



Technical Service Bulletin

GROUP

STEERING

NUMBER

21-ST-003H

DATE

OCTOBER 2021

MODEL(S)

Multiple

SUBJECT:

C-MDPS WORM SHAFT BEARING NOISE

THIS TSB SUPERSEDES 20-ST-003H-1 TO REPLACE THE SMALL BEARING ONLY INSTEAD OF THE WORM SHAFT ASSEMBLY AND TO EXPAND MODEL YEAR RANGE ON SOME MODELS.

Description: Certain vehicles may develop a bearing noise within the Motor Driven Power Steering (MDPS) column worm shaft assembly. If bearing noise is heard, follow the procedure in this bulletin to replace the worm shaft bearing.



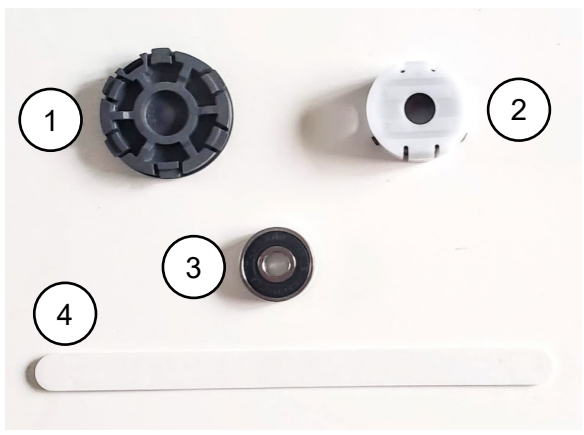
Applicable Vehicles:

2017 – 2020 MY Elantra (AD, VIN beginning with “KMH”)
2017 – 2018 or 2020 MY Elantra (ADa, VIN beginning with “5NP”) with production dates between **January 01, 2017** and **February 28, 2018** or between **November 07, 2019** and **May 03, 2020**
2018 – 2020 MY Elantra GT (PD)
2017 – 2022 MY Ioniq Hybrid/Plug-In (AE HEV/PHEV)
2017 – 2021 MY Ioniq Electric Vehicle (AE EV)
2018 – 2022 MY Kona (OS)
2019 – 2022 MY Kona EV (OS EV)
2020 – 2022 MY Palisade (LX2)
2017 – 2019 MY Santa Fe/XL (NC)
2017 – 2019 MY Sonata (LFA)
2017 – 2019 MY Sonata Hybrid/Plug-In (LF HEV/PHEV)
2020 – 2021 MY Sonata (DN8a)
2020 – 2021 MY Sonata Hybrid (DN8 HEV)
2017 MY Veloster (FS)

NOTICE


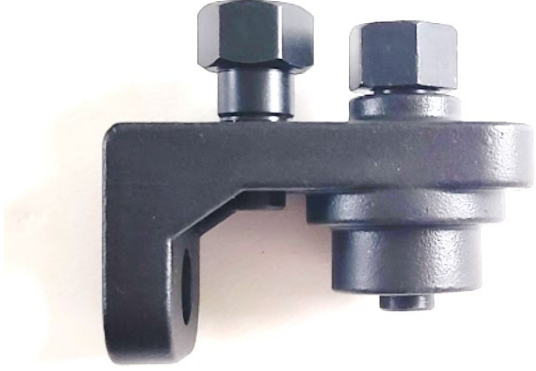
2018 – 2020 MY Elantra (ADa, VIN beginning with “5NP”), with production dates between **March 01, 2018** and **November 06, 2019**, please refer to TSB 21-ST-002H, C-MPDS Worm Shaft Assembly Bearing Noise.

SUBJECT:**C-MDPS WORM SHAFT BEARING NOISE****Parts Information:**

PART NAME	PART NUMBER	PHOTO	PART DESCRIPTION
SMALL BEARING KIT	56359-L1AAFF		<ol style="list-style-type: none">1. End cover assy2. Sliding damper3. Bearing4. Paper stick

NOTE: Only the Sonata and Sonata Hybrid (DN8a and DN8 HEV) requires the use of the end cover (part #1).

