PROBLEM SYMPTOMS TABLE

HINT:

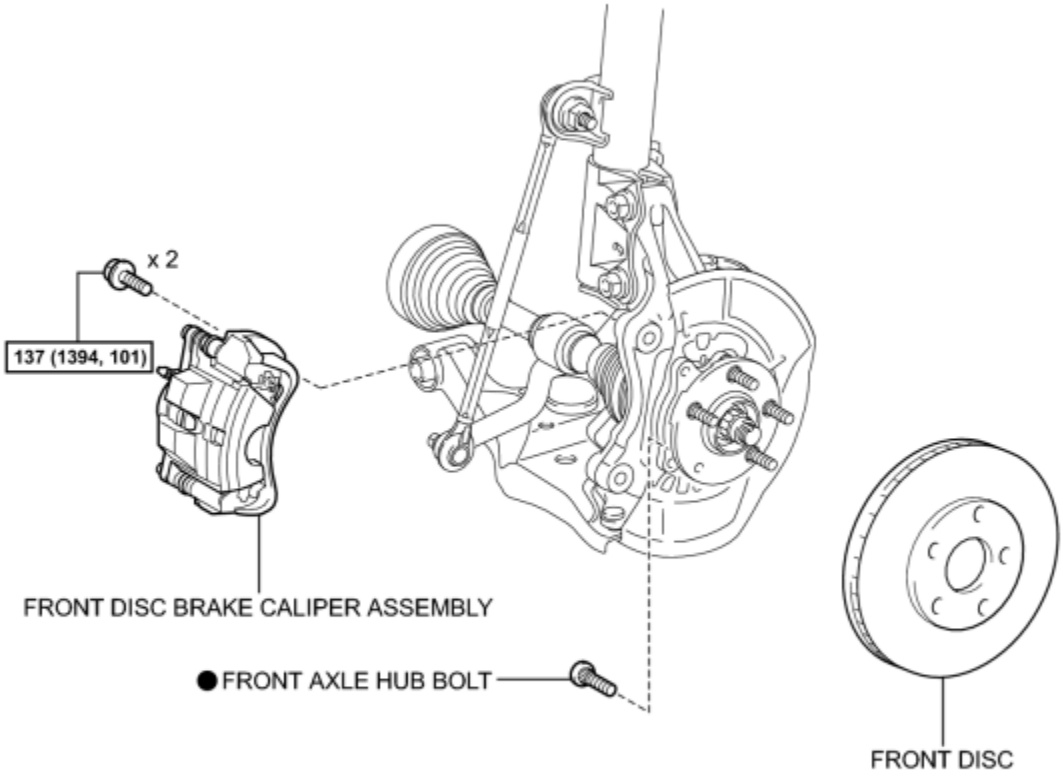
Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Axle System

Symptom	Suspected Area	See page
Wander or pulls	Tire (worn or improperly inflated)	INFO
	Front wheel alignment (incorrect)	INFO
	Rear wheel alignment (incorrect)	INFO
	Front axle hub bearing (loose or worn)	INFO
	Rear axle hub and bearing (loose or worn)	INFO
	Steering intermediate shaft (loose or worn)	INFO
	Steering gear (broken)	INFO
	Suspension parts (worn out)	-
Front wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Front shock absorber (worn out)	INFO
	Front wheel alignment (incorrect)	INFO
	Front lower ball joint (worn)	INFO
	Front axle hub bearing (loose or worn)	INFO
	Steering intermediate shaft (loose or worn)	INFO
	Steering gear (broken)	INFO
Rear wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Rear shock absorber (worn out)	INFO
	Rear axle hub and bearing (loose or worn)	INFO
	Rear wheel alignment (incorrect)	INFO

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

c

REPLACEMENT

NOTICE:

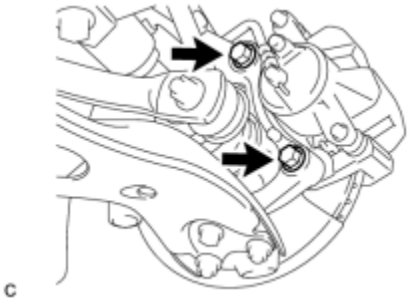
When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, clear the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY



(a) Remove the 2 bolts and separate the front disc brake caliper assembly.

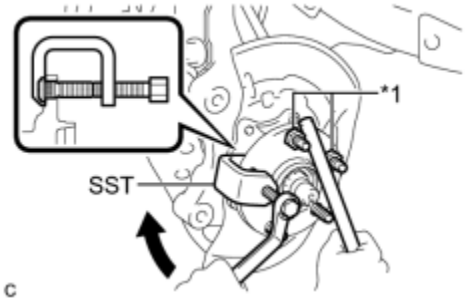
NOTICE:

Use wire or an equivalent tool to keep the front disc brake caliper assembly from hanging down by the flexible hose.

3. REMOVE FRONT DISC INFO

4. REMOVE FRONT AXLE HUB BOLT

(a) Temporarily install 2 nuts to the front axle hub bolts as shown in the illustration.



Text in Illustration

*1	Nut

Recommended service nut:

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

NOTICE:

Install the nuts to prevent damage to the hub bolts.

(b) Using SST and a brass bar or an equivalent tool to hold the front axle, remove the front axle hub bolt.

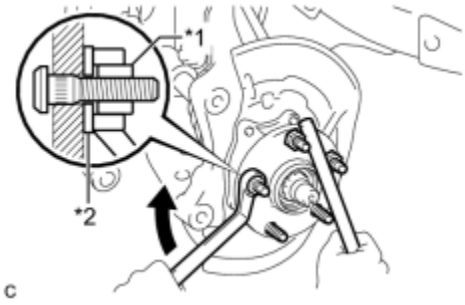
SST: 09611-12010

NOTICE:

Do not damage the threads of the front axle hub bolts.

5. INSTALL FRONT AXLE HUB BOLT

(a) Install a washer and nut to a new front axle hub bolt as shown in the illustration.



Text in Illustration

*1	Nut
*2	Washer

Recommended service nut:

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

HINT:

Recommended thickness of the washer is 5 mm (0.197 in.) or more.

(b) Using a brass bar or an equivalent tool to hold the front axle, install the hub bolt by tightening the nut.

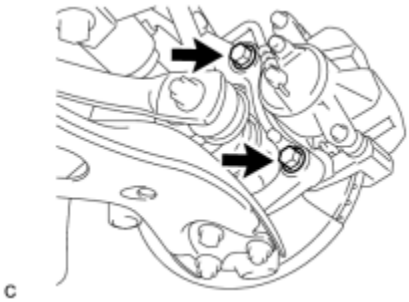
NOTICE:

- Install the nuts to prevent damage to the front axle hub bolts.
- Do not damage the threads of the front axle hub bolts.

(c) Remove the 3 nuts and washer from the 3 front axle hub bolts.

6. INSTALL FRONT DISC INFO

7. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY



(a) Install the front disc brake caliper assembly to the steering knuckle with the 2 bolts.

Torque: **137 N·m (1394 kgf·cm, 101ft·lbf)**

NOTICE:

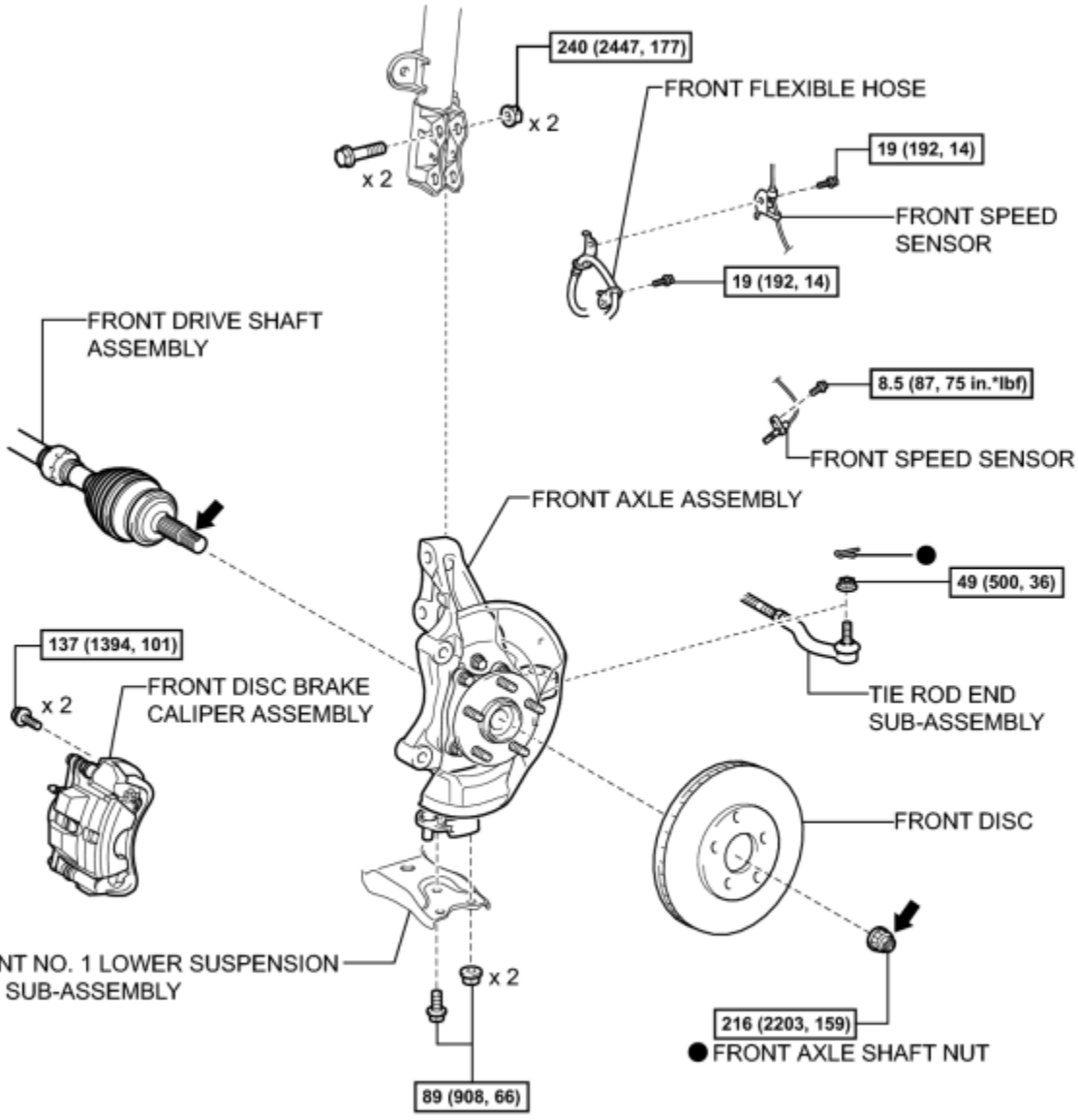
Do not twist the brake hose when installing the front disc brake caliper assembly.

8. INSTALL FRONT WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

COMPONENTS

ILLUSTRATION



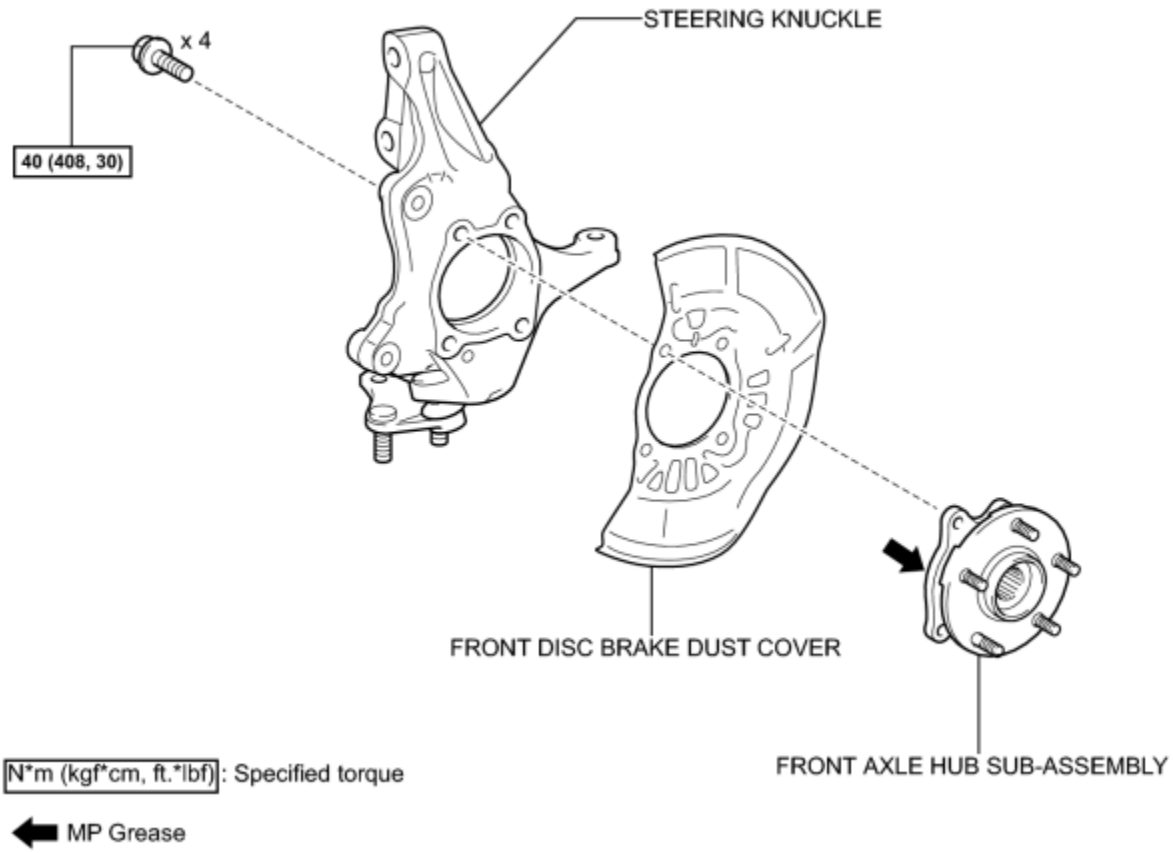
N*m (kgf*cm, ft.*lbf): Specified torque

● Non-reusable part

⬅ Do not apply lubricants to the threaded parts

c

ILLUSTRATION


x 4
40 (408, 30)
STEERING KNUCKLE
FRONT DISC BRAKE DUST COVER
FRONT AXLE HUB SUB-ASSEMBLY
N*m (kgf*cm, ft.*lbf): Specified torque
MP Grease

c 0

ON-VEHICLE INSPECTION

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, clear the DTC.

HINT:

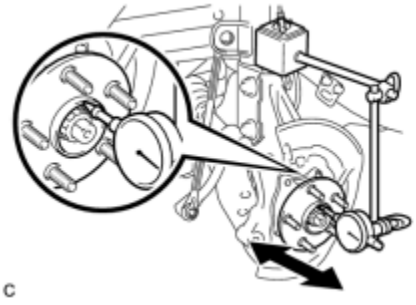
- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY INFO

3. REMOVE FRONT DISC INFO

4. INSPECT FRONT AXLE HUB BEARING LOOSENESS



(a) Using a dial indicator, check for looseness near the center of the axle hub.

Maximum looseness:

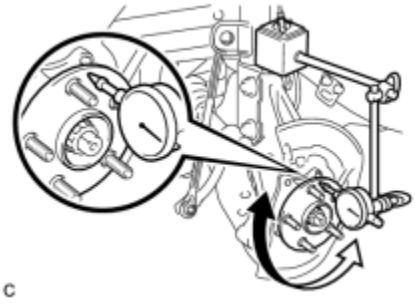
0.05 mm (0.00196 in.)

- Ensure that the dial indicator is set perpendicular to the measurement surface.
- Keep the magnet of the dial indicator away from the front speed sensor.

HINT:

If the looseness exceeds the maximum, replace the front axle hub bearing.

5. INSPECT FRONT AXLE HUB RUNOUT



(a) Using a dial indicator, check for runout on the surface of the axle hub outside the hub bolt.

Maximum runout:

0.05 mm (0.00196 in.)

- Ensure that the dial indicator is set perpendicular to the measurement surface.
- Keep the magnet of the dial indicator away from the front speed

sensor.

HINT:

If the runout exceeds the maximum, replace the front axle hub.

6. INSTALL FRONT DISC INFO

7. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY INFO

8. INSTALL FRONT WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

REMOVAL

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, clear the DTC.

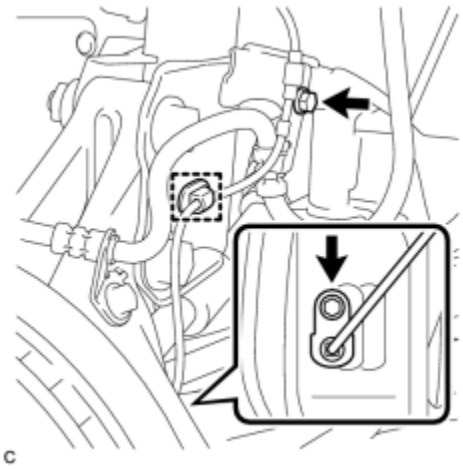
HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. REMOVE FRONT AXLE SHAFT NUT INFO

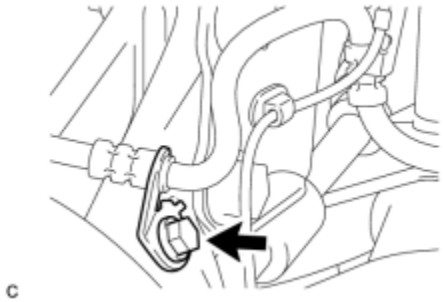
3. SEPARATE FRONT SPEED SENSOR



(a) Remove the 2 bolts and clamp, and separate the front speed sensor.

- Be sure to separate the front speed sensor from the front shock absorber with coil spring completely.
- Prevent foreign matter from attaching to the sensor tip.
- Be careful not to damage the front speed sensor.
- Clean the speed sensor installation hole and the contact surfaces every time the speed sensor is removed.

4. SEPARATE FRONT FLEXIBLE HOSE



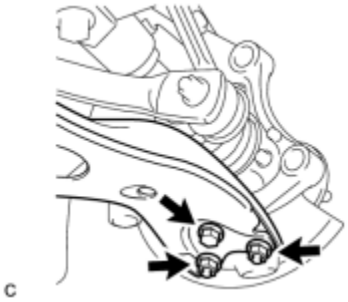
(a) Remove the bolt and separate the front flexible hose from the steering knuckle.

5. SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY INFO

6. REMOVE FRONT DISC INFO

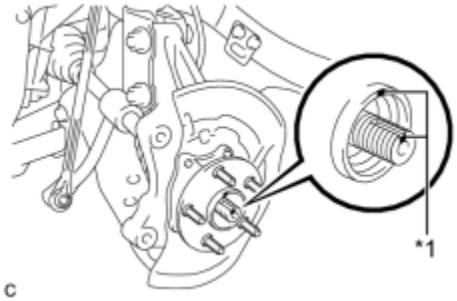
7. SEPARATE TIE ROD END SUB-ASSEMBLY INFO

8. SEPARATE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY



(a) Remove the bolt and 2 nuts, and separate the front No. 1 lower suspension arm sub-assembly from the front lower ball joint.

9. SEPARATE FRONT DRIVE SHAFT ASSEMBLY



(a) Put matchmarks on the front drive shaft assembly and front axle hub sub-assembly.

Text in Illustration

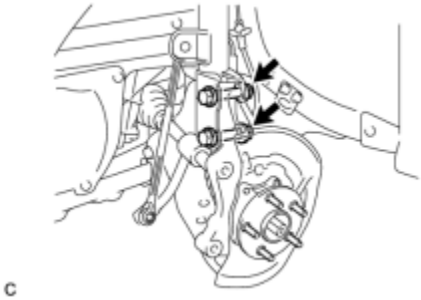
*1	Matchmark

(b) Using a plastic hammer, separate the front drive shaft assembly from the front axle assembly. If it is difficult to separate, tap the end of the front drive shaft assembly using a brass bar and a hammer.

NOTICE:

Be careful not to damage the drive shaft boot and speed sensor rotor.

10. REMOVE FRONT AXLE ASSEMBLY



(a) Remove the 2 bolts, 2 nuts and front axle assembly.

- When removing the nuts, keep the bolts from rotating.
- Be careful not to damage the drive shaft boot and speed sensor rotor.

11. REMOVE FRONT AXLE HUB SUB-ASSEMBLY

(a) Secure the front axle assembly between aluminium plates in a vise.

NOTICE:

Do not overtighten the vise.

C

(b) Remove the 4 bolts, front axle hub sub-assembly and front disc brake dust cover.

NOTICE:

Do not drop the front axle hub sub-assembly.

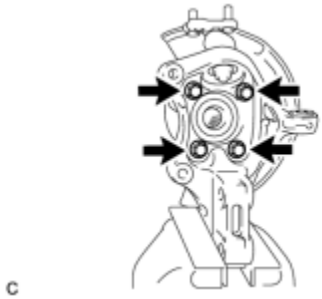
INSTALLATION

1. INSTALL FRONT AXLE HUB SUB-ASSEMBLY

(a) Secure the steering knuckle between aluminium plates in a vise.

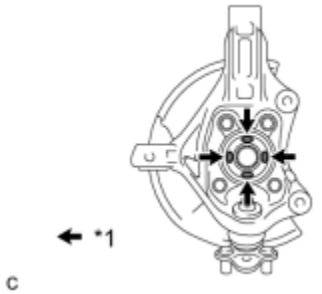
NOTICE:

Do not overtighten the vise.



(b) Install the front axle hub sub-assembly and front disc brake dust cover with the 4 bolts.

Torque: **40 N·m (408 kgf·cm, 30ft·lbf)**



(c) Apply MP grease to the areas indicated by the arrows in the illustration on the front drive shaft assembly contact surface of the front axle hub sub-assembly.

Text in Illustration

*1	MP grease

HINT:

Apply 0.1 to 0.3 g (0.00353 to 0.0106 oz.) of MP grease to each area.

2. INSTALL FRONT AXLE ASSEMBLY

(a) Install the front axle assembly to the front shock absorber with the 2 bolts and 2 nuts.

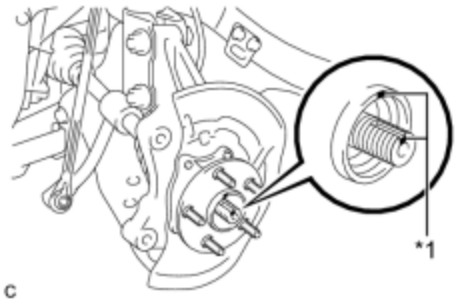
Torque: **240 N·m (2447 kgf·cm, 177ft·lbf)**

NOTICE:

When installing the nuts, keep the bolts from rotating.

3. INSTALL FRONT DRIVE SHAFT ASSEMBLY

(a) Align the matchmarks and install the front drive shaft assembly to the

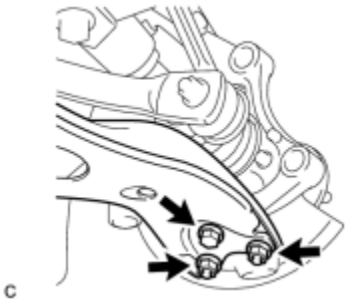


front axle hub sub-assembly.

Text in Illustration

*1	Matchmark

4. INSTALL FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY



(a) Install the front No. 1 lower suspension arm sub-assembly to the front lower ball joint with the bolt and 2 nuts.

Torque: **89 N·m (908 kgf·cm, 66ft·lbf)**

5. CONNECT TIE ROD END SUB-ASSEMBLY INFO

6. INSTALL FRONT DISC INFO

7. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY INFO

8. TEMPORARILY INSTALL FRONT AXLE SHAFT NUT

(a) Clean the threaded parts on the front drive shaft assembly and a new front axle shaft nut using a non-residue solvent.

NOTICE:

- Be sure to perform this work even when using a new drive shaft.
- Keep the threaded parts free of oil and foreign matter.

(b) Using a socket wrench (30 mm), while applying the brakes, temporarily install the front axle shaft nut.

Torque: **216 N·m (2203 kgf·cm, 159ft·lbf)**

NOTICE:

Stake the front axle shaft nut after inspecting for looseness and runout in the following steps.

HINT:

Keep depressing the brake pedal to prevent the drive shaft from rotating.

9. SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY INFO

10. REMOVE FRONT DISC INFO

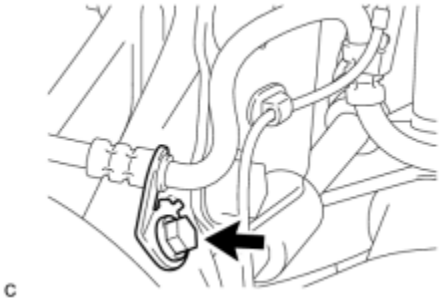
11. INSPECT FRONT AXLE HUB BEARING LOOSENESS INFO

12. INSPECT FRONT AXLE HUB RUNOUT INFO

13. INSTALL FRONT DISC INFO

14. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY INFO

15. INSTALL FRONT FLEXIBLE HOSE

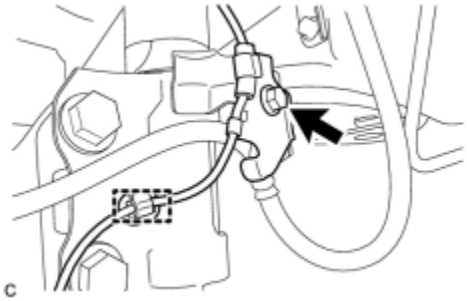


(a) Install the front flexible hose to the steering knuckle with the bolt.

Torque: **19 N·m (192 kgf·cm, 14ft·lbf)**

16. INSTALL FRONT SPEED SENSOR

(a) Install the front speed sensor and front flexible hose to the front shock absorber with the bolt and clamp.



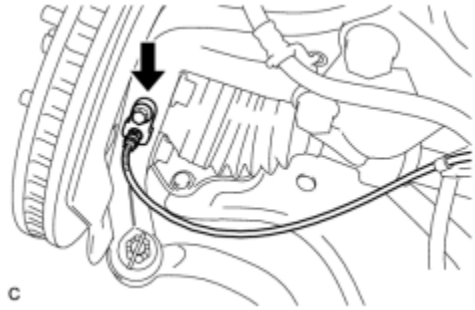
Torque: **19 N·m (192 kgf·cm, 14ft·lbf)**

NOTICE:

Do not twist the front speed sensor when installing it.

HINT:

Install the font flexible hose first and then the speed sensor harness bracket.



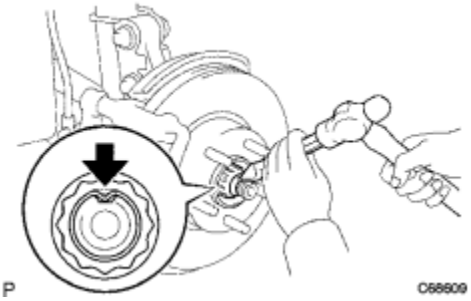
(b) Install the front speed sensor to the steering knuckle with the bolt.

Torque: **8.5 N·m (87 kgf·cm, 75in·lbf)**

NOTICE:

Do not twist the front speed sensor when installing it.

17. INSTALL FRONT AXLE SHAFT NUT



(a) Using a chisel and hammer, stake the front axle shaft nut.

18. INSTALL FRONT WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

19. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

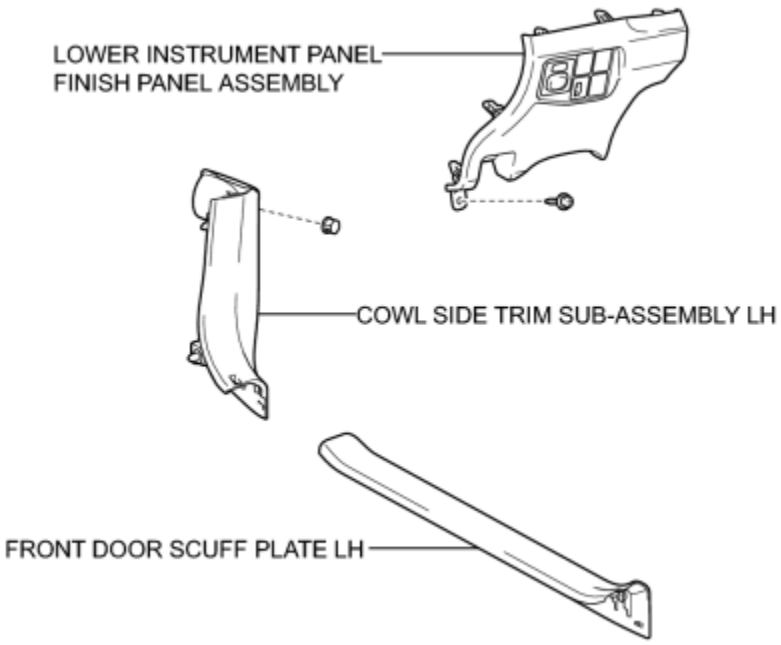
HINT: INFO

20. CHECK FOR SPEED SENSOR SIGNAL

HINT: INFO

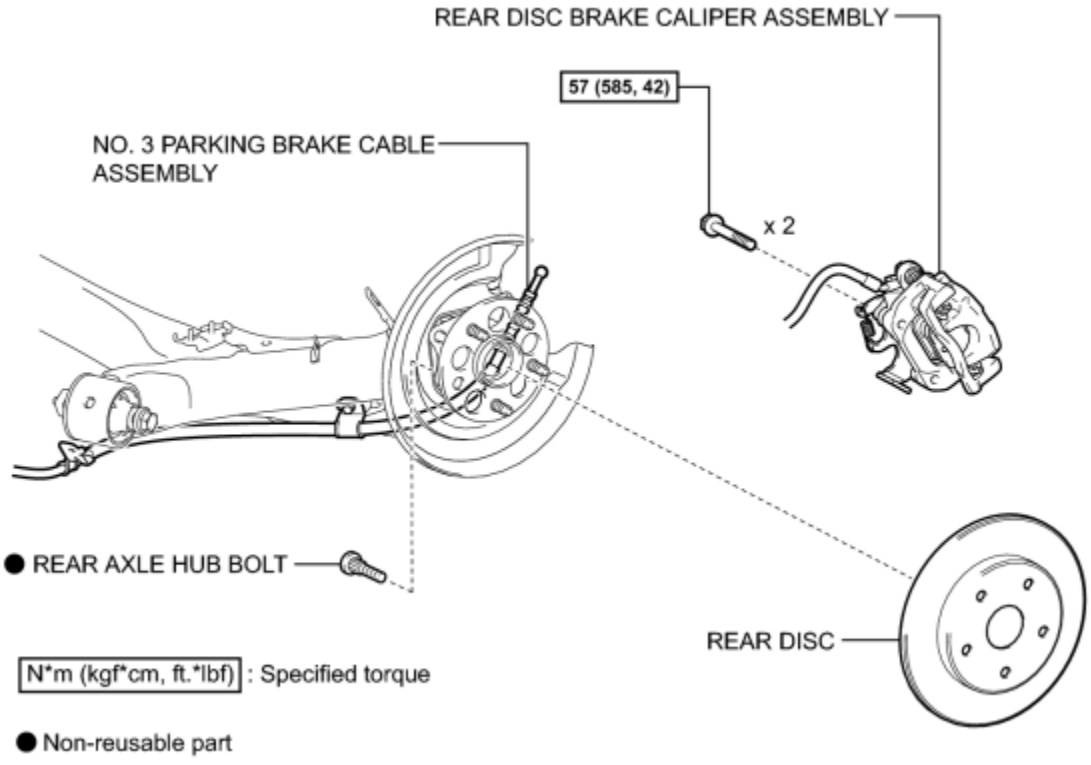
COMPONENTS

ILLUSTRATION



c

ILLUSTRATION


REAR DISC BRAKE CALIPER ASSEMBLY
57 (585, 42)
NO. 3 PARKING BRAKE CABLE ASSEMBLY
x 2
● REAR AXLE HUB BOLT
REAR DISC
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part

c

REPLACEMENT

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, delete the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

2. REMOVE FRONT DOOR SCUFF PLATE LH INFO

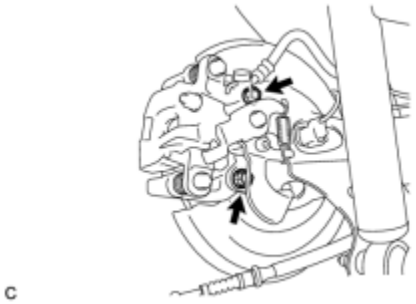
3. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH INFO

4. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

5. LOOSEN PARKING BRAKE CABLE INFO

6. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

7. SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY



(a) Remove the 2 bolts, and separate the rear disc brake caliper assembly.

NOTICE:

Use wire or an equivalent tool to keep the brake caliper from hanging down by the flexible hose.

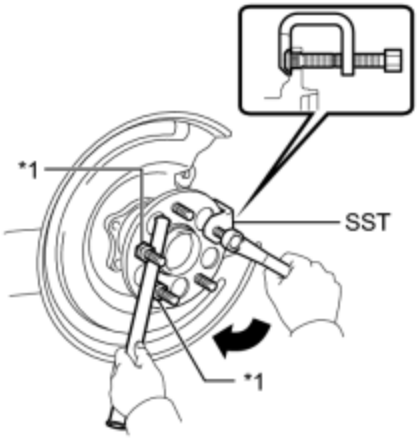
8. REMOVE REAR DISC INFO

9. REMOVE REAR AXLE HUB BOLT

(a) Temporarily install 2 nuts to the rear axle hub bolt as shown in the illustration.

Text in Illustration

*1	Nut



c

Recommended service nut:

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

NOTICE:

Install the nuts to prevent damage to the hub bolts.

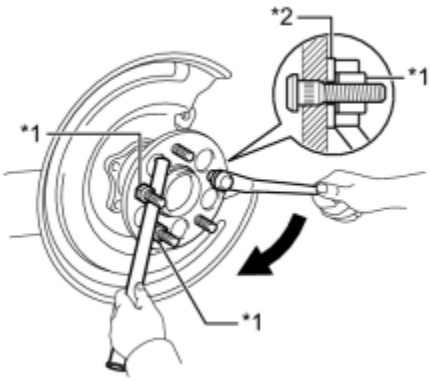
(b) Using SST and a brass bar or an equivalent tool to hold the rear axle hub and bearing assembly, remove the rear axle hub bolt.

SST: 09611-12010

NOTICE:

Do not damage the threads of the rear axle hub bolts.

10. INSTALL REAR AXLE HUB BOLT



c

(a) Temporarily install a new rear axle hub bolt to the rear axle hub and bearing assembly.

Text in Illustration

*1	Nut
*2	Washer

(b) Install a washer and nut to the new rear axle hub bolt as shown in the illustration.

Recommended service nut:

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

HINT:

The thickness of the washer is preferably 5 mm (0.197 in.) or more.

(c) Using a brass bar or an equivalent tool to hold the rear axle hub and bearing assembly, install the rear axle hub bolt by tightening the nut.

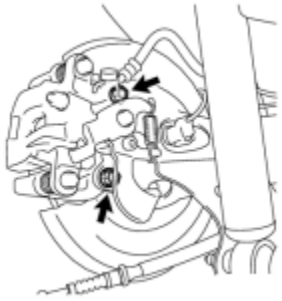
NOTICE:

- Install the nuts to prevent damage to the hub bolts.
- Do not damage the threads of the rear axle hub bolts.

(d) Remove the 3 nuts and washer from the 3 rear axle hub bolts.

11. INSTALL REAR DISC INFO

12. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY



(a) Install the rear disc brake caliper assembly with the 2 bolts.

Torque: **57 N·m (585 kgf·cm, 42ft·lbf)**

13. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

14. ADJUST PARKING BRAKE

HINT: INFO

15. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

16. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH INFO

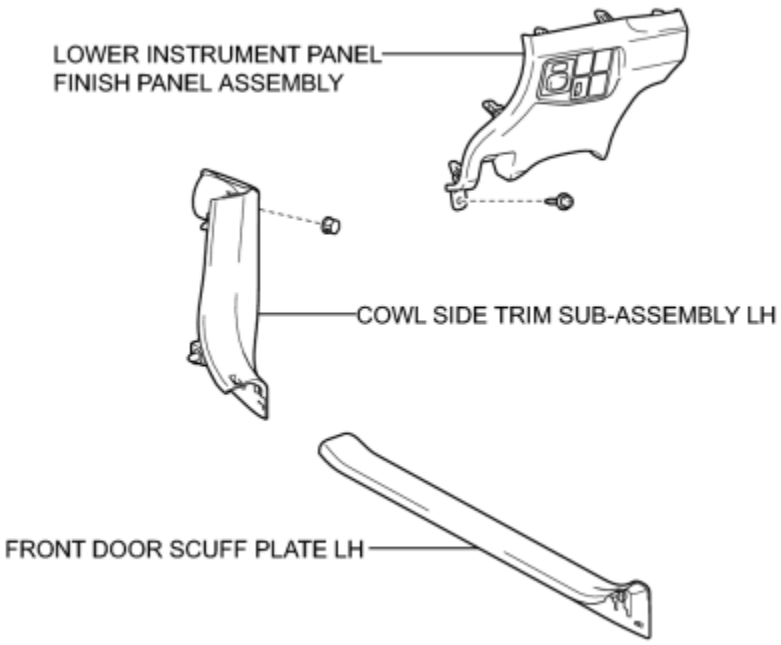
17. INSTALL FRONT DOOR SCUFF PLATE LH INFO

18. INSTALL REAR WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

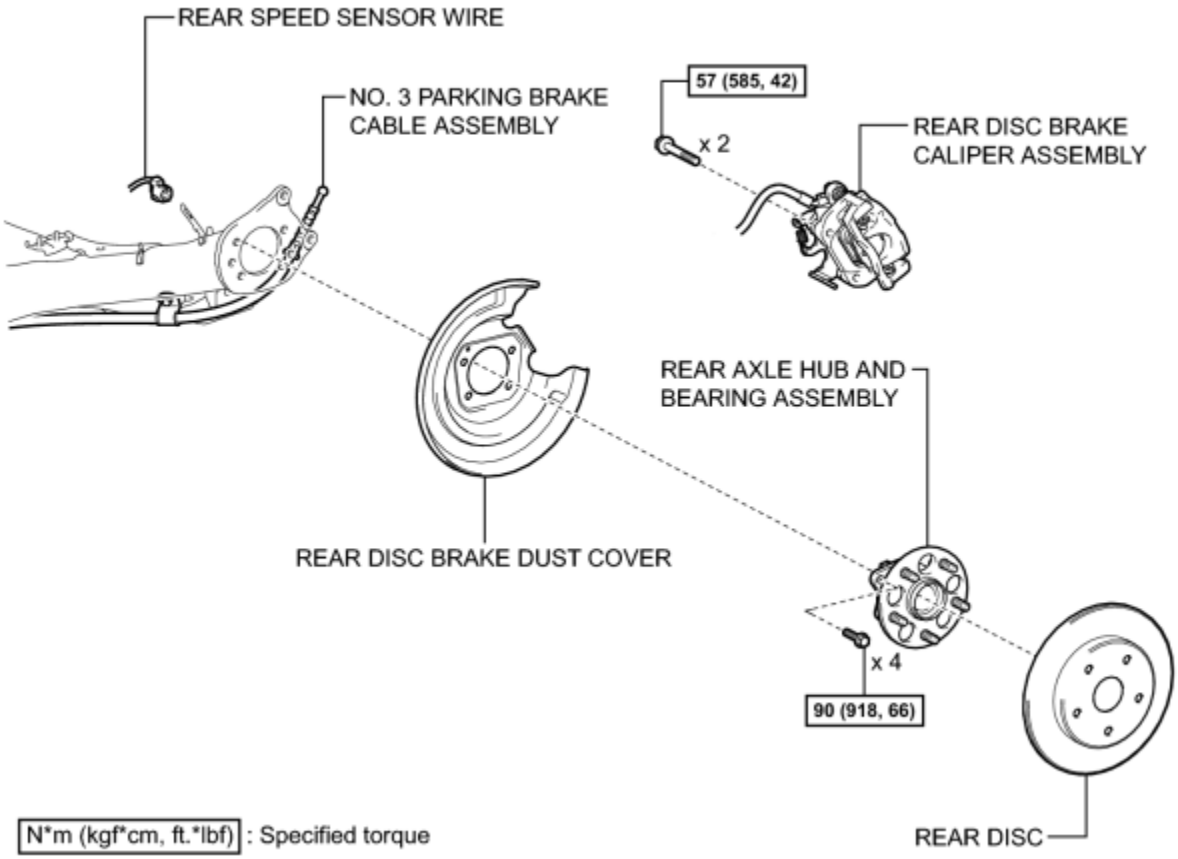
COMPONENTS

ILLUSTRATION



c

ILLUSTRATION


REAR SPEED SENSOR WIRE
NO. 3 PARKING BRAKE CABLE ASSEMBLY
57 (585, 42)
x 2
REAR DISC BRAKE CALIPER ASSEMBLY
REAR AXLE HUB AND BEARING ASSEMBLY
REAR DISC BRAKE DUST COVER
x 4
90 (918, 66)
REAR DISC
N*m (kgf*cm, ft.*lbf) : Specified torque

c

ON-VEHICLE INSPECTION

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, delete the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

2. REMOVE FRONT DOOR SCUFF PLATE LH INFO

3. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH INFO

4. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

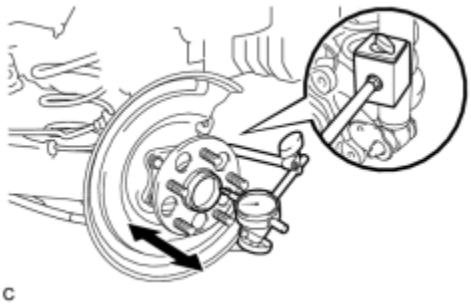
5. LOOSEN PARKING BRAKE CABLE INFO

6. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

7. SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY INFO

8. REMOVE REAR DISC INFO

9. INSPECT REAR AXLE HUB BEARING LOOSENESS



(a) Using a dial indicator, check for looseness near the center of the axle hub.

