Y1A, Y1B, Y1C- High-Voltage (HV) Battery Measurements during HV Battery Repair

Vehicles Affected

Models	Model Year	Model Type	VIN Range	Vehicle-Specific Equipment
Taycan	As of 2020 up to 2024	Y1A, Y1B, Y1C	All	N/A

Revision History

Revision	Release Date	Changes
0	November 6, 2025	▪ Original document
1	November 11, 2025	▪ Update to *Figure 2* ▪ Update to *IR Testing Pass/Fail Criteria* section on page 8

Condition

All Taycan HV batteries are subject to dielectric strength testing after repair according to Workshop Manual WM 270803A5 Performing measurements on the high-voltage battery. In some cases, the VAS 6972 measurement equipment can report a failed Dielectric Strength test (DST). This bulletin serves two purposes. One is to provide an updated test procedure to more accurately isolate test failures, and the second is to serve as an updated diagnostic guide for interpreting the test results. Every safety warning and HV certification requirement from the Workshop Manual also applies to the work instructions contained in this document. Measurement specifications or component replacement requirement guidance listed in this bulletin take precedence over those stated in the Workshop Manual until this bulletin is removed or the workshop manual is updated.

Technical Background

When performing post-repair validation of a Taycan HV battery, it is important to differentiate the purposes of dielectric strength testing and insulation resistance (IR) measurements. Dielectric strength tests assess the ability of the battery's insulation system to withstand a specified high voltage limit without breaking down, ensuring the overall integrity and safety of the high-voltage system under extreme electrical stress. In contrast, IR mearsurements quantify the resistance of the insulation material to direct current leakage, indicating the quality and degradation of the insulation over time before leading to an insulation fault. Both tests are required according to the Workshop Manual.

Service Information

The updated work instructions for dielectric strength testing (DST) are differentiated by HV battery variant in the sections below. Updated IR measurement work instructions apply to both variants. Please note that these instructions are not listed in a step-by-step format, but rather give an overview of the process changes. All instructions should be read for understanding before performing any individual steps. The general order of measurements taken at each point is the same as described in WM 270803A5 Performing measurements on the high-voltage battery.

General DST Procedure Updates:

- Due to the limited cable length of the VAS 6972, grounding to the equipotential bonding line is not possible from all measurement points. The use of the original VAS 6972 ground clamp on the equipotential bonding line is therefore no longer permitted. A straight probe attachment must be used instead.
- Grounding points for DST and IR testing on both 28- and 33-module Taycan battery packs have been modified from WM 270803A5 and are detailed below in *figures 1 and 2*.
- Perform the self test and safety test for the VAS 6972 tool every time before first use during each repair.
- Do not perform an additional DST back to back on any measurement point to confirm a value.
  - Any DST must only be performed once per point if a result is obtained. Only retry a test if it does not yield a result.
  - If a valid result is still not possible after 2 attempts at the same point, contact technical support via PRMS.

DST Procedure for 28-module Taycan Battery Pack (Figure 1)

- Only two DSTs are to be performed on a 28-module battery pack during repair.
- During a DST, only personnel with a 40 Cal Arc Flash suit and approved PPE may be permitted within the cordoned HV safety zone around the battery pack.
- The busbar indicated in red must be removed prior to measurements at either point.
- Perform an IR test at points 1 and 2 before the DST at those points.
- Perform a DST only at points 1 and 2 shown below for each repair scope.
- The yellow boxes in *Figure 1* designate the sections of laser clean surface (silver stripe) to contact using the negative probe to ground the dielectric strength tester. This method ensures consistency in testing.
- Also perform IR tests at points 1 and 2 after a DST, with the negative probe also on the surface designated by the yellow boxes.
- If the DST at measurement point 1 fails, remove busbars and CMC connections from each module shaded in dark blue for further IR testing as described in the following *Updated IR Measurement Procedure* sections.
- If the DST at measurement point 2 fails, remove busbars and CMC connections from each module shaded in light blue module for further IR testing as described in the following *Updated IR Measurement Procedure* sections.
- EXAMPLE: Point 1 passes DST and point 2 fails.
  → Perform IR tests on each light blue module in the failing section (In this example, section 2). No additional work is required for the passing modules in section 1.

