

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

**Service Category** Steering

**Section** Steering Gear/Linkage

**Market** USA

Toyota Supports  
 ASE Certification 

## Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2018	Camry, Camry HV	

## Introduction

Some 2018 model year Camry and Camry Hybrid vehicles may exhibit a condition in which the steering wheel requires increased effort and/or exhibits reduced return to center. The steering wheel may exhibit a slight resistance at certain points during low-speed steering maneuvers. This condition may be caused by the lower universal joint of the steering intermediate shaft assembly. A new steering intermediate shaft assembly has been developed to address this condition. Follow the Repair Procedure in this service bulletin to address this condition.

## Warranty Information

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
ST9012	R & R Intermediate Steering Shaft Assy	0.9	45220-06250	97	83

### APPLICABLE WARRANTY

- This repair is covered under the Toyota Basic Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

## Parts Information

PART NUMBER		PART NAME	QTY
PREVIOUS	NEW		
45220-06250	45220-06252	Shaft Assy, Steering	1

## Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

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### Repair Procedure

1. Confirm the condition exists.
  - A. Lift the vehicle so that all four wheels are off the ground.
  - B. With the engine running, slowly turn the steering wheel from lock to lock position.
  - C. Check for ANY stiffness, resistance, or increased torque feedback every one half (1/2) turn.

Does the vehicle exhibit a condition in which the steering wheel requires increased effort?

- **YES** — Continue to step 2.
- **NO** — This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

#### NOTICE

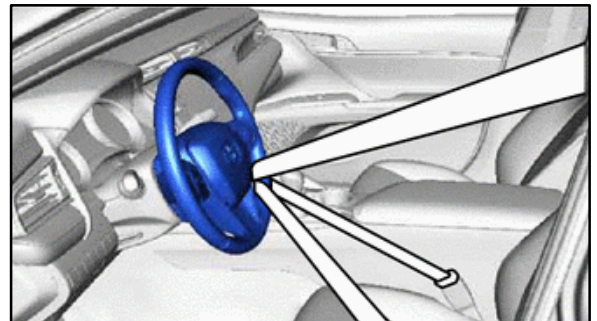
- **BEFORE** removing the steering intermediate shaft assembly, make sure the steering wheel and front wheels remain stationary.
- **Once** the steering intermediate shaft assembly is removed, do **NOT** allow the steering wheel to spin freely.
- **Ensure** the wheels are straight and the steering wheel is centered **BEFORE** removing the steering intermediate shaft assembly by installing a steering wheel holder.

2. Align the front wheels facing straight forward.
3. Secure the steering wheel with the seat belt to prevent rotation as shown.

#### NOTICE

**This operation is necessary to prevent damage to the spiral cable.**

**Figure 1.**



4. Remove the no. 1 engine under cover by removing the bolt, two clips, and six screws.
5. Remove the left front wheel.

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

6. Separate the steering intermediate shaft assembly from the rack and pinion power steering gear assembly.
  - A. Remove the bolt and slide the steering intermediate shaft assembly.

**NOTICE**

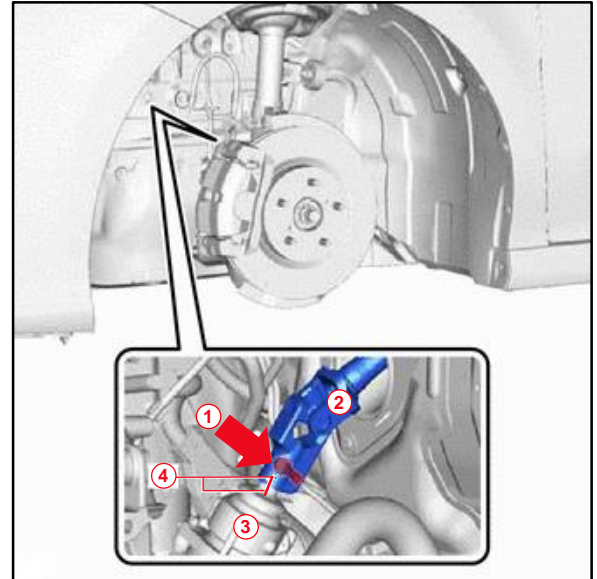
**Do NOT separate the steering intermediate shaft assembly from the rack and pinion power steering gear assembly at this time.**

- B. Place matchmarks on the rack and pinion power steering gear assembly and steering intermediate shaft assembly.
  - C. Separate the steering intermediate shaft assembly from the rack and pinion power steering gear assembly.

