

Rattling/knocking noise from electric steering when driving on rough terrain or cobblestones

Topic number	LI46.35-P-068181
Version	2
Function group	46.35 Electrical steering
Date	09-07-2018
Validity	MODEL 205 except 4MATIC (code M005) MODEL 213 except 4MATIC (code M005) MODEL 238 except 4MATIC (code M005) MODEL 257 except 4MATIC (code M005)
Reason for change	In remedy Pt. 2 the following sentence was removed: "Only one adjustment may be made to the rack-and-pinion steering. If there is a colored mark (10) on the thrust piece, it can be assumed that an adjustment procedure has already been performed in the past. In this case, the rack-and-pinion steering must be replaced." In remedy Pt. 12 the play specification was changed to: Nominal play: 0.01 mm
Reason for block	

Complaint:

A rattling/knocking noise from the electric steering may be heard when driving on rough terrain or cobblestones.

The noise is primarily audible when driving slowly, from 20 - 40 km/h.

Attachments	
File	Description
steering noise 205 bad roads.mp4	Sound video

Cause:

Possibly the play between the thrust piece and toothed rack is not ideal.

Remedy:

Adjust the play between the thrust piece and the toothed rack using the following repair method.

1. Remove rack-and-pinion steering.
2. Attach rack-and-pinion steering to steering gear housing mount.

Note: When performing the work below ensure that the workplace is kept clean while the repair is being carried out. Before starting the repair, remove loose dirt on the steering housing (1) without using a cleaning agent.

Only the specified tools may be used.

Steering gear housing mount: 221589013100

XENTRY TIPS

3. Move rack-and-pinion steering to center position.

Note: The notch on the protective cap (6) must be aligned exactly with the marking (7) on the steering housing (1).

Socket wrench: 203589043103

4. Detach boot (4) and push in direction of tie rod end.

5. Carefully pull rubber plug (3) out of adjustment screw (2).

Note: The rubber plug must be replaced.

6a. Determine play between thrust piece and steering rack.

This step is only applicable for vehicles with a mileage in excess of 150,000 km! For all other vehicles, continue with step 6b.

To do this, mount dial indicator holder (02) on steering gear housing (1) with centering pin. Then remove centering pin from holder (02) and insert dial indicator (01) into holder (02) over adjustment screw (2). Move toothed rack (4) back and forth using a torque wrench (03) and an open-end wrench bit. The specified test torque of the toothed rack (4) must not be exceeded. Otherwise it is not possible to check the play correctly.

--> If the play is greater than 0.6 mm, replace rack-and-pinion steering.

--> If the play is less than 0.6 mm, continue with step 7.

Test torque: 20 Nm

Dial indicator holder: 212589013100

Dial indicator: 001589532100

Open-end wrench bit: 201589000100

6b. Measure play between thrust piece and steering rack.

This step is only applicable for vehicles with a mileage of less than 150,000 km!

To do this, mount dial indicator holder (02) on steering gear housing (1) with centering pin. Then remove centering pin from holder (02) and insert dial indicator (01) into holder (02) over adjustment screw (2). Move toothed rack (4) back and forth using a torque wrench (03) and an open-end wrench bit. The specified test torque of the toothed rack (4) must not be exceeded. Otherwise it is not possible to check the play correctly.

Test torque: 20 Nm

Dial indicator holder: 212589013100

Dial indicator: 001589532100

Open-end wrench bit: 201589000100

7. Remove holder (02) and dial indicator (01) from steering housing (1).

8. Adjust play between thrust piece and toothed rack.

Note: It is essential to ensure that the play between the thrust piece and the toothed rack is adjusted only by screwing the adjustment screw in the "tight" (inward) direction. This procedure is important to ensure that the play between the thrust piece and the toothed rack remains correctly adjusted!

Detaching tool: 205589000700

9. Mount holder (02) on steering housing (1) with centering pin.

XENTRY TIPS

Dial indicator holder: 212589013100

10. Remove centering pin from holder (02).

11. Insert dial indicator (01) into holder (02) over adjustment screw (2).

Dial indicator: 001589532100

Dial indicator holder: 212589013100

12. Check play between thrust piece and toothed rack (4) with dial indicator (01).

Nominal play: 0.01 mm

--> If the play is too small, the adjustment screw must be loosened again by 90° and the adjustment repeated (from step 8).

--> If the play is too large, the adjustment screw can be screwed in further.

Note: The adjustment may not be repeated more than 3x with the same adjustment screw. After this, the adjustment screw must be replaced.

Dial indicator holder: 212589013100

Dial indicator: 001589532100

Open-end wrench bit: 201589000100

13. Use socket wrench to turn toothed rack by input shaft of rack-and-pinion steering from stop to stop.

Note: The toothed rack must move smoothly.

Socket wrench 203589043103

14. Caulk adjustment screw at 3 points 120° apart (11) using a center punch and mark position relative to housing with a colored mark (10).

Note: The caulking is important because a new adjustment screw is not used with this repair method.

15. Carefully press rubber plug (3) into adjustment screw (2) using a suitable tool (e.g. size 4 Allen key).

16. Mount boot.

Note: Grease the seat of the boot on the steering gear housing and tie rod all round.

17. Detach rack-and-pinion steering from steering gear housing mount and install.

Attachments	
File	Description
001.pdf	Steering components (2 sides)

Symptoms
Chassis/suspension / Steering system / Noises / Cracking
Chassis/suspension / Steering system / Noises / Chattering/knocking
Chassis/suspension / Steering system / Noises / Clattering

Parts

XENTRY TIPS

Part number	ES1	ES2	Designation	Quantity	Note	EPC
A 210 988 01 28			Stop plug	1	Stop plug for thrust piece adjustment screw	X

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
			46490 17	

WIS-References			
Document number	Title	Note	Allocation
AR46.20-P-0600LW	Remove/install rack-and-pinion steering	Model 205, 213	Remedy
AR46.20-P-0600LWO	Remove/install rack-and-pinion steering	Model 238	Remedy
AR46.20-P-0600FR	Remove/install rack-and-pinion steering	Model 257	Remedy
AR46.40-P-9998LW	Remove/install boot	Model 205, 213, 238	Remedy
AR46.20-P-9998FR	Remove/install boot	Model 257	Remedy