



# HYUNDAI Technical Service Bulletin

|                                |                                  |
|--------------------------------|----------------------------------|
| GROUP<br><b>STEERING</b>       | NUMBER<br><b>20-ST-002H-2</b>    |
| DATE<br><b>SEPTEMBER, 2020</b> | MODEL(S)<br><b>ELANTRA (ADa)</b> |

**SUBJECT:** C-MDPS WORM SHAFT ASSEMBLY BEARING NOISE

**THIS TSB SUPERSEDES 20-ST-002H-1 TO UPDATE THE CAUSAL PART NUMBER IN THE WARRANTY INFORMATION TABLE AND UPDATE THE BEARING NOISE EXAMPLE VIDEO.**

**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 assembly.



**Applicable Vehicles:**


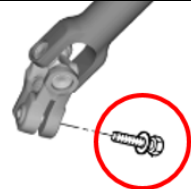
Certain 2018 – 2020 MY Elantra (ADa, VIN beginning with “5NP”), with production dates between **March 01, 2018** and **November 06, 2019**.

**NOTICE**

Certain 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**, please refer to TSB 20-ST-003H-1, C-MPDS Worm Shaft Bearing Noise.

**SUBJECT: C-MDPS WORM SHAFT ASSEMBLY BEARING NOISE**

**Parts Information:**

| MODEL         | PART NUMBER   | PART DESCRIPTION            | PHOTO   |
|---------------|---------------|-----------------------------|---|
| ELANTRA (ADa) | 56351-G3AAAFF | WORM SHAFT ASSY             |  |
|               | 56415-2H000*  | LOWER STEERING U-JOINT BOLT |  |

**NOTE:** \*Steering U-Joint Bolt **cannot** be reused during reassembly. Only one bolt is necessary for this repair.

**SST Information: Worm Shaft Assembly Plug Tool**

| MODEL         | DESCRIPTION          | PART NUMBER    | PICTURE  |
|---------------|----------------------|----------------|--|
| ELANTRA (ADa) | C-SEG 2<br>(A: 42mm) | 0K563-Q2100FFF |  |

**NOTE:** To re-order the SST, contact Bosch at 1-866-539-4248.

**Warranty Information:**

| MODEL         | OP CODE  | OPERATION                            | OP TIME | CAUSAL PART    | NATURE CODE | CAUSE CODE |
|---------------|----------|--------------------------------------|---------|----------------|-------------|------------|
| ELANTRA (ADa) | 00DA05R1 | MDPS Worm Shaft Assembly Replacement | 1.2 M/H | 56351-G3AAAFFF | Q57         | ZZ7        |

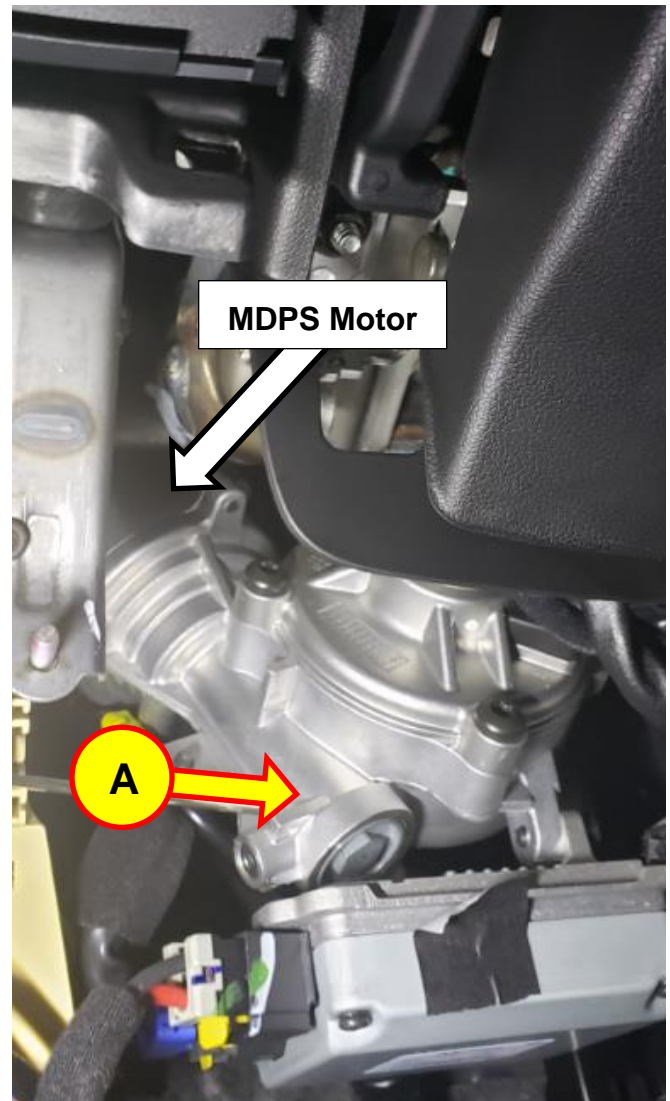
**NOTE 1:** Submit Claim on Campaign Claim Entry Screen.