SST Information:

PART NAME	PART NUMBER	PHOTO
MDPS SMALL BEARING REMOVAL TOOL	0K563-L2100FF	
MDPS SMALL BEARING MOUNTING TOOL	0K563-L2200FF	

NOTE: All dealers were sent one of each tool at the launch of this TSB in October 2021.

SUBJECT:**C-MDPS WORM SHAFT BEARING NOISE****Warranty Information:**

MODEL	OP CODE	OPERATION	OP TIME	CAUSAL PART	NATURE CODE	CAUSE CODE
ELANTRA (AD/ADa) ELANTRA GT (PD) KONA (OS) KONA EV (OS EV) IONIQ (AE EV) IONIQ HYBRID/PLUG-IN (AE HEV/PHEV) SANTA FE/XL (NC) VELOSTER (FS) SONATA (Lfa) SONATA HYBRID/PLUG-IN (LF HEV/PHEV) SONATA (DN8a) SONATA HYBRID (DN8 HEV) PALISADE (LX2)	56352F00	SMALL BEARING REPLACEMENT	0.6 M/H	56359- L1AAAFFF	Q57	ZZ6

Service Procedure:

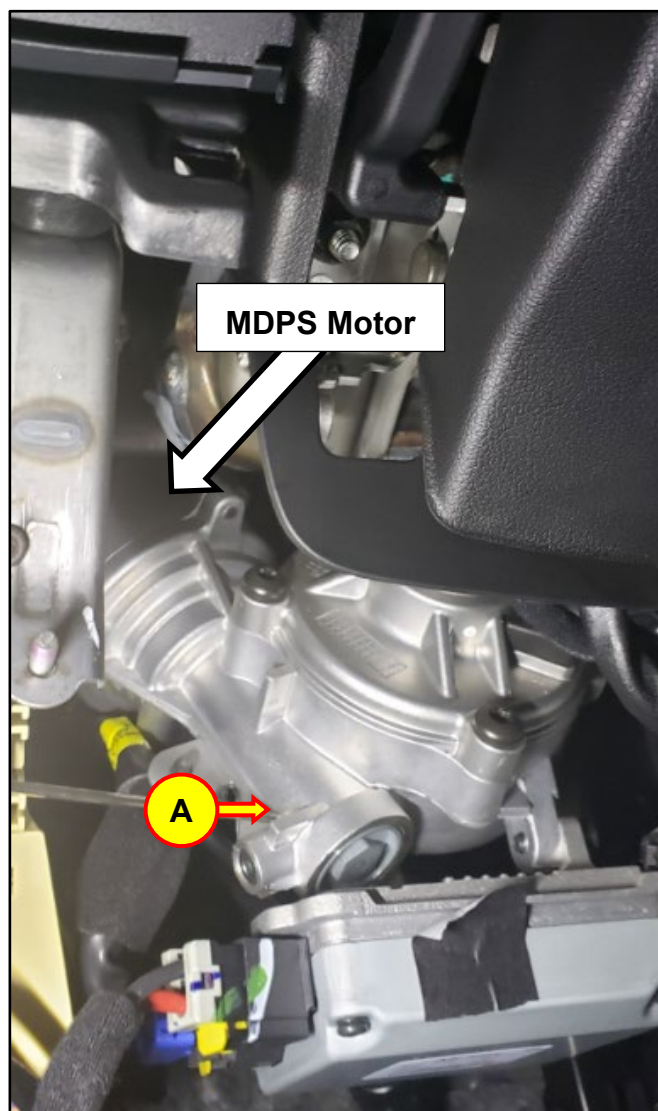
1. Determine if bearing noise comes from the MDPS column and housing.
 - Start the engine and turn the steering wheel left and right.
 - Listen for the bearing noise occurring from the worm shaft housing (A). This noise will be located near the C-MDPS motor on the steering column.
 - To hear an example of the bearing noise, refer to the link or QR code below.
<https://youtu.be/22Pl3hAEfnk>



2. Replace the worm shaft small bearing if noise is heard.

If noise is not heard in this location, refer to the shop manual for detailed diagnostic and repair service procedures or refer to TSB 20-ST-001H-2, Column-Mounted MDPS Repair Information (or current TSB related to partial C-MDPS Repairs) for additional information.