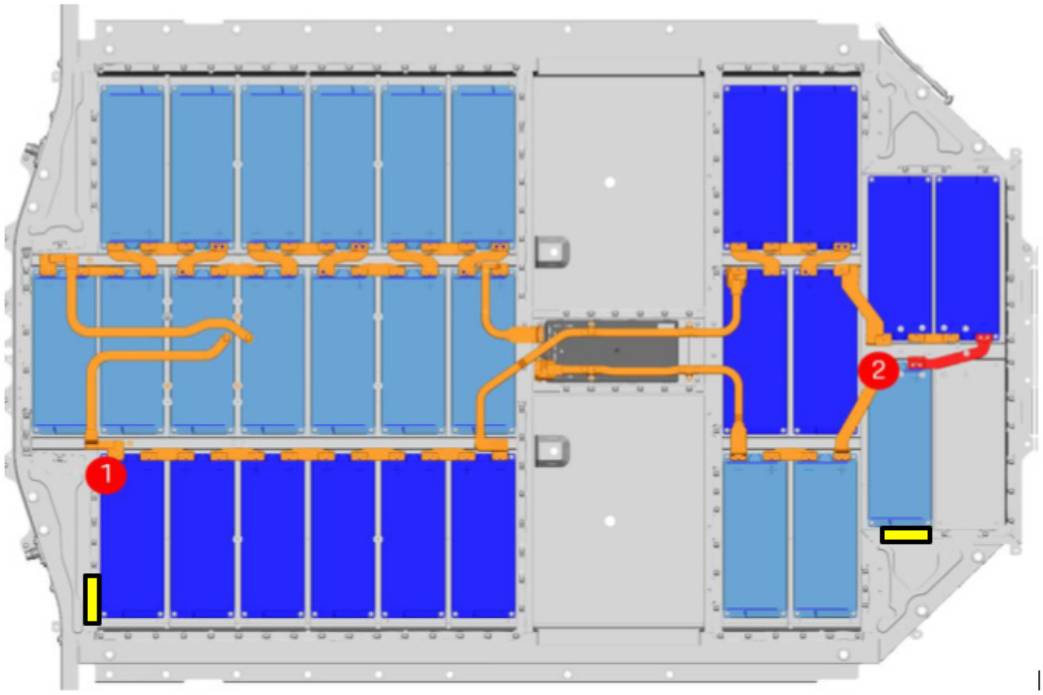

Figure 1 - 28-module HV Battery measurement points

DST Procedure for 33-module Taycan Battery Pack (Figure 2)

- Only a total of three or four dielectric strength tests are to be performed on the 33-module battery pack during repair, depending on scope.
- If removed, the upper "T" Section should be placed aside on a VAS 6762/44 Insulating mat during testing.
- During a DST, only personnel with a 40 Cal Arc Flash suit and Porsche-approved PPE may be permitted within the cordoned HV safety zone around the battery pack.
- Perform an IR test at points 1, 2 and 3 before the DST at those points.
- Perform a DST only at points 1, 2, and 3 for any repair scope involving the lower-level modules.
- Repair scopes in only the upper "T" section require an initial DST (in addition to the points in *figure 2*) at the mid-pack fuse as shown in step 3.9.3 of Safety test after assembly work on the high-voltage battery with 33 modules in WM 270803A5. If the DST fails, proceed with removing the lower lid and perform DSTs at points 1, 2, and 3 as identified below.
- The yellow boxes in *Figure 2* designate the section of laser clean surface (silver stripe) to contact using the negative probe to ground the dielectric strength tester. This method ensures consistency in testing.
- Perform IR tests at points 1, 2, and 3 after a DST, with the negative probe also on the surface designated by the yellow boxes.
- If the DST at measurement point 1 fails, remove busbars and CMC connections from each module shaded in dark blue for further IR testing as described in the following *Updated IR Measurement Procedure* sections.
- If the DST at measurement point 2 fails, remove busbars and CMC connections from each module shaded in light blue for further IR testing as described in the following *Updated IR Measurement Procedure* sections.
- If the DST at measurement point 3 fails, remove busbars and CMC connections from each module in the upper "T" section for further IR testing as described in the following *Updated IR Measurement Procedure* sections.
- EXAMPLE: It is possible for battery to have point 1 pass, point 2 pass, and point 3 fail the DST. It would then only be required to perform further IR tests on each module in the upper "T" section. No additional work would be required for the passing lower sections.