Maximum looseness:

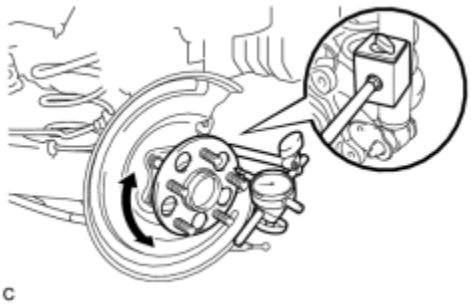
0.05 mm (0.00196 in.)

- Ensure that the dial indicator is set perpendicular to the measurement surface.
- Keep the magnet of the dial indicator away from the rear axle hub and bearing (rear speed sensor).

HINT:

If the looseness exceeds the maximum, replace the rear axle hub and bearing assembly.

10. INSPECT REAR AXLE HUB RUNOUT



(a) Using a dial indicator, check for runout on the surface of the axle hub outside the rear axle hub bolt.

Maximum runout:

0.05 mm (0.00196 in.)

- Ensure that the dial indicator is set perpendicular to the measurement surface.
- Make sure to install the tip of the dial indicator towards the outside of the rear axle hub bolt.
- Keep the magnet of the dial indicator away from the rear axle hub and bearing (rear speed sensor).

HINT:

If the runout exceeds the maximum, replace the rear axle hub and bearing assembly.

11. INSTALL REAR DISC INFO

12. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY INFO

13. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

14. ADJUST PARKING BRAKE

HINT: INFO

15. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

16. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH INFO

17. INSTALL FRONT DOOR SCUFF PLATE LH INFO

18. INSTALL REAR WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

REMOVAL

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, delete the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

2. REMOVE FRONT DOOR SCUFF PLATE LH INFO

3. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH INFO

4. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

5. LOOSEN PARKING BRAKE CABLE INFO

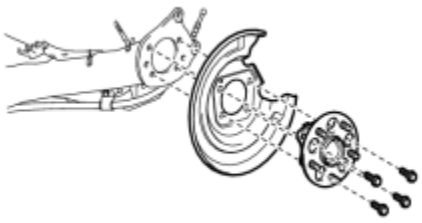
6. DISCONNECT REAR SPEED SENSOR WIRE INFO

7. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

8. SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY INFO

9. REMOVE REAR DISC INFO

10. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY



C

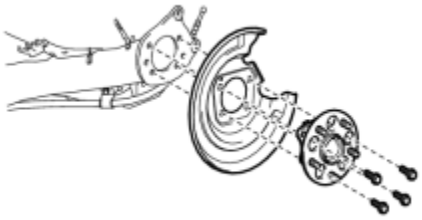
(a) Remove the 4 bolts, rear axle hub and bearing assembly and rear disc brake dust cover from the rear axle beam assembly.

INSTALLATION

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY



(a) Install the rear axle hub and bearing assembly and rear disc brake dust cover to the rear axle beam assembly with the 4 bolts.

Torque: **90 N·m (918 kgf·cm, 66ft·lbf)**

c

2. INSPECT REAR AXLE HUB BEARING LOOSENESS INFO

3. INSPECT REAR AXLE HUB RUNOUT INFO

4. INSTALL REAR DISC INFO

5. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY INFO

6. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

7. CONNECT REAR SPEED SENSOR WIRE INFO

8. ADJUST PARKING BRAKE

HINT: INFO

9. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

10. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH INFO

11. INSTALL FRONT DOOR SCUFF PLATE LH INFO

12. INSTALL REAR WHEEL

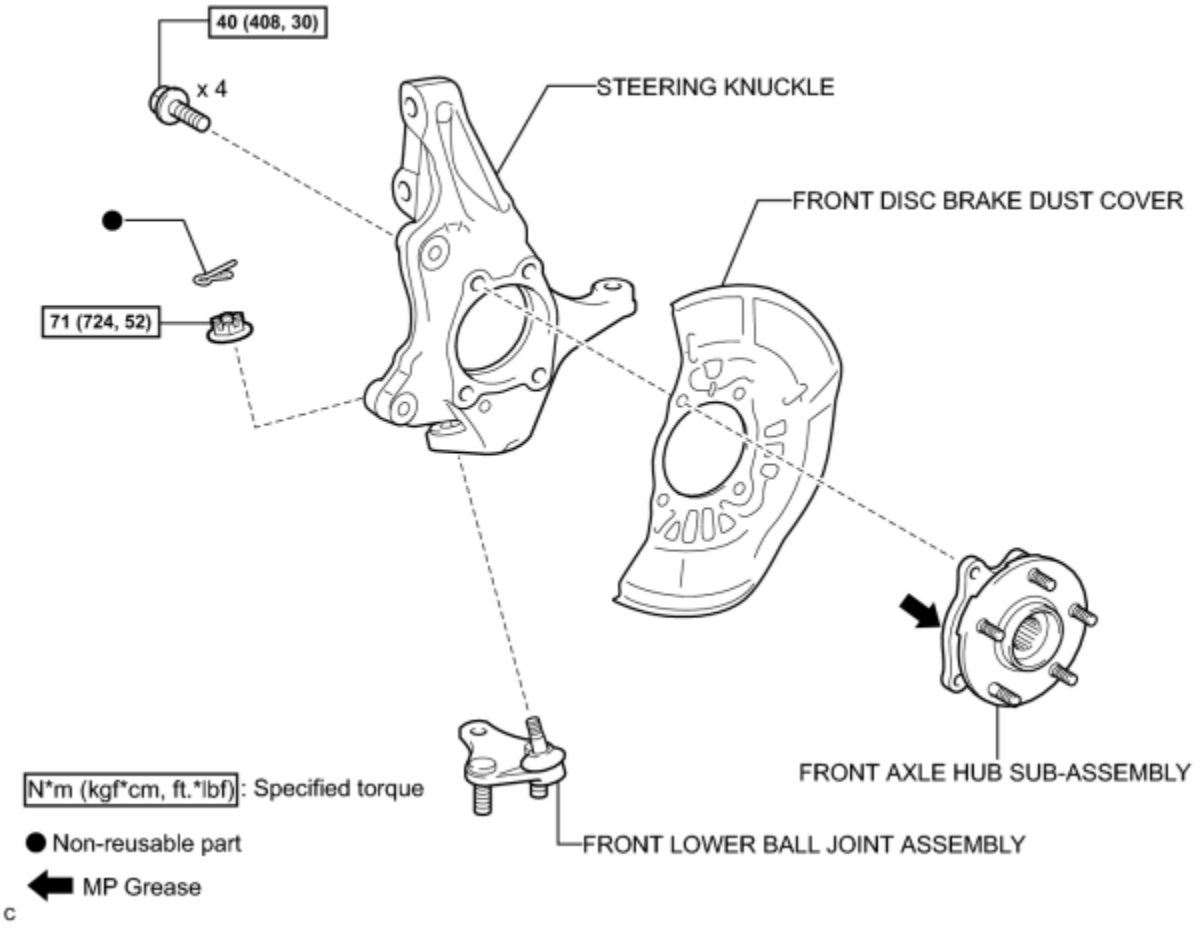
Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

13. CHECK FOR SPEED SENSOR SIGNAL

HINT: INFO

COMPONENTS

ILLUSTRATION



REMOVAL

NOTICE:

When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, clear the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT AXLE ASSEMBLY

HINT:

Refer to the procedures up to Remove Front Axle Assembly INFO.

2. REMOVE FRONT LOWER BALL JOINT ASSEMBLY INFO

3. REMOVE STEERING KNUCKLE

(a) Secure the front axle assembly between aluminium plates in a vise.

NOTICE:

Do not overtighten the vise.

C

(b) Remove the 4 bolts, front axle hub sub-assembly and front disc brake dust cover.

NOTICE:

Do not drop the front axle hub sub-assembly.

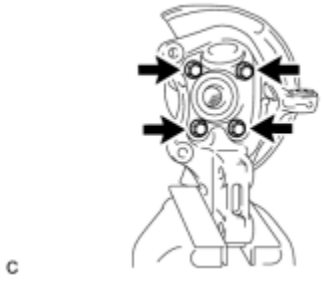
INSTALLATION

1. INSTALL STEERING KNUCKLE

(a) Secure the steering knuckle between aluminium plates in a vise.

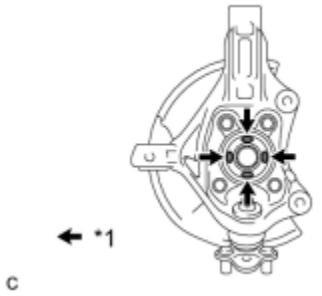
NOTICE:

Do not overtighten the vise.



(b) Install the front axle hub sub-assembly and front disc brake dust cover with the 4 bolts.

Torque: **40 N·m (408 kgf·cm, 30ft·lbf)**



(c) Apply MP grease to the areas indicated by the arrows in the illustration on the front drive shaft assembly contact surface of the front axle hub sub-assembly.

Text in Illustration

*1	MP grease

HINT:

Apply 0.1 to 0.3 g (0.00353 to 0.0106 oz.) of MP grease to each area.

2. INSTALL FRONT LOWER BALL JOINT ASSEMBLY INFO

3. INSTALL FRONT AXLE ASSEMBLY

HINT:

Refer to the procedures from Install Front Axle Assembly INFO.

PROBLEM SYMPTOMS TABLE

HINT:

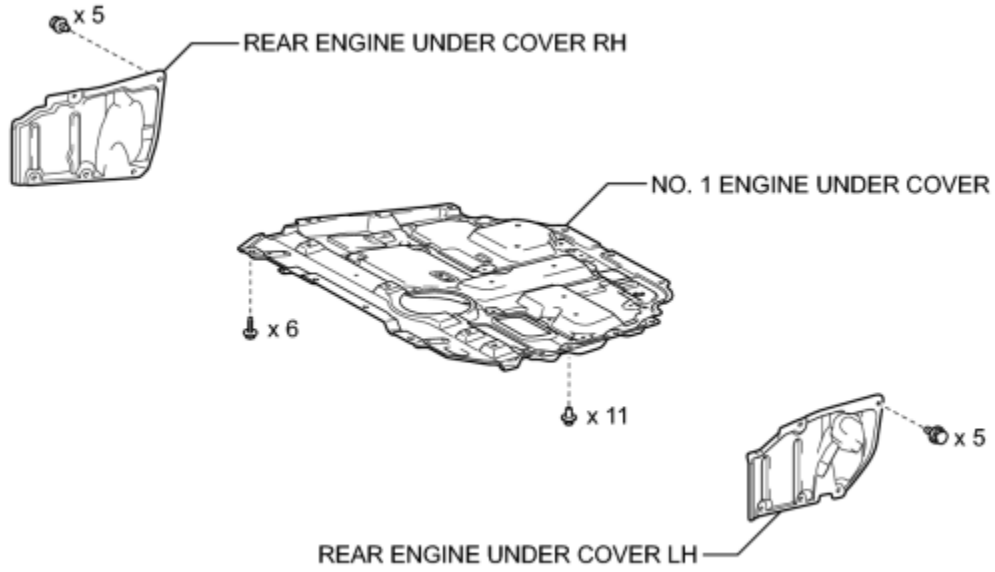
Use the table below to help determine the cause of the problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Front Drive Shaft

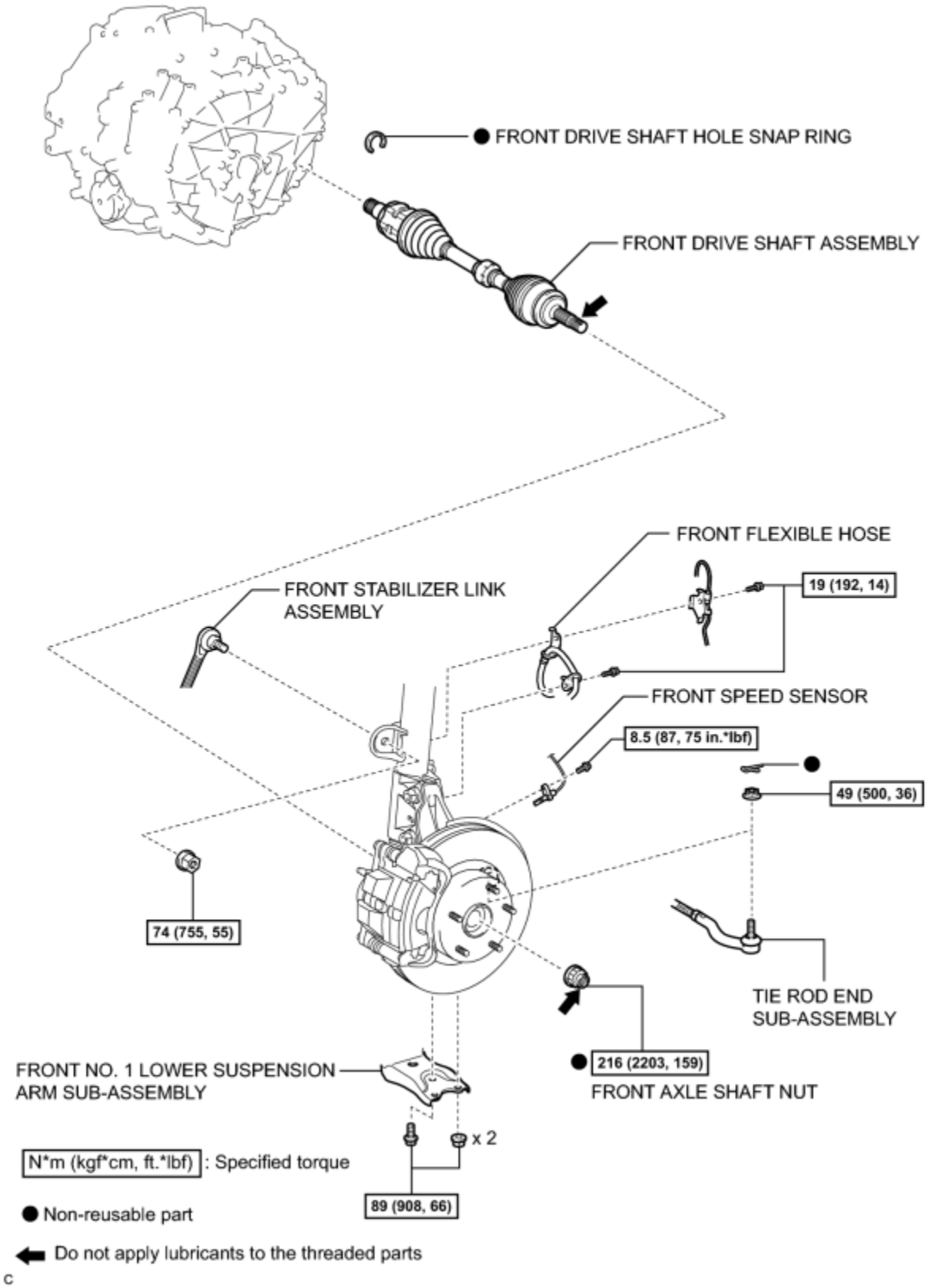
Symptom	Suspected Area	See page
Front wheel shimmy	Front drive shaft (worn)	INFO

COMPONENTS

ILLUSTRATION

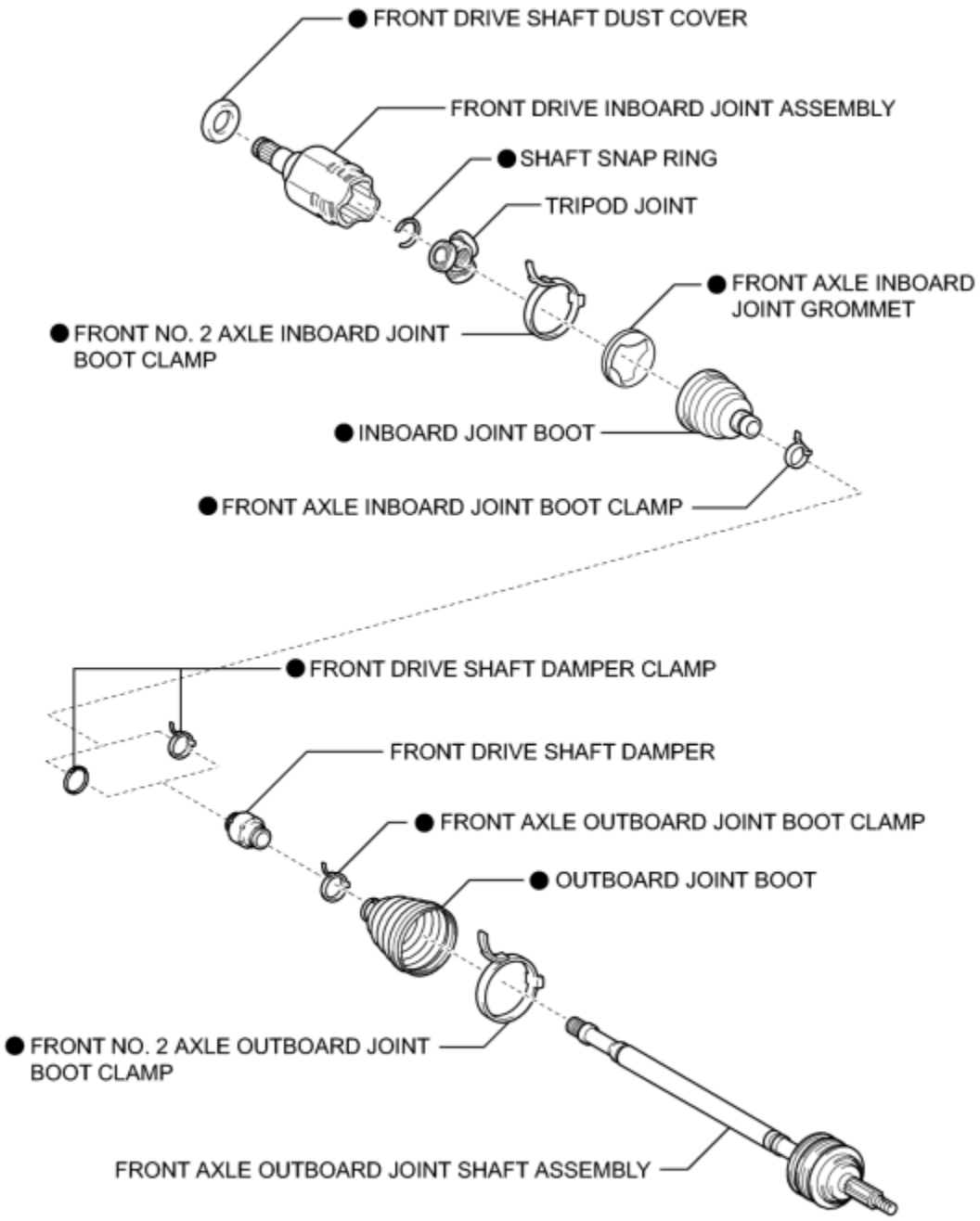


ILLUSTRATION



ILLUSTRATION

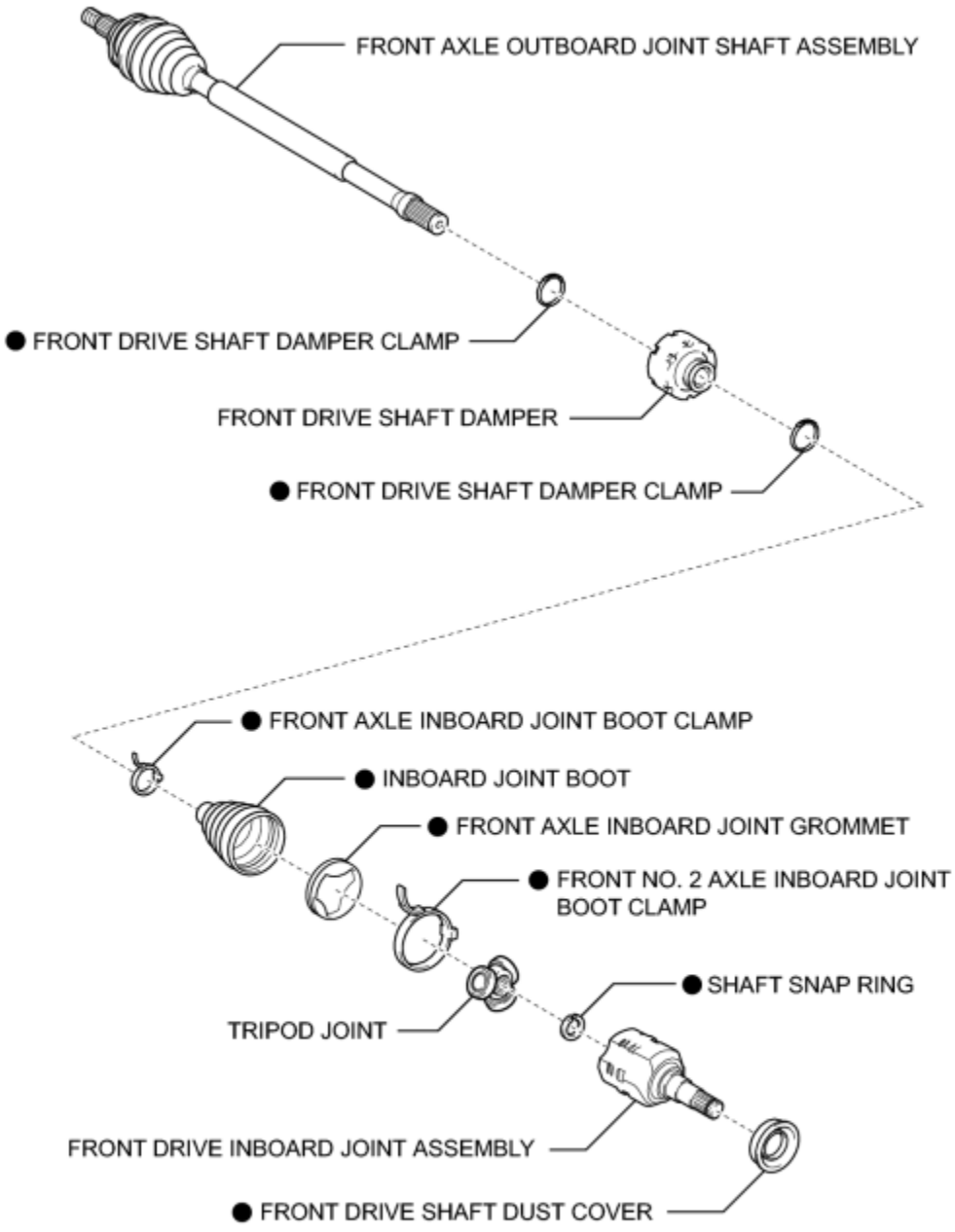
for LH Side:



● Non-reusable part

ILLUSTRATION

for RH Side:



● Non-reusable part

c

REMOVAL

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEELS

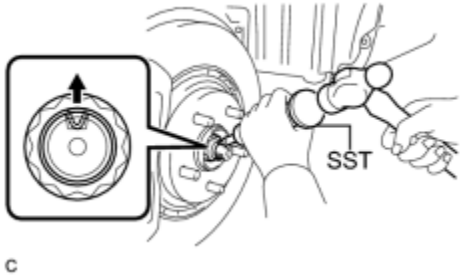
2. REMOVE NO. 1 ENGINE UNDER COVER

3. REMOVE REAR ENGINE UNDER COVER LH

4. REMOVE REAR ENGINE UNDER COVER RH

5. DRAIN HYBRID TRANSAXLE FLUID INFO

6. REMOVE FRONT AXLE SHAFT NUT



(a) Using SST and a hammer, release the staked part of the front axle shaft nut.

SST: 09930-00010

NOTICE:

Loosen the staked part of the nut completely, otherwise the threads of the drive shaft may be damaged.

(b) While applying the brakes, remove the front axle shaft nut.

7. SEPARATE FRONT SPEED SENSOR INFO

8. SEPARATE FRONT FLEXIBLE HOSE INFO

9. SEPARATE TIE ROD END SUB-ASSEMBLY INFO

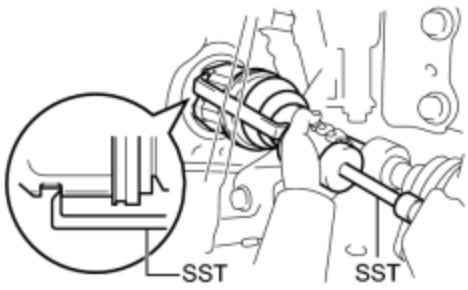
10. SEPARATE FRONT STABILIZER LINK ASSEMBLY INFO

11. SEPARATE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY INFO

12. SEPARATE FRONT DRIVE SHAFT ASSEMBLY INFO

13. REMOVE FRONT DRIVE SHAFT ASSEMBLY

(a) Using SST, remove the front drive shaft assembly.



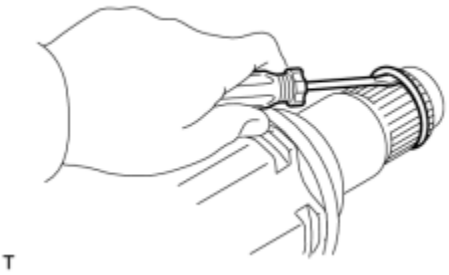
SST: 09520-00031

SST: 09520-01010

SST: 09521-00020

- Do not damage the transaxle case oil seal.
- Do not damage the inboard joint boot.
- Do not drop the front drive shaft assembly.

14. REMOVE FRONT DRIVE SHAFT HOLE SNAP RING

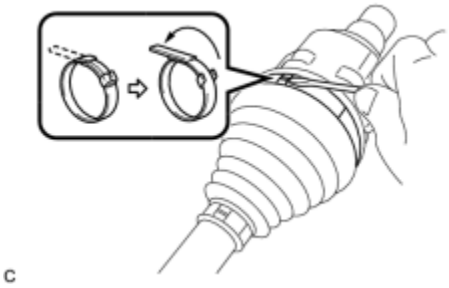


T

(a) Using a screwdriver, remove the front drive shaft hole snap ring.

DISASSEMBLY

1. SEPARATE FRONT NO. 2 AXLE INBOARD JOINT BOOT CLAMP



C

(a) Using a screwdriver, release the staked part of the front No. 2 axle inboard joint boot clamp and separate the front No. 2 axle inboard joint boot clamp as shown in the illustration.

2. SEPARATE FRONT AXLE INBOARD JOINT BOOT CLAMP

HINT:

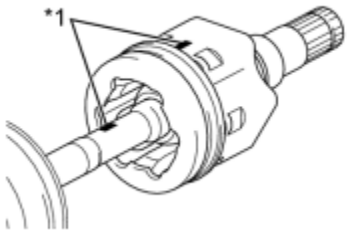
Perform the same procedure as for the front No. 2 axle inboard joint boot clamp.

3. SEPARATE INBOARD JOINT BOOT

(a) Separate the inboard joint boot from the front drive inboard joint assembly.

4. REMOVE FRONT DRIVE INBOARD JOINT ASSEMBLY

(a) Remove the old grease from the front drive inboard joint assembly.



P

(b) Put matchmarks on the front drive inboard joint assembly and front axle outboard joint shaft assembly.

Text in Illustration

*1	Matchmark

NOTICE:

Do not punch the marks.

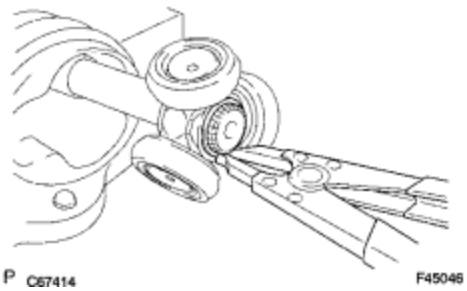
(c) Remove the front drive inboard joint assembly from the front axle outboard joint shaft assembly.

(d) Secure the front axle outboard joint shaft assembly in a vise using aluminum plates.

NOTICE:

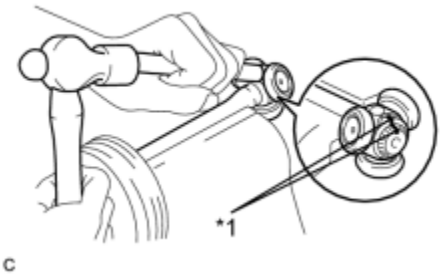
Do not overtighten the vise.

(e) Using a snap ring expander, remove the shaft snap ring from the front



axle outboard joint shaft assembly.

(f) Put matchmarks on the front axle outboard joint shaft assembly and tripod joint.



Text in Illustration

*1	Matchmark

NOTICE:

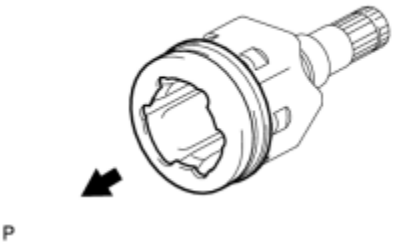
Do not punch the marks.

(g) Using a brass bar and a hammer, tap out the tripod joint from the front axle outboard joint shaft assembly.

NOTICE:

- Do not tap the rollers.
- Do not drop the tripod joint.

(h) Remove the front No. 2 axle inboard joint boot clamp, inboard joint boot and front axle inboard joint boot clamp.



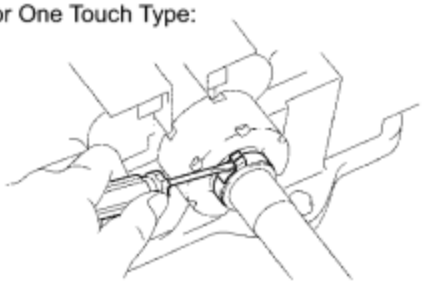
(i) Remove the font axle inboard joint grommet from the front drive inboard joint assembly.

5. SEPARATE FRONT DRIVE SHAFT DAMPER CLAMP (for LH Side)

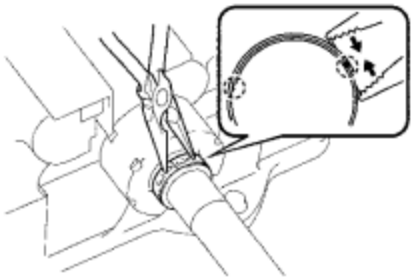
(a) for one touch type:

(1) Using a screwdriver, release the staked part of the front drive shaft damper clamp and separate the front drive shaft damper clamp as shown in the illustration.

for One Touch Type:



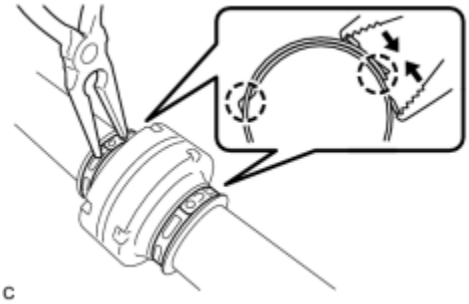
for Claw Engagement Type:



(b) for claw engagement type:

(1) Using needle-nose pliers, disengage the 2 claws and remove the front drive shaft damper clamp as shown in the illustration.

6. SEPARATE FRONT DRIVE SHAFT DAMPER CLAMP (for RH Side)



c

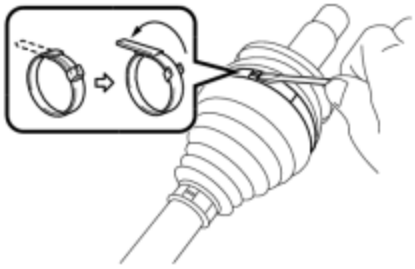
(a) Using needle-nose pliers, disengage the 2 claws on each front drive shaft damper clamp, and then remove each clamp as shown in the illustration.

7. REMOVE FRONT DRIVE SHAFT DAMPER

(a) Remove the front drive shaft damper from the front axle outboard joint shaft assembly.

8. SEPARATE FRONT NO. 2 AXLE OUTBOARD JOINT BOOT CLAMP (for LH Side)

(a) Using a screwdriver, release the staked part of the front No. 2 axle outboard joint boot clamp and separate the front No. 2 axle outboard joint boot clamp as shown in the illustration.



C

9. SEPARATE FRONT AXLE OUTBOARD JOINT BOOT CLAMP (for LH Side)

HINT:

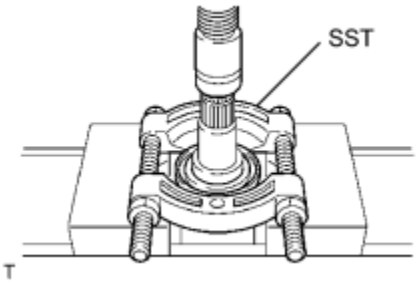
Perform the same procedure as for the front No. 2 axle outboard joint boot clamp.

10. REMOVE OUTBOARD JOINT BOOT (for LH Side)

(a) Remove the front axle outboard joint boot clamp, outboard joint boot and front No. 2 axle outboard joint boot clamp from the front axle outboard joint shaft assembly.

(b) Remove the old grease from the outboard joint.

11. REMOVE FRONT DRIVE SHAFT DUST COVER



T

(a) Using SST and a press, remove the front drive shaft dust cover from the front drive inboard joint assembly.

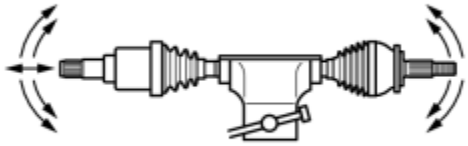
SST: 09950-00020

NOTICE:

Do not drop the front drive inboard joint assembly.

INSPECTION

1. INSPECT FRONT DRIVE SHAFT ASSEMBLY



(a) Check that there is no excessive play in the outboard joint.

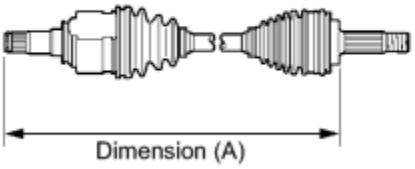
(b) Check that the inboard joint slides smoothly in the thrust direction.

(c) Check that there is no excessive play in the radial directions of the inboard joint.

(d) Check the boots for damage.

NOTICE:

Keep the drive shaft assembly level during inspection.



HINT:

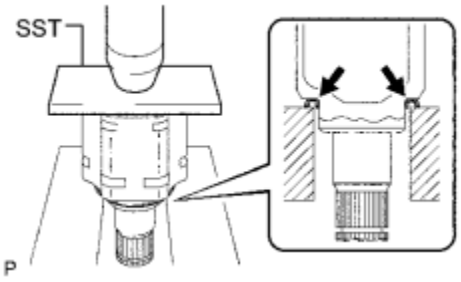
For dimensions (A), refer to the following values.

Dimension (A)

LH Side	RH Side
556.2 mm (1.82 ft.)	905.2 mm (2.96 ft.)

REASSEMBLY

1. INSTALL FRONT DRIVE SHAFT DUST COVER (for LH Side)

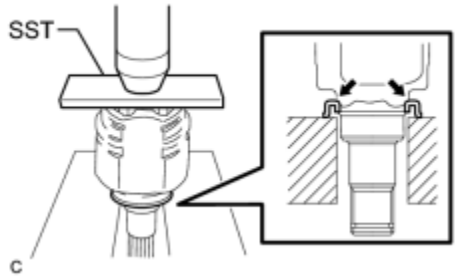


(a) Using SST and a press, install a new front drive shaft dust cover into the front drive inboard joint assembly until it is flush with the end.

SST: 09527-10011

- Install the front drive shaft dust cover in the correct direction.
- Do not deform the front drive shaft dust cover.

2. INSTALL FRONT DRIVE SHAFT DUST COVER (for RH Side)

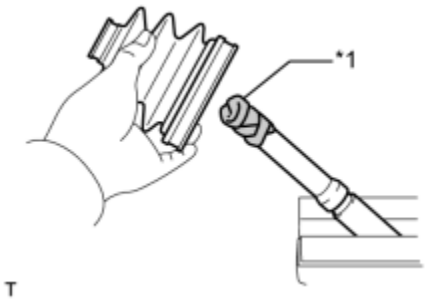


(a) Using SST and a press, install a new front drive shaft dust cover into the front drive inboard joint assembly until it is flush with the end.

SST: 09527-10011

- Install the front drive shaft dust cover in the correct direction.
- Do not deform the front drive shaft dust cover.

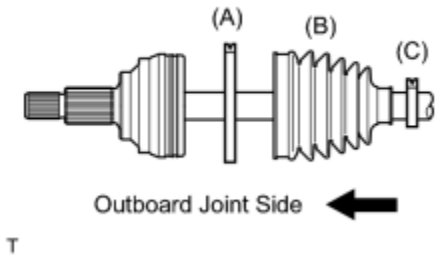
3. INSTALL OUTBOARD JOINT BOOT (for LH Side)



(a) Wrap the splines of the front axle outboard joint shaft assembly with protective tape to prevent the boot from being damaged.

Text in Illustration

*1	Protective Tape



(b) Install new parts onto the front axle outboard joint shaft assembly in the following order:

(1) Front No. 2 axle outboard joint boot clamp (A)

(2) Outboard joint boot (B)

(3) Front axle outboard joint boot clamp (C)

(c) Pack the joint portion of the front axle outboard joint shaft assembly and outboard joint boot with grease.

Standard grease capacity:

135 to 145 g (4.8 to 5.1 oz.)

(d) Install the outboard joint boot onto the front axle outboard joint shaft assembly groove.

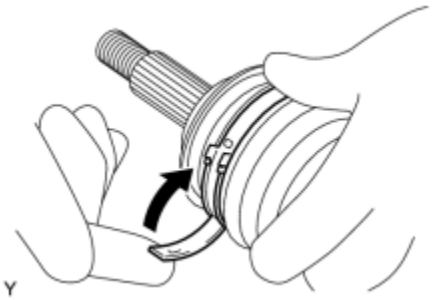
NOTICE:

- Do not allow grease to adhere to the boot clamp track of the outboard joint boot.
- Keep the inside of the outboard joint boot free of foreign matter.

4. INSTALL FRONT NO. 2 AXLE OUTBOARD JOINT BOOT CLAMP (for LH Side)

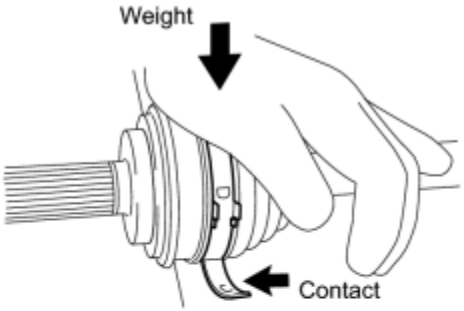
CAUTION:

Wear protective gloves. Sharp areas on the parts may injure your hands.



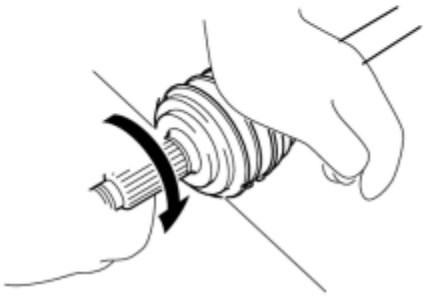
(a) Install the front No. 2 axle outboard joint boot clamp onto the outboard joint boot and temporarily fold back the lever.

- Set the lever into the guide groove correctly and install the clamp as far into the inside of the vehicle as possible.
- Check the band and the lever for any deformation before folding back the lever.

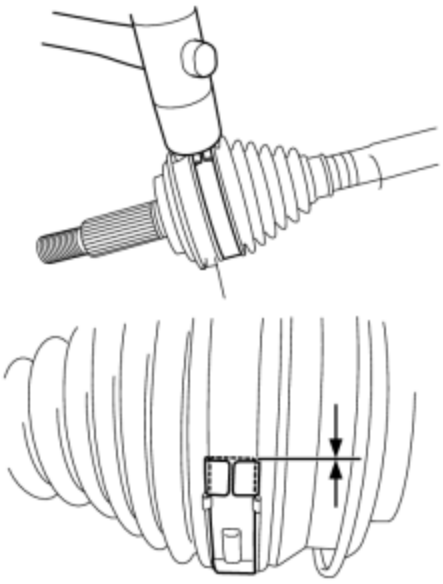


(b) Lean your weight on your hand and roll the outboard joint forward while pressing the outboard joint against the work plane. Roll the outboard joint and fold the lever until a click sound can be heard.

- Do not damage the deflector.
- Make sure that the outboard joint is in direct contact with the work plane.



(c) Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.



NOTICE:

Do not damage the outboard joint boot.

5. INSTALL FRONT AXLE OUTBOARD JOINT BOOT CLAMP (for LH Side)

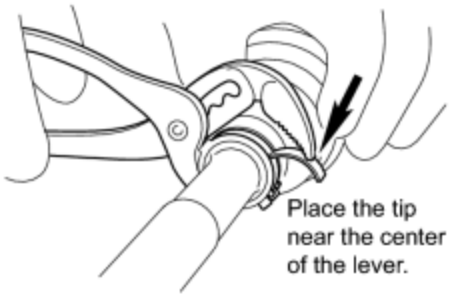
CAUTION:

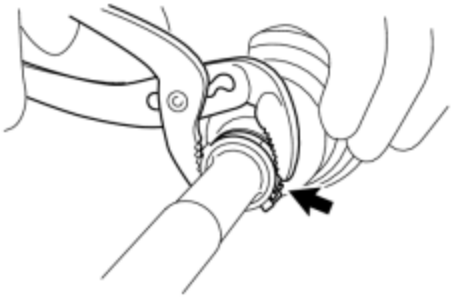
Wear protective gloves. Sharp areas on the parts may injure your hands.

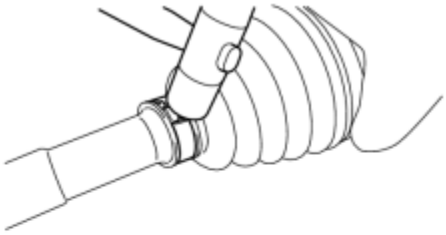
(a) Install the front axle outboard joint boot clamp onto the outboard joint boot and temporarily fold back the lever.

- Set the lever into the guide groove correctly.
- Check the band and the lever for any deformation before folding back the lever.

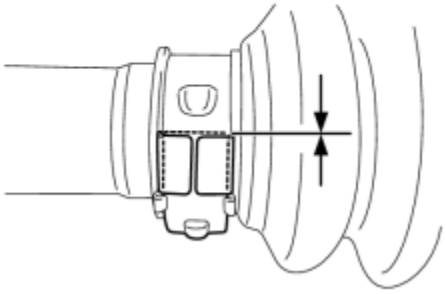
(b) Using water pump pliers, pinch the front axle outboard joint boot clamp to temporarily secure it.







