Troubleshooting Advanced Driver Assistance Systems (ADAS)

Vehicles Affected

Models	Model Year	Model Type	VIN Range	Vehicle-Specific Equipment
Cayenne	As of 2024	9YA, 9YB	N/A	N/A
Macan Electric	As of 2024	XAB	N/A	N/A
Taycan	As of 2020	Y1A, Y1B, Y1C	N/A	N/A
911	As of 2020	992	N/A	N/A
Panamera	As of 2024	YAA, YAB	N/A	N/A

Revision History

Revision	Release Date	Changes
0	February 14. 2025	Original document
1	June 27, 2025	Revised Part ID Revised Document to focus on Troubleshooting ADAS

Condition

The following documentation aims to help Porsche Center service and support personnel with relevant and necessary information to assist customers with Advanced Driver Assistance System (ADAS) complaints.

New Porsche vehicles implement technology, features, and functions at different times due to multiple factors such as vehicle release timing or model year change timing. Connected car systems will also have an effect on ADAS features and functions. The applicable Connect Release Version should be identified to associate the appropriate external systems and services with the specific vehicle in diagnosis.

At the same time, Porsche makes considerable effort to implement features and functions so they appear familiar to customers with experience in other Porsche vehicles. Therefore, while function names and user interfaces are often the same across different model years and model lines, there are often significant differences in vehicle technology or application.

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Technical Background

Advanced Driver Assistance Systems (ADAS) rely upon a complex network of sensors, cameras, control units, software, and backend system data to function. System functionality depends upon technology both in and out of the vehicle. Refer to the system information applicable to the specific model year, model type, and both standard and optional equipment.

"Connect Release 3" refers to vehicles with Software Cluster 3X (32, 33, 35, 37, 39, 3B...) found in Cayenne and Taycan, for example. "Connect Release 4" refers to vehicles with Software Cluster 4X (43, 46). For further information about Connect Releases and subsequent infotainment features and functions, please refer to the PPN Online System SoliD > Knowledge Hub and the "Big Picture" overview files contained within SoliD.

Service Information

Ensure the specific conditions surrounding the customer complaint are understood. Customer-supplied videos or photos can help to ensure the exact messages and displayed text are understood. It is usually best to duplicate customer complaints first-hand to ensure clear understanding of the customer complaints.

In many cases, warning messages may appear for assistance systems which are functioning as designed (*examples below*). In other cases, warnings for system operation remain under analysis (*e.g., TI 11/25*) or a resolution is provided (*e.g., ATI 2121.1*).

The following list of Macan EV (H2 / PPE Platform / E^3 Architecture) topics are known and accepted as normal operation:

1. Customer states when attempting to activate Adaptive Cruise Control (ACC), the function is blocked and the instrument cluster displays the message, "**Adaptive Cruise Control not available|**Driver's Seat Belt unbuckled" (Figure 1), but the driver's seat belt is confirmed to be buckled.
   a. This message appears due to the vehicle ECU counting numerous drive cycles with the driver's seat belt unbuckled - including drive cycles that occur before customer delivery (e.g., anywhere after the production line in Germany). Software updates are planned for release in calendary year 2025 to minimize unnecessary occurrence of this warning.

Figure 1

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2. Customer states the **Adaptive Cruise Control function is greyed out** and cannot be activated (Figure 2).
   a. Function restrictions may exist while vehicle systems automatically download maps and ADAS operating parameters based upon vehicle GPS location and data connection provided via 4GLTE/5G. For example, this situation occurs during the first 25-50 miles of vehicle operation following PDI. After automatic setup is complete, ACC and related ADAS functions become available.
   b. The following fault may be stored in the control unit Long-distance radar distance measurement sensor (*J428*) while the system updates: B199A00_FFFE71, "Online Remote Update in progress."

