

**Symptom - Rattling Noises from Around the Rear Axle: Checking Engine Mount (SY 183/21)**

Change overview:

Release	Date	Change
0	01/25/2022	<ul style="list-style-type: none"> <li>• First publication</li> </ul>
1	11/28/2023	<ul style="list-style-type: none"> <li>• Order types added</li> <li>• Required parts changed</li> <li>• Test sequence revised</li> </ul>

Model Line: **911 (992)**

Model Year: **As of 2020 up to 2024**

Equipment: Dynamic engine mount **(M-No. JQ3)**

Concerns: **Rear engine mount**

Symptom: Customer complains about a rattling noise from the rear axle area while driving. It may only be possible to notice the noise complaints in certain sections. For example, on uneven / wavy road sections.

Cause: The cause may be the exhaustion of the maximum damping travel of the motor bearings, resulting in contact with the decoupler plate of the motor bearings.

Remedial Action: In the event of a complaint, compare the noise using the sound file in the enclosure and, if available, confirm the source of the noise using a targeted noise and vibration analysis "PICO measurement".



**Information**

The reported noise does not necessarily indicate a defect in the engine mount. The installation of new engine mounts can bring about a change in the reported noise. However, in most cases, replacement does not result in any improvement.

Inform the customer about this and advise whether the customer wishes to replace the engine mounts under these circumstances.

**Required parts and materials as needed**



**Information**

No parts are required for checking engine mounts.

Parts Info:	Part No.	Designation – Location	Number
	992199384F	⇒ Hydraulic mount	2 pieces
	PAF107838	⇒ Hexagon flange bolt, M8 x 50 – Mounting for hydraulic mount on body	8 pieces
	PAF104694	⇒ Hexagon-head bolt, M12 x 1.5 x 70 – Engine carrier mounting	2 pieces
	992199534A	⇒ Cap – Hydraulic mount	2 pieces
	N 10742702	⇒ Oval socket head bolt M8 x 25 – Screw for coolant line at connection point in engine compartment	2 pieces
	95557374901	⇒ Round seal – Coolant line	1 piece
	95557374902	⇒ Round seal – Coolant line	1 piece
	PAF909664	⇒ Hexagon collar nut, self-locking – Lower trailing arm on wheel bearing housing	2 pieces
	PAF008674	⇒ Hexagon flange bolt M12 x 1.5 x 105 – Lower trailing arm on wheel bearing housing	2 pieces
	PAF008735	⇒ Hexagon-head bolt, M12 x 1.5 x 95 – Rear axle carrier on rear axle carrier side section	2 pieces
	PAF008673	⇒ Hexagon-head bolt M12 x 1.5 x 110 – Rear axle carrier on rear axle carrier side section	2 pieces
	PAF013814	⇒ Sealing ring 14 x 18 – Coolant drain plug	2 pieces
	992129260	⇒ Hose clamp – Intake pipe	2 pieces
	PAF008955	⇒ O-ring, 59 x 2.5 – Intake pipe	2 pieces
	992145190A	⇒ Sleeve – Charge-air cooler on body	1 piece

N 91244501	⇒ Hexagon-head bolt (combination) combination screw, M6 x 35 – Charge-air cooler on body	2 pieces
WHT008676	⇒ Hexagon-head bolt, M12 x 1.5 x 45 – Strut on body	4 pieces

**Additional parts required if chassis must be adjusted**

9A700837900	⇒ Tie-wrap, A8.0 x 337 – Brake disc air guide	8 pieces
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Materials: **Required materials** (usually already available in the Porsche Center)

Part No.	Designation – Location	Quantity
00004330516	⇒ Coolant additive, 20-liter/ 5. 28 gal container – Cooling system	As required

**Vehicles with refrigerant R1234yf**

9A757390010	⇒ Refrigerant compressor oil 1234yf – Air-conditioning system	As required
....	⇒ Refrigerant 1234yf – Air-conditioning system	As required

**Vehicles with refrigerant R134a**

00004330579	⇒ Refrigerant compressor oil R134a – Air-conditioning system	As required
....	⇒ Refrigerant R134a – Air-conditioning system	As required