**NOTE 2:** If a part is found in need of replacement while performing the repair for this TSB and the affected part is still under warranty, submit a separate claim using the same Repair Order. If the affected part is out of warranty, submit a Prior Approval Request for goodwill consideration prior to performing the work.

**Service Procedure:**

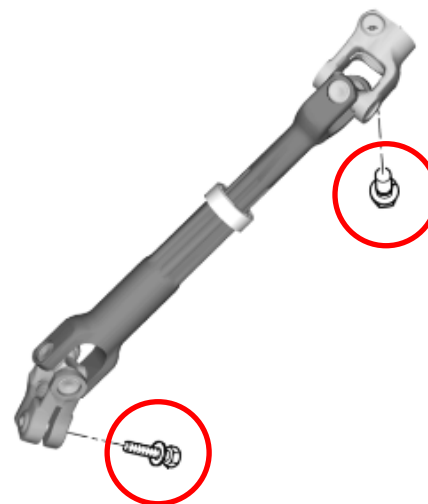
- Determine if bearing noise comes from the MDPS column and housing.
  - Start the engine and turn the steering wheel left and right.
  - Listen for the bearing noise occurring from the worm shaft housing (A). This noise will be located near the C-MDPS motor on the steering column.
  - To hear an example of the bearing noise, refer to the link below.  
<https://youtu.be/22PI3hAEfnk>
- Replace the worm shaft assembly 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 (or current TSB related to partial C-MDPS Repairs) for additional information.



**NOTICE**

If the pinch bolts on either end of the steering universal joint assembly are removed, the bolts **cannot** be reused during reassembly.



3. Remove the C-MPDS assembly and universal joint according to the applicable vehicle shop manual.

\*Steering System > Motor Driven Power Steering > MDPS Assembly > Repair Procedures



**NOTICE**

Before removing the C-MDPS assembly, ensure the wheels are straight and the steering wheel is level.

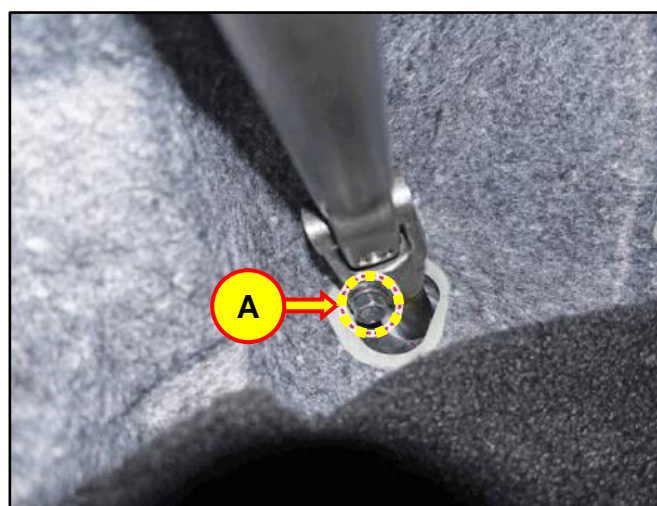
4. Only remove the lower pinch bolt (A) on the steering universal joint assembly to remove the C-MDPS assembly.

**Pinch Bolt Torque**

|       |             |
|-------|-------------|
| lb-ft | • 23.9-27.5 |
| kgf.m | • 3.3-3.8   |
| N.m   | • 32.4-37.3 |

**NOTICE**

If the pinch bolts on either end of the steering universal joint assembly are removed, the bolts **cannot** be reused during reassembly.