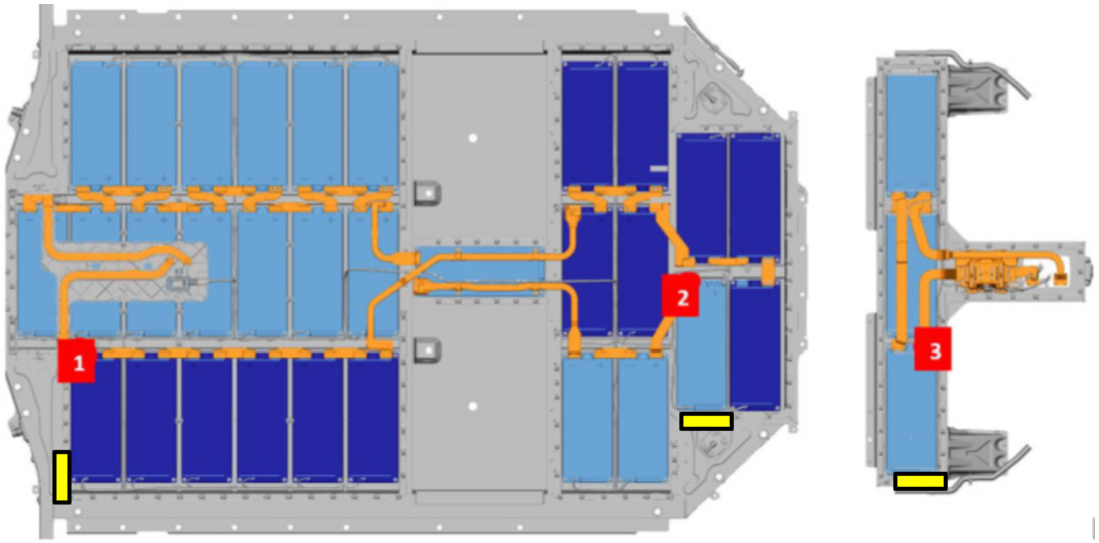

Figure 2 - 33-module HV Battery measurement points

Updated IR Measurement procedure after a DST Failure:

- Perform IR tests at each measurement point in *Figures 1 and 2* before and after a DST at that point.
  → If the DST passes but IR fails, proceed with IR testing each module
- For repair scopes only in the upper level, IR test the upper and lower sections separately after an initial DST failure.
- Discharge capacitance and remove all the busbars from modules of failed section(s) differentiated by light and dark blue in *Figures 1 and 2*.
- Monitor the rate of capacitive discharge on each busbar during removal. Noticeably slow discharge or inconsistent voltage behavior can also point to a damaged module. Keep in mind that a battery with high SoC will also lengthen the capacitive discharge process.
- Perform a close visual inspection of each busbar contact surface and fastener during removal. Order a replacement for any busbar showing signs of arcing, welding, excessive scratches, or any other visual defect. If there is any doubt whether a busbar can safely be reused, contact Technical Support.
- Disconnect all CMC connectors from the modules of failed section(s).
- Two options are available for IR testing in the PIWIS measuring equipment menu. Select “HV System.”
- If IR is below the measurement threshold, the IR test won’t complete in the measurement equipment display. If the IR test fails multiple times on a specific terminal of a module, contact technical support for approval to replace that module.
- IR tests are to be performed on every module at each of the terminals twice in a row. The measurements should be taken immediately back-to-back on on each terminal before advancing to the next one.
- IR testing is conducted using VAS 6558A with both straight probes on the test leads.
- The equipotential bonding cable is no longer used as a ground point for these module IR tests.
- When IR testing a module on the positive terminal: Contact the positive terminal with the red test probe as shown in *Figure 3*.
- When IR testing a module on the negative terminal: Contact the negative terminal with the black test probe as shown in *Figure 4*.