**NOTICE**

**Ensure the steering gear splines are NOT damaged during the removal of the steering intermediate shaft assembly.**

**Figure 2.**



1	Bolt
2	Steering Intermediate Shaft Assembly
3	Pinion Power Steering Gear Assembly
4	Matchmarks

7. Manipulate the steering gear side intermediate shaft assembly universal joint by hand and check for resistance and/or binding.

Does the steering gear side intermediate shaft assembly universal joint exhibit ANY resistance and/or binding?

- **YES** — Continue to step 8.
- **NO** — This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

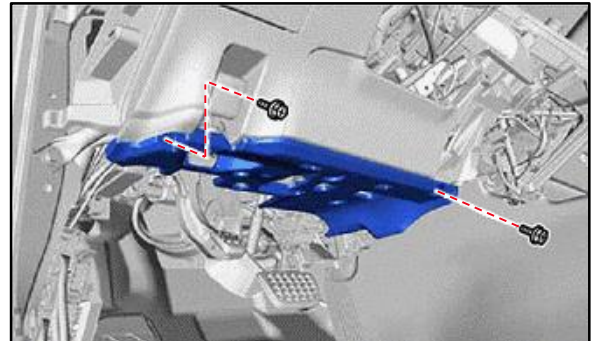
# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

8. Remove the lower no. 1 instrument panel under cover sub-assembly.

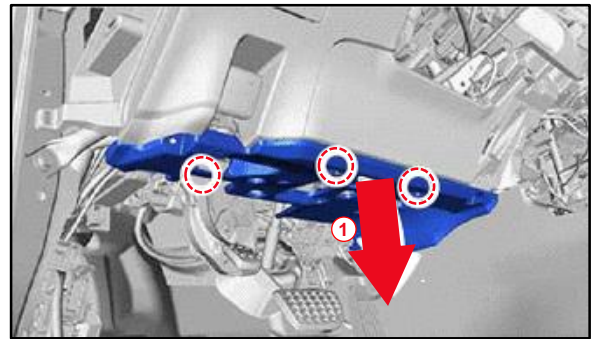
A. Remove the two screws.

**Figure 3.**



B. Disengage the three claws as shown.

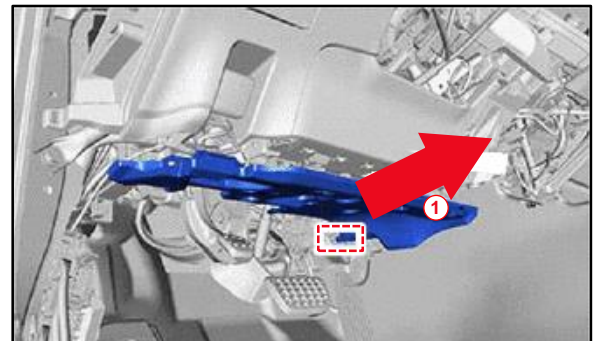
**Figure 4.**



<b>1</b>	Remove in This Direction
	Claw

C. Disengage the guide as shown.

**Figure 5.**



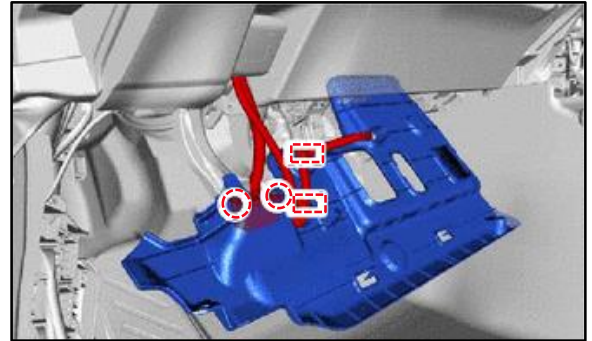
<b>1</b>	Remove in This Direction
	Guide

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

- D. Disengage the two claws to disconnect the DLC3 connector.
  
- E. Disengage the two clamps to remove the lower no. 1 instrument panel under cover sub-assembly.