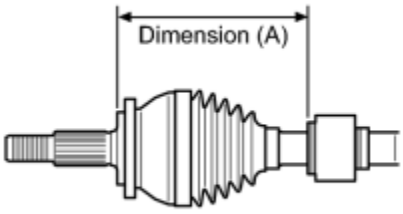
(c) Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.



NOTICE:

Do not damage the outboard joint boot.

6. INSTALL FRONT DRIVE SHAFT DAMPER (for LH Side)



(a) Install the front drive shaft damper onto the front axle outboard joint shaft assembly as shown in the illustration.

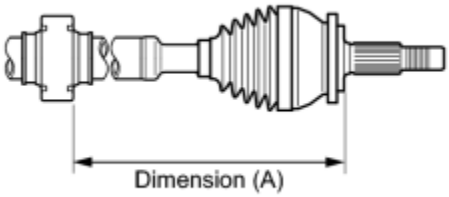
HINT:

Make sure that the front drive shaft damper is on the shaft groove.

Dimension (A):

163 to 165 mm (6.42 to 6.49 in.)

7. INSTALL FRONT DRIVE SHAFT DAMPER (for RH Side)



(a) Install the front drive shaft damper onto the front axle outboard joint shaft assembly as shown in the illustration.

HINT:

Make sure that the front drive shaft damper is on the shaft groove.

Dimension (A):

460 to 462 mm (1.50 to 1.51 ft.)

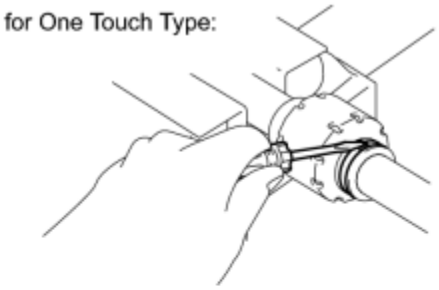
8. INSTALL FRONT DRIVE SHAFT DAMPER CLAMP (for LH Side)

(a) Secure the front axle outboard joint shaft assembly in a vise using aluminum plates.

NOTICE:

Do not overtighten the vise.

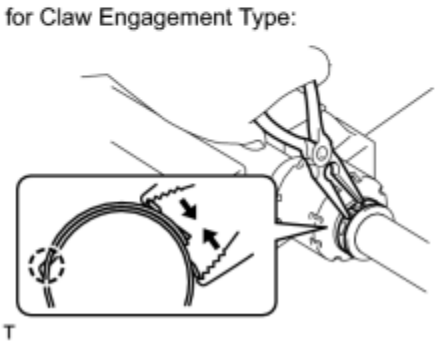
(b) for one touch type:



(1) Using a screwdriver, install a new front drive shaft damper clamp, as shown in the illustration.

NOTICE:

Do not damage the outboard joint boot.

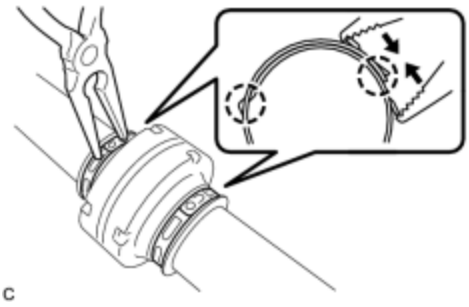


(c) for claw engagement type:

(1) Using needle-nose pliers, install a new front drive shaft damper clamp, as shown in the illustration.

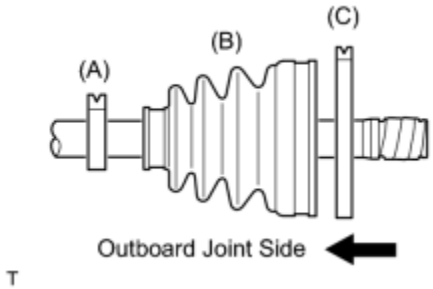
9. INSTALL FRONT DRIVE SHAFT DAMPER CLAMP (for RH Side)

(a) Using needle-nose pliers, install 2 new front drive shaft damper



clamps, as shown in the illustration.

10. INSTALL FRONT DRIVE INBOARD JOINT ASSEMBLY



(a) Install new parts onto the front axle outboard joint shaft assembly in the following order:

(1) Front axle inboard joint boot clamp (A)

(2) Inboard joint boot (B)

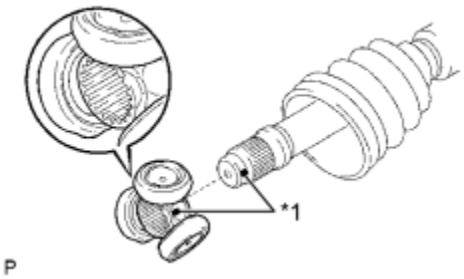
(3) Front No. 2 axle inboard joint boot clamp (C)

(b) Secure the front axle outboard joint shaft assembly in a vise using aluminum plates.

NOTICE:

Do not overtighten the vise.

(c) Remove the protective tape.



(d) Align the matchmarks and install the tripod joint onto the front axle outboard joint shaft assembly as shown in the illustration.

Text in Illustration

*1	Matchmark

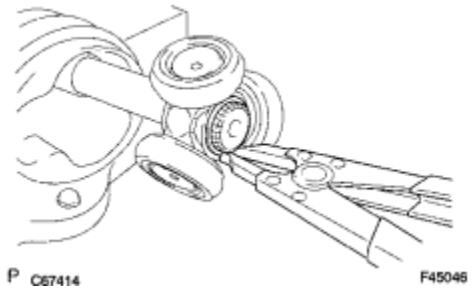
NOTICE:

Face the serrated side of the tripod joint outward and install it onto the outboard joint end.

(e) Using a brass bar and a hammer, install the tripod joint to the front axle outboard joint shaft assembly.

NOTICE:

- Do not tap the rollers.
- Keep the tripod joint free of foreign matter.

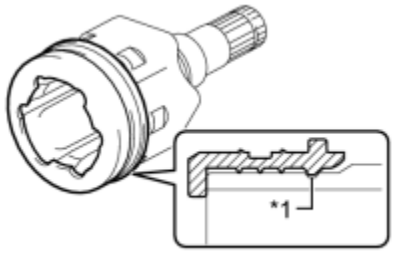


(f) Using a snap ring expander, install a new shaft snap ring to the front axle outboard joint shaft assembly.

(g) Pack the front drive inboard joint assembly and inboard joint boot with grease.

Standard grease capacity:

168 to 178 g (5.9 to 6.2 oz.)



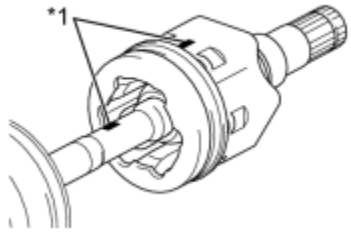
(h) Install a new front axle inboard joint grommet onto the inboard joint groove.

Text in Illustration

*1	Groove

NOTICE:

Securely fit the protrusion on the inboard joint grommet into the inboard joint groove.



(i) Align the matchmarks and install the front drive inboard joint assembly onto the front axle outboard joint shaft assembly.

Text in Illustration

*1	Matchmark

11. INSTALL INBOARD JOINT BOOT

(a) Install the inboard joint boot into the grooves of the inboard joint grommet and inboard joint boot.

NOTICE:

Keep the grooves free of grease.

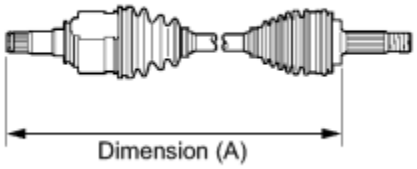
12. INSTALL FRONT NO. 2 AXLE INBOARD JOINT BOOT CLAMP

CAUTION:

Wear protective gloves. Sharp areas on the parts may injure your hands.

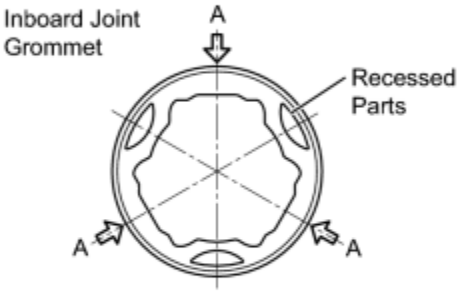
(a) Install the boot clamp onto the inboard joint boot.

(b) Adjust dimension (A) until it is within the specified length.



Dimension (A)

LH Side	RH Side
556.2 mm (1.82 ft.)	905.2 mm (2.96 ft.)



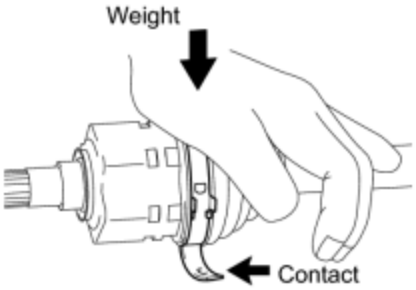
(c) While keeping dimension (A) within the specified length, put the inside of the inboard joint under atmospheric pressure by pulling the recessed parts on the inboard joint grommet out.

(d) Set the lever fulcrum point at any point A indicated in the illustration and temporarily bend the lever.

NOTICE:

- Perform this work with the inside of the inboard joint kept at atmospheric pressure.
- Set the lever into the guide groove correctly and install the clamp as far into the inside of the vehicle as possible.
- Check the band and the lever for any deformation before folding back the lever.

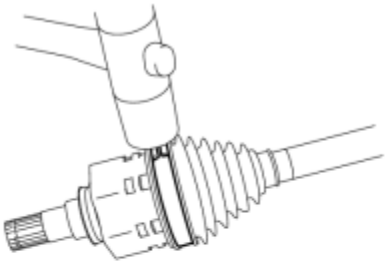
(e) Lean your weight on your hand and roll the inboard joint forward while pressing the inboard joint against the work plane. Roll the inboard joint and fold the lever until a click sound can be heard.

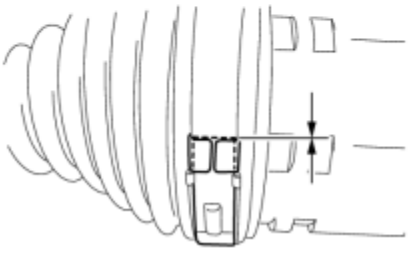


P

NOTICE:

Make sure that the outboard joint is in direct contact with the work plane.





P

(f) Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.

NOTICE:

Do not damage the inboard joint boot.

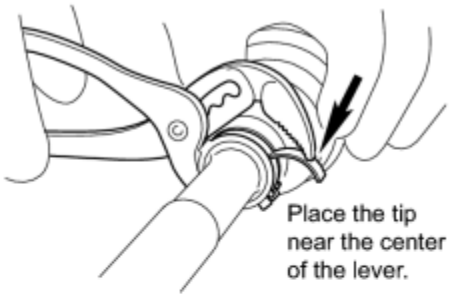
13. INSTALL FRONT AXLE INBOARD JOINT BOOT CLAMP

CAUTION:

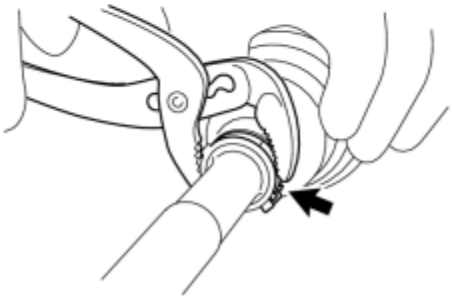
Wear protective gloves. Sharp areas on the parts may injure your hands.

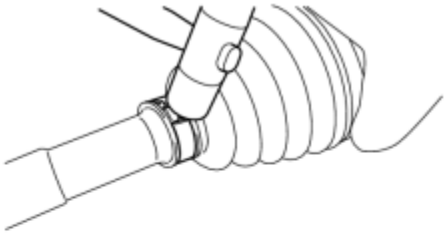
(a) Install the front axle inboard joint boot clamp onto the inboard joint boot and temporarily fold back the lever.

- Set the lever into the guide groove correctly.
- Check the band and the lever for any deformation before folding back the lever.

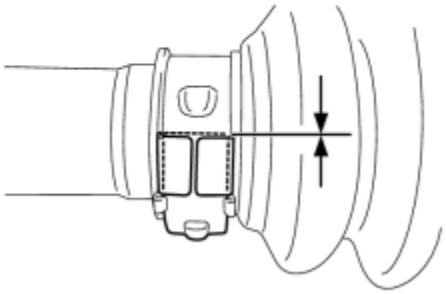


(b) Using water pump pliers, pinch the front axle outboard joint boot clamp to temporarily secure it.





(c) Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.



NOTICE:

Do not damage the inboard joint boot.

14. INSPECT FRONT DRIVE SHAFT ASSEMBLY INFO

INSTALLATION

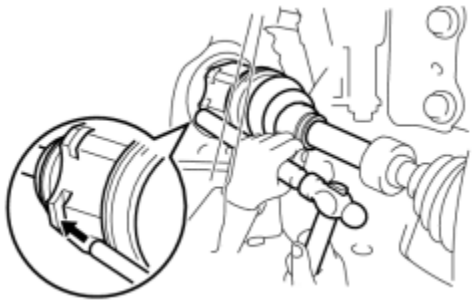
1. INSTALL FRONT DRIVE SHAFT HOLE SNAP RING

(a) Install a new front drive shaft hole snap ring to the front drive inboard joint assembly.

HINT:

Face the end gap of the front drive inboard joint hole snap ring downward.

2. INSTALL FRONT DRIVE SHAFT ASSEMBLY

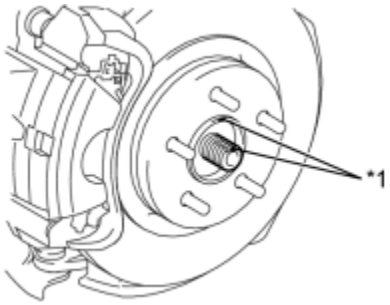


(a) Align the inboard joint splines, and using a brass bar and a hammer, install the front drive shaft assembly.

- Face the end gap of the front drive shaft hole snap ring downward.
- Do not damage the transaxle case oil seal.
- Do not damage the inboard joint boot.
- Make sure to center the front drive shaft assembly during installation to prevent damage to the front drive shaft hole snap ring.

HINT:

Confirm whether the drive shaft is securely driven in by checking the reaction force and sound.



(b) Align the matchmarks and install the front drive shaft assembly to the front axle hub sub-assembly.

Text in Illustration

*1	Matchmark

3. CONNECT FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY INFO

4. CONNECT FRONT STABILIZER LINK ASSEMBLY INFO

5. CONNECT TIE ROD END SUB-ASSEMBLY INFO

6. INSTALL FRONT FLEXIBLE HOSE INFO

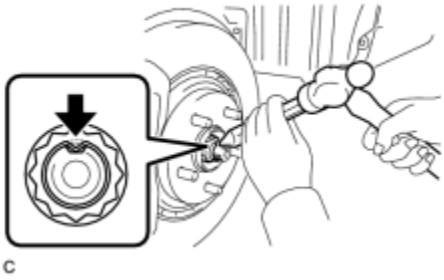
7. CONNECT FRONT SPEED SENSOR INFO

8. INSTALL FRONT AXLE SHAFT NUT

(a) Clean the threaded parts on the drive shaft and a new axle shaft nut using a non-residue solvent.

HINT:

- Be sure to perform this work even when using a new drive shaft.
- Keep the threaded parts free of oil and foreign matter.



(b) Using a socket wrench (30 mm), install the axle shaft nut.

Torque: **216 N·m (2203 kgf·cm, 159ft·lbf)**

(c) Using a chisel and hammer, stake the front axle shaft nut.

9. ADD HYBRID TRANSAXLE FLUID INFO

10. INSPECT HYBRID TRANSAXLE FLUID INFO

11. INSTALL FRONT WHEELS

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

12. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT: INFO.

13. INSTALL REAR ENGINE UNDER COVER LH

14. INSTALL REAR ENGINE UNDER COVER RH

15. INSTALL NO. 1 ENGINE UNDER COVER

16. INSPECT SPEED SENSOR SIGNAL

HINT: INFO.

PRECAUTION

1. PRECAUTION FOR DISCONNECTING THE CABLE FROM THE NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable from the negative (-) battery terminal, initialize the following system after the cable is reconnected:

System	See Procedure
Advanced Parking Guidance System	INFO

2. NOTICE FOR HYBRID SYSTEM ACTIVATION

(a) When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

3. CAN COMMUNICATION SYSTEM PRECAUTIONS

(a) The CAN communication system is used for data communication between the transmission control ECU assembly, the power management control ECU and other ECUs. If there are any problems in the CAN communication lines, corresponding DTCs for the communication lines are output.

(b) If any CAN communication line DTCs are output, repair the malfunction in the communication lines and troubleshoot the electronic shift lever system after data communication becomes normal.

4. LIN COMMUNICATION SYSTEM PRECAUTIONS

(a) The LIN communication system is used for data communication between the transmission control ECU assembly, the certification ECU and other ECUs. If there are any problems in the LIN communication lines, the P position cannot be disengaged.

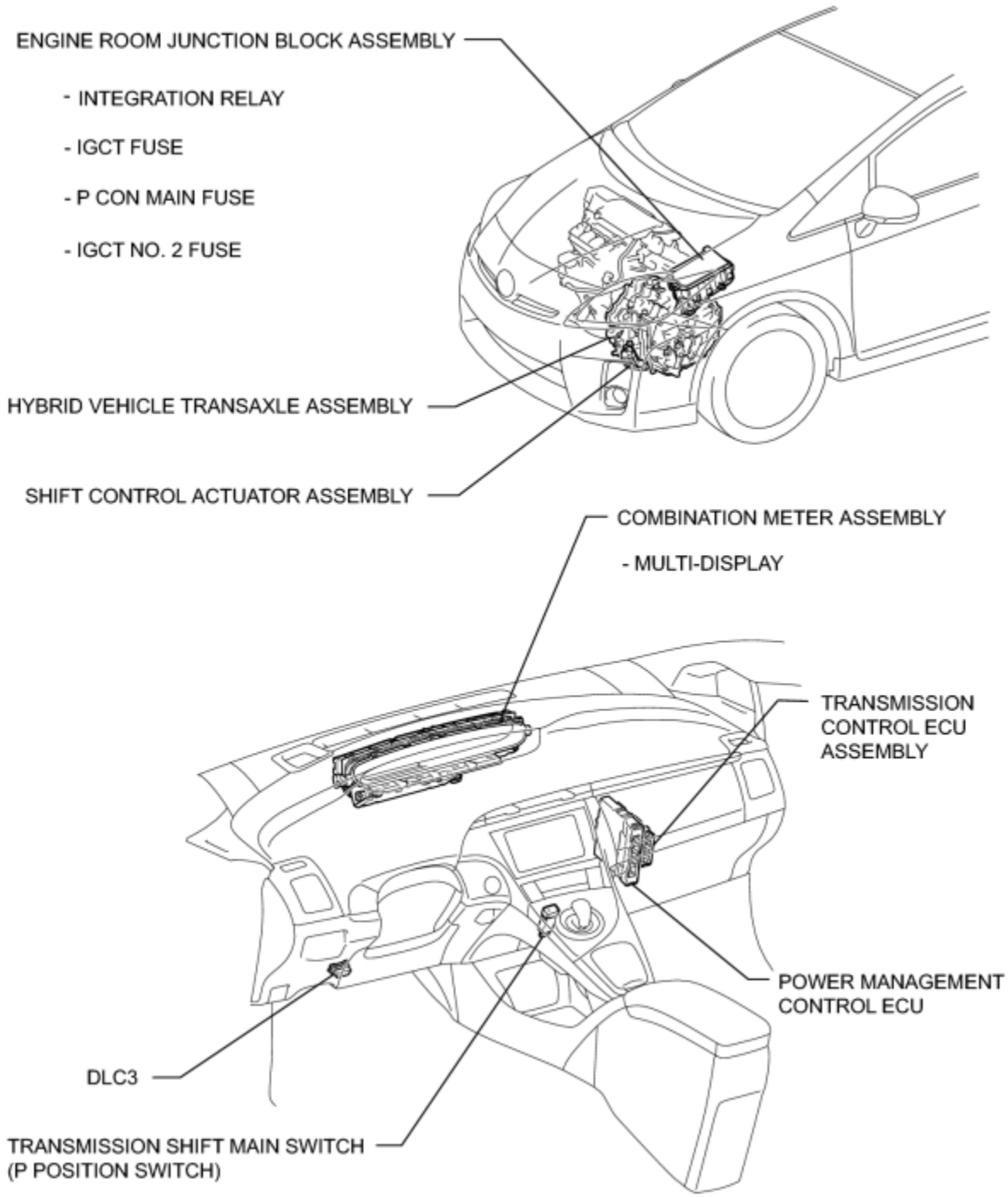
(b) If any LIN communication line DTCs are output, repair the malfunction in the communication lines and troubleshoot the electric shift lever system after data communication becomes normal.

5. DTC PRECAUTION

(a) It is not possible to clear the following DTCs using the Techstream: DTC C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

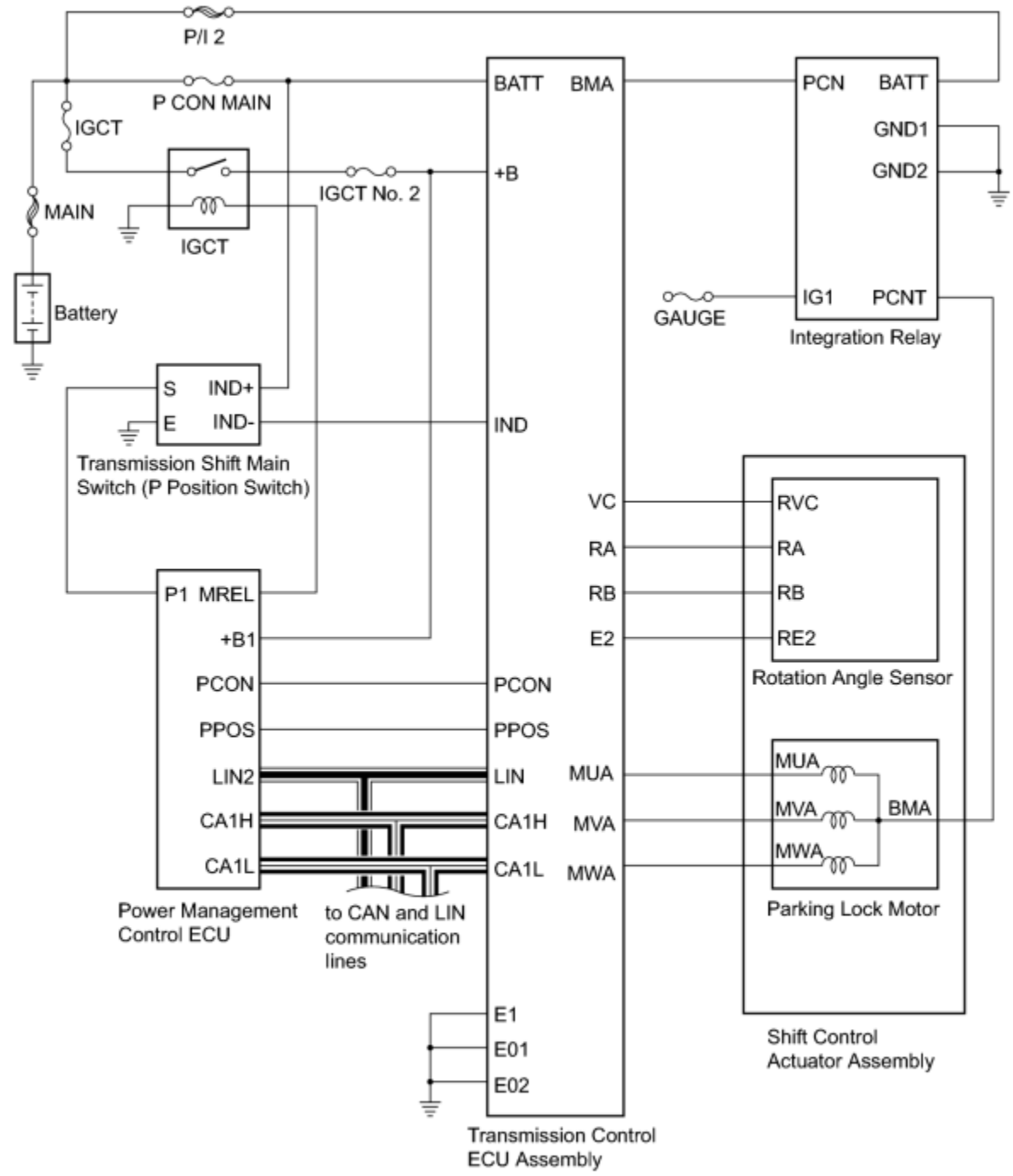
PARTS LOCATION

ILLUSTRATION



H

SYSTEM DIAGRAM



H

SYSTEM DESCRIPTION

1. SYSTEM DESCRIPTION

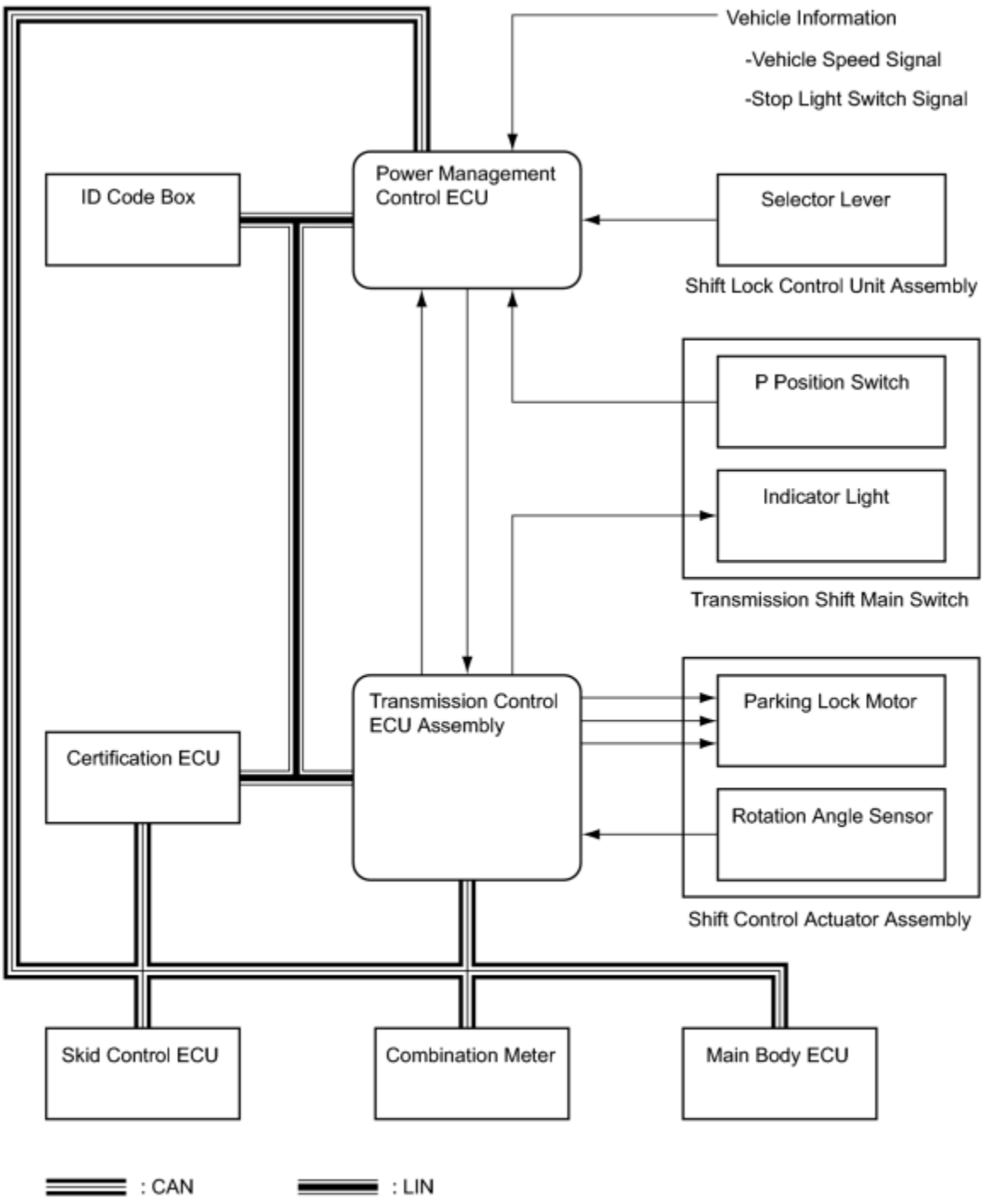
The electronic shift lever system electrically controls the parking lock mechanism by using the actuator.

The transmission control ECU assembly locks/unlocks gearshift control based on lock/unlock request signals from the certification ECU (smart key ECU assembly).

The transmission control ECU assembly controls the shift control actuator when gearshift control is unlocked, and also controls the entire system based on information from the power management control ECU.

The transmission control ECU assembly detects DTCs when there are any malfunctions in the system, and informs the driver of selected malfunctions by illuminating the P position switch indicator light and master warning light, and indicating an error message on the multi-display.

2. SYSTEM DIAGRAM



H

Input and Output Signals of Each ECU

Transmitting ECU (Transmitter)	Receiving ECU	Signal	Communication Method
Main Body ECU	Power Management Control ECU	Parking brake switch signal	CAN
Power Management	Power Management	Power off preparation signal	CAN

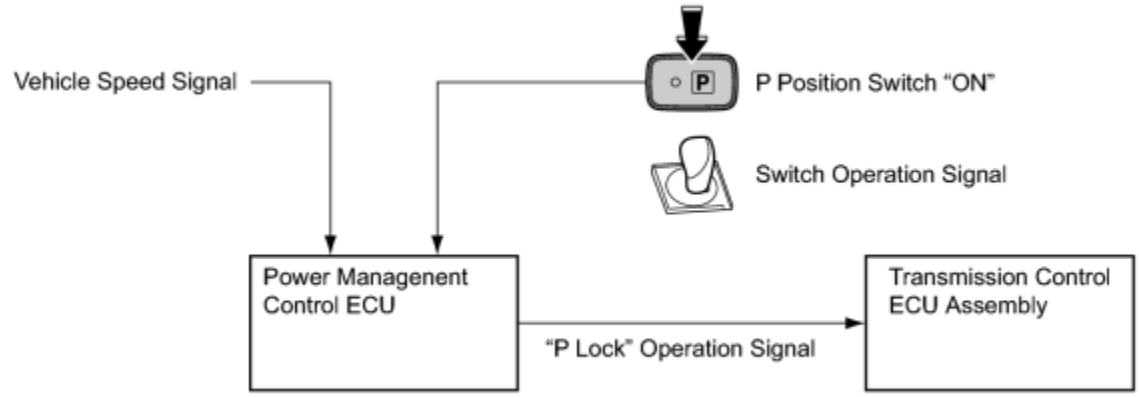
Transmitting ECU (Transmitter)	Receiving ECU	Signal	Communication Method
Control ECU	Control ECU		
Main Body ECU	Transmission control ECU assembly	• Power switch signal • ACC switch signal	CAN
Transmission control ECU assembly	Power Management Control ECU	• P position state signal • Transmission control ECU assembly trouble condition signal • Non-P position state signal	CAN, SIL
Power Management Control ECU	Power Management Control ECU	• Auto P cancel signal • Auto P permit signal	CAN
Transmission control ECU assembly	Combination Meter	Transmission control ECU assembly trouble signal	CAN
Power Management Control ECU	Certification ECU	P position state signal	LIN

3. FUNCTION OF EACH COMPONENT

Part Name	Function
Shift Control Actuator	• Composed of the parking lock motor and the rotation angle sensor. The motor is activated by electric current from the transmission control ECU assembly. • Motor rotation is reduced by the cycloid reduction mechanism in the shift control actuator and then output. • The rotation angle sensor detects the motor rotation angle with the 2 Hall ICs.
Transmission control ECU assembly	• The transmission control ECU assembly activates the shift control actuator based on signals from the power management control ECU. • The transmission control ECU assembly controls the application timing of current to the parking lock motor based on signals from the rotation angle sensor.
Parking Lock Mechanism	The parking lock pawl rotates according to the movement of the parking lock rod when the parking lock motor rotates, and engages with the parking gear on the transaxle side, causing the parking lock mechanism to lock or unlock.
Power Management Control ECU	• The power management control ECU sends a P lock or P unlock demand signal to the transmission control ECU assembly based on information from the selector lever and the P position switch. • The power management control ECU sends a signal with power off information to the power management control ECU. The power management control ECU then sends the signal to the power management control ECU.
P Position Switch Indicator Light	The P position switch indicator light comes on/goes off to indicate the P lock/unlock status and blinks to indicate a malfunction in the electronic shift lever system.
Combination Meter	A malfunction in the transmission control ECU assembly is indicated by the illumination of the master warning light on the combination meter.

4. OPERATION DESCRIPTION

(a) Operation to switch to the P position:



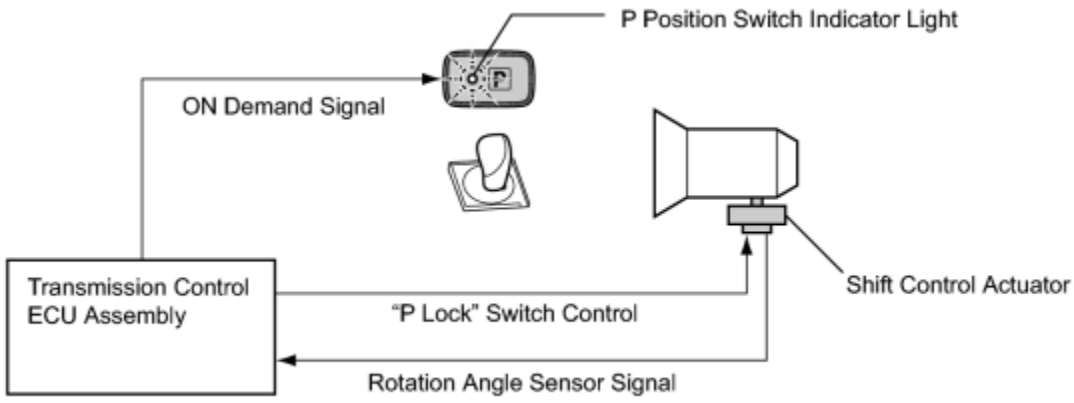
H

(1) When the park (P) is selected to activate parking lock, a signal is sent to the power management control ECU.

(2) The power management control ECU determines whether "P lock" is possible or not based on this signal and other vehicle information.

(3) If the power management control ECU determines that "P lock" is possible, it sends a "P lock" operation demand signal to the transmission control ECU assembly.

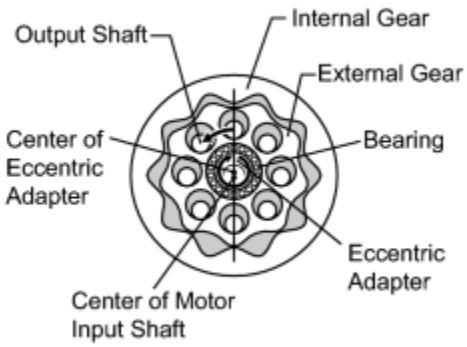
(4) After receiving the signal, the transmission control ECU assembly activates the shift control actuator in order to lock the parking lock mechanism.



H

(5) The transmission control ECU assembly controls motor rotation angle based on signals from the rotation angle sensor in the shift control actuator.

Cycloid Reduction Mechanism



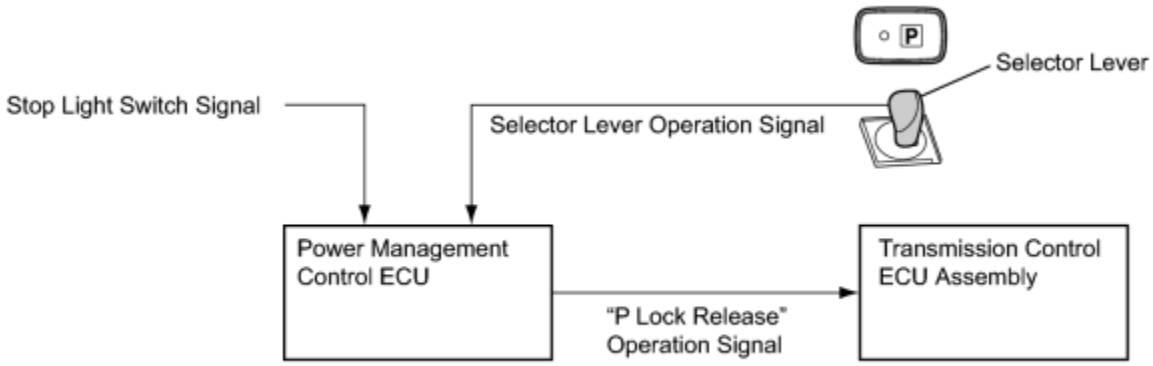
N

HINT:

In the cycloid reduction mechanism, the output shaft is linked to the external gear. Together, they rotate only a single tooth when the eccentric adapter, which is linked to the motor, rotates once. Driving force is increased in this way so that the parking lock mechanism can be switched even when high output is required for parking on a hill, etc.

(6) Turn on the P position switch indicator light.

(b) Operation to switch to a non-P position:

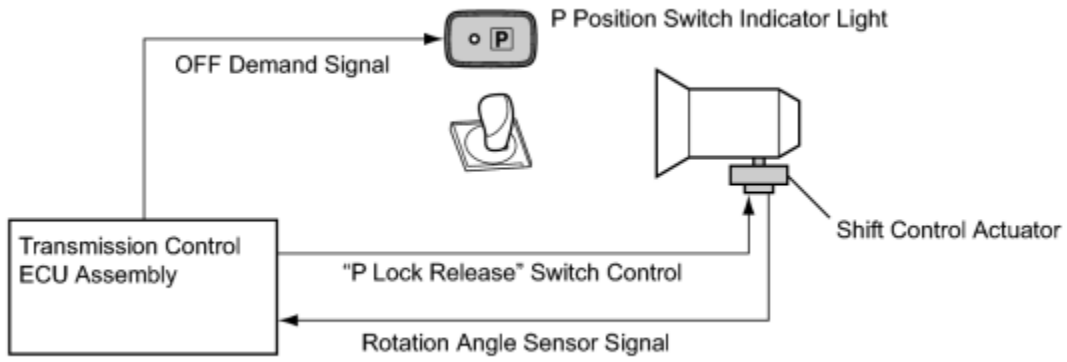


H

(1) When the hybrid system is started (the vehicle is ready to be driven) and the selector lever is moved to R, N, or D with the brake pedal depressed, a signal is sent to the power management control ECU.

(2) This signal is then sent from the power management control ECU to the transmission control ECU assembly as a "P lock release" operation demand signal.

(3) After receiving the signal, the transmission control ECU assembly activates the shift control actuator in order to unlock the parking lock mechanism.



H

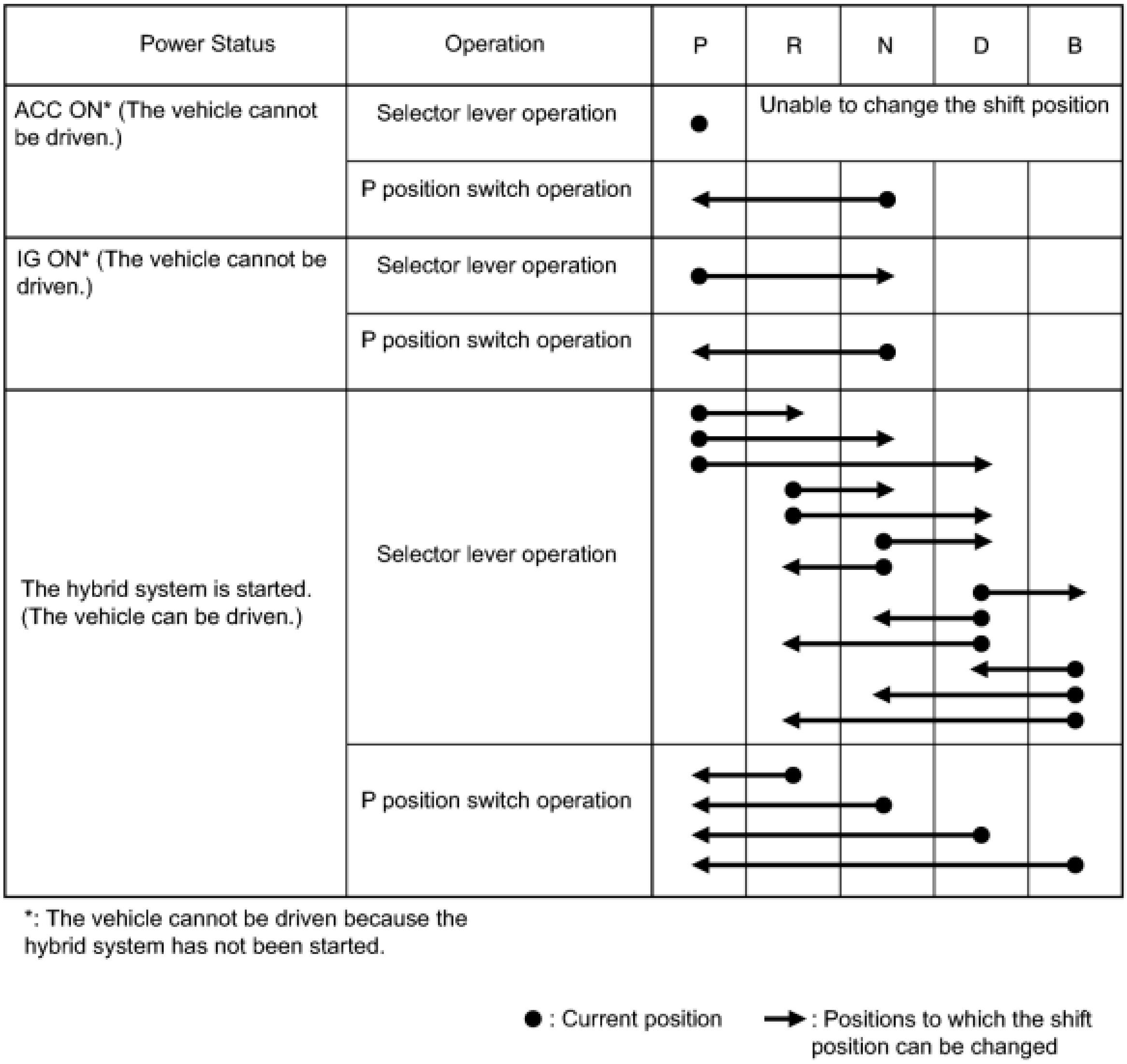
(4) The transmission control ECU assembly controls motor rotation angle based on signals from the rotation angle sensor in the shift control actuator.