Figure 2

3. Customer states the **Lane Change and Turn Assist functions are not working**. The exterior mirrors each contain 3 Lane Change and Turn Assist warning lights. These assistance system functions are blocked if the exterior mirror positions are unknown.
   a. Fold the exterior mirrors in and out electrically via the driver's door switch to teach the exterior mirror position
   b. Turn the LCA system Off and On again
   c. Verify the LEDs in the exterior mirrors light up
   d. Re-check Lane Change and Turn Assist functionality

The following topics for other vehicles (MLBevo architecture, e.g. E3/992/J1) are known and accepted as normal operation:

1. Customer states the **Intersection Assist function continuously flashes** when activated in the PCM > Car > Assist menu (Figure 3). No relevant fault codes are stored in the zFAS / Assistance System control unit.
   a. The PCM message "Function not available" may also be displayed, but only if the timing on activation will be done when the status line disappears, and this is only a default reaction of the PCM which occurs sporadically. The behavior ("Function not available" message) is only present for a few minutes after T15 on, and the system is otherwise fully functional.
   b. This condition only occurs with zFAS Assistance system control unit Software Version 0371 (for example, like found in model year 2022 and 2023 Cayenne (E3))

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Figure 3

2. Customers complain of **3 select white warning messages presented in the instrument cluster that read, "*Emergency Stop Function currently not available | Driving permitted*", "*Active Lane Keeping currently not available | Driving permitted*", and "*Assistance Systems currently restricted | Sensor is dirty, observe messages in central display*"** (Figures 4, 5, 6), along with subsequent yellow warning indicators for the affected driver assistance systems (Figure 7).
   a. In this example, obstructions of the front camera (e.g., dirt, ice, snow) may restrict the functionality of the front camera and result in these warnings. Please discuss these obstructions with the customer.
      i. Dirt, frost, or snow/ice on the windscreen at the front-facing camera for driver assistance systems will restrict the camera from being operationally active, and in many cases this is only temporary. This results in a temporary white warning in the instrument cluster to instruct the driver that these functions are not available while the camera is obstructed. In such cases, these messages and the affected assistance systems are functioning as designed.
      ii. **Check for any dirt, debris, or haze/fog on the interior surface of the windshield glass** between the front-facing camera and the glass. If the glass is dirty or hazy, it may be necessary to remove the front-facing camera to clean the glass before reinstalling the camera.
   b. For the "**Emergency Stop Function currently not available**" warning, see Owner's Manual section "Occupant protection" => "Emergency Stop Function" => "System limitations" for more information.

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c. For the **Active Lane Keeping (ALK) warning**, see Owner's Manual section "Driving Assistance" => "Lane Keep Assist" => "Activating and deactivating Lane Keep Assist" (Figure 8) and Section "Driving Assistance" => "Active Lane Keeping" => "System Limitations" (Figure 9) for more information:

d. The third white warning of Figure 6 of "**Assistance Systems currently restricted**" always accompanies one of the other listed white warnings.

e. If it is determined that there was no obstruction to the camera at the time of the warnings, continue with diagnosis.