5. Loosen the motor mounting bolts (B).

**Motor Mount Tightening Torque**

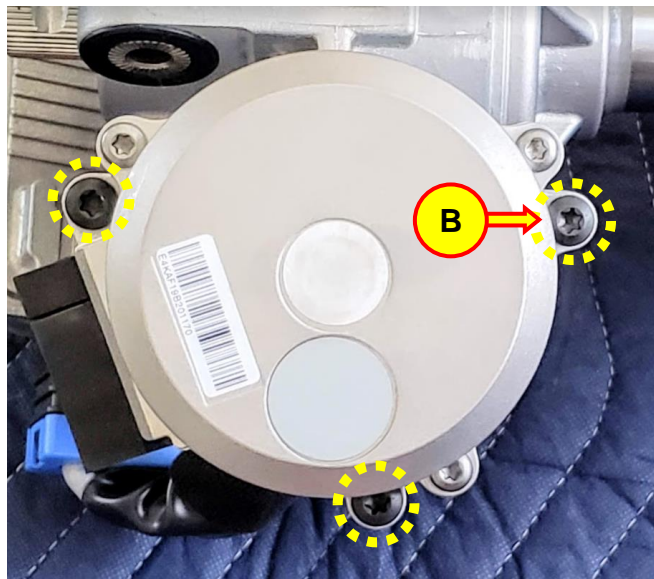
|       |           |
|-------|-----------|
| lb-ft | • 5.8-8.7 |
|-------|-----------|

|       |           |
|-------|-----------|
| kgf.m | • 0.8-1.2 |
|-------|-----------|

|     |            |
|-----|------------|
| N.m | • 7.8-11.8 |
|-----|------------|

**NOTICE**

Wear clean gloves and perform the procedure on a clean work bench to prevent contamination of internal components.



6. Remove the motor assembly (C).

**NOTICE**

Reuse the flexible coupling.



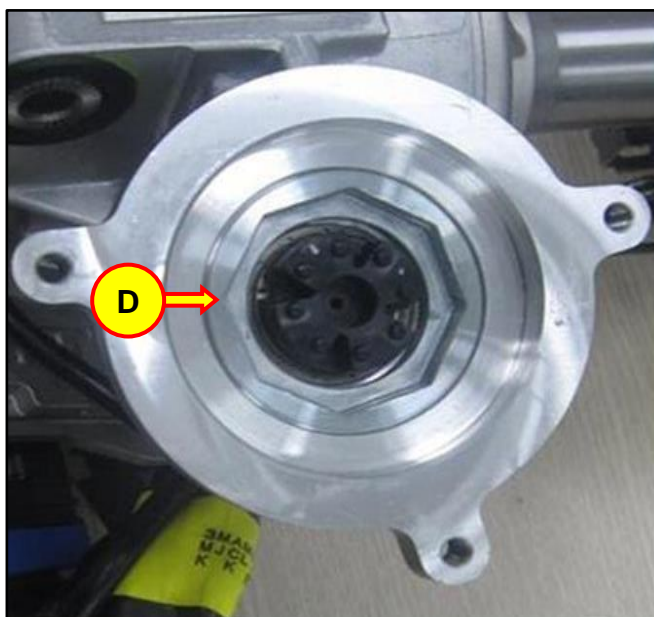
7. Remove the worm shaft plug (D) using the worm shaft assembly plug tool.

**Worm Shaft Plug Tightening Torque**

|       |             |
|-------|-------------|
| lb-ft | • 51.4-59.3 |
|-------|-------------|

|       |           |
|-------|-----------|
| kgf.m | • 7.1-8.2 |
|-------|-----------|