(5) Turn off the P position switch indicator light.

5. SHIFT POSITION CHANGE FUNCTION

(a) The electronic shift lever system comprehensively determines vehicle conditions and changes the shift position, as shown in the following chart, by cooperating with the shift control function of the hybrid system (except when the reject function, described later, is in operation).

(b) Other than indicated in the following chart, when the power switch is turned off with the vehicle stopped, the shift position is automatically changed to the P position and all power is turned off.



N

6. REJECT FUNCTION

(a) In the electronic shift lever system, there may be a situation in which a shift change cannot be done for safety reasons. When attempting to move the selector lever in such a situation, the system sounds a reject buzzer inside the meter and changes the shift position as shown in the following table.

Shift operation which causes reject function to operate	Shift position after rejection
Moving the selector lever to any position with park (P) selected and the brake pedal not depressed	Held in the P position

Shift operation which causes reject function to operate	Shift position after rejection
Pushing the P position switch while driving	Changed to the N position
Moving the selector lever from D to R or R to D while driving at 12 km/h or more	Changed to the N position
Moving the selector lever to B from a position other than D or P	Changed to the N position
Moving the selector lever to B with park (P) selected and the brake pedal depressed	Held in the P position

7. P POSITION SWITCH INDICATOR LIGHT CONTROL

(a) The indicator light comes on when the P position switch is pressed (the P position is engaged), goes off when the switch is released (the P position is disengaged) and blinks when the system malfunction occurs.

Indicator Light

DTC No.	Indicator Light	Suspected Cause
C2300	Blinks	• Initial drive shift count malfunction • Move shift range malfunction • Feedbacks shift count malfunction • Parking lock position memory malfunction • Parking lock moving range memory malfunction
C2301	Blinks	Shift changing time malfunction
C2303	Normal (Comes on when the P position is engaged and goes off when it is disengaged)	Integration relay lockup
C2304	Blinks	Open or short in shift control actuator assembly [parking lock motor (MUA)] signal circuit
C2305	Blinks	Open or short in shift control actuator assembly [parking lock motor (MVA)] signal circuit
C2306	Blinks	Open or short in shift control actuator assembly [parking lock motor (MWA)] signal circuit
C2307	Blinks	Power source circuit malfunction
C2308	Normal (Comes on when the P position is engaged, and goes off when it is disengaged)	Transmission control ECU assembly internal error
C2309	Blinks	Open in +B signal circuit
C2310	Normal (Comes on when the P position is engaged, and goes off when it is disengaged)	Open or short in BATT signal circuit
C2311	Blinks	• PCON DUTY malfunction • Open or short in PCON signal circuit

DTC No.	Indicator Light	Suspected Cause
C2315	Normal (Comes on when the P position is engaged, and goes off when it is disengaged)	• Open or short in PCOS signal circuit • Transmission shift main switch (P position switch) circuit malfunction
U0146	Normal (Comes on when the P position is engaged, and goes off when it is disengaged)	CAN communication system malfunction

NOTICE:

Even if the system has returned to normal, the indicator light does not return to normal without the selector lever moved from the home position to N. (Normal refers to the indicator light coming on when the P position is engaged and it goes off when the P position is disengaged.)

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

*: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP

NEXT

2.	CUSTOMER PROBLEM ANALYSIS

NEXT

3.	CONNECT TECHSTREAM TO THE DLC3*

HINT:

If the display on the Techstream indicates a communication fault, inspect the DLC3.

NEXT

4.	CHECK DTC AND SAVE FREEZE FRAME DATA* INFO, INFO

HINT:

Make sure to save freeze frame data because the data is necessary for a simulation test.

NEXT

5.	CLEAR DTC AND FREEZE FRAME DATA* INFO

NEXT

6.	CONDUCT VISUAL INSPECTION

NEXT

7.	CONFIRM PROBLEM SYMPTOMS

Result

Result	Proceed to
Malfunction does not occur	A
Malfunction occurs	B

B GO TO STEP 11

A

8.	DUPLICATE CONDITIONS THAT PRODUCE SYMPTOMS

NEXT

9.	CHECK FOR DTCS* INFO

Result

Result	Proceed to
DTC is output	A
DTC is not output	B

B GO TO STEP 11

A

10.	REFER TO DTC CHART

NEXT GO TO STEP 13

11.	CONDUCT BASIC INSPECTION

Result

Result	Proceed to
Malfunctioning parts not confirmed	A
Malfunctioning parts confirmed	B

B GO TO STEP 15

A

12.	CHECK ECU POWER SOURCE CIRCUIT

NEXT

13.	CONDUCT CIRCUIT INSPECTION

Result

Result	Proceed to
Malfunction not confirmed	A
Malfunction confirmed	B

B GO TO STEP 16

A

14.	CHECK FOR INTERMITTENT PROBLEMS INFO

NEXT GO TO STEP 16

15.	CONDUCT PARTS INSPECTION

NEXT

16.	IDENTIFY PROBLEM

NEXT

17.	ADJUST AND/OR REPAIR

NEXT

18.	CONDUCT CONFIRMATION TEST

NEXT **END**

PROBLEM SYMPTOMS TABLE

HINT:

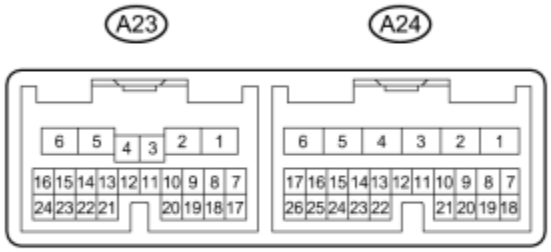
- Use the table below to help determine the cause the problem symptoms. If multiple suspected areas are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Electronic Shift Lever System

Symptom	Suspected Area	See page
The P position switch indicator light does not come on.	P position switch indicator light circuit	INFO
The P position switch indicator light does not go off.	P position switch indicator light circuit	INFO

TERMINALS OF ECU

1. TRANSMISSION CONTROL ECU INSPECTION



H

HINT:

Inspect the connectors from the back side while the connector is connected.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A23-1 (MWA) - A24-6 (E01)	W - W-B	Parking lock motor	Engine stopped (hybrid system stopped), power switch on (IG)	9 to 14 V
A23-2 (MVA) - A24-6 (E01)	R - W-B	Parking lock motor	Engine stopped (hybrid system stopped), power switch on (IG)	9 to 14 V
A23-5 (MUA) - A24-6 (E01)	B - W-B	Parking lock motor	Engine stopped (hybrid system stopped), power switch on (IG)	9 to 14 V
A23-7 (VC) - A23-19 (E2)	G - P	Power source (Rotation angle sensor)	Engine stopped (hybrid system stopped), power switch on (IG)	4.5 to 5.5 V
A23-8 (RB) - A23-19 (E2)	GR - P	Rotation angle sensor signal	Power switch off → Power switch on (IG)	0 to 1.5 V ←→ 4 to 5.5 V
A23-15 (BATT) - A24-1 (E1)	SB - BR	Power source (RAM)	Always	9 to 14 V
A23-16 (+B) - A24-1 (E1)	L - BR	Power source	Engine stopped (hybrid system stopped), power switch on (IG)	9 to 14 V
A24-17 (RA) - A23-19 (E2)	LG - P	Rotation angle sensor signal	Power switch off → Power switch on (IG)	0 to 1.5 V ←→ 4 to 5.5 V
A23-19 (E2) - Body ground	P - Body ground	Rotation angle sensor ground	Always	Below 1 Ω
A23-20 (IND) -	R - BR	P position switch	P position disengaged →P position	9 to 14 V → 0

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A24-1 (E1)		indicator light	engaged [transmission shift main switch (P position switch on)]	to 1.5 V
A23-23 (BMA) - A24-1 (E1)	B - BR	Integration relay	Engine stopped (hybrid system stopped), power switch on (IG)	9 to 14 V
A24-1 (E1) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω
A24-5 (E02) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
A24-6 (E01) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
A24-15 (CA1L) - A24-1 (E1)	BR - BR	CAN communication	Power switch on (IG)	Pulse generation (see waveform 1)
A24-16 (CA1H) - A24-1 (E1)	Y - BR	CAN communication	Power switch on (IG)	Pulse generation (see waveform 1)
A24-22 (PCON) - A24-1 (E1)	LG - BR	Communication bus	Engine stopped (hybrid system stopped), power switch on (IG)	Pulse generation (see waveform 2)
A24-23 (PPOS) - A24-1 (E1)	W - BR	Communication bus	Engine stopped (hybrid system stopped), power switch on (IG)	Pulse generation (see waveform 2)
A24-24 (LIN)	L	LIN communication	-	-

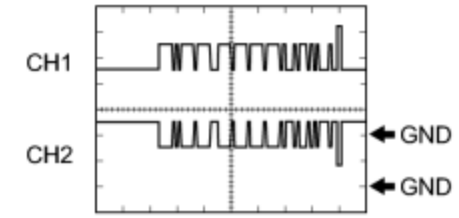
2. Oscilloscope waveforms

HINT:

Oscilloscope waveform samples are provided here for informational purposes. Noise and fluttering waveforms have been omitted.

(a) Waveform 1 (CAN communication signal)

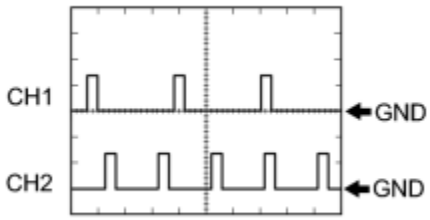
Item	Contents



c

Terminal	CH1: A24-16 (CA1H) - A24-1 (E1) CH2: A24-15 (CA1L) - A24-1 (E1)
Equipment setting	1 V/DIV, 50 μs/DIV
Condition	Power switch on (IG)

(b) Waveform 2 (Transmission control communication signal)



Item	Contents
Terminal	CH1: A24-22 (PCON) - A24-1 (E1) CH2: A24-23 (PPOS) - A24-1 (E1)
Equipment setting	5 V/DIV, 20 ms/DIV
Condition	Power switch on (IG)

DTC CHECK / CLEAR

1. CHECK FOR DTCS (Using the Techstream)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Check for DTCs and freeze frame data, and then write them down.

(f) Check the details of the DTCs.

2. CHECK FOR DTCS (Systems other than the transmission control ECU)

HINT:

The transmission control ECU maintains communication with other ECUs, including the hybrid vehicle control ECU and other ECUs. Therefore, if the transmission control ECU outputs a warning, it is necessary to check and record the DTCs of all systems.

(a) If DTCs are present, check the relevant systems.

HINT:

If DTCs for the CAN communication system are present in addition to other DTCs, first troubleshoot and repair any malfunctions in the CAN communication system.

3. CLEAR DTCS (Using the Techstream)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Clear the DTCs and freeze frame data.

NOTICE:

- It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

- Clearing the DTCs will also clear the freeze frame data.

4. CLEAR DTCS (Without using the Techstream)

(a) Turn the power switch off.

(b) Remove the P CON MAIN fuses from the engine room junction block assembly located inside the engine compartment for more than 1 minute.

(c) Check for DTCs again to see if the DTCs are cleared.

NOTICE:

- If the DTCs are output, repair the parts by following the diagnostic trouble code chart.
- Clearing the DTCs will also clear the freeze frame data.

FREEZE FRAME DATA

1. CHECK FREEZE FRAME DATA

HINT:

The transmission control ECU records vehicle and driving condition information as freeze frame data the moment a DTC is stored. Freeze frame data can help determine the vehicle conditions when the malfunction occurred and help duplicate conditions when troubleshooting.

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Select a DTC in order to display its freeze frame data.

2. LIST OF FREEZE FRAME DATA

Tester Display	Measurement Item	Reference Value
Shift Pos Display (P)	Shift position display (P)	ON / OFF
Shift Pos Display (Not P)	Shift position display (not P)	ON / OFF
Master Caution Display	Master caution display	Disp / Nondisp
PSW Indicator Mode	PSW indicator mode	OFF / ON / Blink
U Phase Voltage Value	U phase voltage value	0 to 39 V
V Phase Voltage Value	V phase voltage value	0 to 39 V
W Phase Voltage Value	W phase voltage value	0 to 39 V
Battery Voltage Value	BATT voltage value	0 to 19 V
IG(+B) Voltage Value	IG (+B) voltage value	0 to 19 V
Cmplte of Learn Lck Pos	Completion of learning lock position	OK / NG
Cmplte of Learn Unlck Pos	Completion of learning unlock position	OK / NG
# of Trip Cuntr after Learn	Number of trip counter after learning	0 to 65535
Main Relay for Motor Drive	Integration relay for motor drive	ON / OFF
U Phase Crnt-Carry Status	U phase current-carrying status	ON / OFF
V Phase Crnt-Carry Status	V phase current-carrying status	ON / OFF
W Phase Crnt-Carry Status	W phase current-carrying status	ON / OFF
U Phase Voltage Status	U phase voltage status	ON / OFF
V Phase Voltage Status	V phase voltage status	ON / OFF
W Phase Voltage Status	W phase voltage status	ON / OFF
Battery Voltage Status	BATT voltage status	ON / OFF

Tester Display	Measurement Item	Reference Value
IG(+B) Phase Vol Status	IG (+B) phase voltage status	ON / OFF
ACC Condition Signal	ACC condition signal	ON / OFF
Init Drv Cntrl Completed	Initial drive control completed	OK / NG
Cmplte of Detct Lck Pos	Completion of detecting lock position	OK / NG
Cmplte of Detct Unlck Pos	Completion of detecting unlock position	OK / NG
P/Not P Move Shft Range	P/Not P movable shift range	Set / Unset
Main Relay	Integration relay	Normal / Abnoml
Current flag record	Current flag record	ON / OFF
Fail Rank	Fail rank	0 to 255
Detail Information #	-	-

FAIL-SAFE CHART

If the transmission control ECU detects a malfunction, the fail-safe functions shown in the table below are activated.

DTC No.	Fail-safe Function	Problem Symptoms
C2300 C2301	Only the P position release operation is possible and the shift control actuator is activated.	• The shift position is not indicated on the meter. • Although the shift position is indicated on the meter, the vehicle cannot be driven.
C2303	-	The battery is dead.
C2304 C2305 C2306	The integration relay is turned off.	The parking lock mechanism cannot be switched.
C2307	The integration relay is turned off.	• The shift position is not indicated on the meter. • Although the shift position is indicated on the meter, the vehicle cannot be driven.
C2308	-	• The parking lock mechanism cannot be switched. • The key reminder buzzer sounds constantly.
C2309	The integration relay is turned off.	The parking lock mechanism cannot be switched.
C2311	-	The parking lock mechanism cannot be switched.

DATA LIST / ACTIVE TEST

1. DATA LIST

NOTICE:

- Some Data List values may vary significantly if there are slight differences in the environment in which the vehicle is operating when measurements are obtained. Variations may also occur due to aging of the vehicle. Due to these considerations, it is not always possible to provide definite values to be used for judgment of malfunctions. It is possible that a malfunction may be present even if measured values are within the reference range.
- In the event of a problem with intricate symptoms, collect sample data from another vehicle of the same model operating under identical conditions in order to reach an overall judgment by comparing all the items in the Data List.

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values. when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the power switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the power switch on (IG).

(e) Turn the Techstream on.

(f) Enter the following menus: Chassis / Transmission Control / Data List.

(g) According to the display on the Techstream, read the Data List.

HINT:

When reading the Data List information, first determine which items need to be monitored before proceeding. Attempting to view all of the data may result in a delayed, inaccurate inspection.

Transmission Control ECU

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Shift Pos Display	Shift position display (P)	ON: Parking lock in P	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
(P)	/ ON or OFF	position OFF: Parking lock in non-P position	
Shift Pos Display (Not P)	Shift position display (not P) / ON or OFF	ON: Parking lock in non-P position OFF: Parking lock in P position	-
Master Caution Display	Master caution display / Disp or Nondisp	Disp: Malfunction occurs in this system Nondisp: Malfunction does not occur in this system	Transmission control ECU assembly
PSW Indicator Mode	PSW indicator mode / ON or OFF	ON: Parking lock in P position OFF: Parking lock in non-P position (When normal)	-
PSW Indicator Mode	PSW indicator mode / Blink	Blink: Malfunction detected	-
U Phase Voltage Value	U phase voltage value / Min: 0 V, Max: 39 V	9 to 14 V: IG ON (If shift control actuator assembly is operating: 0V)	Shift control actuator assembly [parking lock motor (MUA)] signal circuit
V Phase Voltage Value	V phase voltage value / Min: 0 V, Max: 39 V	9 to 14 V: IG ON (If shift control actuator assembly is operating: 0V)	Shift control actuator assembly [parking lock motor(MVA)] signal circuit
W Phase Voltage Value	W phase voltage value / Min: 0 V, Max: 39 V	9 to 14 V: IG ON (If shift control actuator assembly is operating: 0V)	Shift control actuator assembly [parking lock motor(MWA)] signal circuit
Battery Voltage Value	BATT voltage value / Min: 0 V, Max: 19 V	8 to 16 V: IG ON	BATT signal circuit
IG(+B) Voltage Value	IG (+B) voltage value / Min: 0 V, Max: 19 V	8 to 16 V: IG ON	+B signal circuit
Cmplte of Learn Lck Pos	Completion of learning lock position /	OK: Lock position learning completed	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	OK or NG	NG: Lock position learning not completed	
Cmplte of Learn Unlck Pos	Completion of learning unlock position / OK or NG	OK: Unlock position learning completed NG: Unlock position learning not completed	-
# of Trip Cuntr after Learn	Number of trip counter after learning / Min: 0, Max: 65535	Actual number of trip counter	-
Main Relay for Motor Drive	Integration relay for motor drive / ON or OFF	ON: Motor drive main relay on OFF: Motor drive main relay off	Integration relay circuit
U Phase Crnt-Carry Status	U phase current-carrying status / ON or OFF	ON: U phase current flows OFF: U phase current does not flow	Shift control actuator assembly [parking lock motor(MUA)] signal circuit
V Phase Crnt-Carry Status	V phase current-carrying status / ON or OFF	ON: V phase current flows OFF: V phase current does not flow	Shift control actuator assembly [parking lock motor(MVA)] signal circuit
W Phase Crnt-Carry Status	W phase current-carrying status / ON or OFF	ON: W phase current flows OFF: W phase current does not flow	Shift control actuator assembly [parking lock motor(MWA)] signal circuit
U Phase Voltage Status	U phase voltage status /F ON or OFF	ON: 9 to 14 V OFF: 0 V	Shift control actuator assembly [parking lock motor(MUA)] signal circuit
V Phase Voltage Status	V phase voltage status / ON or OFF	ON: 9 to 14 V OFF: 0 V	Shift control actuator assembly [parking lock motor(MVA)] signal circuit
W Phase Voltage Status	W phase voltage status / ON or OFF	ON: 9 to 14 V OFF: 0 V	Shift control actuator assembly [parking lock motor(MWA)] signal circuit
Battery Voltage Status	BATT voltage status / ON or OFF	ON: 8 to 16 V OFF: Below 8 V	BATT signal circuit
IG (+B) Phase Vol Status	IG (+B) phase voltage status / ON or OFF	ON: 10 to 16 V OFF: Below 10 V	+B signal circuit

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ACC Condition Signal	ACC condition signal / ON or OFF	ON: 5 V or higher OFF: Below 5 V	Judged according to the ACC signal via CAN communication line
Init Drv Cntrl Completed	Initial drive control completed / OK or NG	OK: Initial drive control complete NG: Initial drive control not complete	-
Cmplte of Detect Lck Pos	Completion of detecting lock position / OK or NG	OK: Detection of lock position completed NG: Detection of lock position not completed	-
Cmplte of Detect Unlck Pos	Completion of detecting unlock position / OK or NG	OK: Detection of unlock position completed NG: Detection of unlock position not completed	-
P/Not P Move Shft Range	P/Not P movable shift range / Set or Unset	Set: P/Not P movable shift range set Unset: P/Not P movable shift range unset	-
Main Relay	Integration relay / Normal or Abnoml	Normal: Integration relay normal Abnoml: Integration relay fault	Integration relay circuit
Current flag record	Current flag record ON or OFF	ON: Current flag record stored OFF: Current flag record not stored	-
Number of Diagnosis Code	Number of diagnosis code / Min: 0, Max: 255	Actual number of DTCs	-

DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the appropriate page.

HINT:

- Remove the P CON MAIN fuse to clear DTCs C2300, C2301, C2303, C2304, C2305, C2306, C2307 and C2309 because they cannot be clear with the Techstream.
- When a DTC is detected, the master warning light comes on and an error message is indicated on the multi-display.

Electronic Shift Lever System

DTC Code	Detection Item	Trouble Area	Master Warning Light	Multi-display Error Message	Memory	See page
C2300	Actuator System Malfunction	- Transmission control ECU assembly - Auxiliary battery - Integration relay - Shift control actuator assembly - Hybrid vehicle transaxle assembly - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2301	Shift Changing Time Malfunction	- Auxiliary battery - Shift control actuator assembly - Hybrid vehicle transaxle assembly - Transmission control ECU assembly	Comes on	Comes on	DTC stored	INFO
C2303	Short in Power Source Relay Circuit	- Transmission control ECU assembly - Integration relay - Wire harness or connector	Comes on	Comes on	DTC stored	INFO

DTC Code	Detection Item	Trouble Area	Master Warning Light	Multi-display Error Message	Memory	See page
C2304	Open or Short Circuit in U Phase	- Auxiliary battery - Transmission control ECU assembly - Shift control actuator assembly - Integration relay - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2305	Open or Short Circuit in V Phase	- Auxiliary battery - Transmission control ECU assembly - Shift control actuator assembly - Integration relay - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2306	Open or Short Circuit in W Phase	- Auxiliary battery - Transmission control ECU assembly - Shift control actuator assembly - Integration relay - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2307	Power Supply	- Transmission control ECU assembly - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2308	EEPROM Malfunction	- Transmission control ECU assembly	-	-	DTC stored	INFO
C2309	Open in B+ Circuit	- Transmission control	Comes on	Comes on	DTC stored	INFO

DTC Code	Detection Item	Trouble Area	Master Warning Light	Multi-display Error Message	Memory	See page
		ECU assembly - Auxiliary battery - Wire harness or connector				
C2310	Open or Short Circuit in Battery Circuit	- P CON MAIN fuse - Transmission control ECU assembly - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2311	Communication Error from HV ECU	- Transmission control ECU assembly - Power management control ECU - Wire harness or connector	Comes on	Comes on	DTC stored	INFO
C2315	HV System	- Power management control ECU	Comes on	Comes on	DTC stored	INFO
U0146	Lost Communication with Body ECU	- CAN communication system	-	-	DTC stored	INFO

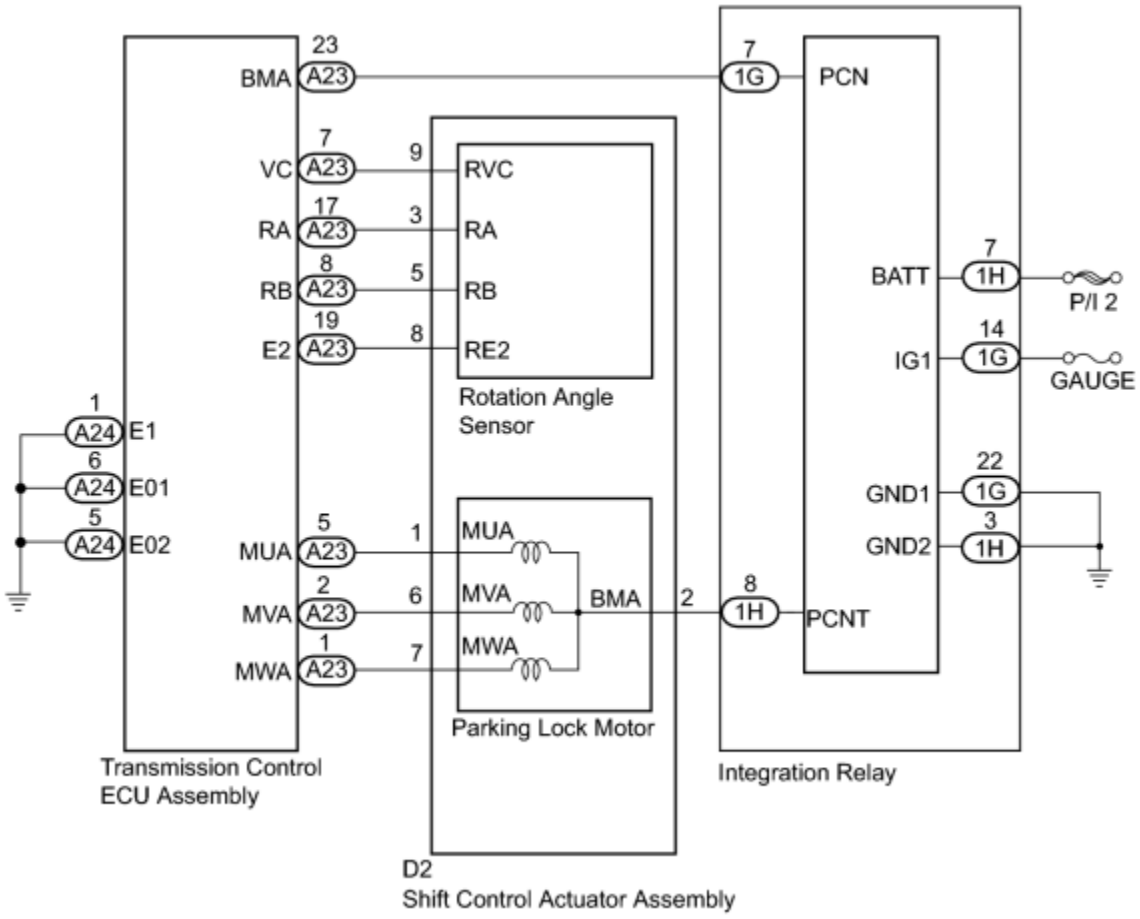
DTC	C2300	Actuator System Malfunction

DESCRIPTION

The shift control actuator consists of the parking lock motor and the rotation angle sensor. The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and activates the parking lock motor by controlling current, causing the parking lock mechanism to switch. The transmission control ECU also detects the rotor rotation angle through the rotation angle sensor to control timing of current application to the coils. The transmission control ECU outputs this DTC when it detects a malfunction in the shift control actuator system.

DTC No.	DTC Detection Condition	Trouble Area
C2300	Open or short in the integration relay or shift control actuator assembly (parking lock motor or rotation angle sensor), or internal malfunction of the shift control actuator assembly (parking lock motor or rotation angle sensor).	• Transmission control ECU assembly • Auxiliary battery • Integration relay • Shift control actuator assembly • Hybrid vehicle transaxle assembly • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

PROCEDURE

1.	CHECK FREEZE FRAME DATA

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Read the freeze frame data "Current flag record" of C2300.

Result

Result	Proceed to
OFF	A
ON	B

(e) Turn the power switch off.

B REPLACE TRANSMISSION CONTROL ECU ASSEMBLY

A

2.	CHECK DTC OUTPUT (TRANSMISSION CONTROL)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Check if DTCs are output.

Result

Result	Proceed to
Any of the following DTCs are not output.	A
Any of the following DTCs are output.	B

DTC No.	Relevant Diagnosis
C2304	Open or Short Circuit in U Phase
C2305	Open or Short Circuit in V Phase
C2306	Open or Short Circuit in W Phase

(e) Turn the power switch off.

B GO TO DTC CHART

A

3.	CHECK FREEZE FRAME DATA

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Read the freeze frame data of C2300.

Result

Result	Proceed to
IG (+B) voltage is 9 V or more	A
IG (+B) voltage is less than 9 V	B

(e) Turn the power switch off.

B ▶ REPLACE AUXILIARY BATTERY

A

▼

4.	CLEAR DTC

(a) Turn the power switch on (IG).

(b) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(c) Read and record the DTCs and freeze frame data.

(d) Turn the power switch off.

(e) Disconnect the P CON MAIN fuse and wait for at least 60 seconds.

(f) Check for DTCs again to see if the DTCs are cleared.

NEXT

▼

5.	CHARGE AUXILIARY BATTERY

(a) Charge the auxiliary battery.

NEXT

▼

6.	CHECK DTC OUTPUT (SIMULATION TEST)

(a) Connect the Techstream to the DLC3.

(b) Release the brake pedal and turn the power switch on (IG).

HINT:

Do not turn the power switch on (READY).

(c) Depress the brake pedal and move the selector lever to N.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Check if DTCs are output.

Result

Result	Proceed to
C2300 is output	A
DTC is not output.	B

(f) Turn the power switch off.

B ▶ END (AUXILIARY BATTERY WAS INSUFFICIENTLY CHARGED)

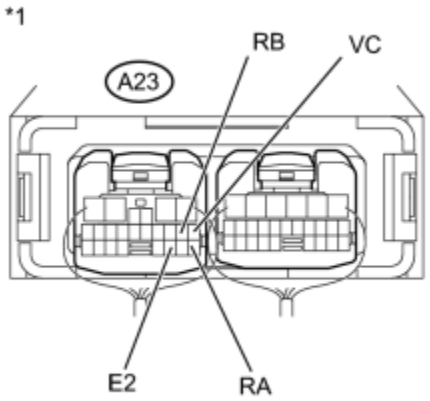
A

▼

7.	CHECK TRANSMISSION CONTROL ECU ASSEMBLY (VC, RA, RB, E2)

(a) Measure the voltage according to the value(s) in the table below.

Standard Voltage:



H

Tester Connection	Condition	Specified Condition
A23-7 (VC) - A23-19 (E2)	Engine stopped (hybrid system stopped), power switch on (IG)	4.5 to 5.5 V
A23-17 (RA) - A23-19 (E2)	Power switch off to on (IG)	0 to 1.5 V ←→ 4 to 5.5 V
A23-8 (RB) - A23-19 (E2)	Power switch off to on (IG)	0 to 1.5 V ←→ 4 to 5.5 V

Text in Illustration

*1	Component with harness connected (Transmission Control ECU Assembly)

(b) Turn the power switch off.

NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

OK

8.	CHECK HARNESS AND CONNECTOR (SHIFT CONTROL ACTUATOR ASSEMBLY POWER SOURCE CIRCUIT)

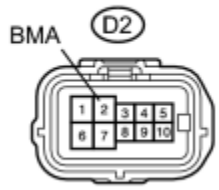
(a) Disconnect the D2 shift control actuator assembly.

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

*1



Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - Body ground	Power switch on (IG)	9 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Turn the power switch off.

(e) Connect the shift control actuator assembly.

NG CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY POWER SOURCE CIRCUIT)

OK

9.	READ VALUE USING TECHSTREAM (U, V, W VOLTAGE)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Data List / U Phase Voltage Value, V Phase Voltage Value, W Phase Voltage Value.

(d) Read the data list displayed on the Techstream.

Result:

Tester Display	Switch Condition	Specified Condition

Tester Display	Switch Condition	Specified Condition
U Phase Voltage Value	Power switch on (IG)	9 to 14 V
V Phase Voltage Value	Power switch on (IG)	9 to 14 V
W Phase Voltage Value	Power switch on (IG)	9 to 14 V

Turn the power switch off.

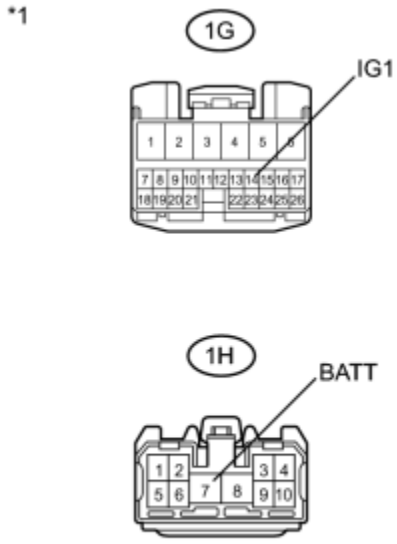
NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

10.	CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY POWER SOURCE CIRCUIT)

(a) Disconnect the 1G and 1H integration relay connectors.

(b) Turn the power switch on (IG).



(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
1H-7 (BATT) - Body ground	Always	9 to 14 V
1G-14 (IG1) - Body ground	Power switch on (IG)	9 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Integration Relay)

(d) Turn the power switch off.

(e) Connect the integration relay connectors.

NG ▶ CHECK AND REPAIR POWER SOURCE CIRCUIT

OK

▼

11.	CHECK HARNESS AND CONNECTOR (SHIFT CONTROL ACTUATOR ASSEMBLY -

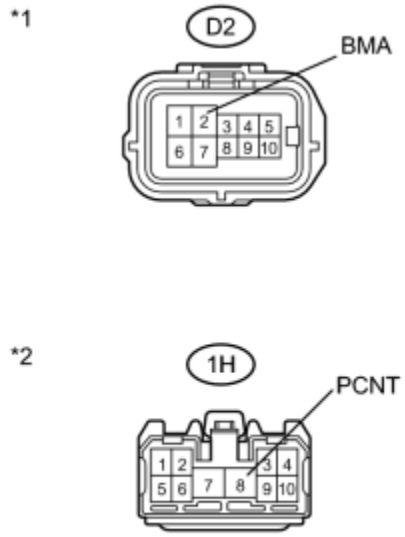
	INTEGRATION RELAY)

(a) Disconnect the D2 shift control actuator assembly connector.

(b) Disconnect the 1H integration relay connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):



Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - 1H-8 (PCNT)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) or 1H-8 (PCNT) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)
*2	Front view of wire harness connector (to Integration Relay)

(d) Connect the integration relay connector.

(e) Connect the shift control actuator assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

12.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - INTEGRATION RELAY)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the 1G integration relay connector.

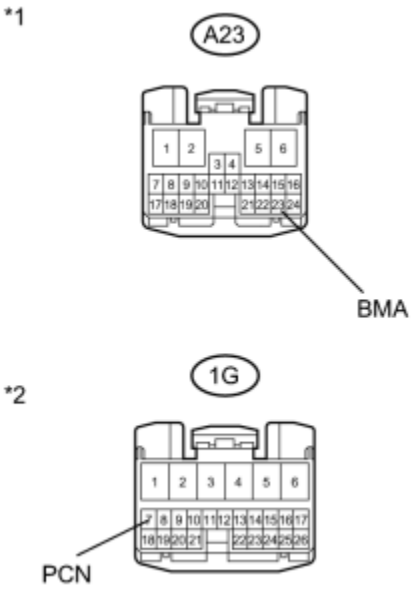
(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-23 (BMA) - 1G-7 (PCN)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-23 (BMA) or 1G-7 (PCN) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Integration Relay)

(d) Connect the integration relay connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

13.	CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - BODY GROUND)

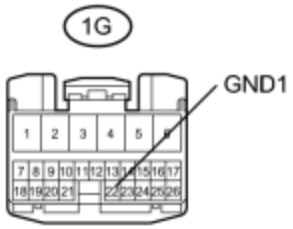
(a) Disconnect the 1G and 1H integration relay connectors.

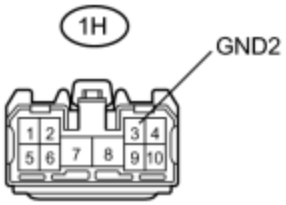
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
1G-22 (GND1) - Body ground	Power switch off	Below 1 Ω
1H-3 (GND2) - Body ground	Power switch off	Below 1 Ω

*1





Text in Illustration

*1	Front view of wire harness connector (to Integration Relay)

(c) Connect the integration relay connectors.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE INTEGRATION NO.1 RELAY**

14.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the D2 shift control actuator assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

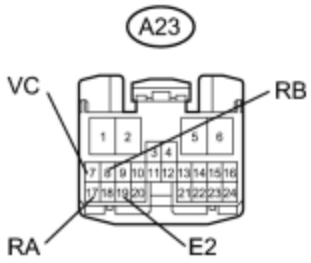
Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-7 (VC) - D2-9 (RVC)	Power switch off	Below 1 Ω
A23-17 (RA) - D2-3 (RA)	Power switch off	Below 1 Ω
A23-8 (RB) - D2-5 (RB)	Power switch off	Below 1 Ω
A23-19 (E2) - D2-8 (RE2)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

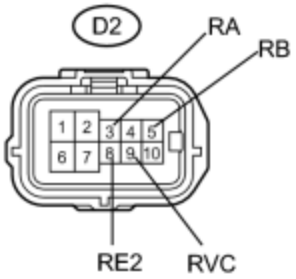
Tester Connection	Switch Condition	Specified Condition
A23-7 (VC) or D2-9 (RVC) - Body	Power switch	10 kΩ or higher

*1



ground and other terminals	off	
A23-17 (RA) or D2-3 (RA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-8 (RB) or D2-5 (RB) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-19 (E2) or D2-8 (RE2) - Body ground and other terminals	Power switch off	10 kΩ or higher

*2



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the shift control actuator assembly connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

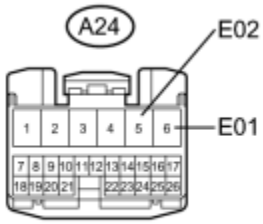
15.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - BODY GROUND)

(a) Disconnect the A24 transmission control ECU assembly connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

*1



Tester Connection	Switch Condition	Specified Condition
A24-6 (E01) - Body ground	Power switch off	Below 1 Ω
A24-5 (E02) - Body ground	Power switch off	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)

H

Result:

Result	Proceed to
Abnormal	A
Normal	B

(c) Connect the transmission control ECU assembly connector.

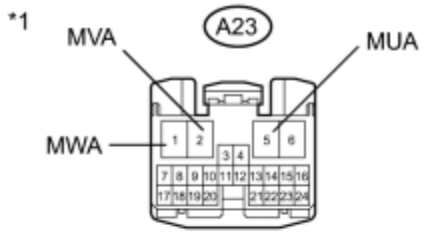
B CHECK SHIFT CONTROL ACTUATOR ASSEMBLY

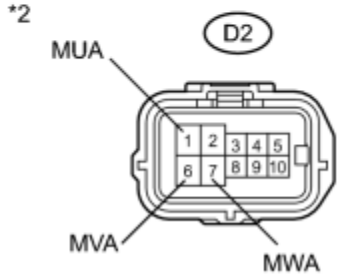
A **REPAIR OR REPLACE HARNESS OR CONNECTOR**

16.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the D2 shift control actuator assembly connector.





(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-5 (MUA) - D2-1 (MUA)	Power switch off	Below 1 Ω
A23-2 (MVA) - D2-6 (MVA)	Power switch off	Below 1 Ω
A23-1 (MWA) - D2-7 (MWA)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-5 (MUA) or D2-1 (MUA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-2 (MVA) or D2-6 (MVA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-1 (MWA) or D2-7 (MWA) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)

*2	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the shift control actuator assembly connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

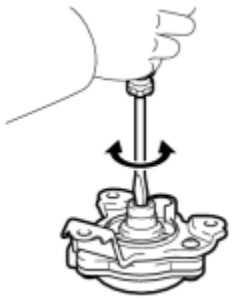
▼

17.	CHECK SHIFT CONTROL ACTUATOR ASSEMBLY

(a) Disconnect the shift control actuator assembly connector.

(b) Remove the shift control actuator 3 bolts INFO.

(c) Slightly pull the shift control actuator assembly from the hybrid vehicle transaxle.



P

(d) Using a screwdriver with its tip wrapped with protective tape or a piece of cloth, rotate the shaft.

OK:

The shift control actuator assembly turns smoothly.

- During this inspection, make sure to use a screwdriver with its tip wrapped with protective tape or a piece of cloth to prevent the splines of the actuator from being damaged.
- The shift control actuator cannot be disassembled.

NG ▶ REPLACE SHIFT CONTROL ACTUATOR ASSEMBLY

OK

▼

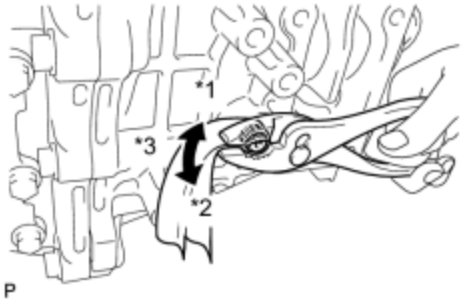
18.	CHECK HYBRID VEHICLE TRANSAXLE ASSEMBLY

(a) Wrap the shaft with a piece of cloth and turn it using pliers.

OK:

The shaft rotates smoothly in the lock and unlock directions.

- Rotates the shaft using torque within 4 to 7 N*m (41 to 71 kgf*cm, 36 to 61 in.*lbf).



- During this inspection, ensure to use a piece of cloth to prevent the shaft splines from being damaged.

Text in Illustration

*1	Lock
*2	Unlock
*3	Rotate approximately 20°.

(b) Set the shaft in the lock position after the inspection.