**Required tools**

- Tool:
- **VAS 611 015A - Vibration and noise analysis system**
  - **P90999 - PIWIS Tester 4**
  - Battery charger with a current rating of **at least 90 A**, e.g. **VAS 5908 - 90-A battery charger**. For further information about the battery chargers to be used, see the corresponding Workshop Manual.  
⇒ *Workshop Manual '2X00IN Battery trickle charge'*

**Additional required tools if the engine mounts must be replaced:**

- Torque wrench, 0.4-2 Nm (0.3-1.5 ftlb.), e.g. **VAS 6253A - Torque wrench, 0.4-2 Nm (0.3-1.5 ftlb.)**
- Torque wrench, 2-10 Nm (1.5-7.5 ftlb.), e.g. **V.A.G 1783 - Torque wrench, 2-10 Nm (1.5-7.5 ftlb.)**
- Torque wrench, 6-50 Nm (4.5-37 ftlb.), e.g. **V.A.G 1331A - Torque spanner, 6-50 Nm (4.5-37 ftlb.)**
- Torque wrench, 40-200 Nm (30-148 ftlb.), e.g. **V.A.G 1332A - Torque wrench, 40-200 Nm (30-148 ftlb.)**
- Torque wrench, 150-800 Nm (111-592 ftlb.), e.g. **V.A.G 1601 - Torque wrench, 150-800 Nm (111-592 ftlb.)**
- **9769 - Retainer plate**
- **9769/1 - Support**
- **9822 - Assembly tool**
- **9959 - Lowering device**
- **VAS 6832 - Master Gear unit elevating platform**
- **VAS 6932 - Transport system**
- **VAS 6867 - Support plate**
- **9696 - Filling device**
- **9696/1 - Cover**
- **VAS 6096/2 - Vacuum pump**
- **9794 - Assembly aid**
- **9796 - Socket wrench**
- **VAS 6266A - Wheel fitting trolley**
- **9453 - Access ramps**
- **V.A.G 1274B - Cooling system testing unit**
- **VAS 6929 - Vacuum-cleaner nozzle**
- **VAS 231 001 - High-performance fan**
- **VAS 6890 - Spring band clamp pliers**
- Air conditioning service unit for R1234yf, e.g. **VAS 581 001A - air conditioning service unit R1234yf** or air conditioning service unit for R134a, e.g. **VAS 6746A - air conditioning service station R134a**

**Additional required tools for measuring and adjusting the assist systems**

- **9229/1 - Puller hook**
- **9730 - Socket-wrench insert**
- **VAS 6826 - Steering wheel balance**
- **VAS 6830 - Wheel-alignment adapter for wheels with central lock**
- **VAS 6918 - Quick-clamping unit**
- **VAS 6927 - Tie-wrap pliers**
- **VAS 6430/1A - Adjustment device with reflector**
- **VAS 6430/3 - Mirror for adjustment device**
- **VAS 6350A - Calibration unit**
- **VAS 6430/6 - Night View Assist calibration unit**
- **VAS 6350/2A - Spacing laser**
- **VAS 6430/4 - Lane Keep Assist calibration board**

- VAS 6350/7 - Locking Pins
- VAS 6350/4 - Calibration unit for Lane Change Assist

### Compare noise complaint

3D Information: Additional information is stored under the following link, which is required for carrying out the action described here:

- Sound file as an aid to identify the noise
- Video as an aid to recreate the driving situation in which the noises occur
- File required for this "PICO measurement"



#### Information

The updated 3D information for this action is currently not yet available. Please refer to the additional information on PPN: [https://ppn.porsche.com/portal/community/porsche\\_cars\\_north\\_america/after\\_sales/support/blog/2023/11/17/sy-18321-additional-information](https://ppn.porsche.com/portal/community/porsche_cars_north_america/after_sales/support/blog/2023/11/17/sy-18321-additional-information)

Work Procedure: 1 Recreate the noise complained about in a driving situation as described below and compare it with the sound file from the 3D information:

- Light acceleration
- Normal drive mode
- Transmission in "D"
- Light load at approx. 1500 rpm

	Assessment	Action
(✓)	This is the same noise.	To confirm the noise, perform a targeted noise and vibration analysis "PICO measurement".  Continue with: ⇒ <i>Technical Information '2X00IN Check engine mounts'</i>  The measurement can only be omitted if <b>no</b> PICO analysis tool is available. In this case, based on empirical values and a comparison vehicle with dynamic engine mount, estimate whether a component replacement would lead to an improvement.
(x)	It is <b>not</b> the same noise.	Identify other cause of noise.  End of test.