Module IR Testing Procedure: Positive Terminal (Figure 3)

- Place the red probe at the edge closest to the black plastic surrounding the terminal to avoid scratching the conductive surface.
  - → CAUTION: pay attention to the angle of the red probe in this case. Avoid contact with the side of the probe and the edge of the module housing. Use a plastic probe cap to expose only the tip of the probe if available.
- Maintain contact with the black probe to the module case in the center. Ensure that the module casing surface is clean at the point of contact.
- The equipotential bonding cable is not suitable as a ground point during this test. Use both straight probes directly on the module to isolate conductive influences.

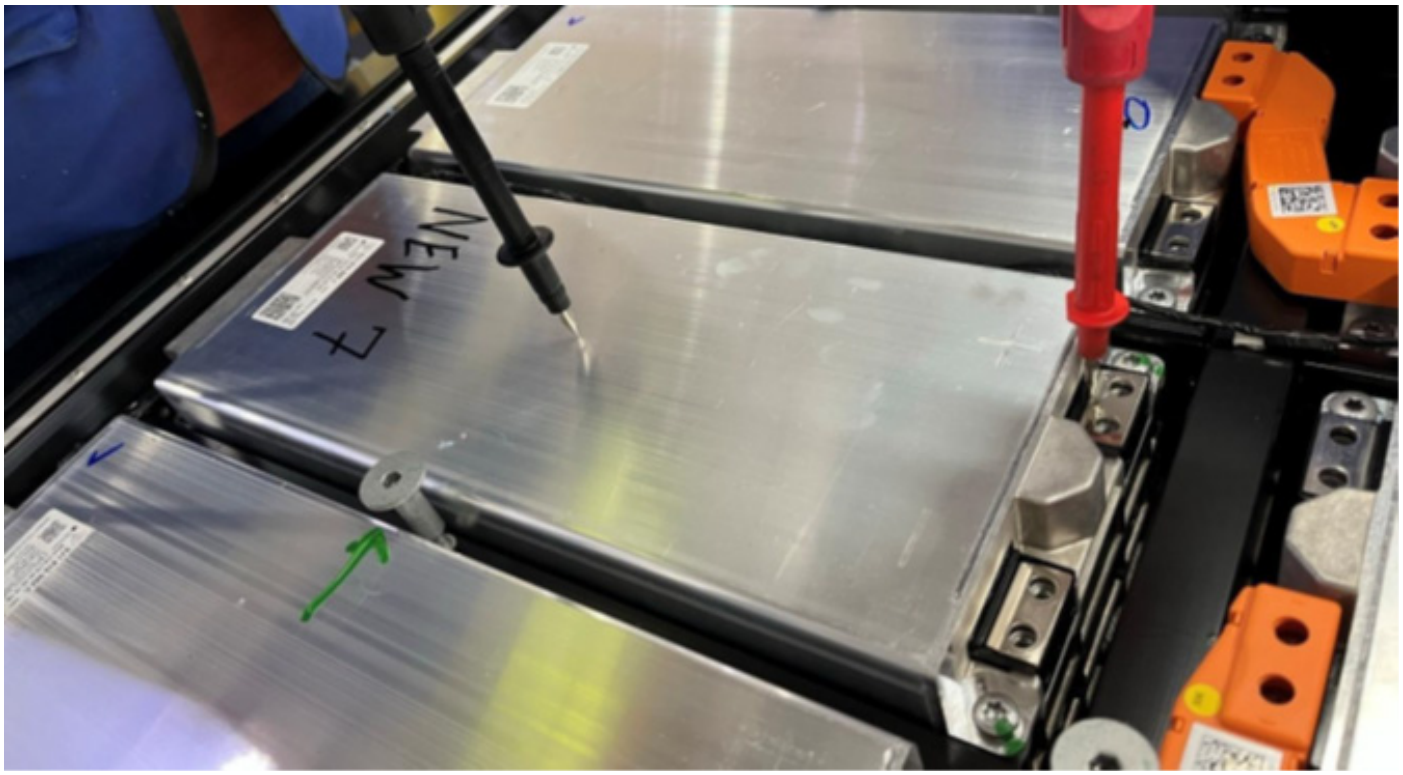

Figure 3 - IR Test at Positive Terminal

Module IR Testing Procedure: Negative Terminal (Figure 4)

- Place the black probe at the edge closest to the black plastic on the terminal to avoid scratching the conductive surface.
  - → CAUTION: Pay attention to the angle of the black probe in this case. Avoid contact with the side of the probe and the edge of the module housing. Use a plastic probe cap to expose only the tip of the probe if available.
- Maintain contact with the red probe to the module case in the center. Ensure that the module casing surface is clean at the point of contact.
- The equipotential bonding cable is not recommended as a ground point during this test. Use both straight probes directly on the module to isolate conductive influences.