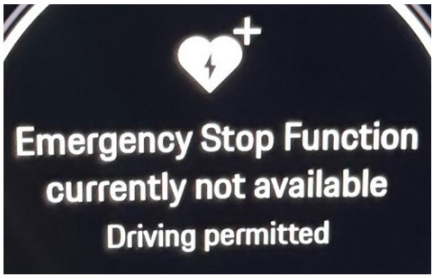


Figure 4

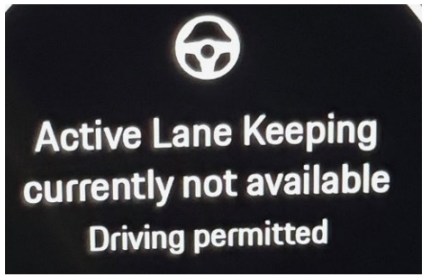


Figure 5

Figure 6

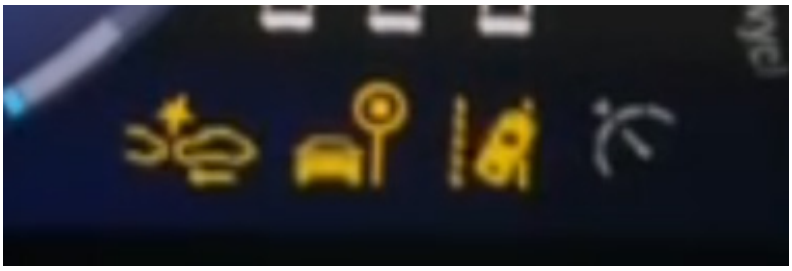


Figure 7

Driving assistance

Displays

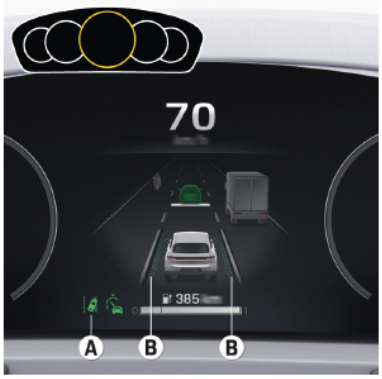


Fig. 146: Drive Assist display

A Lane Keep Assist display

B Animation of steering intervention

Read system states in the instrument cluster

Symbol	Meaning
	Lane Keep Assist is switched on and active on at least one side.
	Lane Keep Assist is switched on but passive.
OFF	Lane Keep Assist is switched off.

Symbol	Meaning
	Lane Keep Assist performs a corrective steering action.

▷ Refer to chapter "Warning lights and indicator lights" on page 64.

Activating and deactivating Lane Keep Assist

Depending on the laws of the specific country, Lane Keep Assist is automatically active after establishing operational readiness.

⚠ WARNING Risk of accidents due to disregarding system limitations

- Only switch on and activate the system if traffic conditions, road conditions, and weather allow it.
- Staying Attentive: Make sure that you can take control of the vehicle at any time.
- Keep front camera free of dirt, ice, snow, and foreign objects.
- Even with the system switched on: The driver is responsible, e.g., for adjusted speed and safety distance.

Manually deactivating Lane Keep Assist

- Press and hold the **S** (Fig. 146) button on the control lever.
  - ➡ Lane Keep Assist is switched off. The corresponding symbol (Fig. 146) appears in the instrument cluster.

– or –

▸ **Assistance** ▸ **Additional functions** ▸ **Lane Keep Assist**

Manually activating Lane Keep Assist

- Press button **S** (Fig. 146) on the control lever.
  - ➡ Lane Keep Assist is switched on and active. The symbol **A** (Fig. 146) is displayed on the instrument cluster.

– or –

▸ **Assistance** ▸ **Additional functions** ▸ **Lane Keep Assist**

Setting lane departure warning

The lane departure warning may alert the driver acoustically when the vehicle approaches a detected lane marking and threatens to leave the lane.

▸ **Assistance** ▸ **Additional functions** ▸ **Lane Departure Warning**

Figure 8

Active Lane Keeping

Operating principle

Active Lane Keeping is a system that supports the driver within the system limits in a speed range of approx. 0–130 mph (0–210 km/h) through continuous steering actions to keep the vehicle in the center of the lane. However, driving is always the responsibility of the driver. The system is designed for driving on highways and well-surfaced federal and state roads. The system is available depending on equipment and country.

Active Lane Keeping uses sensors in the front and rear bumpers as well as the front camera to detect the environment in front and behind the vehicle.

▷ Refer to chapter "Sensors and cameras" on page 20.

When the system is active, the driver can set a preferred position within the lane. When the driver keeps the vehicle at the desired position for several seconds, the system ends Active Lane Keeping and starts driving in the selected offset position. The shift in position is reset again when the system becomes passive or is switched off (e.g., by activating the turn signal, lane change, or braking).

Active Lane Keeping can make it easier to drive in traffic jam situations. The system always prioritizes the lane markings over other objects, e.g. vehicles. In some cases, this can mean that the driver has to position the vehicle in the center of the lane in order to activate the system. Activation of the system outside the center of the lane is prevented so that the driver does not feel a strong movement on the steering wheel immediately after the system is activated. The driver is responsible for moving to the side of the road to create a lane for emergency vehicles. In such situations, the driver can switch off the system or override the system using the steering wheel.

Behavior when the turn signal is activated

If a lane marking is overridden with the turn signal set, the system does not warn and steer. The lane change is interpreted as intended in this case.