## Checking engine mounts using targeted noise and vibration analysis "PICO measurement"



### CAUTION

#### Hot components

- Risk of burns
- ⇒ Let hot components cool down.
- ⇒ Wear personal protective gear.



#### Information

In order to clearly determine that the engine mounts cause the noises complained about, a targeted noise and vibration analysis "PICO measurement" must be performed.

If no targeted noise and vibration analysis "PICO measurement" is possible, based on empirical values and, if necessary, a comparison vehicle with dynamic engine mounts whether these are unusually strong noises, estimate whether a component replacement can make an improvement.



#### Information

Information and documents on the handling and use of the **VAS 611 015A - vibration and noise analysis system** can be found in **PALMS** under "My learning area" with the keyword "Pico NVH Diagnostics"

Overview › 01 Global › 01 Topics › 03 Technical Training › 01 Components & Repair Groups › 13 Others

- Work Procedure: 1 Remove rear wheels.  
⇒ *Workshop Manual '440519 Removing and fitting wheel'*
- 2 Remove rear wheel housing liners (rear section).  
⇒ *Workshop Manual '53691903 Removing and installing rear wheel housing liner (rear section)'*
- 3 Install / route microphone and vibration and noise analysis system sensors as follows:
- 3.1 Microphone **channel A** rear-seat backrest
- Sensor type: Microphone
  - Item: Passenger compartment
  - Fastening on the vehicle: Rear-seat backrest area directed backwards ⇒ *Item microphone in channel A*



*Item microphone in channel A*

3.2 Sensor **channel B** seat rail for driver seat

- Sensor type: Acceleration sensor
- Item: Passenger compartment
- Fastening on the vehicle: Seat rail for driver seat at **left** ⇒ *Item sensor channel B*



*Item sensor channel B*

3.3 Sensor **channel C** for left PADM bearing

- Sensor type: Acceleration sensor
- Item: Engine compartment
- Fastening on the vehicle: Screw on PADM bearing on the **left** on longitudinal member ⇒ *Item sensor channel C*



*Item sensor channel C*

3.4 Sensor **channel D** for right PADM bearing

- Sensor type: Acceleration sensor
- Item: Engine compartment
- Fastening on the vehicle: Screw on PADM bearing on the **right** on longitudinal member  
⇒ *Item sensor channel D*