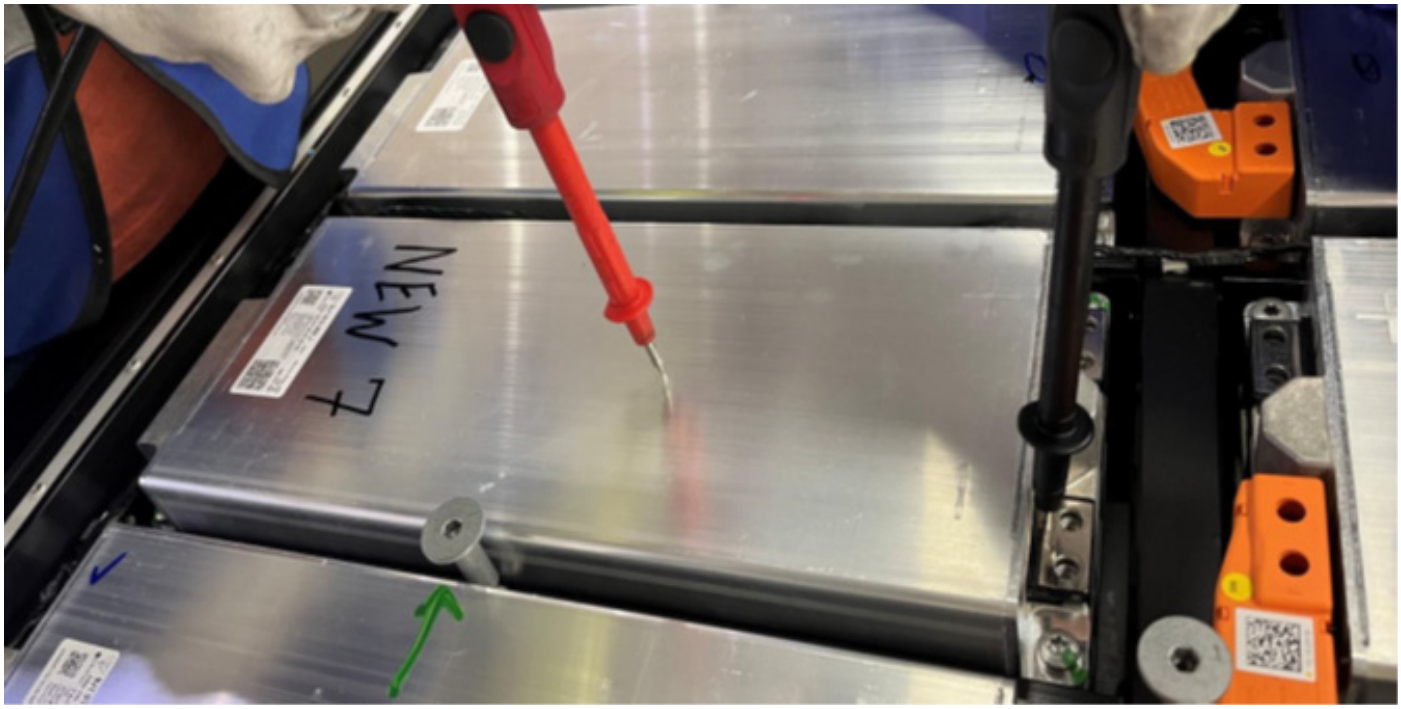

Figure 4 - IR Test at Negative Terminal

IR Testing Pass/Fail Criteria (Figure 5)

- Shown below is an example of passing test result of >5000 MΩ. This is the reading when IR measures above the 500 MOhm measuring threshold.
- If the first IR test on either module terminal fails, but the second one passes, the module is okay and should not be replaced.
- If any second terminal IR test shows a number below 500 MΩ, this is considered a failure.
- Document any failures in the "Module insulation Resistance Template" Excel file attachment and attach to the PRMS Ticket and repair PCSS entry.