**Figure 6.**

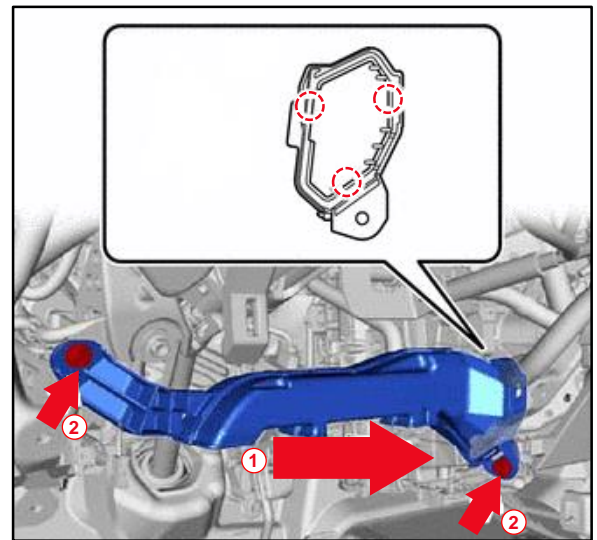


○	Claw
▭	Clamp

- 9. Loosen the no. 1 air duct bolts ONLY if necessary.

**NOTICE**  
 The no. 1 air duct is a non-reusable part and should NOT be removed.

**Figure 7.**



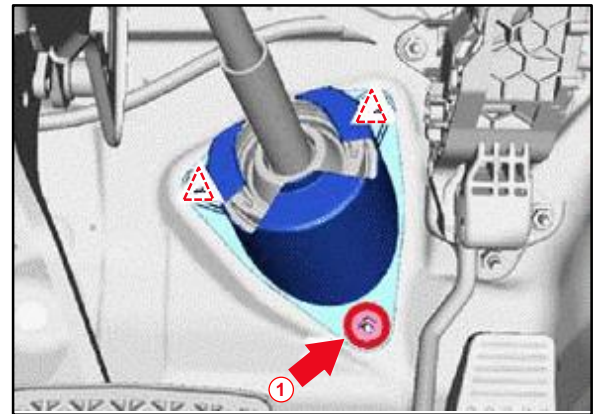
1	Front
2	Bolt
○	Claw (Do Not Remove)

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

10. Remove the steering column hole cover.
  - A. Remove the floor carpet clip and turn back the floor carpet.
  - B. Disengage the two clips to remove the steering column hole cover.
  
11. Remove the steering intermediate shaft assembly from the steering column.
  - A. Using a screwdriver, loosen the clamp as shown.

**Figure 8.**

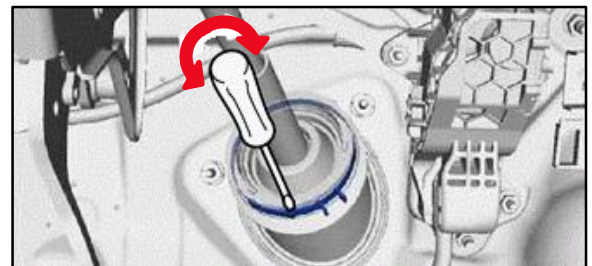


1	Floor Carpet Clip
△	Clip

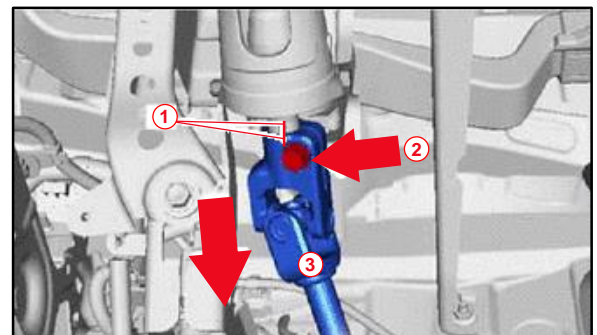
11. Remove the steering intermediate shaft assembly from the steering column.
  - A. Using a screwdriver, loosen the clamp as shown.
  - B. Remove the bolt and slide the steering intermediate shaft assembly.

**NOTICE**  
 Do NOT remove the steering intermediate shaft assembly from the steering column assembly at this time.

**Figure 9.**



**Figure 10.**



1	Matchmark
2	Bolt
3	Steering Intermediate Shaft Assembly

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

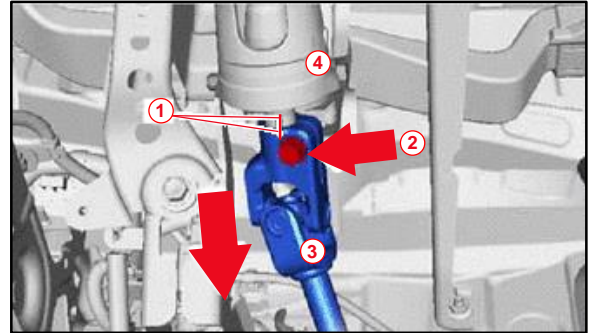
## Repair Procedure (continued)

- C. Place matchmarks on the steering intermediate shaft assembly and the steering column assembly.
- D. Remove the steering intermediate shaft assembly from the steering column assembly.

