

Taycan: Troubleshooting Charging

Vehicles Affected

Models	Model Year	Model Type	VIN Range	Vehicle-Specific Equipment
Taycan	As of 2020	Y1A	N/A	N/A
Taycan Cross Turismo	As of 2021	Y1B	N/A	N/A
Taycan Sport Turismo	As of 2022	Y1C	N/A	N/A

Revision History

Revision	Release Date	Changes
0	October 7, 2021	Original document
1	January 31, 2023	Revised Service Information; Revised Questionnaire with additional HV Fuse Case Data worksheet

Condition

Duplication and diagnosis of customer charging complaints is difficult without detailed information from the customer. The following documentation aims to assist Porsche Dealership service and support personnel with relevant and necessary information to assist customers with charging complaints.

Technical Background

Charging complaints occur due to a wide range of issues. Root causes span from misunderstanding functions or user configurations to both internal and external hardware or software issues. Additional functionality (for example, Plug and Charge via ISO-15118) increases potential for breakage and complaints. For those reasons, extremely detailed documentation of all customer complaints is necessary to assist duplication and diagnosis.

Service Information

Customers are encouraged to contact the Customer Contact Center directly via 1-800-PORSCHE for first-level, second-level, and immediate support of charging at home or on the road. The customer contact center is prepared to field customer requests and further clear important details in the event additional support discussions are necessary with other suppliers (for example, Electrify America customer care or Agero roadside service support).

Porsche Dealership personnel may contact charging.support@porsche.us for assistance with the following equipment or systems:

- 24 kW Delta DC charger
- 50 kW BTC Power DC charger
- Porsche Charge Boxes
- Porsche Charging Pedestals
- Charge Point Management
- AC Power Base AC charger

NOTE: Dealerships with a "Turnkey" installation contract with ABM for AC and DC Charging installations should contact ABM directly for assistance. ABM Contact Info:

- Phillip Volk (Phillip.Volk@abm.com)
- Brian Arvidson (brian.arvidson@abm.com)

Numerous information sources and documents are currently available to Porsche Dealerships.

- Troubleshooting Charging document with clickable PDF shortcuts (Figure 1), available via both PCSS (Taycan Information Media, WM group 99) and SoliD (Manuals & Guides)
- Charging Complaint Questionnaire, modified for North America Region --> see attached spreadsheet Troubleshooting Charging Questionnaire (Figure 2)

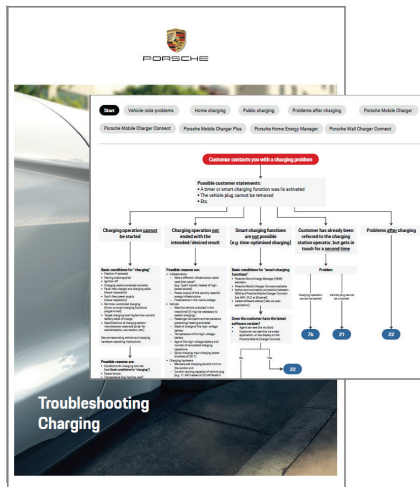


Figure 1

1. General Information on the Customer Complaint	
VIN	
Date and time of occurrence, with Time Zone	
Please provide the exact Customer Complaint, including as much detail as possible	
Were any DTC warning messages displayed in the instrument cluster?	Please specify
Which charge port was used? (Left or Right)	
How long was the vehicle connected to the charger?	Days, Hours, Minutes, Seconds
Is Customer authorized?	
Was Remote Access used and/or were any settings changed via Remote Access while the vehicle was charged?	Please specify
Was a navigation destination active when the vehicle started charging?	Yes/No
How was the vehicle used before the complaint occurred? (Consider app on page or any recent charge VAI available in PCSS?)	Please provide the protocol time and date.
PRIME Ticket #	
Porsche Dealership Contact Person	
For complaints with AC Charging, complete section 2 below	
For complaints with DC Charging (Delta/BTC), complete section 3 below	
For complaints with DC Charging Performance, complete section 4 below	
2. AC Charging	
Charging Power (Current setting or %)	Enter charging current or percentage, depending on
Charging Voltage	Enter 120 V or 240 V
Which charger was used?	If a specialty equipment was used, please provide Manufacturer
Please specify the charging power or settings of 3rd Plug type of the charger that was used (NEMA 14-50, IEC 60309, etc.) stored in the fault memory of the Porsche charger?	Please provide photo of the device. If "yes", please list the fault code below.
Was a Timer, Profile, and/or pre-conditioning set/used?	Please list the timer settings (Target Charge %, Charging profile settings, time details, or provide a photo of the PCM settings).
EV State of Charge (SOC) before charging	%
Was any error on the inner display in the center console of the vehicle?	
What color and pattern did the charge port LED show before and after the issue?	
Charger Software Version, if known	
Charger Serial Number	Please specify
Did the customer see any kind of extension cable to use the wiring and/or hardware newly installed for this vehicle, or was cabling through/underground used?	If to property or other add. Equipment, location, time and EV location and device setting.
Is a Home Energy Manager (HEM) installed?	
3. DC Charging Does Not Start	
Location Name and/or Address of DC Charger	Enter the PlugShare App or www.PlugShare.com
Charge Point Operator	Please specify the name and which charging links.