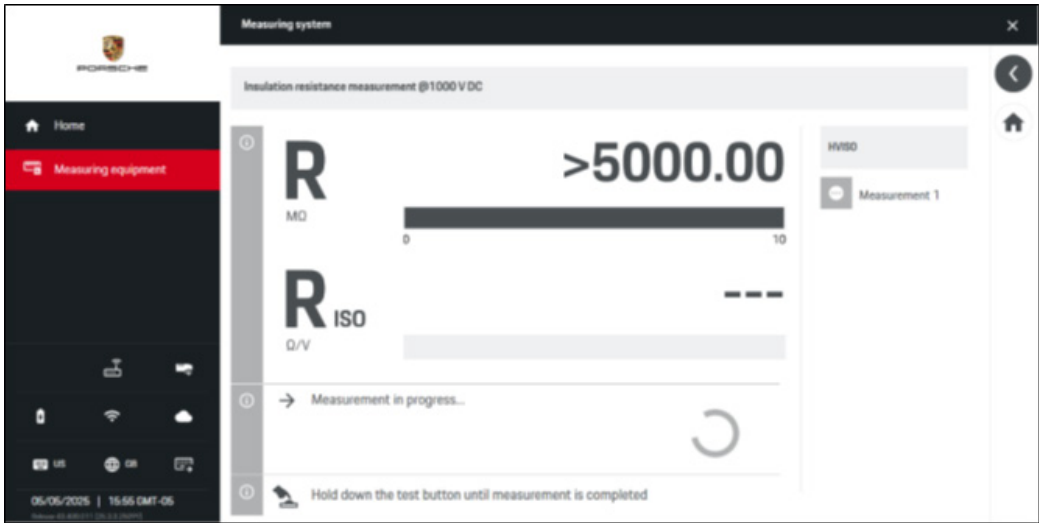

Figure 5 - Insulation resistance measurement in PIWIS Tester

Warranty

For documentation and warranty invoicing, enter the working position and PCSS encryption specified below in the warranty claim:

APOS	Labor operation	I No.
27080375	High-voltage battery measure	

PCSS encryption:

Location (FES5)	2708G	Cell block module
Damage type (SA4)	4053	Voltage loss/drop

Search Items

HV Battery, Isolation resistance, Dielectric strength, Safety test after assembly work