**NOTICE**

Ensure the steering column splines are NOT damaged during the removal of the steering intermediate shaft assembly.

**Figure 11.**



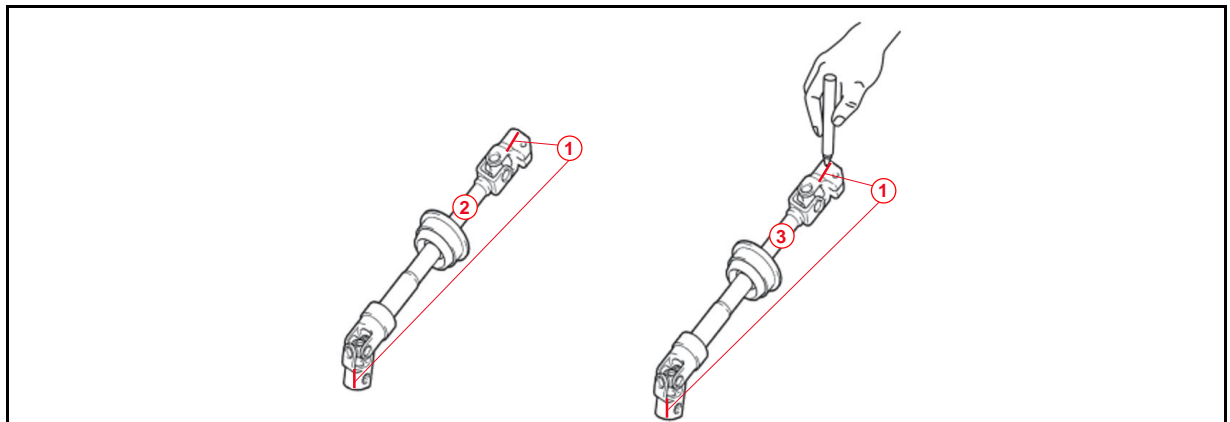
1	Matchmark
2	Bolt
3	Steering Intermediate Shaft Assembly
4	Steering Column Assembly

- 12. Transfer the matchmarks from the removed steering intermediate shaft assembly to the NEW steering intermediate shaft assembly.

**NOTICE**

- Place the NEW steering intermediate shaft assembly next to the original steering intermediate shaft assembly (removed in the previous step) and transfer those matchmarks to the same locations on the NEW steering intermediate shaft assembly.
- With a paint pen or metal punch, mark the original steering intermediate shaft assembly to avoid reinstalling it in error.

**Figure 12.**



1	Matchmark
2	Original Steering Intermediate Shaft Assembly
3	New Steering Intermediate Shaft Assembly

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

13. Install the NEW steering intermediate shaft assembly to the steering column assembly.

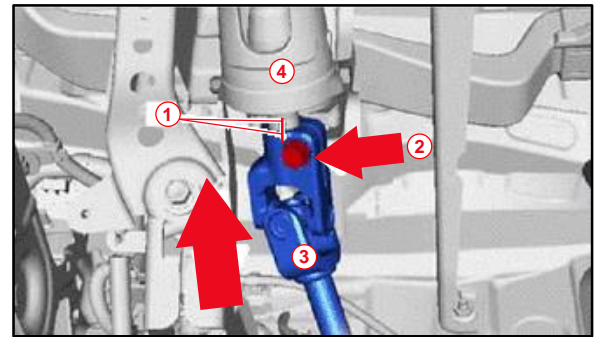
- A. Align the matchmarks on the steering intermediate shaft assembly and steering column assembly.
- B. Install the steering intermediate shaft assembly to the steering column assembly.
- C. Install the bolt.

**Torque: 35 N\*m (357 kgf\*cm, 26 ft\*lbf)**

**NOTICE**

Ensure the bolt goes along the machined ridge in the upper and lower splined areas to confirm bolt installation in the groove.