Figure 2

- To open the attachment, download the pdf and click on the paperclip icon to the left of your Adobe Acrobat window. If the paperclip is not visible, pass your mouse pointer over the lower part of the Acrobat window and the Acrobat toolbar should appear as seen below (Figure 3). Click on the Acrobat icon on the far right to access the paperclip, then click on the paperclip to open the attachment.

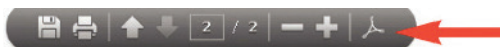


Figure 3

- **SoliD (Solution with integrated Diagnosis):** a PPN Online System available to Porsche Dealership personnel. It houses nearly all charging-relevant documents in addition to those found in PPN and PCSS. Contact your PPN Administrator if you need to request access to SoliD
- **Installation and Operating Manuals** are provided with charging hardware, are available via SoliD, and are available via www.Porsche.com.
NOTE: separate operating manuals may exist for both Home User and Customer Service (For example, Web Application Home User (MCC_HU 01-A) and Web Application Customer Service (MCC_CS 01-A))
- **PIWIS Tester III, together with Special Tool VAS 611 009**
 - Diagnostics --> External components --> Charging Cable
 - Guided Fault Finding --> Manual Vehicle and fault code selection --> External components --> Universal charging cable
- **Service Information Technik (SIT) books** are a valuable source of information for service personnel. At the time of publication, separate SIT books exist for the initial model launch (2020 Taycan Turbo/Turbo S), 2020 Taycan 4S, and the 2021 Taycan.
- **PPN Portal --> AfterSales --> E-Performance** contains detailed information regarding all manner of charging in addition to processes, policies, and procedures
 - For example, refer to AC Power Base and Pedestal Update for Porsche Dealers for information on the subject components
- The **Porsche.com e-performance page** provides customer-friendly Video Tutorials, Manuals, and Software assistance for AC charging hardware
- **Smart Mobility World** provides basic tutorials and product information

Tips

- Customers who experience difficulty starting a charging session should **attempt charging with Plug and Charge Deactivated via the PCM** menu Home → Charging → Options[...] (Figure 4). (Currently applies only to Model Year 2021 and later Taycan)

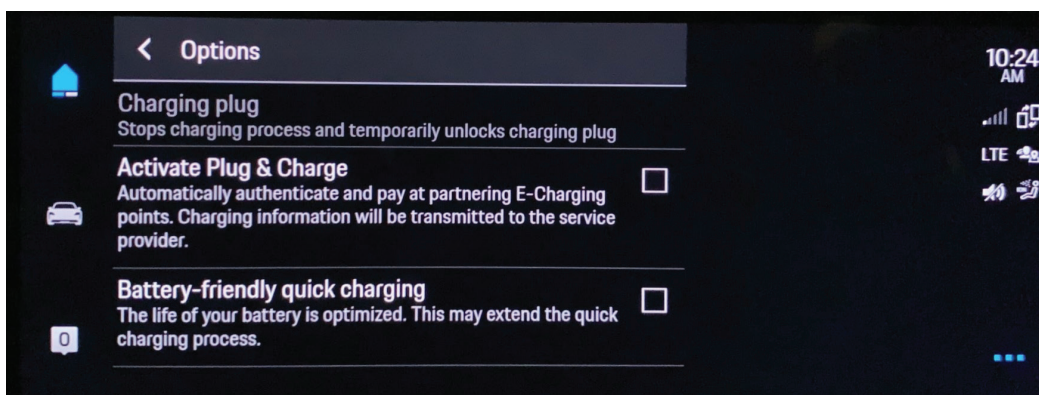


Figure 4

- **Customer charging complaints should be duplicated in the same manner reported by the customer.** For example, DC charging complaints should be checked with DC charging function tests, and AC charging complaints should be checked with AC charging function tests.
- Customers may find **authenticating the session via smartphone before plugging in the car to be beneficial** (authenticate through the Charging NA App or the new MyPorsche App, for example). This recommendation may differ from the instructions shown on a charging kiosk display.