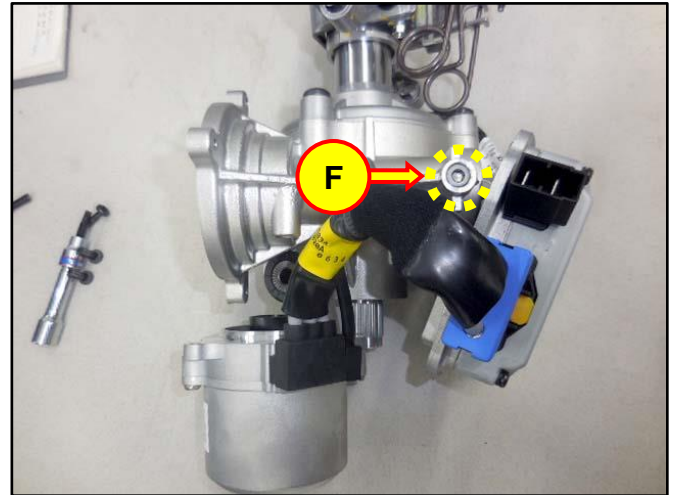
|     |             |
|-----|-------------|
| N.m | • 69.7-80.4 |
|-----|-------------|



8. Remove the anti-rattle plug (F).

**Anti-Rattle Plug Tightening Torque**

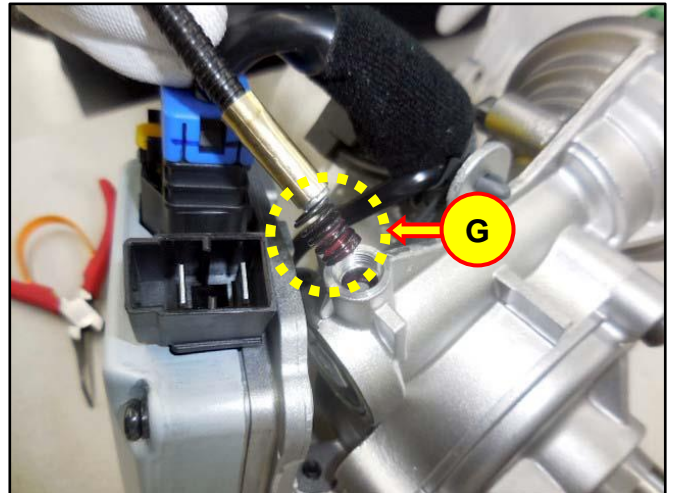
|              |            |
|--------------|------------|
| <b>lb-ft</b> | • 7.2-9.4  |
| <b>kgf.m</b> | • 1.0-1.3  |
| <b>N.m</b>   | • 9.8-12.8 |



9. Remove the anti-rattle spring (G).

**NOTICE**

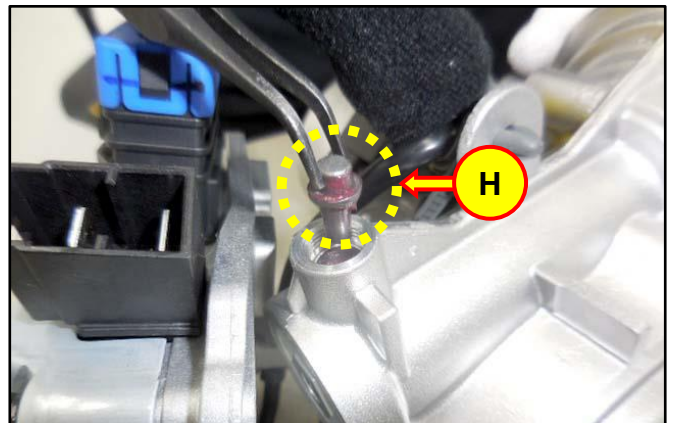
Keep the anti-rattle spring free of debris after removal. Reuse the spring during reassembly.



10. Remove the slide pin (H).

**NOTICE**

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



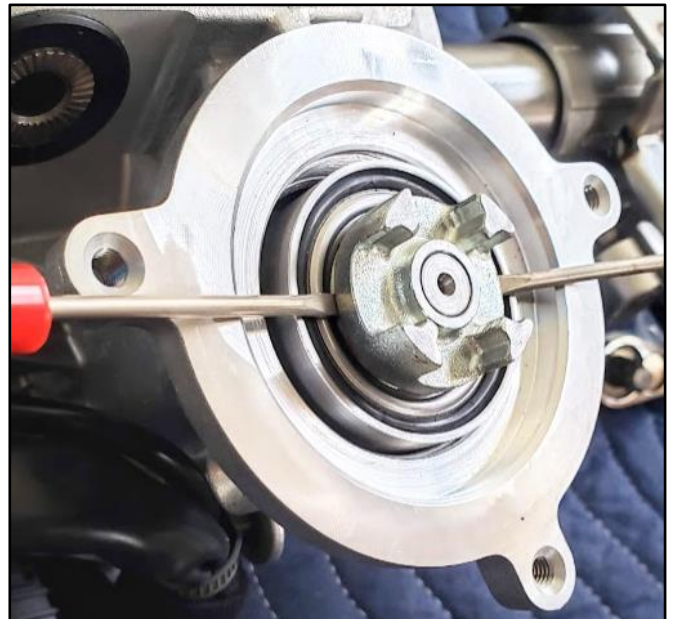
11. There are a few methods to remove the worm shaft assembly.
- Use locking pliers or similar tool to grip the coupler and pull out the assembly.  
After the worm shaft assembly is freed, move to step 12. (Page 10)