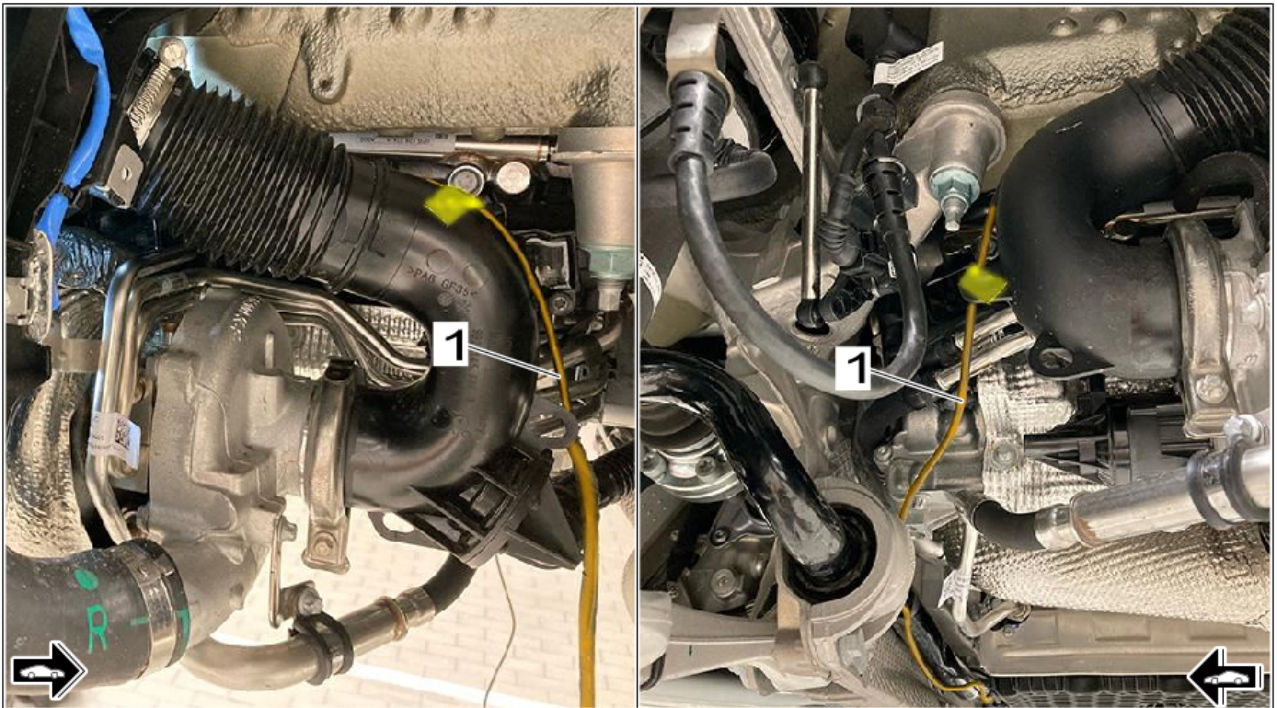
*Item sensor channel D*

- 4 Route the test leads ⇒ *Example of routing / fastening underbody -1-* in such a way that they are not damaged during the analytical run.