3. Ensure the wheels are straight and the steering wheel is level.
4. Record the customer's AM, FM, and SXM radio preset stations.



5. Disconnect the negative (-) battery terminal.

NOTICE

Wait at least **3 minutes** before proceeding to ensure voltage is bled off.

Battery Terminal Tightening Torque

Follow the applicable shop manual for battery terminal tightening torque.

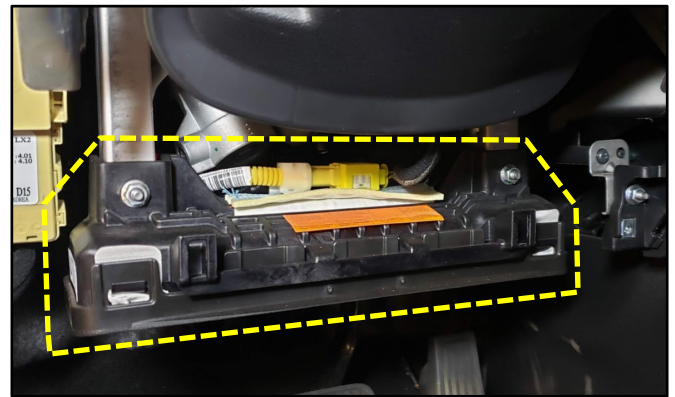
**CAUTION**

Not removing the negative (-) terminal from the battery may result in accidental airbag deployment and possible physical injury.

6. Removal of the MDPS assembly is not required to replace the small bearing located in the MDPS steering column and housing. Several parts might need to be removed to gain access to the small bearing.

If equipped, carefully remove the driver's knee airbag following the procedures in the applicable shop manual.

Restraint > Airbag Module > Knee Airbag (KAB) Module

**CAUTION**

The airbag may accidentally be deployed and possibly cause physical injury. After removing the knee airbag module, position airbag with the cover facing upward.



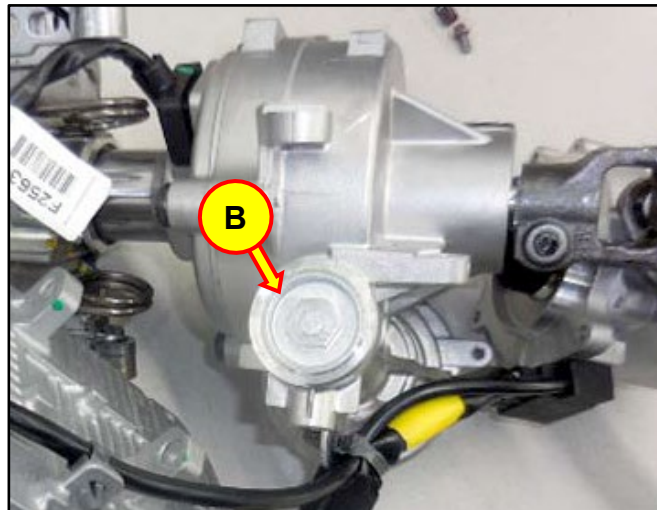
7. After removing the KAB, additional parts might have to be removed to gain access to the small bearing. Follow the applicable shop manual for part removal procedures.

- 8a. **ALL EXCEPT DN8a and DN8 HEV**
Remove the plug (B).

Reuse the plug during reassembly.

