

Noise Symptom/Jerking - Clicking Noise/Rough-Running Engine/Jerking Under Load With Respect to Transfer Case: Programming all-wheel drive control unit/checking transfer case (SY 84/17)



Information

Currently, **a high percentage of warranty returned transfer cases are evaluated as "OK" during testing by the supplier.**

For this reason, **the two previous symptom-based repair instructions** are being replaced by these symptom-based repair instructions:

1. ⇒ "Eliminating noise symptoms - Re-programming control unit for all-wheel drive (Creaking noise from around the transfer case/SY0416) – ⇒ **only relevant for vehicles from model year 2015 to 2016** and
2. ⇒ "Eliminating symptoms - Engine: Replacing transfer case (Rough-running engine, vehicle jerks under load/SY2516)

in Repair Group 39 - Final drive.



Information

The "transfer case" is designed as an active all-wheel drive system that is dynamically adapted to the respective driving state.

Power transmission between the front and rear axle **is controlled electronically via the "all-wheel drive servo motor (transfer case)"** and the **multi-plate clutches integrated in the transfer case.**

⇒ **On all-wheel drive vehicles, the drive train can become strained** at low speeds and when the steering is turned sharply **when "Off-road mode" is activated, depending on design.**

- **Under extreme conditions**, the drive train can also become strained **when "Off-road mode" is deactivated.**
- **Customers** with little experience with all-wheel drive vehicles **can interpret this behavior as a fault**, which in turn can **result in incorrect diagnoses** in the workshop.

Vehicle Type: **Cayenne (VR6 - 92A)/Cayenne S (92A)/Cayenne GTS (92A)/Cayenne Turbo (92A)/Cayenne Turbo S (92A)/Cayenne S Diesel (V8 - 92A)**

Model Year: **As of 2011 up to 2017**

Equipment: With transfer case

With regard to
1:

1. ⇒ **All-wheel drive servo motor** (transfer case) ⇒ see "**Symptom 1**" below



Information

"**Symptom 1**" described below and the corresponding test procedure is relevant **only for vehicles**
⇒ from model year 2015 to model year 2016.

⇒ **This procedure and remedial action must not be used for vehicles from model years 2011 to 2014.**

Symptom 1:

Clicking noises can come from around the transfer case when **driving slowly** or when **manoeuvring** in a parking garage.



Information

The customer complaint about a clicking noise (from the servo motor) can only occur on vehicles:

- produced **between 6 November 2013 and 1 December 2015** and
- with a **software version lower than version 1010 in the all-wheel drive control unit.**

Cause:

Clicking noises can come from around the transfer case when manoeuvring the vehicle (or driving slowly) due to activation of the transfer case servo motor.

Remedial
Action:

Before doing any other work, the symptom must be simulated using a test procedure.

(Opening the door windows can be helpful when evaluating noises).

1 Conditions for the first test procedure:

- Activate the Start/Stop function and
- deactivate all sources of noise in the vehicle (Entertainment, ventilation, etc.).
- A multi-story parking garage can be useful for acoustic reverberation.

- On a **straight stretch**
- from **speeds less than 10 mph (20 km/h)**
- brake the vehicle to a standstill.
- The best way of finding the clicking noise is by driving slowly and then stopping the vehicle.

⇒ In the event of a distinct customer complaint, the clicking noise can already be heard on a straight stretch with partial load accelerations.

⇒ To **correct the problem, re-program the all-wheel drive control unit.** See "**Procedure**" section below.

The measure is complete after programming the all-wheel drive control unit.

With regard to
2: **Transfer case** ⇒ see "**Symptom 2**" below



Information

"**Symptom 2**" described below and the corresponding test procedure is relevant **for vehicles**

⇒ **from model year 2011 to model year 2017.**

⇒ **For vehicles from model year 2015, the test procedure described under "Symptom 1" must be completed before doing any other work.**

Symptom 2: **Symptoms to be checked:**

- Rough-running engine or
- the vehicle vibrates or
- the engine jerks under load.



Information

Generally, the vehicle can start jerking when driving in tight corners with a small radius and when Off-road mode is activated.

This behavior is perfectly normal for all-wheel drive vehicles and is not a defect on the vehicle.

NOTICE

Driving with connectors on chassis components or control units disconnected.

- **Bearings in transfer case can be damaged.**
- ⇒ **Drive vehicle only at a maximum speed of 30 mph (50 km/h).**
- ⇒ **Do not drive vehicle in the upper load range or at full throttle.**

1 Carry out the test procedure under the following **conditions**:

- On a **straight stretch**
- from **speeds less than 10 mph (20 km/h)**
- accelerate the vehicle in the partial load range.

During this test procedure, if:

- **jerking can be felt**, the test procedure under ⇒ (below) must also be carried out in order to determine the exact cause.
- **no jerking is felt**, see the information below about normal vehicle behavior:

**Information**

Generally, the vehicle can start jerking when driving in tight corners with a small radius and when Off-road mode is activated.

This behavior is perfectly normal for all-wheel drive vehicles and is not a defect on the vehicle.

2 Conditions for the test procedure:

- **Activate Off-road mode** in the vehicle **and**
- drive at **low speed**
- into a tight **bend with a small radius** (high steering angle).

If **jerking can be felt** during this test procedure, ⇒ work through the following steps, **depending on which equipment is installed**:

- **with PTV PLUS** (controlled **rear-differential lock**) – I-no. 1Y1 ⇒ **continue with ⇒ 2.1**
- **without front/rear differential lock** – I-no. 1Y0 ⇒ **continue with ⇒**

**Information**

Generally, the vehicle can start jerking when driving in tight corners with a small radius and when Off-road mode is activated.

This behavior is perfectly normal for all-wheel drive vehicles and is not a defect on the vehicle.