Behavior if there is no steering activity

The driver's steering behavior is monitored when Active Lane Keeping is switched on and active. If there is no steering activity, i.e., hands not on the steering wheel or only resting lightly, a warning message appears on the instrument cluster. The system prompts the driver to actively take over the steering. If the driver does not react to the takeover prompt, the system switches to a passive state. In vehicles with an activated emergency stop function (depending on the country), the vehicle can be slowed to a full stop.

▷ Refer to chapter "Emergency Stop Function" on page 147.

System limitations

The system is available in the following speed range: 0–130 mph (0–210 km/h).

The system cannot detect the following situations:

- Persons and animals
- Crossing or oncoming vehicles in the same lane

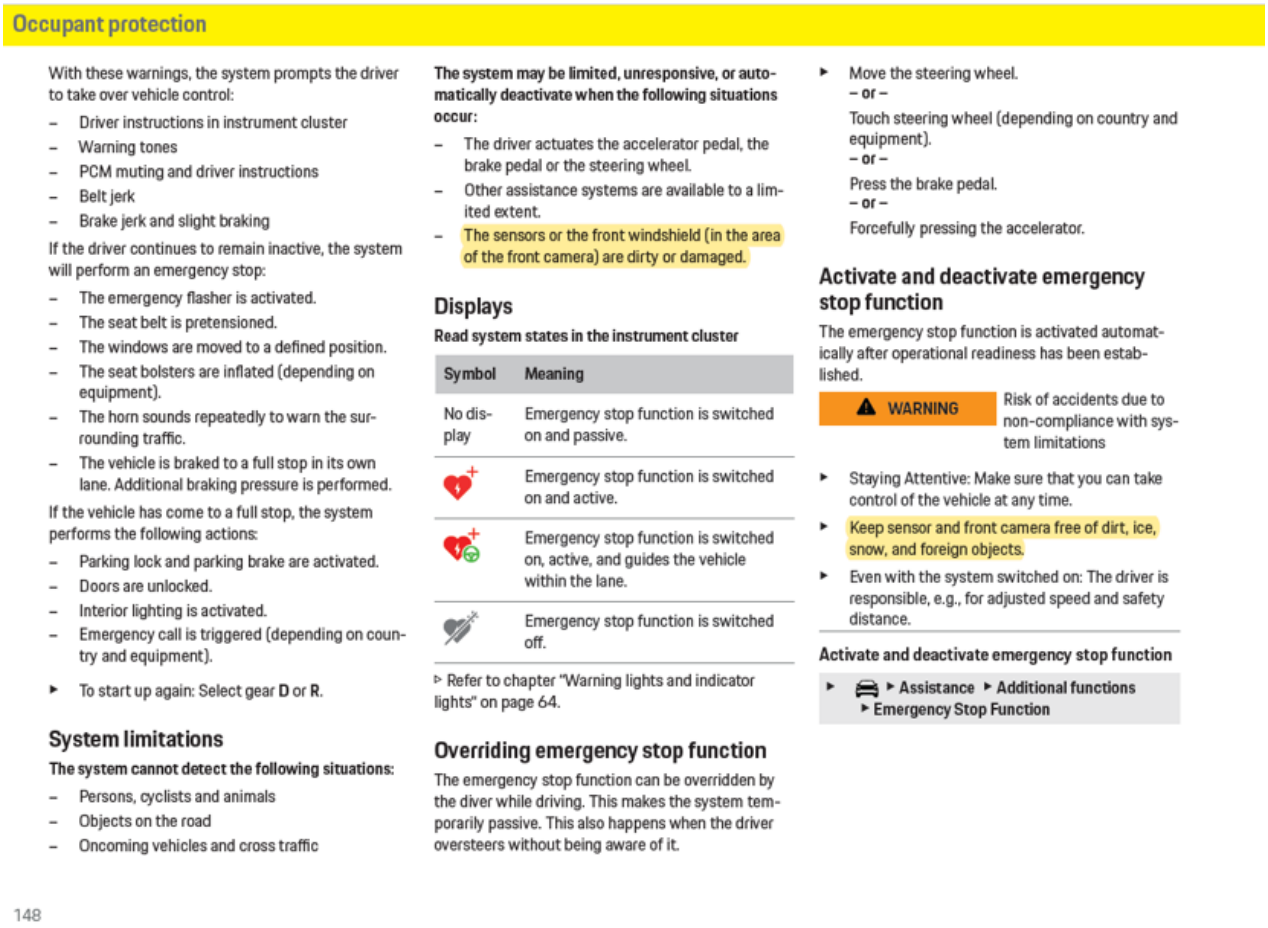
Do not use the system in these situations:

- in urban traffic
- in areas with roadworks
- when approaching humps and dips
- on winding and narrow country roads
- in bad road conditions, e.g. potholes
- off-road or on unpaved or slippery roads
- in adverse weather conditions, e.g. fog, snow or heavy rain
- when windshield is misted-up
- during sporty driving

The following situations may arise:

- The system does not always keep the vehicle in the center of the lane or in a central position behind the last vehicle in the line.
- In the case of heavy braking, corrective steering actions might not take place.
- During active steering by the driver, corrective steering intervention might be reduced or not take place.
- The system cannot fully detect the environment. Steering interventions might not take place.
- The system cannot correctly interpret the environment. This could result in inadvertent steering interventions.
- Corrective steering interventions alone may not be sufficient to keep the vehicle in the driving lane in the case of ruts, winding roads, inclined road surfaces or a crosswind. The driver must actively steer in such situations.
- The system may not work as expected in ambiguous traffic situations such as turning lanes, exits, construction sites or city traffic. Steering intervention might not take place or be plausible.
- The system can remain active in unwanted or unexpected situations or unexpectedly go into passive mode.

Figure 9



Occupant protection

With these warnings, the system prompts the driver to take over vehicle control:

- Driver instructions in instrument cluster
- Warning tones
- PCM muting and driver instructions
- Belt jerk
- Brake jerk and slight braking

If the driver continues to remain inactive, the system will perform an emergency stop:

- The emergency flasher is activated.
- The seat belt is pretensioned.
- The windows are moved to a defined position.
- The seat bolsters are inflated (depending on equipment).
- The horn sounds repeatedly to warn the surrounding traffic.
- The vehicle is braked to a full stop in its own lane. Additional braking pressure is performed.

If the vehicle has come to a full stop, the system performs the following actions:

- Parking lock and parking brake are activated.
- Doors are unlocked.
- Interior lighting is activated.
- Emergency call is triggered (depending on country and equipment).

▸ To start up again: Select gear **D** or **R**.

System limitations

The system cannot detect the following situations:

- Persons, cyclists and animals
- Objects on the road
- Oncoming vehicles and cross traffic

The system may be limited, unresponsive, or automatically deactivate when the following situations occur:

- The driver actuates the accelerator pedal, the brake pedal or the steering wheel.
- Other assistance systems are available to a limited extent.
- The sensors or the front windshield (in the area of the front camera) are dirty or damaged.

Displays

Read system states in the instrument cluster

Symbol	Meaning
No display	Emergency stop function is switched on and passive.
	Emergency stop function is switched on and active.
	Emergency stop function is switched on, active, and guides the vehicle within the lane.
	Emergency stop function is switched off.

▷ Refer to chapter "Warning lights and indicator lights" on page 64.

Overriding emergency stop function

The emergency stop function can be overridden by the diver while driving. This makes the system temporarily passive. This also happens when the driver oversteers without being aware of it.

▸ Move the steering wheel.
– or –
Touch steering wheel (depending on country and equipment).
– or –
Press the brake pedal.
– or –
Forcefully pressing the accelerator.

Activate and deactivate emergency stop function

The emergency stop function is activated automatically after operational readiness has been established.

WARNING Risk of accidents due to non-compliance with system limitations

- Staying Attentive: Make sure that you can take control of the vehicle at any time.
- Keep sensor and front camera free of dirt, ice, snow, and foreign objects.
- Even with the system switched on: The driver is responsible, e.g., for adjusted speed and safety distance.

