

Knocking noise from area of front axle when driving over thresholds or edges with front wheels steered

Topic number	LI46.35-P-064639
Version	2
Function group	46.35 Electrical steering
Date	01-25-2018
Validity	MODEL 205 except 4MATIC (code M005) MODEL 213 except 4MATIC (code M005) MODEL 238 except 4MATIC (code M005)
Reason for change	Under remedy step 19: BR238 added.
Reason for block	

Complaint:

For left-hand drive vehicles:

A knocking noise can be heard at the left front when steering to the left and simultaneously driving over a threshold or edge (e.g. a curb). See noise video in attachment.

The noise is reproducible with the steering wheel turned approx. 270° to 360° (steering not at full lock) to the left.

Attachments	
File	Description
knocking noise_left turn, model 205 4x2.mp3	Sound video

Cause:

There may be relative movement of toothed rack in steering housing.

Remedy:

Repeat the driving procedure with the steering turned to full lock, i.e. with the steering at the corresponding end stop position. The steering must be held firmly at the end stop.

If the noise can no longer be heard or if it is significantly quieter, the steering is the reason for the noise. If the noise remains unchanged, it should be located in the components adjacent to the front axle.

If the steering is found to be the cause, perform the repair procedure below:

Replace the thrust piece; for this, the thrust piece repair kit must be ordered (see parts table).

Note: Before installing the new thrust piece, it must be checked for visible damage. If any damage is found, a new thrust piece repair kit must be ordered.

Also, the "injection gate" on the thrust piece must be checked (Attachment 002). If a burr can be seen there (picture framed in red), this must be removed using a suitable tool (such as a screwdriver). The reason for this is that the tip of the dial indicator rests on this surface.

XENTRY TIPS

1. Remove rack-and-pinion steering (AR46.20-P-0600LW)

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

Note: The rack-and-pinion steering may only be adjusted once. 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.

Please note: When performing the work below ensure that the workplace is kept while the repair is being carried out. Only the specified tools may be used. Before starting the repair, remove the loose dirt on the steering housing (1) without using a cleaning agent.

Steering gear housing mount: 221589013100

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).

4. Detach boot and push in direction of tie rod end (AR46.40-P-9998LW)

Note: The inner clamp of the boot must be replaced.

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

Note: The rubber plug must be replaced.

6. Only valid for vehicles with over 93,000 mi: Measure play between thrust piece and toothed rack. 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 or open-end wrench bit. Important: 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, the rack-and-pinion steering must be replaced.

Test torque: 20 Nm

Dial indicator holder: 212589013100

Dial indicator: 001589532100

Open-end wrench bit: 763589000100

7. Carefully unscrew adjustment screw (2) using detaching tool

Detaching tool: 205589000700

Note: The adjustment screw must be replaced. Make sure that no debris from the seal of the adjustment screw (2) falls into the steering gear housing.

8. Clean thread in steering gear housing for adjustment screw using a clean, dry cloth.

Note: It must not be cleaned after the thrust piece is removed.

9. Remove compression spring (9) and thrust piece (8)

Note: Needle nose pliers can be used for this.

10. Thoroughly grease new thrust piece on all sides. To do this, spread the grease all the way round the thrust piece. Also grease the slide surface (towards the toothed rack) and the contact surface of the compression spring (attachment 004)

Note: See the parts table for the grease to be used

XENTRY TIPS

11. Insert new thrust piece and new compression spring (from repair kit)

Note: Grease the spring seat of the adjustment screw.

12. Lightly grease the beginning of the thread (see parts table for grease). Screw new adjustment screw (from repair kit) into steering gear housing by hand using detaching tool

Note: Make sure that the compression spring is seated correctly.

Tightening torque: 60 Nm

Detaching tool: 205589000700

13. Use socket wrench to turn toothed rack by input shaft of rack-and-pinion steering 10x from stop to stop

Socket wrench: 203589043103

14. Slacken thrust piece adjustment screw by 180°

15. Screw thrust piece adjustment screw back in by 90°

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 inwards. If this procedure is ignored, it cannot be guaranteed that the play between the thrust piece and the toothed rack will remain set correctly!

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

Holder: 212589013100

17. Remove centering pin from holder (02)

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

Dial indicator: 001589532100

Dial indicator holder: 212589013100

19. Check play between toothed rack (4) and thrust piece with dial indicator (01). To do this, move the toothed rack (4) back and forth using a torque wrench (03) and an open-end wrench or open-end wrench bit.

Important: The specified test torque of the toothed rack (4) must not be exceeded. Otherwise it is not possible to adjust the play correctly.

MODEL 205/213/238: 0.02 mm +0.01 mm

Test torque: 20 Nm

Open-end wrench bit: 763589000100

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

21. Adjust play between toothed rack and thrust piece

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 inwards. If the play has been set too small, the steps 14 to 21 must be repeated.

Important: If this procedure is ignored, it cannot be guaranteed that the play between the thrust piece and the toothed rack will remain set correctly!

22. Check play between toothed rack (4) and thrust piece with dial indicator (01) and repeat adjustment procedure if necessary.

XENTRY TIPS

Note: If the play is outside the permissible tolerance, the adjustment must be repeated. The adjustment procedure may not be repeated more than 3x with the same adjustment screw. After this, the adjustment screw must be replaced again.

23. 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 easily and smoothly.

Socket wrench 203589043103

24. Mark adjustment screw relative to housing with a colored mark (10)

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

26. Fit boot (AR46.40-P-9998LW)

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

27. Detach rack-and-pinion steering from steering gear housing mount

28. Install rack-and-pinion steering (AR46.20-P-0600LW)

Attachments	
File	Description
001.pdf	Steering components (2 sides)
002.pdf	Check injection gate on contact surface
004.pdf	Greasing thrust piece

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

Parts						
Part number	ES1	ES2	Designation	Quantity	Note	EPC
A0029896451	11		Special grease	1	It is essential to use this special grease to carry out this repair method!	
A2054605202			Thrust piece repair kit	1	The repair kit contains: Thrust piece, thrust piece spring, thrust piece adjustment screw, rubber plug, large boot clamp	

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
			46480 GC	