2.1 Disconnect connector on the rear-differential lock control unit, see ⇒ *Workshop Manual '397519 Removing and installing control unit for rear-differential lock'*.

2.2 Carry out the test procedure under the following conditions:

⇒ Disconnecting the connector should prevent the vehicle from jerking due to a higher rear-differential lock locking value.

2.3 Re-connect connector on the rear-differential lock control unit, see ⇒ *Workshop Manual '397519 Removing and installing control unit for rear-differential lock'*.

2.4 If **jerking still occurs even with the connector disconnected**, **continue with step ⇒** .

3 During the test procedure under step ⇒ , **if jerking can be felt**, **the following test procedure must still be carried out**:

3.1 **Disconnect connector on centre differential lock** (plug connection on transfer gear servo motor).

3.2 Carry out the test procedure under the following conditions:

- **Activate Off-road mode** in the vehicle **and**
- drive at **low speed**
- into a tight **bend with a small radius** (high steering angle).

3.3 Re-connect connector on center differential lock.

⇒ If a problem is found, the transfer case must be replaced, see ⇒ *Workshop Manual '396519 Removing and installing transfer gear'*.

End of action required.

Tools:

- **9900 - PIWIS Tester 3** with PIWIS Tester software version **35.800** (or higher) installed
- **Battery Charger/Power Supply** - Suitable for AGM Type batteries, recommended current rating of 70A fixed voltage 13.5V to 14.5V.

NOTICE

Fault entry in the fault memory and control unit programming aborted due to low voltage.

- **Increased current draw during diagnosis or control unit programming can cause a drop in voltage, which can result in one or more fault entries and the abnormal termination of the programming process.**
- ⇒ **Before starting control unit programming, connect a battery charger or power supply, suitable for AGM type batteries, recommended current rating of 70A fixed voltage 13.5V to 14.5V.**

NOTICE

Control unit programming will be aborted if the Internet connection is unstable.

- **An unstable Internet connection can interrupt communication between PIWIS Tester and the vehicle communication module (VCI). As a result, control unit programming may be aborted.**
- ⇒ **During control unit programming, always connect PIWIS Tester to the vehicle communication module (VCI) via the USB cable.**

NOTICE

Control unit programming will be aborted if the vehicle key is not recognized

- **If the vehicle key is not recognized in vehicles with Porsche Entry & Drive, programming cannot be started or will be interrupted.**
- ⇒ **Switch on the ignition using the original vehicle key. To do this, replace the original vehicle key in the ignition lock with the plastic key fob if it was previously removed at the start of this procedure.**

Work Procedure: 1 **Preliminary work**

Carry out general preliminary work for control unit programming as described in ⇒ *Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Preliminary work"*.

**Information**

The procedure described here is based on the PIWIS Tester III software version **35.800**.

The PIWIS Tester instructions take precedence and in the event of a discrepancy, these are the instructions that must be followed.

A discrepancy may arise with later software versions for example.

2 Re-program all-wheel drive control unit.

The basic procedure for programming a control unit is described in the Workshop Manual ⇒ *Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Programming"*

For specific information on control unit programming during this campaign, see table below.

NOTICE

Use software update via 'programming code' described below on vehicles before model year 2015.

- Malfunctions in the system

⇒ Use software update only for model year 2015 to 2016 vehicles.

Required PIWIS Tester software version:	35.800 (or higher)
Type of control unit programming:	Control unit programming using the " Campaign " function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	G5N7B
Programming sequence:	<p>Read and follow the information and instructions on the PIWIS Tester during the guided programming sequence.</p> <p>The fault memory is first deleted during the programming sequence. If the message appears informing you that certain fault memory entries could not be deleted, acknowledge the message by pressing "•>>" and start control unit programming. During programming, the all-wheel drive control unit will be re-programmed and then re-coded automatically.</p> <p>Do not interrupt programming and coding.</p> <p>Once the control units have been programmed and coded, the PIWIS Tester will prompt you to switch the ignition off and then back on again after a waiting time of approx. 10 seconds.</p>

Programming time (approx):	2 minutes
Data record (Porsche part number) programmed as part of this campaign:	0C2.927.xxx.S Following control unit programming, the Porsche part number can be read out of the 'All-wheel drive' control unit in the ⇒ 'Extended identification' menu using the PIWIS Tester.
Procedure in the event of error messages appearing during the programming sequence:	⇒ <i>Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"</i> .
Procedure in the event of abnormal termination of control unit programming:	Repeat control unit programming by restarting programming. If this is not possible, restart the PIWIS Tester and then execute control unit programming again.

3 Subsequent work

- 3.1 Create a Vehicle Analysis Log (VAL) and mark it with the attribute "Following repairs". ⇒ *Workshop Manual '0X03IN Creating Vehicle Analysis Log (VAL)'*
- 3.2 Carry out general subsequent work for control unit programming as described in ⇒ *Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Subsequent work"*.

Invoicing: The work involved is invoiced under the labor operation:

APOS	Labor operation	I No.
39952500	Programming all-wheel drive control unit	

For invoicing and documentation using PQIS, enter the following coding, depending on the customer complaint:

a) "Creaking noise" (clicking noise):

Location (FES5)	39780	Transfer case servo motor
Damage type (SA4)	2015	creaking

b) "Rough-running engine, vehicle vibrates or engine jerks under load":

Location (FES5)	39650	Transfer gear
Damage type (SA4)	1313	vibrating, shaking

- References: ⇒ *Workshop Manual '0X03IN Creating Vehicle Analysis Log (VAL)'*
- ⇒ *Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Subsequent work"*
- ⇒ *Workshop Manual '397519 Removing and installing control unit for rear-differential lock'*
- ⇒ *Workshop Manual '396519 Removing and installing transfer gear'*

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