NG ▶ REPLACE HYBRID VEHICLE TRANSAXLE ASSEMBLY

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

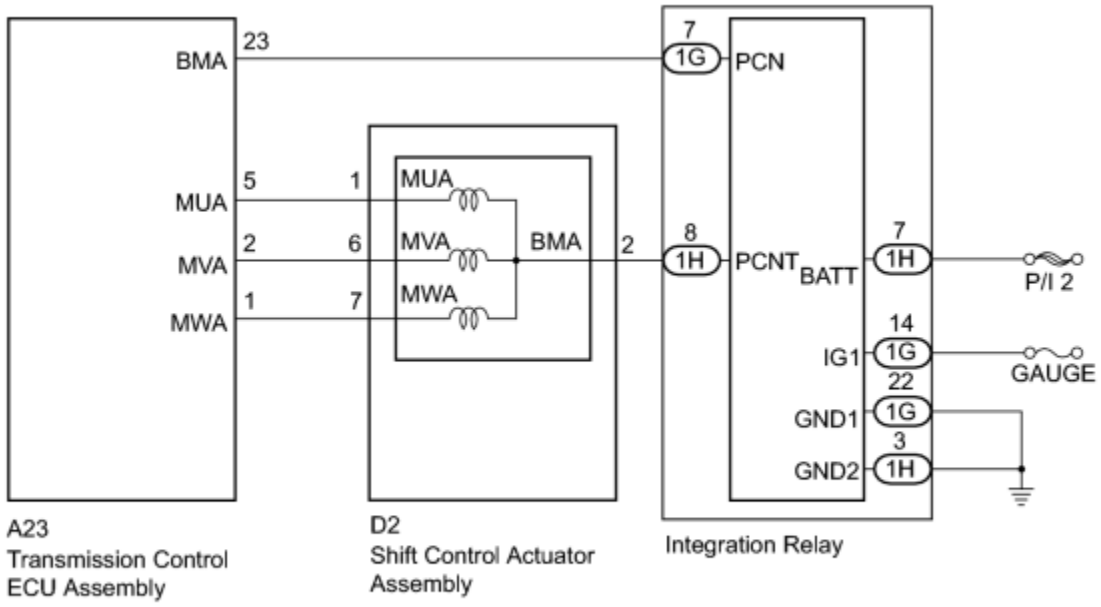
DTC	C2301	Shift Changing Time Malfunction

DESCRIPTION

The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and then activates the shift control actuator. At the same time, the transmission control ECU detects the length of time it takes for the parking lock mechanism to switch. The transmission control ECU outputs this DTC when this length of time is longer than specification.

DTC No.	DTC Detection Condition	Trouble Area
C2301	A shift control actuator assembly (parking lock motor) internal malfunction (parking lock motor spins freely) is detected for 2 seconds or more.	• Auxiliary battery • Shift control actuator assembly • Hybrid vehicle transaxle assembly • Transmission control ECU assembly

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

PROCEDURE

1.	CHECK FREEZE FRAME DATA

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Read the freeze frame data of C2301.

Result

Result	Proceed to
IG (+B) voltage is 9 V or more	A
IG (+B) voltage is less than 9 V	B

(e) Turn the power switch off.

B ▶ REPLACE AUXILIARY BATTERY

A

▼

2.	CLEAR DTC

(a) Turn the power switch on (IG).

(b) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(c) Read and record the DTCs and freeze frame data.

(d) Turn the power switch off.

(e) Disconnect the P CON MAIN fuse and wait for at least 60 seconds.

(f) Check for DTCs again to see if the DTCs are cleared.

NEXT

3.	CHARGE AUXILIARY BATTERY

(a) Charge the auxiliary battery.

NEXT

4.	CHECK DTC OUTPUT (SIMULATION TEST)

(a) Connect the Techstream to the DLC3.

(b) Release the brake pedal and turn the power switch on (IG).

HINT:

Do not turn the power switch on (READY).

(c) Depress the brake pedal and move the selector lever to N.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Check if DTCs are output.

Result

Result	Proceed to
C2301 is output	A
DTC is not output.	B

(f) Turn the power switch off.

B END (AUXILIARY BATTERY WAS INSUFFICIENTLY CHARGED)

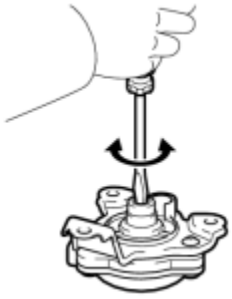
A

5.	CHECK SHIFT CONTROL ACTUATOR ASSEMBLY

(a) Disconnect the shift control actuator assembly connector.

(b) Remove the shift control actuator 3 bolts INFO.

(c) Slightly pull the shift control actuator assembly from the hybrid vehicle transaxle.



P

(d) Using a screwdriver with its tip wrapped with protective tape or a piece of cloth, rotate the shaft.

OK:

The shift control actuator assembly turns smoothly.

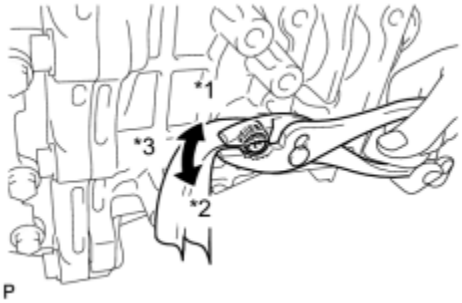
- During this inspection, make sure to use a screwdriver with its tip wrapped with protective tape or a piece of cloth to prevent the splines of the actuator from being damaged.
- The shift control actuator cannot be disassembled.

NG ▶ REPLACE SHIFT CONTROL ACTUATOR ASSEMBLY

OK

▼

6.	CHECK HYBRID VEHICLE TRANSAXLE ASSEMBLY



P

(a) Wrap the shaft with a piece of cloth and turn it using pliers.

OK:

The shaft rotates smoothly in the lock and unlock directions.

- Rotates the shaft using torque within 4 to 7 N*m (41 to 71 kgf*cm, 36 to 61 in.*lbf).
- During this inspection, ensure to use a piece of cloth to prevent the shaft splines from being damaged.

Text in Illustration

*1	Lock
*2	Unlock
*3	Rotate approximately 20°.

(b) Set the shaft in the lock position after the inspection.

NG ▶ REPLACE HYBRID VEHICLE TRANSAXLE ASSEMBLY

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

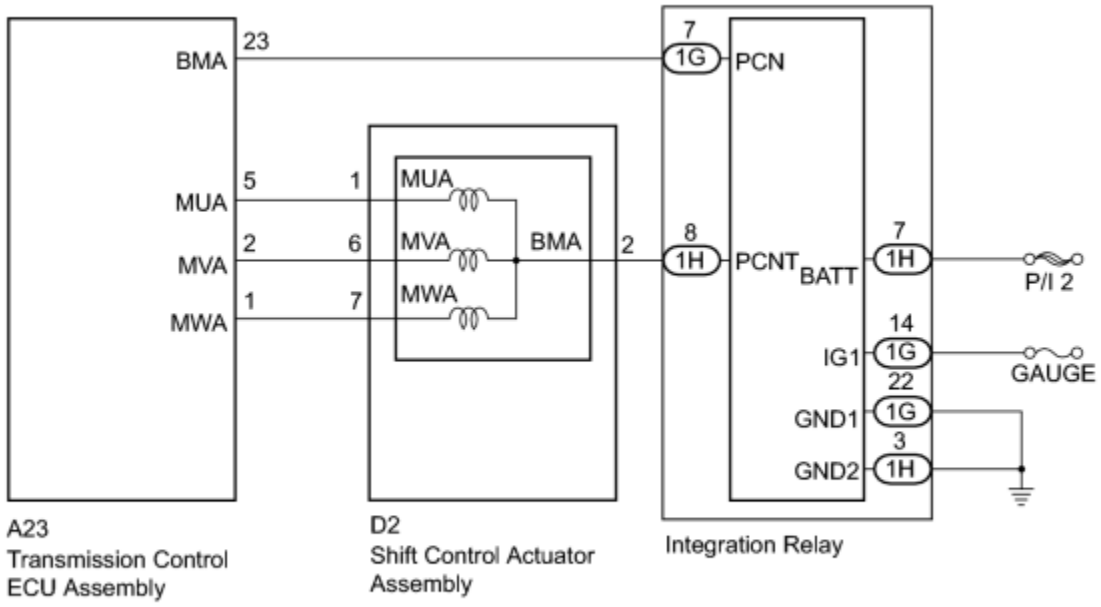
DTC	C2303	Short in Power Source Relay Circuit

DESCRIPTION

The integration relay is activated by output voltage from the transmission control ECU and supplies power to the shift control actuator (parking lock motor). The transmission control ECU outputs this DTC when it detects a malfunction in the integration relay.

DTC No.	DTC Detection Condition	Trouble Area
C2303	When the integration relay is off, voltage of transmission control ECU terminal MUA, MVA and MWA are 6 V or more for 0.064 seconds or more.	• Transmission control ECU assembly • Integration relay • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

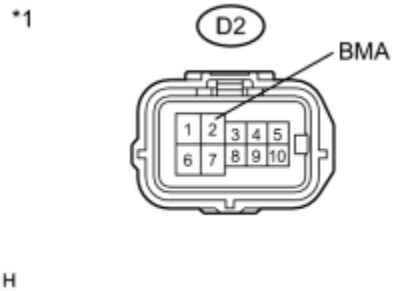
PROCEDURE

1.	CHECK SHIFT CONTROL ACTUATOR ASSEMBLY (SHIFT CONTROL ACTUATOR ASSEMBLY POWER SOURCE CIRCUIT)

(a) Disconnect the D2 shift control actuator assembly connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:



Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - Body ground	Power switch off	Below 1 V

Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)

(c) Connect the shift control actuator assembly connector.

(d) Turn the power switch off.

NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - INTEGRATION RELAY)

OK ▼

2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

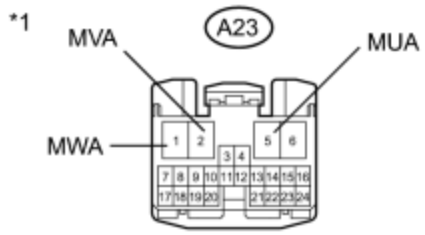
(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the D2 shift control actuator assembly connector.

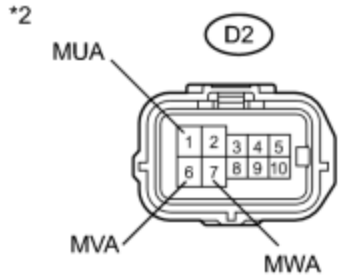
(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Short):

Tester Connection	Switch	Specified



	Condition	Condition
A23-5 (MUA) or D2-1 (MUA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-2 (MVA) or D2-6 (MVA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-1 (MWA) or D2-7 (MWA) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the shift control actuator assembly connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

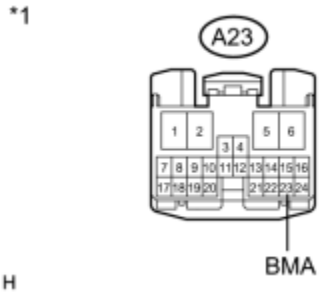
3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - INTEGRATION RELAY)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the 1G integration relay connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Short):



Tester Connection	Switch Condition	Specified Condition
A23-23 (BMA) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)

(d) Connect the integration relay connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK
▼

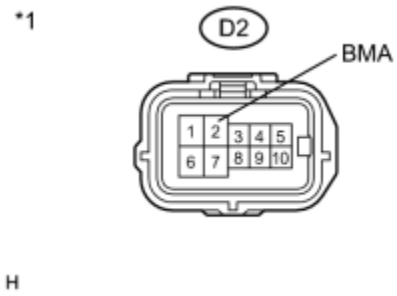
4.	CHECK HARNESS AND CONNECTOR (SHIFT CONTROL ACTUATOR ASSEMBLY - INTEGRATION RELAY)

(a) Disconnect the D2 shift control actuator assembly connector.

(b) Disconnect the 1H integration relay connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Short):



Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the integration relay connector.

(e) Connect the shift control actuator assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE INTEGRATION NO.1 RELAY**

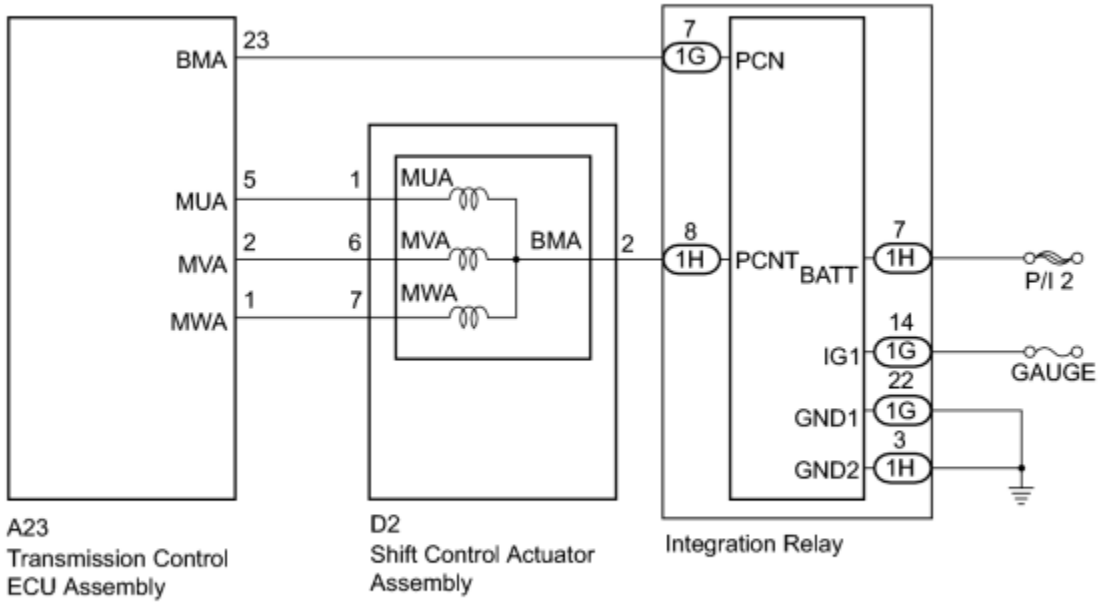
DTC	C2304	Open or Short Circuit in U Phase
DTC	C2305	Open or Short Circuit in V Phase
DTC	C2306	Open or Short Circuit in W Phase

DESCRIPTION

The shift control actuator consists of the parking lock motor and the rotation angle sensor. The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and activates the parking lock motor by controlling current, causing the parking lock mechanism to switch. The transmission control ECU outputs these DTCs when it detects a malfunction in the parking lock motor system.

DTC No.	DTC Detection Condition	Trouble Area
C2304	With the power switch on (IG) (battery voltage is 8 V or more), voltage of transmission control ECU terminal MUA is 6 V or less for 1 second or more.	• Auxiliary battery • Transmission control ECU assembly • Shift control actuator assembly • Integration relay • Wire harness or connector
C2305	With the power switch on (IG) (battery voltage is 8 V or more), voltage of transmission control ECU terminal MVA is 6 V or less for 1 second or more.	
C2306	With the power switch on (IG) (battery voltage is 8 V or more), voltage of transmission control ECU terminal MWA is 6 V or less for 1 second or more.	

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

PROCEDURE

1.	CHECK DTC OUTPUT (TRANSMISSION CONTROL)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Check if DTCs are output.

Result

Result	Proceed to
C2304, C2305 and C2306 are detected simultaneously	A
One of C2304, C2305 and C2306 is detected	B

HINT:

- If DTCs C2304, 2305 and 2306 are stored at the same time, there may be a malfunction in the parking lock motor (BMA signal) power source circuit.
- If DTC C2304, 2305 or 2306 is stored individually, there may be a malfunction in the parking lock motor (MUA, MVA or MWA signal) circuits.

(e) Turn the power switch off.

B READ VALUE USING TECHSTREAM (U, V, W VOLTAGE)

A

2.	CHECK FREEZE FRAME DATA

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(d) Read the freeze frame data of C2304, 2305 and 2306.

Result

Result	Proceed to
IG (+B) voltage is 9 V or more	A
IG (+B) voltage is less than 9 V	B

(e) Turn the power switch off.

B REPLACE AUXILIARY BATTERY

A

3.	CLEAR DTC

(a) Turn the power switch on (IG).

(b) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(c) Read and record the DTCs and freeze frame data.

(d) Turn the power switch off.

(e) Disconnect the P CON MAIN fuse and wait for at least 60 seconds.

(f) Check for DTCs again to see if the DTCs are cleared.

NEXT

4.	CHARGE AUXILIARY BATTERY

(a) Charge the auxiliary battery.

NEXT

5.	CHECK DTC OUTPUT (SIMULATION TEST)

(a) Connect the Techstream to the DLC3.

(b) Release the brake pedal and turn the power switch on (IG).

HINT:

Do not turn the power switch on (READY).

(c) Depress the brake pedal and move the selector lever to N.

(d) Enter the following menus: Chassis / Transmission Control / Trouble Codes.

(e) Check if DTCs are output.

Result

Result	Proceed to
C2304, 2305 or 2306 is output	A
DTC is not output.	B

(f) Turn the power switch off.

B END (AUXILIARY BATTERY WAS INSUFFICIENTLY CHARGED)

A

6.	CHECK HARNESS AND CONNECTOR (SHIFT CONTROL ACTUATOR ASSEMBLY POWER SOURCE CIRCUIT)

(a) Disconnect the D2 shift control actuator assembly connector.

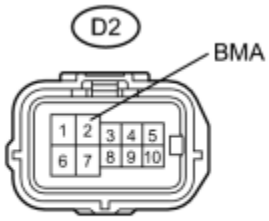
(b) Turn the power switch on (IG)

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - Body ground	Power switch on (IG)	9 to 14 V

*1



H

Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Turn the power switch off.

(e) Connect the shift control actuator assembly connector.

NG ▶ CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY POWER SOURCE CIRCUIT)

OK

▼

7.	READ VALUE USING TECHSTREAM (U, V, W VOLTAGE)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Data List / U Phase Voltage Value, V Phase Voltage Value, W Phase Voltage Value.

(d) Read the Data List displayed on the Techstream.

Result:

Tester Display	Switch Condition	Specified Condition
U Phase Voltage Value	Power switch on (IG)	9 to 14 V
V Phase Voltage Value	Power switch on (IG)	9 to 14 V

Tester Display	Switch Condition	Specified Condition
W Phase Voltage Value	Power switch on (IG)	9 to 14 V

(e) Turn the power switch off.

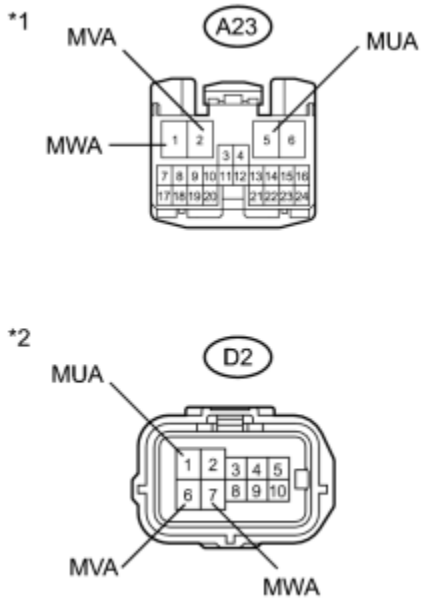
NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

8.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the D2 shift control actuator assembly connector.



(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-5 (MUA) - D2-1 (MUA)	Power switch off	Below 1 Ω
A23-2 (MVA) - D2-6 (MVA)	Power switch off	Below 1 Ω
A23-1 (MWA) - D2-7 (MWA)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-5 (MUA) or D2-1 (MUA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-2 (MVA) or D2-6 (MVA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-1 (MWA) or D2-7 (MWA) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the shift control actuator assembly connector.

(e) Connect the transmission control ECU assembly connector.

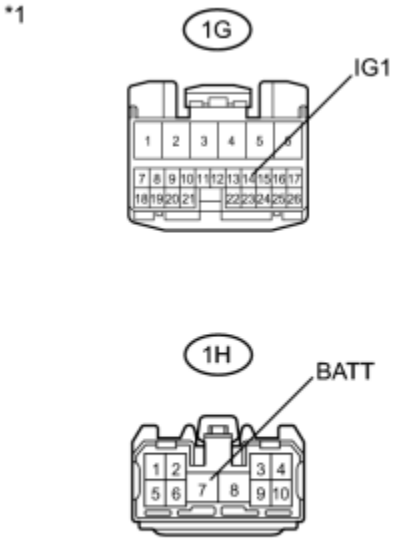
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE SHIFT CONTROL ACTUATOR ASSEMBLY**

9.	CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY POWER SOURCE CIRCUIT)

(a) Disconnect the 1G and 1H integration relay connectors.

(b) Turn the power switch on (IG)



(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
1H-7 (BATT) - Body ground	Always	9 to 14 V
1G-14 (IG1) - Body ground	Power switch on (IG)	9 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Integration Relay)

(d) Turn the power switch off.

(e) Connect the integration relay connectors.

NG ▶ CHECK AND REPAIR POWER SOURCE CIRCUIT

OK

▼

10.	CHECK HARNESS AND CONNECTOR (SHIFT CONTROL ACTUATOR ASSEMBLY - INTEGRATION RELAY)

(a) Disconnect the D2 shift control actuator assembly connector.

(b) Disconnect the 1H integration relay connector.

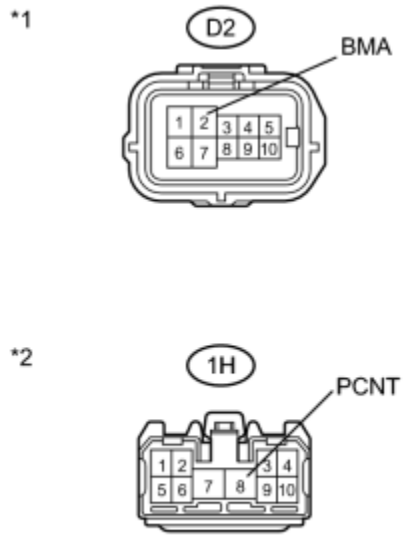
(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) - 1H-8 (PCNT)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
D2-2 (BMA) or 1H-8 (PCNT) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Shift Control Actuator Assembly)
*2	Front view of wire harness connector (to Integration Relay)

(d) Connect the integration relay connector.

(e) Connect the shift control actuator assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

11.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - INTEGRATION RELAY)

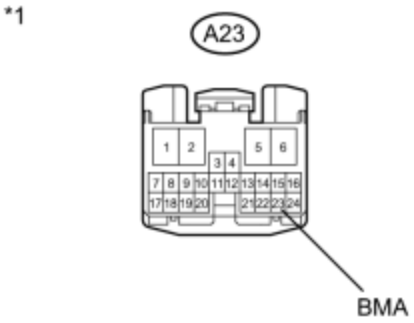
(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the 1G integration relay connector.

(c) Measure the resistance according to the value(s) in the table below.

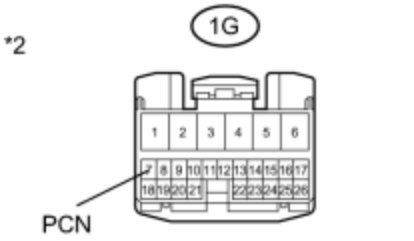
Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-23 (BMA) - 1G-7 (PCN)	Power switch off	Below 1 Ω



Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-23 (BMA) or 1G-7 (PCN) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Integration Relay)

(d) Connect the integration relay connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

12.	CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - BODY GROUND)

(a) Disconnect the 1G and 1H integration relay connectors.

(b) Measure the resistance according to the value(s) in the table below.

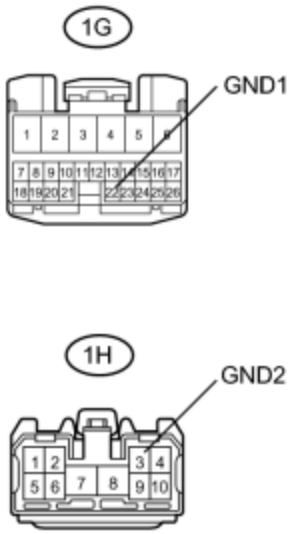
Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
1G-22 (GND1) - Body ground	Power switch off	Below 1 Ω
1H-3 (GND2) - Body ground	Power switch off	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Integration Relay)

*1



(c) Connect the integration relay connectors.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE INTEGRATION NO.1 RELAY**

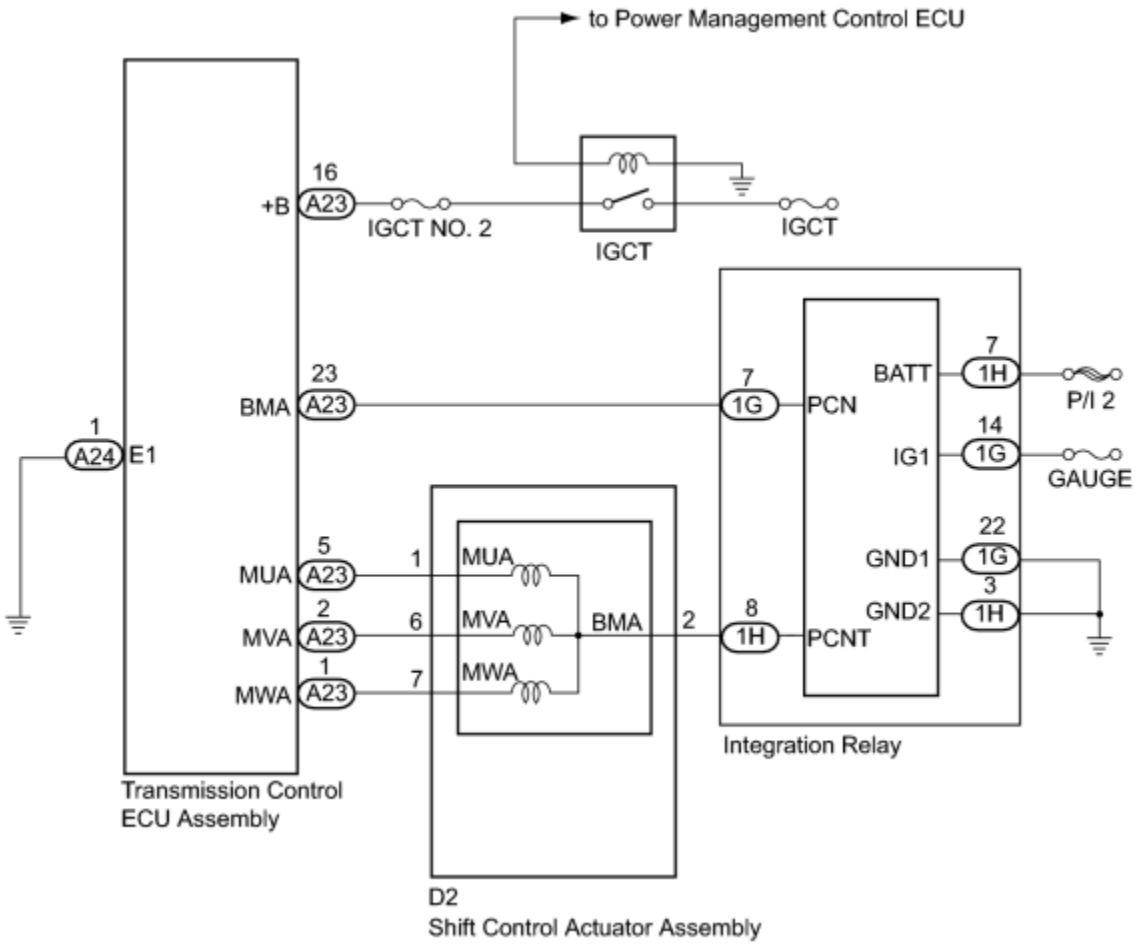
DTC	C2307	Power Supply

DESCRIPTION

The shift control actuator consists of the parking lock motor and the rotation angle sensor. The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and activates the parking lock motor by controlling current, causing the parking lock mechanism to switch. The transmission control ECU outputs this DTC when it detects a malfunction in the parking lock motor system and/or the ground circuit.

DTC No.	DTC Detection Condition	Trouble Area
C2307	With the power switch on (IG) (IG circuit malfunction is not detected), current of the parking lock motor is 50 A or more or open in the transmission control ECU terminal E1 circuit for 1 second or more.	• Transmission control ECU assembly • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

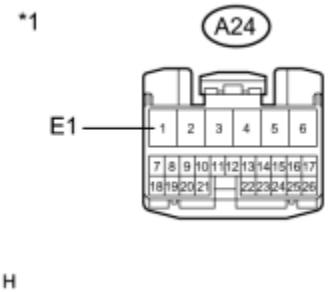
PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - BODY GROUND)

(a) Disconnect the A24 transmission control ECU assembly connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):



Tester Connection	Switch Condition	Specified Condition
A24-1 (E1) - Body ground	Power switch off	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)

(c) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

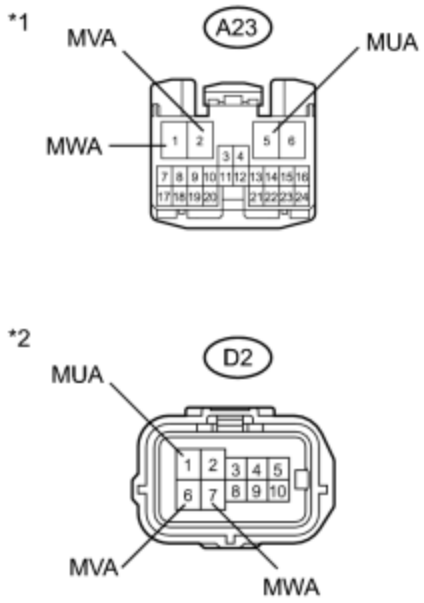
2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - SHIFT CONTROL ACTUATOR)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the D2 shift control actuator assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Short):



Tester Connection	Switch Condition	Specified Condition
A23-5 (MUA) or D2-1 (MUA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-2 (MVA) or D2-6 (MVA) - Body ground and other terminals	Power switch off	10 kΩ or higher
A23-1 (MWA) or D2-7 (MWA) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Shift Control Actuator Assembly)

(d) Connect the shift control actuator assembly connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

DTC	C2308	EEPROM Malfunction

DESCRIPTION

The transmission control ECU assembly monitors its internal operation and it will set this DTC when it detects an EEPROM malfunction. If this DTC is output, replace the transmission control ECU assembly.

DTC No.	DTC Detection Condition	Trouble Area
C2308	EEPROM malfunction	Transmission control ECU assembly

INSPECTION PROCEDURE

PROCEDURE

1.	REPLACE TRANSMISSION CONTROL ECU ASSEMBLY

(a) Replace the transmission control ECU assembly INFO.

NEXT **END**

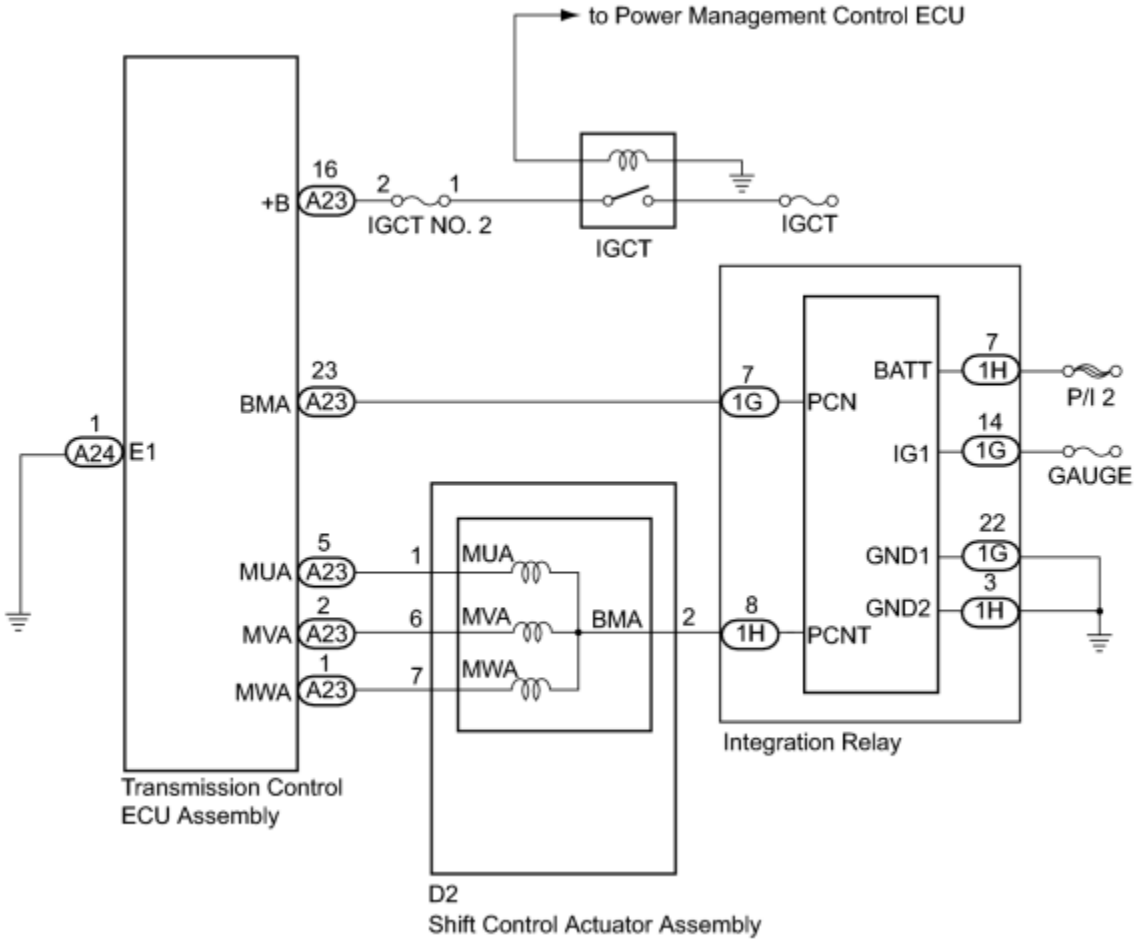
DTC	C2309	Open in B+ Circuit

DESCRIPTION

Battery voltage will be applied to the +B terminal when the power switch is turned on (IG). When a +B terminal voltage malfunction is detected, the transmission control ECU outputs this DTC.

DTC No.	DTC Detection Condition	Trouble Area
C2309	With the power switch on (IG), voltage of transmission control ECU terminal +B is 3 V or less for 1 second or more.	• Transmission control ECU assembly • Auxiliary battery • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

It is not possible to clear the following DTCs using the Techstream: DTCs C2300 (Actuator System Malfunction), C2301 (Shift Changing Time Malfunction), C2303 (Short in Power Source Relay Circuit), C2304 (Open or Short Circuit in U Phase), C2305 (Open or Short Circuit in V Phase), C2306 (Open or Short Circuit in W Phase), C2307 (Power Supply) and C2309 (Open in B+ Circuit). After the repair, it is necessary to disconnect the P CON MAIN fuse and wait for at least 60 seconds to clear the DTCs.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (IG(+B) VOLTAGE VALUE)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Data List / IG(+B) Voltage Value.

(d) Read the Data List displayed on the Techstream.

Result:

Result	Proceed to
3 V or less	A
Other than above	B

(e) Turn the power switch off.

B ▶ REPLACE TRANSMISSION CONTROL ECU ASSEMBLY

A ▼

2.	READ VALUE USING TECHSTREAM (BATTERY VOLTAGE VALUE)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Data List / Battery Voltage Value.

(d) Read the Data List displayed on the Techstream.

Result:

Result	Proceed to
9 V or less	A
Other than above	B

(e) Turn the power switch off.

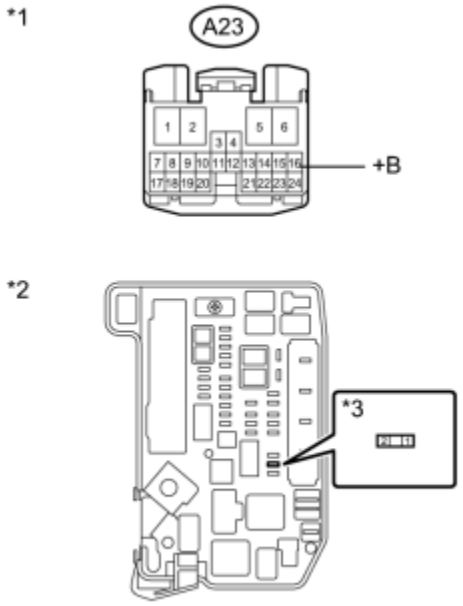
B ▶ CHARGE OR REPLACE AUXILIARY BATTERY

A ▼

3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - IGCT NO. 2 FUSE)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Remove the IGCT No. 2 fuse from the engine room junction block assembly.



(c) Measure the resistance according to the value(s) in the table below.

Standard resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-16 (+B) - 2 (IGCT No. 2 fuse)	Power switch off	Below 1 Ω

Standard resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-16 (+B) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Engine Room Junction Block Assembly
*3	IGCT No. 2 fuse

NOTICE:

Be careful not to break the fuse holder by forcing the tester probes into it during this inspection.

(d) Install the IGCT No. 2 fuse.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **CHECK AND REPAIR POWER SOURCE CIRCUIT**

DTC	C2310	Open or Short Circuit in Battery Circuit

DESCRIPTION

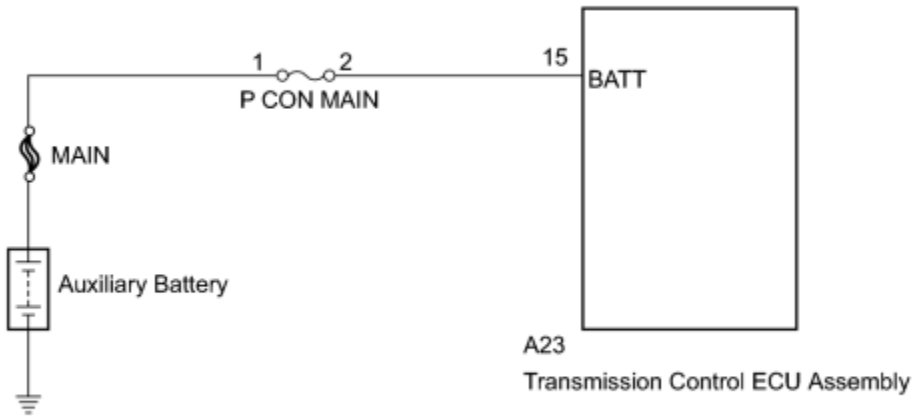
The battery voltage is constantly applied to terminal BATT. The terminal BATT voltage is used to power the transmission control ECU memory. The transmission control ECU outputs this DTC when it detects a malfunction related to terminal BATT.

HINT:

When there is an open or short in the BATT circuit, information on the actuator position ("P position" or "non-P position") stored in the transmission control ECU is cleared every time the power switch is turned off. Therefore, the ECU works to recognize the position each time the power switch is turned on (IG). As a result, the time from when the power switch is turned on (IG) until "READY ON" is indicated may become longer than normal.

DTC No.	DTC Detection Condition	Trouble Area
C2310	With the power switch on (IG) (IG circuit malfunction is not detected), voltage of transmission control ECU terminal BATT is 8 V or less for 1 second or more.	• P CON MAIN fuse • Transmission control ECU assembly • Wire harness or connector

WIRING DIAGRAM



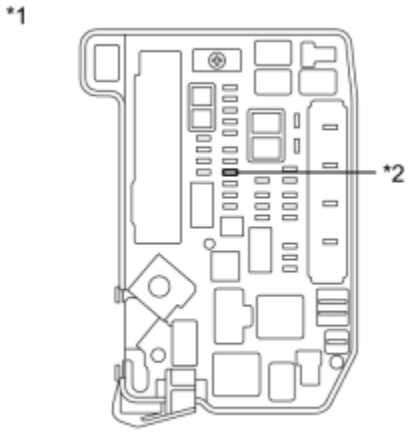
H

INSPECTION PROCEDURE

PROCEDURE

1.	INSPECT FUSE (P CON MAIN)

(a) Remove the P CON MAIN fuse from the engine room junction block assembly.



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
P CON MAIN fuse	Always	Below 1 Ω

Text in Illustration

*1	Engine Room Junction Block Assembly
*2	P CON MAIN fuse

(c) Install the P CON MAIN fuse.

NG ▶ REPLACE FUSE (P CON MAIN)
OK
▼

2.	READ VALUE USING TECHSTREAM (BATT VOLTAGE VALUE)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Chassis / Transmission Control / Data List / Battery Voltage Value.

(d) Read the Data List displayed on the Techstream.

Result:

Tester Display	Condition	Specified Condition
Battery Voltage Value	Always	9 to 14 V

(e) Turn the power switch off.

NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - P CON MAIN FUSE)

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU ASSEMBLY - P CON MAIN FUSE)

(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the P CON MAIN fuse from the engine room junction block assembly.

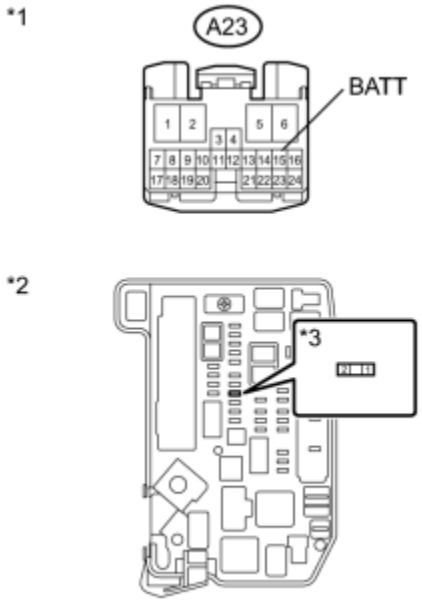
(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-15 (BATT) - 2 (P CON MAIN fuse)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-15 (BATT) or 2 (P CON MAIN fuse) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Engine Room Junction Block Assembly
*3	P CON MAIN fuse

NOTICE:

Be careful not to break the fuse holder by forcing the tester probes into it during this inspection.

(d) Install the P CON MAIN fuse.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **CHECK AND REPAIR POWER SOURCE CIRCUIT**

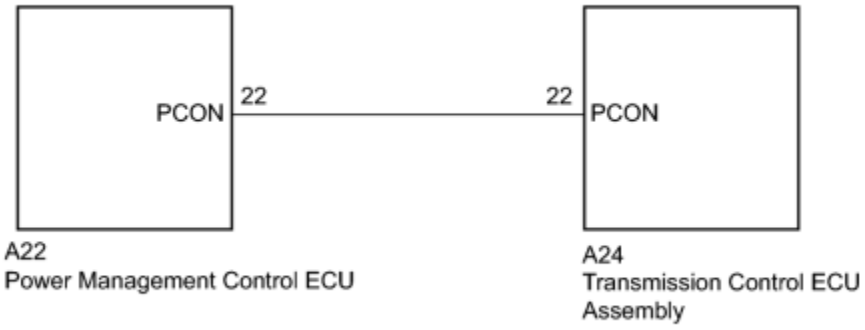
DTC	C2311	Communication Error from HV ECU

DESCRIPTION

The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and activates the parking lock motor by controlling current, causing the parking lock mechanism to switch. The transmission control ECU outputs this DTC when it detects a communication error between the power management control ECU (HV CPU) and the transmission control ECU.