AC Charging

- AC charging concerns should be checked **with customer-supplied charging hardware** (supply cable charger control unit, and vehicle cable, for example)
 - The infrastructure that supplies customer homes and garages often differs from the infrastructure in a Porsche Dealership or other commercial building. For example, customer homes are typically single-phase and operate at 240 VAC, whereas commercial buildings are often three-phase and provide split-phase to 208 VAC circuits and receptacles in the workshop. This change in operating voltage affects charging hardware operation and overall charging power, for one.
- **Ground Faults**
 - Underwriter Laboratory (UL) requirements define ground fault and residual current detection capabilities for Electric Vehicle Supply Equipment (EVSE). The charge control unit is extremely sensitive to ground faults in the supply infrastructure.
 - The self-test function of **typical residential GFCI receptacles can cause ground faults**. GFCI receptacles or circuits are a common code requirement, especially in residential garages and damp or wet locations.
 - A qualified electrician may need to **ensure the quality of the complete electrical system grounding and bonding** (metal underground water pipes, in-ground support structures, or concrete-encased electrodes, for example)
- **Industrial quality electrical receptacles** should always be installed by qualified electricians in accordance with national and local codes and regulations.
 - Receptacles from the supplier Hubbell are recommended for their industrial quality and ability to handle high current for long periods of time (Figure 5)
 - Hubbell HBL9450A = NEMA 14-50 Receptacle (4-prong)
 - Hubbell HLB9367 = NEMA 6-50 Receptacle (3-prong)
 - A 50-amp branch circuit should use minimum 6 AWG, 90°C-rated copper wire for conductors supplying level 2 Porsche charging hardware plugged with a NEMA 14-50 or 6-50 supply cable
 - Receptacle terminal screws must be tightened to manufacturer specifications.
 - The use of ferrules on the supply conductor wiring is recommended to further safeguard the connection at the receptacle.
- **110V Charging is for emergency use only.** The relatively high current (8A to 10A) loads household circuits and receptacles for an extremely long time with minimal charge gain. Discuss installation and use of a suitable 208-240V circuit with all customers.

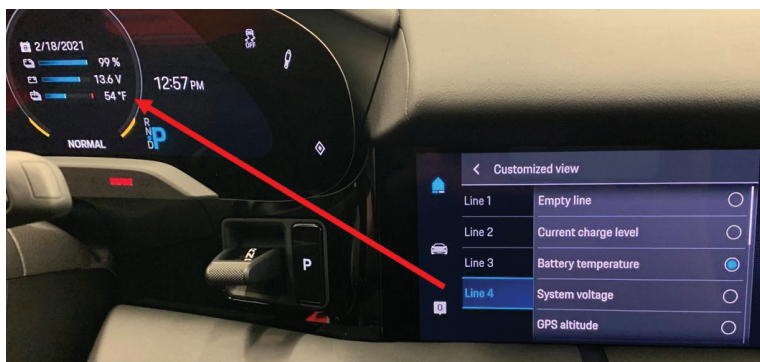


Figure 5

- **Charging hardware will normally reach high temperatures** during prolonged use
 - High ambient temperature may cause stopped, slowed, or derated charging sessions
 - The optional Charging Dock (7PP.915.706.A) traps multiple heat sources (receptacle, plug, supply cable, charge control unit, and part of the vehicle cable) and may exacerbate charger derating or stopped charging sessions
 - The optional 7.5m vehicle cable is often wrapped around the charging dock. This further heats the charging dock during/after prolonged use, especially if the vehicle is parked close to the charging dock where less vehicle cable is needed.
 - The 10 AWG supply cables are tested and certified for use in US and Canada, and may differ from other cord-and-plug EVSEs readily available in the market
 - It is recommended to install or relocate installed charging hardware away from vehicle heat sources or heat exchanger exhaust air (for example, away from the Taycan front wheel opening)
- **Additional Documents** with limited validity
 - **ATI 2014.1**, Part ID 9981D, "AC Charging Hardware and Cable Temperature"
 - **ATI 2016**, Part ID 9981, "Porsche Mobile Charger Connect Diagnosis and utilizing the Web Application"
 - **ATI 2104**, Part ID 9981, "Y1A Taycan On Board Charger (OBC) Fault P31D200 'Charging socket – over-temperature'"

DC Charging

- **DC Charging authentication**
 - Customers are able to authenticate [pay for] charging sessions multiple ways.
 - In the event of a DC charging authentication complaint, discuss the process in detail with the customer, using the attached Questionnaire as a guide.
- **DC Charging performance**
 - Charging performance, typically indicated by the kW delivered from the charger to the vehicle, depends upon numerous conditions. The most important conditions visible to the customer are:
 - 1) State of Charge of the HV Battery, and
 - 2) Temperature of the HV Battery
 - For example: to achieve the "5% to 80% SOC in 22.5 minutes" charging time stated in sales and marketing materials, the following conditions are required:
 - > A CCS DC fast charging station with > 270kW and > 850V
 - > A starting battery temperature range of 86°-95°F (30°-35°C)
 - The current calculated HV Battery Temperature can be displayed in the instrument cluster "Information" screen (Figure 6). Customers may wish to display this value and consider battery temperature for optimal charging performance.



In the PCM central display, Settings --> Vehicle Settings --> Displays --> Instrument Cluster --> Customized View

Figure 6

- For physical and chemical reasons, the charging speed decreases as the battery approaches its full capacity.
- Charging speeds over 80% state of charge are significantly slower and not recommended for daily use.
- For regular fast DC charging usage, Porsche recommends charging at 50kW stations.
- **Performance Battery Plus**, 93.4 kWh; standard in Taycan Turbo, Turbo S, and all Cross Turismo variants; optionally available in Taycan (RWD) and Taycan 4S
 - > Charges at a maximum rate of approximately **270 kW**
 - > The **"Battery friendly quick charging"** function limits DC Charging to an approximate **max. 200 kW**
- Performance Battery, 79.2 kWh; Standard in Taycan (RWD) and Taycan 4S variants
 - > Charges at a maximum rate of approximately **225 kW**
 - > The **"Battery friendly quick charging"** function limits DC Charging to an approximate **max. 170 kW**
- The Maximum Charging Performance chart (Figure 7) provides an indication of how the HV Battery Temperature and SoC conditions at the start of a charging session affect the theoretical maximum charging rate under ideal conditions.

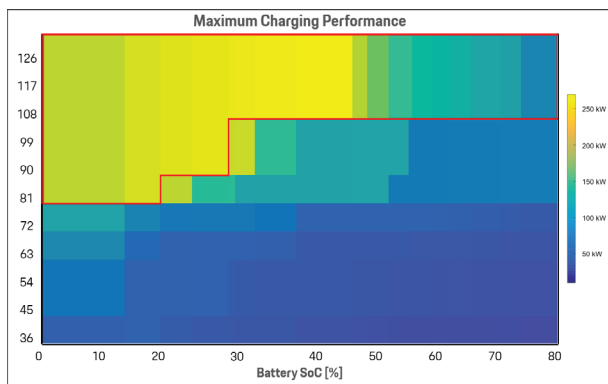


Figure 7

- **At temperatures above 81°F, if the HV battery temperature falls below the red box at a given SOC, then the charging rate may be limited to the level below the red line – even if the temperature later rises above it again"**
- The attached chart (Figure 8) provides an example of the theoretical maximum charge rate under ideal conditions (purple line) versus the **reduced maximum charge rate with Battery friendly quick charging activated** (mint green line).

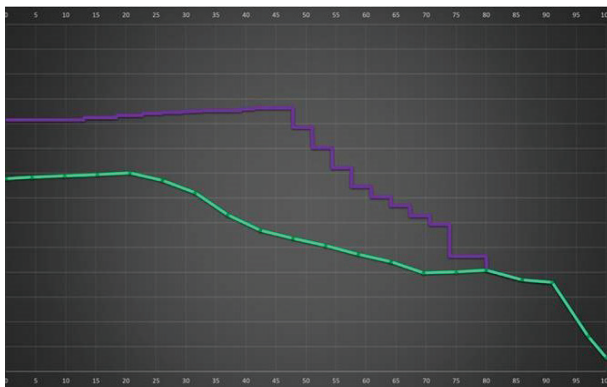


Figure 8

Warranty

Warranty work must be documented per standard policies and procedures.

Search Items

Taycan, charge, charging, On-board charger, OBC, plug and charge, pnc, quick charging, DC, Electrify America,

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