly display a message to “Check Connections” after cables are connected to battery terminals.

This is most likely due to the sensing probe making contact with the clamp.

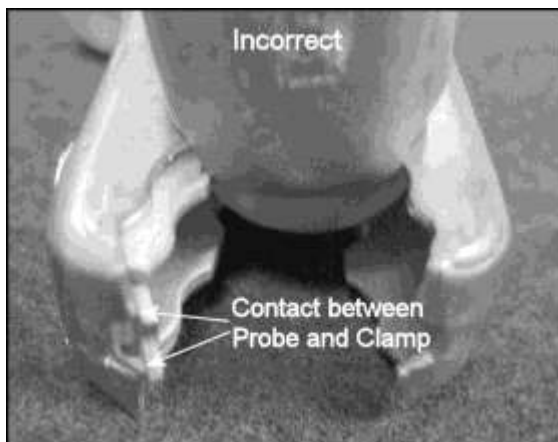


**Tip:**

There is one sensing probe on each clamp, (+) and (-), make sure to check both!



- There must be no contact between the inside connection and outside jaw of clamp -arrows-.



- Inside connection is bent and touching outside of the clamp, -arrows-.



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If clamp is incorrect:

- Use a small flat tool and gently bend sensing probe so it does not make contact with clamp.

If this does not resolve the issue:

- Contact Midtronics Corporation Customer Service Department at 1-800-776-1995 for assistance.

## Warranty

Information only.

## Required Parts and Tools

Information only.

## Additional Information

All part and service references provided in this Technical Bulletin are subject to change and/or removal. Always check with your Parts Dept. and Repair Manuals for the latest information.