DTC No.	DTC Detection Condition	Trouble Area
C2311	With the power switch on (IG) (IG circuit malfunction is not detected), a signal cannot be received from the power management control ECU (open or short in the PCON terminal circuit) or a pulse signal malfunction is received from the power management control ECU for 2 second or more.	• Transmission control ECU assembly • Power management control ECU • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

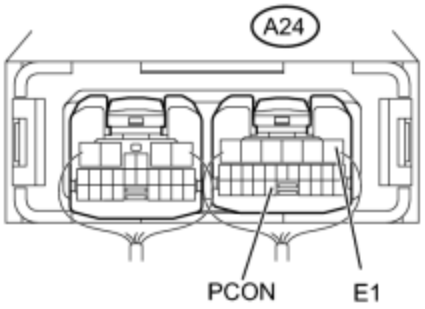
PROCEDURE

1.	CHECK TRANSMISSION CONTROL ECU ASSEMBLY

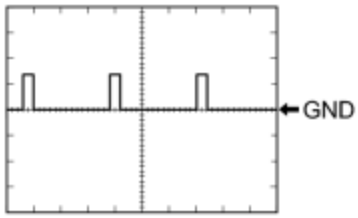
(a) Turn the power switch on (IG).

(b) Connect an oscilloscope between the transmission control ECU assembly terminals specified in the table below, and measure the

*1



*2



waveform.

Item	Contents
Symbols	PCON - E1
Tool setting	5 V/DIV., 20 msec./DIV.
Vehicle condition	Power switch on (IG)

OK:

The waveform appears as shown in the illustration.

Text in Illustration

*1	Component with harness connected (Transmission Control ECU Assembly)
*2	Waveform

HINT:

Perform this inspection with the connector connected.

(c) Turn the power switch off.

NG ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU - POWER MANAGEMENT CONTROL ECU)

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU - POWER MANAGEMENT CONTROL ECU)

(a) Disconnect the A24 transmission control ECU assembly connector.

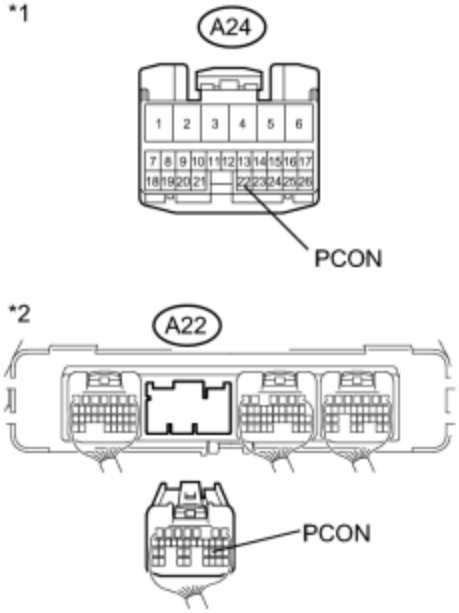
(b) Disconnect the A22 power management control ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A24-22 (PCON) - A22-22 (PCON)	Power switch off	Below 1 Ω

Standard Resistance (Check for Short):



Tester Connection	Switch Condition	Specified Condition
A24-22 (PCON) or A22-22 (PCON) - Body ground and other terminals	Power switch off	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Rear view of wire harness connector (to Power Management Control ECU)

(d) Connect the power management control ECU connector.

(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE POWER MANAGEMENT CONTROL ECU**

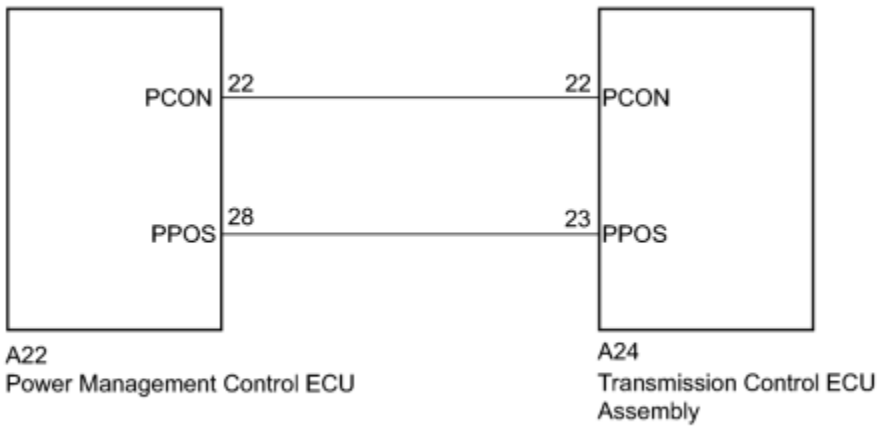
DTC	C2315	HV System

DESCRIPTION

The transmission control ECU receives a P position switch signal from the power management control ECU (HV CPU) and activates the parking lock motor by controlling current, causing the parking lock mechanism to switch. When the power management control ECU (HV CPU) detects a malfunction with the P position switch or P position signal, it sends an information signal to the transmission control ECU. After receiving this signal, the transmission control ECU outputs this DTC.

DTC No.	DTC Detection Condition	Trouble Area
C2315	With the power switch on (IG) (IG circuit malfunction is not detected), a malfunction signal is received from the power management control ECU for 2 second or more.	Power management control ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK DTC OUTPUT (HV)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Enter the following menus: Powertrain / Hybrid Control / Trouble Codes.

(d) Check if DTCs are output.

Result

Result	Proceed to
Any of the following DTCs are not output.	A
Any of the following DTCs are output.	B

DTC No.	Relevant Diagnosis
P0851-579	Park/Neutral Switch Input Circuit Low
P0852-580	Park/Neutral Switch Input Circuit High
P085D-599	Gear Shift Control Module "A" Performance
P0861-597	Gear Shift Control Module "A" Communication Circuit Low
P0862-598	Gear Shift Control Module "A" Communication Circuit High
U1107-436	Lost Communication with Power Management Module

(e) Turn the power switch off.

B GO TO DTC CHART

A **REPLACE POWER MANAGEMENT CONTROL ECU**

DTC	U0146	Lost Communication with Body ECU

DESCRIPTION

The transmission control ECU receives signals from the main body ECU via CAN communication. When a lost CAN communication malfunction is detected, the transmission control ECU stores this DTC.

DTC No.	DTC Detection Condition	Trouble Area
U0146	With the power switch on (IG), a signal cannot be received from the main body ECU for 10 seconds or more.	CAN communication system

INSPECTION PROCEDURE

PROCEDURE

1.	GO TO CAN COMMUNICATION SYSTEM

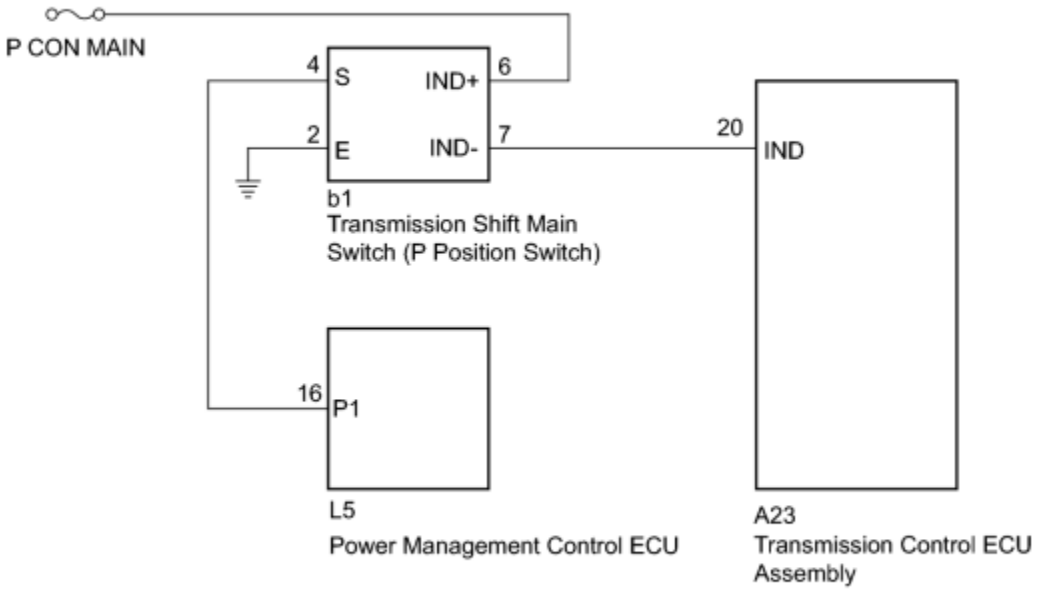
(a) Troubleshoot the CAN communication system INFO.

NEXT **END**

DESCRIPTION

The indicator light comes on when the P position switch is pressed (the P position is engaged), goes off when the switch is released (the P position is disengaged) and blinks when a system malfunction occurs.

WIRING DIAGRAM



H

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK TRANSMISSION SHIFT MAIN SWITCH (INDICATOR LIGHT)

(a) Turn the power switch on (IG).

(b) Depress the brake pedal and move the selector lever to N.

(c) Inspect the indicator light condition by operating the transmission shift main switch (P position switch).

Result

Condition of Indicator Light	Proceed to
Indicator light does not go off. (Remains on)	A
Indicator light does not come on.	B

(d) Turn the power switch off.

B ▶ CHECK HARNESS AND CONNECTOR (TRANSMISSION SHIFT MAIN SWITCH POWER SOURCE CIRCUIT)

A

▼

2.	CHECK TRANSMISSION SHIFT MAIN SWITCH (INDICATOR LIGHT)

(a) Disconnect the A23 transmission control ECU assembly.

(b) Turn the power switch on (IG).

(c) Inspect the indicator light condition by operating the transmission shift main switch (P position switch).

Result

Condition of Indicator Light	Proceed to
Comes on	A
Does not come on	B

NOTICE:

Turning the power switch on (IG) with the transmission control ECU assembly connector disconnected causes other DTCs to be stored. Clear the DTCs after performing this inspection.

(d) Turn the power switch off.

(e) Connect the transmission control ECU assembly connector.

B ▶ REPLACE TRANSMISSION CONTROL ECU ASSEMBLY

A

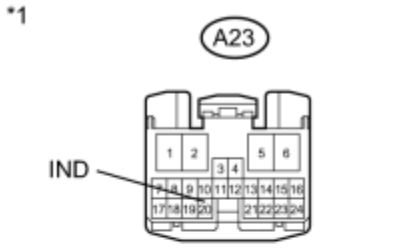
▼

3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU - TRANSMISSION SHIFT MAIN SWITCH)

(a) Disconnect the A23 transmission control ECU assembly connector.

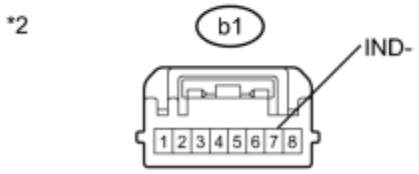
(b) Disconnect the b1 transmission shift main switch (P position switch) connector.

(c) Measure the resistance according to the value(s) in the table below.



Standard Resistance (Check for Short):

Tester Connection	Switch Condition	Specified Condition
A23-20 (IND) or b1-7 (IND-) - Body ground and other terminals	Power switch off	10 kΩ or higher



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Transmission Shift Main Switch (P Position Switch))

(d) Connect the transmission shift main switch (P position switch) connector.

(e) Connect the transmission control ECU assembly connector.

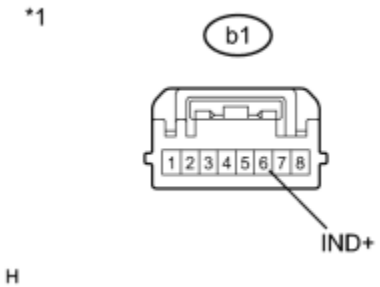
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE TRANSMISSION SHIFT MAIN SWITCH**

4.	CHECK HARNESS AND CONNECTOR (TRANSMISSION SHIFT MAIN SWITCH POWER SOURCE CIRCUIT)

(a) Disconnect the b1 transmission shift main switch (P position switch) connector.

(b) Measure the voltage according to the value(s) in the table below.



Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
b1-6 (IND+) - Body ground	Power switch off	9 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Transmission Shift Main Switch (P Position Switch))

(c) Connect the transmission shift main switch (P position switch) connector.

NG CHECK AND REPAIR POWER SOURCE CIRCUIT

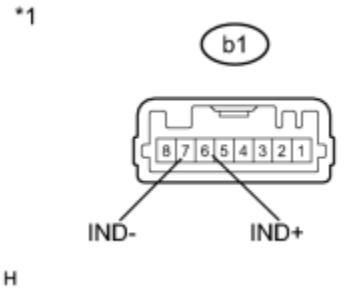
OK

5.	INSPECT TRANSMISSION SHIFT MAIN SWITCH

(a) Disconnect the b1 transmission shift main switch (P position switch) connector.

(b) Apply auxiliary battery voltage between terminals b1-6 (IND+) and b1-7 (IND-) and check the indicator light.

Result:



Condition	Specified Condition
Auxiliary battery voltage applied between terminals b1-6 (IND+) and b1-7 (IND-)	Comes on

Text in Illustration

*1	Component without harness connected (Transmission Shift Main Switch (P Position Switch))

(c) Connect the transmission shift main switch (P position switch) connector.

NG REPLACE TRANSMISSION SHIFT MAIN SWITCH

OK

6.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL ECU - TRANSMISSION SHIFT MAIN SWITCH)

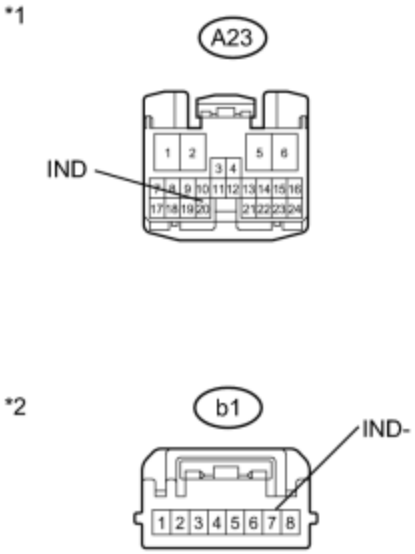
(a) Disconnect the A23 transmission control ECU assembly connector.

(b) Disconnect the b1 transmission shift main switch (P position switch) connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Switch Condition	Specified Condition
A23-20 (IND) - b1-7 (IND-)	Power switch off	Below 1 Ω



Text in Illustration

*1	Front view of wire harness connector (to Transmission Control ECU Assembly)
*2	Front view of wire harness connector (to Transmission Shift Main Switch (P Position Switch))

(d) Connect the transmission shift main switch (P position switch) connector.

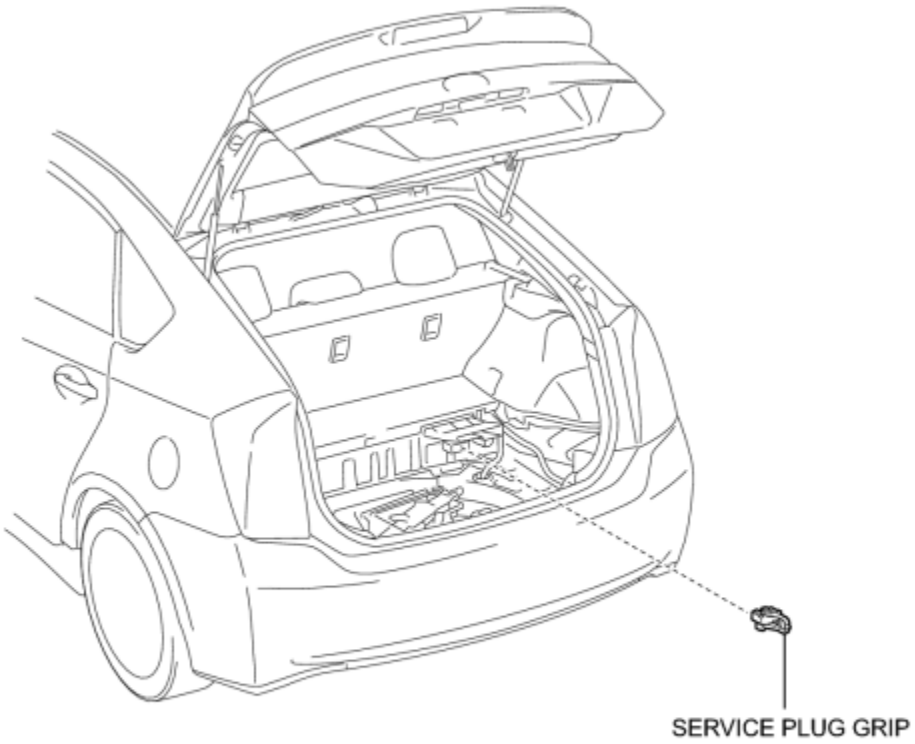
(e) Connect the transmission control ECU assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE TRANSMISSION CONTROL ECU ASSEMBLY**

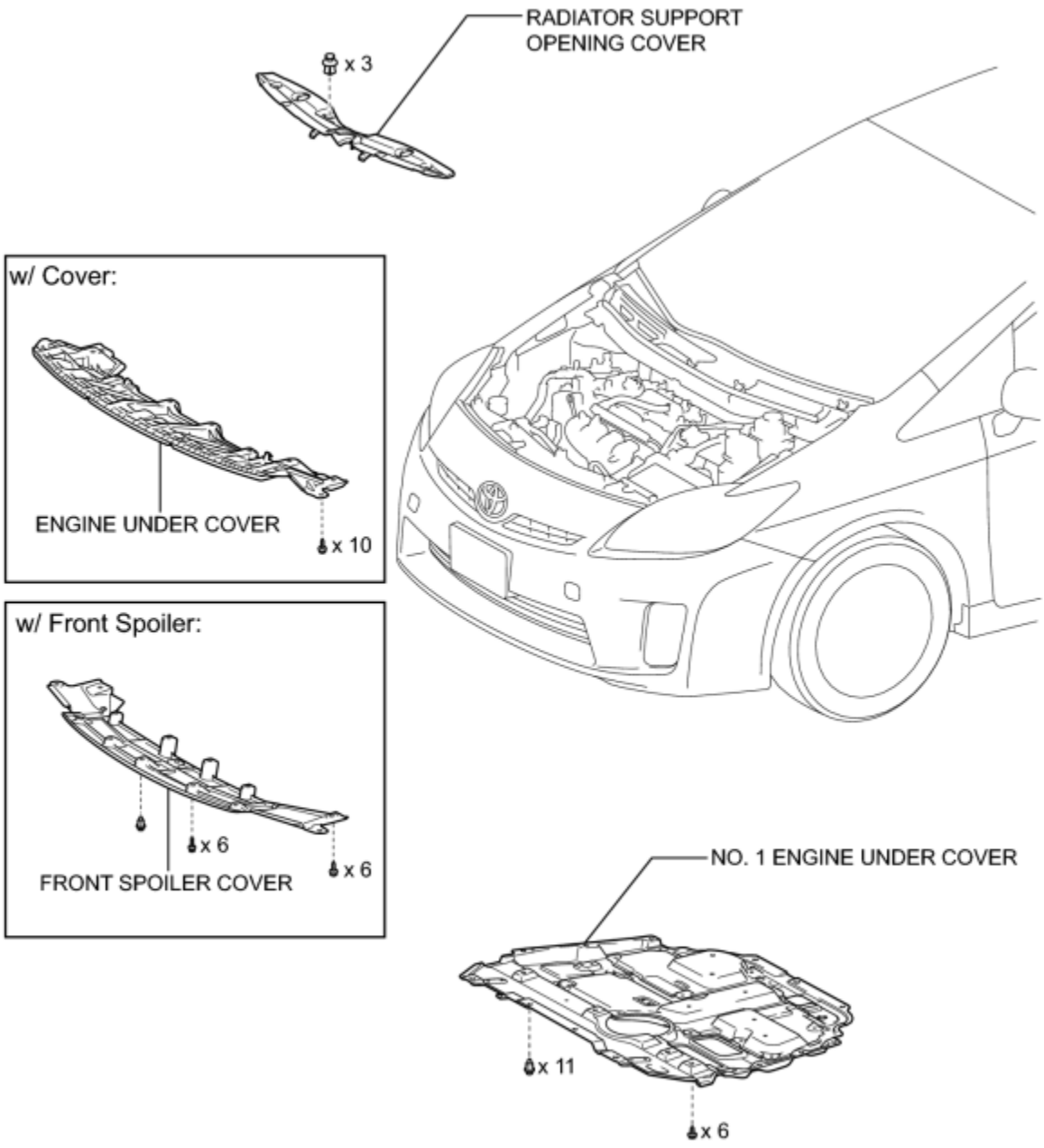
COMPONENTS

ILLUSTRATION



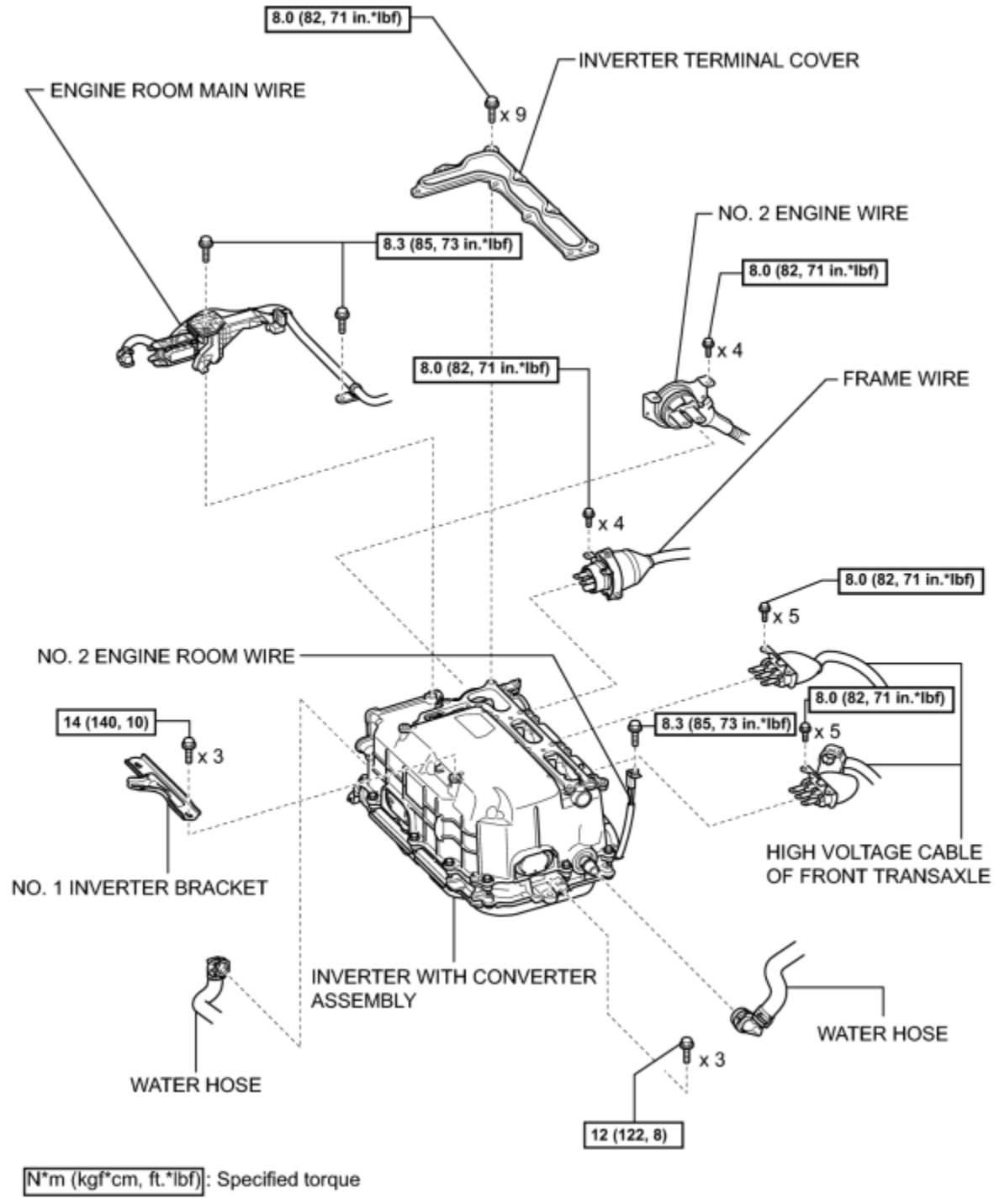
P

ILLUSTRATION



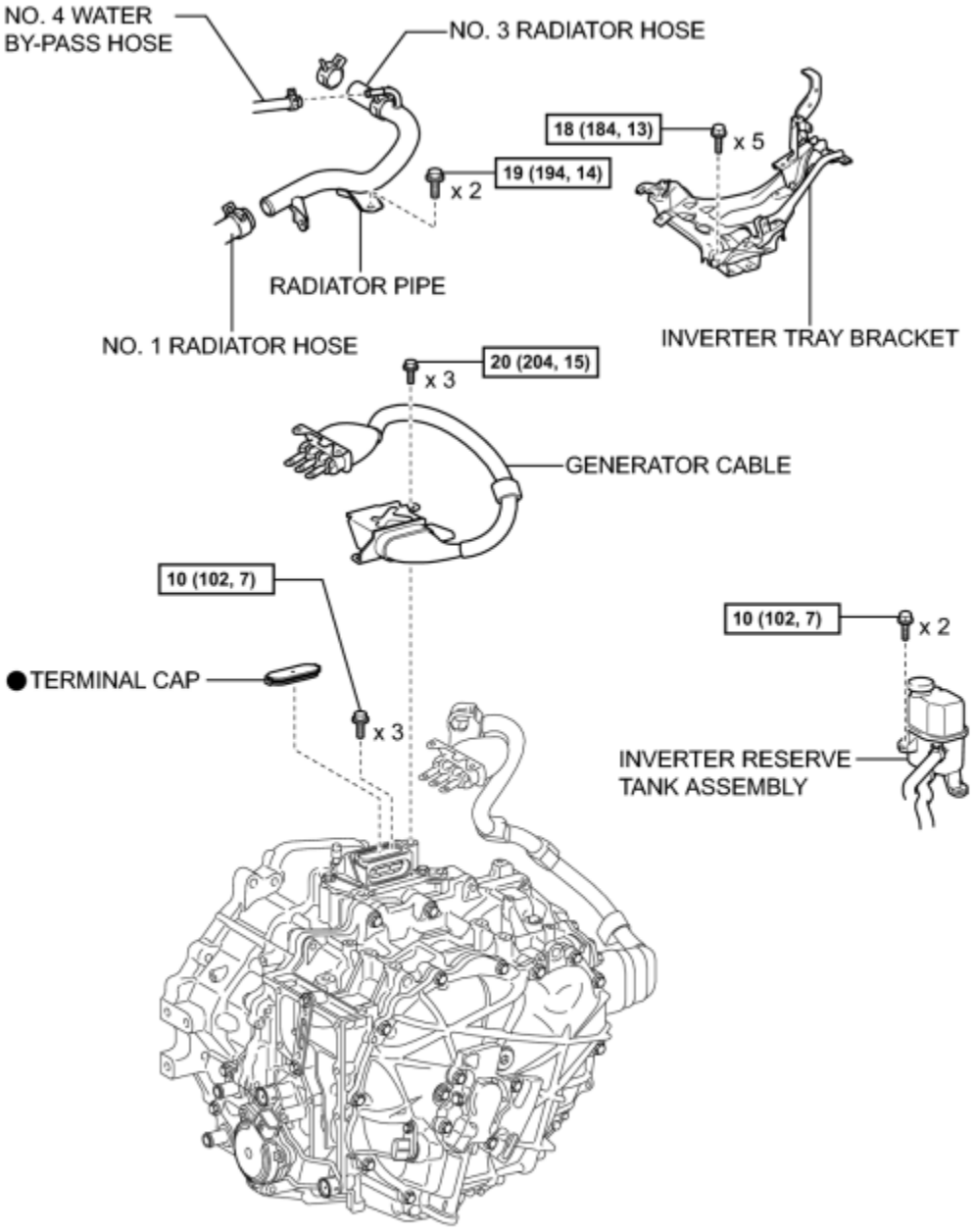
c

ILLUSTRATION



c

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

● Non-reusable part

c

REMOVAL

1. PRECAUTION

HINT: INFO

2. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

3. REMOVE REAR DECK FLOOR BOX INFO

4. REMOVE REAR NO. 3 FLOOR BOARD INFO

5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

6. REMOVE SERVICE PLUG GRIP INFO

7. REMOVE FRONT SPOILER COVER (w/ Front Spoiler)

8. REMOVE ENGINE UNDER COVER (w/ Cover)

9. REMOVE NO. 1 ENGINE UNDER COVER

10. DRAIN COOLANT (for Engine) INFO

11. DRAIN COOLANT (for Inverter) INFO

12. REMOVE RADIATOR SUPPORT OPENING COVER INFO

13. REMOVE NO. 1 INVERTER BRACKET INFO

14. DISCONNECT ENGINE ROOM MAIN WIRE INFO

15. REMOVE INVERTER TERMINAL COVER INFO

16. CHECK TERMINAL VOLTAGE INFO

17. DISCONNECT FRAME WIRE INFO

18. DISCONNECT HIGH VOLTAGE CABLE OF FRONT TRANSAXLE INFO

19. DISCONNECT NO. 2 ENGINE WIRE INFO

20. INSTALL INVERTER TERMINAL COVER INFO

21. DISCONNECT NO. 2 ENGINE ROOM WIRE INFO

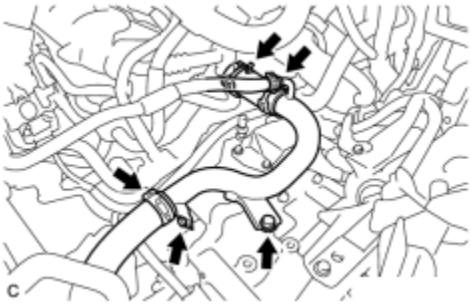
22. DISCONNECT WATER HOSE INFO

23. REMOVE INVERTER WITH CONVERTER ASSEMBLY INFO

24. REMOVE INVERTER RESERVE TANK ASSEMBLY INFO

25. REMOVE INVERTER TRAY BRACKET INFO

26. REMOVE RADIATOR PIPE



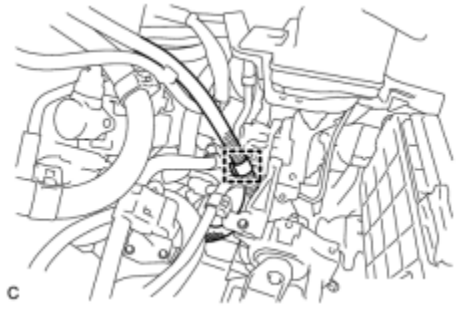
(a) Disconnect the clamps, No. 1 radiator hose, No. 4 water by-pass hose and No. 3 radiator hose.

(b) Remove the 2 bolts and radiator pipe.

27. REMOVE GENERATOR CABLE

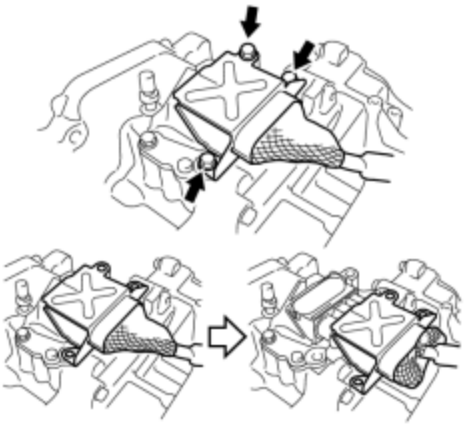
NOTICE:

Wear insulated gloves.

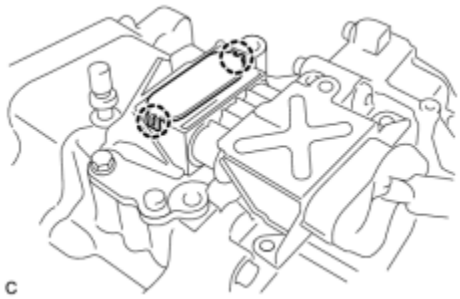


(a) Disconnect the generator cable clamp from the motor cable bracket.

(b) Remove the 3 bolts and slide the generator cable connector shell back.

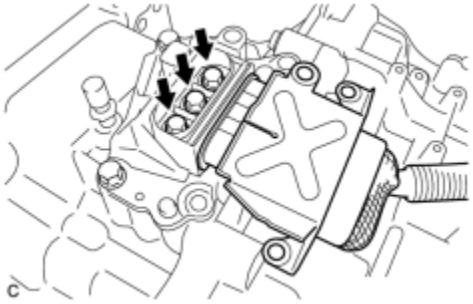


c



c

(c) Disengage the 2 claws to remove the terminal cap.



c

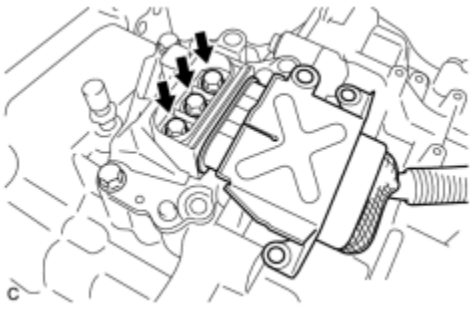
(d) Remove the 3 bolts and generator cable from the hybrid transaxle assembly.

INSTALLATION

1. INSTALL GENERATOR CABLE

NOTICE:

Wear insulated gloves.

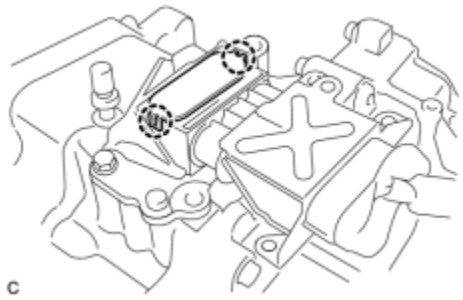


(a) Install the generator cable to the hybrid transaxle assembly with the 3 bolts.

Torque: **10 N·m (102 kgf·cm, 7ft·lbf)**

NOTICE:

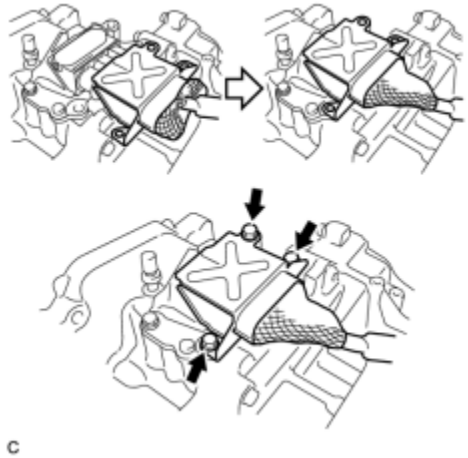
Keep the sealing surface of the generator cable and the connector terminal joint free of foreign matter.



(b) Engage the 2 claws to install a new terminal cap.

NOTICE:

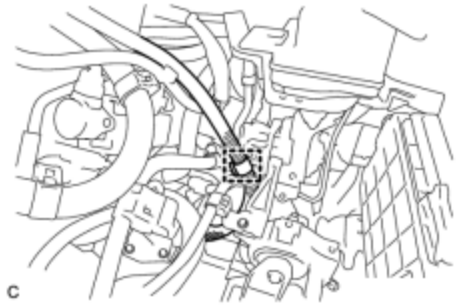
When installing the terminal cap to the generator cable terminal block, keep the sealing surface free of foreign matter.



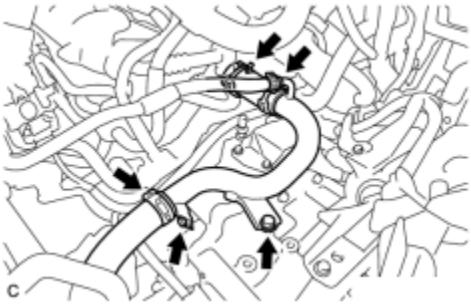
(c) Place the generator cable connector shell in position and install it with the 3 bolts.

Torque: **20 N·m (204 kgf·cm, 15ft·lbf)**

(d) Connect the generator cable clamp to the motor cable bracket.



2. INSTALL RADIATOR PIPE



(a) Install the radiator pipe with the 2 bolts.

Torque: **19 N·m (194 kgf·cm, 14ft·lbf)**

(b) Connect the No. 3 radiator hose, No. 4 water by-pass hose and No. 1 radiator hose with the clamps.

3. INSTALL INVERTER TRAY BRACKET INFO

4. INSTALL INVERTER RESERVE TANK ASSEMBLY INFO

5. INSTALL INVERTER WITH CONVERTER ASSEMBLY INFO

6. CONNECT WATER HOSE INFO

7. CONNECT NO. 2 ENGINE ROOM WIRE INFO

8. REMOVE INVERTER TERMINAL COVER INFO

9. CONNECT NO. 2 ENGINE WIRE INFO

10. CONNECT HIGH VOLTAGE CABLE OF FRONT TRANSAXLE INFO

11. CONNECT FRAME WIRE INFO

12. CHECK HIGH VOLTAGE CABLE CONNECTION INFO

13. INSTALL INVERTER TERMINAL COVER INFO

14. INSTALL ENGINE ROOM MAIN WIRE INFO

15. INSTALL NO. 1 INVERTER BRACKET INFO

16. INSTALL SERVICE PLUG GRIP INFO

17. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

18. INSTALL REAR NO. 3 FLOOR BOARD INFO

19. INSTALL REAR DECK FLOOR BOX INFO

20. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

21. ADD COOLANT (for Inverter) INFO

22. ADD COOLANT (for Engine) INFO

23. INSPECT FOR COOLANT LEAK (for Inverter) INFO

24. INSPECT FOR COOLANT LEAK (for Engine) INFO

25. INSTALL NO. 1 ENGINE UNDER COVER

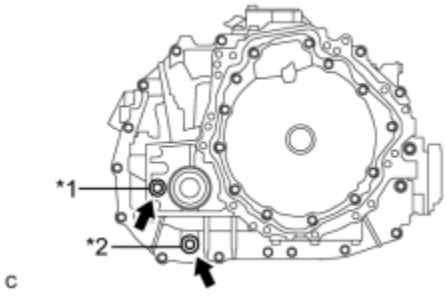
26. INSTALL FRONT SPOILER COVER (w/ Front Spoiler)

27. INSTALL ENGINE UNDER COVER (w/ Cover)

28. INSTALL RADIATOR SUPPORT OPENING COVER INFO

REPLACEMENT

1. DRAIN HYBRID TRANSAXLE FLUID



(a) Using a 10 mm hexagon socket wrench, remove the filler plug and gasket.

Text in Illustration

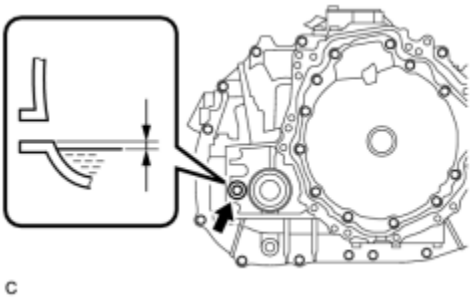
*1	Filler Plug
*2	Drain Plug

(b) Using a 10 mm hexagon socket wrench, remove the drain plug and gasket.

(c) Using a 10 mm hexagon socket wrench, install the drain plug, and a new gasket.

Torque: **39 N·m (398 kgf·cm, 29ft·lbf)**

2. ADD HYBRID TRANSAXLE FLUID



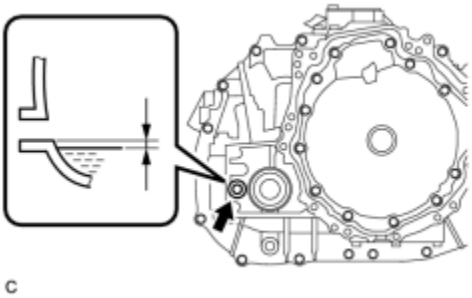
(a) Add transaxle fluid until the fluid level is between 0 to 10 mm (0 to 0.394 in.) from the bottom lip of the filler plug opening.

- Stop the vehicle on a flat road.
- Recheck the transaxle fluid level after driving when exchanging fluid.
- Insufficient or excessive amounts of transaxle fluid may be the cause of some trouble.

Reference:

3.3 liters (3.5 US qts, 2.9 lmp.qts)

3. INSPECT HYBRID TRANSAXLE FLUID



(a) Check that the fluid level is between 0 to 10 mm (0 to 0.394 in.) from the lowest position of the inner surface of the transaxle filler plug opening.

- Stop the vehicle on a flat road.
- Recheck the transaxle fluid level after driving when exchanging fluid.
- Insufficient or excessive amounts of transaxle fluid may be the cause of some trouble.