Plug Tightening Torque

lb-ft	• 28.2-35.5
kgf.m	• 3.9-4.9
N.m	• 38.3-48.1



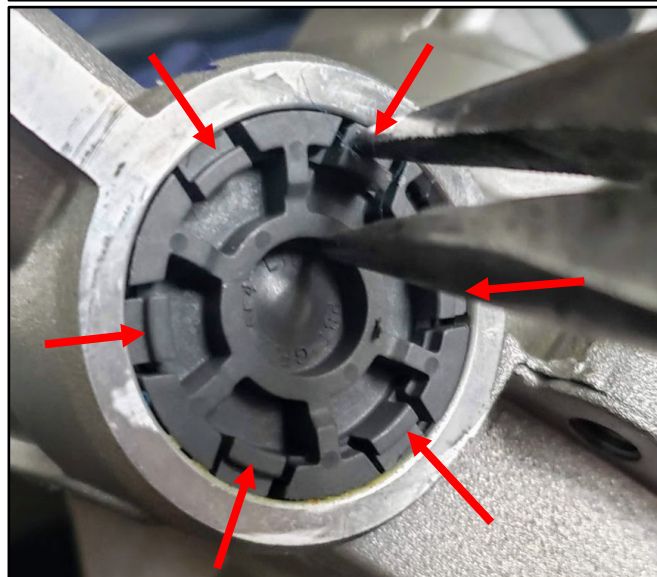
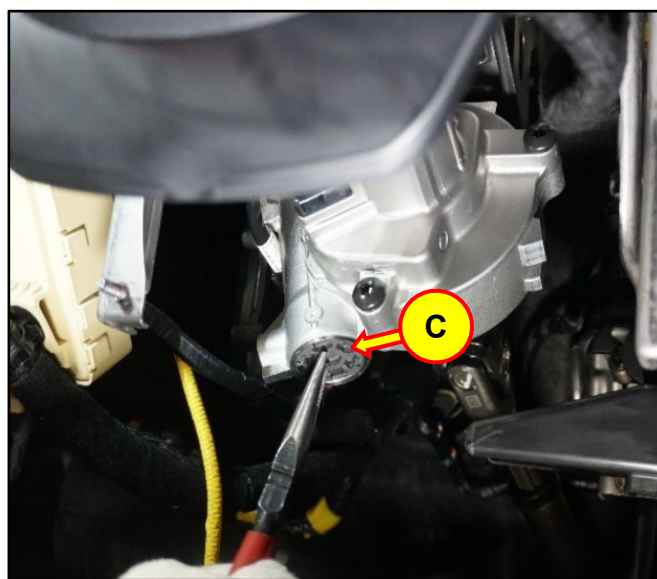
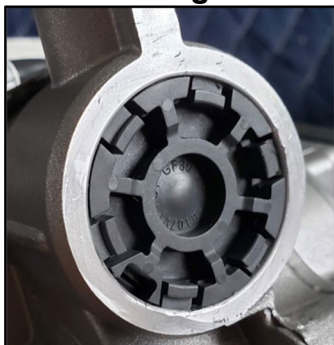
- 8b. **DN8a and DN8 HEV**
Remove the plastic cover (C) by breaking the six cover tabs with pliers.

NOTICE

Use the supplied plastic cover during reassembly.



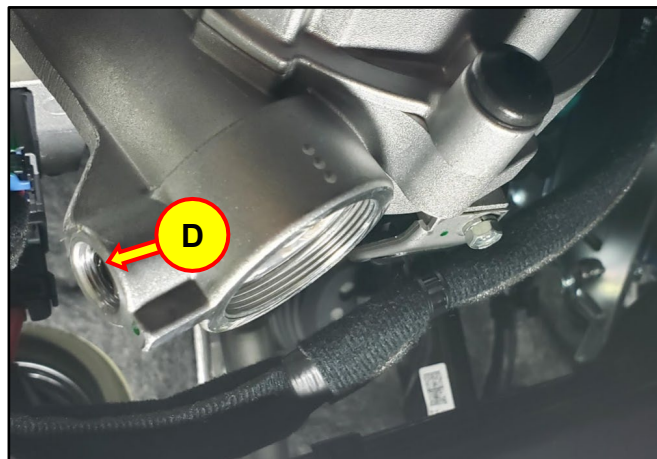
Ensure cover snaps into place and is flush with the housing.



9. Remove the anti-rattle plug (D).

Anti-Rattle Plug Tightening Torque

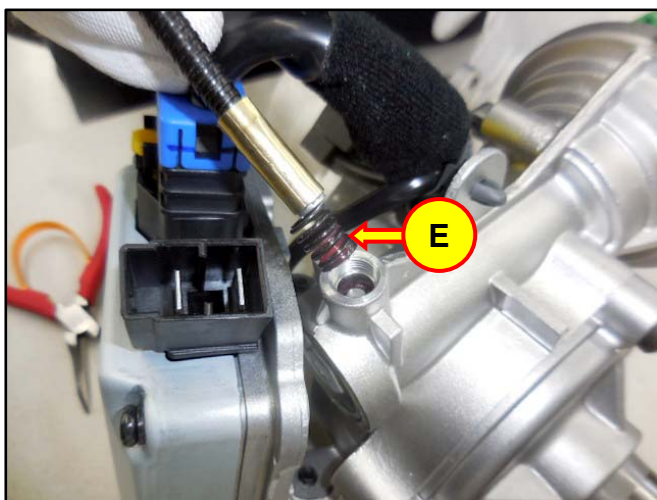
lb-in	• 86.4-112.8
lb-ft	• 7.2-9.4
kgr.m	• 1.0-1.3
N.m	• 9.8-12.8



10. Remove the anti-rattle spring (E).

NOTICE

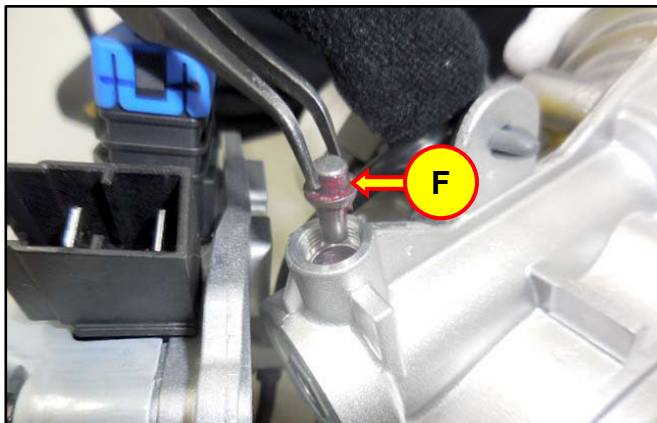
Keep the anti-rattle spring free of debris after removal. Reuse the spring during reassembly.



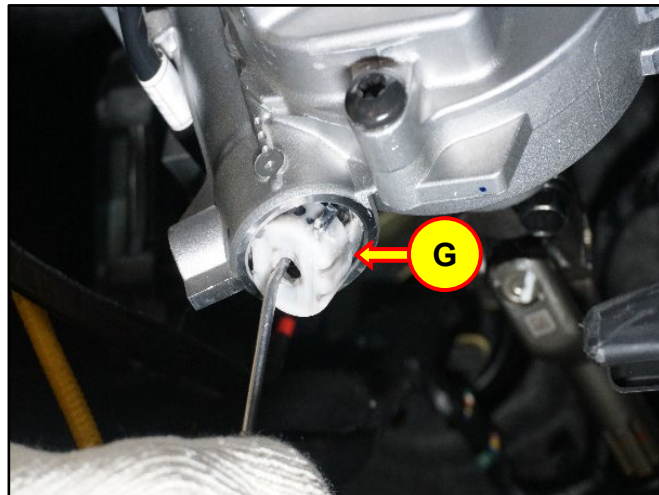
11. Remove the slide pin (F).

NOTICE

Keep the slide pin free of debris after removal. Reuse the slide pin during reassembly.



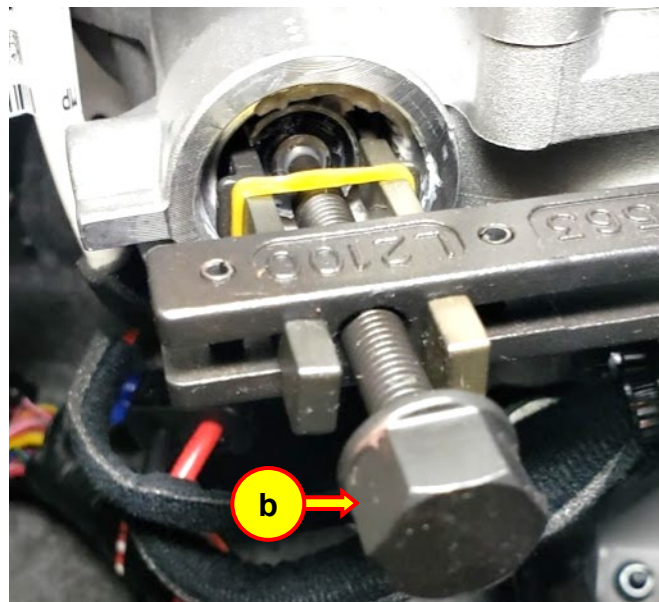
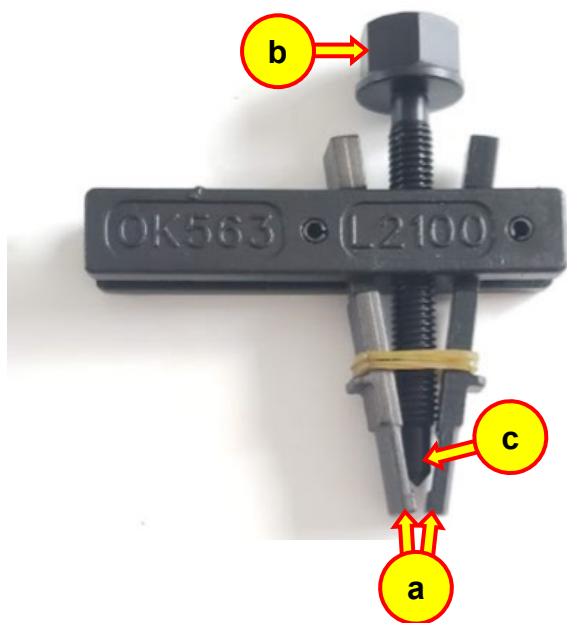
12. Remove the sliding damper (G) and discard.



13. Use the MDPS small bearing removal tool, to remove and discard the bearing.

How to use the tool

1. Insert the ends (a) of the tool into the MDPS housing to grasp the outer race of the bearing.
2. Slowly turn the threaded rod (b) until the tip (c) reaches the center of the bearing and worm shaft.
3. Continue to turn the rod slowly until the bearing is pulled off the worm shaft.



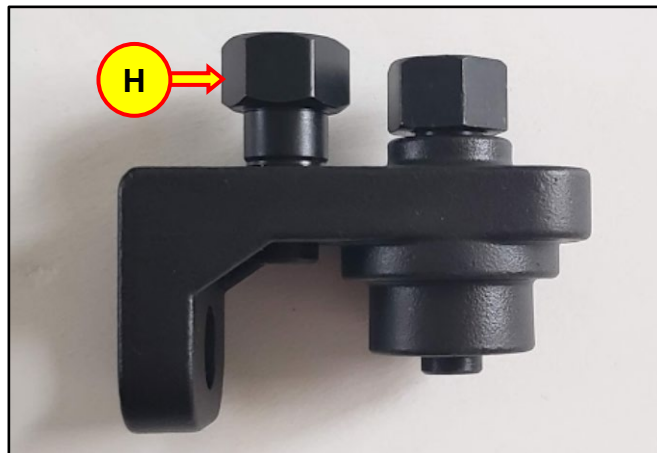
14. Use the supplied paper stick to remove the excess grease.



15. Remove the bolt (H) from the MDPS small bearing mounting tool. This bolt will be used to locate the tool on the MDPS housing.

NOTICE

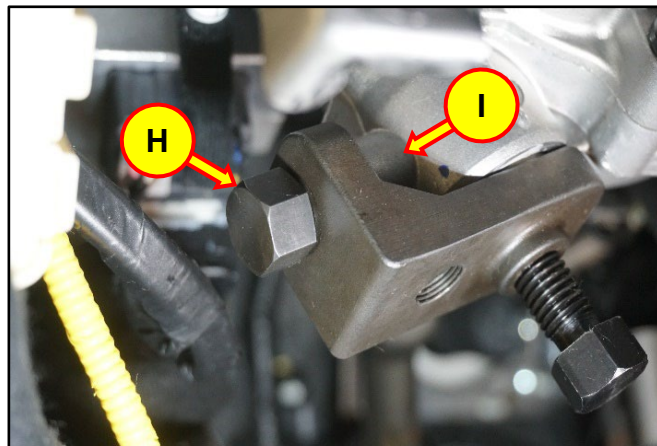
After completing the bearing installation procedure, thread the bolt back into its original position.



16. Insert the new, small bearing into the bearing holder.



17. Place the tool onto the MDPS housing as shown in the photo in the right. Slide the bolt (H) through the hole and then thread the bolt into the anti-rattle plug boss (I). Tighten the bolt (H) until the tool is firmly held onto the MDPS housing.



18. Use a torque wrench to slowly seat the bearing into position on the worm shaft.

Bearing Seating Torque

lb-in	• 26.52
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lb-ft	• 2.21
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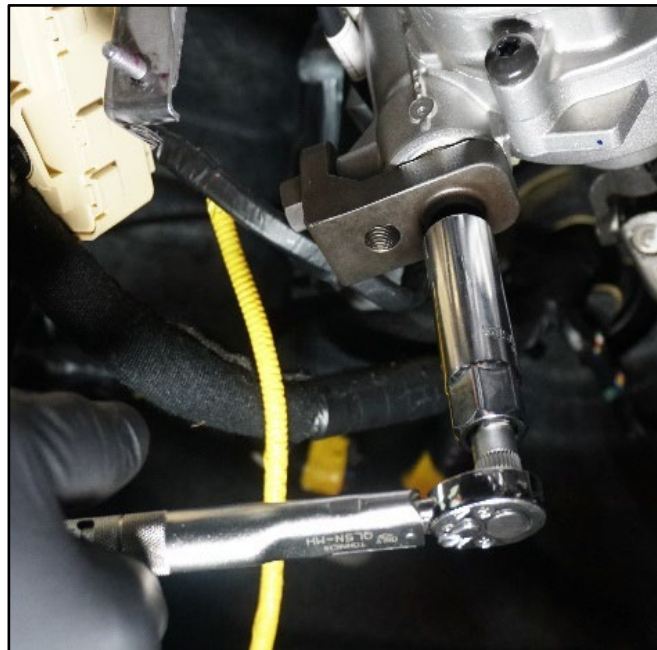
kgf.m	• 0.31
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N.m	• 3.0
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NOTICE

Note the small torque values to seat the bearing.

Only use hand tools. Electric tools may damage the bearing during assembly.



19. Remove the tool from the MDPS housing and inspect the bearing.

Ensure the bearing is fully seated and the end of the worm shaft is protruding approximately 1.2mm (0.047 inch).

If the bearing did not seat as shown in the photo, increase the torque setting on the torque wrench and continue to slowly seat the bearing.

Increased Bearing Seating Torque

lb-in	• 44.28
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lb-ft	• 3.69
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kgf.m	• 0.51
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N.m	• 5.0
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NOTICE

If the bearing is removed during this procedure, do not reinstall the bearing as it might be damaged and cause a noise. A new bearing must be used.



OK
Bearing is seated properly. The end of the worm shaft is protruding.

Not OK
Bearing is not seated properly. The end of the worm shaft is flush with the bearing.

20. Install the new sliding damper. Align the hole on the side of the sliding damper (J) with the anti-rattle plug boss (I).



21. Reinstall parts in the reverse order of removal.
22. Reconnect the negative battery cable after all the components have been reinstalled to the vehicle.
23. If necessary, program the customer's AM, FM, and SXM radio preset stations.
24. The service procedure is now complete.