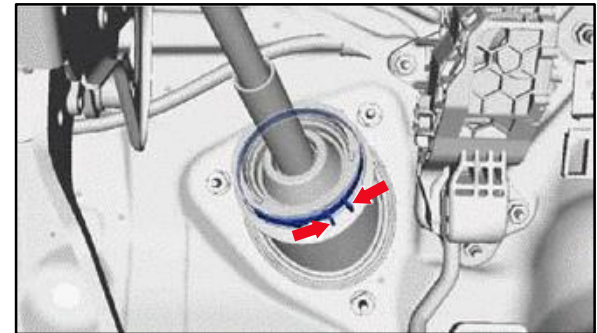
**Figure 13.**



1	Matchmark
2	Bolt
3	Steering Intermediate Shaft Assembly
4	Steering Column Assembly

D. Tighten the clamp.

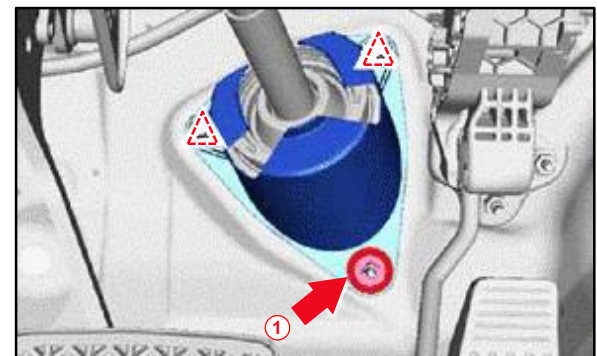
**Figure 14.**



14. Install the steering column hole cover.

- A. Install the two clips.
- B. Return the floor carpet.
- C. Install the carpet clip.

**Figure 15.**



1	Floor Carpet Clip
	Clip

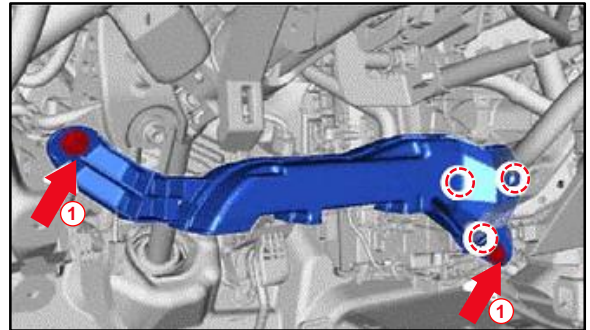


## Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

### Repair Procedure (continued)

15. Tighten the two bolts for the no. 1 air duct ONLY if they were loosened.

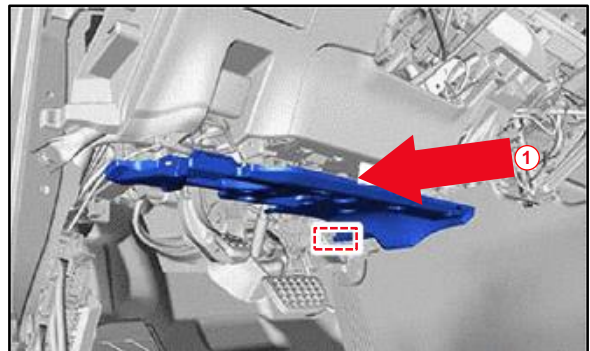
**Figure 16.**



<b>1</b>	<b>Bolt</b>
	<b>Claw (Do Not Remove)</b>

16. Install the lower no. 1 instrument panel under cover sub-assembly.
  - A. Engage the two claws to connect the DLC3 connector.
  - B. Engage the two clamps.
  - C. Connect the connector.
  - D. Engage the guide as shown.

**Figure 17.**



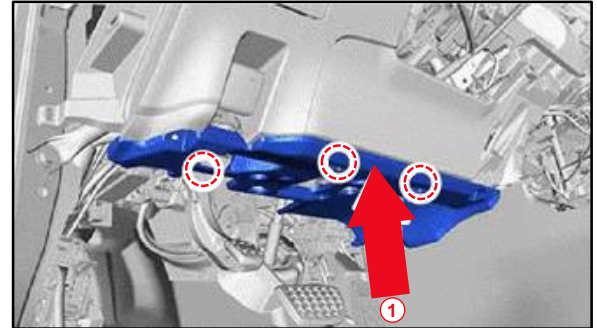
<b>1</b>	<b>Install in This Direction</b>
	<b>Guide</b>

# Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

## Repair Procedure (continued)

E. Engage the three claws as shown.

**Figure 18.**



<b>1</b>	Install in This Direction
	Claw

F. Install the lower no. 1 instrument panel under cover sub-assembly with the two screws.

17. Connect the steering intermediate shaft assembly to the rack and pinion power steering gear assembly.

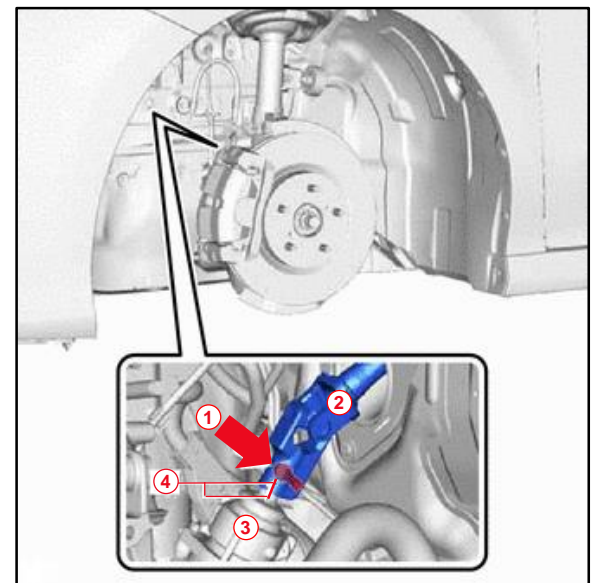
- A. Align the matchmarks on the steering intermediate shaft assembly and rack and pinion power steering gear assembly.
- B. Connect the steering intermediate shaft assembly to the rack and pinion power steering gear assembly.
- C. Install the bolt.

**Torque: 35 N\*m (357 kgf\*cm, 26 ft\*lbf)**

**NOTICE**

Ensure the bolt goes along the machined ridge in the upper and lower splined areas to confirm bolt installation in the groove.

**Figure 19.**



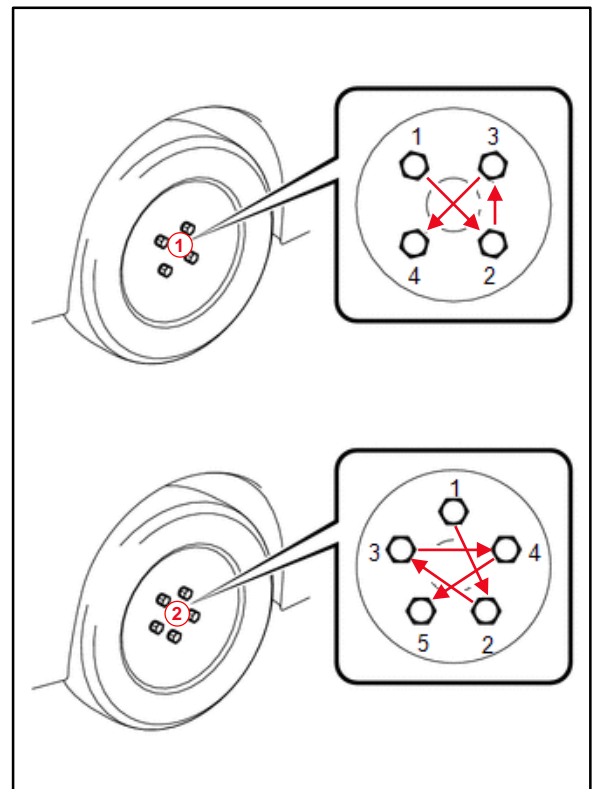
<b>1</b>	Bolt
<b>2</b>	Steering Intermediate Shaft Assembly
<b>3</b>	Pinion Power Steering Gear Assembly
<b>4</b>	Matchmarks

## Steering Wheel Requires Increased Effort and/or Exhibits Reduced Return to Center

### Repair Procedure (continued)

18. Install the no. 1 engine under cover.
  - A. Install the bolt.  
**Torque: 7.5 N\*m (76 kgf\*cm, 66 ft\*lbf)**
  - B. Install the six screws.
  - C. Install the two clips.
  
19. Install the left front wheel.
  - A. While aligning the wheel assembly with the center of the axle hub, install the axle hub nuts by hand.
  - B. Temporarily tighten the axle hub nuts in the order shown in the illustration.
  - C. Lower the vehicle, then fully tighten the axle hub nuts in the order shown.  
**Torque: 103 N\*m (1050 kgf\*cm, 76 ft\*lbf)**

**Figure 20.**



<b>1</b>	<b>For Four Bolt Axle Hub</b>
<b>2</b>	<b>For Five Bolt Axle Hub</b>

20. Test-drive the vehicle to verify the condition no longer exists and confirm that the steering wheel is centered.