**OR**

- Place two flat-head screwdrivers under the coupler, 180 degrees apart, to pry out the assembly.  
After the worm shaft assembly is freed, move to step 12. (Page 10)

**OR**

- If either of the above methods are unsuccessful, move to step 11c (Page 8) for an alternate method of removal.

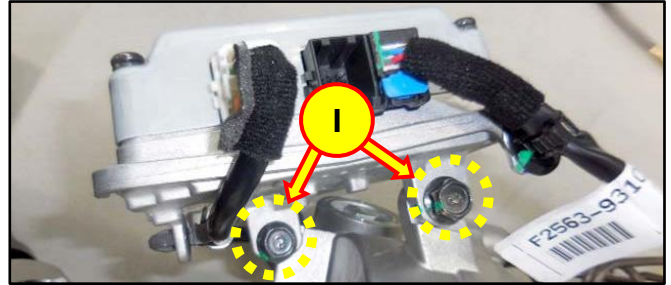


**11c. Alternate Method to Remove Worm Shaft Assembly**

11c-1. Remove the ECU mounting bolts (I) and set aside the ECU assembly.

**ECU Mounting Bolts Tightening Torque**

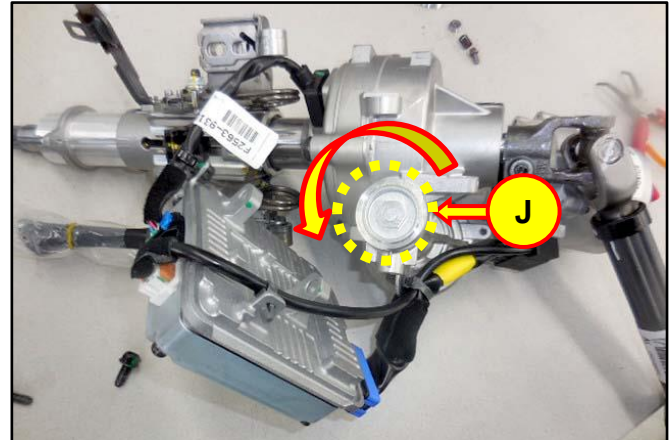
|              |             |
|--------------|-------------|
| <b>lb-ft</b> | • 14.5-17.4 |
| <b>kgf.m</b> | • 2.0-2.4   |
| <b>N.m</b>   | • 19.6-23.5 |



11c-2. Remove the plug (J).

**Plug Tightening Torque**

|              |             |
|--------------|-------------|
| <b>lb-ft</b> | • 28.2-35.5 |
| <b>kgf.m</b> | • 3.9-4.9   |
| <b>N.m</b>   | • 38.3-48.1 |



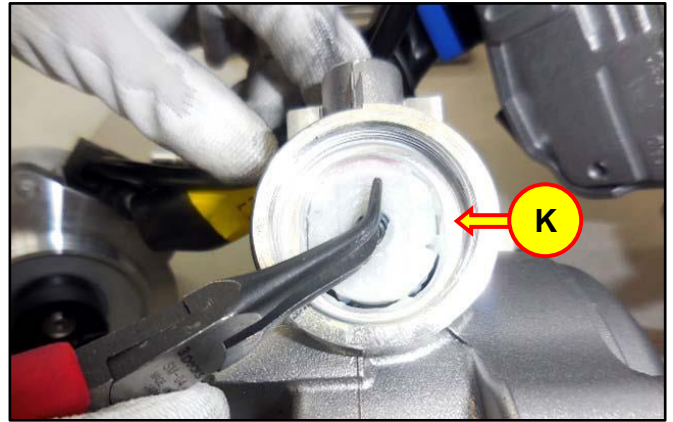
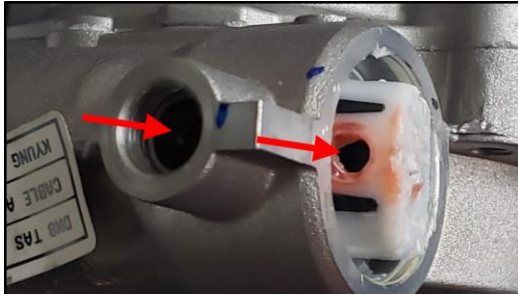