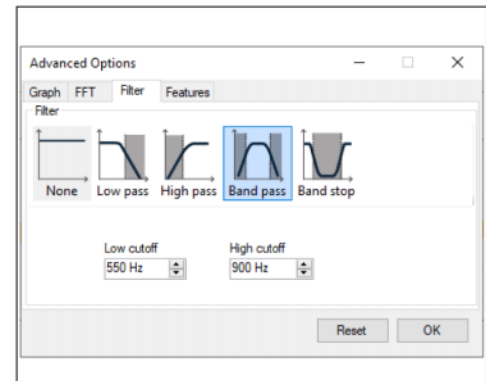


*Example of routing / fastening underbody*

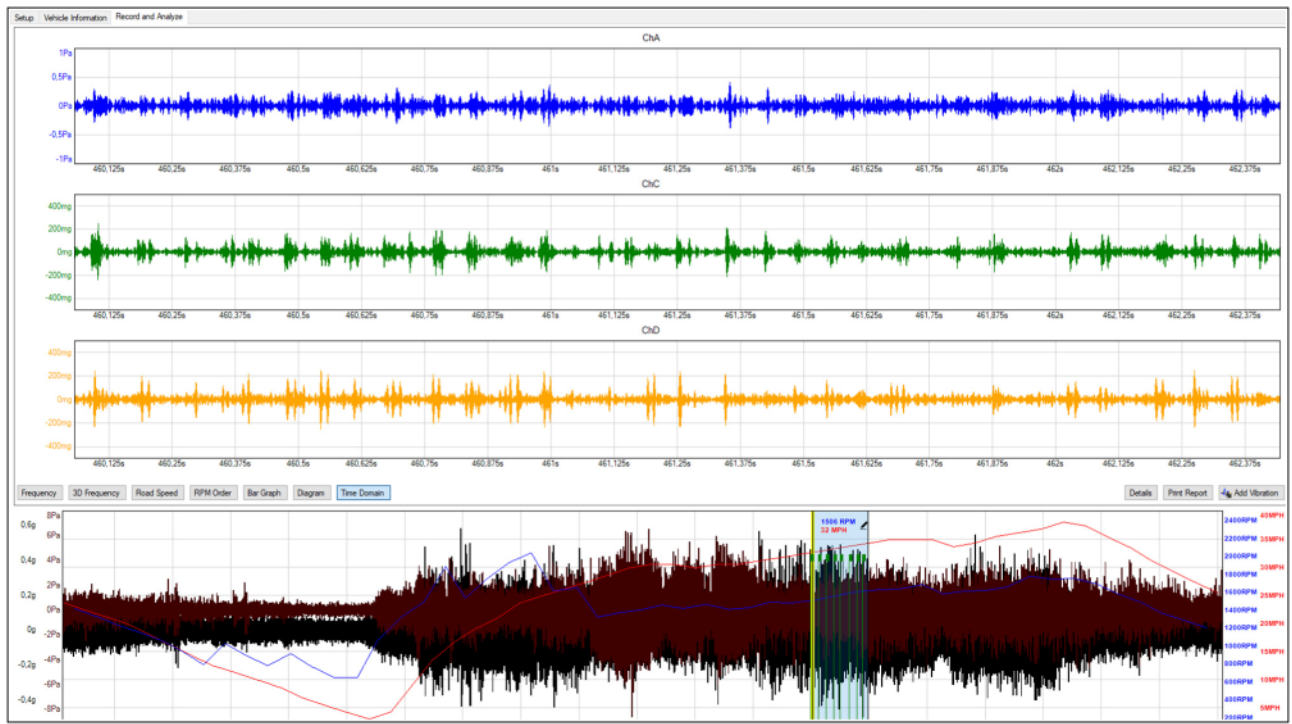


*Example of routing / fastening intake hose*

- 5 Install wheels at rear (wheel housing liners need not be installed for the analysis run).  
⇒ *Workshop Manual '440519 Removing and fitting wheel'*
- 6 For targeted noise and vibration analysis "PICO measurement", proceed as follows:
  - 6.1 Load the available comparison measurement file called "Vergleichsmessung.pddata" in 3D information.
  - 6.2 Start measurement based on Comparison measurement file "Vergleichsmessung.pddata". Required settings are pre-set.
  - 6.3 Open the "Record and Analyse" tab.
  - 6.4 Switch view from "Frequency" to "Time Domain".
  - 6.5 Set filter to 550 Hz–900 Hz if not already done. ⇒ *Frequency filter*
  - 6.6 Start recording and perform comparison run.
    - Light acceleration
    - Normal drive mode
    - Transmission in "D"
    - Light load at approx. 1500 rpm
  - 6.7 Set markers as soon as noise complaint is noticeable.
  - 6.8 Stop and save measurement if noise complaint has been recorded.
  - 6.9 Compare current measurement with sample measurement ⇒ *Sample measurement* with the same scaling (400 mg and 2.5 seconds).



*Frequency filter*



Sample measurement

Assessment		Action
(✓)	The noise can be attributed to the engine mounts.	Using empirical values and, if necessary, a comparison vehicle with dynamic engine mounts, estimate whether these are unusually strong noises.  If the noise is rated as "normal", replacing the engine mounts would not make any improvement. If the noise is rated as "not normal", replacing the engine mounts <b>can</b> make an improvement.  If necessary, continue with: ⇒ <i>Technical Information '440519 Replacing engine mounts'</i>
(✗)	The noise cannot be attributed to the engine mounts.	The engine mounts are not the cause of the noise.  If necessary, contact Technical Support in order to agree on how to proceed.  End of test.  Continue with: Step ⇒ 7.

7 Remove vibration and noise analysis system.

8 Install rear wheel housing liners (rear section).  
⇒ *Workshop Manual '53691903 Removing and installing rear wheel housing liner (rear section)'*

## Replacing engine mounts

Work Procedure: 1 Remove vibration and noise analysis system.

- 2 Replace engine mounts.  
⇒ *Workshop Manual '103519 Removing and installing engine mount'*

## Working position and PCSS encryption

Labor position:

APOS	Labor operation	I No.
10350210	Check engine mounts	
10352020	Removing and installing engine mount	
10352010	Removing and installing engine mount	

PCSS encryption:

Location (FES5)	10350	Engine mount
Damage type (SA4)	2013	rattles, knocks

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