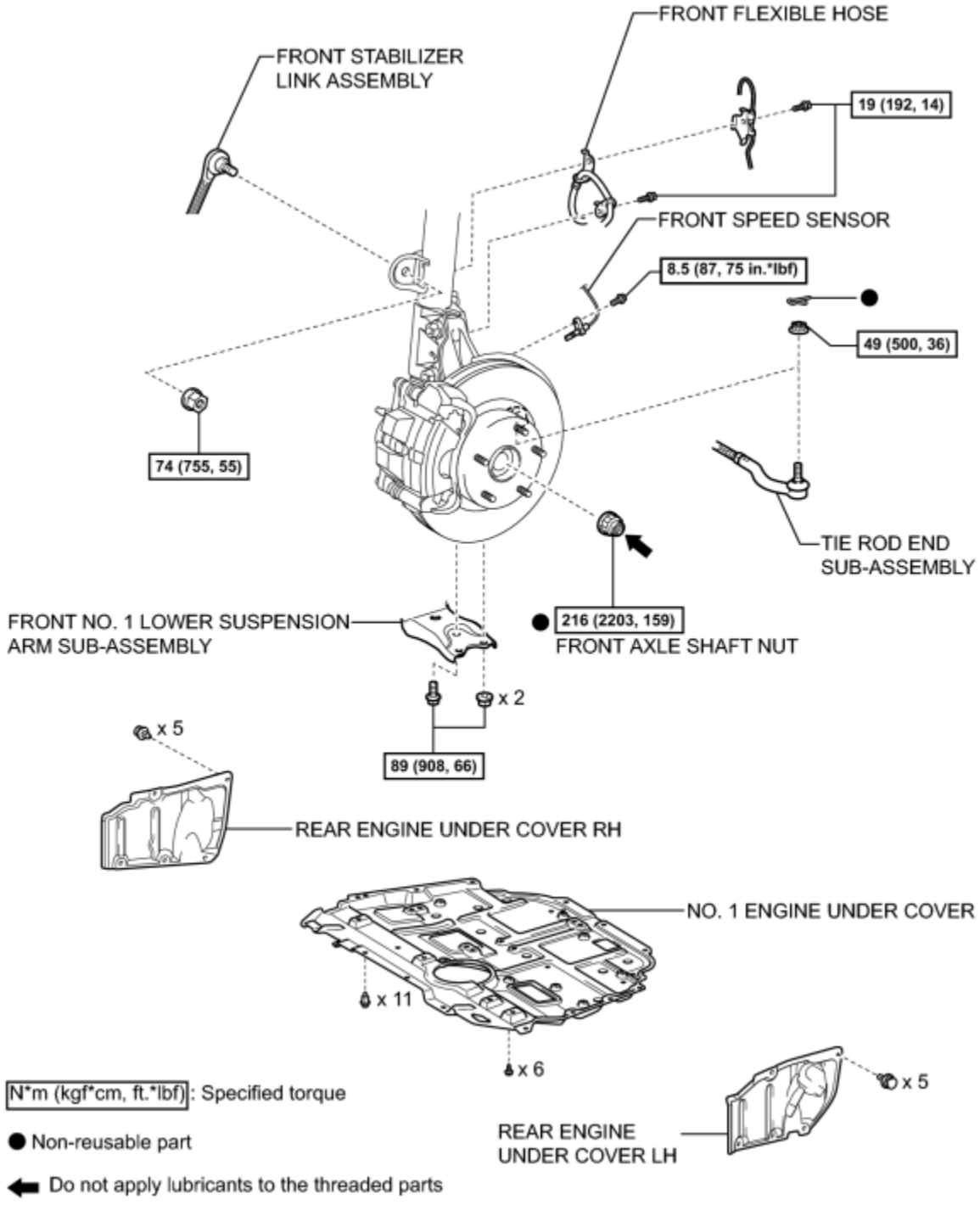
(b) Check for leaks if the quantity of transaxle fluid is low.

(c) Using a 10 mm hexagon socket wrench, install the filler plug with a new gasket.

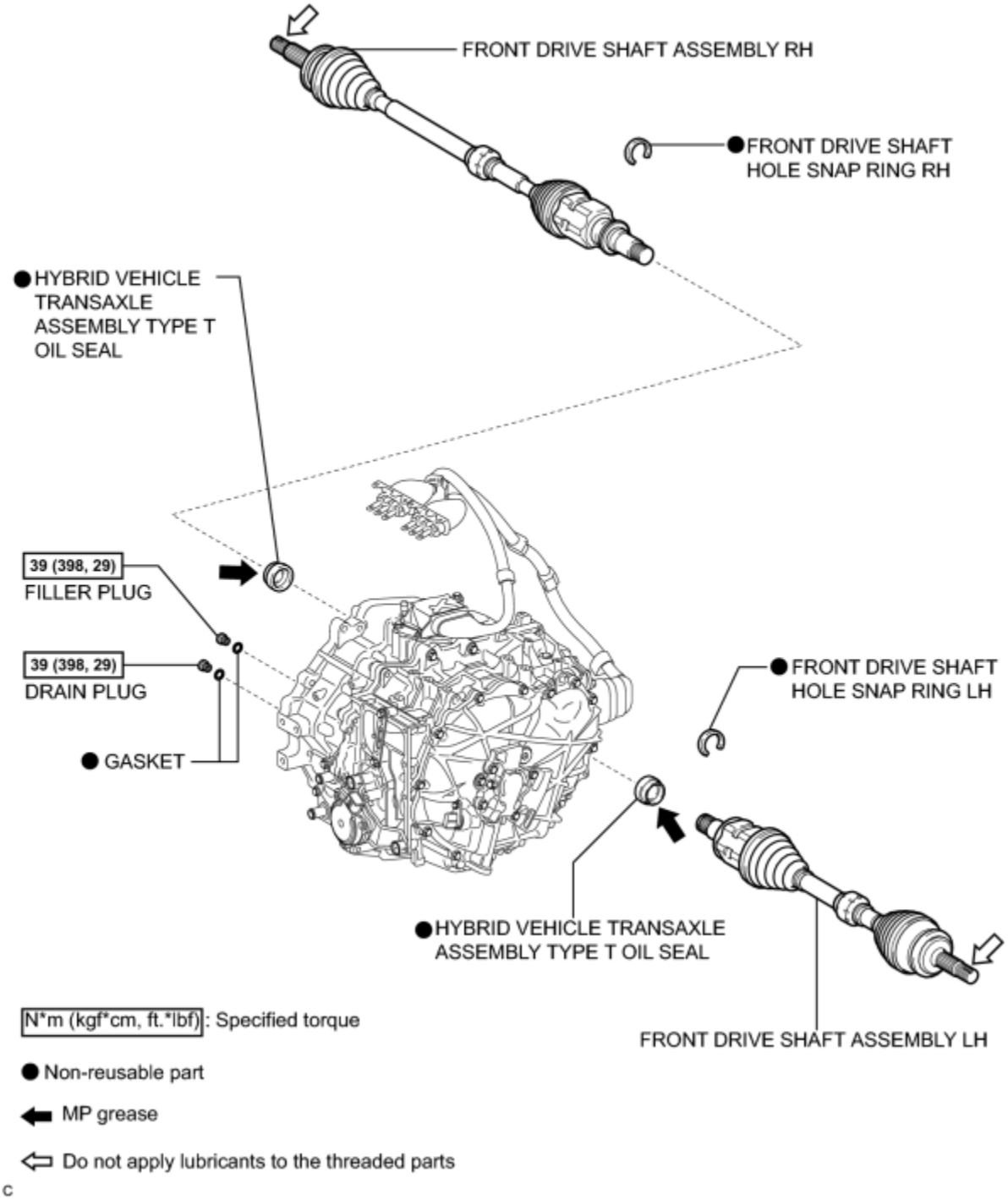
Torque: **39 N·m (398 kgf·cm, 29ft·lbf)**

COMPONENTS

ILLUSTRATION



ILLUSTRATION


FRONT DRIVE SHAFT ASSEMBLY RH
FRONT DRIVE SHAFT HOLE SNAP RING RH
HYBRID VEHICLE TRANSAXLE ASSEMBLY TYPE T OIL SEAL
39 (398, 29)
FILLER PLUG
39 (398, 29)
DRAIN PLUG
GASKET
FRONT DRIVE SHAFT HOLE SNAP RING LH
HYBRID VEHICLE TRANSAXLE ASSEMBLY TYPE T OIL SEAL
FRONT DRIVE SHAFT ASSEMBLY LH
N*m (kgf*cm, ft.*lbf): Specified torque
Non-reusable part
MP grease
Do not apply lubricants to the threaded parts

c

REPLACEMENT

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. REMOVE NO. 1 ENGINE UNDER COVER

3. REMOVE REAR ENGINE UNDER COVER LH

4. REMOVE REAR ENGINE UNDER COVER RH

5. DRAIN HYBRID TRANSAXLE FLUID INFO

6. REMOVE FRONT AXLE SHAFT NUT INFO

7. SEPARATE FRONT SPEED SENSOR INFO

8. SEPARATE FRONT FLEXIBLE HOSE INFO

9. SEPARATE TIE ROD END SUB-ASSEMBLY INFO

10. SEPARATE FRONT STABILIZER LINK ASSEMBLY INFO

11. SEPARATE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY INFO

12. SEPARATE FRONT DRIVE SHAFT ASSEMBLY INFO

13. REMOVE FRONT DRIVE SHAFT ASSEMBLY INFO

14. REMOVE FRONT DRIVE SHAFT HOLE SNAP RING INFO

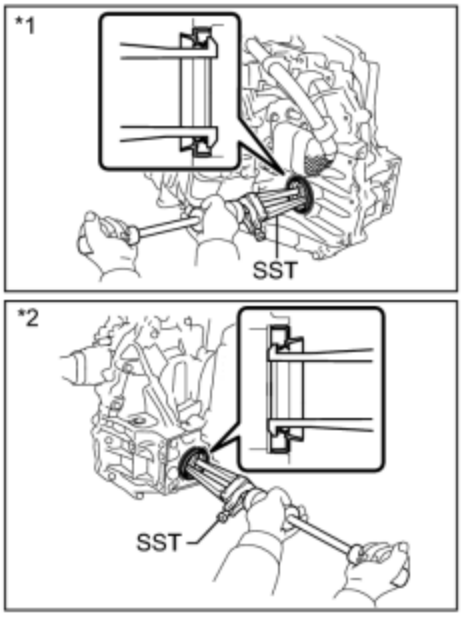
15. REMOVE HYBRID VEHICLE TRANSAXLE ASSEMBLY TYPE T OIL SEAL

(a) Using SST, tap out the 2 oil seals.

SST: 09308-00010

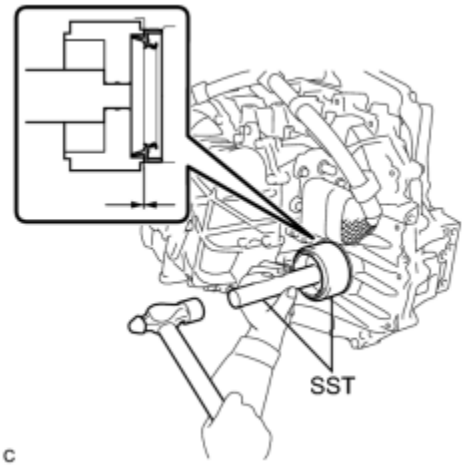
Text in Illustration

*1	LH Side
*2	RH Side



16. INSTALL HYBRID VEHICLE TRANSAXLE ASSEMBLY TYPE T OIL SEAL

(a) Install a new oil seal LH side.



(1) Using SST and a hammer, tap in a new oil seal.

SST: 09316-10010

SST: 09950-70010

09951-07150

Oil seal driven in depth:

-0.5 to 0.5 mm (-0.0197 to 0.0197 in.)

(2) Coat the lip of the oil seal with MP grease.

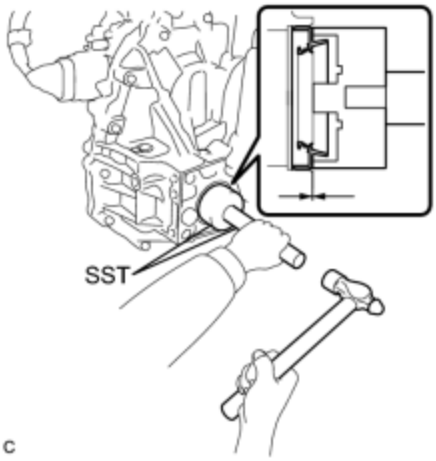
(b) Install a new oil seal RH side.

(1) Using SST and a hammer, tap in a new oil seal.

SST: 09726-36010

SST: 09950-70010

09951-07150



Oil seal driven in depth:

-0.5 to 0.5 mm (-0.0197 to 0.0197 in.)

(2) Coat the lip of the oil seal with MP grease.

17. INSTALL FRONT DRIVE SHAFT HOLE SNAP RING INFO

18. INSTALL FRONT DRIVE SHAFT ASSEMBLY INFO

19. CONNECT FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY INFO

20. CONNECT FRONT STABILIZER LINK ASSEMBLY INFO

21. CONNECT TIE ROD END SUB-ASSEMBLY INFO

22. INSTALL FRONT FLEXIBLE HOSE INFO

23. CONNECT FRONT SPEED SENSOR INFO

24. INSTALL FRONT AXLE SHAFT NUT INFO

25. ADD HYBRID TRANSAXLE FLUID INFO

26. INSPECT HYBRID TRANSAXLE FLUID INFO

27. INSTALL FRONT WHEEL INFO

28. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT: INFO

29. INSTALL REAR ENGINE UNDER COVER LH

30. INSTALL REAR ENGINE UNDER COVER RH

31. INSTALL NO. 1 ENGINE UNDER COVER

32. INSPECT SPEED SENSOR SIGNAL

HINT: 

ON-VEHICLE INSPECTION

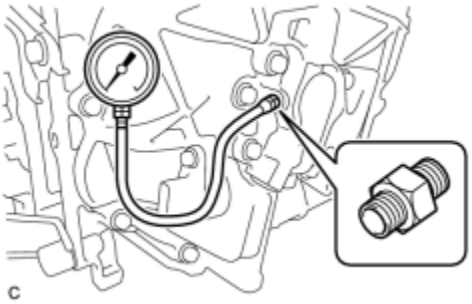
1. INSPECT TRANSAXLE FLUID PRESSURE

NOTICE:

Perform the test at normal operating transaxle fluid temperature 50 to 80°C (122 to 176°F).

(a) Lift up the vehicle.

(b) Remove the fluid pump cover plug and O-ring.



(c) Install an oil pressure gauge with the adapter.

(d) Put the engine in inspection mode INFO.

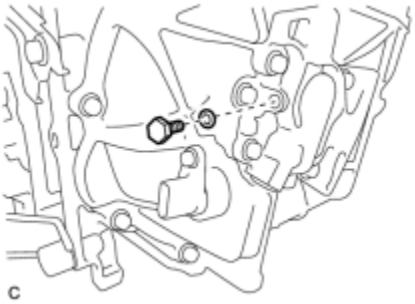
(e) Measure the transaxle fluid pressure.

Standard:

Engine Speed	Transaxle Fluid Pressure
1000 rpm	3.0 kPa (0.03 kgf/cm^2, 0.4 psi) or more

NOTICE:

Be sure to cancel inspection mode immediately after the transaxle fluid pressure check is completed.

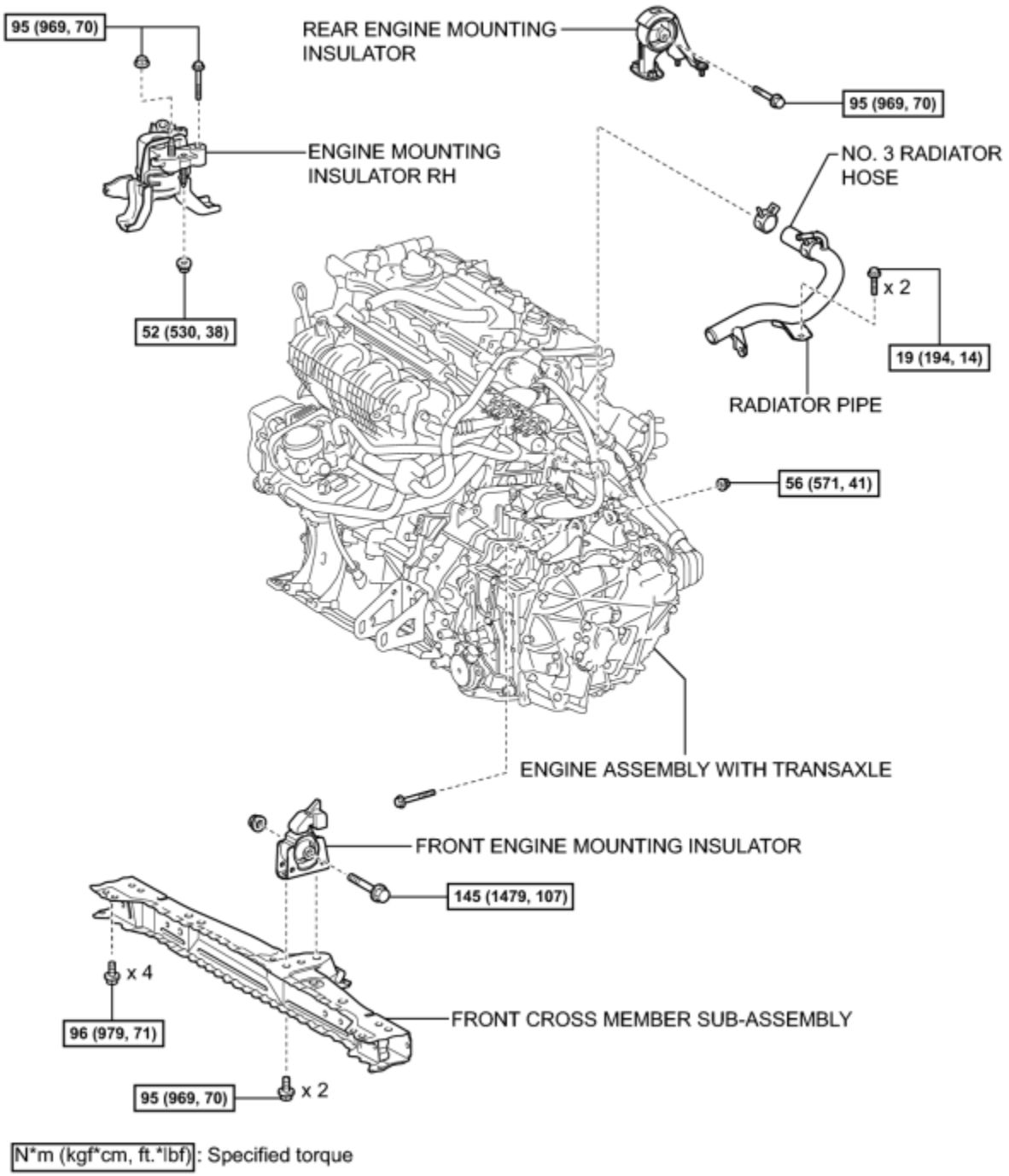


(f) Install a new O-ring and fluid pump cover plug.

Torque: **8.0 N·m (82 kgf·cm, 71in·lbf)**

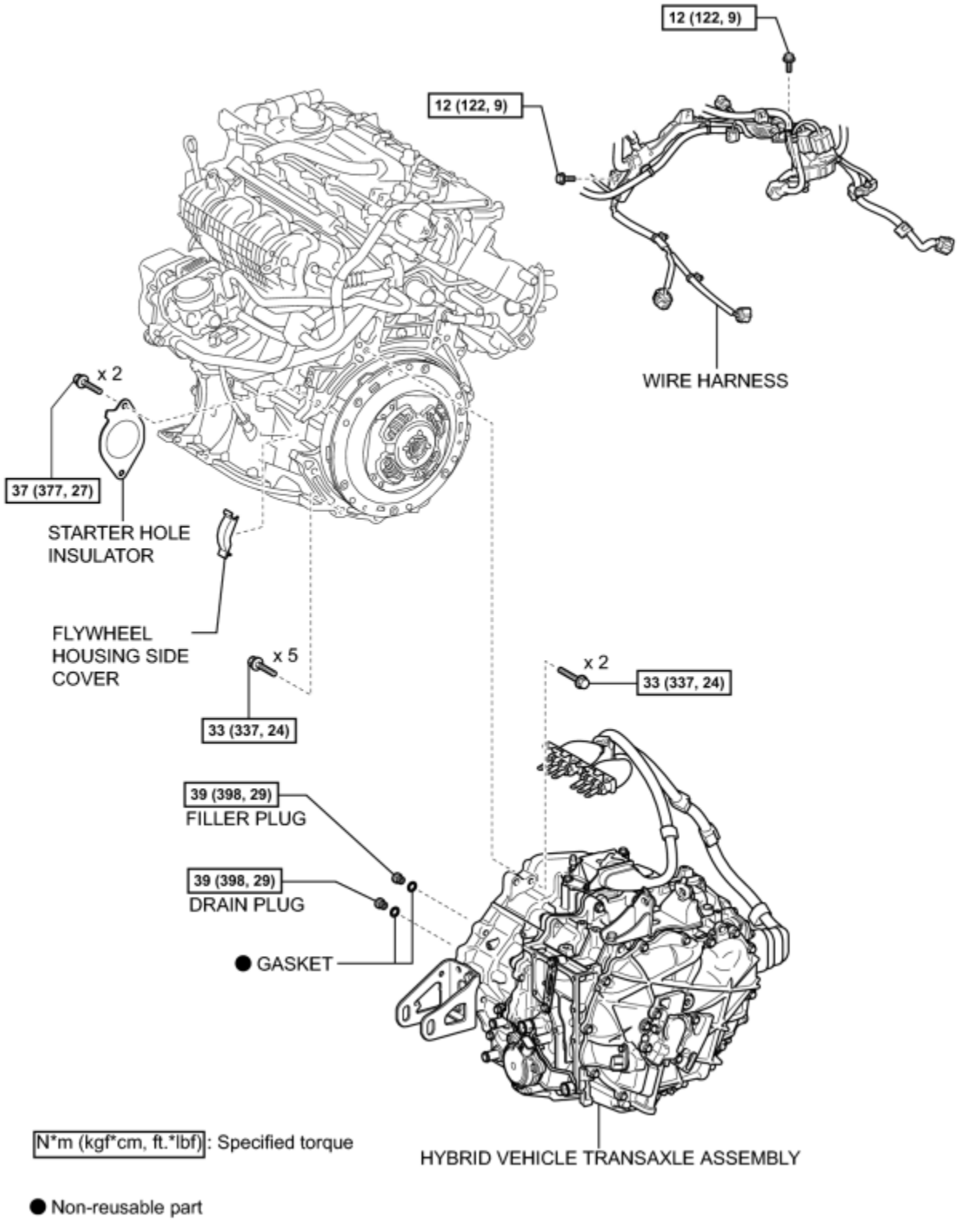
COMPONENTS

ILLUSTRATION



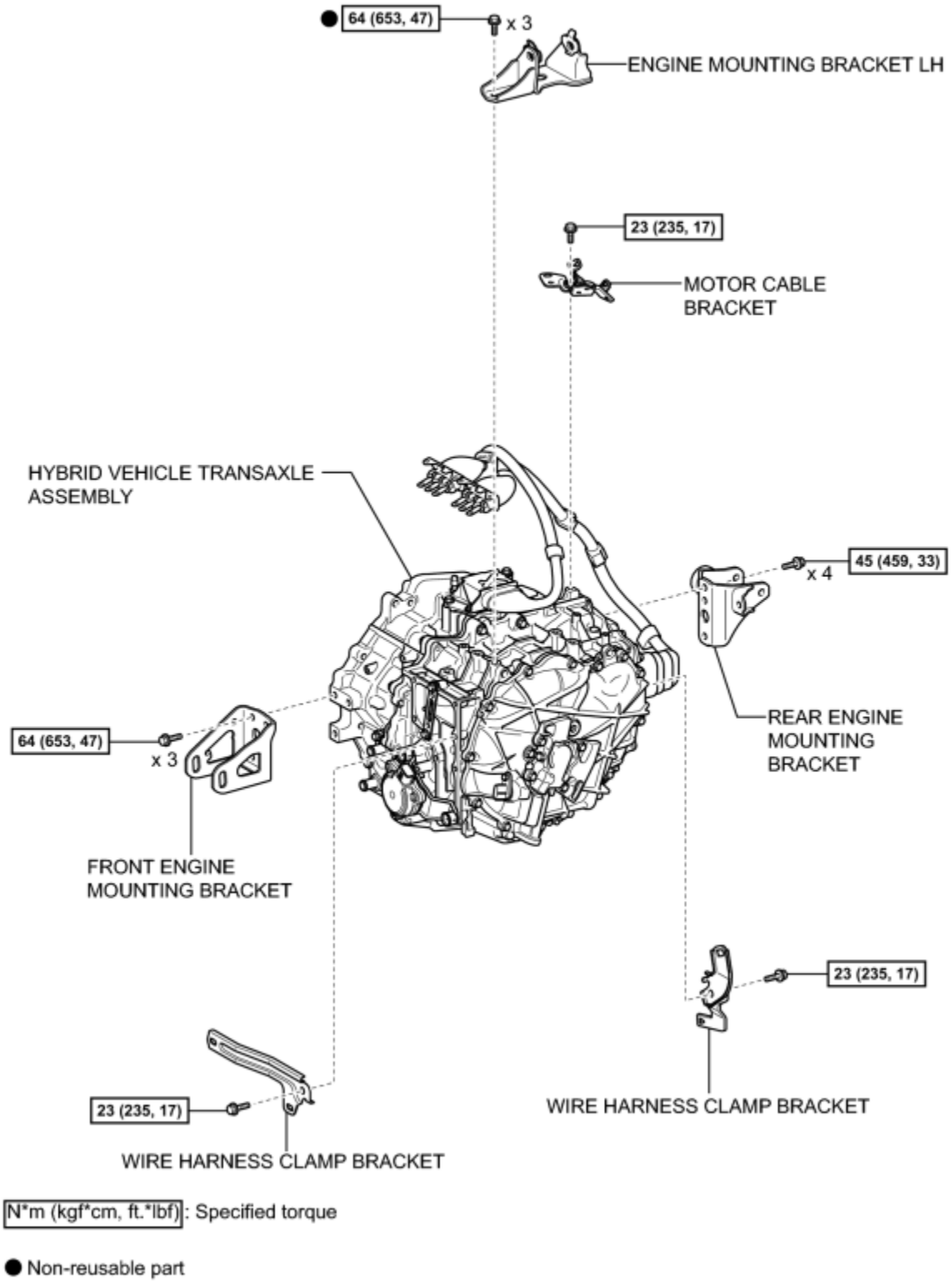
c

ILLUSTRATION



c

ILLUSTRATION


64 (653, 47)
x 3
ENGINE MOUNTING BRACKET LH
23 (235, 17)
MOTOR CABLE BRACKET
HYBRID VEHICLE TRANSAXLE ASSEMBLY
45 (459, 33)
x 4
REAR ENGINE MOUNTING BRACKET
64 (653, 47)
x 3
FRONT ENGINE MOUNTING BRACKET
23 (235, 17)
WIRE HARNESS CLAMP BRACKET
23 (235, 17)
WIRE HARNESS CLAMP BRACKET
N*m (kgf*cm, ft.*lbf): Specified torque
Non-reusable part

c

REMOVAL

1. REMOVE ENGINE ASSEMBLY WITH TRANSAXLE

HINT: INFO

2. REMOVE FRONT CROSS MEMBER SUB-ASSEMBLY INFO

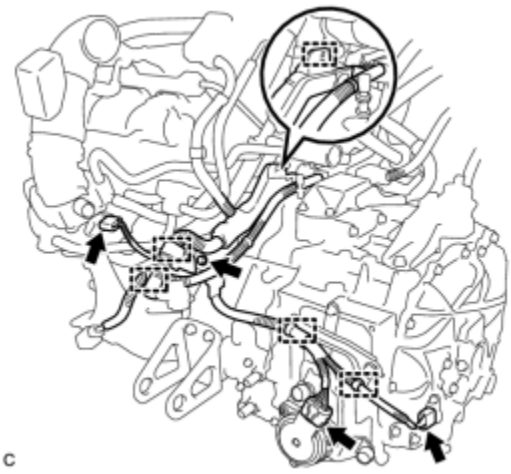
3. REMOVE FRONT ENGINE MOUNTING INSULATOR INFO

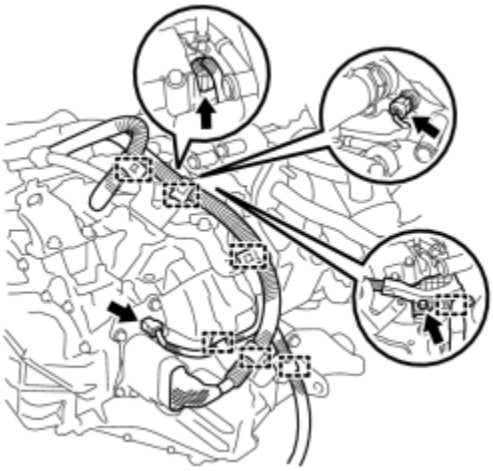
4. REMOVE REAR ENGINE MOUNTING INSULATOR INFO

5. REMOVE RADIATOR PIPE INFO

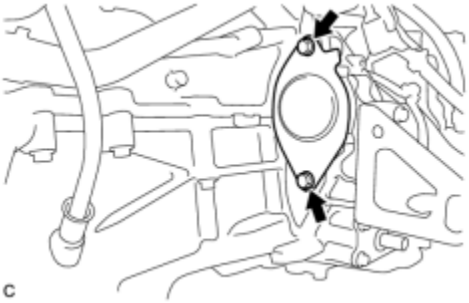
6. DISCONNECT WIRE HARNESS

(a) Remove the 2 bolts and disconnect the 6 connectors and 12 wire harness clamps.



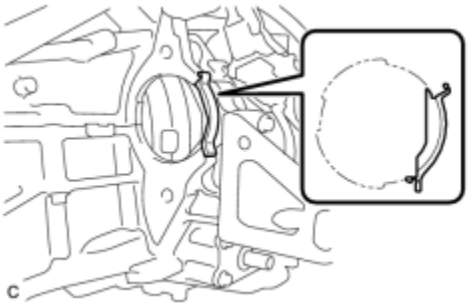


7. REMOVE STARTER HOLE INSULATOR



(a) Remove the 2 bolts and starter hole insulator.

8. REMOVE FLYWHEEL HOUSING SIDE COVER



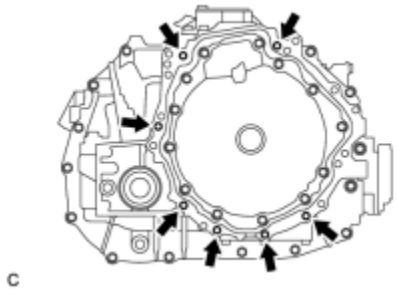
(a) Remove the flywheel housing side cover.

9. REMOVE HYBRID VEHICLE TRANSAXLE ASSEMBLY

(a) Using wood blocks or equivalent, set an engine lifter to the hybrid vehicle transaxle assembly.

NOTICE:

Using a rope, wooden blocks or equivalent, secure the hybrid vehicle transaxle assembly to the engine lifter.



(b) Remove the 7 bolts and hybrid vehicle transaxle assembly.

NOTICE:

To avoid damage to the knock pin, do not pry the connecting portion of the hybrid transaxle and the engine.

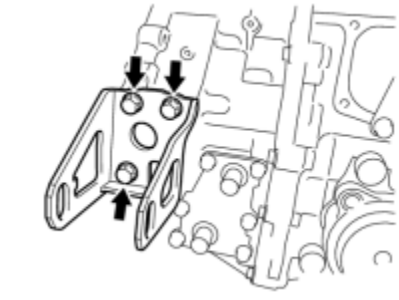
10. REMOVE WIRE HARNESS CLAMP BRACKET

(a) Remove the 2 bolts and 2 wire harness clamp brackets.

11. REMOVE MOTOR CABLE BRACKET

(a) Remove the bolt and motor cable bracket.

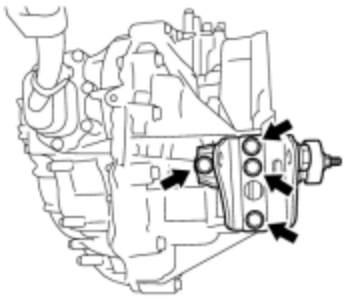
12. REMOVE FRONT ENGINE MOUNTING BRACKET



(a) Remove the 3 bolts and front engine mounting bracket.

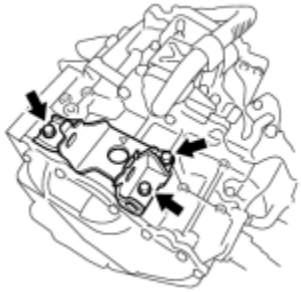
13. REMOVE REAR ENGINE MOUNTING BRACKET

(a) Remove the 4 bolts and rear engine mounting bracket.



C

14. REMOVE ENGINE MOUNTING BRACKET LH

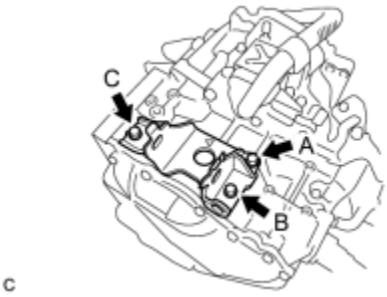


C

(a) Remove the 3 bolts and engine mounting bracket LH.

INSTALLATION

1. INSTALL ENGINE MOUNTING BRACKET LH



c

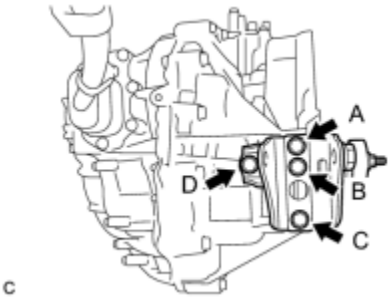
(a) Install the engine mounting bracket LH with 3 new bolts in several steps.

Torque: **64 N·m (653 kgf·cm, 47ft·lbf)**

NOTICE:

Temporarily tighten bolt A, and then fully tighten the 3 bolts in the order of B, C and A.

2. INSTALL REAR ENGINE MOUNTING BRACKET



c

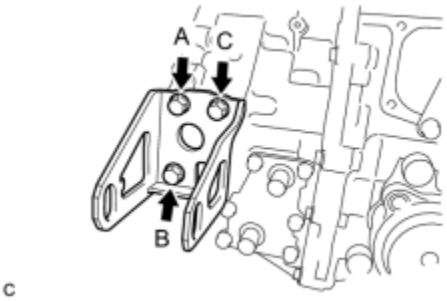
(a) Install the rear engine mounting bracket with the 4 bolts in several steps.

Torque: **45 N·m (459 kgf·cm, 33ft·lbf)**

NOTICE:

Temporarily tighten bolt A, and then fully tighten the 4 bolts in the order of C, B, D and A.

3. INSTALL FRONT ENGINE MOUNTING BRACKET



c

(a) Install the front engine mounting bracket with the 3 bolts in several steps.

Torque: **64 N·m (653 kgf·cm, 47ft·lbf)**

NOTICE:

Temporarily tighten bolt A, and then fully tighten the 3 bolts in the order of B, C and A.

4. INSTALL MOTOR CABLE BRACKET

(a) Install the motor cable bracket with the bolt.

Torque: **23 N·m (235 kgf·cm, 17ft·lbf)**

C

5. INSTALL WIRE HARNESS CLAMP BRACKET

C

(a) Install the 2 wire harness clamp brackets with the 2 bolts.

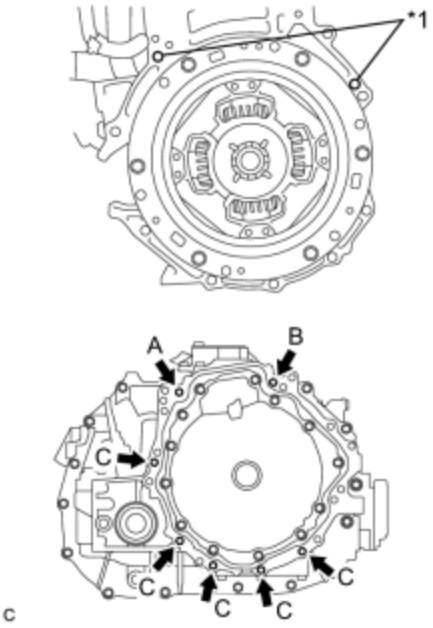
Torque: **23 N·m (235 kgf·cm, 17ft·lbf)**

6. INSTALL HYBRID VEHICLE TRANSAXLE ASSEMBLY

(a) Make sure that the knock pins are installed on the engine.

Text in Illustration

*1	Knock Pin



(b) Using an engine lifter, align the engine assembly and hybrid vehicle transaxle assembly, fit the knock pins into the knock pin holes, and tighten the 7 bolts shown in the illustration.

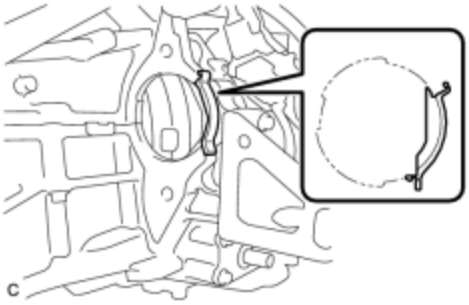
Torque: **33 N·m (337 kgf·cm, 24ft·lbf)**

NOTICE:

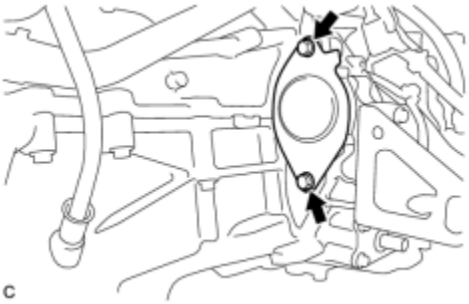
- Make sure to align the hybrid vehicle transaxle so that the input shaft of the hybrid vehicle transaxle will be inserted straight into the inner splines of the transmission input damper.
- When inserting the input shaft of the hybrid vehicle transaxle into the inner splines of the transmission input damper, do not shake the hybrid vehicle transaxle excessively.
- When mounting the hybrid vehicle transaxle to the engine, make sure to securely fit the knock pins into the knock holes.
- Push in the hybrid vehicle transaxle so that the contact surfaces of the engine and the hybrid vehicle transaxle will be are aligned evenly.
- While mounting the hybrid vehicle transaxle to the engine, temporarily tighten the bolt (A), fully tighten the bolt (B), fully tighten the bolt (A), and then fully tighten the bolts (C).
- Do not hang the hybrid vehicle transaxle off of the engine if the contact surfaces of the engine and the hybrid vehicle transaxle are not in full contact. The knock holes of the hybrid vehicle transaxle case may be deformed due to the excessive weight of the engine and hybrid vehicle transaxle, resulting in misalignment between the engine and hybrid vehicle transaxle.

7. INSTALL FLYWHEEL HOUSING SIDE COVER

(a) Install the flywheel housing side cover.



8. INSTALL STARTER HOLE INSULATOR

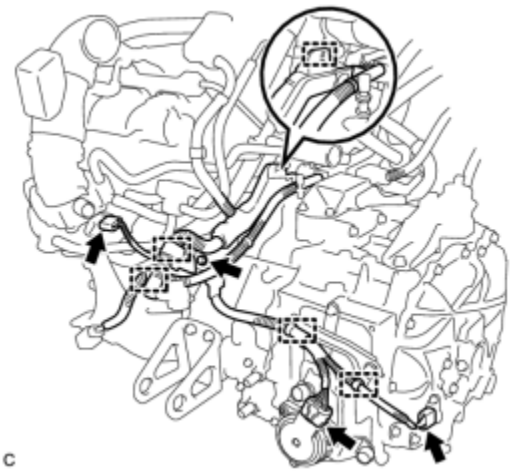


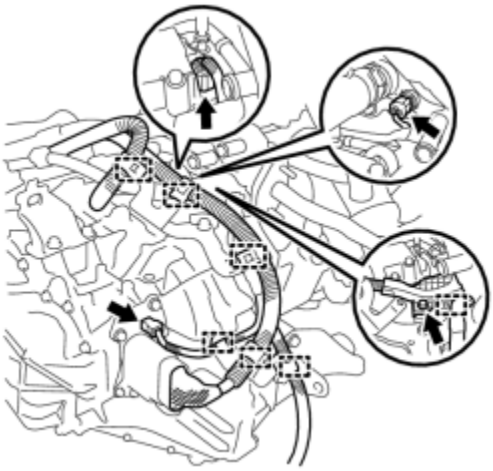
(a) Install the starter hole insulator with the 2 bolts.

Torque: **37 N·m (377 kgf·cm, 27ft·lbf)**

9. CONNECT WIRE HARNESS

(a) Connect the 12 wire harness clamps and 6 connectors and install the 2 bolts.





Torque: **12 N·m (122 kgf·cm, 9ft·lbf)**

10. INSTALL RADIATOR PIPE INFO

11. INSTALL REAR ENGINE MOUNTING INSULATOR INFO

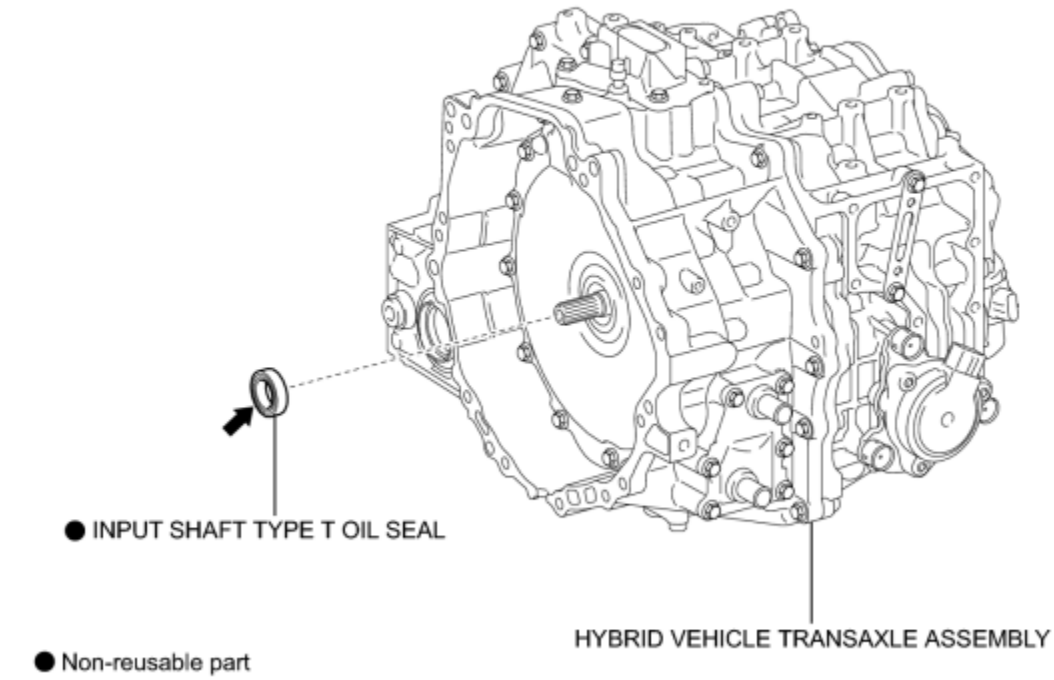
12. INSTALL FRONT ENGINE MOUNTING INSULATOR INFO

13. INSTALL ENGINE ASSEMBLY WITH TRANSAXLE

HINT: INFO

COMPONENTS

ILLUSTRATION



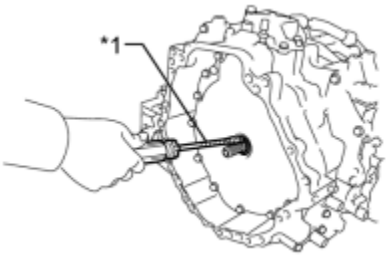
c

REPLACEMENT

1. REMOVE HYBRID VEHICLE TRANSAXLE ASSEMBLY

HINT: INFO

2. REMOVE INPUT SHAFT TYPE T OIL SEAL

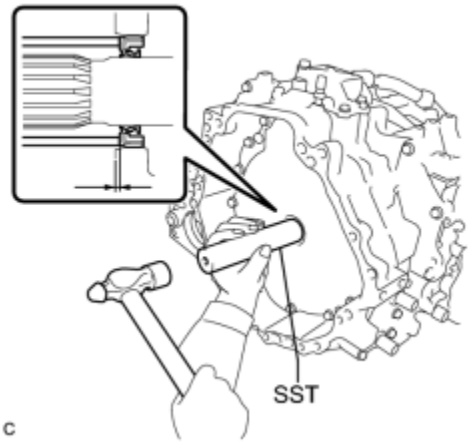


(a) Using a screwdriver with the tip taped, remove the oil seal.