11c-3. Remove the grease plug (K).

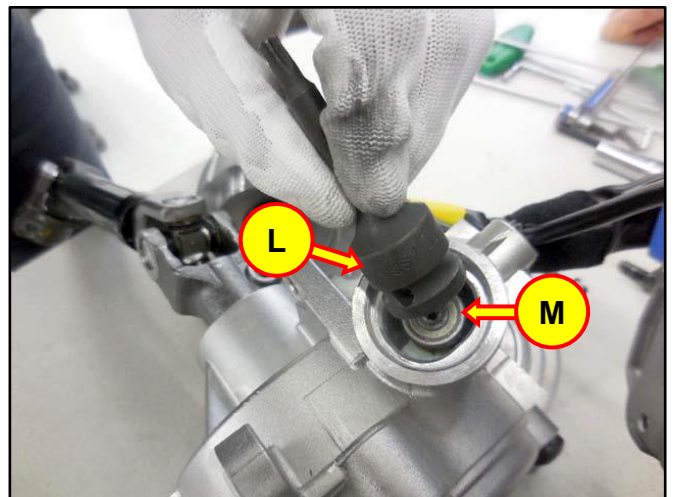
**NOTICE**

Keep the grease plug free of debris after removal. Reuse the plug during reassembly.

During reassembly, align the hole on the side of the grease plug with the boss to insert the slide pin.

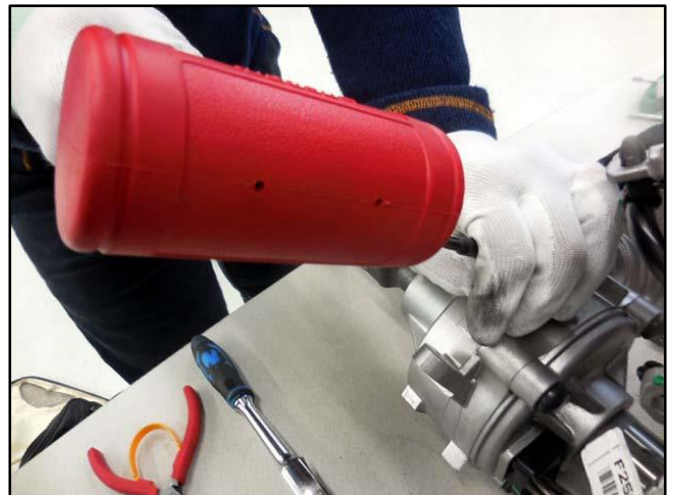


11c-4. Place a short 3/8-inch socket extension or similar tool (L) onto the small bearing (M) as shown.



11c-5. Using a plastic hammer or rubber mallet, lightly tap the extension to free the worm shaft assembly.

After the worm shaft assembly is freed, move to step 12. (Page 10)



12. Pull the worm shaft assembly out of the MDPS column and discard the assembly.

**NOTICE**

Keep the housing opening free and clear of debris.



13. Apply the entire contents of the supplied grease evenly onto the new worm gear (N).



14. Carefully reinstall the new worm shaft assembly.

Slide the assembly straight into the housing. Light thumb pressure on either side of the large bearing/coupler should be sufficient to seat the assembly. If the assembly does not slide into place, remove the assembly and try again.

**NOTICE**

Do not force or tap the worm shaft assembly into the housing.



15. Reinstall the removed parts in reverse order of removal.

**NOTICE**

Ensure the steering wheel is level during reinstallation.

16. Connect the GDS and perform the ASP calibration and EPS type recognition according to the applicable vehicle shop manual.
17. The service procedure is now complete.