Activate and deactivate emergency stop function

▸ ▸ Assistance ▸ Additional functions ▸ Emergency Stop Function

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Figure 10

The following topics for other vehicles (MLBevo architecture, e.g. E3/992/J1) are known and under analysis:

1. **TI 03/23** – Various Error Messages Regarding Driver Assistance Systems in the Instrument Cluster (Part ID 9102)
2. **TI 11/25** - Various Error Messages regarding Driver Assistance Systems in the Instrument Cluster / Passive Fault Memory Entry "C12D5FA" in the Driver Assistance System Control Unit (ZFAS) (Part ID 9102)

The following topics for other vehicles (MLBevo architecture) are known and guidance is provided to address complaints:

1. **ATI 2121.1** - 9YA ACC Dynamic Calibration Fault C110300 (Part ID 9102)

The following documents serve as additional references to ADAS systems and functions:

1. Porsche Technology Index. This is a guide to assist in finding information about various Porsche models, systems, and technologies in all SIT manuals since the introduction of the 986.
2. Attached PDF with **Cayenne (E3-I) ADAS function and sensor information**. Note: Not all functions are available in all markets. For example, complete Matrix headlight functionality is not operational in USA.
3. PCSS > Information media > Standard Forms (SF) > **Human Error Check** and **Automated Parking Questionnaire** are available to assist information gathering and troubleshooting
4. **Connect "Release" information** - see PPN > Online Systems > SoliD > Big Pictures for Porsche Connect and Charging
   a. Contact your Porsche Center PPN Coordinator to request access to SoliD
5. **Owner's Manuals** via manual.porsche.com
6. **Service Information Technik (SIT)** via PPN > Academy > Technical Training > SIT – Service Information Technik, notably:
   a. 2021 Taycan (Y1A/J1-I MOPF) – 9.2 Porsche InnoDrive. "*Introduction of the second generation of Porsche InnoDrive... available since the end of [CY]2020 and initially be available for 992 and J1 models*"
   b. 2024 Cayenne (9YA.2/E3-II) – 9.8 Driver Assistance Systems. "The 2024 Cayenne has more extensive assistance systems [as standard] with additional functions to offer the customer more comfort and safety."
   c. 2024 Panamera (YAA/G3) – 9.7 Driver Assistance Systems. "*The 2024 Panamera has expanded assistance systems.. The sensor set was adopted from the 2024 Cayenne.*"
   d. 2025 Taycan (J1.2/Y1A.2) – 9.7 Driver Assistance Systems. "*For the 2025 Taycan, the driver assistance systems have been extended with new functions. Drowsiness detection is now standard. The ACC Premium package was supplemented with Swerve Assist. In the USA, the ACC high-end package receives the optimized Traffic Jam Assist Extended.*"
   e. 2025 911 Carrera GTS (992.2) – 9.4 Driver Assistance Systems. "*The offer concept for the driver assistance systems (DAS) of the 2025 911 Carrera is shown ... available depending on equipment and country. Some functions will not be fully usable until later (e.g., drowsiness detection, which currently uses other input signals due to a driver observation camera that will not be installed until later). If such special features or limitations apply, they are explained in the respective chapter.*"
   f. 2024 Macan Electric (H2/XAB) – 9.10 Driver Assistance Systems. "*The 2024 Macan Electric has a completely new network architecture with E³, which will act as the basis for many new assistance systems – and also for the first autonomous functions in the coming years. In addition, zFAS, the former central control unit of the driver assistance systems, has been replaced by the new HCP2 driver assistance main control unit (J1274)...*"

g. MY25 Updates / Changes
   i. Icon changed for lateral control (LCA / LDW / LKA / ALK) (Figure 11)
   ii. E3PA: Surround View with Active Parking Support fitted as standard equipment

Figure 11

h. MY26 Updates / Changes
   i. "*As of CW48 production, Warn and Brake assist has an updated camera installed near the rear view mirror base*"
   ii. "*As of CW48 production, a Driver Awareness Detection camera is installed on top of the steering column. In addition to the current Driver Fatigue detection features, the driver is now also warned of microsleep and visual distraction if their gaze is not directed at the road for a certain period (warning after 6 seconds at 12-31 mph (20–50 km/h) or after 3.5 seconds at speeds > 31 mph (50 km/h))*"

Search Items

Cayenne, Taycan, 911, Panamera, Macan (H2), Front Camera, Assistance Systems, Advanced Driver Assistance Systems, ADAS, zFAS, lane change assist, traffic jam assist, LCA, LDW, LKA, ALK, TJA, ACC, adaptive cruise control