Text in Illustration

*1	Vinyl Tape

3. INSTALL INPUT SHAFT TYPE T OIL SEAL



(a) Coat a lip of a new oil seal with MP grease.

(b) Using SST and a hammer, tap in the oil seal.

SST: 09330-50010

Oil seal driven in depth:

1.0 to 1.8 mm (0.0394 to 0.0709 in.)

NOTICE:

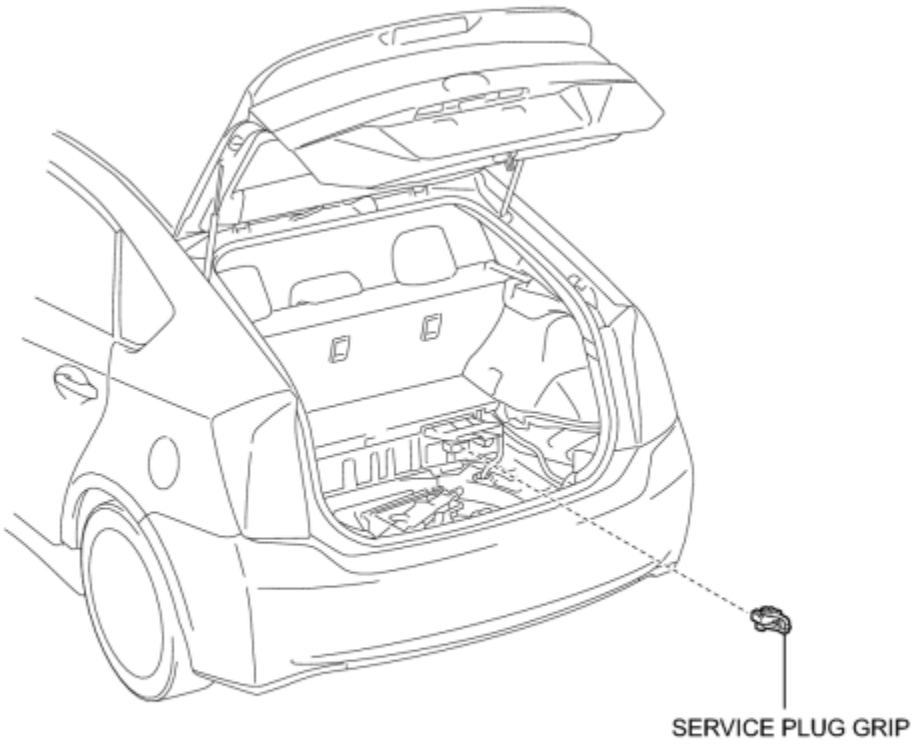
- Ensure that no foreign matter adhere to the oil seal lip.
- Ensure that the oil seal is not at an angle.

4. INSTALL HYBRID VEHICLE TRANSAXLE ASSEMBLY

HINT: 

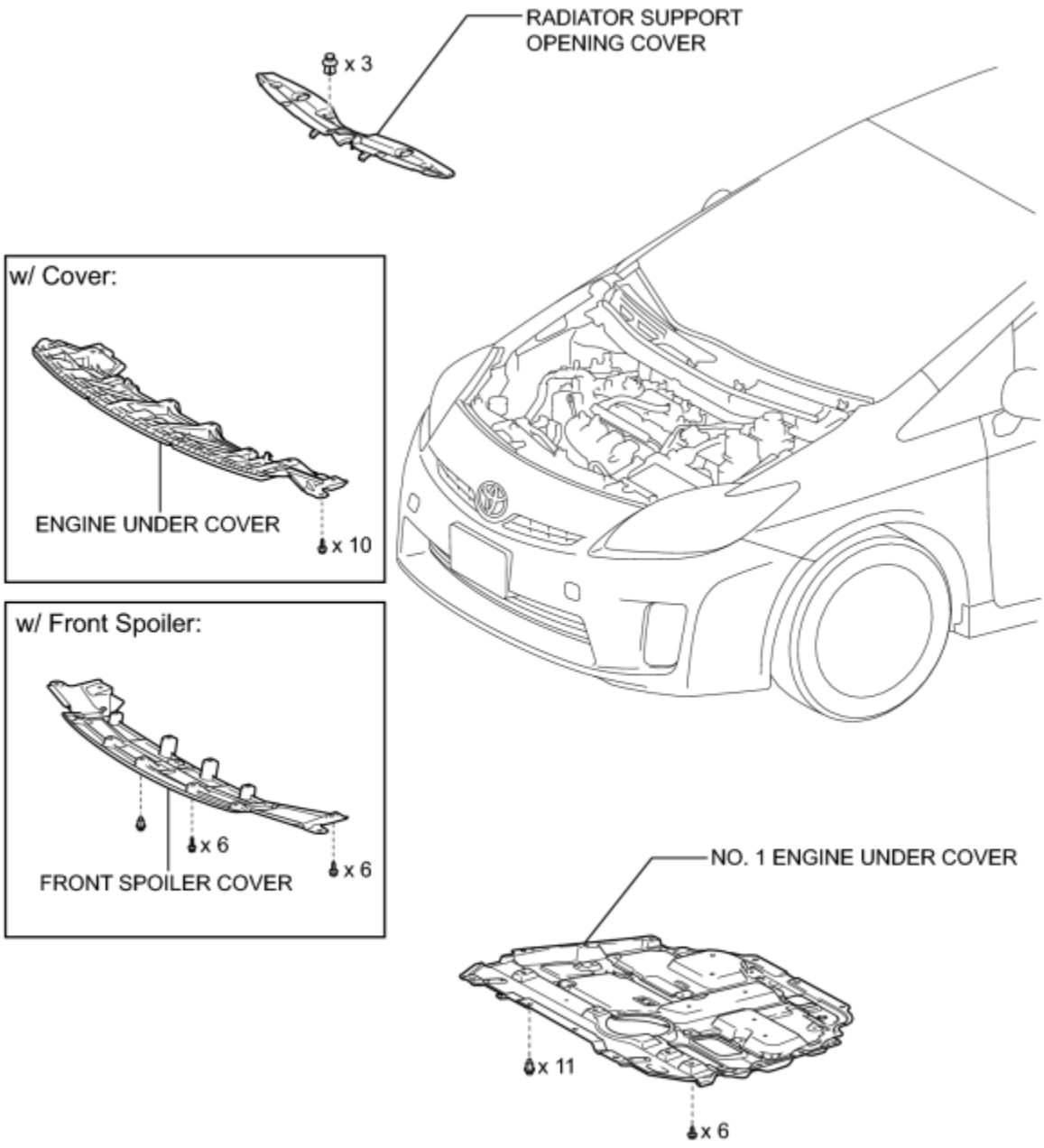
COMPONENTS

ILLUSTRATION



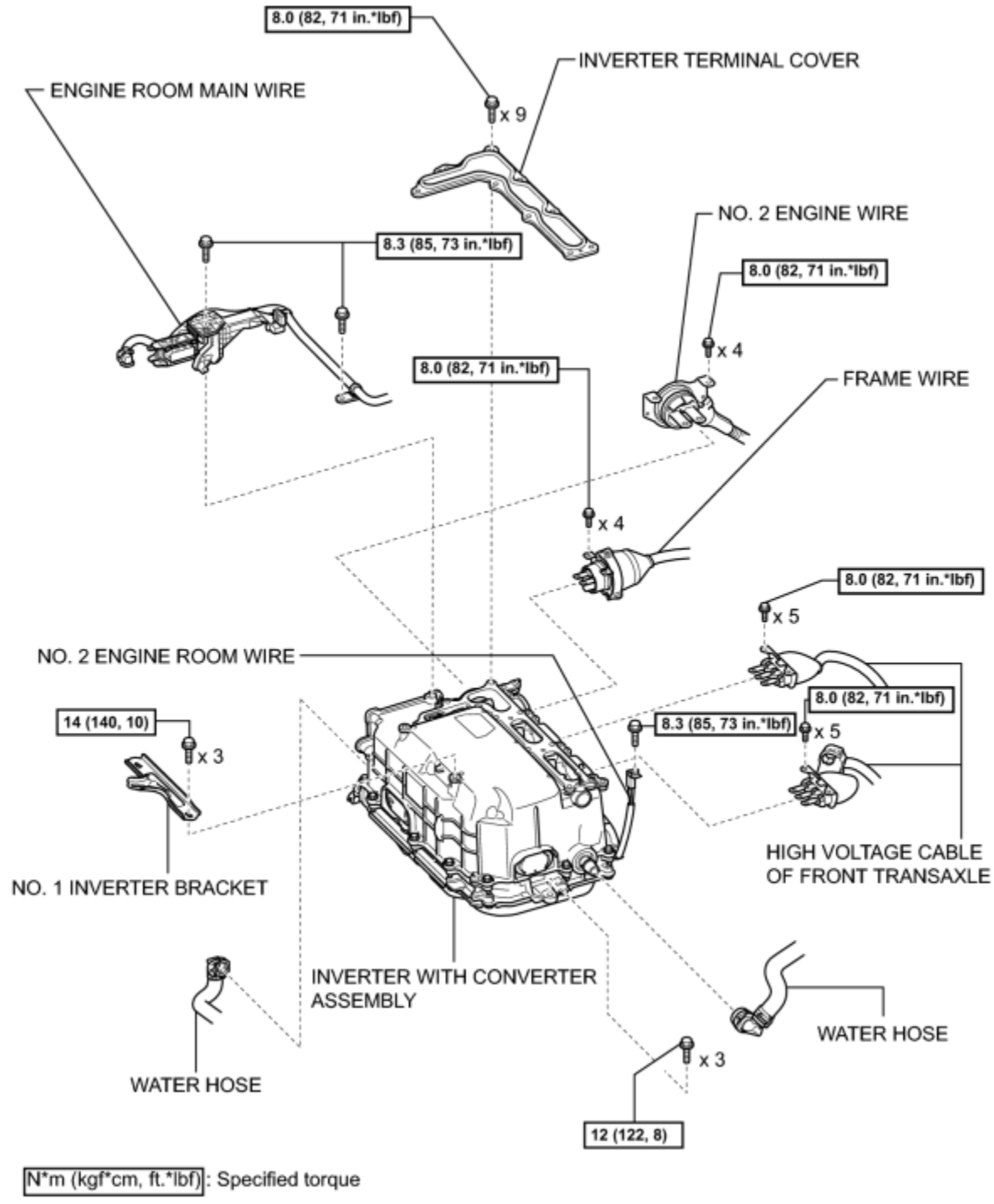
P

ILLUSTRATION



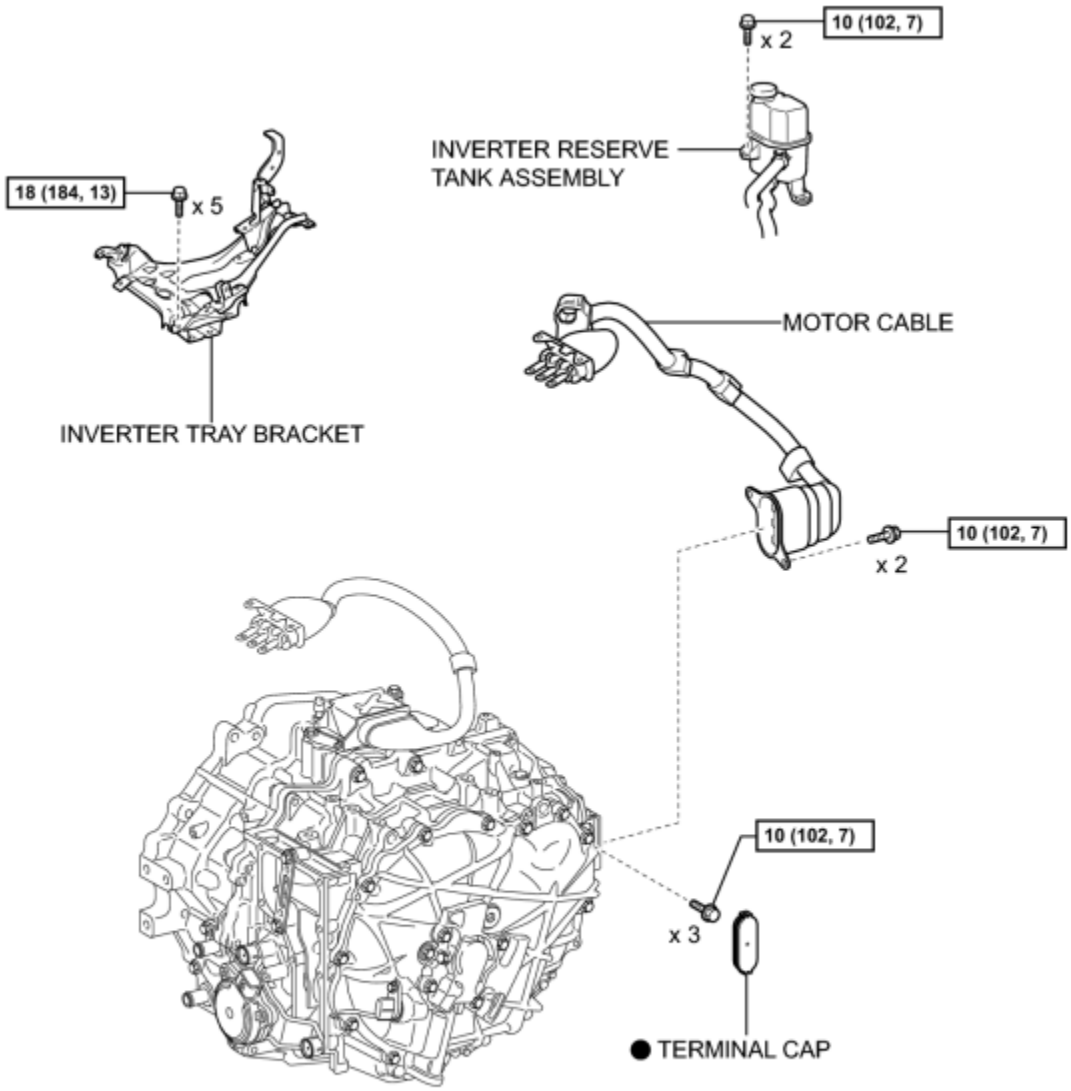
c

ILLUSTRATION



c

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

● Non-reusable part

c

REMOVAL

1. PRECAUTION

HINT: INFO

2. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

3. REMOVE REAR DECK FLOOR BOX INFO

4. REMOVE REAR NO. 3 FLOOR BOARD INFO

5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

6. REMOVE SERVICE PLUG GRIP INFO

7. REMOVE FRONT SPOILER COVER (w/ Front Spoiler)

8. REMOVE ENGINE UNDER COVER (w/ Cover)

9. REMOVE NO. 1 ENGINE UNDER COVER

10. DRAIN COOLANT (for Inverter) INFO

11. REMOVE RADIATOR SUPPORT OPENING COVER INFO

12. REMOVE NO. 1 INVERTER BRACKET INFO

13. DISCONNECT ENGINE ROOM MAIN WIRE INFO

14. REMOVE INVERTER TERMINAL COVER INFO

15. CHECK TERMINAL VOLTAGE INFO

16. DISCONNECT FRAME WIRE INFO

17. DISCONNECT HIGH VOLTAGE CABLE OF FRONT TRANSAXLE INFO

18. DISCONNECT NO. 2 ENGINE WIRE INFO

19. INSTALL INVERTER TERMINAL COVER INFO

20. DISCONNECT NO. 2 ENGINE ROOM WIRE INFO

21. DISCONNECT WATER HOSE INFO

22. REMOVE INVERTER WITH CONVERTER ASSEMBLY INFO

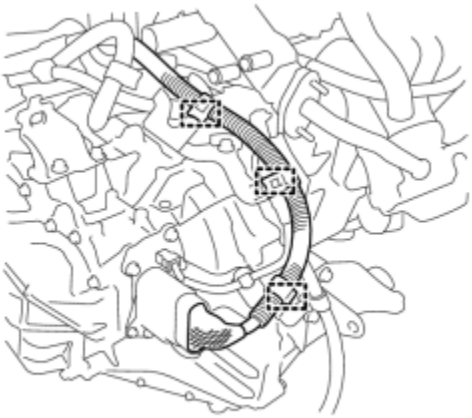
23. REMOVE INVERTER RESERVE TANK ASSEMBLY INFO

24. REMOVE INVERTER TRAY BRACKET INFO

25. REMOVE MOTOR CABLE

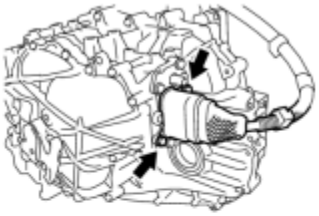
NOTICE:

Wear insulated gloves.

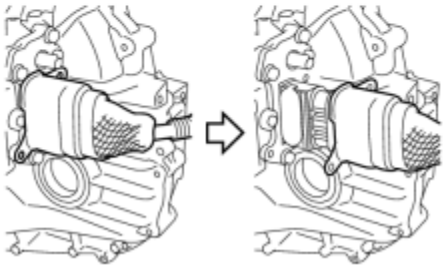


C

(a) Disconnect the 3 clamps.

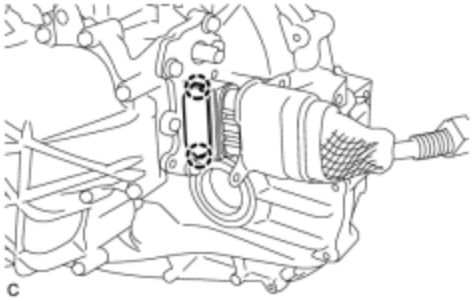


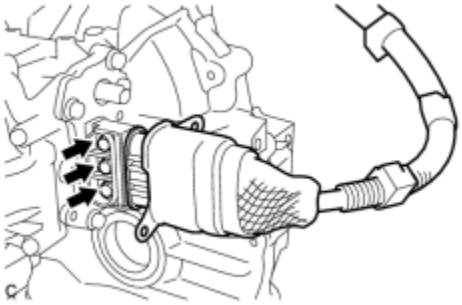
(b) Remove the 2 bolts and slide the motor cable connector shell back.



C

(c) Disengage the 2 claws to remove the terminal cap.





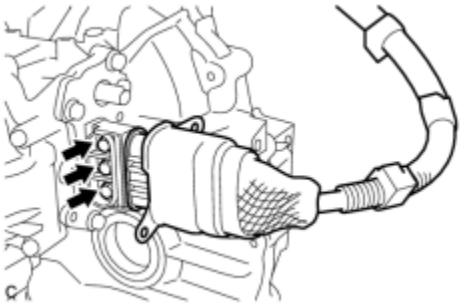
(d) Remove the 3 bolts and motor cable from the hybrid transaxle assembly.

INSTALLATION

1. INSTALL MOTOR CABLE

NOTICE:

Wear insulated gloves.

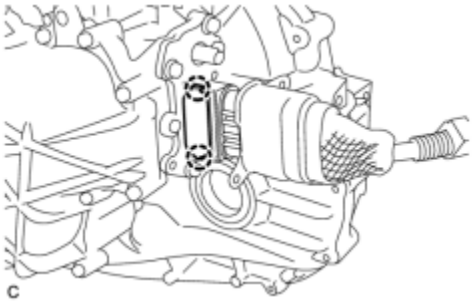


(a) Install the motor cable to the hybrid transaxle assembly with the 3 bolts.

Torque: **10 N·m (102 kgf·cm, 7ft·lbf)**

NOTICE:

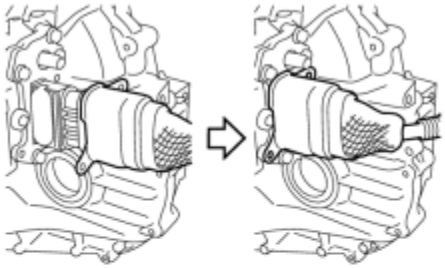
Keep the sealing surface of the motor cable and the connector terminal joint free of foreign matter.



(b) Engage the 2 claws to install a new terminal cap.

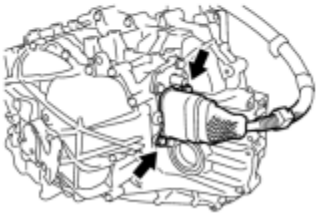
NOTICE:

When installing the terminal cap to the motor cable terminal block, keep the sealing surface free of foreign matter.

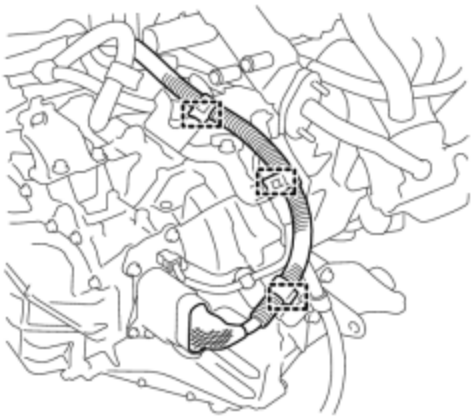


(c) Place the motor cable connector shell in position and install it with the 2 bolts.

Torque: **10 N·m (102 kgf·cm, 7ft·lbf)**



(d) Connect the 3 clamps.



c

2. INSTALL INVERTER TRAY BRACKET INFO

3. INSTALL INVERTER RESERVE TANK ASSEMBLY INFO

4. INSTALL INVERTER WITH CONVERTER ASSEMBLY INFO

5. CONNECT WATER HOSE INFO

6. CONNECT NO. 2 ENGINE ROOM WIRE INFO

7. REMOVE INVERTER TERMINAL COVER INFO

8. CONNECT NO. 2 ENGINE WIRE INFO

9. CONNECT HIGH VOLTAGE CABLE OF FRONT TRANSAXLE INFO

10. CONNECT FRAME WIRE INFO

11. CHECK HIGH VOLTAGE CABLE CONNECTION INFO

12. INSTALL INVERTER TERMINAL COVER INFO

13. INSTALL ENGINE ROOM MAIN WIRE INFO

14. INSTALL NO. 1 INVERTER BRACKET INFO

15. INSTALL SERVICE PLUG GRIP INFO

16. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

17. INSTALL REAR NO. 3 FLOOR BOARD INFO

18. INSTALL REAR DECK FLOOR BOX INFO

19. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

20. ADD COOLANT (for Inverter) INFO

21. INSPECT FOR COOLANT LEAK (for Inverter) INFO

22. INSTALL FRONT SPOILER COVER (w/ Front Spoiler)

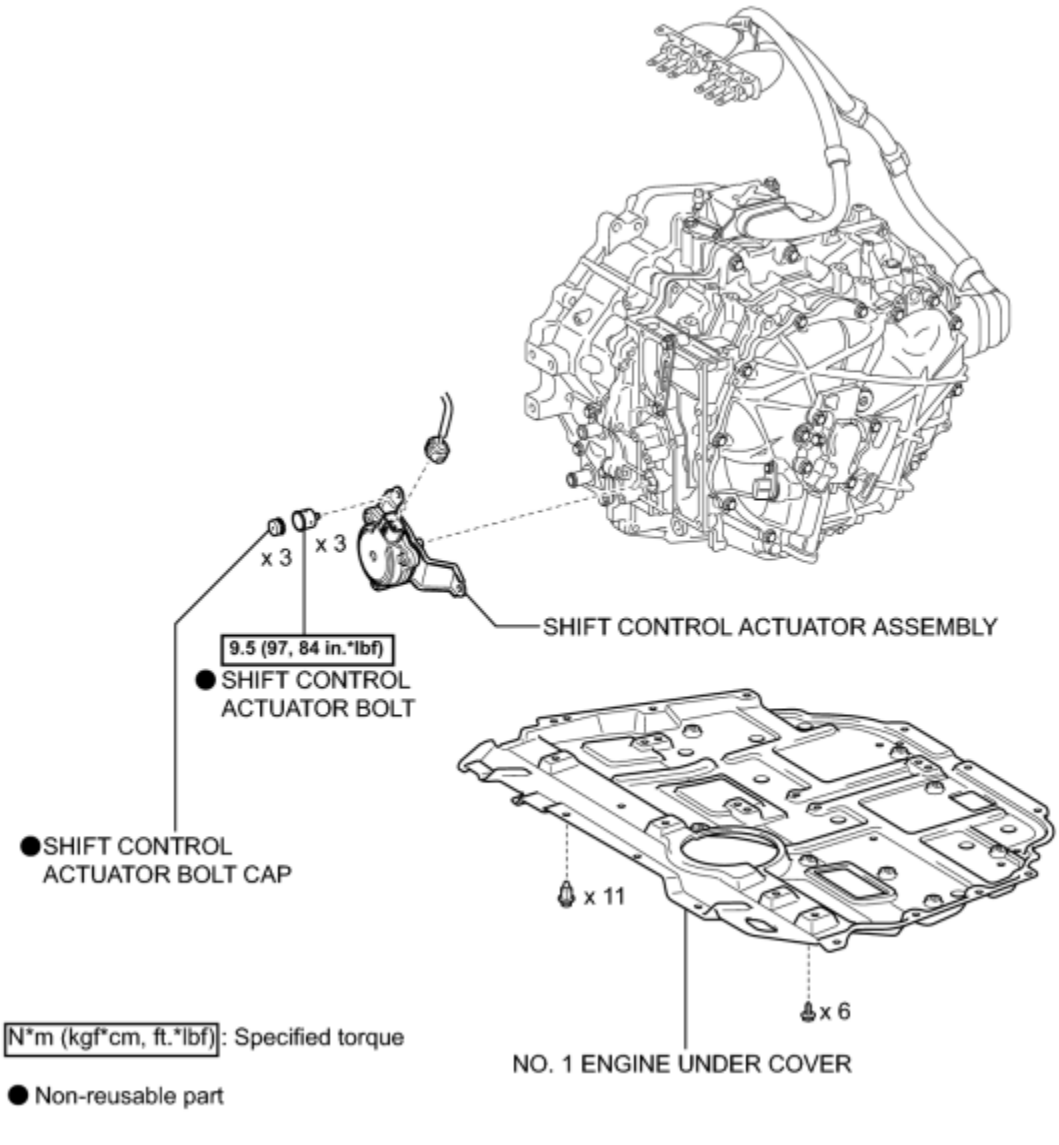
23. INSTALL ENGINE UNDER COVER (w/ Cover)

24. INSTALL NO. 1 ENGINE UNDER COVER

25. INSTALL RADIATOR SUPPORT OPENING COVER INFO

COMPONENTS

ILLUSTRATION

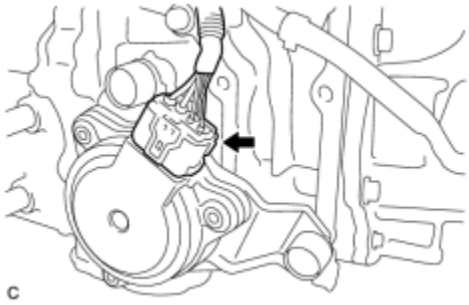


c

REMOVAL

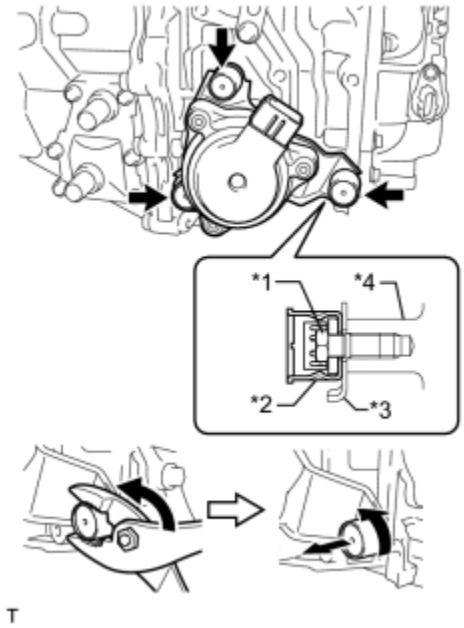
1. REMOVE NO. 1 ENGINE UNDER COVER

2. REMOVE SHIFT CONTROL ACTUATOR ASSEMBLY



(a) Disconnect the connector from the shift control actuator assembly.

(b) Using pliers or an equivalent tool, turn the shift control actuator bolt covers counterclockwise and remove the 3 shift control actuator bolts and shift control actuator assembly.



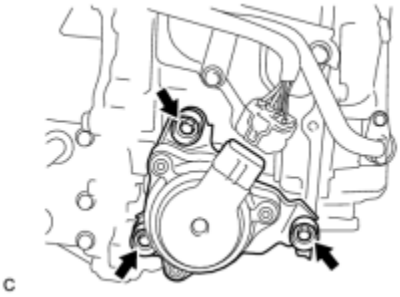
Text in Illustration

*1	Shift Control Actuator Bolt
*2	Cover
*3	Shift Control Actuator Assembly
*4	Transaxle Assembly

- Use pliers or an equivalent tool to initially rotate the cover, and then proceed to remove the shift control actuator bolt and cover by pulling the cover towards the front of the vehicle by hand while rotating the bolt counterclockwise.
- This actuator is a precision instrument. Do not strike it with a plastic hammer or the like during installation.
- This actuator detects its own position when a battery is reinstalled. Thus it does not require initialization.

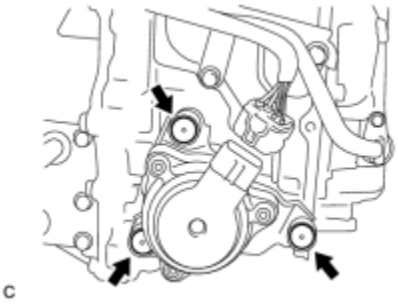
INSTALLATION

1. INSTALL SHIFT CONTROL ACTUATOR ASSEMBLY



(a) Install the shift control actuator assembly with the 3 new shift control actuator bolts.

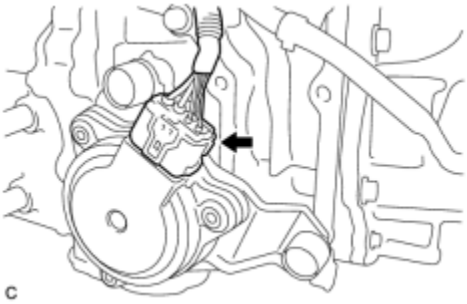
Torque: **9.5 N·m (97 kgf·cm, 84in·lbf)**



(b) Install the 3 new shift control actuator bolt caps to the shift control actuator bolts.

NOTICE:

Push in each shift control actuator cap firmly until the claw of the shift control actuator bolt cap engages with the control actuator bolt.

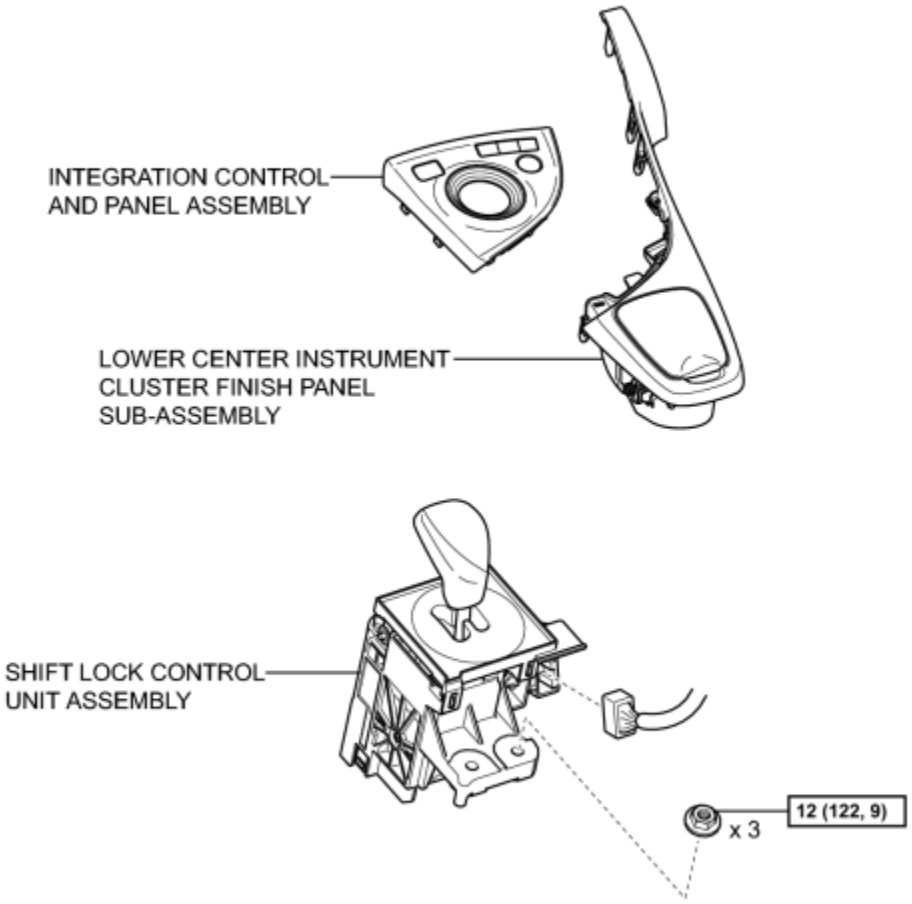


(c) Connect the connector to the shift control actuator assembly.

2. INSTALL NO. 1 ENGINE UNDER COVER

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

c

REMOVAL

NOTICE:

If the shift lock control unit assembly is to be replaced with a new one, it is necessary to clear the learned shift sensor voltage value by disconnecting and reconnecting the cable of the negative (-) battery terminal INFO.

1. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

2. REMOVE REAR DECK FLOOR BOX INFO

3. REMOVE REAR NO. 3 FLOOR BOARD INFO

4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

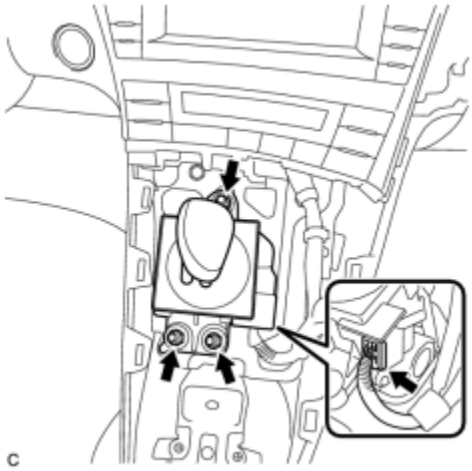
NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. REMOVE INTEGRATION CONTROL AND PANEL ASSEMBLY INFO

6. REMOVE LOWER CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY INFO

7. REMOVE SHIFT LOCK CONTROL UNIT ASSEMBLY

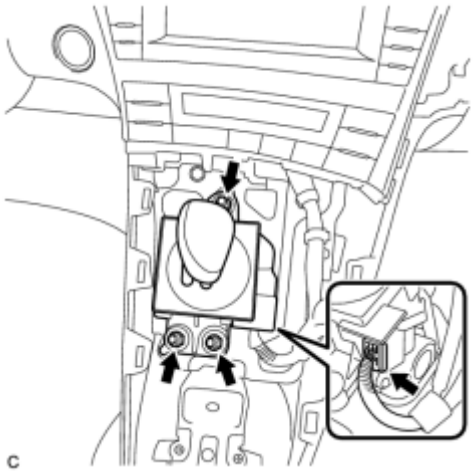


(a) Disconnect the connector from the shift lock control unit assembly.

(b) Remove the 3 nuts and shift lock control unit assembly.

INSTALLATION

1. INSTALL SHIFT LOCK CONTROL UNIT ASSEMBLY



(a) Install the shift lock control unit assembly with the 3 nuts.

Torque: **12 N·m (122 kgf·cm, 9ft·lbf)**

(b) Connect the connector to the shift lock control unit assembly.

2. INSTALL LOWER CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY INFO

3. INSTALL INTEGRATION CONTROL AND PANEL ASSEMBLY INFO

4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. INSTALL REAR NO. 3 FLOOR BOARD INFO

6. INSTALL REAR DECK FLOOR BOX INFO

7. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

8. INSPECT SHIFT LEVER

(a) Turn the power switch on (READY).

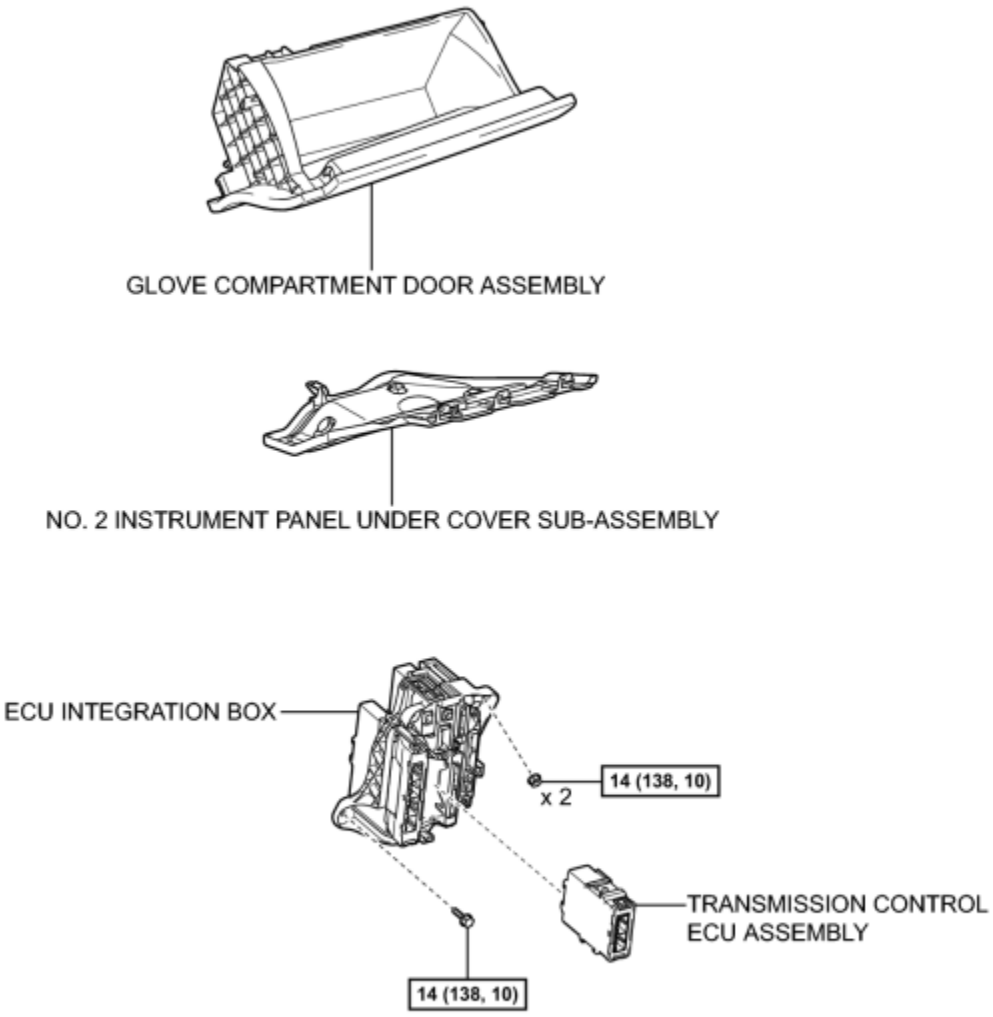
(b) Check that all available shift positions can be selected moving the shift lever.

HINT:

After the shift lever is replaced with a new one, perform the above operation. If this operation is not performed, moving the shift lever may not initially select shift positions.

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

REMOVAL

1. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

2. REMOVE REAR DECK FLOOR BOX INFO

3. REMOVE REAR NO. 3 FLOOR BOARD INFO

4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

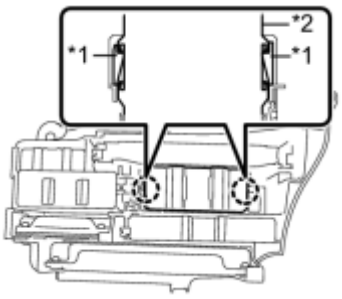
When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

6. REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY INFO

7. REMOVE ECU INTEGRATION BOX INFO

8. REMOVE TRANSMISSION CONTROL ECU ASSEMBLY



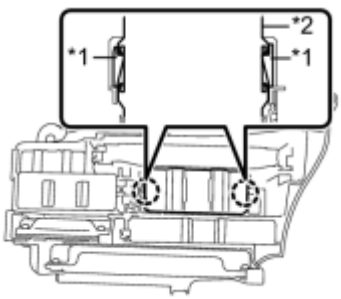
(a) Disengage the 2 claws and remove the transmission control ECU assembly from the ECU integration box.

Text in Illustration

*1	Claw
*2	Transmission Control ECU Assembly

INSTALLATION

1. INSTALL TRANSMISSION CONTROL ECU ASSEMBLY



(a) Engage the 2 claws to install the transmission control ECU assembly to the ECU integration box.

Text in Illustration

*1	Claw
*2	Transmission Control ECU Assembly

2. INSTALL ECU INTEGRATION BOX INFO

3. INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY INFO

4. INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

5. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

6. INSTALL REAR NO. 3 FLOOR BOARD INFO

7. INSTALL REAR DECK FLOOR BOX INFO

8. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO