ADJUSTMENT

NOTICE:

If the wheel alignment has been adjusted, and if suspension or underbody components have been removed/installed or replaced, be sure to perform the following initialization procedure in order for the system to function normally:

- Perform zero point calibration of the yaw rate and acceleration sensor.

1. INSPECT TIRES

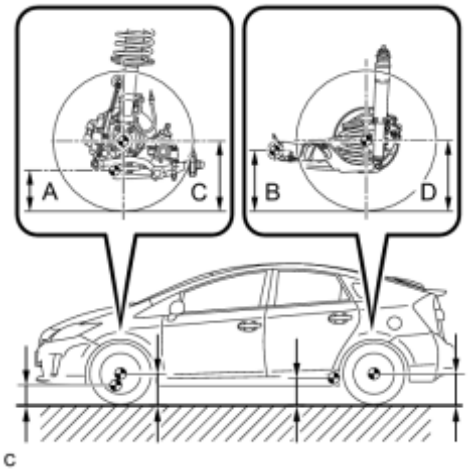
INFO.

2. MEASURE VEHICLE HEIGHT

- Before inspecting the wheel alignment, adjust the vehicle height to the specified value.
- Be sure to perform measurement on a level surface.
- If it is necessary to go under the vehicle for measurement, confirm that the parking brake is applied and the vehicle is secured with chocks.
- Inspect while the vehicle is unloaded.

(a) Bounce the vehicle up and down at the corners to stabilize the suspension.

(b) Measure the vehicle height.



C

Measurement points:

A: Ground clearance of front No. 1 lower suspension arm bushing set bolt center

B: Ground clearance of rear axle beam bushing set bolt center

C: Ground clearance of front wheel center

D: Ground clearance of rear wheel center

Vehicle Height (Unloaded Vehicle):

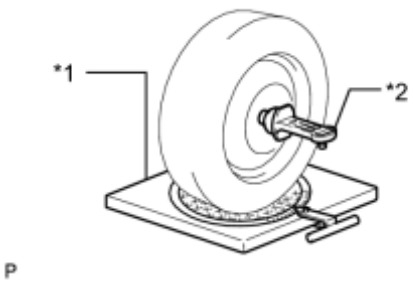
Tire Size	Front C - A	Rear D - B
195/65R15	108 mm (4.25 in.) 90 mm (3.54 in.)*	26 mm (1.02 in.) 9 mm (0.354 in.)*
215/45R17	103 mm (4.06 in.)	21 mm (0.827 in.)

* For vehicle height for Rough Road Package.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

NOTICE:

Inspect while the vehicle is unloaded.



(a) Install a camber-caster-kingpin gauge and place the front wheels on the center of a wheel alignment tester.

Text in Illustration

*1	Wheel Alignment Tester
*2	Gauge

(b) Inspect the camber, caster and steering axis inclination.

Camber (Unloaded Vehicle):

Tire Size	Camber Inclination	Right-left Difference
195/65R15	-0°13' +/- 45' (-0.22° +/- 0.75°) -0°07' +/- 45' (-0.12° +/- 0.75°)*	45' (0.75°) or less
215/45R17	-0°12' +/- 45' (-0.20° +/- 0.75°)	

* For vehicle height for Rough Road Package.

Caster (Unloaded Vehicle):

Tire Size	Caster Inclination	Right-left Difference
195/65R15	5°53' +/- 45' (5.88° +/- 0.75°) 5°40' +/- 45' (5.67° +/- 0.75°)*	45' (0.75°) or less
215/45R17	5°50' +/- 45' (5.83° +/- 0.75°)	

* For vehicle height for Rough Road Package.

Steering Axis Inclination (Unloaded Vehicle):

Tire Size	Steering Axis Inclination
195/65R15	12°16' (12.27°) 11°52' (11.87°)*

Tire Size	Steering Axis Inclination
215/45R17	12°10' (12.17°)

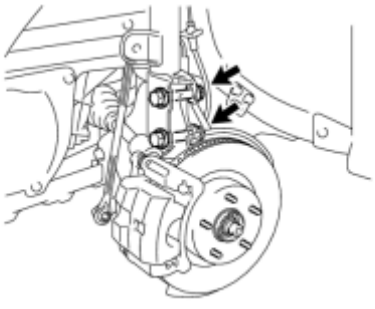
* For vehicle height for Rough Road Package.

4. ADJUST CAMBER

NOTICE:

Inspect toe-in after the camber has been adjusted.

(a) Remove the front wheel.



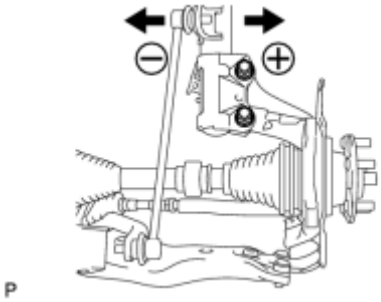
(b) Loosen the 2 nuts.

NOTICE:

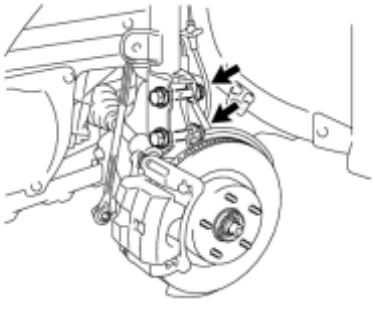
Keep the bolts inserted.

(c) Clean the installation surfaces of the front shock absorber and the steering knuckle.

(d) Temporarily install the 2 nuts. (Step A)



(e) Fully push or pull the front axle hub in the direction of the required adjustment. (Step B)



(f) Tighten the nuts.

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

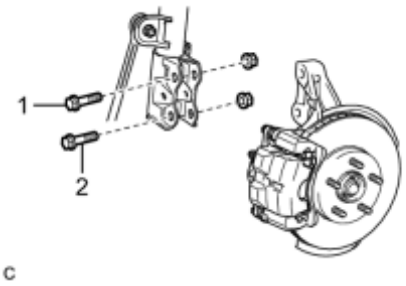
NOTICE:

Keep the bolts from rotating when tightening the nuts.

(g) Install the front wheel.

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

(h) Check the camber.



c

If the measured value is not within the specification, calculate the required adjustment amount using the formula below.

Camber adjustment amount = center of the specified range - measured value

Check the combination of the installed bolts. Select appropriate bolts from the tables below to adjust the camber to the specified values.

HINT:

Try to adjust the camber to the center of the specified values.

Move the axle hub toward (+) in step B	Move the axle hub toward (-) in step B
Refer to table (1) (Move the axle hub toward the positive side)	Refer to table (2) (Move the axle hub toward the negative side)

Table (1) (Move the axle hub toward the positive side)

Installed Bolt / Adjusting Value								
	1	 90105-17019	 90105-17019	 90105-17019	 90105-17019	 90105-17016	 90105-17017	 90105-17018
	2	 90105-17019	 90105-17016	 90105-17017	 90105-17018	 90105-17018	 90105-17018	 90105-17018
-1°30' to -1°15' (-1.50° to -1.25°)								G
-1°15' to -1°00' (-1.25° to -1°)							G	A
-1°00' to -0°45' (-1° to -0.75°)						G	A	B
-0°45' to -0°30' (-0.75° to -0.5°)					G	A	B	C
-0°30' to -0°15' (-0.5° to -0.25°)				G	A	B	C	D
-0°15' to 0° (-0.25° to 0°)			G	A	B	C	D	E
0° to 0°15' (0° to 0.25°)		A	B	C	D	E	F	
0°15' to 0°30' (0.25° to 0.5°)		B	C	D	E	F		
0°30' to 0°45' (0.5° to 0.75°)		C	D	E	F			
0°45' to 1°00' (0.75° to 1°)		D	E	F				
1°00' to 1°15' (1° to 1.25°)		E	F					
1°15' to 1°30' (1.25° to 1.5°)		F						

Selected Bolt Combination

	A	B	C	D	E	F	G
1	 90105-17019	 90105-17019	 90105-17019	 90105-17016	 90105-17017	 90105-17018	 90105-17019
2	 90105-17016	 90105-17017	 90105-17018	 90105-17018	 90105-17018	 90105-17018	 90105-17019

Table (2) (Move the axle hub toward the negative side)

Installed Bolt / Adjusting Value								
	1	 90105-17019	 90105-17019	 90105-17019	 90105-17019	 90105-17016	 90105-17017	 90105-17018
	2	 90105-17019	 90105-17016	 90105-17017	 90105-17018	 90105-17018	 90105-17018	 90105-17018
-1°30' to -1°15' (-1.50° to -1.25°)		F						
-1°15' to -1°00' (-1.25° to -1°)		E	F					
-1°00' to -0°45' (-1° to -0.75°)		D	E	F				
-0°45' to -0°30' (-0.75° to -0.5°)		C	D	E	F			
-0°30' to -0°15' (-0.5° to -0.25°)		B	C	D	E	F		
-0°15' to 0° (-0.25° to 0°)		A	B	C	D	E	F	
0° to 0°15' (0° to 0.25°)			G	A	B	C	D	E
0°15' to 0°30' (0.25° to 0.5°)				G	A	B	C	D
0°30' to 0°45' (0.5° to 0.75°)					G	A	B	C
0°45' to 1°00' (0.75° to 1°)						G	A	B
1°00' to 1°15' (1° to 1.25°)							G	A
1°15' to 1°30' (1.25° to 1.5°)								G

Selected Bolt Combination

	A	B	C	D	E	F	G
1	 90105-17019	 90105-17019	 90105-17019	 90105-17016	 90105-17017	 90105-17018	 90105-17019
2	 90105-17016	 90105-17017	 90105-17018	 90105-17018	 90105-17018	 90105-17018	 90105-17019

NOTICE:

Replace the nut with a new one when replacing the bolt.

The body and suspension may be damaged if the camber is not correctly adjusted according to the tables above.

(i) Repeat the steps mentioned above. In Step A, replace 1 or 2 selected bolts.

HINT:

Replace one bolt at a time when replacing both bolts.

5. INSPECT TOE-IN

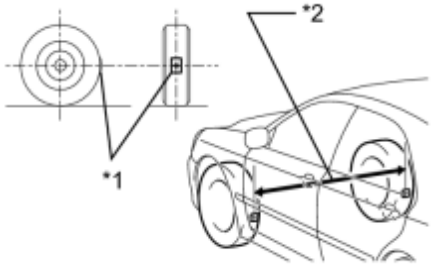
NOTICE:

Inspect while the vehicle is unloaded.

(a) Bounce the vehicle up and down at the corners to stabilize the suspension.

(b) Release the parking brake and move the shift lever to N.

(c) Push the vehicle straight ahead approximately 5 m (16.4 ft.). (Step C)



(d) Put tread center marks on the rearmost points of the front wheels and measure the distance between the marks (dimension B).

Text in Illustration

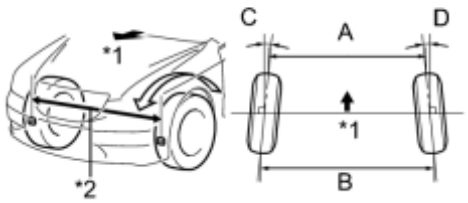
*1	Tread Center Mark
*2	Dimension B

(e) Slowly push the vehicle straight ahead to cause the front wheels to rotate 180° using the front tire valve as a reference point.

HINT:

Do not allow the wheels to rotate more than 180°. If the wheels rotate more than 180°, perform the procedure from Step C again.

(f) Measure the distance between the tread center marks on the front side of the wheels (dimension A).



Text in Illustration

*1	Front of the Vehicle
*2	Dimension A

To-in (Unloaded Vehicle)

Specified Condition
C + D: 0°12' +/- 0°12' (0.20° +/- 0.20°) C + D: 0°18' +/- 0°12' (0.30° +/- 0.20°)*
B - A: 2.0 +/- 2.0 mm (0.0787 +/- 0.0787 in.) B - A: 3.0 +/- 2.0 mm (0.118 +/- 0.0787 in.)*

* For vehicle height for Rough Road Package.

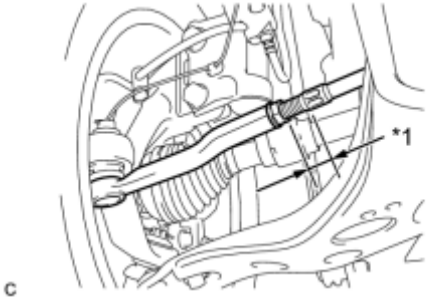
HINT:

Measure "B - A" only when "C + D" cannot be measured.

If the toe-in is not within the specified range, adjust it at the rack ends.

6. ADJUST TOE-IN

(a) Make sure that the thread length of the right and left rack ends are approximately the same.



c

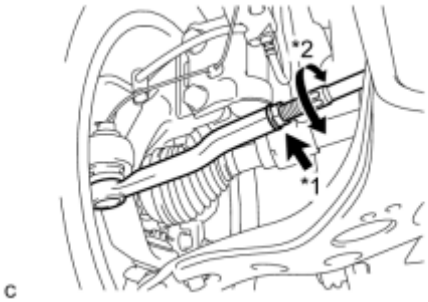
Text in Illustration

*1	Thread Length

Standard difference:

1.5 mm (0.0591 in.) or less

(b) Remove the boot clips.



c

(c) Loosen the tie rod end lock nuts.

Text in Illustration

*1	Loosen
*2	Turn

(d) Adjust the rack ends if the difference in thread length between the right and left rack ends is not within the specified range.

(1) Extend the shorter rack end if the measured toe-in deviates toward the outer-side.

(2) Shorten the longer rack end if the measured toe-in deviates toward the inner-side.

(e) Turn the right and left rack ends by an equal amount to adjust the toe-in to the center value.

(f) Make sure that the thread lengths of the right and left rack ends are the same.

(g) Tighten the tie rod end lock nuts.

Torque: **74 N·m (755 kgf·cm, 55ft·lbf)**

(h) Place the boots on the seats and install the clips.

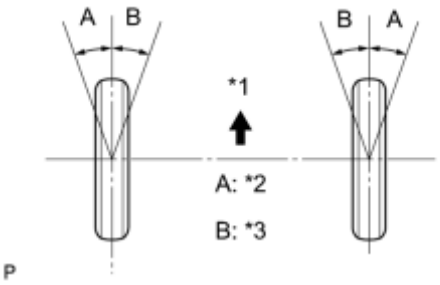
HINT:

Make sure that the boots are not twisted.

7. INSPECT WHEEL ANGLE

Text in Illustration

*1	Front of the Vehicle
*2	Inside
*3	Outside



(a) Put tread center marks on the rearmost points of a turning radius gauge.

(b) Turn the steering wheel to the left and right full lock positions, and measure the turning angle.

NOTICE:

Inspect while the vehicle is unloaded.

Wheel Angle (Unloaded Vehicle):

Tire Size	Inside Wheel	Outside Wheel Reference
195/65R15	40°50' +/- 2° (40.83° +/- 2°) 37°42' +/- 2° (37.70° +/- 2°)*	33°50' (33.83°) 32°13' (32.22°)*
215/45R17	37°27' +/- 2° (37.45° +/- 2°)	31°56' (31.93°)

* For vehicle height for Rough Road Package.

If the angles are not as specified, check and adjust the right and left rack end lengths.

8. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

9. PERFORM YAW RATE AND ACCELERATION SENSOR CALIBRATION

INFO.

10. PERFORM INITIALIZATION (w/ Height Control Sensor)

NOTICE:

Some systems need to be initialized after the wheel alignment is adjusted INFO.

INSPECTION

NOTICE:

If the wheel alignment has been adjusted, and if suspension or underbody components have been removed/installed or replaced, be sure to perform the following initialization procedure in order for the system to function normally:

- Perform zero point calibration of the yaw rate and acceleration sensor and test mode inspection.

1. INSPECT TIRES

INFO.

2. MEASURE VEHICLE HEIGHT INFO

3. INSPECT CAMBER

NOTICE:

Inspect while the vehicle is unloaded.

(a) Install a camber-caster-kingpin gauge.

(b) Inspect the camber.

Camber (Unloaded Vehicle):

Tire Size	Camber Inclination	Right-left Difference
195/65R15	-1°29' +/- 30' (-1.48° +/- 0.50°)	30' (0.50°) or less
215/45R17	-1°28' +/- 30' (-1.47° +/- 0.50°)	

HINT:

Camber is not adjustable. If the measurement is not within the specified range, inspect the suspension parts for damage and/or wear, and replace them if necessary.

4. INSPECT TOE-IN

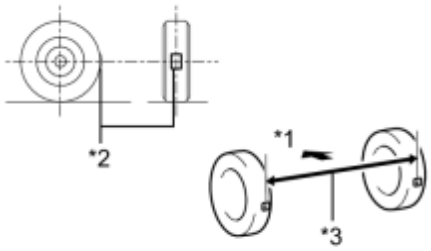
NOTICE:

Inspect while the vehicle is unloaded.

(a) Bounce the vehicle up and down at the corners to stabilize the suspension.

(b) Release the parking brake and move the shift lever to N.

(c) Push the vehicle straight ahead approximately 5 m (16.4 ft.). (Step A)



(d) Put tread center marks on the rearmost points of the rear wheels and measure the distance between the marks (dimension B).

Text in Illustration

*1	Front of the Vehicle
*2	Tread Center Mark
*3	Dimension B

(e) Slowly push the vehicle straight ahead to cause the rear wheels to rotate 180° using the rear tire valve as a reference point.

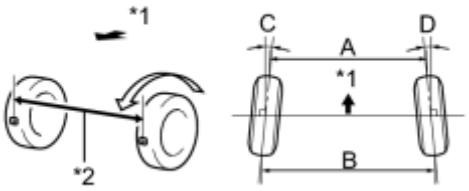
HINT:

Do not allow the wheels to rotate more than 180°. If the wheels rotate more than 180°, perform the procedure from Step A again.

(f) Measure the distance between the tread center marks on the front side of the wheels (dimension A).

Text in Illustration

*1	Front of the Vehicle
*2	Dimension A



Toe-in (Unloaded Vehicle):

Tire Size	Specified Condition	Right-left Difference
195/65R15	C + D: 0°17' +/- 18' (0.29° +/- 0.30°) C + D: 0°10' +/- 18' (0.17° +/- 0.30°)*	45' (0.75°) or less
	B - A: 2.9 +/- 3 mm (0.114 +/- 0.118 in.) B - A: 1.7 +/- 3 mm (0.0669 +/- 0.118 in.)*	-
215/45R17	C + D: 0°15' +/- 18' (0.25° +/- 0.30°)	45' (0.75°) or less
	B - A: 2.5 +/- 3 mm (0.0984 +/- 0.118 in.)	-

* For vehicle height for Rough Road Package.

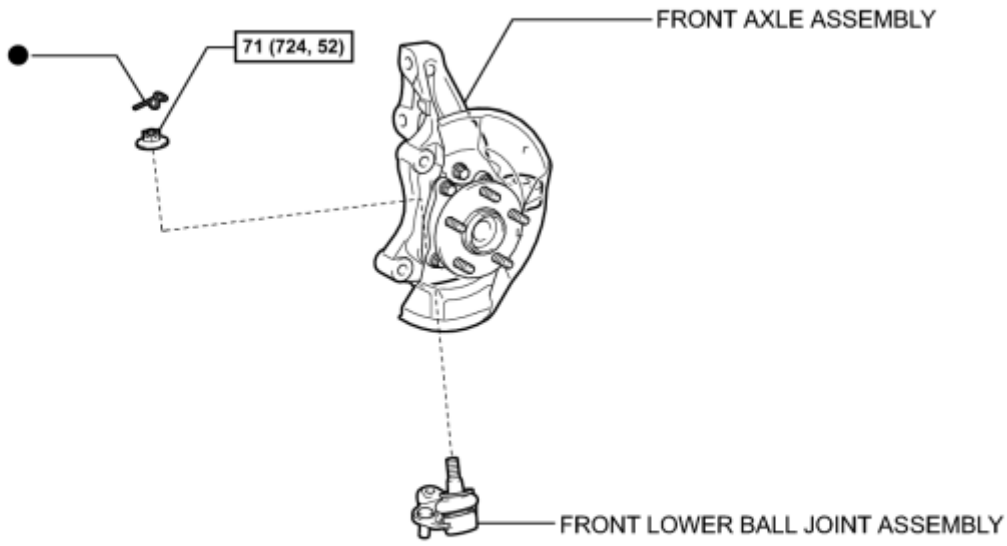
HINT:

Measure "B - A" only when "C + D" cannot be measured.

If the toe-in is not within the specified range, inspect the suspension parts and replace them if necessary.

COMPONENTS

ILLUSTRATION



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

● Non-reusable part

P

REMOVAL

HINT:

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

1. REMOVE FRONT AXLE ASSEMBLY

HINT:

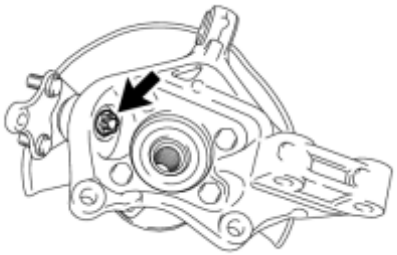
Refer to the procedure up to Remove Front Axle Assembly INFO.

2. REMOVE FRONT LOWER BALL JOINT ASSEMBLY

(a) Secure the front axle assembly in a vise.

NOTICE:

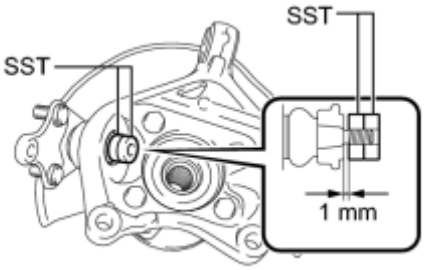
When using a vise, do not overtighten it.



c

(b) Remove the clip and nut.

(c) Install SST to the front lower ball joint as shown in the illustration.



c

SST: 09960-20010

09961-02050

09961-02050

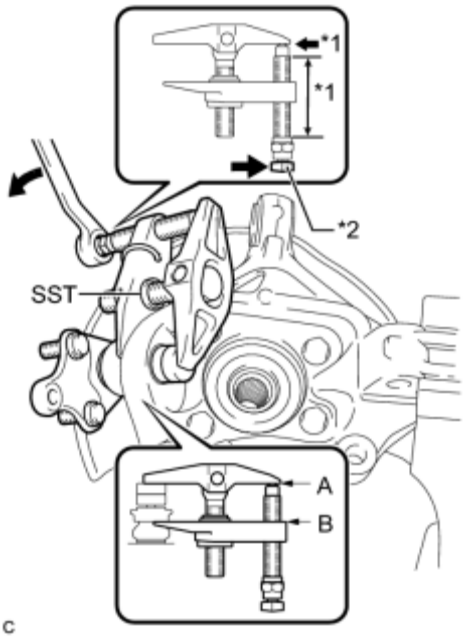
NOTICE:

Check that the clearance measurement between SST and the front axle assembly is 1 mm (0.0394 in.).

(d) Using SST, remove the front lower ball joint assembly from the front axle assembly as shown in the illustration.

SST: 09960-20010

09961-02010



09961-02050

09961-02050

Text in Illustration

*1	Apply grease
*2	Place the wrench here.

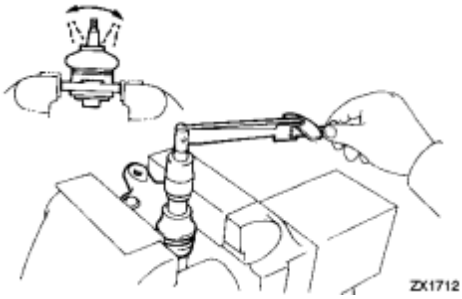
CAUTION:

Apply grease to the threads and end of the SST bolt.

- Install SST so that A and B are parallel.
- Be sure to place the wrench on the part indicated in the illustration.
- Do not damage the front lower ball joint dust cover.

INSPECTION

1. INSPECT FRONT LOWER BALL JOINT ASSEMBLY



(a) Inspect the turning torque of the ball joint.

(1) Secure the front lower ball joint assembly in a vise using aluminum plates.

(2) Install the nut to the front lower ball joint stud.

(3) Using a torque wrench, turn the nut continuously at a rate of 3 to 5 seconds per turn and take the torque reading on the 5th turn.

Torque: **0.98 to 4.90 N·m (10 to 50 kgf·cm, 8.7 to 43in·lbf)**

HINT:

If the turning torque is not within the specified range, replace the front lower ball joint assembly with a new one.

(b) Inspect the dust cover.

(1) Check that the dust cover is not cracked and that there is no grease on it.

INSTALLATION

HINT:

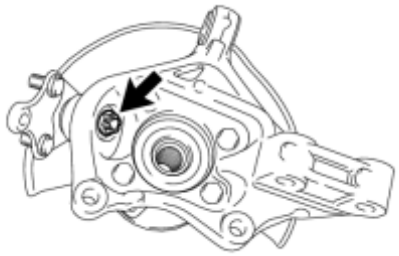
- Use the same procedure for the LH side and RH side.
- The procedure listed below is for the LH side.

1. INSTALL FRONT LOWER BALL JOINT ASSEMBLY

(a) Secure the front axle assembly in a vise.

NOTICE:

When using a vise, do not overtighten it.



C

(b) Install the front lower ball joint assembly to the front axle assembly with the nut.

Torque: **71 N·m (724 kgf·cm, 52ft·lbf)**

(c) Install a new clip.

NOTICE:

Further tighten the nut up to 60° if the holes for the cotter pin are not aligned.

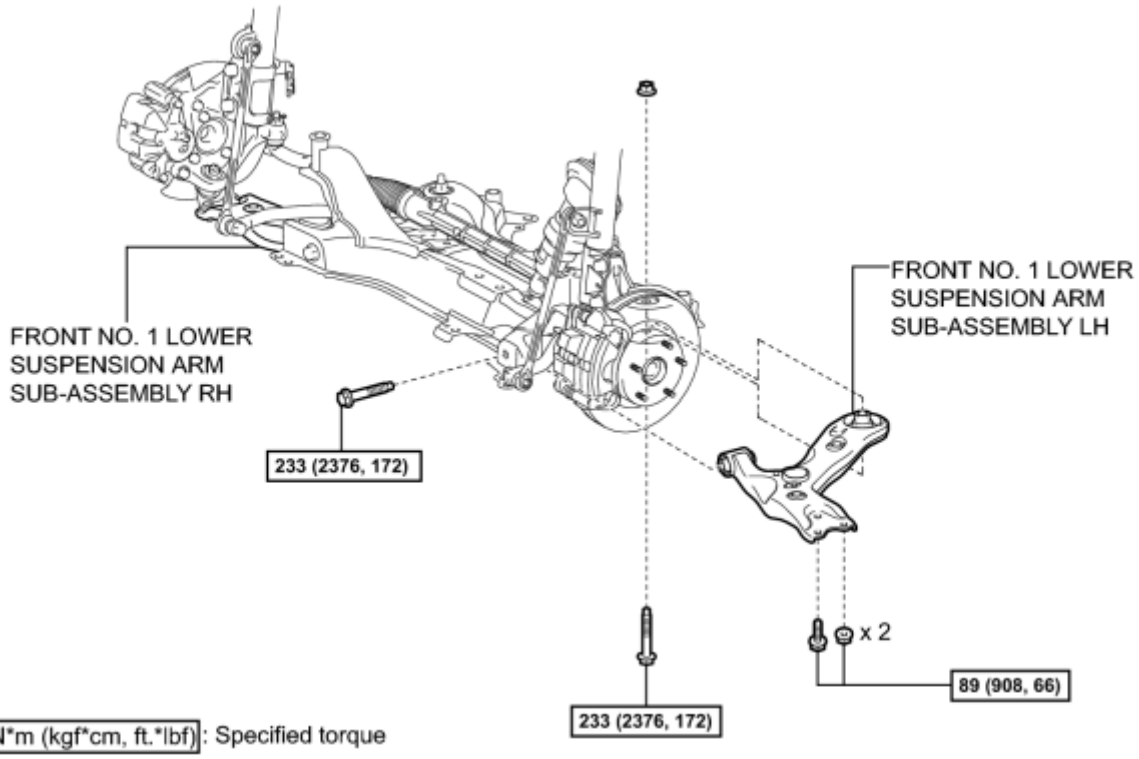
2. INSTALL FRONT AXLE ASSEMBLY

HINT:

Refer to the procedure from Install Front Axle Assembly INFO.

COMPONENTS

ILLUSTRATION



c

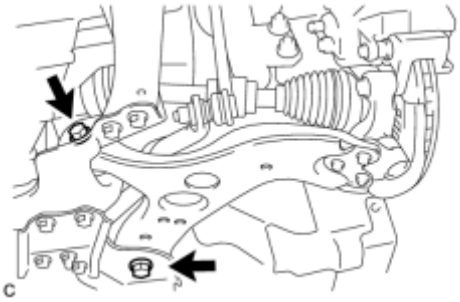
REMOVAL

1. REMOVE FRONT WHEELS

2. REMOVE NO. 1 ENGINE UNDER COVER

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

4. REMOVE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH



(a) Remove the 2 bolts, nut, and front No. 1 lower suspension arm sub-assembly LH from the front suspension member.

NOTICE:

Because the nut has its own stopper, do not turn the nut. Loosen the bolt with the nut secured.

5. REMOVE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Refer to the procedure up to Remove Front No. 1 Lower Suspension Arm Sub-assembly RH INFO.

INSTALLATION

1. TEMPORARILY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Refer to the procedure from Temporarily Tighten Front No. 1 Lower Suspension Arm Sub-assembly RH INFO.

2. TEMPORARILY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH

(a) Temporarily install the front No. 1 lower suspension arm LH to the front suspension crossmember with the 2 bolts and nut.

NOTICE:

Because the nut has its own stopper, do not turn the nut. Tighten the bolt with the nut secured.

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

4. INSTALL FRONT WHEELS

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

5. STABILIZE SUSPENSION

(a) Lower the vehicle.

(b) Press down on the vehicle several times to stabilize the suspension.

6. FULLY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH

(a) Fully tighten the bolt A and B.

Torque: **233 N·m (2376 kgf·cm, 172ft·lbf)**

NOTICE:

Because the nut has its own stopper, do not turn the nut. Tighten the bolt with the nut secured.

7. INSTALL NO. 1 ENGINE UNDER COVER

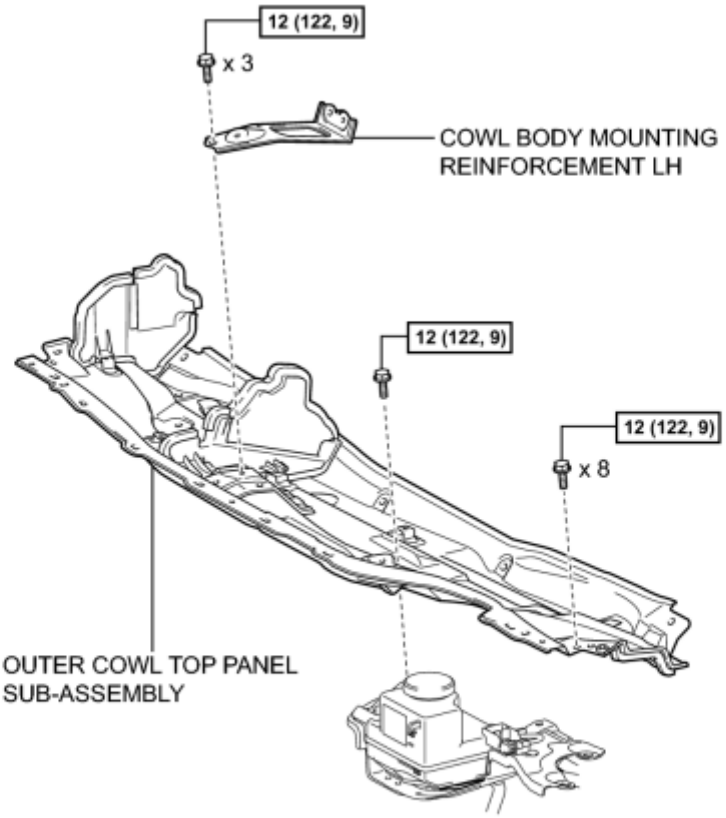
8. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

Inspect and adjust the front wheel alignment INFO.

COMPONENTS

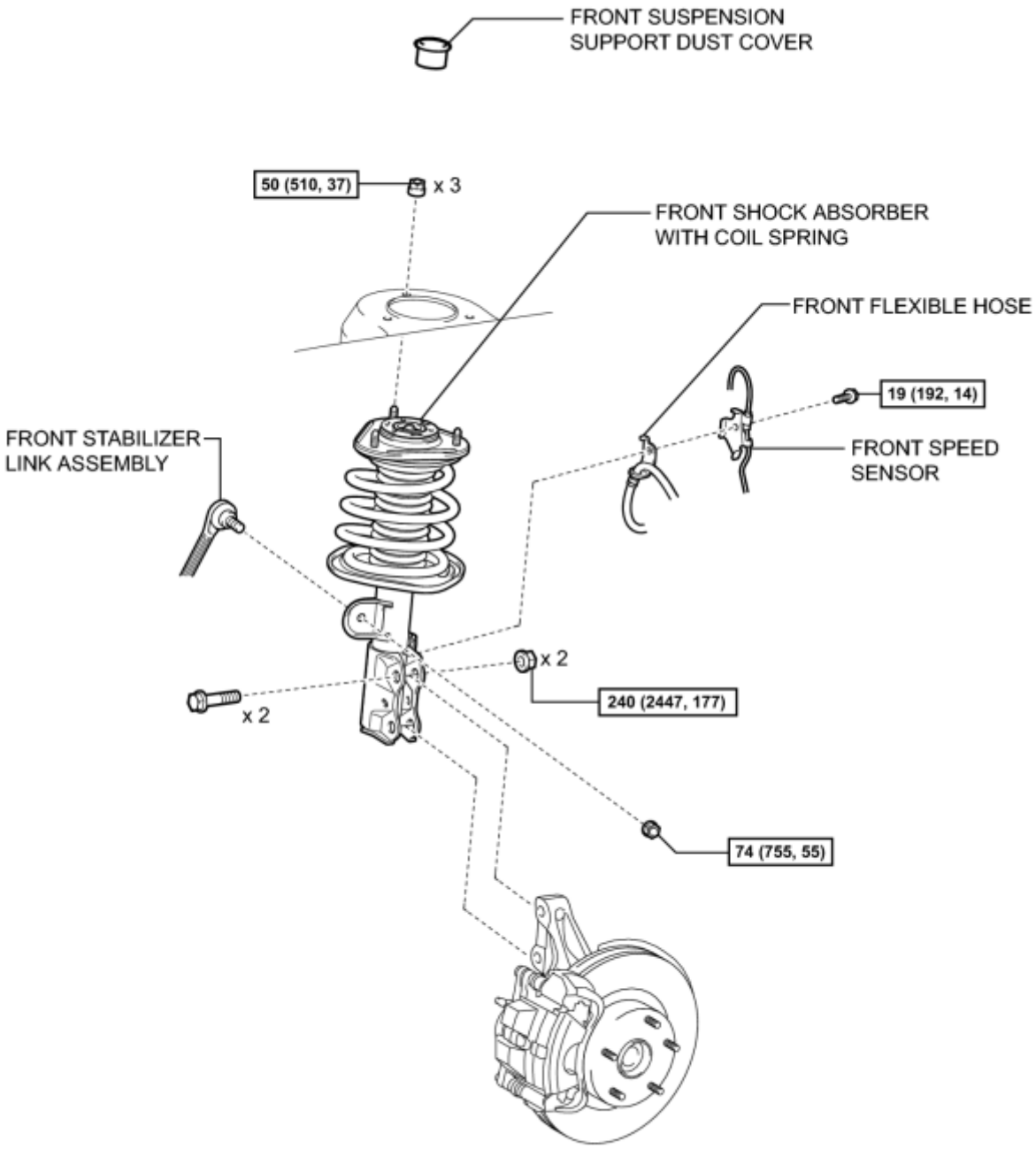
ILLUSTRATION



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

P

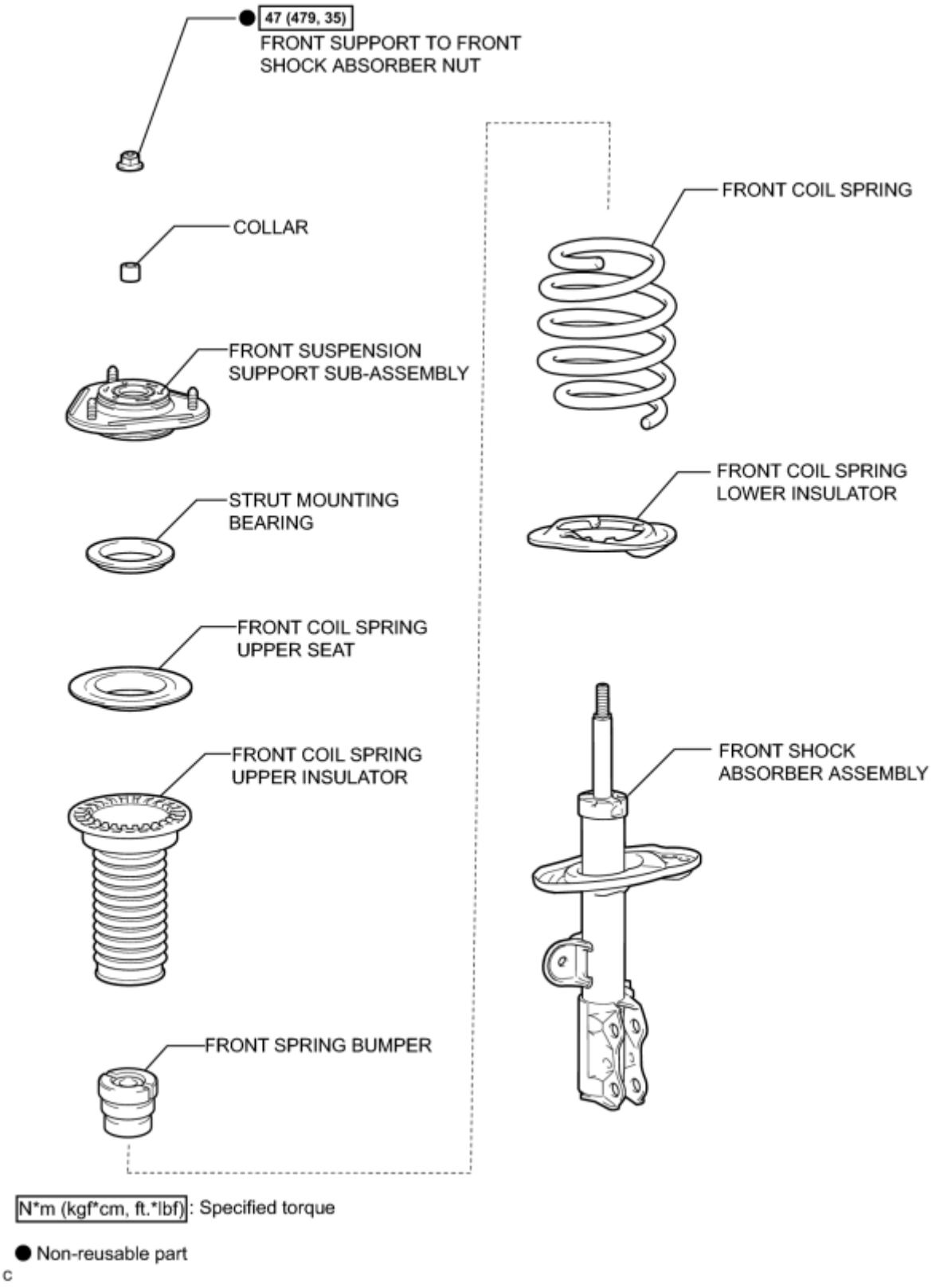
ILLUSTRATION



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

c

ILLUSTRATION



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

● Non-reusable part

c

REMOVAL

HINT:

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

1. REMOVE FRONT WHEEL

2. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY

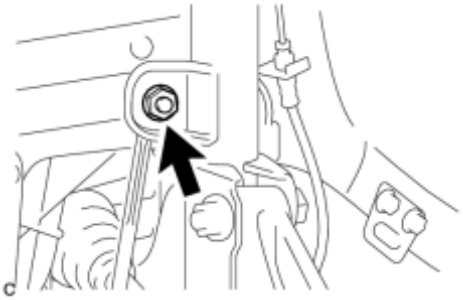
HINT:

Refer to the procedure up to Remove Windshield Wiper Motor and Link Assembly INFO.

3. REMOVE COWL BODY MOUNTING REINFORCEMENT LH INFO

4. REMOVE OUTER COWL TOP PANEL SUB-ASSEMBLY INFO

5. SEPARATE FRONT STABILIZER LINK ASSEMBLY

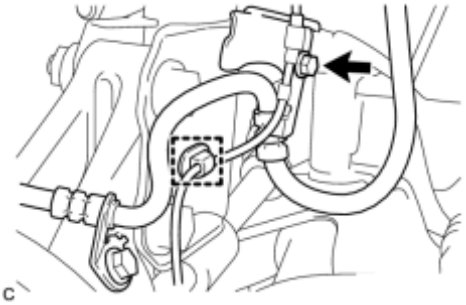


(a) Remove the nut and separate the stabilizer link assembly from the front shock absorber with coil spring.

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

6. SEPARATE FRONT SPEED SENSOR



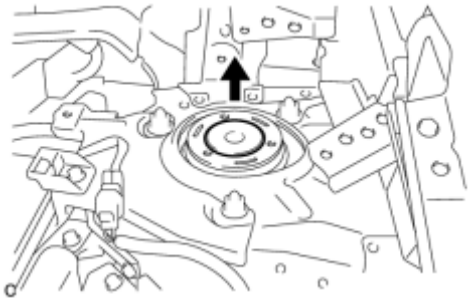
(a) Remove the bolt and clamp, and separate the front speed sensor and front flexible hose from the front shock absorber with coil spring.

NOTICE:

Be sure to separate the front speed sensor from the front shock absorber with coil spring completely.

7. REMOVE FRONT SUSPENSION SUPPORT DUST COVER

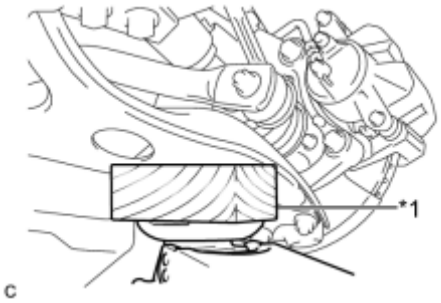
(a) Remove the front suspension support dust cover.



8. REMOVE FRONT SHOCK ABSORBER WITH COIL SPRING

(a) Loosen the front support to front shock absorber nut of the front shock absorber.

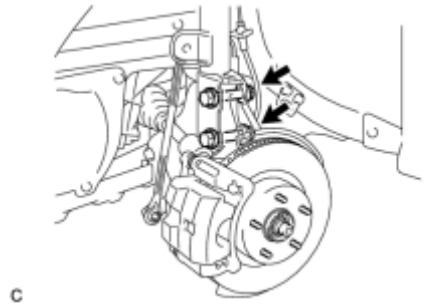
- Do not remove the front support to front shock absorber nut.
- Loosen the nut only when the front shock absorber with coil spring needs to be disassembled.



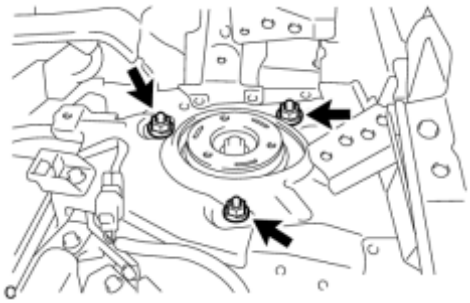
(b) Support the front axle using a jack and wooden block.

Text in Illustration

*1	Wooden Block



(c) Remove the 2 bolts and 2 nuts, and separate the front shock absorber with coil spring (lower side) from the steering knuckle.

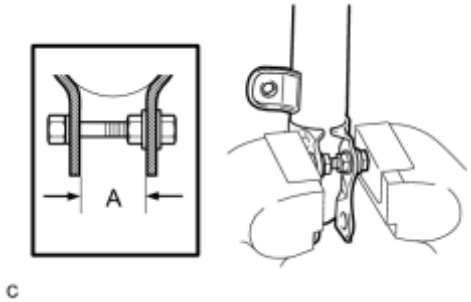


(d) Remove the 3 nuts and front shock absorber with coil spring.

NOTICE:

Make sure that the front speed sensor is completely separated from the front shock absorber with coil spring.

9. SECURE FRONT SHOCK ABSORBER WITH COIL SPRING



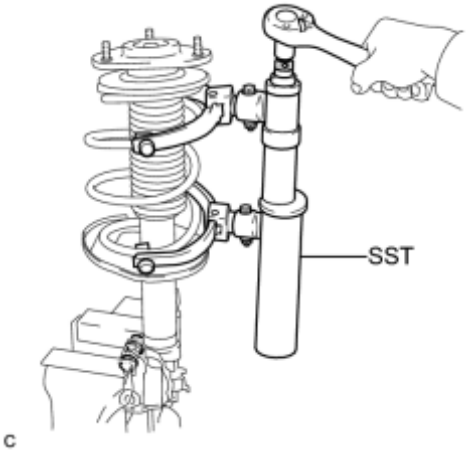
C

(a) Install a bolt and nut to the front shock absorber as shown in the illustration and secure the front shock absorber in a vise.

Standard length A:

40 mm (1.575 in.)

10. REMOVE FRONT SUPPORT TO FRONT SHOCK ABSORBER NUT



C

(a) Using SST, compress the front coil spring.

SST: 09727-30021

09727-00010

09727-00021

09727-00031

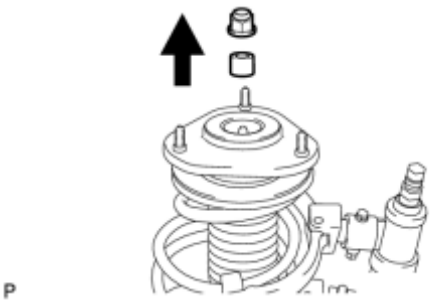
NOTICE:

Do not use an impact wrench. It will damage SST.

HINT:

If the front coil spring is compressed at an angle, using 2 SST will make the work easier.

(b) Check that the front coil spring is sufficiently compressed.



P

(c) Remove the front support to front shock absorber nut and collar.

11. REMOVE FRONT SUSPENSION SUPPORT SUB-ASSEMBLY

12. REMOVE STRUT MOUNTING BEARING

13. REMOVE FRONT COIL SPRING UPPER SEAT

14. REMOVE FRONT COIL SPRING UPPER INSULATOR

15. REMOVE FRONT COIL SPRING

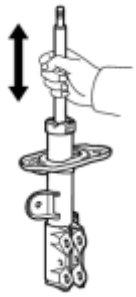
16. REMOVE FRONT SPRING BUMPER

17. REMOVE FRONT COIL SPRING LOWER INSULATOR

18. REMOVE FRONT SHOCK ABSORBER ASSEMBLY

INSPECTION

1. INSPECT FRONT SHOCK ABSORBER ASSEMBLY



P

(a) Compress and extend the shock absorber rod 4 times or more.

Standard:

There is no abnormal resistance or sound.

HINT:

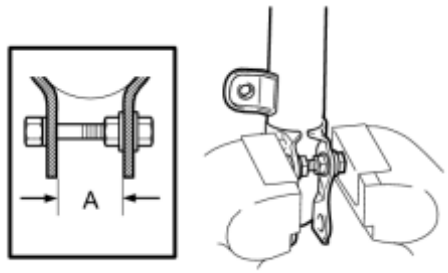
If there is any abnormality, replace the front shock absorber assembly with a new one.

INSTALLATION

HINT:

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

1. SECURE FRONT SHOCK ABSORBER ASSEMBLY



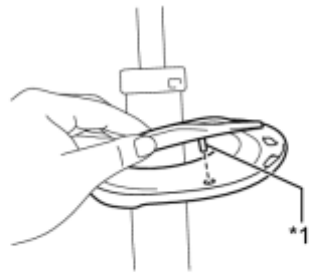
c

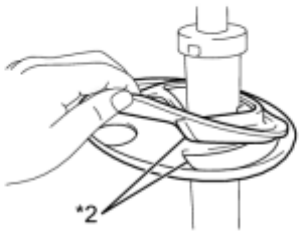
(a) Install the bolt and nut to the front shock absorber as shown in the illustration and secure the front shock absorber in a vise.

Standard length A:

40 mm (1.575 in.)

2. INSTALL FRONT COIL SPRING LOWER INSULATOR





c

(a) Install the front coil spring lower insulator to the front shock absorber assembly.

Text in Illustration

*1	Positioning Pin
*2	Depression

NOTICE:

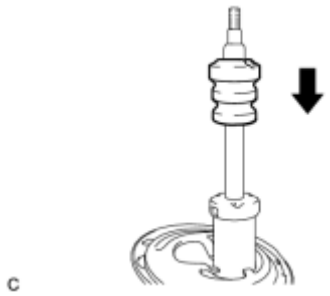
When installing the insulator, fit the insulator to the depression of the spring seat and align the positioning pin into the hole.

3. INSTALL FRONT SPRING BUMPER

(a) Install the front spring bumper to the front shock absorber assembly.

NOTICE:

Face the smaller diameter end of the front spring bumper downward.



C

4. INSTALL FRONT COIL SPRING

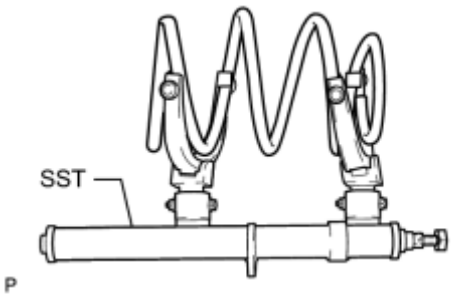
(a) Using SST, compress the front coil spring.

SST: 09727-30021

09727-00010

09727-00021

09727-00031



P

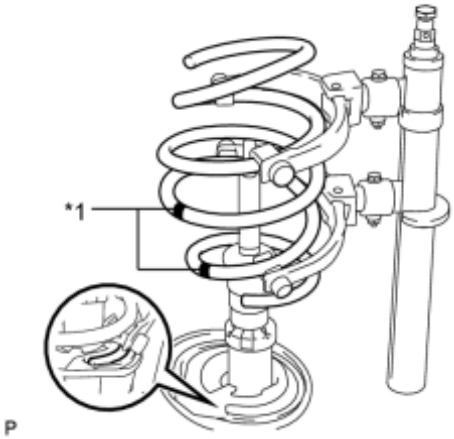
NOTICE:

Do not use an impact wrench. It will damage the SST.

HINT:

If the front coil spring is compressed at an angle, using 2 SST will make the work easier.

(b) Install the front coil spring.



P

Text in Illustration

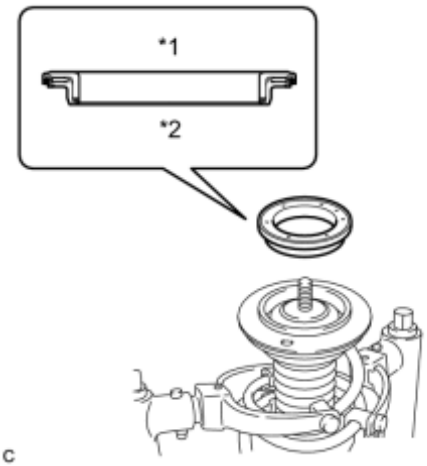
*1	Paint Mark

- Make sure that the end of the front coil spring is positioned in the depression of the lower spring seat.
- Make sure to install the coil spring with the paint mark facing downward.

5. INSTALL FRONT COIL SPRING UPPER INSULATOR

6. INSTALL FRONT COIL SPRING UPPER SEAT

7. INSTALL STRUT MOUNTING BEARING



c

(a) Install the strut mounting bearing.

Text in Illustration

*1	Upper Side
*2	Lower Side

NOTICE:

Do not install the bearing upside down.

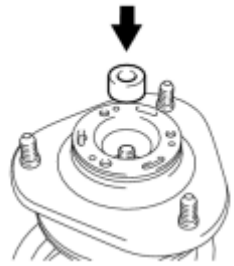
8. INSTALL FRONT SUSPENSION SUPPORT SUB-ASSEMBLY

(a) Install the front suspension support sub-assembly to the front shock absorber assembly.

NOTICE:

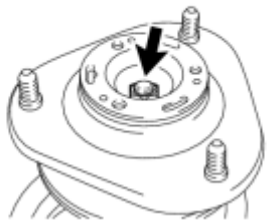
When installing, align the cutout on the front suspension support sub-assembly and the shock absorber piston rod end.

9. TEMPORARILY TIGHTEN FRONT SUPPORT TO FRONT SHOCK ABSORBER NUT



c

(a) Install the collar to the front shock absorber assembly.



c

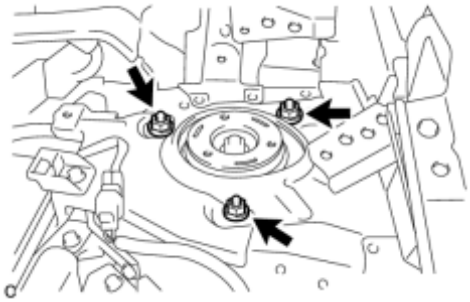
(b) Temporarily tighten a new front support to front shock absorber nut.

(c) Remove SST from the front coil spring.

NOTICE:

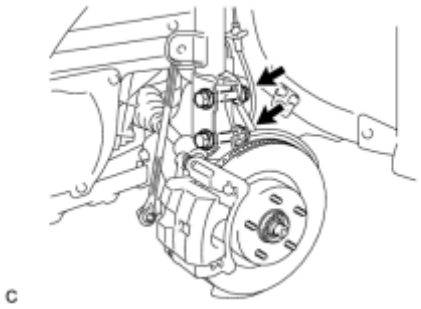
Do not use an impact wrench. It will damage SST.

10. INSTALL FRONT SHOCK ABSORBER WITH COIL SPRING



(a) Install the front shock absorber with coil spring (upper side) with the 3 nuts.

Torque: **50 N·m (510 kgf·cm, 37ft·lbf)**



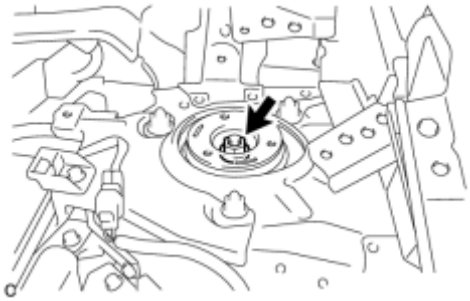
(b) Install the front shock absorber with coil spring (lower side) to the steering knuckle with the 2 bolts and 2 nuts.

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

NOTICE:

While keeping the bolts from rotating, tighten the nuts.

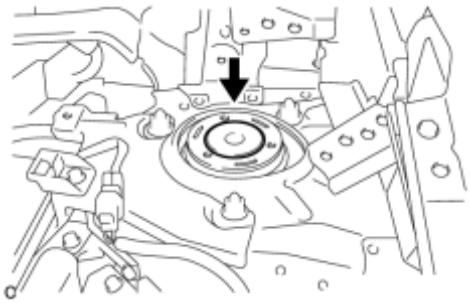
11. FULLY TIGHTEN FRONT SUPPORT TO FRONT SHOCK ABSORBER NUT



(a) Fully tighten the front support to front shock absorber nut.

Torque: **47 N·m (479 kgf·cm, 35ft·lbf)**

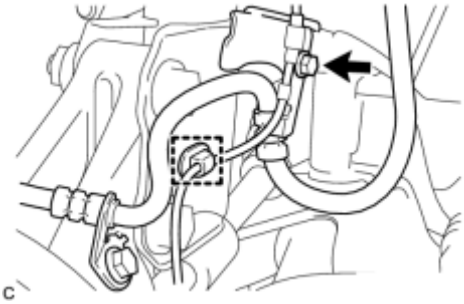
12. INSTALL FRONT SUSPENSION SUPPORT DUST COVER



(a) Install the front suspension support dust cover.

13. 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)**

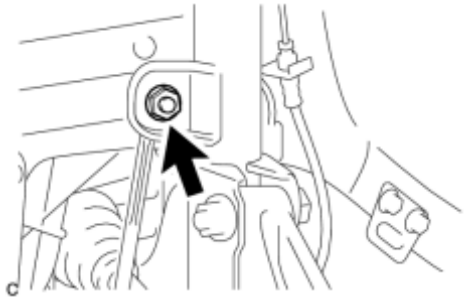
NOTICE:

Do not twist the front speed sensor when installing it.

HINT:

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

14. INSTALL FRONT STABILIZER LINK ASSEMBLY



(a) Install the front stabilizer link assembly to the front shock absorber with coil spring with the nut.

Torque: **74 N·m (755 kgf·cm, 55ft·lbf)**

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

15. INSTALL OUTER COWL TOP PANEL SUB-ASSEMBLY INFO

16. INSTALL COWL BODY MOUNTING REINFORCEMENT LH INFO

17. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY

HINT:

Refer to the procedure from Install Windshield Wiper Motor and Link Assembly INFO.

18. INSTALL FRONT WHEEL

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

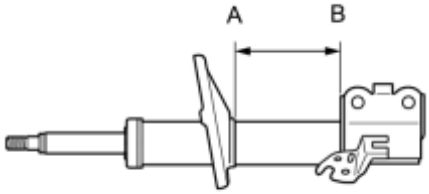
19. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

Inspect and adjust the front wheel alignment INFO.

DISPOSAL

1. DISPOSE OF FRONT SHOCK ABSORBER ASSEMBLY



P

(a) Position the front shock absorber assembly level with the piston rod fully extended. Using a drill, make a hole in the cylinder between A and B shown in the illustration to discharge the gas inside.

NOTICE:

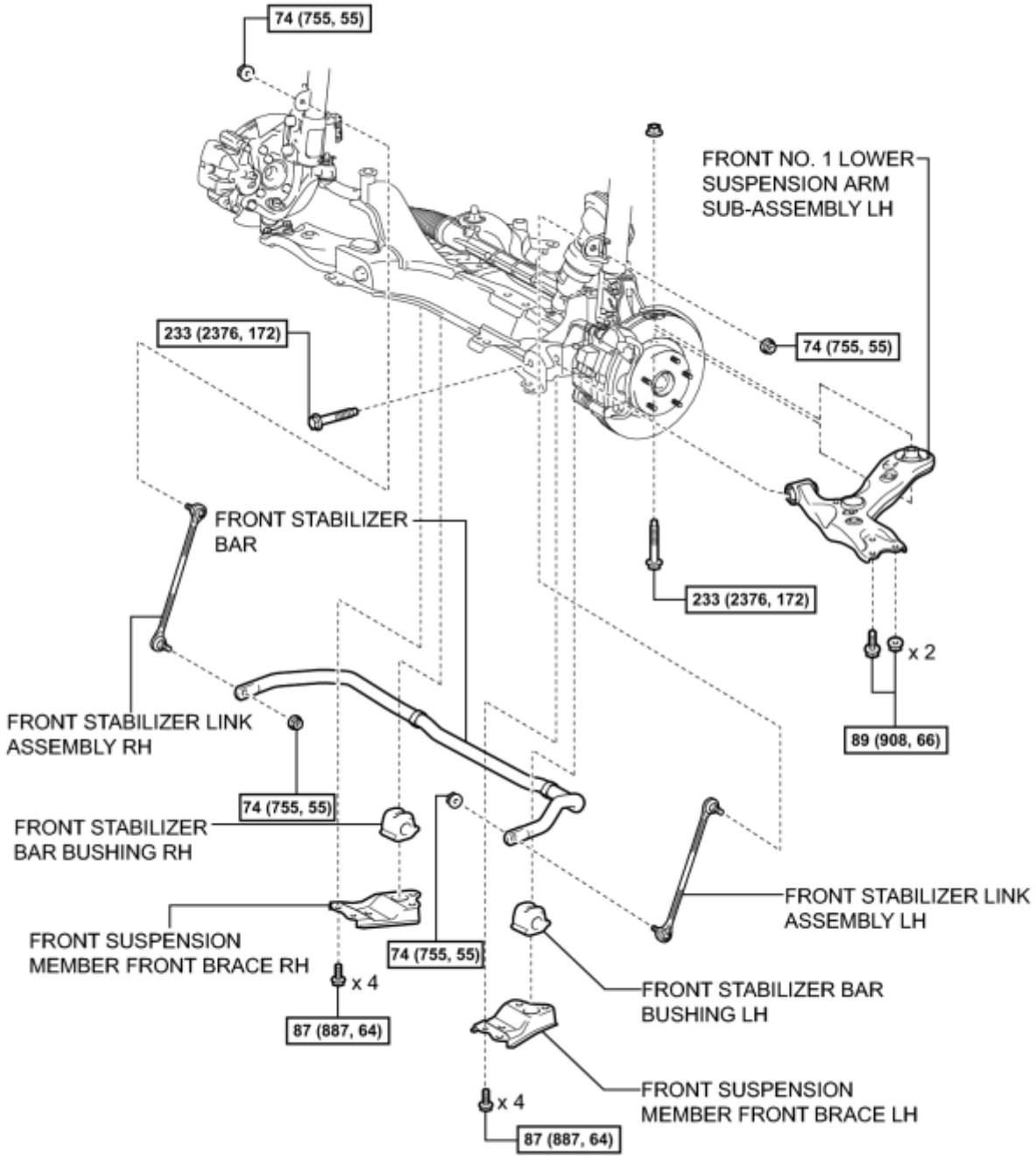
Always use proper safety equipment and be careful when drilling because shards of metal fly about.

HINT:

The gas is colorless, odorless and non-poisonous.

COMPONENTS

ILLUSTRATION



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

c

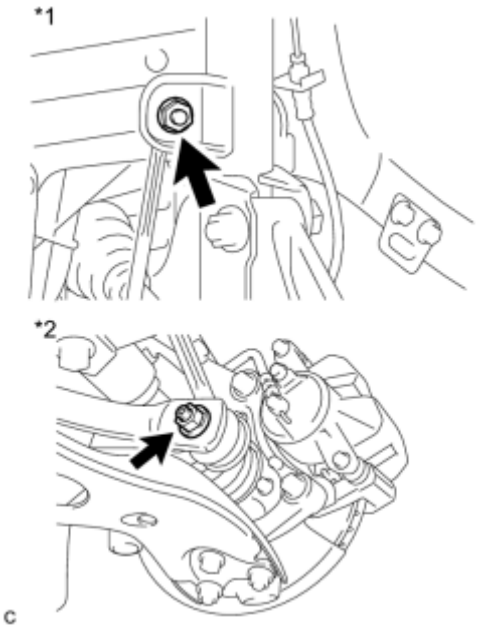
REMOVAL

1. REMOVE FRONT WHEELS

2. REMOVE NO. 1 ENGINE UNDER COVER

3. REMOVE NO. 2 ENGINE UNDER COVER

4. REMOVE FRONT STABILIZER LINK ASSEMBLY LH



(a) Remove the 2 nuts and front stabilizer link assembly LH.

Text in Illustration

*1	Upper Side
*2	Lower Side

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

5. REMOVE FRONT STABILIZER LINK ASSEMBLY RH

HINT:

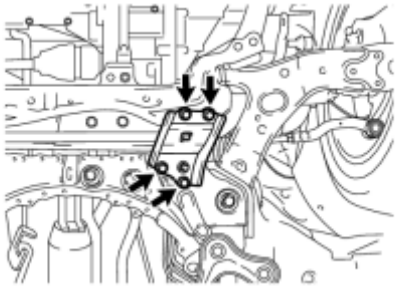
Perform the same procedure as for the LH side.

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

7. REMOVE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH INFO

8. REMOVE FRONT SUSPENSION MEMBER FRONT BRACE LH

(a) Remove the 4 bolts and front suspension member front brace LH.



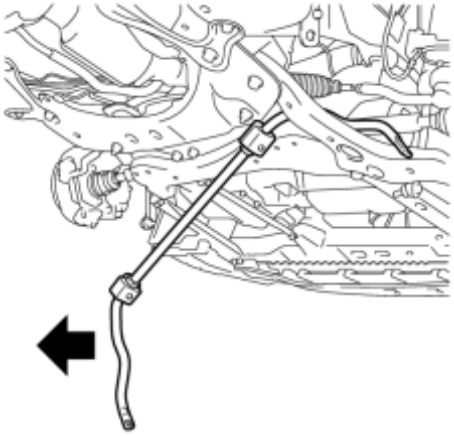
C

9. REMOVE FRONT SUSPENSION MEMBER FRONT BRACE RH

HINT:

Perform the same procedure as for the LH side.

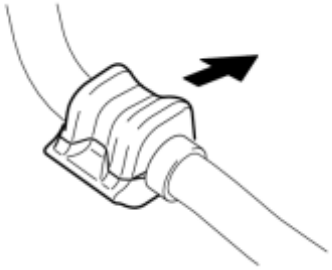
10. REMOVE FRONT STABILIZER BAR



C

(a) Remove the front stabilizer bar with front stabilizer bar bushing from the front suspension crossmember sub-assembly.

11. REMOVE FRONT STABILIZER BAR BUSHING LH



P

(a) Remove the front stabilizer bar bushing LH from the front stabilizer bar.

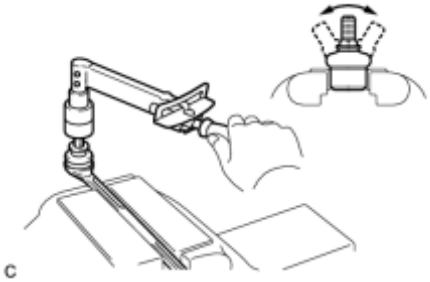
12. REMOVE FRONT STABILIZER BAR BUSHING RH

HINT:

Perform the same procedure as for the LH side.

INSPECTION

1. INSPECT FRONT STABILIZER LINK ASSEMBLY



(a) Inspect the turning torque of the ball joint.

(1) Secure the front stabilizer link assembly in a vise using aluminum plates.

(2) Install the nut to the front stabilizer link assembly stud.

(3) Using a torque wrench, turn the nut continuously at a rate of 3 to 5 seconds per turn and take the torque reading on the 5th turn.

Torque: **0.05 to 1.96 N·m (0.5 to 20 kgf·cm, 0.4 to 17in·lbf)**

HINT:

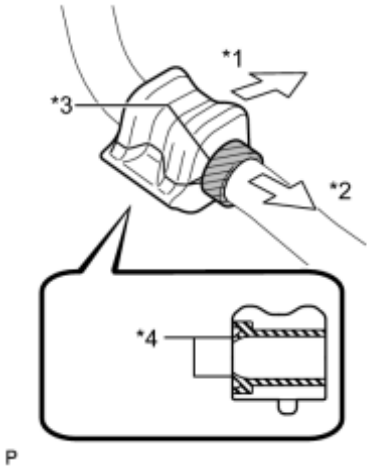
If the turning torque is not within the specified range, replace the front stabilizer link assembly with a new one.

(b) Inspect the dust cover.

(1) Check that the dust cover is not cracked and that there is no grease on it.

INSTALLATION

1. INSTALL FRONT STABILIZER BAR BUSHING LH



P

(a) Install the front stabilizer bar bushing to the front stabilizer bar as shown in the illustration.

Text in Illustration

*1	Front of the Vehicle
*2	Inside of the Vehicle
*3	Stopper
*4	Dust Lip

- Install the front stabilizer bar bushing so that the dust lips face outward of the vehicle.
- Install the front stabilizer bar bushing so that the cutouts face rearward of the vehicle.

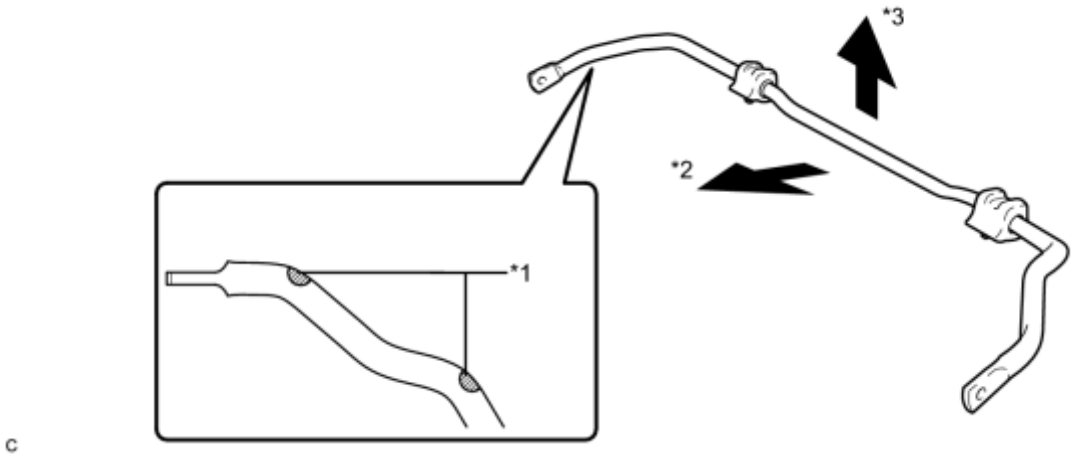
2. INSTALL FRONT STABILIZER BAR BUSHING RH

HINT:

Perform the same procedure as for the LH side.

3. INSTALL FRONT STABILIZER BAR

(a) Install the front stabilizer bar to the front suspension crossmember sub-assembly so that the identification mark is positioned on the right side of the vehicle.



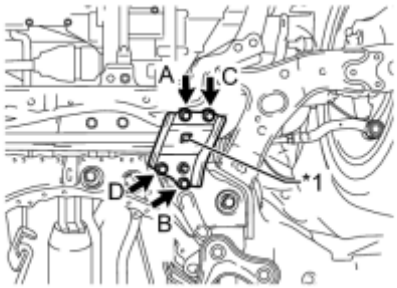
C

Text in Illustration

*1	Identification Mark	*2	Front of the Vehicle
*3	Top of the Vehicle	-	-

4. INSTALL FRONT SUSPENSION MEMBER FRONT BRACE LH

(a) Install the front suspension member front brace LH with the 4 bolts.



c

Text in Illustration

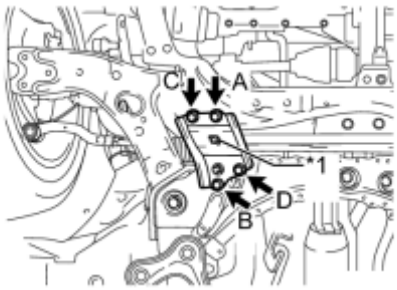
*1	Protrusion

Torque: **87 N·m (887 kgf·cm, 64ft·lbf)**

- Temporarily tighten bolt A, and then fully tighten the 4 bolts in the order of B, C, D, and A.
- After installing the front suspension member front brace LH, make sure that the protrusion of the No. 1 front stabilizer bar bushing comes out.

5. INSTALL FRONT SUSPENSION MEMBER FRONT BRACE RH

(a) Install the front suspension member front brace RH with the 4 bolts.



c

Text in Illustration

*1	Protrusion

Torque: **87 N·m (887 kgf·cm, 64ft·lbf)**

- Temporarily tighten bolt A, and then fully tighten the 4 bolts in the order of B, C, D, and A.
- After installing the front suspension member front brace RH, make sure that the protrusion of the No. 1 front stabilizer bar bushing comes out.

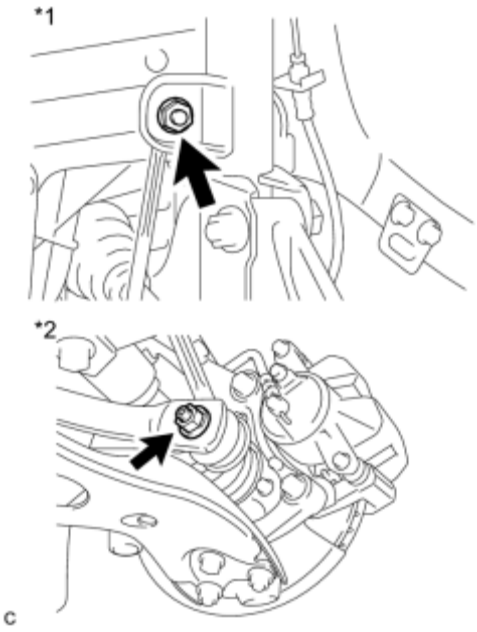
6. TEMPORARILY INSTALL FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH INFO

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

8. INSTALL FRONT STABILIZER LINK ASSEMBLY LH

(a) Install the front stabilizer link assembly LH with the 2 nuts.

Text in Illustration



*1	Upper Side
*2	Lower Side

Torque: **74 N·m (755 kgf·cm, 55ft·lbf)**

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

9. INSTALL FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Perform the same procedure for as the LH side.

10. INSTALL FRONT WHEELS

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

11. STABILIZE SUSPENSION INFO

12. FULLY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH INFO

13. INSTALL NO. 2 ENGINE UNDER COVER

14. INSTALL NO. 1 ENGINE UNDER COVER

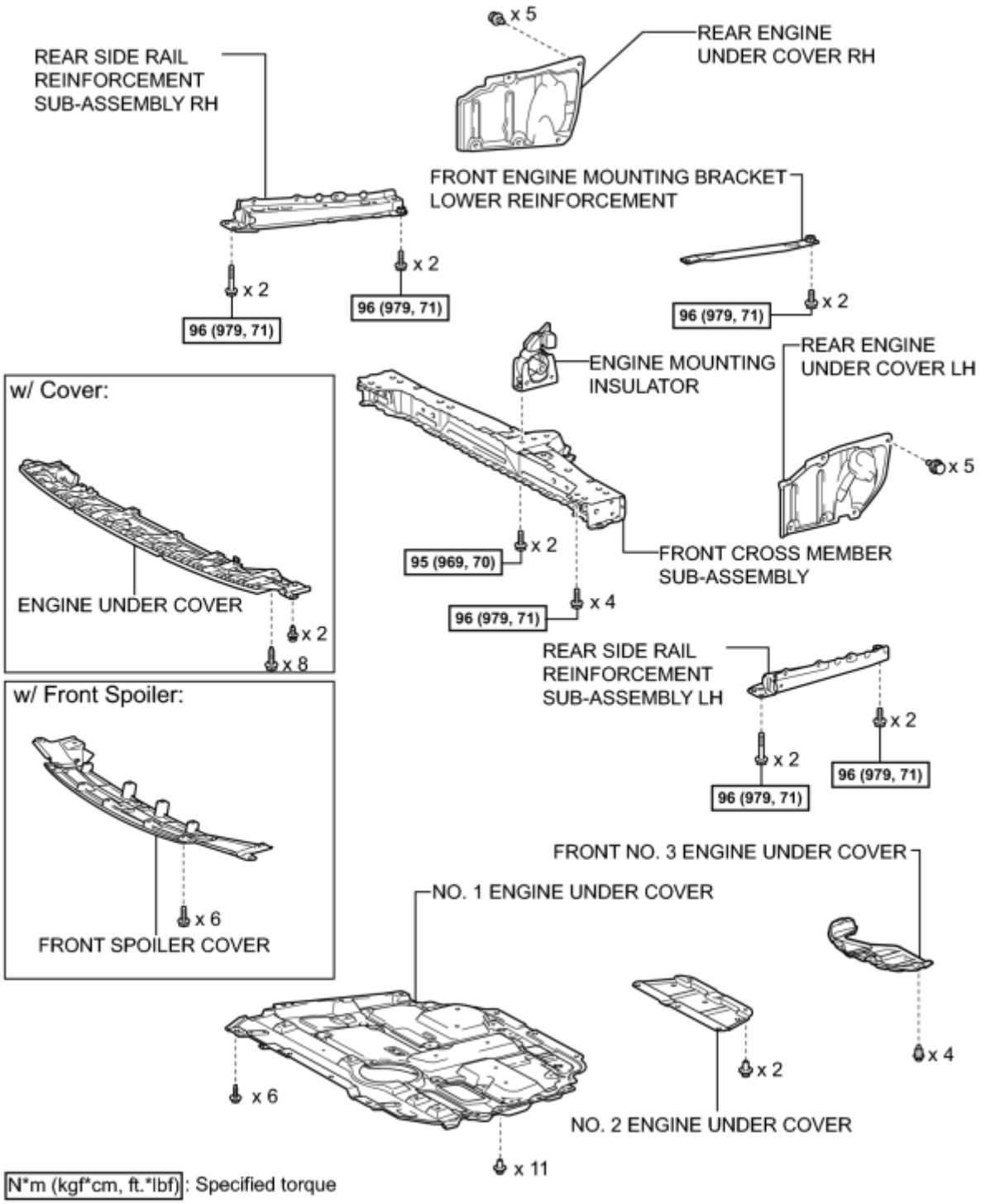
15. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

Inspect and adjust the front wheel alignment INFO.

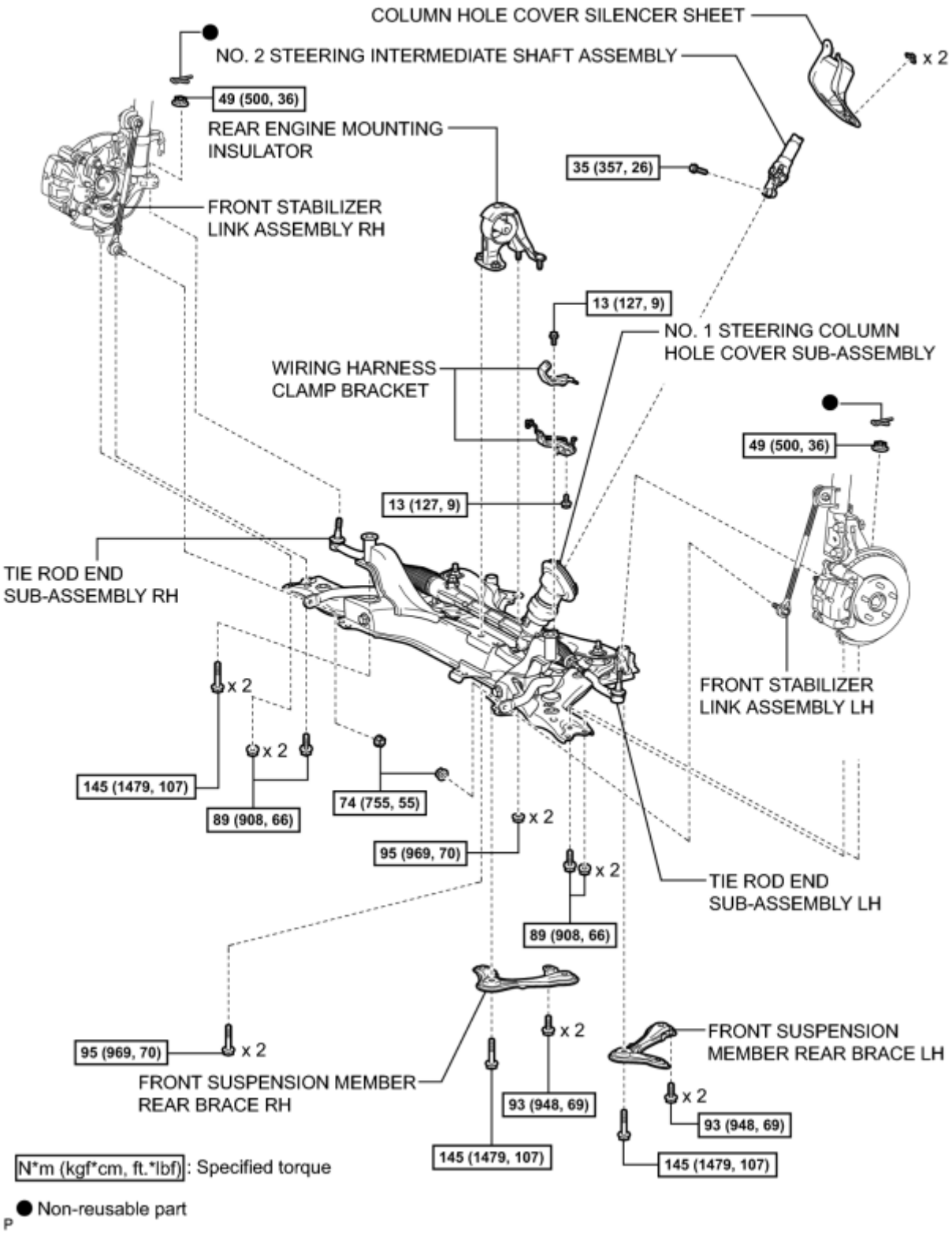
COMPONENTS

ILLUSTRATION

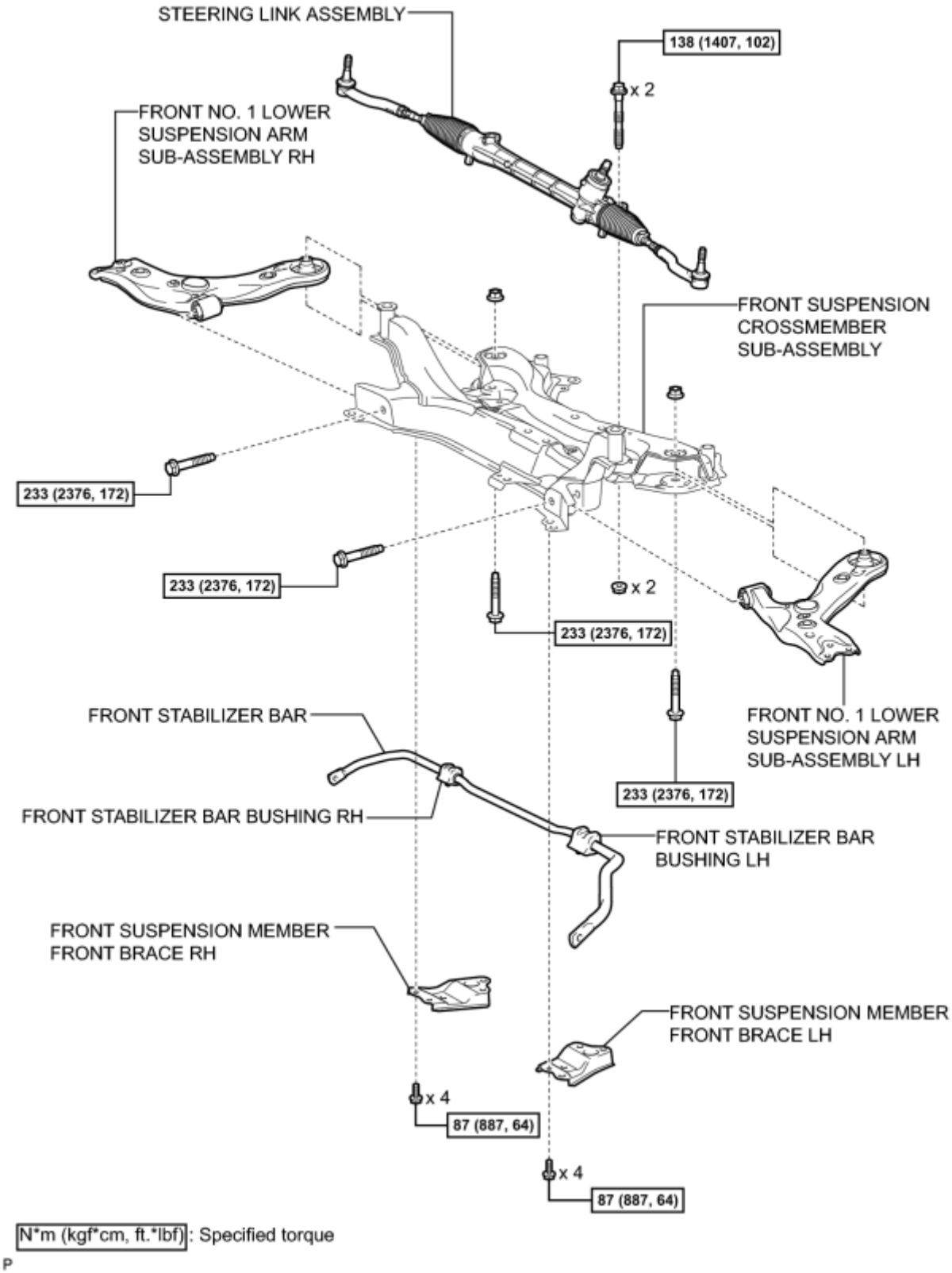


P

ILLUSTRATION



ILLUSTRATION



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

P

REMOVAL

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

2. SECURE STEERING WHEEL INFO

3. REMOVE COLUMN HOLE COVER SILENCER SHEET INFO

4. SEPARATE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY INFO

5. SEPARATE NO. 1 STEERING COLUMN HOLE COVER SUB-ASSEMBLY INFO

6. REMOVE FRONT WHEELS

7. REMOVE NO. 1 ENGINE UNDER COVER

8. REMOVE NO. 2 ENGINE UNDER COVER

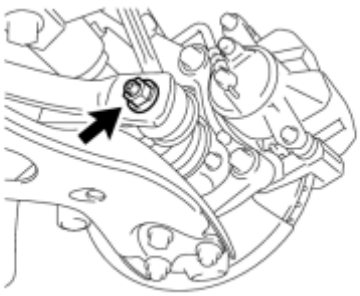
9. REMOVE FRONT NO. 3 ENGINE UNDER COVER

10. REMOVE REAR ENGINE UNDER COVER LH

11. REMOVE REAR ENGINE UNDER COVER RH

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

13. REMOVE ENGINE UNDER COVER (w/ Cover)



14. SEPARATE FRONT STABILIZER LINK ASSEMBLY LH

(a) Remove the nut and separate the stabilizer link assembly LH from the front stabilizer bar.

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

15. SEPARATE FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

16. SEPARATE TIE ROD END SUB-ASSEMBLY LH INFO

17. SEPARATE TIE ROD END SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

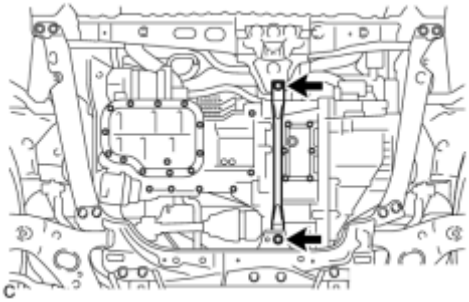
18. SEPARATE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH INFO

19. SEPARATE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

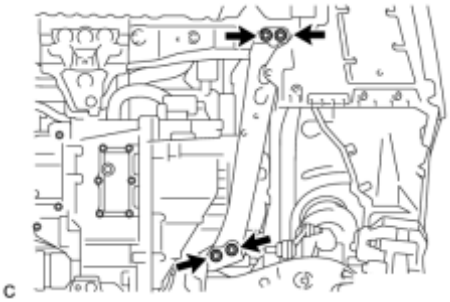
Perform the same procedure as for the LH side.

20. REMOVE FRONT ENGINE MOUNTING BRACKET LOWER REINFORCEMENT



(a) Remove the 2 bolts and front engine mounting bracket lower reinforcement.

21. REMOVE REAR SIDE RAIL REINFORCEMENT SUB-ASSEMBLY LH



(a) Remove the 4 bolts and rear side rail reinforcement sub-assembly LH.

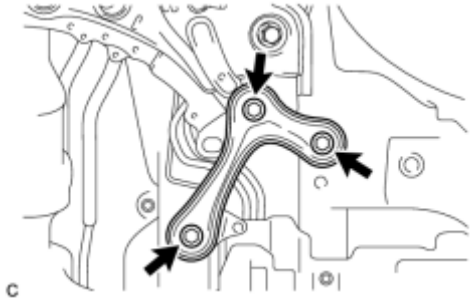
22. REMOVE REAR SIDE RAIL REINFORCEMENT SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

23. REMOVE FRONT SUSPENSION MEMBER REAR BRACE LH

(a) Remove the 3 bolts and front suspension member rear brace LH.

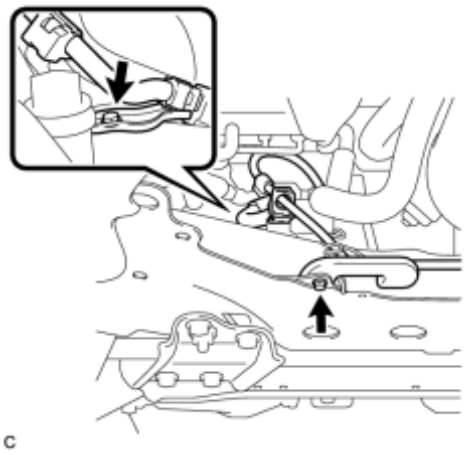


24. REMOVE FRONT SUSPENSION MEMBER REAR BRACE RH

HINT:

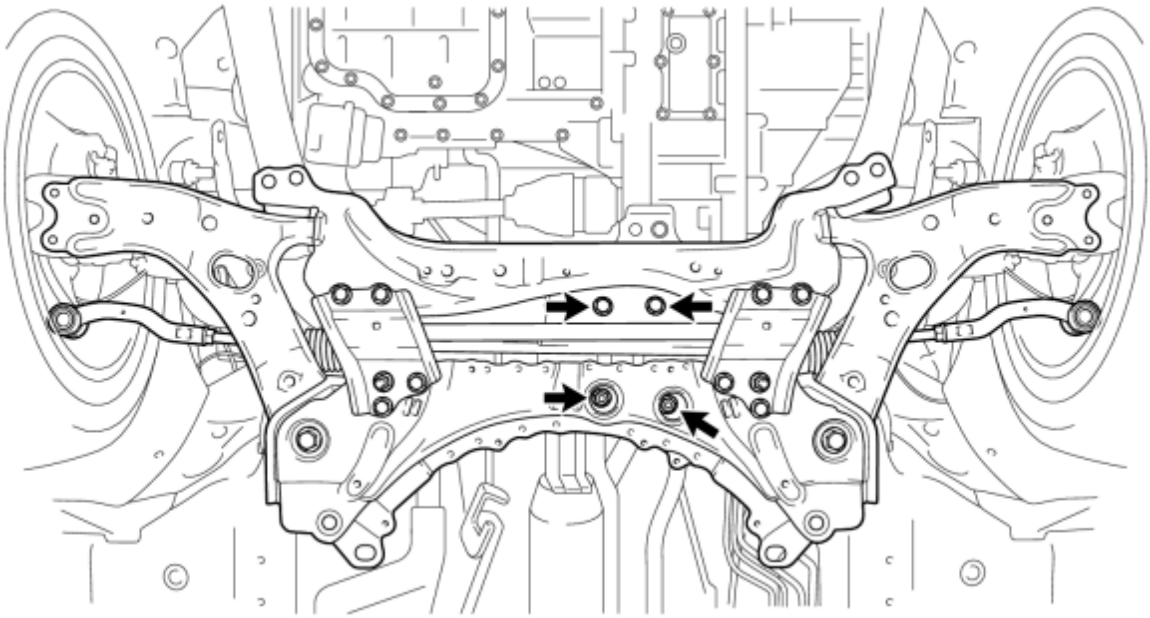
Perform the same procedure as for the LH side.

25. REMOVE FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY



(a) Remove the 2 bolts and 2 wire harness clamp brackets from the front suspension crossmember sub-assembly.

(b) Remove the 2 bolts and 2 nuts, and separate the front suspension crossmember sub-assembly from the rear engine mounting insulator.

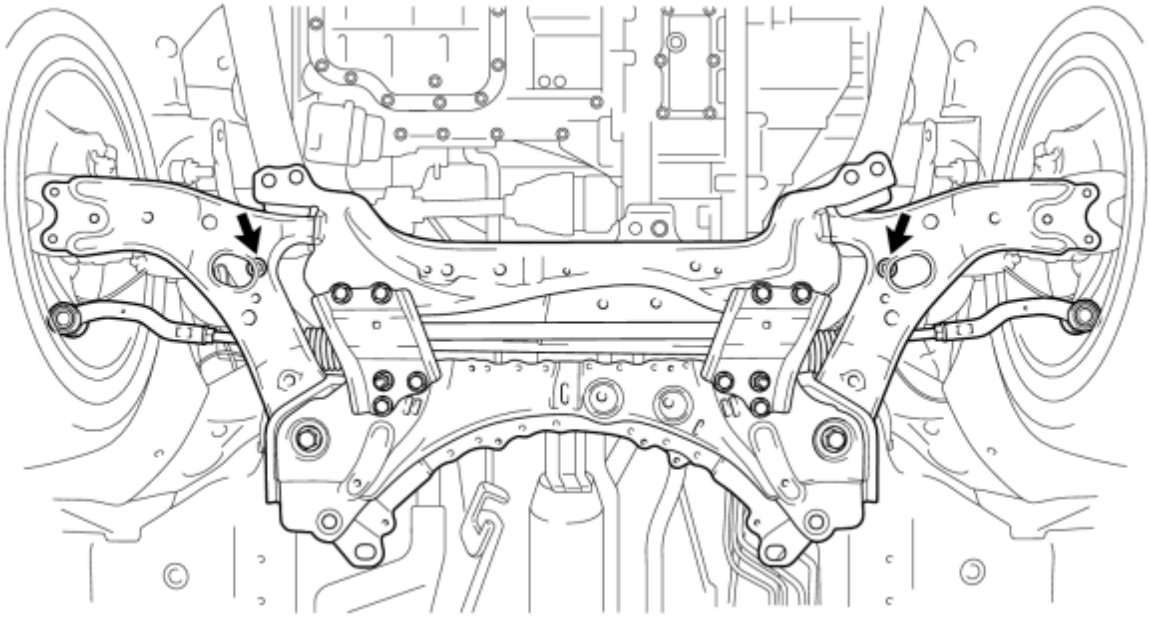


C

C

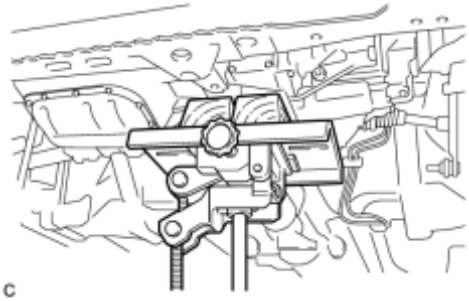
(c) Using a transmission jack, support the front suspension crossmember sub-assembly.

(d) Remove the 2 bolts and front suspension crossmember sub-assembly.



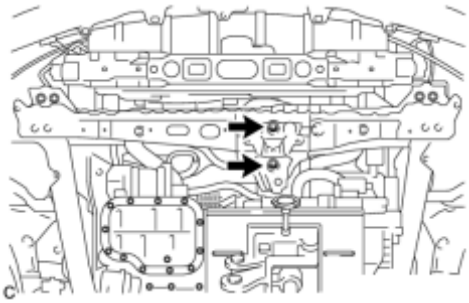
C

26. REMOVE FRONT CROSS MEMBER SUB-ASSEMBLY



C

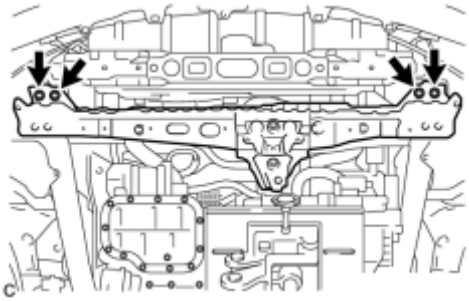
(a) Using a transmission jack, support the engine assembly with transaxle.



C

(b) Remove the 2 bolts and separate the front cross member sub-assembly from the engine mounting insulator.

(c) Remove the 4 bolts and front cross member sub-assembly.

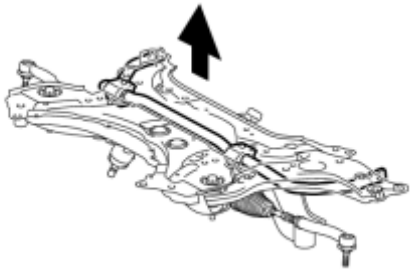


C

27. REMOVE FRONT SUSPENSION MEMBER FRONT BRACE LH INFO

28. REMOVE FRONT SUSPENSION MEMBER FRONT BRACE RH INFO

29. REMOVE FRONT STABILIZER BAR

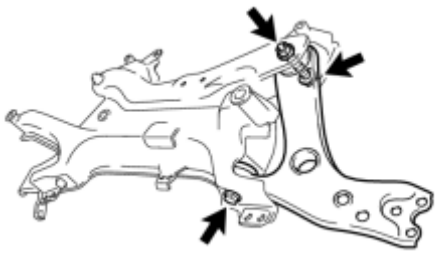


P

(a) Remove the front stabilizer bar with front stabilizer bar bushings from the front suspension crossmember sub-assembly.

30. REMOVE STEERING LINK ASSEMBLY INFO

31. REMOVE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH



C

(a) Remove the 2 bolts, nut and front No. 1 lower suspension arm sub-assembly LH from the front suspension crossmember.

NOTICE:

Because the nut has its own stopper, do not turn the nut. Loosen the bolt with the nut secured.

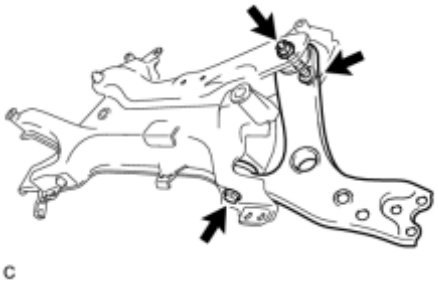
32. REMOVE FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

INSTALLATION

1. TEMPORARILY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH



(a) Temporarily tighten the front No. 1 lower suspension arm sub-assembly LH to the front suspension crossmember with the 2 bolts and nut.

NOTICE:

Because the nut has its own stopper, do not turn the nut. Tighten the bolt with the nut secured.

2. TEMPORARILY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

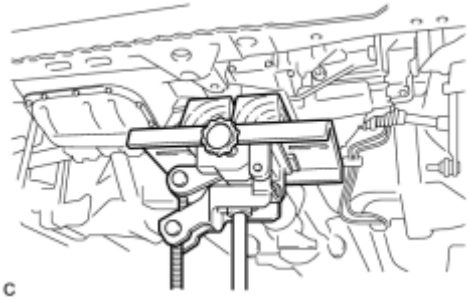
3. INSTALL STEERING LINK ASSEMBLY INFO

4. INSTALL FRONT STABILIZER BAR INFO

5. INSTALL FRONT SUSPENSION MEMBER FRONT BRACE LH INFO

6. INSTALL FRONT SUSPENSION MEMBER FRONT BRACE RH INFO

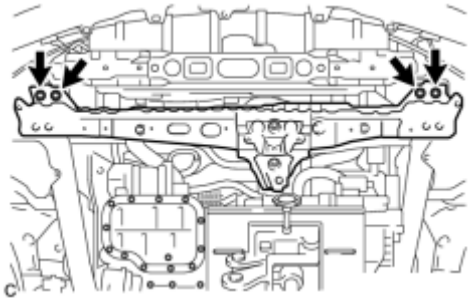
7. INSTALL FRONT CROSS MEMBER SUB-ASSEMBLY

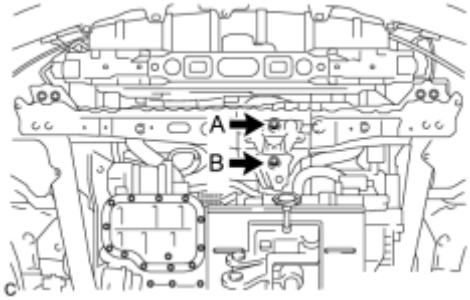


(a) Using a transmission jack, support the engine assembly with transaxle.

(b) Install the front cross member sub-assembly with the 4 bolts.

Torque: **96 N·m (979 kgf·cm, 71ft·lbf)**





(c) Connect the engine mounting insulator with the 2 bolts.

Torque: **95 N·m (969 kgf·cm, 70ft·lbf)**

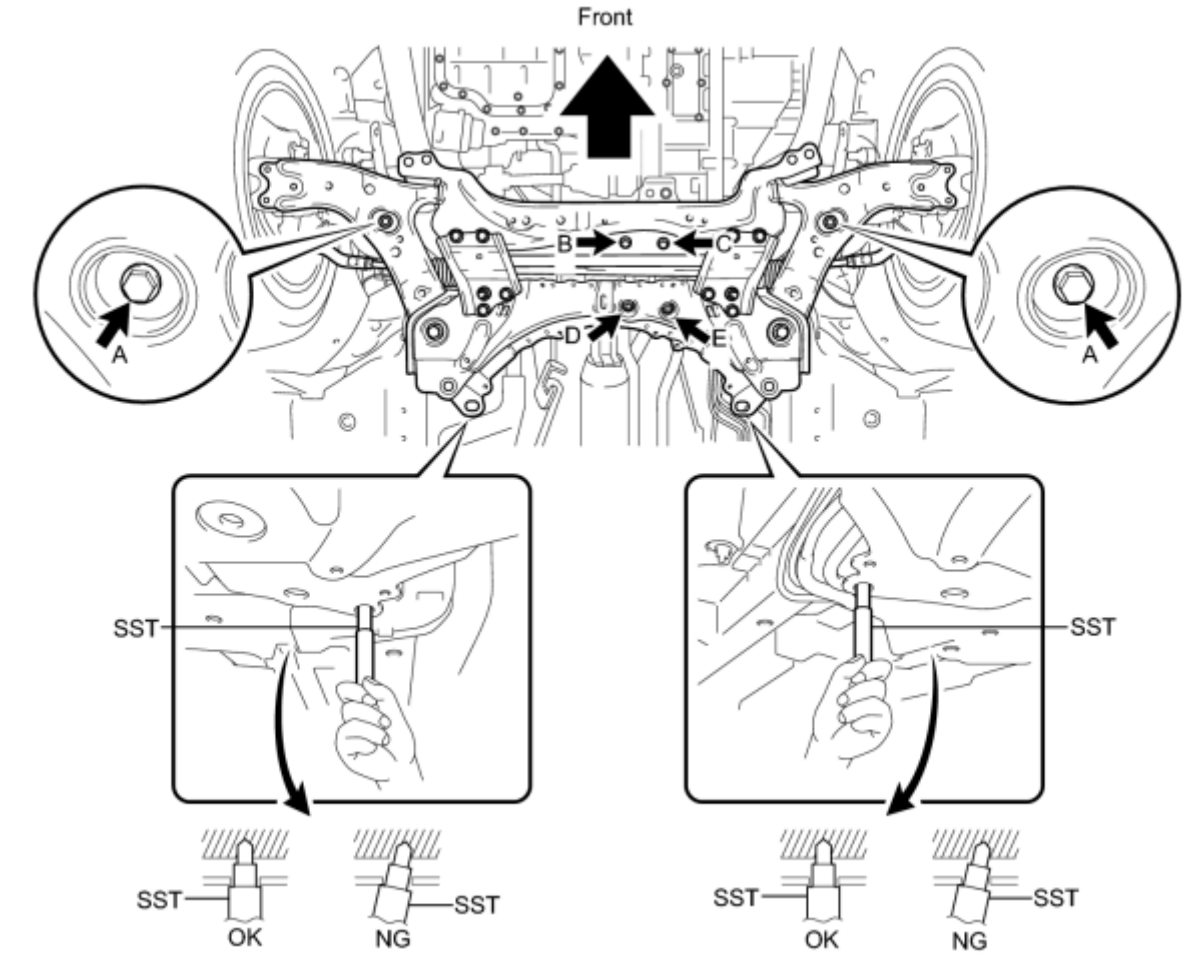
NOTICE:

Temporarily tighten bolt B and then fully tighten the 2 bolts in the order of A and B.

8. INSTALL FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY

(a) Support the front suspension crossmember with a transmission jack.

(b) While inserting SST into the reference holes on the front suspension crossmember RH and LH alternately, tighten 2 bolts A, 2 bolts B, C and 2 nuts on the RH and LH sides to the respective specified torque in several steps.



c

SST: 09670-00020

Bolt A - Torque: **145 N·m (1479 kgf·cm, 107ft·lbf)**

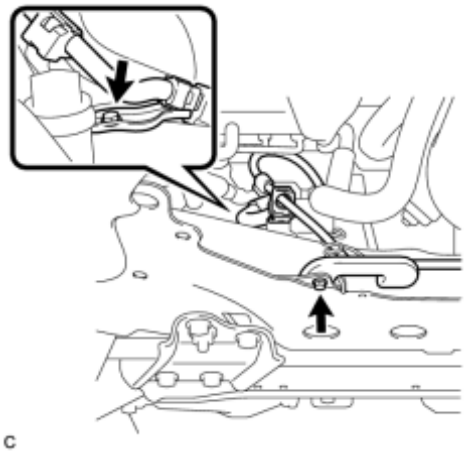
Bolt B, C, Nut D, E - Torque: **95 N·m (969 kgf·cm, 70ft·lbf)**

NOTICE:

Temporarily tighten bolt B, and then fully tighten the 2 bolts and 2 nuts in the order of C, E, D, and B.

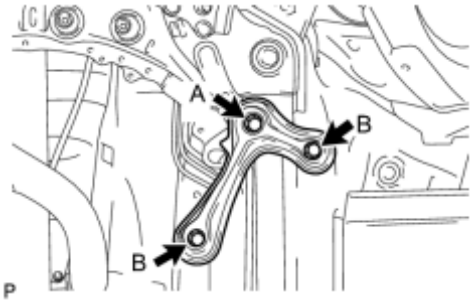
(c) Install the 2 wire harness clamp brackets with the 2 bolts.

Torque: **13 N·m (127 kgf·cm, 9ft·lbf)**



C

9. INSTALL FRONT SUSPENSION MEMBER REAR BRACE LH



P

(a) Install the front suspension member rear brace LH with the 3 bolts.

Bolt A - Torque: **145 N·m (1479 kgf·cm, 107ft·lbf)**

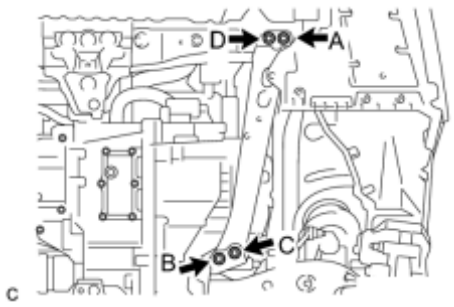
Bolt B - Torque: **93 N·m (948 kgf·cm, 69ft·lbf)**

10. INSTALL FRONT SUSPENSION MEMBER REAR BRACE RH

HINT:

Perform the same procedure as for the LH side.

11. INSTALL REAR SIDE RAIL REINFORCEMENT SUB-ASSEMBLY LH



C

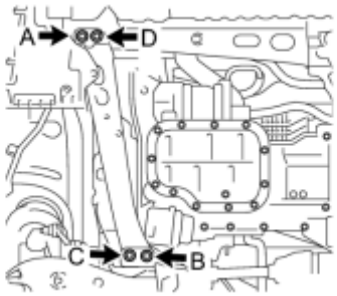
(a) Install the rear side rail reinforcement sub-assembly LH with the 4 bolts.

Torque: **96 N·m (979 kgf·cm, 71ft·lbf)**

NOTICE:

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

12. INSTALL REAR SIDE RAIL REINFORCEMENT SUB-ASSEMBLY RH



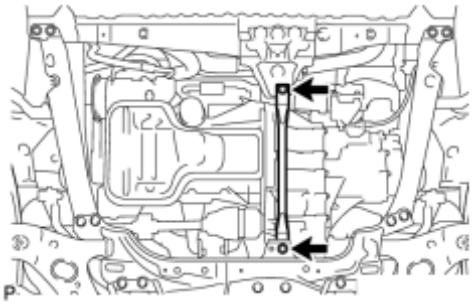
(a) Install the rear side rail reinforcement sub-assembly RH with the 4 bolts.

Torque: **96 N·m (979 kgf·cm, 71ft·lbf)**

NOTICE:

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

13. INSTALL FRONT ENGINE MOUNTING BRACKET LOWER REINFORCEMENT



(a) Install the front engine mounting bracket lower reinforcement with the 2 bolts.

Torque: **96 N·m (979 kgf·cm, 71ft·lbf)**

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

15. CONNECT FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

16. CONNECT TIE ROD END SUB-ASSEMBLY LH INFO

17. CONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

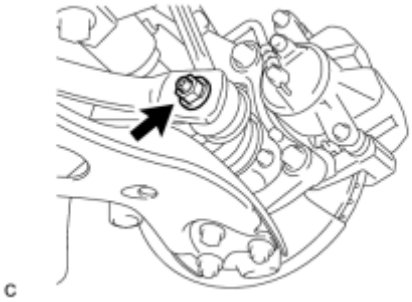
Perform the same procedure as for the LH side.

18. INSTALL FRONT STABILIZER LINK ASSEMBLY LH

(a) Install the front stabilizer link assembly LH to the front stabilizer bar with the nut.

Torque: **74 N·m (755 kgf·cm, 55ft·lbf)**

HINT:



If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud bolt.

19. INSTALL FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

20. CONNECT NO. 1 STEERING COLUMN HOLE COVER SUB-ASSEMBLY INFO

21. CONNECT NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY INFO

22. INSTALL COLUMN HOLE COVER SILENCER SHEET INFO

23. INSTALL FRONT WHEELS

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

24. STABILIZE SUSPENSION

(a) Lower the vehicle.

(b) Press down on the vehicle several times to stabilize the suspension.

25. FULLY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY LH INFO

26. FULLY TIGHTEN FRONT NO. 1 LOWER SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

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

28. INSTALL ENGINE UNDER COVER (w/ Cover)

29. INSTALL REAR ENGINE UNDER COVER LH

30. INSTALL REAR ENGINE UNDER COVER RH

31. INSTALL FRONT NO. 3 ENGINE UNDER COVER

32. INSTALL NO. 2 ENGINE UNDER COVER

33. INSTALL NO. 1 ENGINE UNDER COVER

34. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

Inspect and adjust the front wheel alignment INFO.

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.

Suspension System

Symptom	Suspected Area	See page
Vehicle pulls to one side while driving	Tire (worn or improperly inflated)	INFO
	Front wheel alignment (incorrect)	INFO
	Front hub bearing (worn)	INFO
	Front shock absorber (worn)	INFO
	Steering gear (out of adjustment or broken)	INFO
	Suspension parts (worn)	-
Bottoming	Vehicle (overloaded)	-
	Front coil spring (weak)	INFO
	Front shock absorber (worn)	INFO
Sways/pitches	Tire (worn or improperly inflated)	INFO
	Front stabilizer bar (bent or broken)	INFO
	Front coil spring (weak)	INFO
	Front shock absorber (worn)	INFO
Wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Front wheel alignment (incorrect)	INFO
	Front lower suspension arm (worn)	INFO
	Front shock absorber (worn)	INFO
	Front lower ball joint (worn)	INFO
	Front hub bearing (worn)	INFO
Abnormal tire wear	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Front wheel alignment (incorrect)	INFO
	Suspension parts (worn)	-

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.

Rear Suspension System

Symptom	Suspected Area	See page
Vehicle pulls to one side while driving.	Tire (worn or improperly inflated)	INFO
	Rear wheel alignment (incorrect)	INFO
	Rear shock absorber (worn)	INFO
	Rear axle hub (worn)	INFO
	Suspension parts (worn)	-
Bottoming	Vehicle (overloaded)	-
	Rear coil spring (weak)	INFO
	Rear shock absorber (worn)	INFO
Sway/pitches	Tire (worn or improperly inflated)	INFO
	Rear coil spring (weak)	INFO
	Rear shock absorber (worn)	INFO
Wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Rear wheel alignment (incorrect)	INFO
	Rear shock absorber (worn)	INFO
	Rear axle hub (worn)	INFO
Abnormal tire wear	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Rear wheel alignment (incorrect)	INFO
	Suspension parts (worn)	-

COMPONENTS

ILLUSTRATION

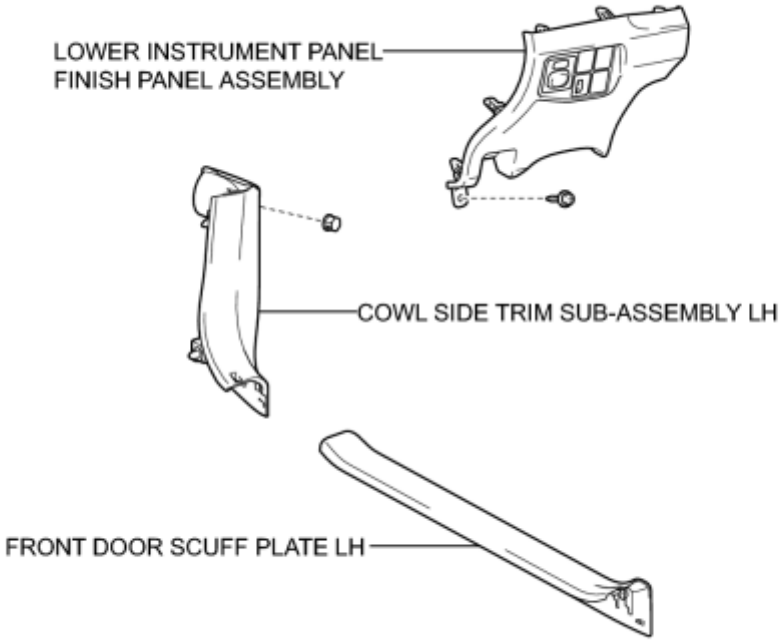


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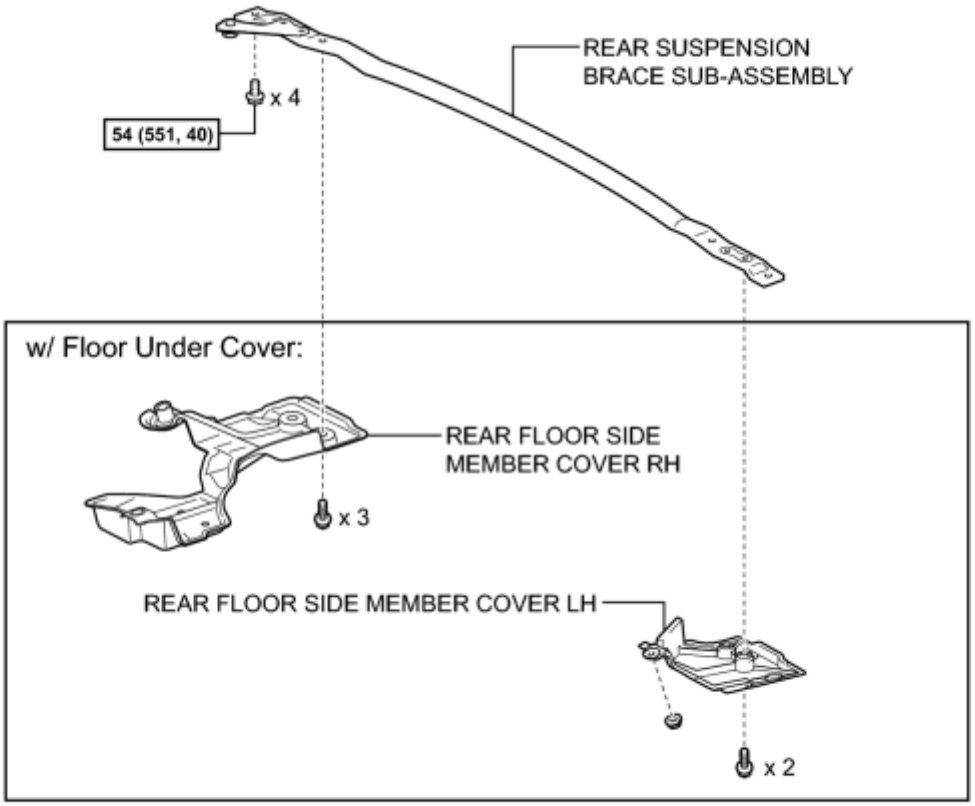
ILLUSTRATION



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

c

ILLUSTRATION

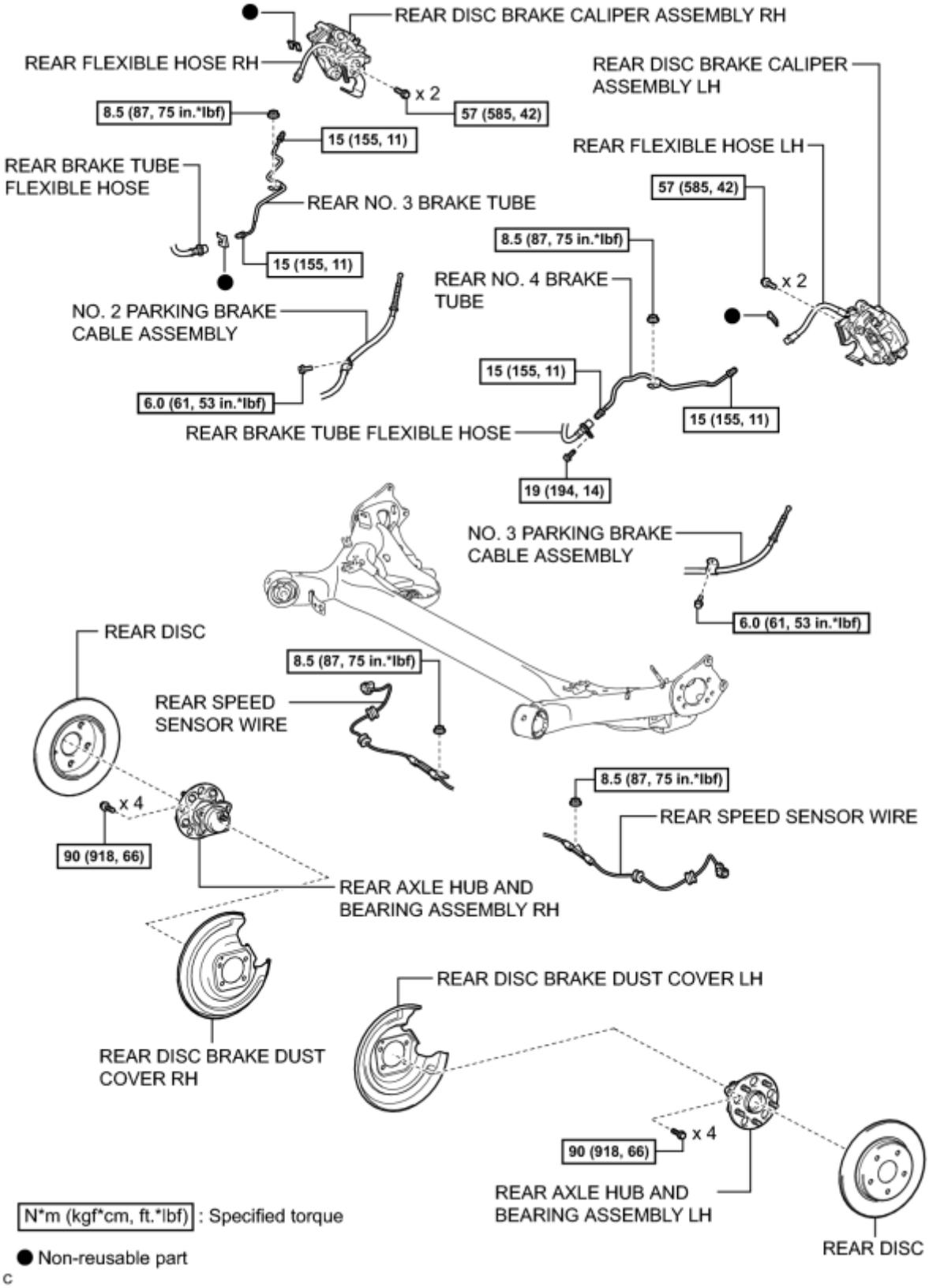


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ILLUSTRATION

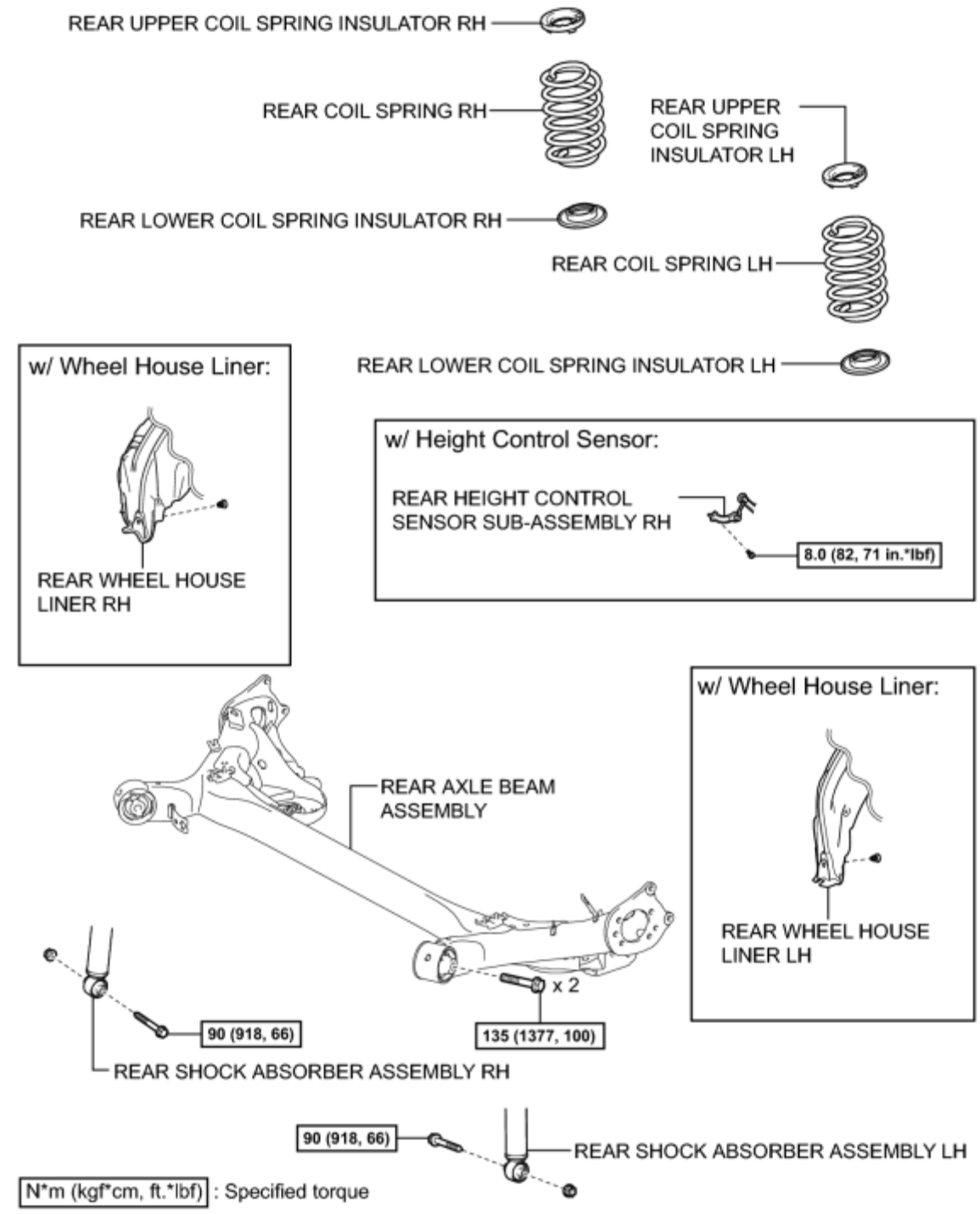

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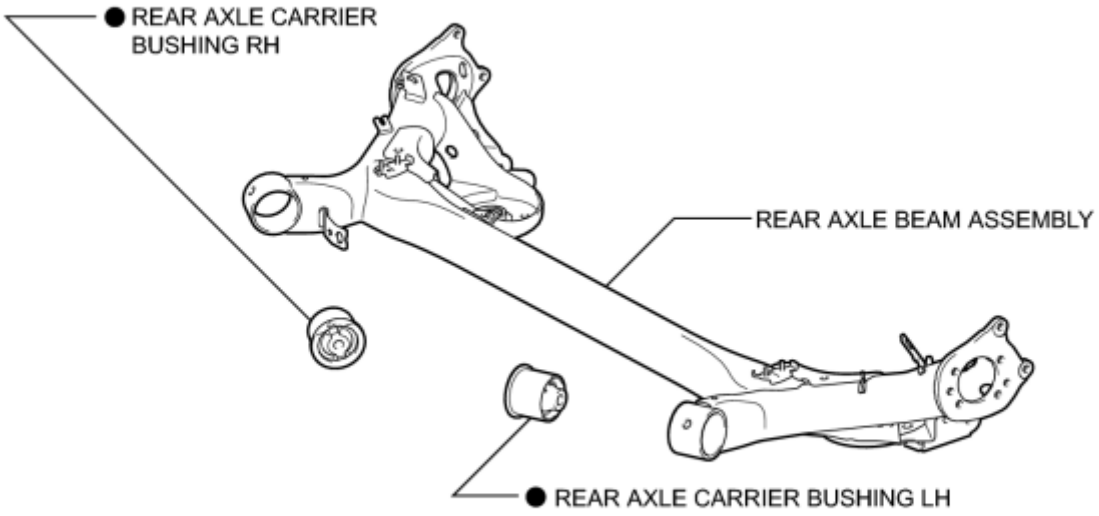
ILLUSTRATION



● Non-reusable part

P

REMOVAL

1. DISABLE BRAKE CONTROL INFO

2. REMOVE REAR WHEELS

3. REMOVE FRONT DOOR SCUFF PLATE LH INFO

4. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH INFO

5. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

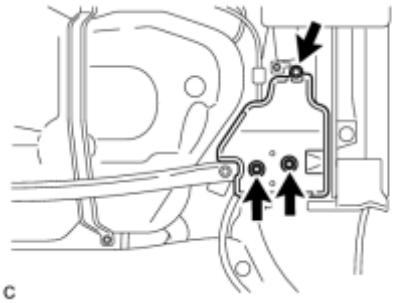
6. LOOSEN PARKING BRAKE CABLE INFO

7. DRAIN BRAKE FLUID

NOTICE:

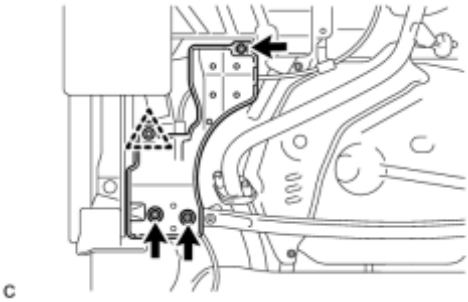
If brake fluid leaks onto any painted surface, immediately wash it off.

8. REMOVE REAR FLOOR SIDE MEMBER COVER LH (w/ Floor Under Cover)



(a) Remove the nut, 2 bolts and rear floor side member cover LH.

9. REMOVE REAR FLOOR SIDE MEMBER COVER RH (w/ Floor Under Cover)

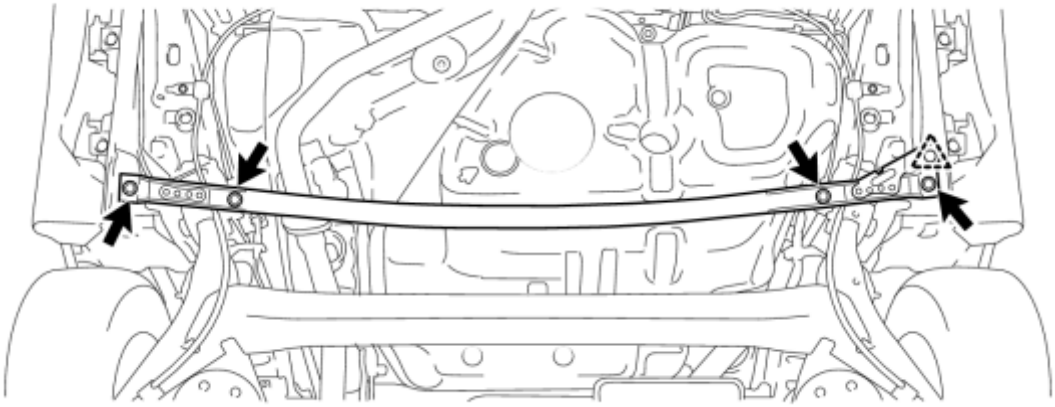


(a) Remove the 3 bolts.

(b) Disengage the clip and remove the rear floor side member cover RH.

10. REMOVE REAR SUSPENSION BRACE SUB-ASSEMBLY

(a) Remove the 4 bolts.



C

(b) Disengage the clip and remove the rear suspension brace sub-assembly.

11. DISCONNECT REAR SPEED SENSOR WIRE (for LH Side) INFO

12. DISCONNECT REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as for the LH side.

13. SEPARATE REAR SPEED SENSOR WIRE (for LH Side) INFO

14. SEPARATE REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as for the LH side.

15. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

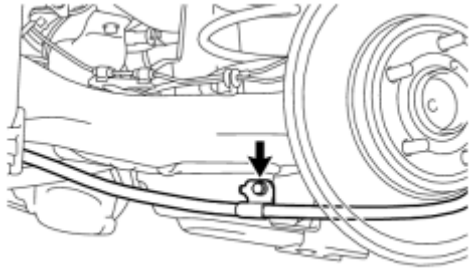
16. DISCONNECT NO. 2 PARKING BRAKE CABLE ASSEMBLY

HINT:

Perform the same procedure as for the No. 3 parking brake cable assembly.

17. SEPARATE NO. 3 PARKING BRAKE CABLE ASSEMBLY

(a) Remove the bolt and separate the No. 3 parking brake cable assembly.



P

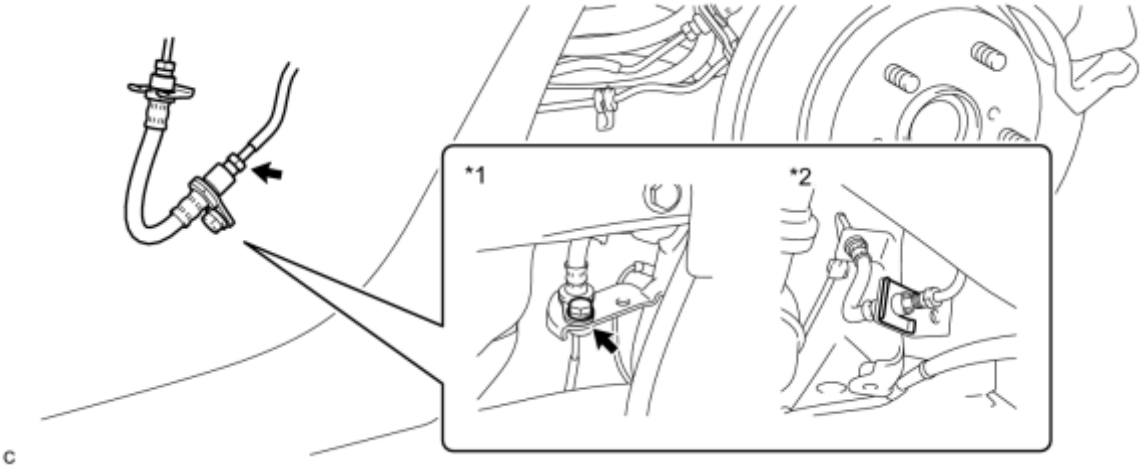
18. SEPARATE NO. 2 PARKING BRAKE CABLE ASSEMBLY

HINT:

Perform the same procedure as for the No. 3 parking brake cable assembly.

19. SEPARATE REAR BRAKE TUBE FLEXIBLE HOSE

(a) Using a union nut wrench, disconnect the 2 brake lines while holding the rear brake tube flexible hose with a wrench.



C

Text in Illustration

*1	LH Side	*2	RH Side

NOTICE:

- Do not bend or damage the brake line.
- Do not allow any foreign matter such as dirt or dust to enter the brake line from the connecting points.

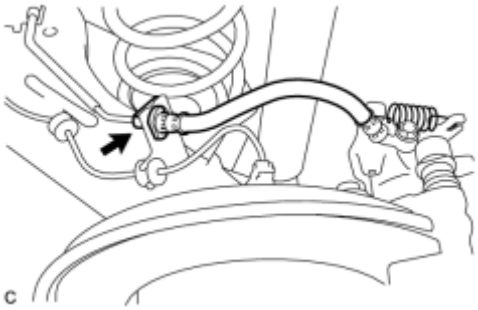
(b) for LH Side

(1) Remove the bolt and separate the rear brake tube flexible hose from the rear axle beam assembly.

(c) for RH Side

(1) Remove the clip and separate the rear brake tube flexible hose from the rear axle beam assembly.

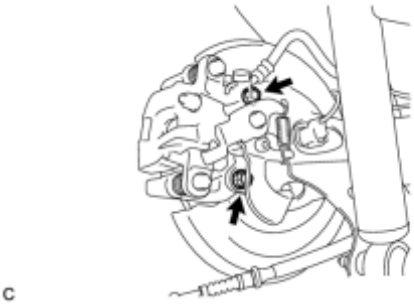
20. REMOVE REAR DISC BRAKE CALIPER ASSEMBLY LH



(a) Using a union nut wrench, disconnect the brake line while holding the rear flexible hose LH with a wrench.

- Do not bend or damage the brake line.
- Do not allow any foreign matter such as dirt or dust to enter the brake line from the connecting points.

(b) Remove the clip and separate the rear flexible hose LH.



(c) Remove the 2 bolts and rear disc brake caliper assembly LH with rear flexible hose LH.

21. REMOVE REAR DISC BRAKE CALIPER ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

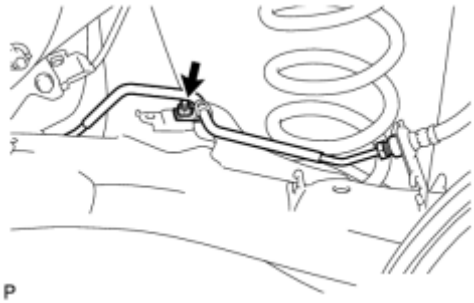
22. REMOVE REAR DISC (for LH Side) INFO

23. REMOVE REAR DISC (for RH Side)

HINT:

Perform the same procedure as for the LH side.

24. REMOVE REAR NO. 4 BRAKE TUBE



(a) Remove the nut and rear No. 4 brake tube from the rear axle beam assembly.

25. REMOVE REAR NO. 3 BRAKE TUBE

HINT:

Perform the same procedure as for the rear No. 4 brake tube.

26. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY LH INFO

27. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

28. SEPARATE REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner) INFO

29. SEPARATE REAR WHEEL HOUSE LINER RH (w/ Wheel House Liner)

HINT:

Perform the same procedure as for the LH side.

30. SEPARATE REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor) INFO

31. REMOVE REAR COIL SPRING LH INFO

32. REMOVE REAR COIL SPRING RH

HINT:

Perform the same procedure as for the LH side.

33. REMOVE REAR UPPER COIL SPRING INSULATOR LH

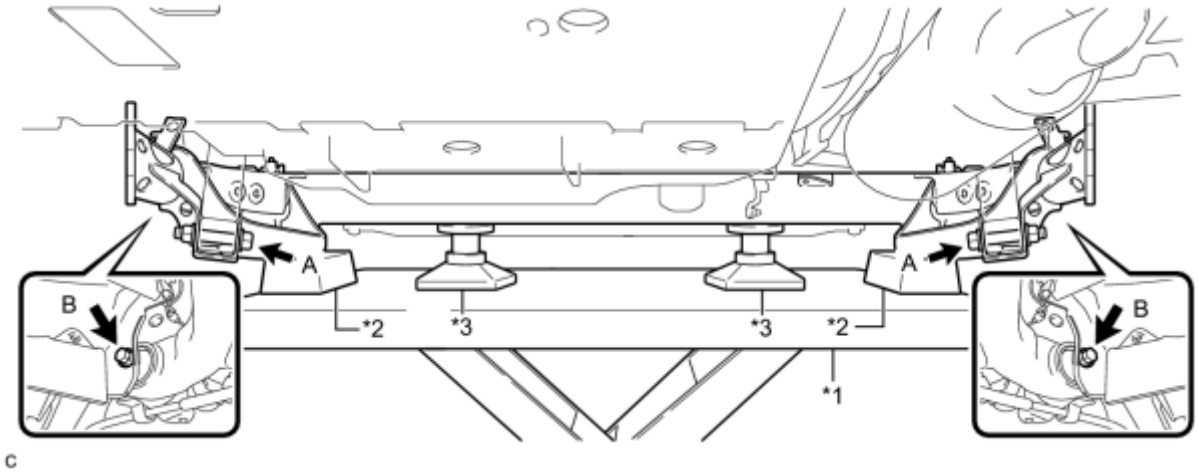
34. REMOVE REAR UPPER COIL SPRING INSULATOR RH

35. REMOVE REAR LOWER COIL SPRING INSULATOR LH

36. REMOVE REAR LOWER COIL SPRING INSULATOR RH

37. REMOVE REAR AXLE BEAM ASSEMBLY

(a) Support the rear axle beam assembly with a jack using 2 wooden blocks and 2 attachments or equivalent tools to replicate standard vehicle height conditions as shown in the illustration.



c

Text in Illustration

*1	Jack	*2	Wooden Block
*3	Attachment	-	-

NOTICE:

Make sure to secure the rear axle beam assembly to prevent it from dropping.

(b) Remove the 2 bolts (A) and 2 nuts while holding the 2 nuts and separate the rear axle beam assembly from the rear shock absorber assemblies LH and RH.

NOTICE:

Since the stopper nuts are used, turn the bolts.

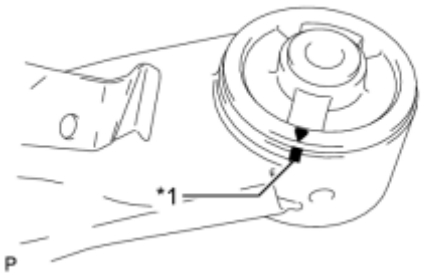
(c) Remove the 2 bolts (B) and rear axle beam assembly.

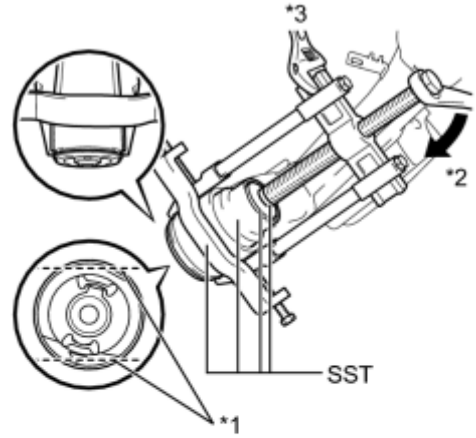
38. REMOVE REAR AXLE CARRIER BUSHING LH

(a) Put a matchmark on the rear axle beam assembly so that the mark aligns with the arrow mark on the rear axle carrier bushing LH. (If the rear axle beam assembly is reused.)

Text in Illustration

*1	Matchmark

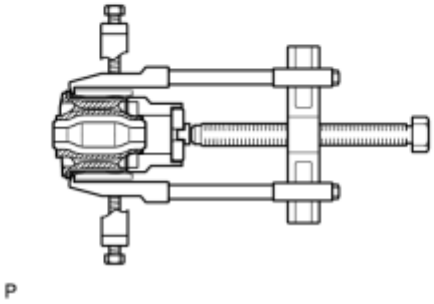




(b) Using a chisel and hammer, bend the 2 ribs on the rear axle carrier bushing LH.

Text in Illustration

*1	Bend Portion
*2	Turn
*3	Hold



NOTICE:

When removing the rear axle carrier bushing, do not erase the matchmark on the rear axle beam assembly.

(c) Using SST, remove the rear axle carrier bushing LH from the rear axle beam assembly.

SST: 09710-26011

09710-05061

SST: 09950-40011

09951-04020

09952-04010

09953-04030

09954-04020

09955-04051

09957-04010

09958-04011

SST: 09950-60010

09951-00530

NOTICE:

Apply grease to the threads and tip of the SST center bolt before use.

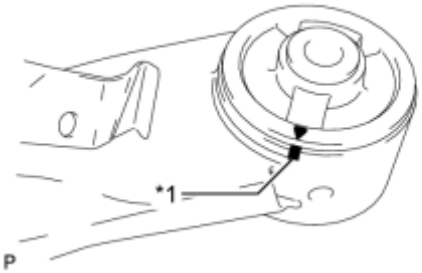
39. REMOVE REAR AXLE CARRIER BUSHING RH

HINT:

Perform the same procedure as for the LH side.

INSTALLATION

1. INSTALL REAR AXLE CARRIER BUSHING LH



(a) Align the arrow mark on a new rear axle carrier bushing LH with the matchmark on the rear axle beam assembly and temporarily install the rear axle carrier bushing LH to the rear axle beam assembly. (If the rear axle beam assembly is reused.)

Text in Illustration

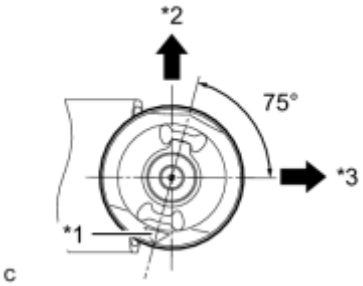
*1	Matchmark

NOTICE:

Be sure to install the rear axle carrier bushing in the same direction as it was before removal.

The rear axle carrier bushing has to be installed in a specific direction.

(b) Temporarily install the new rear axle carrier bushing LH as shown in the illustration.



Text in Illustration

*1	Mark
*2	Upper Side of the Vehicle
*3	Front of the Vehicle

NOTICE:

Be sure to install the rear axle carrier bushing in the same direction as it was before removal.

The rear axle carrier bushing has to be installed in a specific direction.

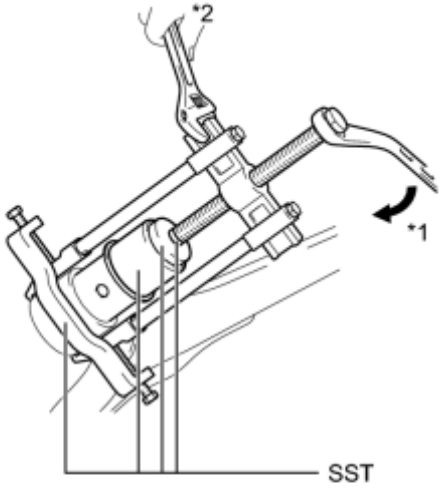
(c) Using SST, install the rear axle carrier bushing LH to the rear axle beam assembly.

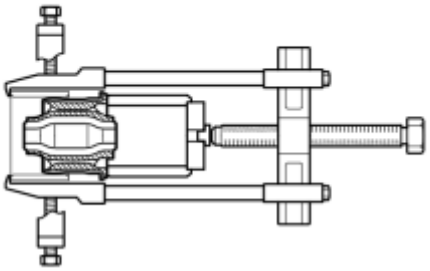
Text in Illustration

*1	Turn
*2	Hold

SST: 09710-04101

SST: 09950-40011





P

09951-04020

09952-04010

09953-04030

09954-04020

09955-04051

09957-04010

09958-04011

SST: 09950-60010

09951-00620

- Do not damage the rubber portion when installing the rear axle carrier bushing.
- Apply grease to the threads and tip of the SST center bolt before use.

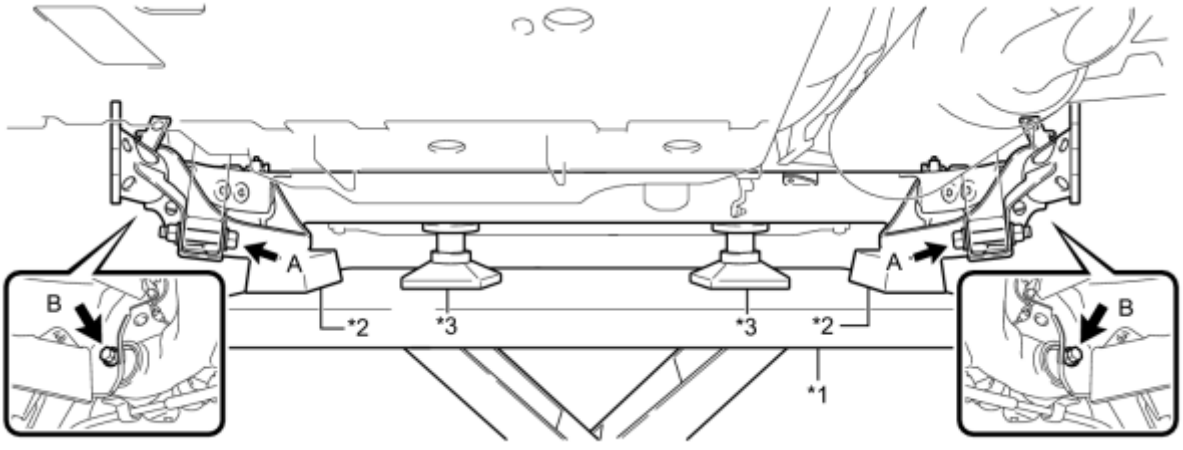
2. INSTALL REAR AXLE CARRIER BUSHING RH

HINT:

Perform the same procedure as for the LH side.

3. TEMPORARILY TIGHTEN REAR AXLE BEAM ASSEMBLY

(a) Slowly jack up the rear axle beam assembly with a jack using 2 wooden blocks and 2 attachments or equivalent tools and temporarily install the rear axle beam assembly to the body with the 2 bolts (B).



C

Text in Illustration

*1	Jack	*3	Attachment
*2	Wooden Block	-	-

NOTICE:

Make sure to secure the rear axle beam assembly to prevent it from dropping.

(b) Temporarily tighten the rear axle beam assembly to the rear shock absorber assemblies LH and RH with the 2 bolts (A) and 2 nuts.

NOTICE:

Since the stopper nuts are used, turn the bolts.

HINT:

Insert the bolts with the threaded end facing the outside of the vehicle.

4. INSTALL REAR UPPER COIL SPRING INSULATOR LH INFO

5. INSTALL REAR UPPER COIL SPRING INSULATOR RH

HINT:

Perform the same procedure as for the LH side.

6. INSTALL REAR LOWER COIL SPRING INSULATOR LH

7. INSTALL REAR LOWER COIL SPRING INSULATOR RH

8. INSTALL REAR COIL SPRING LH INFO

9. INSTALL REAR COIL SPRING RH

HINT:

Perform the same procedure as for the LH side.

10. INSTALL REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor) INFO

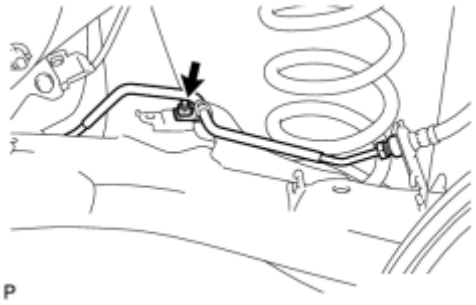
11. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY LH INFO

12. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

13. INSTALL REAR NO. 4 BRAKE TUBE



(a) Install the rear No. 4 brake tube to the rear axle beam assembly with the nut.

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

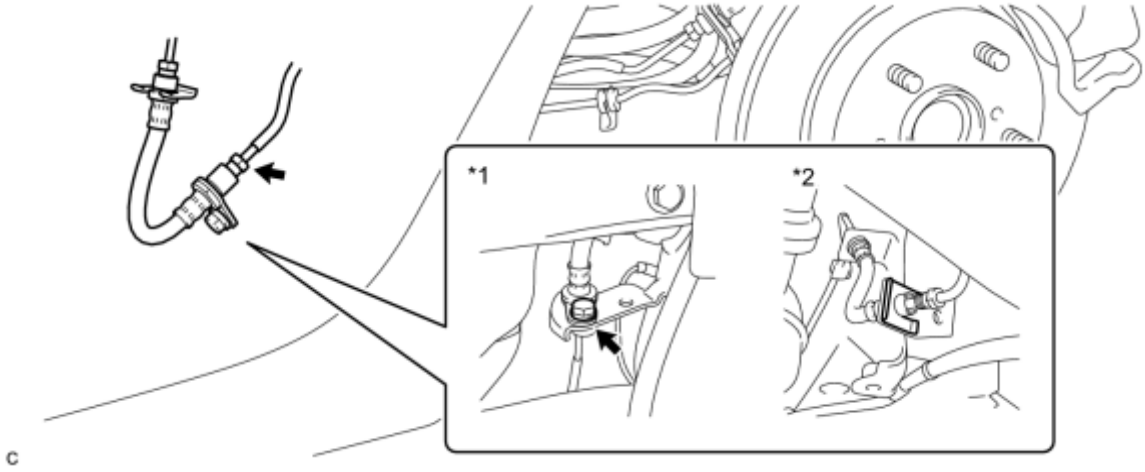
14. INSTALL REAR NO. 3 BRAKE TUBE

HINT:

Perform the same procedure as for the rear No. 4 brake tube.

15. CONNECT REAR BRAKE TUBE FLEXIBLE HOSE

(a) for LH Side



Text in Illustration

*1	LH Side	*2	RH Side

(1) Install the rear brake tube flexible hose with the bolt.

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

(b) for RH Side

(1) Install the rear brake tube flexible hose with a new clip.

NOTICE:

Install the clip as far as it will go.

(c) Using a union nut wrench, connect the 2 brake lines to the rear brake tube flexible hose.

Torque: **15 N·m (155 kgf·cm, 11ft·lbf)**

NOTICE:

- Do not bend or damage the brake line.
- Do not allow any foreign matter such as dirt and dust to enter the brake line from the connecting points.
- Use the formula to calculate special torque values for situations where the union nut wrench is combined with a torque wrench INFO.

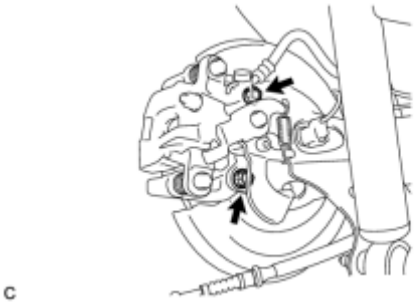
16. INSTALL REAR DISC (for LH Side) INFO

17. INSTALL REAR DISC (for RH Side)

HINT:

Perform the same procedure as for the LH side.

18. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY LH



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

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

(b) Connect the rear flexible hose LH to the rear axle beam assembly with a new clip.

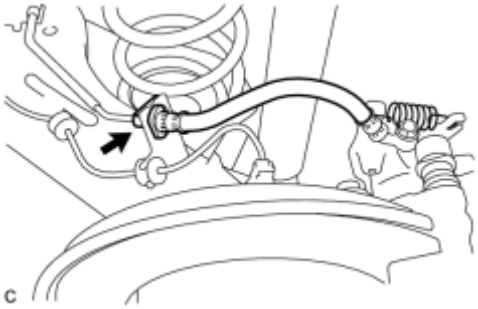
NOTICE:

Install the clip as far as it will go.

(c) Using a union nut wrench, connect the brake line to the rear flexible hose LH while holding the rear flexible hose LH with a wrench.

Torque: **15 N·m (155 kgf·cm, 11ft·lbf)**

- Do not bend or damage the brake line.
- Do not allow any foreign matter such as dirt and dust to enter the brake



line from the connecting points.

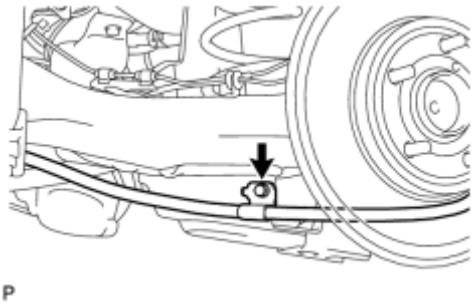
- Use the formula to calculate special torque values for situations where the union nut wrench is combined with a torque wrench INFO.

19. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

20. INSTALL NO. 3 PARKING BRAKE CABLE ASSEMBLY



(a) Install the No. 3 parking brake cable assembly to the rear axle beam assembly with the bolt.

Torque: **6.0 N·m (61 kgf·cm, 53in·lbf)**

21. INSTALL NO. 2 PARKING BRAKE CABLE ASSEMBLY

HINT:

Perform the same procedure as for the No. 3 parking brake cable assembly.

22. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

23. CONNECT NO. 2 PARKING BRAKE CABLE ASSEMBLY

HINT:

Perform the same procedure as for the LH side.

24. INSTALL REAR SPEED SENSOR WIRE (for LH Side) INFO

25. INSTALL REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as for the LH side.

26. CONNECT REAR SPEED SENSOR WIRE (for LH Side) INFO

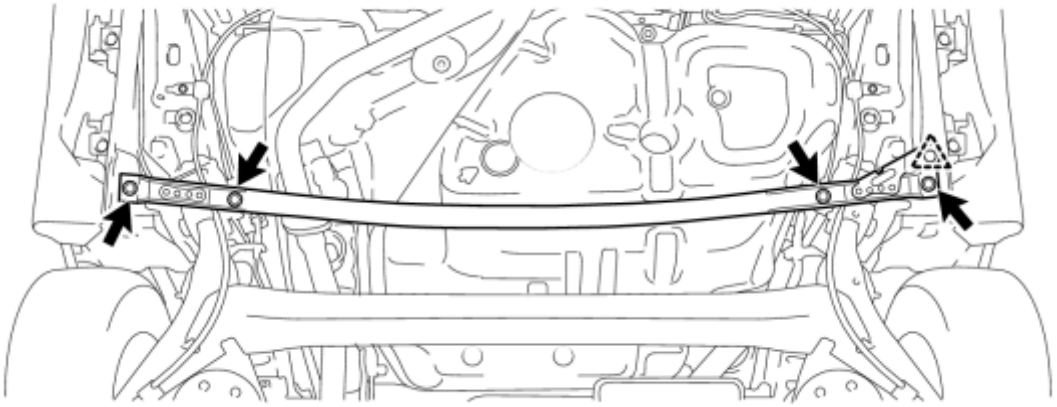
27. CONNECT REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as for the LH side.

28. INSTALL REAR SUSPENSION BRACE SUB-ASSEMBLY

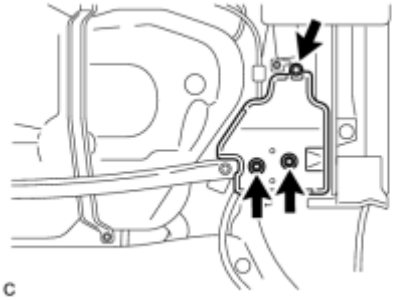
(a) Install the rear suspension brace sub-assembly with the 4 bolts and clip.



C

Torque: **54 N·m (551 kgf·cm, 40ft·lbf)**

29. INSTALL REAR FLOOR SIDE MEMBER COVER LH (w/ Floor Under Cover)

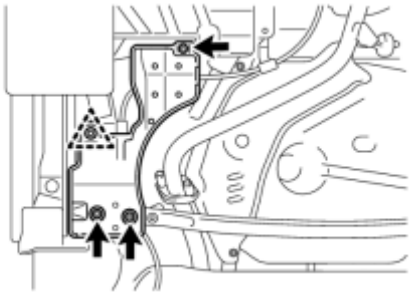


C

(a) Install the rear floor side member cover LH with the nut and 2 bolts.

30. INSTALL REAR FLOOR SIDE MEMBER COVER RH (w/ Floor Under Cover)

(a) Engage the clip to temporarily install the rear floor side member cover RH.



(b) Install the rear floor side member cover RH with the 3 bolts.

31. ADJUST PARKING BRAKE

INFO.

32. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

33. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH INFO

34. INSTALL FRONT DOOR SCUFF PLATE LH INFO

35. BLEED BRAKE LINE INFO

36. PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE

HINT:

If the brake control has been disabled, make sure to perform initialization and calibration of the linear solenoid valve INFO.

37. INSTALL REAR WHEELS

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

38. STABILIZE SUSPENSION INFO

39. FULLY TIGHTEN REAR AXLE BEAM ASSEMBLY INFO

40. INSTALL REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner) INFO

41. INSTALL REAR WHEEL HOUSE LINER RH (w/ Wheel House Liner)

HINT:

Perform the same procedure as for the LH side.

42. INSPECT REAR WHEEL ALIGNMENT

INFO.

43. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

44. PERFORM YAW RATE AND ACCELERATION SENSOR CALIBRATION

INFO.

45. CHECK FOR SPEED SENSOR SIGNAL

INFO.

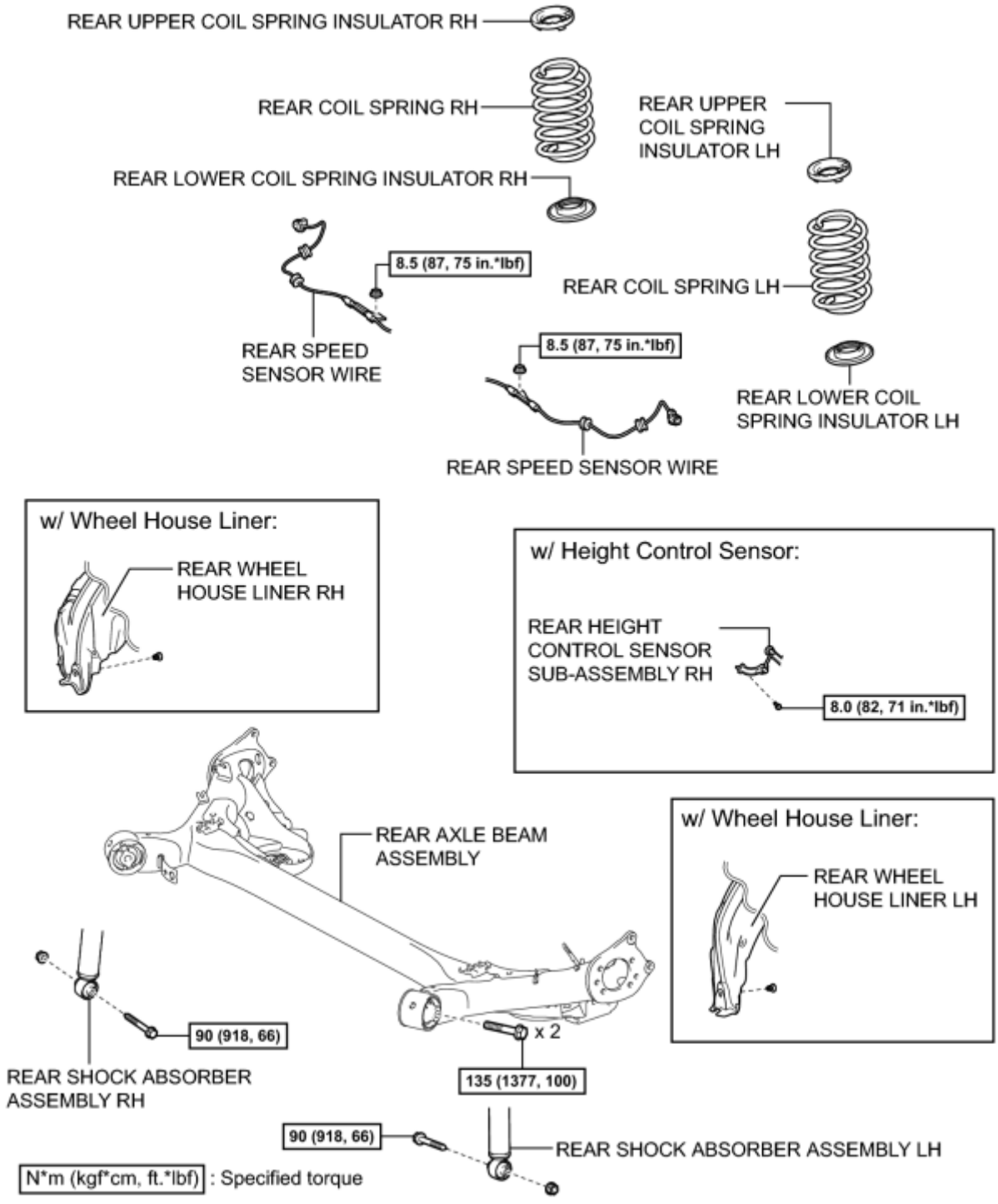
46. PERFORM INITIALIZATION (w/ Height Control Sensor)

NOTICE:

Some systems need to be initialized after the rear height control sensor sub-assembly RH is replaced INFO.

COMPONENTS

ILLUSTRATION



c

REMOVAL

1. REMOVE REAR WHEELS

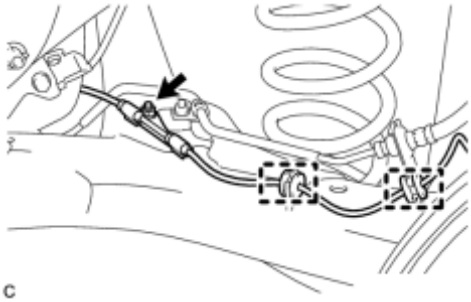
2. DISCONNECT REAR SPEED SENSOR WIRE (for LH Side) INFO

3. DISCONNECT REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as the LH side.

4. SEPARATE REAR SPEED SENSOR WIRE (for LH Side)



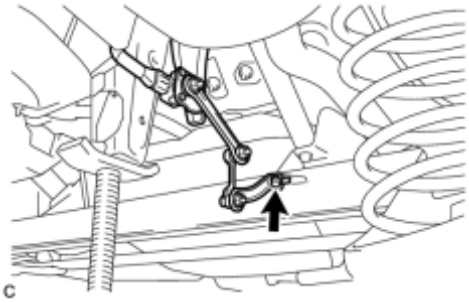
(a) Remove the nut and separate the 2 clamps and rear speed sensor wire.

5. SEPARATE REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as the LH side.

6. SEPARATE REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor)



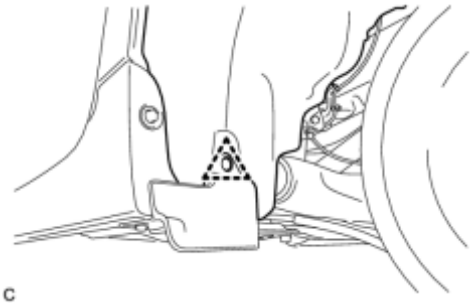
(a) Remove the bolt and separate the rear height control sensor sub-assembly RH from the rear axle beam assembly.

(b) Using a vinyl tape, secure the rear height control sensor sub-assembly RH as shown in the illustration.

Text in Illustration

*1	Vinyl Tape

7. SEPARATE REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner)



(a) Remove the clip and turn back the rear wheel house liner LH to separate the rear wheel house liner LH.

8. SEPARATE REAR WHEEL HOUSE LINER RH (w/ Wheel House Liner)

HINT:

Perform the same procedure as the LH side.

9. REMOVE REAR COIL SPRING LH

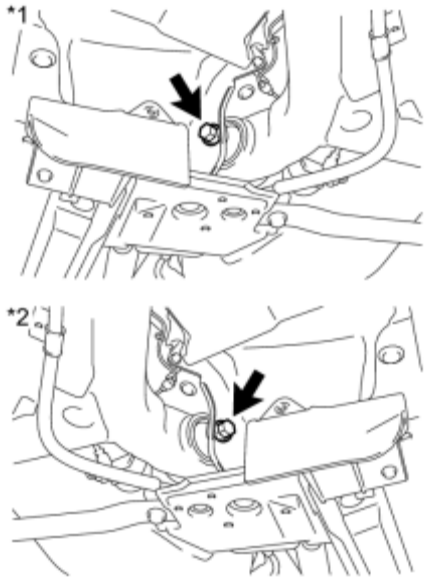
(a) Loosen the 2 bolts.

Text in Illustration

*1	LH Side
*2	RH Side

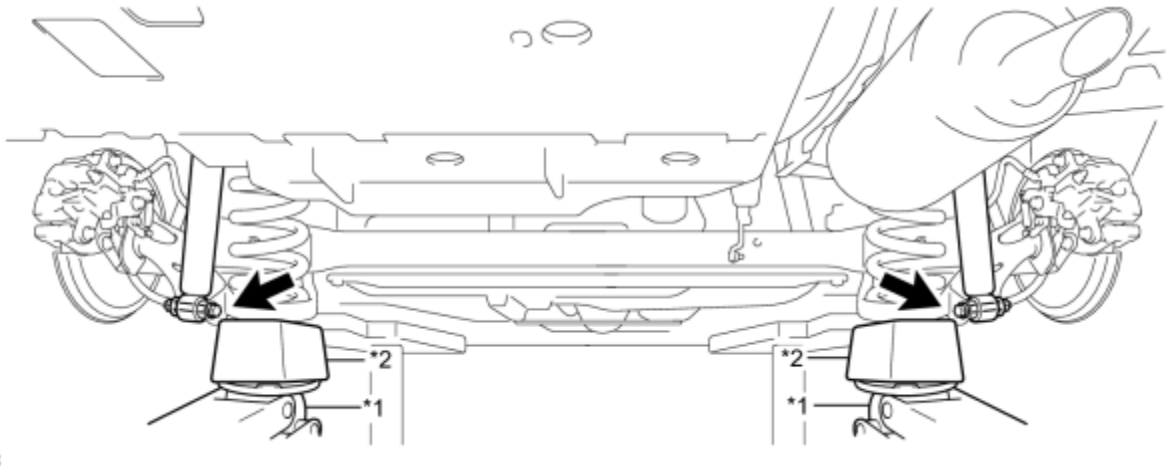
NOTICE:

Do not remove the bolts.



c

(b) Support the spring seat of the rear axle beam assembly using 2 jacks and 2 wooden blocks.



c

Text in Illustration

*1	Jack	*2	Wooden Block

CAUTION:

Do not jack up the rear axle beam assembly too high as the vehicle may fall.

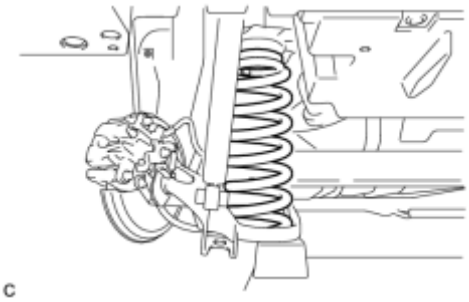
HINT:

Support the rear shock absorber at a position where it compresses by approximately 20 to 30 mm (0.787 to 1.18 in.).

(c) Remove the 2 bolts while holding the 2 nuts and separate the rear axle beam assembly from the rear shock absorber assemblies LH and RH.

NOTICE:

Since the stopper nuts are used, turn the bolts.

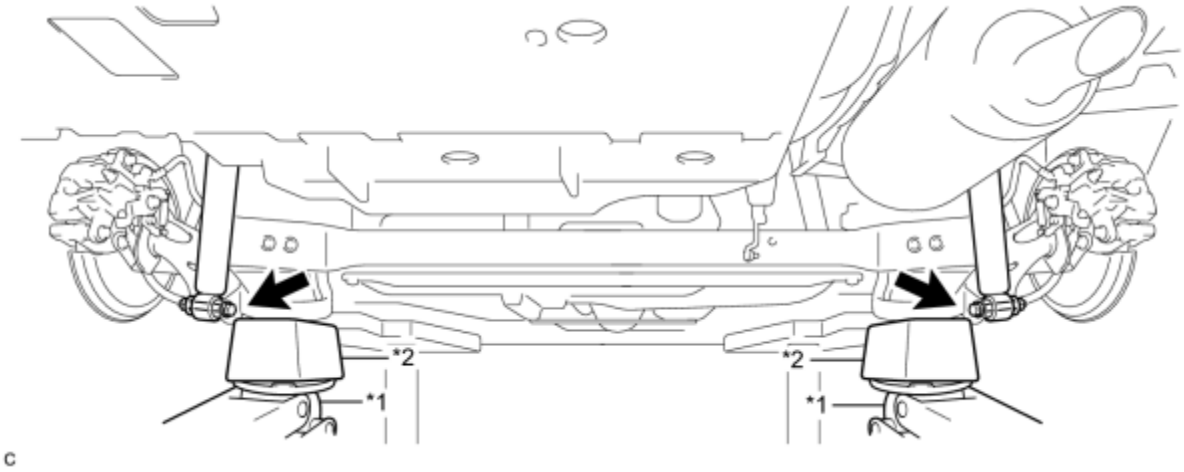


(d) Slowly lower the rear axle beam assembly using 2 jacks and 2 wooden blocks, and remove the rear coil spring LH.

NOTICE:

When moving the rear axle beam assembly beyond full rebound, make sure that the rear axle beam assembly is not out of position for more than 10 minutes.

(e) Slowly jack up the rear axle beam assembly using 2 jacks and 2 wooden blocks, and temporarily tighten the rear axle beam assembly to the rear shock absorber assemblies LH and RH with the 2 bolts and 2 nuts.



Text in Illustration

*1	Jack	*2	Wooden Block

NOTICE:

Since the stopper nuts are used, turn the bolts.

10. REMOVE REAR COIL SPRING RH

HINT:

Perform the same procedure as the LH side.

11. REMOVE REAR UPPER COIL SPRING INSULATOR LH

12. REMOVE REAR UPPER COIL SPRING INSULATOR RH

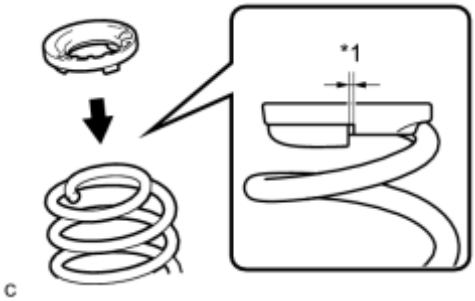
13. REMOVE REAR LOWER COIL SPRING INSULATOR LH

14. REMOVE REAR LOWER COIL SPRING INSULATOR RH

INSTALLATION

1. INSTALL REAR UPPER COIL SPRING INSULATOR LH

(a) Install the rear upper coil spring insulator LH to the rear coil spring LH.



c

Text in Illustration

*1	10 mm or less

NOTICE:

Install the rear upper coil spring insulator so that the dimension between the stopper and the upper end of the rear coil spring is 10 mm (0.394 in.) or less.

2. INSTALL REAR UPPER COIL SPRING INSULATOR RH

HINT:

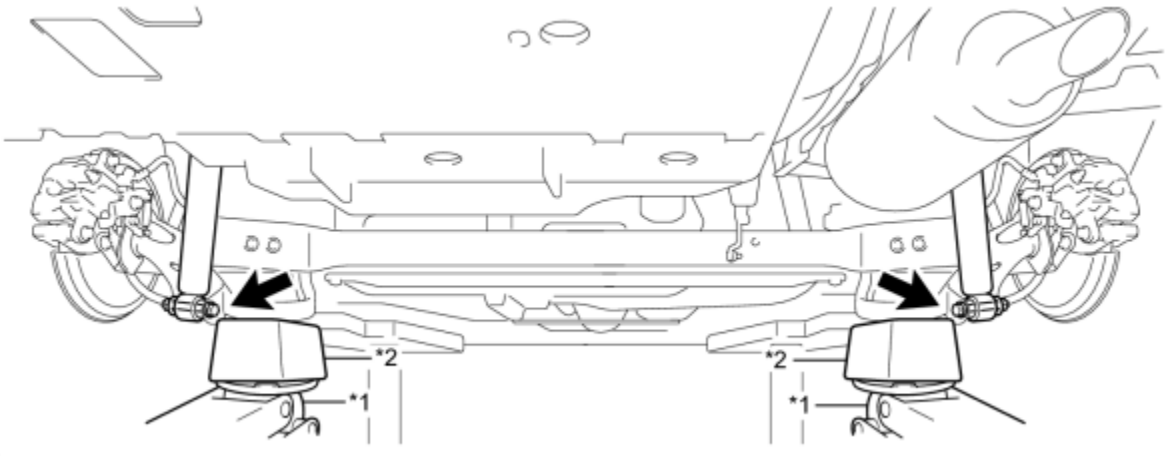
Perform the same procedure as the LH side.

3. INSTALL REAR LOWER COIL SPRING INSULATOR LH

4. INSTALL REAR LOWER COIL SPRING INSULATOR RH

5. INSTALL REAR COIL SPRING LH

(a) Support the spring seat of the rear axle beam assembly using 2 jacks and 2 wooden blocks.



c

Text in Illustration

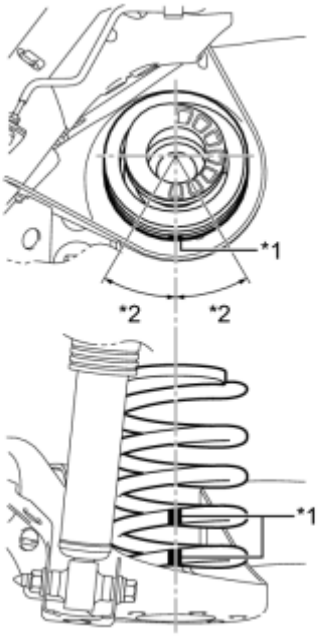
*1	Jack	*2	Wooden Block

(b) Remove the 2 bolts while holding the 2 nuts and separate the rear axle beam assembly from the rear shock absorber assemblies LH and RH.

NOTICE:

Since the stopper nuts are used, turn the bolts.

(c) Slowly lower the rear axle beam assembly using 2 jacks and 2 wooden blocks.



c

(d) Set the rear coil spring LH to the rear axle beam assembly.

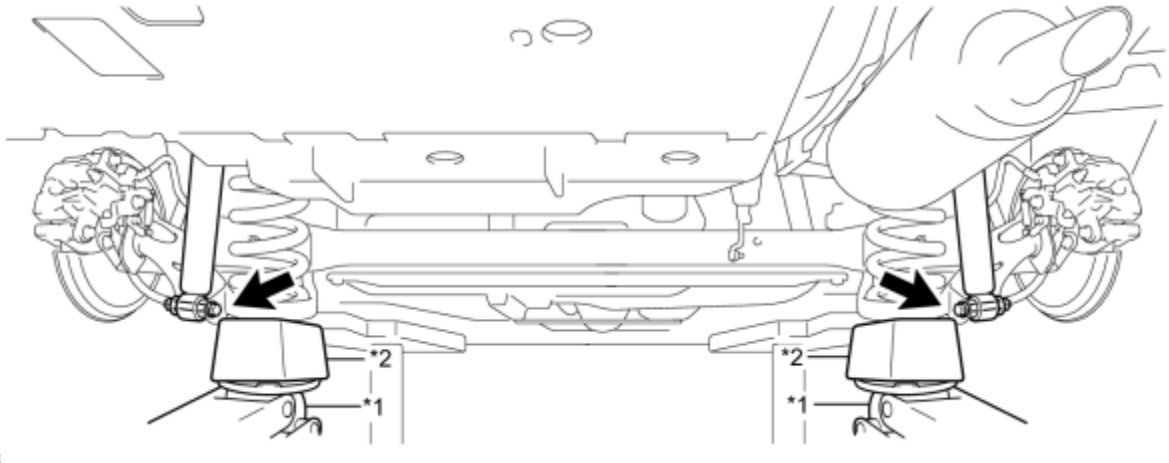
Text in Illustration

*1	Identification Mark
*2	30° or less

NOTICE:

Set the rear coil spring so that the identification marks are positioned as shown in the illustration.

(e) Slowly jack up the rear axle beam assembly using 2 jacks and 2 wooden blocks and temporarily install the rear axle beam assembly and rear coil spring LH with the 2 bolts and 2 nuts.



c

Text in Illustration

*1	Jack	*2	Wooden Block

NOTICE:

Since the stopper nuts are used, turn the bolts.

HINT:

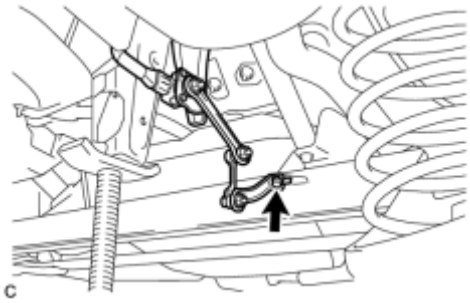
Insert the bolt with the threaded end facing the outside of the vehicle.

6. INSTALL REAR COIL SPRING RH

HINT:

Perform the same procedure as the LH side.

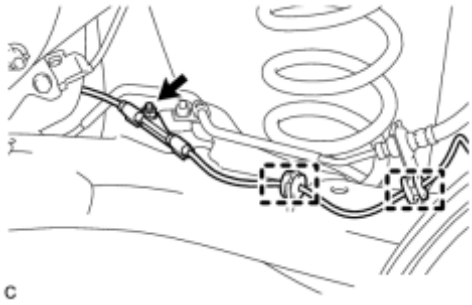
7. INSTALL REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor)



(a) Install the rear height control sensor sub-assembly RH to the rear axle beam assembly with the bolt.

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

8. INSTALL REAR SPEED SENSOR WIRE (for LH Side)



(a) Install the rear speed sensor wire to the rear axle beam assembly with the nut and 2 clamps.

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

NOTICE:

Do not twist the rear speed sensor wire when installing it.

9. INSTALL REAR SPEED SENSOR WIRE (for RH Side)

HINT:

Perform the same procedure as the LH side.

10. CONNECT REAR SPEED SENSOR WIRE (for LH Side) INFO

11. CONNECT REAR SPEED SENSOR WIRE (for RH Side)

HINT:

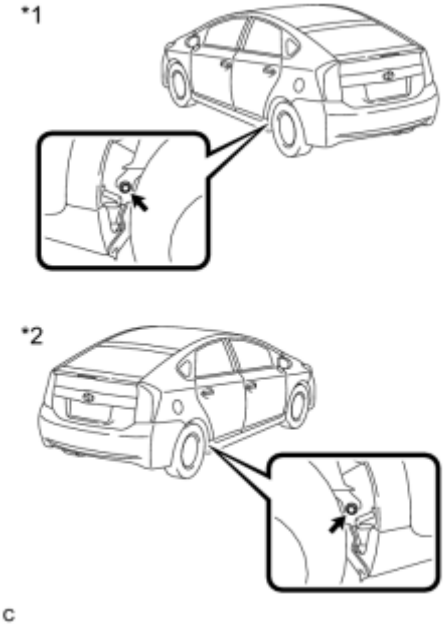
Perform the same procedure as the LH side.

12. INSTALL REAR WHEELS

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

13. STABILIZE SUSPENSION INFO

14. FULLY TIGHTEN REAR AXLE BEAM ASSEMBLY



(a) Fully tighten the 2 bolts.

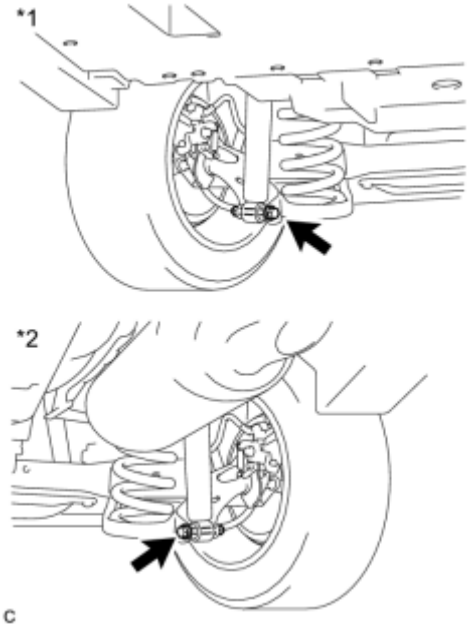
Text in Illustration

*1	LH Side
*2	RH Side

Torque: **135 N·m (1377 kgf·cm, 100ft·lbf)**

NOTICE:

The final torque must be applied under the standard vehicle height conditions.



(b) Fully tighten the 2 bolts.

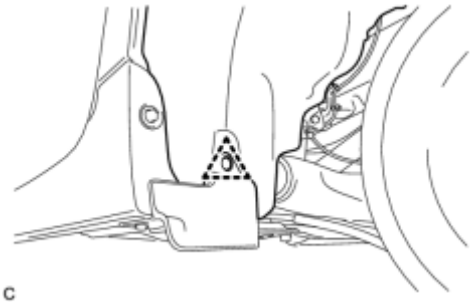
Text in Illustration

*1	LH Side
*2	RH Side

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

- Since the stopper nut are used, turn the bolts.
- The final torque must be applied under the standard vehicle height conditions.

15. INSTALL REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner)



(a) Install the rear wheel house liner LH with the clip.

16. INSTALL REAR WHEEL HOUSE LINER RH (w/ Wheel House Liner)

HINT:

Perform the same procedure as the LH side.

17. INSPECT REAR WHEEL ALIGNMENT

INFO.

18. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

19. PERFORM YAW RATE AND ACCELERATION SENSOR CALIBRATION

INFO.

20. CHECK FOR SPEED SENSOR SIGNAL

INFO.

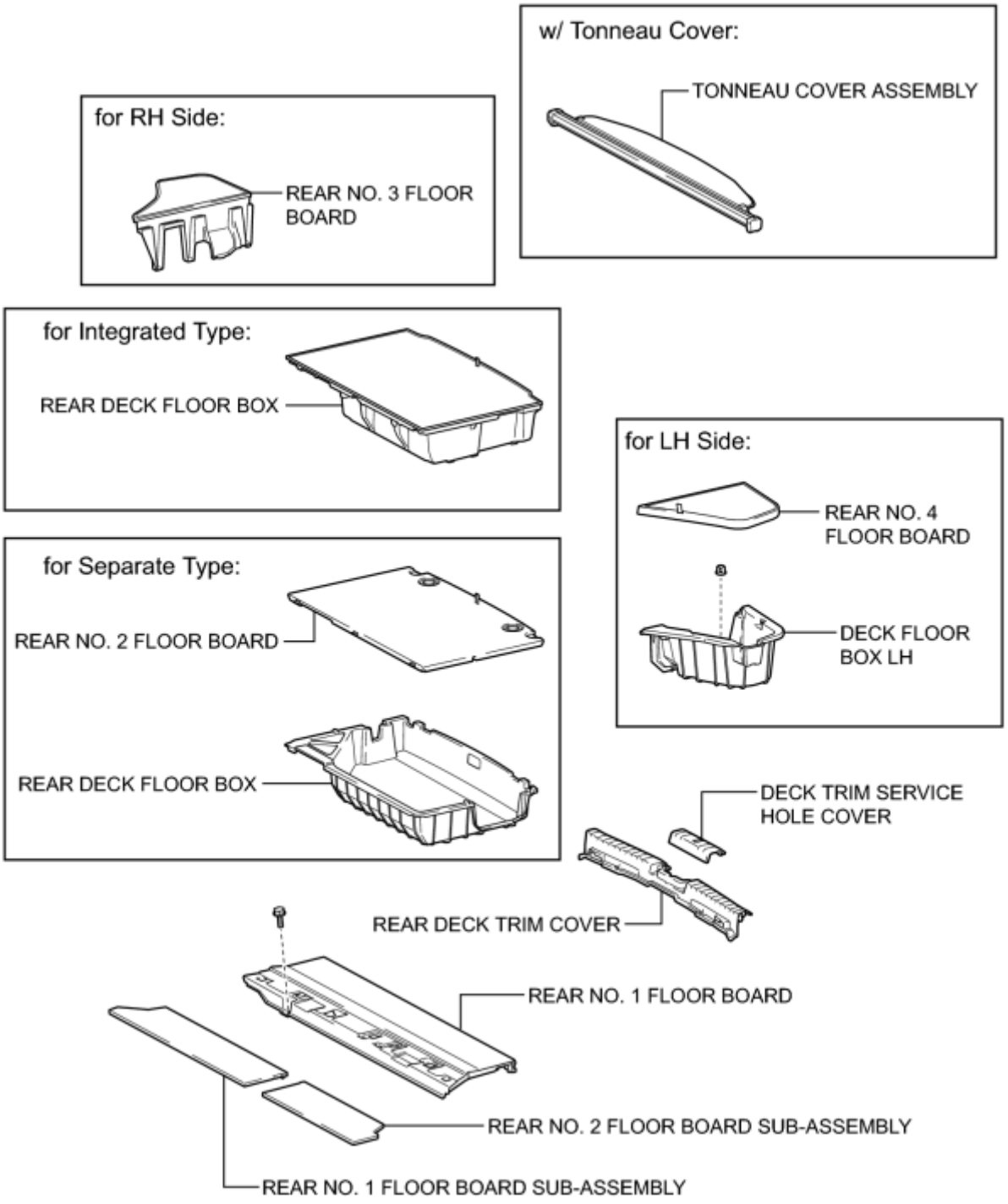
21. PERFORM INITIALIZATION (w/ Height Control Sensor)

NOTICE:

Some systems need to be initialized after the rear height control sensor sub-assembly RH is replaced INFO.

COMPONENTS

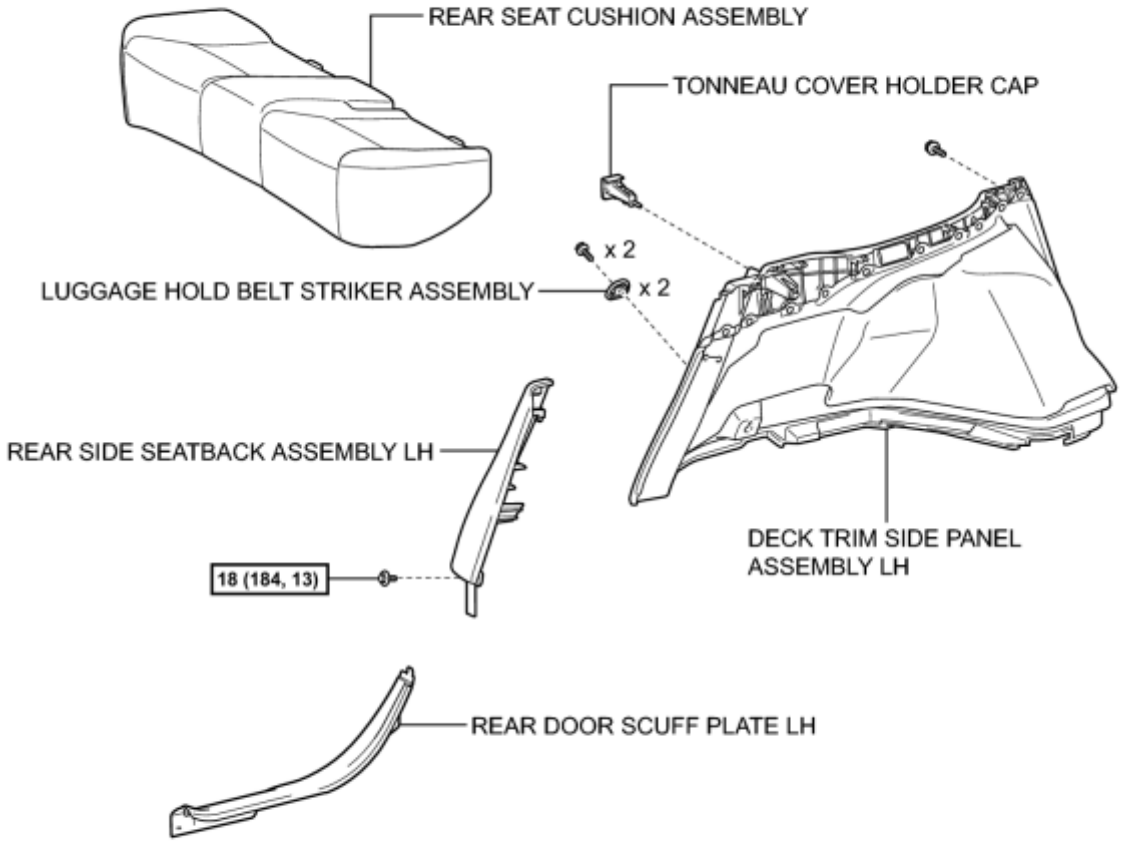
ILLUSTRATION



c

ILLUSTRATION

for LH Side:

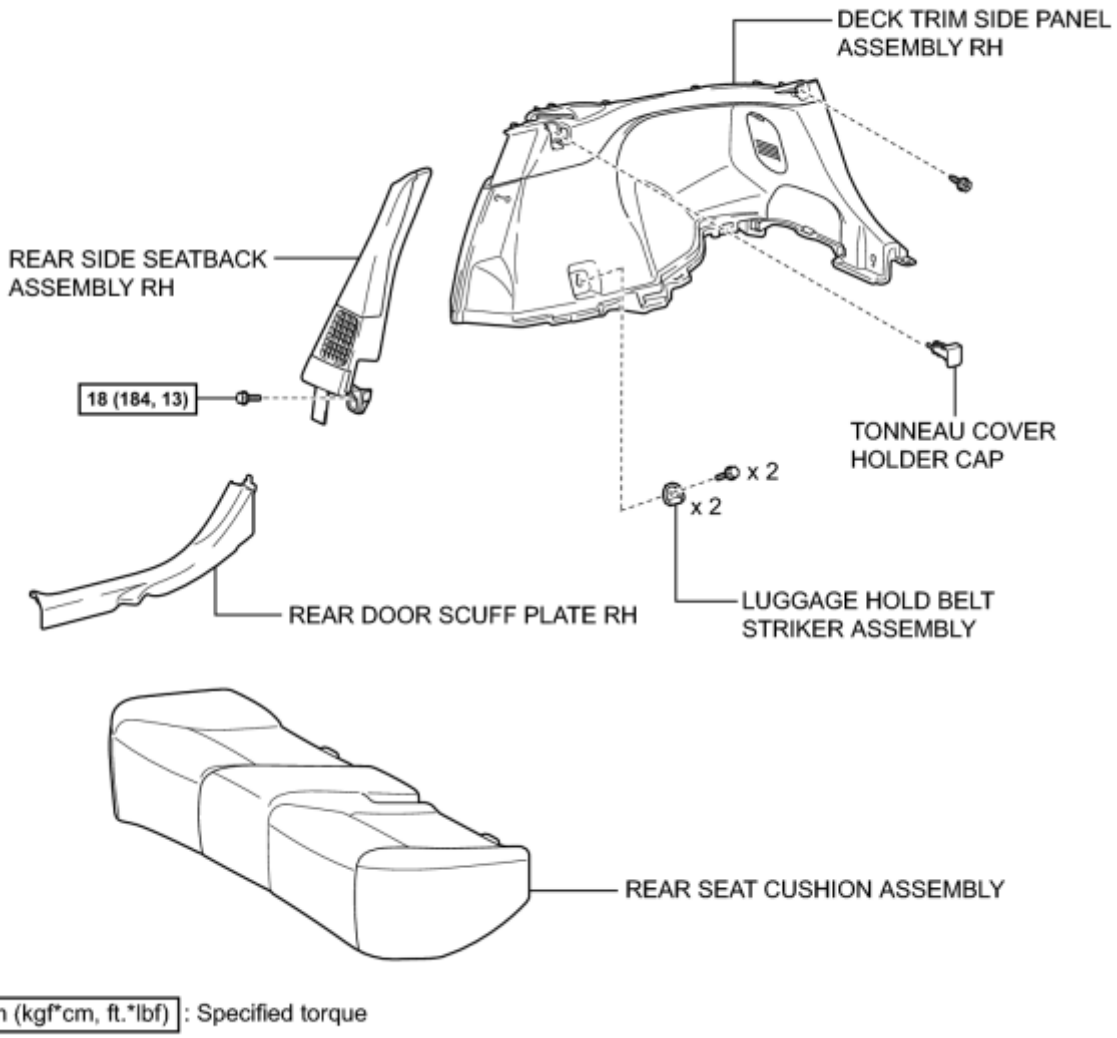


N*m (kgf*cm, ft.*lbf) : Specified torque

c

ILLUSTRATION

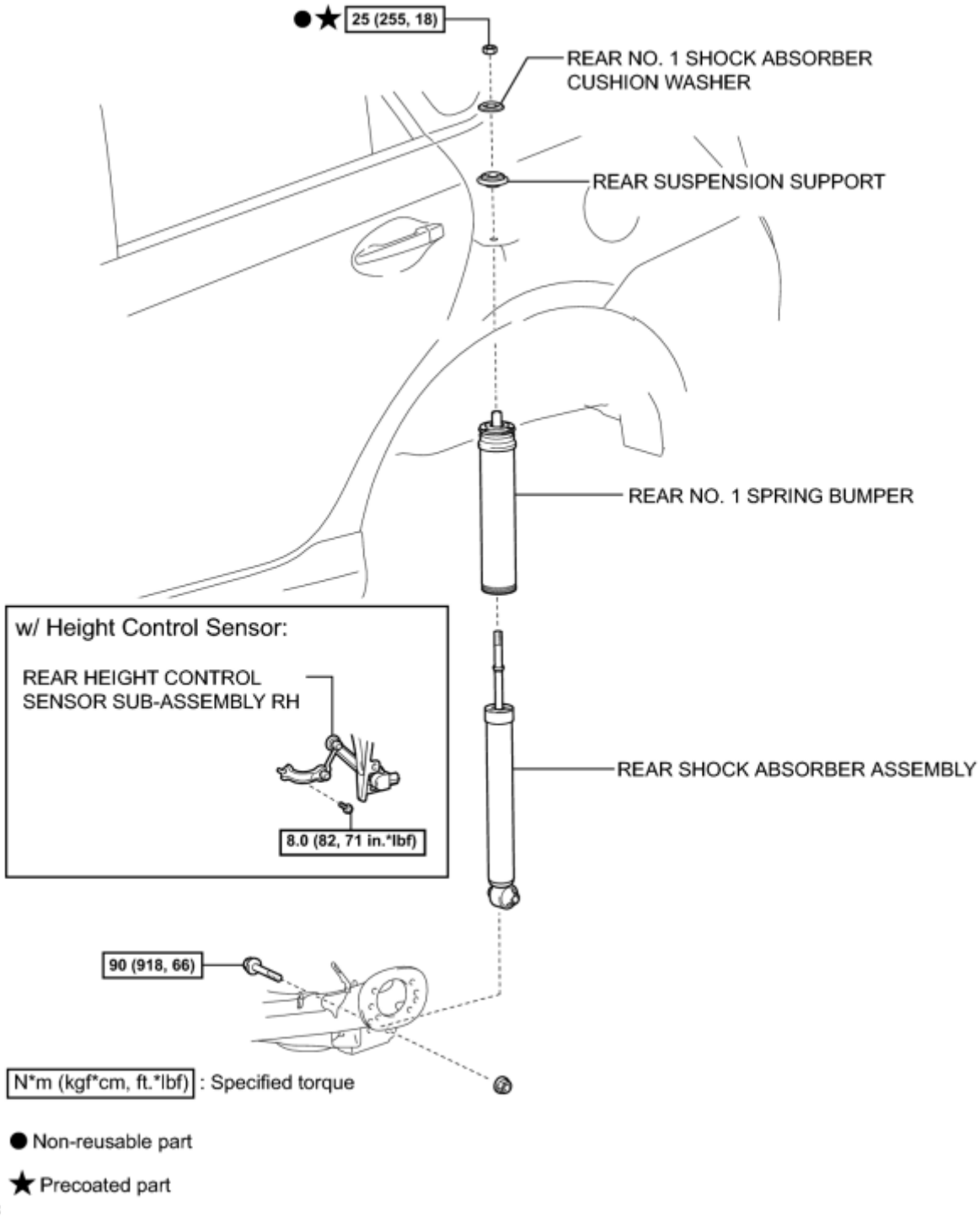
for RH Side:



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

c

ILLUSTRATION


●★ 25 (255, 18)
REAR NO. 1 SHOCK ABSORBER CUSHION WASHER
REAR SUSPENSION SUPPORT
REAR NO. 1 SPRING BUMPER
w/ Height Control Sensor:
REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH
8.0 (82, 71 in.*lbf)
REAR SHOCK ABSORBER ASSEMBLY
90 (918, 66)
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
★ Precoated 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 TONNEAU COVER ASSEMBLY (w/ Tonneau Cover) INFO

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

3. REMOVE REAR DECK FLOOR BOX INFO

4. REMOVE REAR NO. 4 FLOOR BOARD (for LH Side) INFO

5. REMOVE DECK FLOOR BOX LH (for LH Side) INFO

6. REMOVE REAR NO. 3 FLOOR BOARD (for RH Side) INFO

7. REMOVE REAR NO. 1 FLOOR BOARD SUB-ASSEMBLY INFO

8. REMOVE REAR NO. 2 FLOOR BOARD SUB-ASSEMBLY INFO

9. REMOVE REAR NO. 1 FLOOR BOARD INFO

10. REMOVE DECK TRIM SERVICE HOLE COVER INFO

11. REMOVE REAR DECK TRIM COVER INFO

12. REMOVE REAR DOOR SCUFF PLATE LH (for LH Side) INFO

13. REMOVE REAR DOOR SCUFF PLATE RH (for RH Side) INFO

14. REMOVE REAR SEAT CUSHION ASSEMBLY INFO

15. REMOVE REAR SIDE SEATBACK ASSEMBLY LH (for LH Side) INFO

16. REMOVE LUGGAGE HOLD BELT STRIKER ASSEMBLY (for LH Side) INFO

17. REMOVE TONNEAU COVER HOLDER CAP (for LH Side) INFO

18. REMOVE DECK TRIM SIDE PANEL ASSEMBLY LH (for LH Side) INFO

19. REMOVE REAR SIDE SEATBACK ASSEMBLY RH (for RH Side) INFO

20. REMOVE LUGGAGE HOLD BELT STRIKER ASSEMBLY (for RH Side) INFO

21. REMOVE TONNEAU COVER HOLDER CAP (for RH Side) INFO

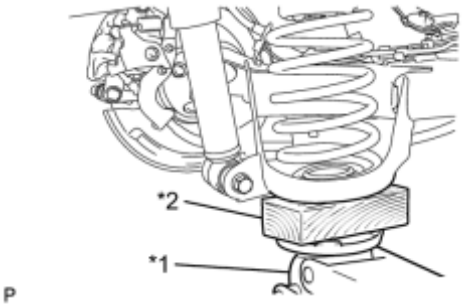
22. REMOVE DECK TRIM SIDE PANEL ASSEMBLY RH (for RH Side) INFO

23. REMOVE REAR WHEEL

24. SEPARATE REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor) INFO

25. REMOVE REAR NO. 1 SHOCK ABSORBER CUSHION WASHER

(a) Support the spring seat of the rear axle beam assembly using a jack and wooden block.



Text in Illustration

*1	Jack
*2	Wooden Block

CAUTION:

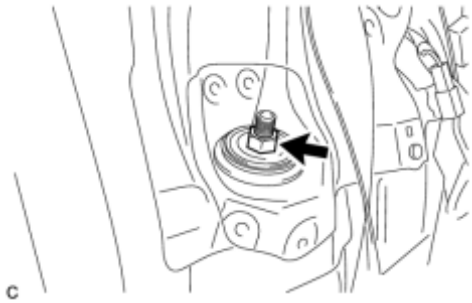
Do not jack up the rear axle beam assembly too high as the vehicle may fall.

NOTICE:

Keep supporting the rear axle beam assembly with a jack until the installation of the rear shock absorber assembly has been completed.

HINT:

Support the rear shock absorber at a position where it compresses by approximately 20 to 30 mm (0.787 to 1.18 in.).



(b) Using a hexagon socket wrench, secure the rear shock absorber rod and remove the lock nut.

NOTICE:

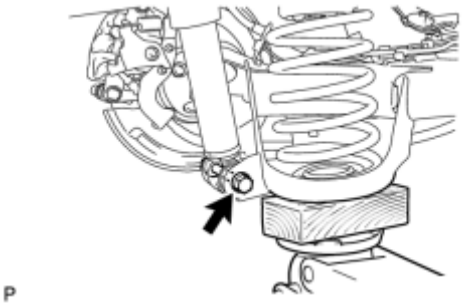
Securely insert the hexagon socket wrench to the rear shock absorber rod to prevent damage to the rear shock absorber assembly when removing the nut.

(c) Remove the rear No. 1 shock absorber cushion washer.

26. REMOVE REAR SUSPENSION SUPPORT

(a) Remove the rear suspension support.

27. REMOVE REAR SHOCK ABSORBER ASSEMBLY

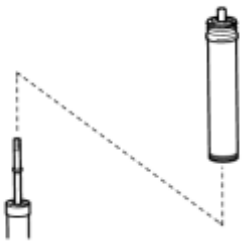


(a) Remove the bolt while holding the nut and remove the rear shock absorber assembly.

NOTICE:

Since the stopper nut is used, turn the bolt.

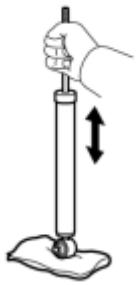
28. REMOVE REAR NO. 1 SPRING BUMPER



(a) Remove the rear No. 1 spring bumper from the rear shock absorber assembly.

INSPECTION

1. INSPECT REAR SHOCK ABSORBER ASSEMBLY



(a) Compress and extend the rear shock absorber rod, and check that there is no abnormal resistance or unusual sound during operation.

If there is any abnormality, replace the shock absorber with a new one.

NOTICE:

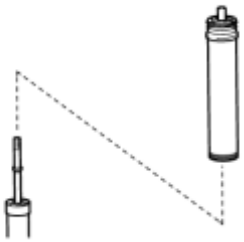
When disposing of the rear shock absorber assembly, see DISPOSAL INFO.

INSTALLATION

HINT:

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

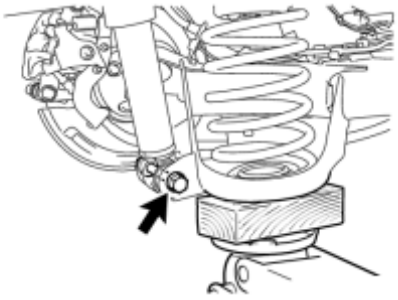
1. INSTALL REAR NO. 1 SPRING BUMPER



(a) Install the rear No. 1 spring bumper to the rear shock absorber assembly.

2. TEMPORARILY TIGHTEN REAR SHOCK ABSORBER ASSEMBLY

(a) Insert the upper end of the rear shock absorber assembly with the rear No. 1 spring bumper to the vehicle body.



P

(b) Temporarily tighten the rear shock absorber assembly to the rear axle beam assembly with the bolt and nut.

NOTICE:

Since the stopper nut is used, turn the bolt.

HINT:

Insert the bolt with the threaded end facing the outside of the vehicle.

3. INSTALL REAR SUSPENSION SUPPORT

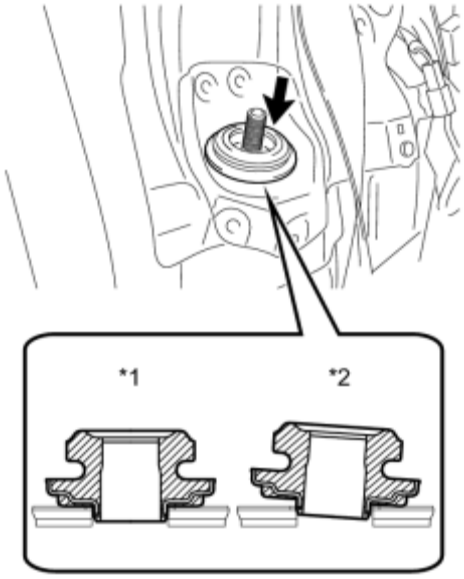
(a) Install the rear suspension support.

Text in Illustration

*1	Correct
*2	Incorrect

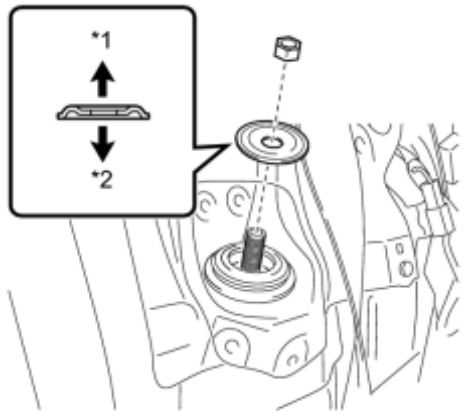
NOTICE:

Make sure that the rear suspension support is correctly installed as shown in the illustration.



c

4. INSTALL REAR NO. 1 SHOCK ABSORBER CUSHION WASHER



c

(a) Apply a few drops of adhesive to the threads of a new nut.

Text in Illustration

*1	Upper Side
*2	Lower Side

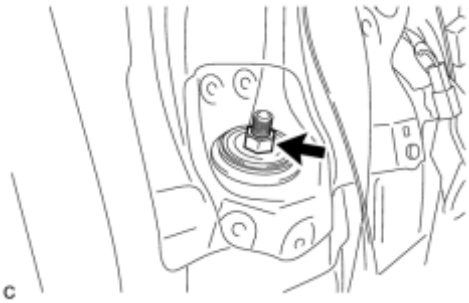
Adhesive:

Toyota genuine adhesive 1324, three bond 1324 or equivalent

(b) Install the rear No. 1 shock absorber cushion washer.

NOTICE:

Be sure to install the rear No. 1 shock absorber cushion washer in the correct direction.



c

(c) Using a union nut wrench, fully tighten the lock nut while holding the rod of the rear shock absorber assembly with a hexagon socket wrench.

Torque: **25 N·m (255 kgf·cm, 18ft·lbf)**

- Securely insert the hexagon socket wrench to the rear shock absorber rod to prevent damage to the rear shock absorber assembly when tightening the nut.
- Use the formula to calculate special torque values for situations

where the union nut wrench is combined with a torque wrench INFO.

5. INSTALL REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor) INFO

6. INSTALL DECK TRIM SIDE PANEL ASSEMBLY LH (for LH Side) INFO

7. INSTALL TONNEAU COVER HOLDER CAP (for LH Side) INFO

8. INSTALL LUGGAGE HOLD BELT STRIKER ASSEMBLY (for LH Side) INFO

9. INSTALL REAR SIDE SEATBACK ASSEMBLY LH (for LH Side) INFO

10. INSTALL DECK TRIM SIDE PANEL ASSEMBLY RH (for RH Side) INFO

11. INSTALL TONNEAU COVER HOLDER CAP (for RH Side) INFO

12. INSTALL LUGGAGE HOLD BELT STRIKER ASSEMBLY (for RH Side) INFO

13. INSTALL REAR SIDE SEATBACK ASSEMBLY RH (for RH Side) INFO

14. INSTALL REAR SEAT CUSHION ASSEMBLY INFO

15. INSTALL REAR DOOR SCUFF PLATE LH (for LH Side) INFO

16. INSTALL REAR DOOR SCUFF PLATE RH (for RH Side) INFO

17. INSTALL REAR DECK TRIM COVER INFO

18. INSTALL DECK TRIM SERVICE HOLE COVER INFO

19. INSTALL REAR NO. 1 FLOOR BOARD INFO

20. INSTALL REAR NO. 2 FLOOR BOARD SUB-ASSEMBLY INFO

21. INSTALL REAR NO. 1 FLOOR BOARD SUB-ASSEMBLY INFO

22. INSTALL DECK FLOOR BOX LH (for LH Side) INFO

23. INSTALL REAR NO. 4 FLOOR BOARD (for LH Side) INFO

24. INSTALL REAR NO. 3 FLOOR BOARD (for RH Side) INFO

25. INSTALL REAR DECK FLOOR BOX INFO

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

27. INSTALL TONNEAU COVER ASSEMBLY (w/ Tonneau Cover) INFO

28. INSTALL REAR WHEEL

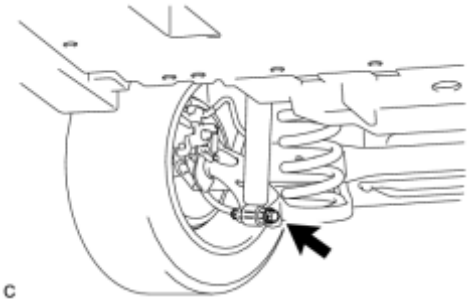
Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

29. STABILIZE SUSPENSION

(a) Lower the vehicle.

(b) Bounce the vehicle up and down several times to stabilize the suspension.

30. FULLY TIGHTEN REAR SHOCK ABSORBER ASSEMBLY



(a) Fully tighten the bolt.

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

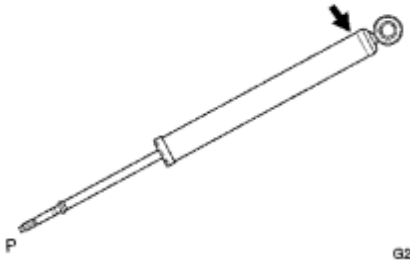
- Since the stopper nut is used, turn the bolt.
- The final torque must be applied under the standard vehicle height conditions.

31. PERFORM INITIALIZATION (w/ Height Control Sensor)

NOTICE:

Some systems need to be initialized after the rear height control sensor sub-assembly RH is replaced INFO.

DISPOSAL



1. DISPOSE OF REAR SHOCK ABSORBER ASSEMBLY

(a) Disposal using a drill

(1) Fully extend the piston rod and secure the rear shock absorber assembly at an angle in a vise.

(2) Using a drill, slowly make a hole at the position indicated by the arrow in the illustration to discharge the gas inside.

NOTICE:

Be careful when drilling because shards of metal may fly about, so always use proper safety equipment.

HINT:

The gas is colorless, odorless and non-poisonous.

HOW TO PROCEED WITH TROUBLESHOOTING

1. DIAGNOSIS OF TIRE VIBRATION

1.	TIGHTEN WHEEL NUTS

NEXT

▼

2.	INSPECT TIRES INFO

NG ▶ Go to step 3

OK ▶ Go to step 4

3.	REPAIR OR REPLACE TIRE(S)

NEXT

▼

4.	INSPECT AND/OR ADJUST WHEEL BALANCE INFO

NEXT

▼

5.	INSPECT FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT INFO

NG ▶ Go to step 6

OK ▶ Go to step 7

6.	REPAIR FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT INFO

NEXT

▼

7.	INSPECT REAR AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT INFO

NG ▶ Go to step 8

OK ▶ Go to step 9

8.	REPAIR REAR AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT INFO

NEXT

▼

9.	PERFORM ROAD TEST

NEXT

10.	RETURN VEHICLE TO CUSTOMER

2. DIAGNOSIS OF IRREGULAR TIRE WEAR

1.	INSPECT TIRES INFO

NEXT

2.	REPAIR OR REPLACE TIRE(S)

NEXT

3.	INSPECT AND/OR ADJUST FRONT WHEEL ALIGNMENT INFO

NEXT

4.	INSPECT REAR WHEEL ALIGNMENT INFO

NEXT

5.	PERFORM ROAD TEST

NEXT

6.	RETURN VEHICLE TO CUSTOMER

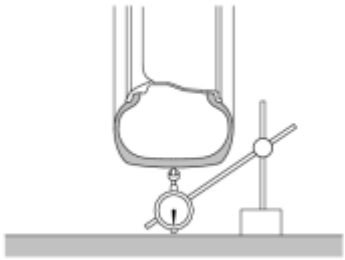
INSPECTION

1. INSPECT TIRES

(a) Check the tires for wear and proper inflation pressure.

Cold Tire Inflation Pressure:

Tire Size	Front kPa (kgf/cm^2, psi)	Rear kPa (kgf/cm^2, psi)
P195/65R15 89S	240 (2.4, 35)	230 (2.3, 33)
P215/45R17 87V	230 (2.3, 33)	220 (2.2, 32)
195/65R15 91H	220 (2.2, 32)	220 (2.2, 32)



C

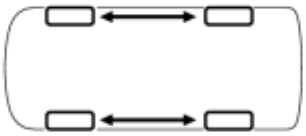
(b) Using a dial indicator, check the runout of the tires.

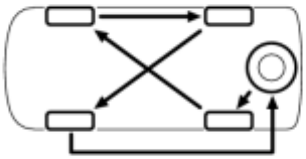
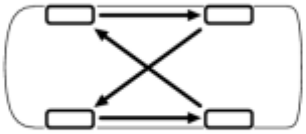
Maximum tire runout:

1.4 mm (0.0551 in.)

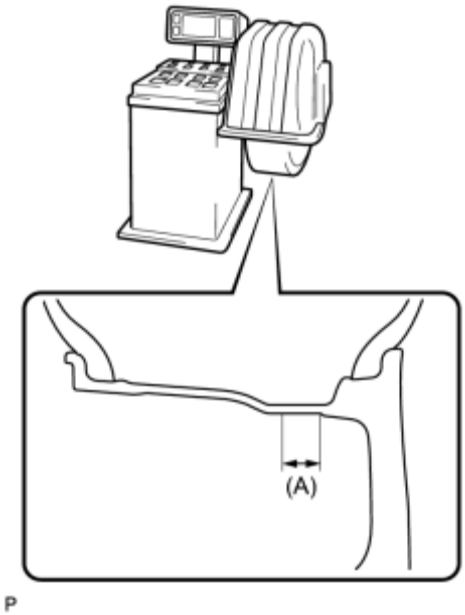
2. ROTATE TIRES

(a) Rotate the tires as shown in the illustration.

Area	Rotate Tire Vehicle Front Facing Left
North America	 C
Mexico	

Area	Rotate Tire Vehicle Front Facing Left
	 C
Korea	 C

3. INSPECT WHEEL BALANCE



P

(a) Check and adjust the off-the-car balance.

Maximum imbalance after adjustment:

8.0 g (0.0176 lb)

- Use a cleaning detergent to remove dirt, oil and water from the surface where the balance weight is to be adhered.
- Do not touch the adhesive surface of the tape.
- Adhere a sticking type balance weight to the flat surface (A) shown in the illustration.

  Width (A):

  25 mm (0.984 in.)

- Push the balance weight securely with your finger to adhere it to the position.
- Do not reuse the balance weight.

HINT:

The inner side balance weight should be installed by clipping it to the rim.

4. INSPECT FRONT AXLE HUB BEARING LOOSENESS

(a) Inspect the front axle hub bearing looseness INFO.

5. INSPECT REAR AXLE HUB BEARING LOOSENESS

(a) Inspect the rear axle hub bearing looseness INFO.

6. INSPECT FRONT AXLE HUB RUNOUT

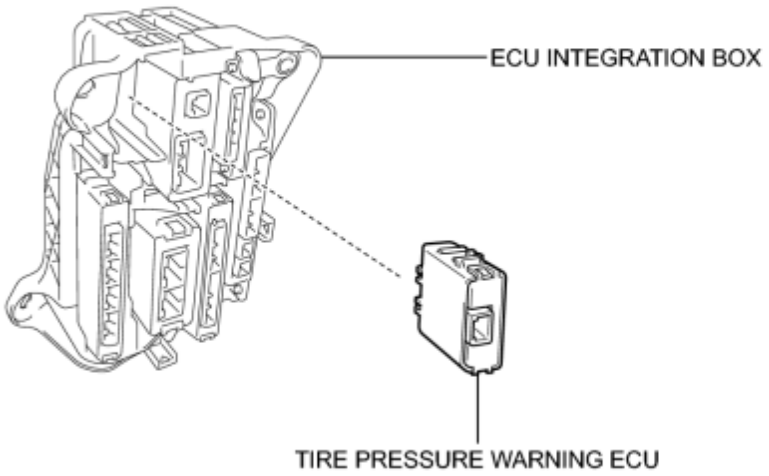
(a) Inspect the front axle hub runout INFO.

7. INSPECT REAR AXLE HUB RUNOUT

(a) Inspect the rear axle hub runout INFO.

COMPONENTS

ILLUSTRATION



c

REMOVAL

NOTICE:

When replacing the tire pressure warning ECU, read the transmitter IDs registered in the tire pressure warning ECU and make a note of them before removing the tire pressure warning ECU.

1. REMOVE ECU INTEGRATION BOX

HINT:

Refer to the procedures up to Remove ECU Integration Box INFO.

2. REMOVE TIRE PRESSURE WARNING ECU

C

(a) Disengage the 2 claws to remove the tire pressure warning ECU.

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING ECU

C

(a) Engage the 2 claws to install the tire pressure warning ECU.

2. INSTALL ECU INTEGRATION BOX

HINT:

Refer to the procedures from Install ECU Integration Box INFO.

3. REGISTER OF TRANSMITTER ID

(a) Register all transmitter IDs INFO.

4. PERFORM INITIALIZATION

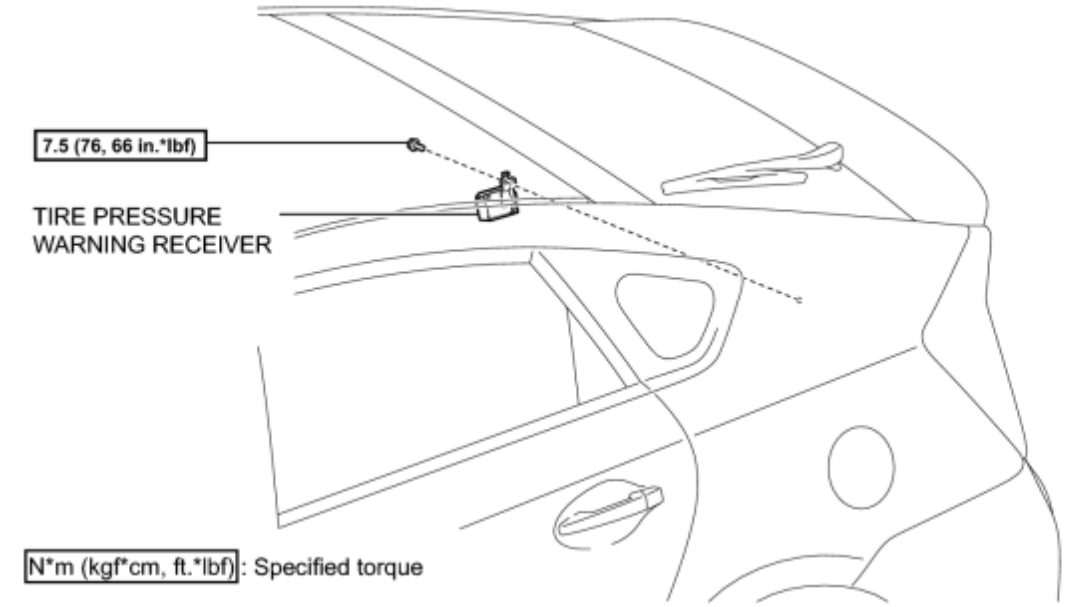
(a) Perform initialization INFO.

5. INSPECT TIRE PRESSURE WARNING SYSTEM

(a) Inspect the tire pressure warning system INFO.

COMPONENTS

ILLUSTRATION



c

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

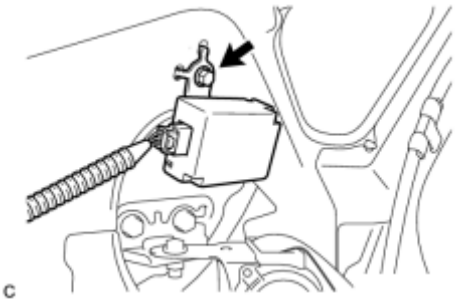
When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

2. REMOVE ROOF SIDE INNER GARNISH ASSEMBLY LH

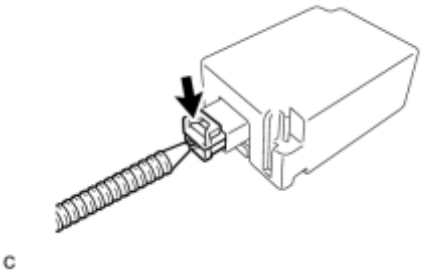
HINT:

- Refer to the procedures up to Remove Roof Side Inner Garnish Assembly INFO.
- Removal should be performed only for the left side.

3. REMOVE TIRE PRESSURE WARNING RECEIVER



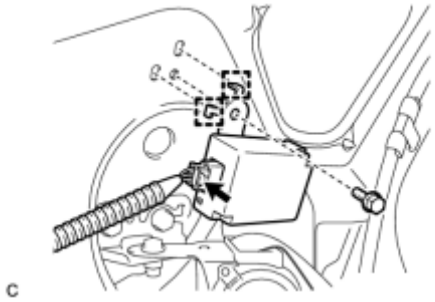
(a) Remove the bolt.



(b) Disconnect the connector to remove the tire pressure warning receiver.

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING RECEIVER



(a) Connect the connector.

(b) Engage the 2 tabs into the holes as shown in the illustration to install the tire pressure warning receiver.

(c) Install the bolt.

Torque: **7.5 N·m (76 kgf·cm, 66in·lbf)**

2. INSTALL ROOF SIDE INNER GARNISH ASSEMBLY LH

HINT:

- Refer to the procedures from Install Roof Side Inner Garnish Assembly INFO.
- Installation should be performed only for the left side.

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

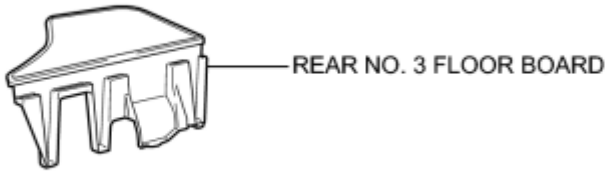
When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

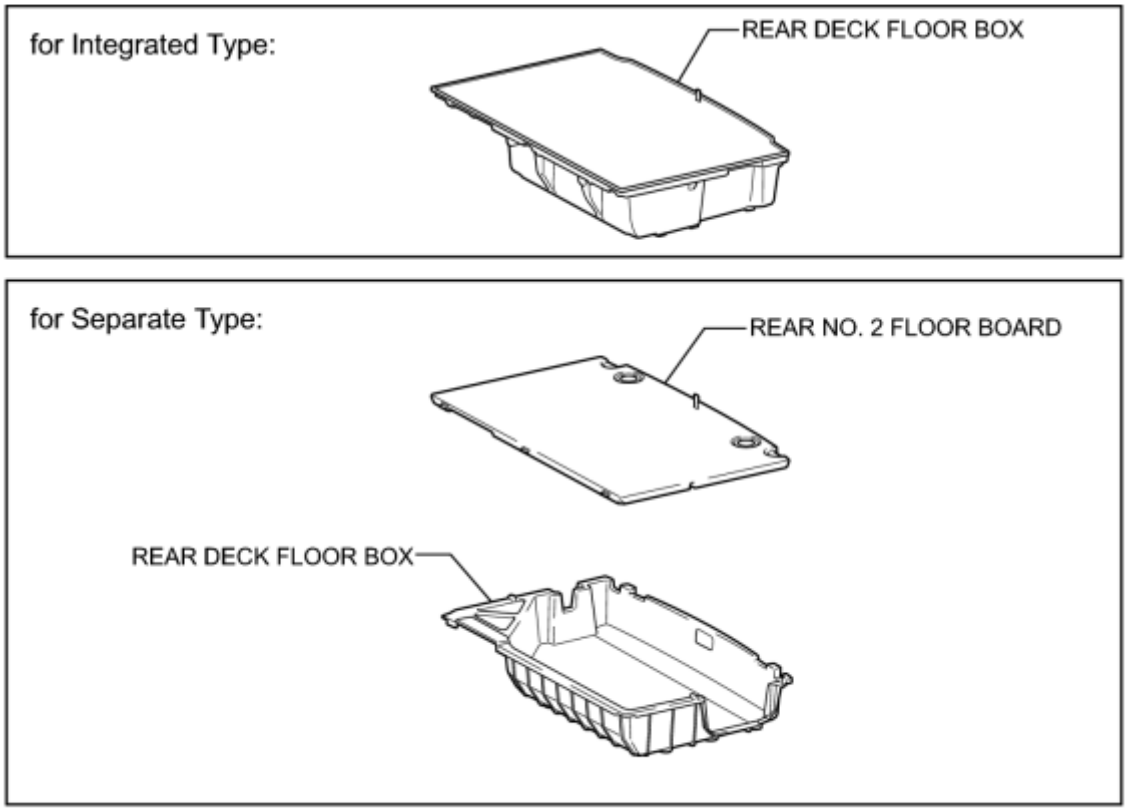
4. INSPECT TIRE PRESSURE WARNING SYSTEM

(a) Inspect the tire pressure warning system INFO.

COMPONENTS

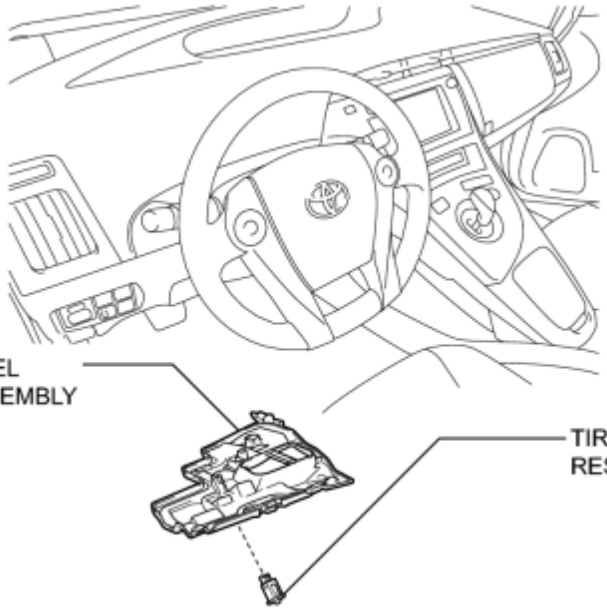
ILLUSTRATION





P

ILLUSTRATION


NO. 1 INSTRUMENT PANEL
UNDER COVER SUB-ASSEMBLY
TIRE PRESSURE WARNING
RESET SWITCH

c

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

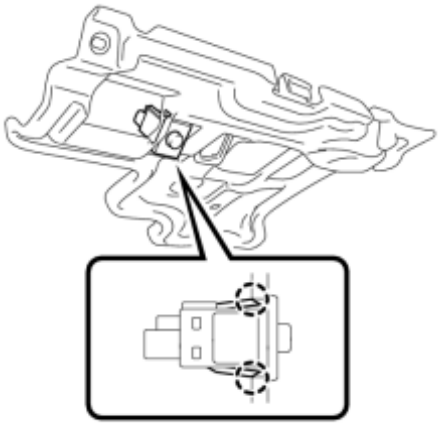
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

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

5. REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

6. REMOVE TIRE PRESSURE WARNING RESET SWITCH



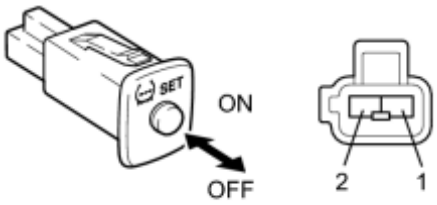
C

(a) Disengage the 2 claws to remove the tire pressure warning reset switch from the No. 1 instrument panel under cover sub-assembly.

INSPECTION

1. INSPECT TIRE PRESSURE WARNING RESET SWITCH

Component without harness connected:
(Tire Pressure Warning Reset Switch)



(a) Remove the tire pressure warning reset switch.

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

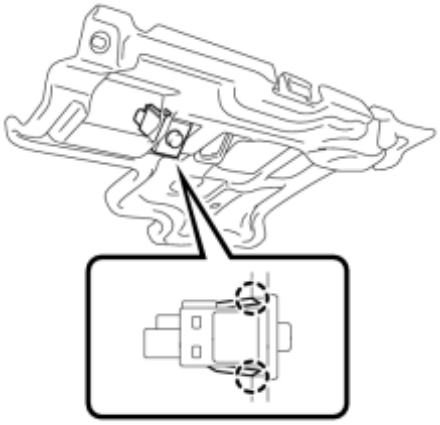
Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
1 - 2	ON	Below 1 Ω
	OFF	10 kΩ or higher

If the result is not as specified, replace the tire pressure warning reset switch.

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING RESET SWITCH



C

(a) Engage the 2 claws to install the tire pressure warning reset switch to the No. 1 instrument panel under cover sub-assembly.

2. INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

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

4. INSPECT TIRE PRESSURE WARNING SYSTEM

(a) Inspect the tire pressure warning system 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

PRECAUTION

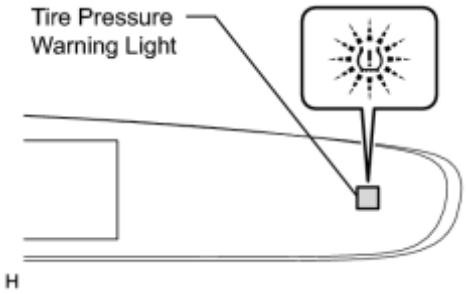
1. PRECAUTION FOR DISCONNECTING THE BATTERY CABLE

NOTICE:

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

System	See Procedure
Advanced Parking Guidance System	INFO

2. TIRE PRESSURE WARNING SYSTEM PRECAUTION



(a) When the tire pressure warning light comes on, immediately check the tire pressure of the tire and adjust it to the specified value (The tire pressure warning light will come on after blinking for 1 minute, the system may be malfunctioning. In this case, refer to following troubleshooting to repair the malfunction) INFO.

(b) When the tire pressure warning light comes on after blinking for 1 minute, there is a malfunction in the system. Check for DTCs.

(c) It is necessary to register the transmitter ID in the tire pressure warning ECU after replacing the tire pressure warning valve and transmitter and/or tire pressure warning ECU INFO.

(d) When replacing the tire pressure warning ECU:

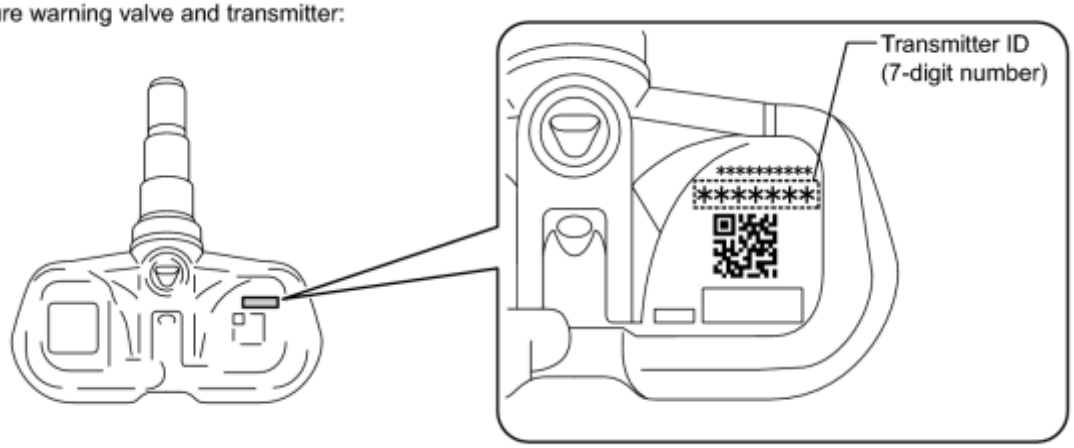
(1) Using the Data List, read the transmitter IDs registered in the ECU and make a note of them before removing the tire pressure warning ECU.

(2) Register the transmitter IDs after installing a new tire pressure warning ECU.

(e) When replacing the tire pressure warning valve and transmitter:

(1) Take a note of the 7-digit number (transmitter ID) written on the new tire pressure warning valve and transmitter when replacing the old one. Register the transmitter IDs in the tire pressure warning ECU after replacing the tire pressure warning valve and transmitter and installing the tires and wheels on the vehicle.

Tire pressure warning valve and transmitter:



H

NOTICE:

The transmitter ID is written on the tire pressure warning valve and transmitter. It will be unable to be read after installing the tire pressure warning valve and transmitter on the tire and wheel. Therefore, take a note of the transmitter ID before installing the tire pressure warning valve and transmitter.

(f) Tire and wheel replacement or tire rotation:

- After the tires or wheels are replaced with a new tire pressure warning valve and transmitter, it is necessary to register the transmitter IDs.
- It is not necessary to register the transmitter IDs after tire rotation is performed.
- After dropping the tire pressure warning valve and transmitter into the tire, disengage the bead from the wheel.

  NOTICE:

  Be careful not to damage the tire pressure warning valve and transmitter because of interference between the sensor and tire bead.

- The initialization is necessary to reset the warning threshold in accordance with the variant tire pressure settings due to the tire types.

(g) When replacing the tire pressure warning ECU and the tire pressure warning valve and transmitters, it is necessary to perform the initialization INFO after the registration INFO.

(h) Precautions about the tire pressure:

- Tire pressure decreases naturally.
- In winter, tire pressure may decrease due to low ambient temperatures (tire pressure decreases by approximately 10 kPa (0.1 kgf/cm^2, 1.5 psi) for every 10°C (50°F) drop in the ambient temperature).

  Therefore, the tire pressure warning system is more likely to indicate a warning if the tire pressures are not adjusted appropriately. If the daily temperature variation is large, pressurize the tires high so that the tire pressures are suitable under cold conditions. As a result, incorrect tire pressure warning operation should decrease.

3. IN CASE OF TIRE AND WHEEL REPLACEMENT

(a) When tires and wheels are replaced, always ensure that each transmitter ID is correctly registered.

(b) Before removing the tires from the disc wheels or reinstalling the tires to the disc wheels, be sure to follow the correct procedures for removal and installation of the tire pressure warning valve and transmitter. Failure to do so may cause the tire pressure warning valve and transmitters to break INFO.

4. INITIALIZATION PRECAUTION

(a) Initialize the tire pressure warning system after any of the following is performed:

- Replacing the tire pressure warning ECU and/or the tire pressure warning valve and transmitter
- When rotating tires on vehicles with differing front and rear tire inflation pressures

HINT:

The tire pressure warning system will not operate properly if it is not initialized INFO.

5. FAIL-SAFE FUNCTION

(a) When a system malfunction occurs in the tire pressure warning system, the tire pressure warning light and master warning light comes on after blinking for 1 minute to informs the driver of the system failure.

(b) The result of this diagnosis is stored in the tire pressure warning ECU.

6. CHECK TIRE PRESSURE AFTER REPAIRS

(a) After repairs confirm that the actual tire pressures are displayed in the Data List INFO.

7. REMOVAL AND INSTALLATION OF TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) When installing a tire, make sure that the tire pressure warning valve and transmitter does not interfere with the tire bead in order to prevent damage to the tire pressure warning valve and transmitter.

(b) After completing the operation, remove the valve core to rapidly release the air in the tire and check that the warning light comes on. If the warning light does not come on, the system may be defective.

(c) If there is air leakage, tighten the nut to a torque of 4.0 N*m (41 kgf*cm, 35 in.*lbf) and push the valve core 2 or 3 times to remove any dirt attached to the valve core. If air continues to leak, replace the grommet, washer, and nut.

(d) When installing the tire pressure warning valve and transmitter, make sure that the rim, grommet, washer, and nut are clean. Use a manufacturer-specified valve cap.

(e) When putting air into the tire, first install the tire pressure valve straight onto the stem of the tire pressure warning valve and transmitter.

8. TIRE AND WHEEL REPLACEMENT

(a) To prevent damage to the tire pressure warning valve and transmitter, drop the tire pressure warning valve and transmitter into the tire whenever removing the tire from the wheel.

NOTICE:

Always use a new grommet, washer and nut when installing the tire pressure warning valve and transmitter.

(b) If tires and wheels are replaced, register the transmitter IDs INFO.

PARTS LOCATION

ILLUSTRATION

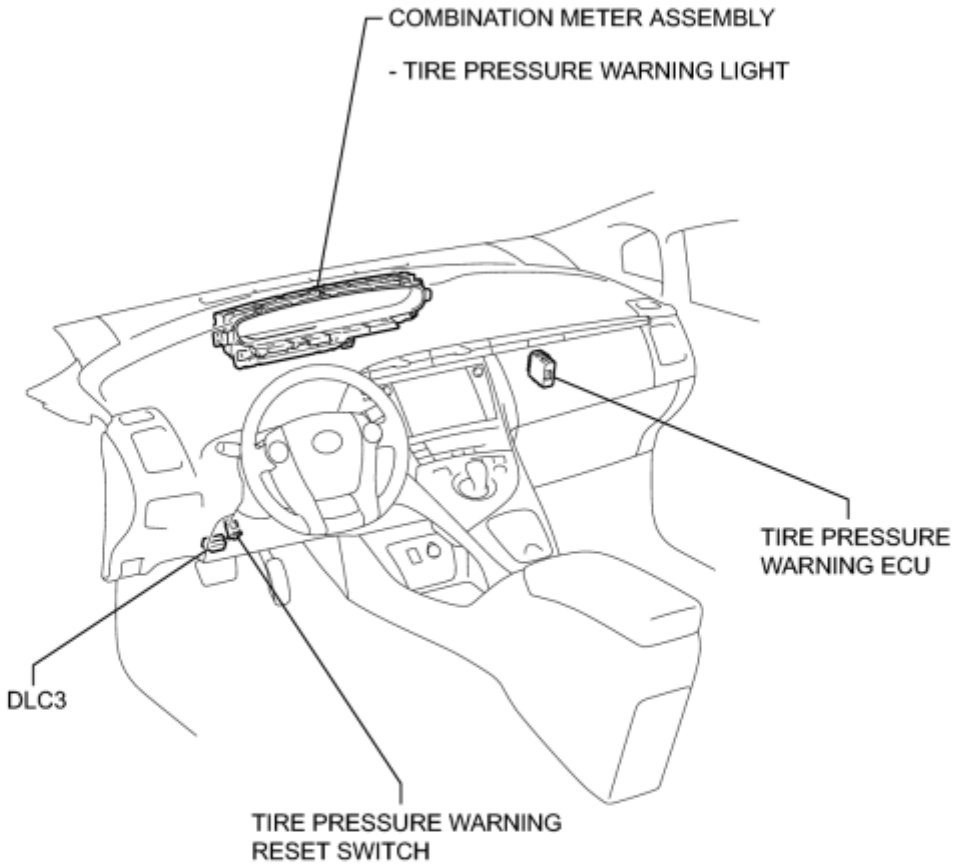


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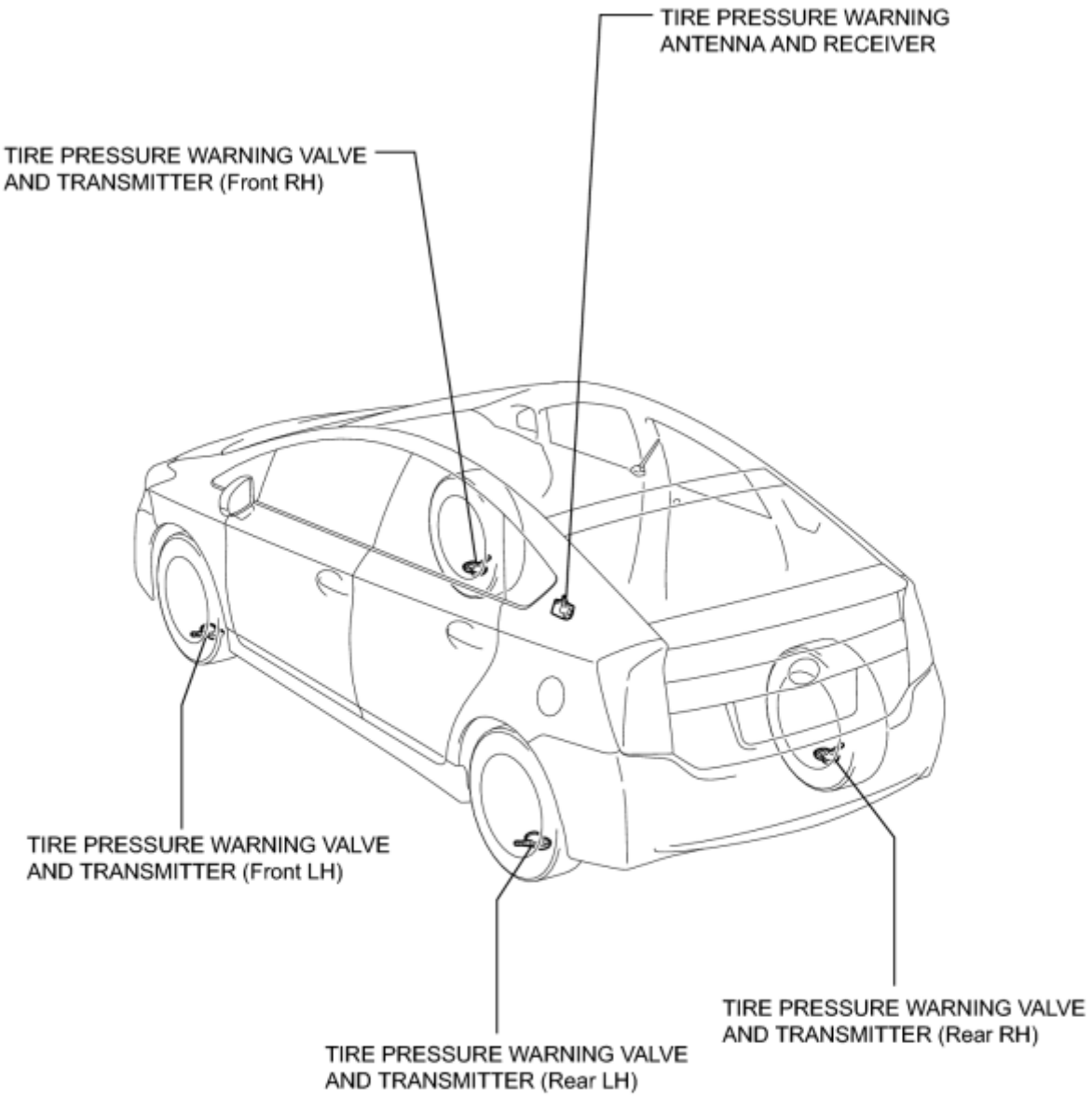
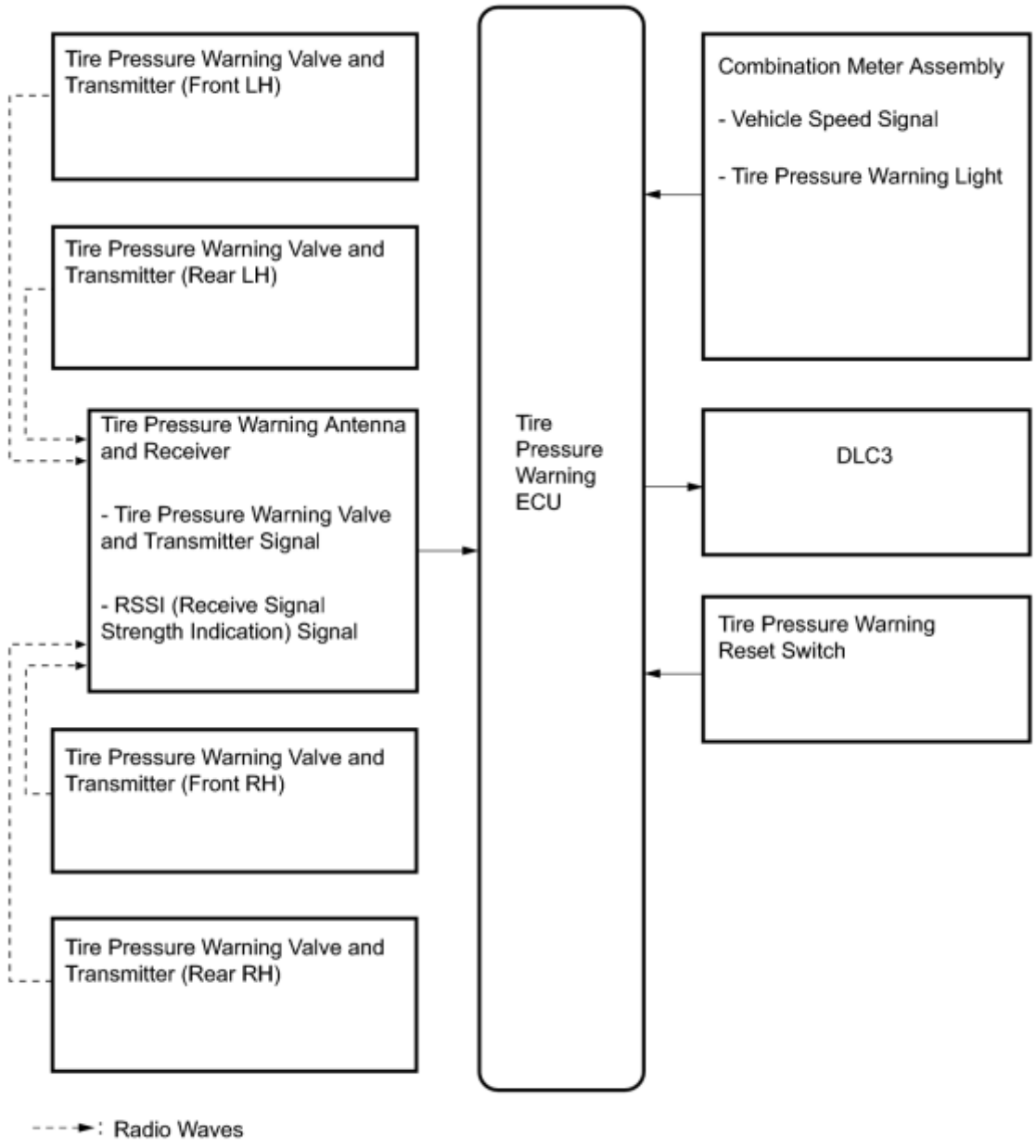
ILLUSTRATION


TIRE PRESSURE WARNING
ANTENNA AND RECEIVER
TIRE PRESSURE WARNING VALVE
AND TRANSMITTER (Front RH)
TIRE PRESSURE WARNING VALVE
AND TRANSMITTER (Front LH)
TIRE PRESSURE WARNING VALVE
AND TRANSMITTER (Rear LH)
TIRE PRESSURE WARNING VALVE
AND TRANSMITTER (Rear RH)

P

SYSTEM DIAGRAM



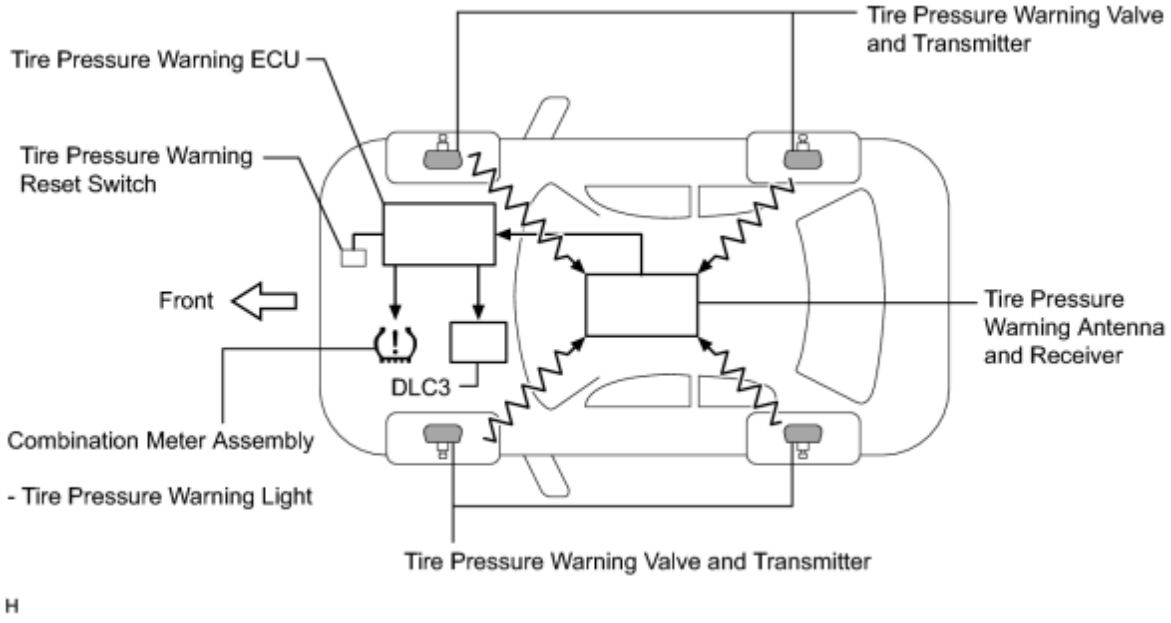
HINT:

Each tire pressure warning valve and transmitter sends information on the temperature inside the tire, the transmitter ID, and the tire pressure.

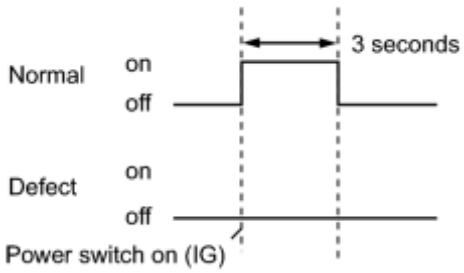
SYSTEM DESCRIPTION

1. DESCRIPTION OF SYSTEM

(a) A tire pressure warning valve and transmitter is equipped with a tire pressure sensor and a transmitter and is installed in each tire and wheel assembly. The sensor measures the tire pressure. The measured value and transmitter ID are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU from the tire pressure warning antenna and receiver. If the transmitter ID has already been registered, the ECU compares the measured air pressure value with the standard value. When the value is less than the standard value registered in the tire pressure warning ECU, the warning light on the combination meter comes on. The tire pressure warning reset switch addresses the differences in the air pressure settings by the type of tires.



2. INITIAL CHECK



(a) After the power switch is turned to on (IG), the tire pressure warning light comes on for 3 seconds and then go off.

HINT:

If the warning light does not come on for 3 seconds, troubleshoot the tire pressure warning light circuit INFO.

3. WHEN TIRE PRESSURE WARNING LIGHT IS LIT

(a) When the tire pressure warning light does not go off, or when it comes on during driving, check the tire pressure. If the tire pressure warning light comes on within several hours of adjusting the tire pressure, the tire may have a slow air leak.

(b) Under the following conditions, the system may not function properly:

(1) The system will be disabled in the following conditions:

(When the condition becomes normal, the system will work properly.)

- If tires not equipped with the tire pressure warning valve and transmitters are used.
- If the ID code on the tire pressure warning valve and transmitters is not registered in the tire pressure warning ECU.
- If the tire inflation pressure is absolute pressure: 600 kPa (6.0 kgf/cm^2, 87 psi) or more; relative pressure: 500 kPa (5.0 kgf/cm^2, 73 psi) or more.
- If the tire pressure warning valve and transmitter battery voltage drops. (battery life: 10 years)

(2) The system may be disabled in the following conditions:

(When the condition becomes normal, the system will work properly.)

- If electronic devices or facilities using similar radio wave frequencies are nearby.
- If a radio set at similar frequencies is in used in the vehicle.
- If a window tint that affects the radio wave signal is installed.
- If there is a lot of snow or ice on the vehicle, in particular around the wheels or wheel housings.
- If non-genuine wheels are used.
- If tire chains are used.

(c) After removing and installing the ECU or a sensor, check for a diagnostic trouble code and verify that it is a normal system code.

4. FUNCTION OF COMPONENTS

Components	Function
Tire pressure warning valve and transmitter	Combined as a single unit with a disc wheel air valve, it measures tire pressure and temperature and transmits an ID number for measurement value and identification. Built-in the battery.
Tire pressure warning antenna and receiver	Receives and transmits a necessary signal from the transmitters to the tire pressure warning ECU.
Tire pressure warning ECU	Receives a signal from the receiver and identifies it as vehicle's own signal. If the measured value is equal to or lower than the specified value, it transmits a signal to illuminate the tire pressure warning light on the combination meter.
Tire pressure warning light	Located in the combination meter, it informs the driver of lowered tire pressure and system failure.
Tire pressure warning reset switch	Allows entering initialization mode for when the standard pressure is changed

5. TIRE PRESSURE WARNING RESET SWITCH

- By operating the tire pressure warning reset switch, the tire pressure warning ECU can be set to issue a warning at an inflation pressure that corresponds to the standard pressure of tires.

Therefore, the warning threshold must be set to the proper value in order to comply with the local regulations.

- Operate the tire pressure warning reset switch only after the inflation pressures of all tires have been adjusted on the vehicle.
- To initialize the system, press and hold the tire pressure warning reset switch for 3 seconds or longer with the power switch on (IG). When the system receives the initialization signal, the warning light blinks 3 times (1 second on, 1 second off).
- During initialization, the tire pressure warning valve and transmitter measures the inflation pressure of the tire, and registers the signals that are transmitted into the tire pressure warning ECU at a frequency of once per minute. The initialization process is completed when signals from all the tires have been received. It takes a few minutes.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the tire pressure warning system.
- *: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP

NEXT

2.	CUSTOMER PROBLEM ANALYSIS

(a) Interview the customer to confirm the trouble.

HINT:

It is important to collect as much specific information as possible from the customer to allow for a quick repair.

NEXT

3.	ADJUST TIRE PRESSURE*

(a) Turn the power switch off.

(b) Set the all tire pressure to the specified value INFO.

(c) Connect the Techstream to the DLC3.

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

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Read the "ID Tire Inflation Pressure" values.

(g) Check the Data List INFO.

HINT:

- It takes about 2 or 3 minutes to display the updated tire pressure data.
- If the problem is that the tire pressure decreases, wait until all of the tire pressure data is received by the ECU. If the data is received, the tire pressure warning light will go off.

Result:

Condition	Proceed to
Tire pressure warning light goes off	A
Tire pressure warning light remains on	B

A GO TO STEP 9

B

4.	CHECK FOR DTC*

(a) Check for DTCs INFO.

Result:

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

B GO TO STEP 6

A

5.	DTC CHART

(a) Refer to Diagnostic Trouble Code Chart INFO.

NEXT **GO TO STEP 7**

6.	PROBLEM SYMPTOMS TABLE

(a) Refer to Problem Symptoms Table INFO.

NEXT

7.	CIRCUIT INSPECTION*

(a) Refer to Electronic Circuit Inspection Procedure INFO.

NEXT

8.	REPAIR OR REPLACE

(a) Repair or replace parts based on the diagnosis result.

NEXT

9.	CONFIRMATION TEST*

(a) Check the Data List to confirm that the tire inflation pressure has been received INFO.

(b) Perform initialization INFO.

(c) Confirm that the initialization has been completed.

REGISTRATION

1. DESCRIPTION OF CODE REGISTRATION

It is necessary to register the transmitter ID in the tire pressure warning ECU when replacing the tire pressure warning valve and transmitter and/or tire pressure warning ECU.

Prepare all transmitter ID data before starting registration.

(a) Before registration

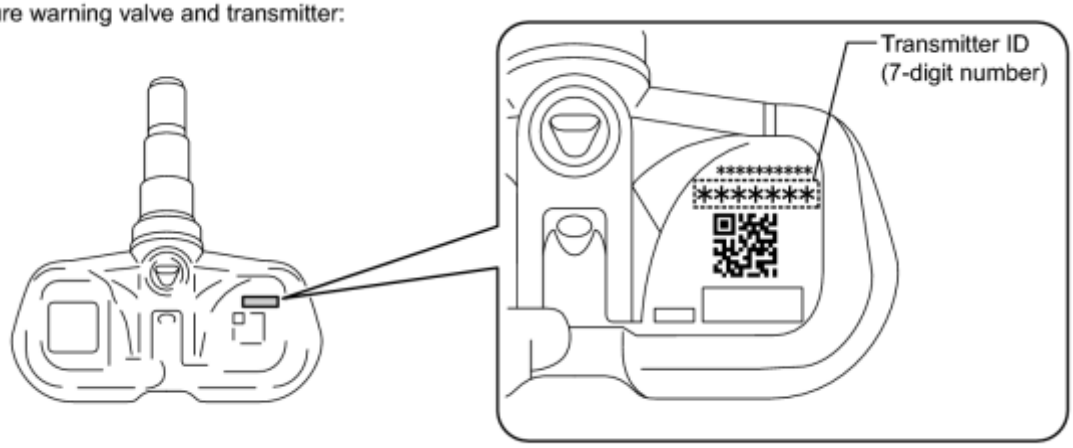
(1) When replacing the tire pressure warning ECU:

- Read the registered transmitter IDs that are stored in the old ECU using the Techstream and note them down.
- If reading stored transmitter IDs is impossible due to malfunctions of components such as the tire pressure warning antenna and receiver, remove the tires from the wheels and check the IDs located on the tire pressure warning valve and transmitters INFO.

(2) When replacing a tire pressure warning valve and transmitter:

- Take note of the 7-digit number (transmitter ID) written on the tire pressure warning valve and transmitter.

Tire pressure warning valve and transmitter:



H

NOTICE:

- The transmitter ID is written on the tire pressure warning valve and transmitter. It will be unable to be read after installing the tire pressure warning valve and transmitter on the tire and wheel. Therefore, take a note of the transmitter ID before installing the tire pressure warning valve and transmitter.
- The ID registration must be performed for all tire pressure warning valve and transmitters. Check the Data List, replace the exchanged ID with a new ID, and make a new DATA LIST of all 4 tires for the vehicle.

2. REGISTER TRANSMITTER ID (Using Techstream)

(a) Set the all tire pressure to the specified value INFO.

(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 / Tire Pressure Monitor / Utility / ID Registration.

(g) Perform the following procedures displayed on the screen.

(h) Confirmation of transmitter ID registration.

(1) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(2) Read the "ID Tire Inflation Pressure" values.

(3) Confirm that the data of tire pressure of all tires are displayed on the Techstream.

NOTICE:

- It takes about 2 or 3 minutes to display the updated tire pressure data. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.
- If the IDs have not been registered, DTC C2171/71 is set in the tire pressure warning ECU after 3 minutes or more.
- If normal pressure values are displayed, the IDs have been registration correctly.
- If the tire pressure values are not displayed after a few minutes, the IDs may be incorrect or the system may have a malfunction.
- After all IDs are registered, DTC C2126/26 (Transmitter ID not Received) is set in the tire pressure warning ECU and the tire pressure warning light blinks for 1 minute and then comes on. When the tire pressure warning ECU successfully receives radio waves from all the transmitters whose IDs are stored in the ECU, DTC C2126/26 is deleted and the tire pressure warning light goes off.

INITIALIZATION

1. DESCRIPTION OF INITIALIZATION

(a) Perform initialization in the following cases:

- Before delivery of a new vehicle.
- After replacement of the tire pressure warning ECU*.
- After replacement of any of the tire pressure warning valve and transmitters*.

*: Perform initialization after the transmitter ID registration is completed INFO.

(b) Before initialization

(1) Set the all tire pressure to the specified value INFO.

NOTICE:

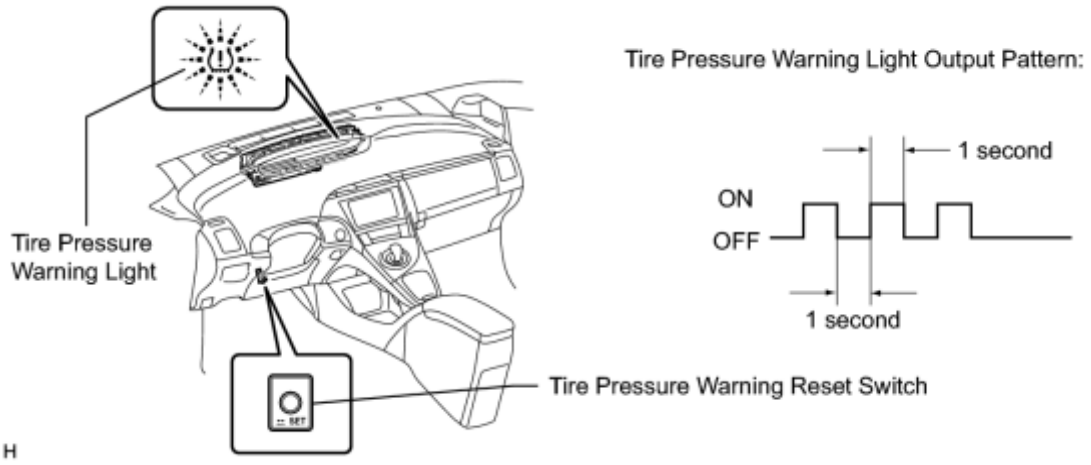
Make sure the tires are cooled down.

2. INITIALIZATION PROCEDURE

(a) Adjust all tire (except spare tire) to the standard tire inflation pressure, as indicated on the tire and loading information label on the vehicle.

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

(c) Push and hold the tire pressure warning reset switch for 3 seconds or more so that the tire pressure warning light blinks 3 times.



(d) Turn the power switch off.

(e) Connect the Techstream to the DLC3.

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

(g) Turn the Techstream on.

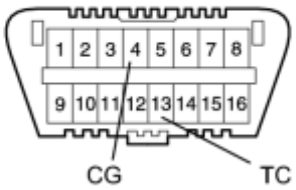
(h) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(i) Check that the initialization has been completed.

(j) Confirm that the tire pressure data of all wheels are displayed on the Techstream.

- The initialization is normally completed within 2 or 3 minutes.
- If the initialization has not been completed successfully, DTC C2177/77 is set after a vehicle speed 8 km/h (5 mph) or more continues for 20 minutes or more.
- The initialization can be terminated by connecting terminals TC and CG of the DLC3.

Front View of DLC3:



T

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

	pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

- The initialization is completed when the "ID Tire Information Pressure" display shows the correct pressures.
- *: It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.

TEST MODE PROCEDURE

1. ENTER TEST MODE

HINT:

- Operation of the tire pressure warning reset switch can be checked in TEST MODE.
- During TEST MODE, the system is not initialized by pushing the tire pressure warning reset switch. The circuit of the tire pressure warning reset switch can be inspected during this mode.

(a) Turn the power switch off.

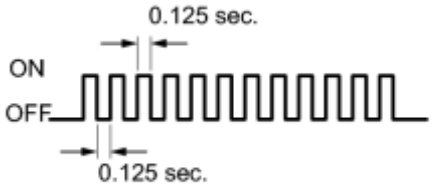
(b) Connect the Techstream to the DLC3.

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

(d) Check that the tire pressure warning light comes on for 3 seconds and then goes off.

(e) Turn the Techstream on.

(f) Enter the following menus: Chassis / Tire Pressure Monitor / Utility / Signal Check.



(g) Confirm that the tire pressure warning light in the combination meter blinks at 0.125 second intervals.

P

2. PERFORM SIGNAL CHECK

HINT:

- When entering signal check mode, the tire pressure warning ECU sets all the signal check DTCs first.

  After completing signal check for each inspection item, the DTCs for systems that are determined to be normal by the tire pressure warning ECU will be cleared.

  The DTCs for other inspection items may not be cleared when only a certain signal is inspected.

- When signal check returns to normal mode, all the signal check DTCs will be cleared.

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Utility / Signal Check.

HINT:

Every time the test mode DTC clear conditions are satisfied, the tire pressure warning light comes on for 1 second. Then, the tire pressure warning light blinks at 0.125 second intervals.

(f) Turn the power switch on (IG) and wait for 3 seconds or more to check the RSSI signal (C2196/96).

(g) Drive the vehicle at 20 km/h (12 mph) or more for 3 seconds or more to check the vehicle speed signal (C2191/91).

(h) Loosen the valve core and rapidly reduce the pressure (at least 40 kPa (0.4 kg/cm^2, 5.8 psi) within 30 seconds or more) to check the transmitter data (C2181/81 to C2184/84).

HINT:

The transmitter ID can be transmitted by rapidly reducing the tire pressure.

(i) Check that the tire pressure warning system test mode DTCs are cleared.

Test Mode DTC	Test Signal	Test Mode DTC Clear Condition
C2181/81 to C2184/84	Transmitter Data	Data is received from the transmitter which has a registered ID in the tire pressure warning ECU
C2191/91	Vehicle Speed Signal	Vehicle speed of 20 km/h (12 mph) or more is detected for 3 seconds or more
C2196/96	RSSI Signal	RSSI signal between 49 mV and 4.95 V is received for 3 seconds or more

(j) Check the tire pressure warning reset switch.

(1) Press the tire pressure warning reset switch.

(2) Check the tire pressure warning light.

Test Signal	Normal Condition
Tire Pressure Warning Reset Switch	• Switch ON: Tire pressure warning light comes on • Switch OFF: Tire pressure warning light blinks at 0.125 sec. intervals

(k) Result

HINT:

After the signal check is completed, check for a signal check DTC to confirm the system status.

Condition	Procedure
Test mode DTC is output	Repair the faulty part and enter SIGNAL CHECK again
Test mode DTCs are cleared	No problem

(l) End of SIGNAL CHECK

(1) After completing the test mode (SIGNAL CHECK), turn the power switch off and disconnect the Techstream.

(m) DTC of SIGNAL CHECK (TEST DIAGNOSIS)

(1) If a trouble code is displayed during the test mode DTC check, check the circuit listed for that code. For details of each code, refer to the "See Procedure" below.

DTC No.	Detection Item	Trouble Area	See Procedure
C2181/81	Transmitter ID1 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU	INFO
C2182/82	Transmitter ID2 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU	INFO
C2183/83	Transmitter ID3 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU	INFO
C2184/84	Transmitter ID4 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU	INFO
C2191/91	Vehicle speed signal error	• Vehicle speed sensor • Combination meter assembly • Wire harness or connector • Tire pressure warning ECU	INFO
C2196/96	RSSI signal error	• Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU	INFO

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.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Tire Pressure Warning System

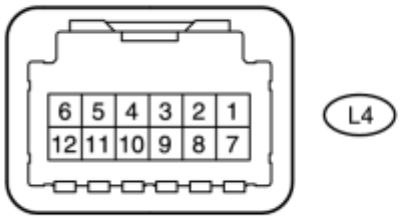
Symptom	Suspected Area	See page
Tire pressure warning light does not illuminate, despite tire pressure decreasing	Initialization	INFO
	Check Data List (ID Tire Inflation Pressure)	INFO
	ID code check (Registration)	INFO
Tire pressure warning light remains illuminated (Goes off during initial check)	ECU power source circuit	INFO
	Tire pressure warning light circuit	INFO
Tire pressure warning light remains illuminated (Comes on during initial check)	Check Data List (ID Tire inflation pressure)	INFO
	Tire pressure warning light circuit	INFO
	ID code check (Registration)	INFO
	Initialization	INFO
Initialization cannot be done	Tire pressure warning reset switch	INFO
DTC check cannot be done	ECU power source circuit	INFO
	TC and CG terminal circuit	INFO

TERMINALS OF ECU

1. CHECK TIRE PRESSURE WARNING ECU

HINT:

Inspect the connectors from the back side while the connectors are connected.



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(a) Disconnect the R2 tire pressure warning antenna and receiver connector.

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

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
L4-12 (RDA) - Body ground	B - Body ground	Tire pressure warning antenna and receiver signal	Power switch on (IG)	11 to 14 V

(c) Connect the R2 tire pressure warning antenna and receiver connector.

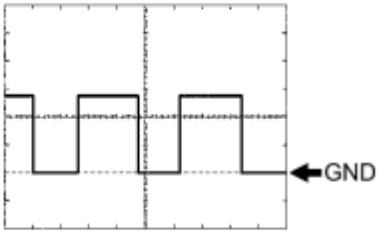
(d) Measure the voltage and resistance according to the value(s) in the table below. If the result is not as specified, the ECU may have a malfunction.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
L4-1 (CLSW) - Body ground	Y -Body ground	Tire pressure warning reset switch	• Power switch on (IG) • Tire pressure warning reset switch ON	8.5 to 15 V
			• Power switch on (IG) • Tire pressure warning reset switch OFF	Below 1.5 V
L4-2 (SPD) - Body ground	V - Body ground	Vehicle speed signal	Vehicle running	Pulse generation (see waveform 1)
L4-3 (TC) - Body ground	L - Body ground	TC terminal	Terminal TC not connected	11 to 14 V

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
L4-4 (TACH) - Body ground	L - Body ground	RSSI (receive signal strength indication) signal	Power switch on (IG)	Pulse generation (see waveform 2)
L4-5 (IND) - Body ground	G - Body ground	Tire pressure warning light output signal	• Power switch on (IG) • Tire pressure warning light OFF	Below 0.5 V
		Tire pressure warning reset switch	After turning power switch on (IG), tire pressure warning light illuminates for 3 seconds	0.9 to 3.2 V
L4-6 (RF5V) - Body ground	R - Body ground	Tire pressure warning antenna and receiver power source	Power switch on (IG)	11 to 14 V
L4-7 (IG) - Body ground	B - Body ground	IG power source	Power switch on (IG)	11 to 14 V
L4-9 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
L4-10 (SIL) - Body ground	P - Body ground	Diagnostic communication	Power switch on (IG)	8 to 14 V
L4-11 (GND2) - Body ground	G - Body ground	Tire pressure warning antenna and receiver ground	Always	Below 1 Ω

(e) Using an oscilloscope, check the waveform 1.

Waveform 1:



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Item	Contents
Terminal	L4-2 (SPD) - Body ground
Tool setting	5 V/DIV, 20 ms./DIV.
Vehicle condition	Driving at approximately 20 km/h (12 mph)

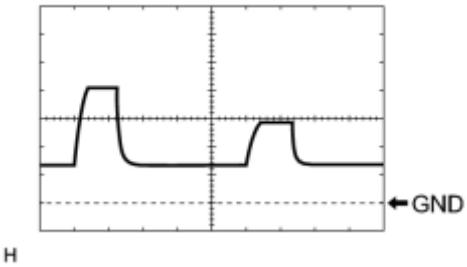
HINT:

The wavelength becomes shorter as the vehicle speed increases.

(f) Using an oscilloscope, check the waveform 2.

Waveform 2:

Item	Contents
Terminal	L4-4 (TACH) - Body ground
Tool setting	0.5 V/DIV., 10 ms./DIV.



Vehicle condition	Power switch on (IG)

HINT:

The shape of waves like figure appears approximately 2 times every 3 minutes.

DIAGNOSIS SYSTEM

1. CHECK BATTERY VOLTAGE

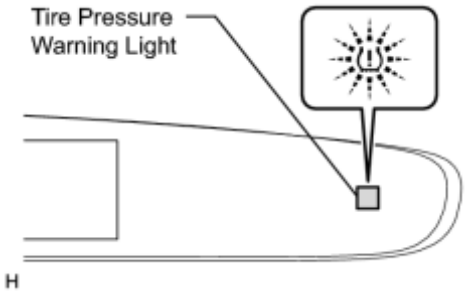
Standard voltage:

11 to 14 V

If the voltage is below 11 V, recharge the battery before proceeding to the next step.

2. CHECK DLC3 INFO

3. DIAGNOSIS SYSTEM



(a) Warning light

(1) When there is a problem with the tire pressure warning system, the tire pressure warning light blinks at 0.5 second intervals, and comes on after 1 minute.

NOTICE:

When the malfunction has been corrected, the tire pressure warning light does not come on.

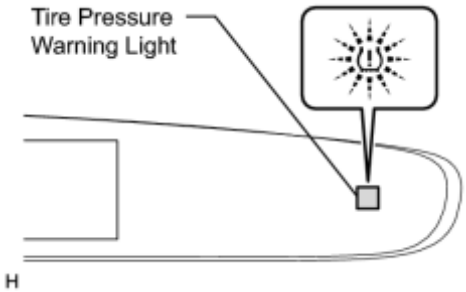
(b) DTCs (Normal mode)

(1) DTCs are memorized in the tire pressure warning ECU and read by the blinks of the tire pressure warning light or by using the Techstream INFO.

(c) Test mode

(1) By switching from normal mode into test mode (input signal check), you can inspect the tire pressure warning antenna and receiver, each tire pressure warning valve and transmitter, RSSI signal and vehicle speed sensor INFO.

4. CHECK TIRE PRESSURE WARNING LIGHT



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

(b) Check that the tire pressure warning light comes on for 3 seconds.

If the warning check result is not normal, proceed to troubleshooting for the tire pressure warning light circuit INFO.

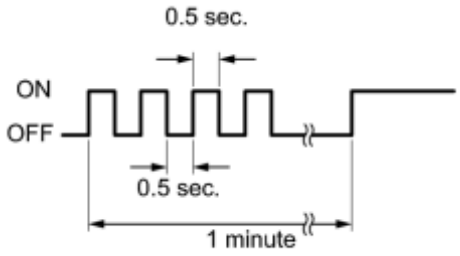
5. TIRE PRESSURE WARNING LIGHT CHART

HINT:

The table below indicates the state of the tire pressure warning light after the power switch is turned on (IG).

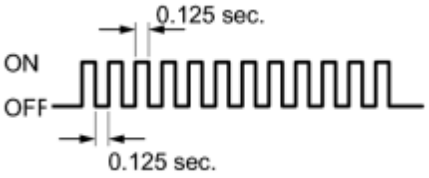
	Immediately after turning the power switch on(IG)	Always						
		Warning light output pattern						
	Comes on for 3 sec.	Goes off	Comes on	Blinks for 1 minute and then illuminates*1	Blinks*2	Blinks*3	Blinks*4	Outputs DTC
Normal	○	○	-	-	-	-	-	-
Low tire pressure	○	-	○	-	-	-	-	-
System fail	○	-	-	○	-	-	-	-
Test mode	○	-	-	-	○	-	-	-
Initialization	○	-	-	-	-	○	-	-
ECU connector poorly connected	-	-	-	○ *5	-	-	-	-
TC ground (DTC is output)	○	-	-	-	-	-	-	○
TC ground (DTC is not output)	○	-	-	-	-	-	○	-

- *1: Comes on and goes off repeatedly at 0.5 second intervals, and stays on after 1 minute.



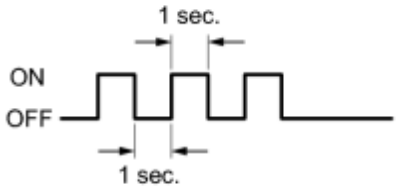
P

- *2: Comes on and goes off repeatedly at 0.125 second intervals.



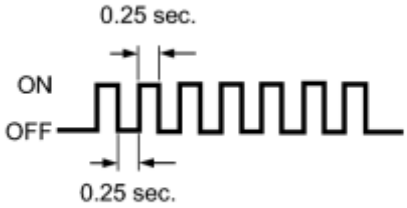
P

- *3: Blinks 3 times (1 second on, 1 second off).

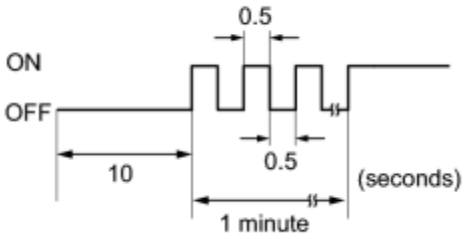


P

- *4: Comes on and goes off repeatedly at 0.25 second intervals.



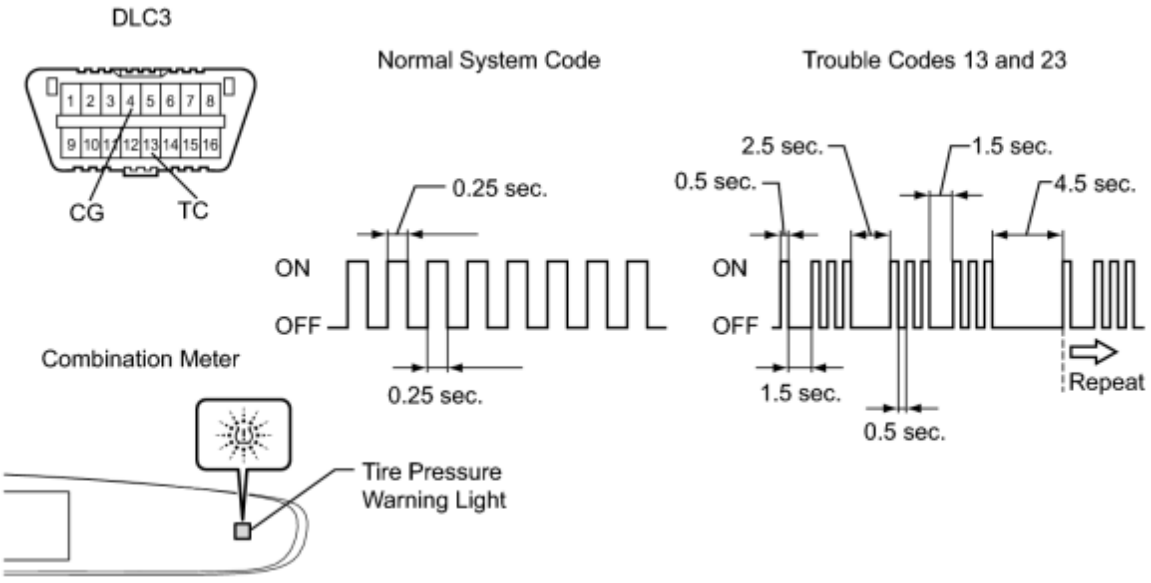
- *5: When determining if there is a short circuit (10 seconds), the light goes off. Then it blinks at 0.5 second intervals, and stays on after 1 minute.



DTC CHECK / CLEAR

1. DTC CHECK (USING SST CHECK WIRE)

(a) Turn the power switch off.



(b) Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3.

SST: 09843-18040

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

(d) Read and record any DTCs from the tire pressure warning light on the combination meter. Refer to the illustration as examples of the normal system code and codes 13 and 23.

HINT:

- If the tire pressure warning light does not indicate any DTCs or the normal system code, inspect the tire pressure warning light circuit or TC and CG terminal circuit.

Trouble Area	See Procedure
Tire pressure warning light circuit	INFO
TC and CG terminal circuit	INFO

- If 2 or more malfunctions are indicated at the same time, the lowest numbered DTC is displayed first.

(e) Refer to Diagnostic Trouble Code Chart INFO for DTC information.

(f) After completing the check, turn the power switch off and remove SST from the DLC3.

SST: 09843-18040

2. DTC CHECK (USING TECHSTREAM)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.

(f) Read the DTCs following the prompts on the Techstream.

HINT:

Refer to the Techstream operator's manual for further details.

3. CLEAR DTC

HINT:

After repairing the malfunctions, clear the DTCs.

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.

(f) Clear the DTCs following prompts on the Techstream.

HINT:

Refer to the Techstream operator's manual for further details.

DATA LIST / ACTIVE TEST

1. 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) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

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

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mode Status	Tire pressure warning system mode/ NORMAL or TEST	NORMAL: Normal mode TEST: Test mode	-
Main Tire	Number of main tire ID to be registered/ 0 or 1 or 2 or 3 or 4	0 to 4 displayed	-
Vehicle Speed	Vehicle speed reading/ min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual vehicle speed	Speed indicated on the combination meter
Registered ID1 Code	Registered ID1 code/ min.: 0, max.: FFFFFFF*1	ID No. registered in transmitter ID1 displayed	-
Registered ID2 Code	Registered ID2 code/	ID No. registered in transmitter ID2	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	min.: 0, max.: FFFFFFF*1	displayed	
Registered ID3 Code	Registered ID3 code/ min.: 0, max.: FFFFFFF*1	ID No. registered in transmitter ID3 displayed	-
Registered ID4 Code	Registered ID4 code/ min.: 0, max.: FFFFFFF*1	ID No. registered in transmitter ID4 displayed	-
ID Transmission Status	ID code transmission status/ FINISH or NOW	FINISH or NOW	-
Initialization Switch	Tire pressure warning reset switch/ ON, OFF	ON: Switch on OFF: Switch off	-
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*2
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*2
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*2

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	kgf/cm^2, 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*2
ID1 Temperature in Tire	ID1 temperature in tire/ min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID2 Temperature in Tire	ID2 temperature in tire/ min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID3 Temperature in Tire	ID3 temperature in tire/ min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID4 Temperature in Tire	ID4 temperature in tire/ min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID1 Battery Voltage	ID1 battery voltage/OVER or LESS	OVER	-
ID2 Battery Voltage	ID2 battery voltage/OVER or LESS	OVER	-
ID3 Battery Voltage	ID3 battery voltage/OVER or LESS	OVER	-
ID4 Battery Voltage	ID4 battery voltage/OVER or LESS	OVER	-
Initialization Switch Info	Tire pressure warning reset switch setting information/ WITH or WITHOUT	WITH	-
ID1 Initial Threshold of Low-pressure	ID1 initial threshold of low-pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative	Tire pressure after initialization	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID2 Initial Threshold of Low-pressure	ID2 initial threshold of low-pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Tire pressure after initialization	-
ID3 Initial Threshold of Low-pressure	ID3 initial threshold of low-pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Tire pressure after initialization	-
ID4 Initial Threshold of Low-pressure	ID4 initial threshold of low-pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Tire pressure after initialization	-
Number of Trouble Code	Number of DTCs recorded/min.: 0, max.: 255	Min.: 0, Max.: -	-

HINT:

*1: Displayed only when the ID No. is not registered.

*2: It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.

2. Active Test

Using the Techstream to perform Active Tests allows the relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in trouble shooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Body Electrical / Combination Meter / Active Test.

(f) Check the operation by referring to the table below.

Combination Meter

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire pressure warning light	Tire pressure warning light OFF or ON	Confirm that the vehicle is stopped, engine idling

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is displayed during the DTC check, inspect the circuit listed for that code. For details of each code, refer to the relevant page listed under respective "DTC Code" in the DTC chart.

Tire Pressure Warning System

DTC Code	Detection Item	Trouble Area	See page
C2111/11	Transmitter ID1 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2112/12	Transmitter ID2 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2113/13	Transmitter ID3 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2114/14	Transmitter ID4 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2121/21	No Signal from Transmitter ID1	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2122/22	No Signal from Transmitter ID2	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2123/23	No Signal from Transmitter ID3	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and	INFO

DTC Code	Detection Item	Trouble Area	See page
		receiver 3. Wire harness or connector 4. Tire pressure warning ECU	
C2124/24	No Signal from Transmitter ID4	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2126/26	Transmitter ID not Received in Main Mode	1. ID registration failure 2. Tire pressure warning valve and transmitter 3. Tire pressure warning antenna and receiver 4. Wire harness or connector 5. Tire pressure warning ECU	INFO
C2141/41	Transmitter ID1 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2142/42	Transmitter ID2 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2143/43	Transmitter ID3 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2144/44	Transmitter ID4 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	INFO
C2165/65	Abnormal Temperature Inside ID1 Tire	1. Tires 2. Tire pressure warning valve and transmitter	INFO

DTC Code	Detection Item	Trouble Area	See page
		3. Tire pressure warning ECU	
C2166/66	Abnormal Temperature Inside ID2 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	INFO
C2167/67	Abnormal Temperature Inside ID3 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	INFO
C2168/68	Abnormal Temperature Inside ID4 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	INFO
C2171/71	Transmitter ID not Registered	Tire pressure warning ECU	INFO
C2175/75	Vehicle Speed or RSSI Signal Error	1. Combination meter 2. Tire pressure warning valve and transmitter 3. Tire pressure warning antenna and receiver 4. Wire harness or connector 5. Tire pressure warning ECU	INFO
C2176/76	Receiver Error	Tire pressure warning ECU	INFO
C2177/77	Initialization not Completed	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2181/81	Transmitter ID1 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and	INFO

DTC Code	Detection Item	Trouble Area	See page
		receiver 3. Wire harness or connector 4. Tire pressure warning ECU	
C2182/82	Transmitter ID2 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2183/83	Transmitter ID3 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2184/84	Transmitter ID4 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2191/91	Vehicle Speed Signal Error (Test Mode DTC)	1. Vehicle speed sensor 2. Combination meter assembly 3. Wire harness or connector 4. Tire pressure warning ECU	INFO
C2196/96	RSSI Signal Error (Test Mode DTC)	1. Tire pressure warning antenna and receiver 2. Wire harness or connector 3. Tire pressure warning ECU	INFO

DTC	C2111/11	Transmitter ID1 Operation Stop
DTC	C2112/12	Transmitter ID2 Operation Stop
DTC	C2113/13	Transmitter ID3 Operation Stop
DTC	C2114/14	Transmitter ID4 Operation Stop

DESCRIPTION

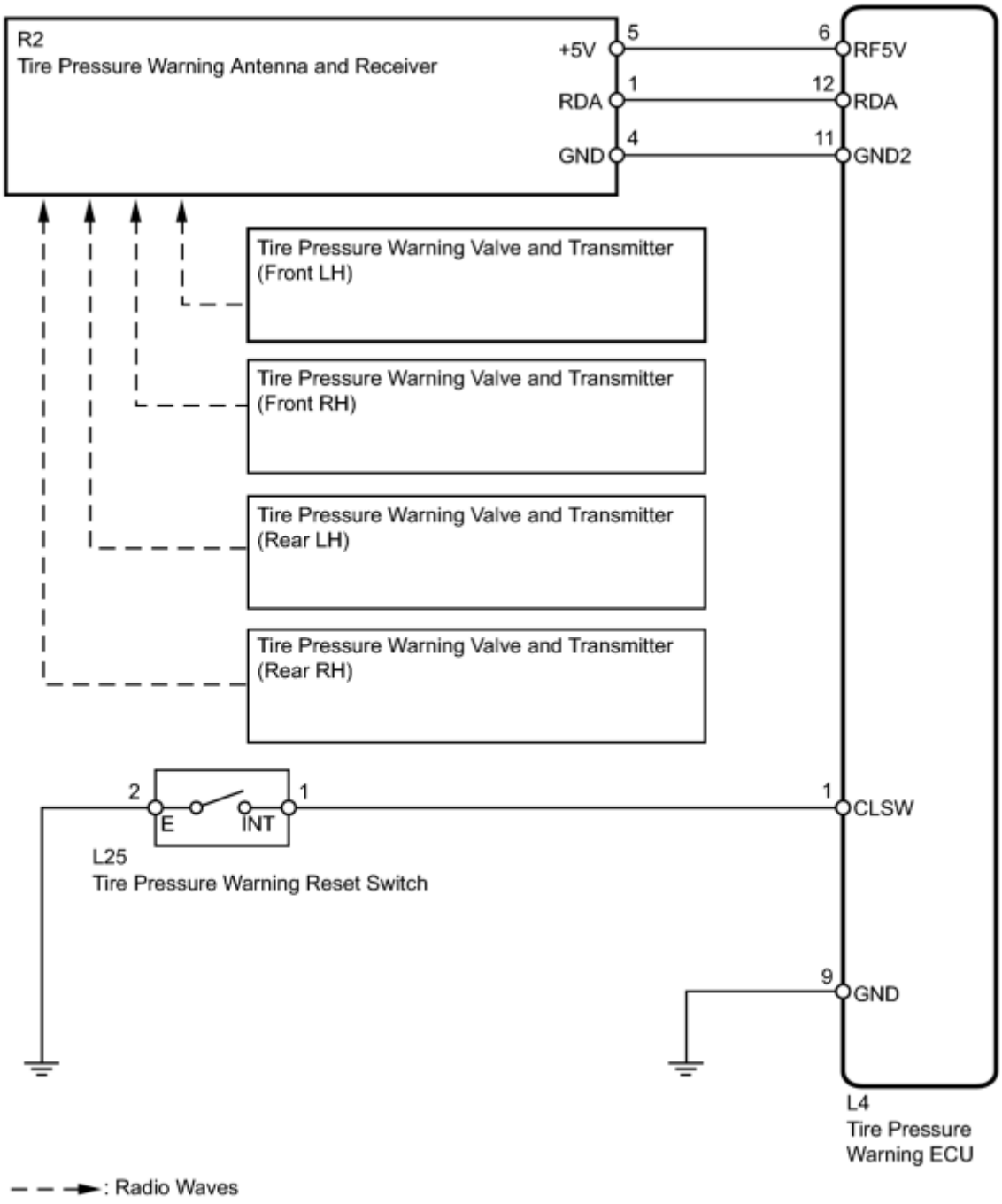
The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressures. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter comes on. The tire pressure warning ECU stores a DTC when the tire pressure warning valve and transmitter stops transmitting signals. At this time, forcibly transmit the signals by releasing the tire pressure rapidly. The stored DTC is cleared when the signal transmission is resumed.

DTC No.	DTC Detection Condition	Trouble Area
C2111/11 C2112/12 C2113/13 C2114/14	Tire pressure warning valve and transmitters stop transmitting signals	• Tire pressure warning valve and transmitter • Tire pressure warning ECU

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	PERFORM FORCED TRANSMISSION OF TRANSMITTER ID OF ALL WHEELS

(a) Set the tire pressure to the specified value INFO.

(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 / Tire Pressure Monitor / Data List.

(g) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation	ID4 tire inflation pressure /	Actual tire inflation	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Pressure	min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	pressure	14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.

(h) Rapidly release the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm^2, 5.8 psi) within 30 seconds.

(1) Check that each tire pressure data displayed on the Techstream has changed.

OK:

Each tire pressure data displayed on the Techstream will change to the value of the tire pressure.

NOTICE:

- It takes about 2 or 3 minutes to display the updated tire pressure data.
- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

(2) After confirming that all of the tire pressure data displayed on the Techstream have changed, set the tire pressure to the appropriate specified values.

HINT:

If the tire pressure data displayed on the Techstream has not changed after rechecking, inspect for another problem INFO.

NG ▶ GO TO TRANSMITTER AND RECEIVER INSPECTION PROCEDURE

OK ▶ **END**

DTC	C2121/21	No Signal from Transmitter ID1
DTC	C2122/22	No Signal from Transmitter ID2
DTC	C2123/23	No Signal from Transmitter ID3
DTC	C2124/24	No Signal from Transmitter ID4
DTC	C2181/81	Transmitter ID1 not Received (Test Mode DTC)
DTC	C2182/82	Transmitter ID2 not Received (Test Mode DTC)
DTC	C2183/83	Transmitter ID3 not Received (Test Mode DTC)
DTC	C2184/84	Transmitter ID4 not Received (Test Mode DTC)

DESCRIPTION

The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressures. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter comes on.

The tire pressure warning valve and transmitters constantly send radio waves to the tire pressure warning antenna and receiver.

Under the conditions below, the tire pressure warning antenna and receiver is unable to receive the signals from the tire pressure warning valve and transmitters, and a DTC is stored.

- Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.
- Devices using similar radio frequencies are used in the vehicle.
- The ID of the tire pressure warning valve and transmitter is mistyped during registration.
- A tire/wheel/transmitter from a different vehicle is installed.

HINT:

When no transmitter ID is received from a tire pressure warning valve and transmitter for a total of 20 minutes while the vehicle speed is more than 8 km/h (5 mph) or no transmitter ID is received from all the tire pressure warning valve and transmitters for a total of 20 minutes, DTCs are set.

DTCs from C2121/21 to C2124/24 can only be cleared by using the Techstream. DTCs from C2181/81 to C2184/84 can be cleared when the transmitter in the tire pressure warning valve and transmitter sends a forced transmission signal or test mode ends. DTCs from C2181/81 to C2184/84 are output only in test mode.

DTC No.	DTC Detection Condition	Trouble Area
C2121/21 C2122/22 C2123/23 C2124/24	Following condition (a) or (b) is met: (a) When all conditions below are met: • Tire pressure warning valve and transmitter is not in stop mode. • Any transmitter ID is not received from tire pressure warning valve and transmitters.	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU

DTC No.	DTC Detection Condition	Trouble Area
	• For 20 minutes or more, vehicle speed is more than 8 km/h (5 mph) or no vehicle speed signal or RSSI signal is received. (b) When all conditions below are met: • Tire Pressure warning valve and transmitter is not in stop mode. • No transmitter ID is received from tire pressure warning valve and transmitters for 20 minutes or more.	
C2181/81 C2182/82 C2183/83 C2184/84	Test mode procedure is performed.	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU

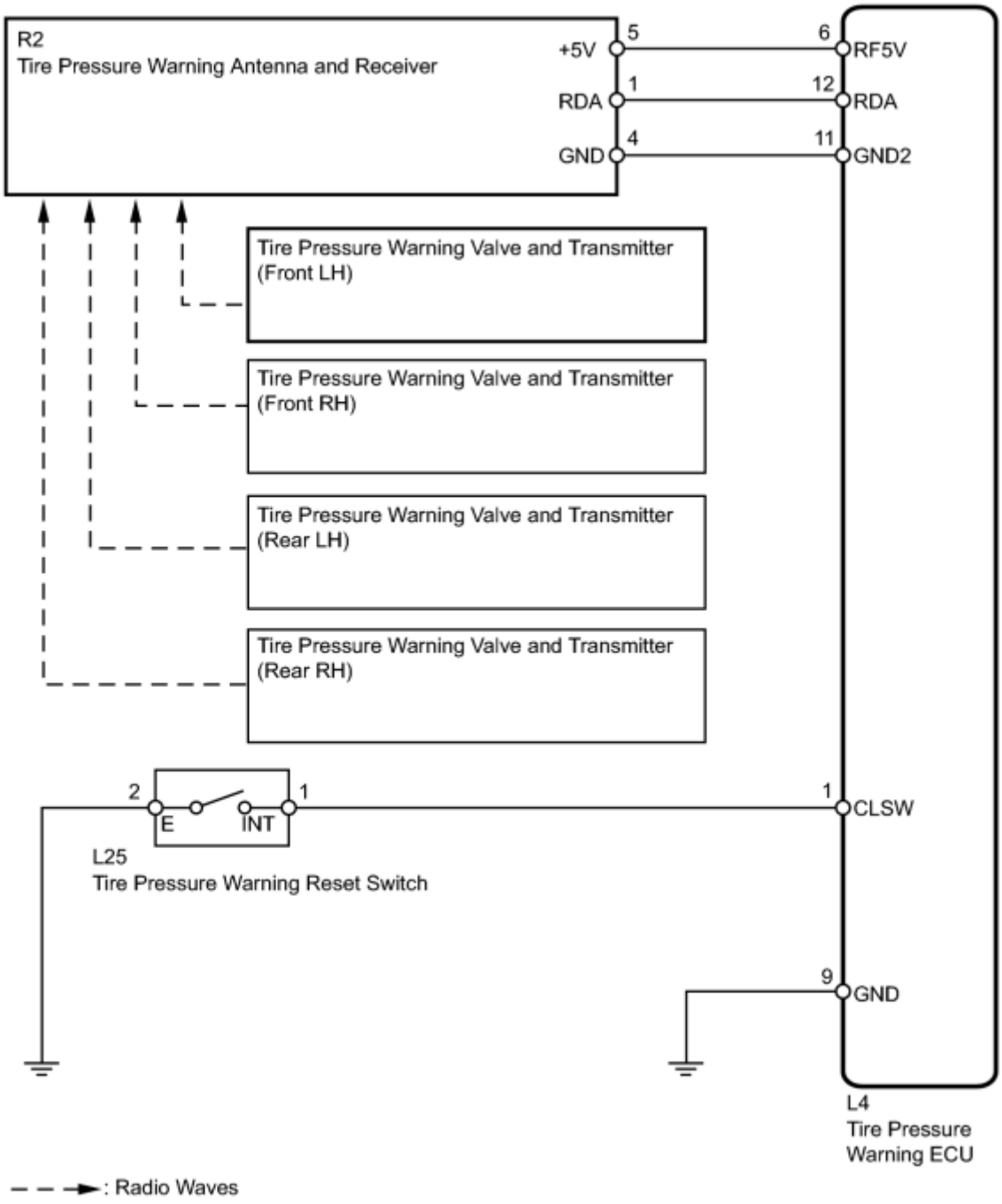
NOTICE:

When DTCs C2121/21 to C2124/24 are set, DTC C2175/75 may be set simultaneously. In such cases, troubleshoot DTCs C2121/21 to C2124/24 first, then troubleshoot DTC C2175/75.

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.

- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

PROCEDURE

1.	CHECK FREQUENCY RECEIVING CONDITION

(a) Check that the vehicle is not located in an area such as described below:

(1) Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.

HINT:

If the vehicle is located in area described above, the tire pressure warning light may come on only in a particular area.

(2) Devices using similar radio frequencies are used in the vehicle.

OK:

Facilities, or devices that use similar radio frequencies are not located in the vicinity of the vehicle.

HINT:

Radio transmissions may be interrupted due to the surroundings or devices installed by the user.

NG ▶ CHECK IF ANY DEVICE IS INSTALLED BY USER

OK

▼

2.	IDENTIFY TRANSMITTER CORRESPONDING TO DTC

(a) Set the tire pressure to the specified values INFO.

(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 / Tire Pressure Monitor / Data List.

(g) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take about 2 or 3 minutes until the values are displayed.

(h) Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kg/cm^2, 5.8 psi) within 30 seconds.

(i) Check the Data List.

NOTICE:

- It takes about 2 or 3 minutes to display the updated tire pressure data.
- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.
- Record the transmitter ID of which "ID Tire Inflation Pressure" data corresponds to each tire.

(j) After confirming that the "ID Tire Inflation Pressure" data for one tire (ID1 to ID4) has changed, repeat this procedure one by one. Identify the transmitter that corresponds to the DTC.

Result:

Result	Proceed to
One or more of transmitters abnormal	A
All normal	B
All abnormal	C

B ▶ END

A ▶ CHECK TRANSMITTER ID

C

▼

3.	CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)

(a) Disconnect the L4 ECU connector.

(b) Disconnect the R2 receiver connector.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
L4-12 (RDA) - R2-1 (RDA)	Always	Below 1 Ω
L4-11 (GND2) - R2-4 (GND)		
L4-6 (RF5V) - R2-5 (+5V)		
L4-12 (RDA) - Body ground		10 kΩ or higher
L4-11 (GND2) - Body ground		
L4-6 (RF5V) - Body ground		

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4.	CHECK TRANSMITTER ID

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

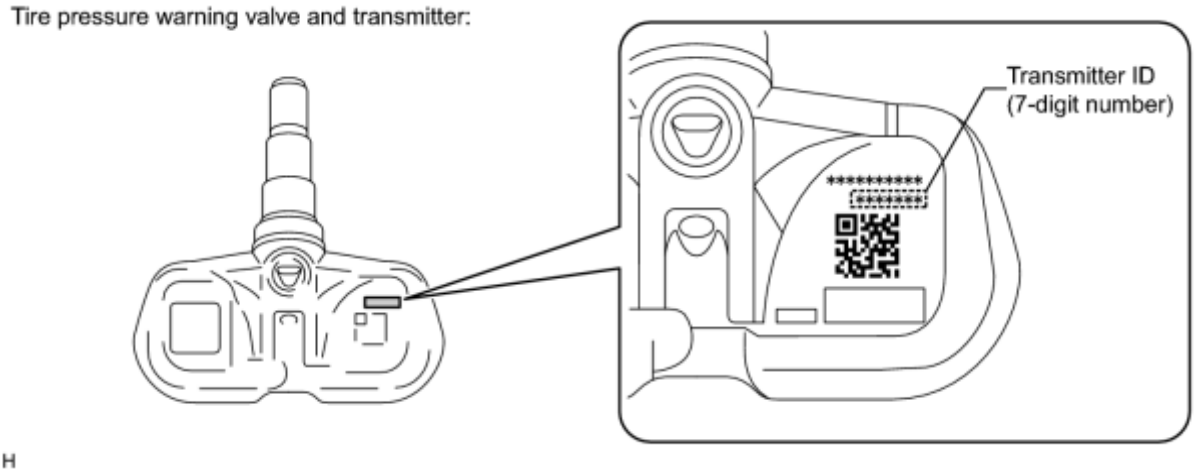
Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: Displayed only when the ID No. is not registered.

(g) Check the ID number on the identified transmitter by removing it from the tire and wheel.



H

(h) Confirm that the ID number on the transmitter and recorded transmitter ID match.

Result:

Result	Proceed to
Match	A
Do not match	B

B ▶ REGISTRATION OF TRANSMITTER ID

A

▼

5.	REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Replace the tire pressure warning valve and transmitter INFO.

NEXT

6.	REGISTRATION OF TRANSMITTER ID

(a) Perform registration INFO.

NEXT

7.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

NEXT

8.	READ VALUE USING TECHSTREAM (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

A ▶ END

B

9.	REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER

(a) Replace the tire pressure warning antenna and receiver INFO.

NEXT

10.	READ VALUE USING TECHSTREAM (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation	ID3 tire inflation pressure /	Actual tire inflation	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Pressure	min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	pressure	14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B ▶ REPLACE TIRE PRESSURE WARNING ECU

A ▶ **END**

DTC	C2126/26	Transmitter ID not Received in Main Mode

DESCRIPTION

After all IDs are registered, DTC C2126/26 is set in the tire pressure warning ECU and the tire pressure warning light blinks for 1 minute and then comes on.

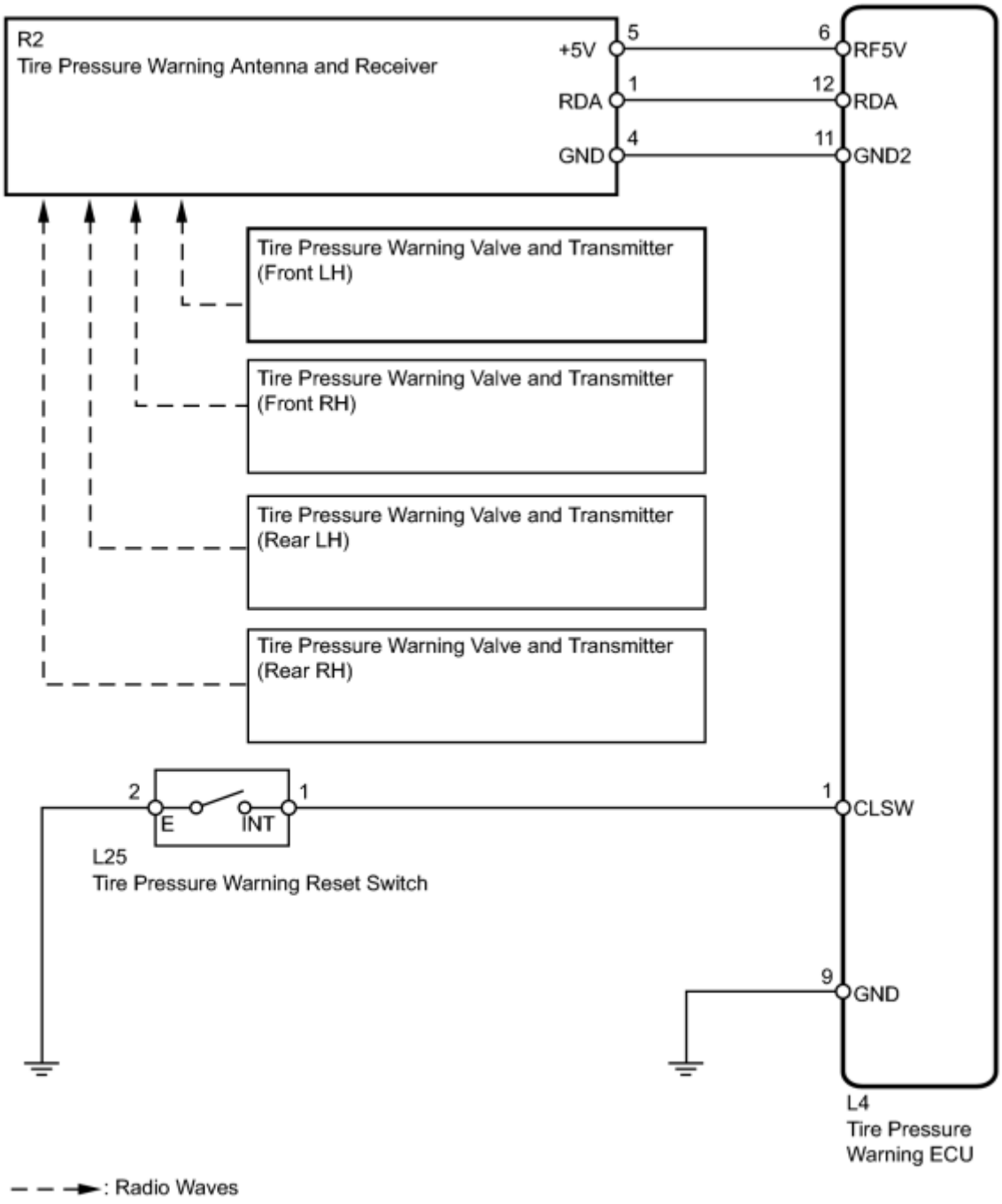
When the tire pressure waning ECU successfully receives radio waves from all the transmitters whose IDs are stored in the ECU, DTC C2126/26 is cleared and the tire pressure warning light goes off.

DTC No.	DTC Detection Condition	Trouble Area
C2126/26	After ID registration is completed, ECU does not receive radio waves from transmitters whose IDs are stored in ECU.	• ID registration failure • Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU

HINT:

If the IDs stored in the tire pressure warning ECU differ from the transmitter IDs, DTC C2126/26 is set. Check that the IDs in the ECU are the same as the transmitter IDs.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.

- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU after the ECU and/or valve and transmitter has been replaced.

PROCEDURE

1.	IDENTIFY TRANSMITTER NOT RECEIVED

(a) Set the tire pressure to the specified values INFO.

(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 / Tire Pressure Monitor / Data List.

(g) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure /	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	-100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take about 2 or 3 minutes until the values are displayed.

(h) Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm^2, 5.8 psi) within 30 seconds.

(i) Check the Data List.

NOTICE:

- It takes about 2 or 3 minutes to display the updated tire pressure data.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.
- Record the "ID Tire Inflation Pressure" data transmitter ID that corresponds to each tire.

(j) After confirming that the "ID Tire Inflation Pressure" data for one tire (ID1 to ID4) has changed, repeat this procedure one by one. Identify the transmitter not received.

Result:

Condition	Proceed to
One or more of transmitters abnormal	A
All normal	B

B ▶ END

A

▼

2.	CHECK TRANSMITTER ID

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

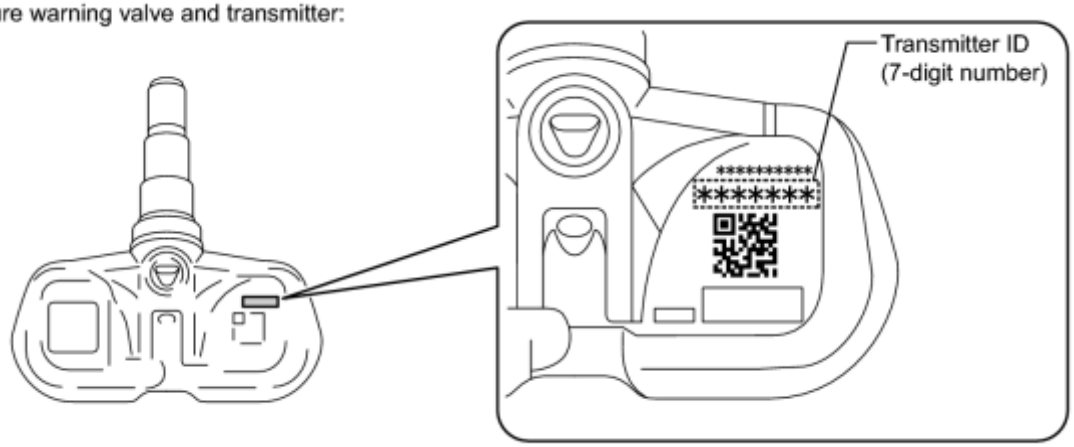
Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Registered ID1 Code	Registered ID1 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID1 displayed	-
Registered ID2 Code	Registered ID2 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID2 displayed	-
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID3 displayed	-
Registered ID4 Code	Registered ID4 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID4 displayed	-

HINT:

*: Displayed only when the ID No. is not registered.

(g) Check the ID number on the identified transmitter by removing it from the tire and wheel.

Tire pressure warning valve and transmitter:



H

(h) Confirm that the ID number on the transmitter and recorded transmitter ID match.

Result:

Result	Proceed to
Match	A
Do not match	B

B ▶ REGISTRATION OF TRANSMITTER ID

A

▼

3.	REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Replace the tire pressure warning valve and transmitter INFO.

NEXT

▼

4.	REGISTRATION OF TRANSMITTER ID

(a) Perform registration INFO.

NEXT

▼

5.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

6.	CONFIRM TIRE INFLATION PRESSURE (DATA LIST)

(a) Turn the power switch off.

(b) Connect Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B ▶ END

A

▼

7.	REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER

(a) Replace the tire pressure warning antenna and receiver INFO.

NEXT

▼

8.	CONFIRM TIRE INFLATION PRESSURE (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B ▶ REPLACE TIRE PRESSURE WARNING ECU

A ▶ **END**

DTC	C2141/41	Transmitter ID1 Error
DTC	C2142/42	Transmitter ID2 Error
DTC	C2143/43	Transmitter ID3 Error
DTC	C2144/44	Transmitter ID4 Error

DESCRIPTION

The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressures. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter comes on.

When the internal circuit of the tire pressure warning valve and transmitter is malfunctioning, one of these DTCs is output.

DTC No.	DTC Detection Condition	Trouble Area
C2141/41 C2142/42 C2143/43 C2144/44	If an "ERROR" signal is received 3 times consecutively, the tire pressure warning valve and transmitter will be judged as defective and a DTC will be output. This will happen in situations where the inflation pressure is outside the range -100 to 538 kPa (-1.0 to 5.4 kgf/cm^2, -14 to 78 psi), the temperature inside the tire is outside the specified range -40 to 120°C (-40 to 253°F), or an error occurs in the tire pressure warning valve and transmitter or the surrounding area.	• Tire pressure warning valve and transmitter • Tire pressure warning ECU

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

PROCEDURE

1.	IDENTIFY TRANSMITTER CORRESPONDING TO DTC

(a) Set the tire pressure to the specified value INFO.

(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 / Tire Pressure Monitor / Data List.

(g) Display the "ID Tire Inflation Pressure" data for each wheel using the Techstream.

(h) Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kg/cm^2, 5.8 psi) within 30 seconds. If "ID Tire Inflation Pressure" displayed on the Techstream (ID1 to ID4) does not change, the tire pressure warning valve and transmitter corresponding to the unchanged "ID Tire Inflation Pressure" data was the cause of the output DTC.

HINT:

- Identify the malfunctioning tire pressure warning valve and transmitter by repeatedly decreasing the tire pressure for each tire.
- Record which "ID Tire Inflation Pressure" data (ID1 to ID4) corresponds to each tire.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure /	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	-100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.

(i) Check the Data List.

Result:

Result	Detection Condition
One of "ID Tire Inflation Pressure" data (ID1 to ID4) changed.	Normal
"ID Tire Inflation Pressure" data did not change.	Transmitter corresponding to DTC

NOTICE:

- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.
- Record the transmitter IDs and positions of transmitters that are normal.

(j) When the "ID Tire inflation Pressure" data (ID1 to ID4) has changed, repeat this procedure to identify the tire pressure warning valve and transmitter that corresponds to the DTC.

(k) When all of the "ID Tire Inflation Pressure" data (ID1 to ID4) have changed, identify the malfunctioning tire pressure warning valve and transmitter using the recorded ID numbers and output DTCs.

NEXT

2.	REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Replace the identified tire pressure warning valve and transmitter with a new one INFO.

HINT:

- Before installing a new tire pressure warning valve and transmitter, read and write down its transmitter ID.
- The IDs for the tire pressure warning valve and transmitters which are not replaced should be checked using the Techstream and recorded.

NEXT

3.	REGISTRATION OF TRANSMITTER ID

(a) Register the transmitter ID for all wheels INFO.

NEXT

4.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

NEXT

5.	READ VALUE USING TECHSTREAM

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B ▶ END

A ▶ **REPLACE TIRE PRESSURE WARNING ECU**

DTC	C2165/65	Abnormal Temperature Inside ID1 Tire
DTC	C2166/66	Abnormal Temperature Inside ID2 Tire
DTC	C2167/67	Abnormal Temperature Inside ID3 Tire
DTC	C2168/68	Abnormal Temperature Inside ID4 Tire

DESCRIPTION

Each tire pressure warning valve and transmitter measures the internal temperature of its tire as well as tire pressure, and transmits the information to the tire pressure warning ECU along with the transmitter ID. If the measured temperature is out of the specified range, the tire pressure warning ECU recognizes it as a malfunction, outputs DTCs, and the tire pressure warning light blinks for 1 minute and then remains on.

DTC No.	DTC Detection Condition	Trouble Area
C2165/65 C2166/66 C2167/67 C2168/68	Temperature inside the tire exceeds 119°C (246.2°F).	• Tires • Tire pressure warning valve and transmitter • Tire pressure warning ECU

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

PROCEDURE

1.	CHECK TIRES

(a) Check that the tires are not flat, and there is no indication of air pressure drop.

OK:

The tires are normal.

HINT:

If a tire is damaged, the tire pressure warning valve and transmitter may also have been damaged at the same time.

NG ▶ REPLACE TIRE AND TIRE PRESSURE WARNING VALVE AND TRANSMITTER

OK

▼

2.	IDENTIFY TRANSMITTER CORRESPONDING TO DTC

(a) Set the tire pressure to the specified value INFO.

(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 / Tire Pressure Monitor / Data List.

(g) Display the "ID Tire Inflation Pressure" data for each wheel using the Techstream.

(h) Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kg/cm^2, 5.8 psi) within 30 seconds.

(i) Check the Data List.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 INFO.

Result:

Result	Detection Condition
One of "ID Tire Inflation Pressure" data (ID1 to ID4) changed.	Normal
No "ID Tire Inflation Pressure" data changed.	Transmitter corresponding to DTC

NOTICE:

- It may take about 2 to 3 minutes to display the updated data.
- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck the data.
- Record the transmitter IDs and transmitter positions that are normal.

(j) When the "ID Tire Inflation Pressure" data (ID1 to ID4) has changed, repeat this procedure to identify the tire pressure warning valve and transmitter that corresponds to the DTC.

(k) When all of the "ID Tire Inflation Pressure" data (ID1 to ID4) have changed, identify the malfunctioning tire pressure warning valve and transmitter based on the recorded ID numbers and output DTC.

NEXT

3.	REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Replace the identified tire pressure warning valve and transmitter with a new one INFO.

HINT:

- Before installing a new tire pressure warning valve and transmitter, read and write down its transmitter ID.
- The IDs for the tire pressure warning valve and transmitters which are not replaced should be checked using the Techstream and recorded.

NEXT

4.	CHECK REGISTRATION OF TRANSMITTER ID

(a) Register the transmitter IDs for 4 tires INFO.

NEXT

5.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

NEXT

6.	READ VALUE USING TECHSTREAM (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B ▶ END

A ▶ **REPLACE TIRE PRESSURE WARNING ECU**

DTC	C2171/71	Transmitter ID not Registered

DESCRIPTION

The IDs of each tire pressure warning valve and transmitter are registered to the tire pressure warning ECU.

When the ECU detects that transmitter ID code is not registered in the ECU, a DTC is output.

DTC No.	DTC Detection Condition	Trouble Area
C2171/71	Transmitter ID code is not registered. (When an ID code is unregistered for 3 minutes or more)	Tire pressure warning ECU

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	CONFIRM REGISTRATION CONDITION (REGISTERED ID CODES)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Registered ID1 code	Registered ID1 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID1 displayed	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Registered ID2 code	Registered ID2 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID2 displayed	-
Registered ID3 code	Registered ID3 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID3 displayed	-
Registered ID4 code	Registered ID4 code/ min.: 0 max.: FFFFFFF*	ID No. registered in transmitter ID4 displayed	-

HINT:

*: Displayed only when the ID No. is not registered.

OK:

The registered transmitter ID codes are displayed on the Techstream.

NG PERFORM REGISTRATION (TRANSMITTER ID)

OK **REPLACE TIRE PRESSURE WARNING ECU**

2.	PERFORM REGISTRATION (TRANSMITTER ID)

(a) Register the transmitter IDs for all the wheels INFO.

NEXT

3.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

NEXT

4.	READ VALUE USING TECHSTREAM (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)		

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B REPLACE TIRE PRESSURE WARNING ECU

A **END**

DTC	C2175/75	Vehicle Speed or RSSI Signal Error

DESCRIPTION

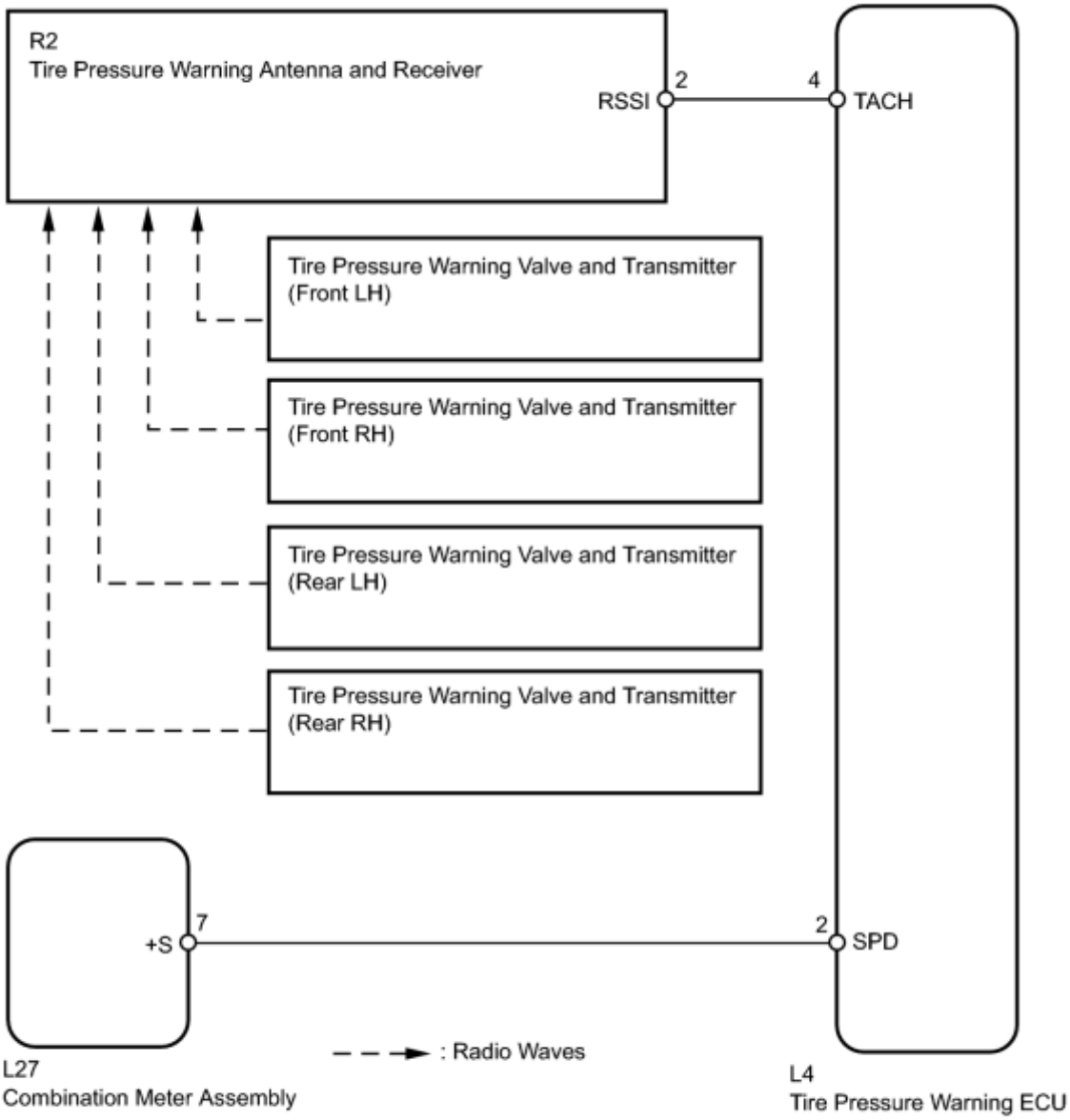
The tire pressure warning ECU receives a vehicle speed signal from the combination meter assembly and a RSSI signal from the tire pressure warning antenna and receiver. The tire pressure warning ECU uses these signals to detect DTCs C2121/21 to C2124/24 (No Signal from Transmitter) and DTC C2177/77 (Initialization not Completed).

DTC No.	DTC Detection Condition	Trouble Area
C2175/75	After following condition (a) or (b) is met, the transmitter ID is not received from the tire pressure warning valve and transmitters for a total of 20 minutes: (a) No vehicle speed signal for 15 minutes (b) RSSI signal 49 mV or less, or 4.95 V or more twice continuously	• Combination meter assembly • Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU

HINT:

This DTC is set at the same time as DTCs C2121/21 to C2124/24 are being set.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	READ OUTPUT DTC (DTCs C2121/21 to C2124/24)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.

(f) Read DTCs.

Result:

Result	Proceed to
DTCs C2121/21 to C2124/24 are not output	A
DTCs C2121/21 to C2124/24 are output	B

NOTICE:

When DTCs C2121/21 to C2124/24 is output, troubleshoot that DTCs first. Then troubleshoot DTCs C2175/75.

B ▶ GO TO DTCs C2121/21 to C2124/24

A ▼

2.	PERFORM SIGNAL CHECK (VEHICLE SPEED SIGNAL AND RSSI SIGNAL)

(a) Enter the signal check mode in Test Mode Procedure INFO.

(b) Turn the power switch on (IG) and wait for 3 seconds or more to erase DTC C2196/96.

(c) Drive the vehicle at 20 km/h (12 mph) or more for 10 seconds to erase DTC C2191/91.

(d) Check for test mode DTCs.

Result:

Result	Proceed to
DTCs C2191/91 and C2196/96 are cleared	A
DTC C2191/91 is output	B
DTC C2196/96 is output	C

HINT:

DTCs C2181/81 to C2184/84 (Transmitter ID not Received) are output at this time, but they are not related to this check.

C ▶ GO TO DTC C2196/96
B ▶ GO TO DTC C2191/91
A ▼

3.	RECONFIRM DTC OUTPUT (DTC C2175/75)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Drive the vehicle at 50 km/h or more for at least 20 minutes.

(e) Turn the Techstream on.

(f) Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.

(g) Read DTCs.

Result:

Result	Proceed to
DTC C2175/75 is not output	A
DTC C2175/75 is output	B

HINT:

If the DTC is not output, it can be determined that the system is functioning normally and that the DTC was stored due to radio wave interference.

B ▶ REPLACE TIRE PRESSURE WARNING ECU
A ▶ **USE SIMULATION METHOD TO CHECK**

DTC	C2176/76	Receiver Error

DESCRIPTION

The signals are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU.

DTC No.	DTC Detection Condition	Trouble Area
C2176/76	Malfunction in the tire pressure warning ECU internal circuit	Tire pressure warning ECU

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	CHECK DTC OUTPUT (C2176/76)

(a) Clear the DTC INFO.

(b) Turn the power switch off.

(c) Turn the power switch on (IG) and check for DTC INFO.

OK:

DTC C2176/76 is not output.

NG ▶ REPLACE TIRE PRESSURE WARNING ECU
OK ▶ **END**

DTC	C2177/77	Initialization not Completed

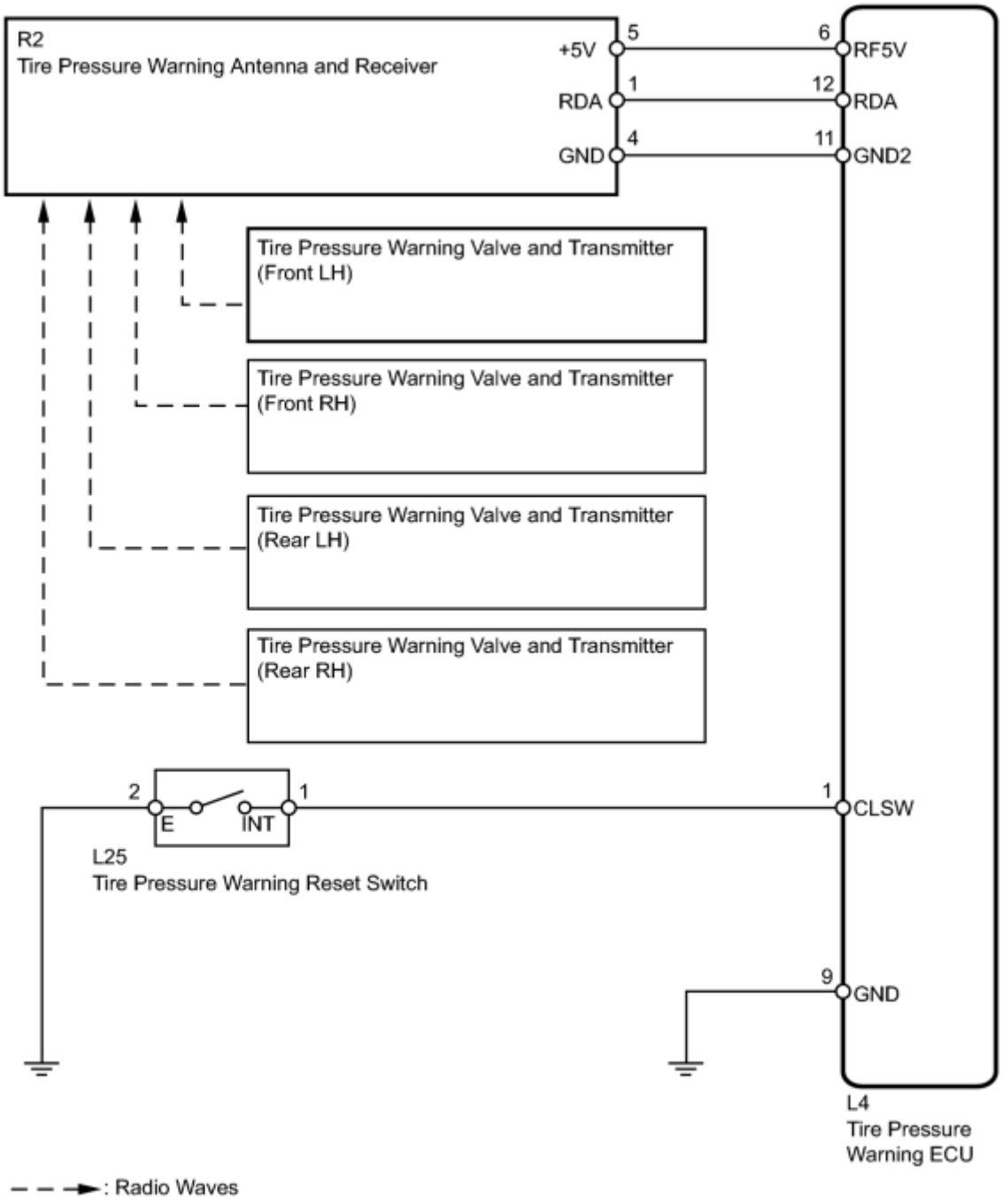
DESCRIPTION

Initialization is necessary if one of the following occurs:

- Tire pressure warning ECU is replaced.
- Tire pressure warning valve and transmitter is replaced.
- Tires with a different tire standard pressure are installed.
- Tires are rotated.
- A new vehicle is delivered.

DTC No.	DTC Detection Condition	Trouble Area
C2177/77	• All conditions below are met: • During initialization • Tire pressure warning valve and transmitter is not in stop mode • Signal is not received from tire pressure warning valve and transmitter for 20 minutes or more • Vehicle speed is more than 8 km/h (5 mph) for a total of 20 minutes	• Tire pressure warning valve and transmitter • Tire pressure warning ECU • Tire pressure warning antenna and receiver • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.

- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

PROCEDURE

1.	CHECK FREQUENCY RECEIVING CONDITION

(a) Check that the vehicle is not located in an area such as described below:

(1) Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.

HINT:

If the vehicle is located in an area described above, the tire pressure warning light may come on after blinking 1 minute only in a particular area due to interfering radio frequencies.

(2) Devices using similar radio frequencies are used in the vehicle.

OK:

Facilities, or devices that use similar radio frequencies are not located in the vicinity of the vehicle.

HINT:

Radio transmissions may be interrupted due to the surroundings, or devices installed by the user.

NG ▶ CHECK IF ANY DEVICE IS INSTALLED BY USER

OK

▼

2.	CONFIRM TIRE INFLATION PRESSURE (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B GO TO DTC C2121/21 TO C2124/24

A

3.	PERFORM INITIALIZATION

(a) Perform initialization INFO.

NEXT

4.	CONFIRM TIRE INFLATION PRESSURE (DATA LIST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check the values by referring to the table below.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation	ID2 tire inflation pressure /	Actual tire inflation	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Pressure	min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	pressure	14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2, 0 psi), Relative pressure / -100 kPa (-1.0 kgf/cm^2, -14 psi) max.: Absolute pressure / 638 kPa (6.4 kgf/cm^2, 93 psi), Relative pressure / 538 kPa (5.4 kgf/cm^2, 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2, 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2, -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take about 2 or 3 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270 degrees. Then rapidly release the tire pressure and recheck it.

Result:

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B ▶ GO TO DTC C2121/21 TO C2124/24

A ▶ **END**

DTC	C2191/91	Vehicle Speed Signal Error (Test Mode DTC)

DESCRIPTION

The tire pressure warning ECU receives a vehicle speed signal from the combination meter. This DTC is stored upon entering test mode, and cleared when a vehicle speed signal of 20 km/h (12 mph) is detected for 3 seconds or more. This DTC is output only in test mode.

DTC No.	DTC Detection Condition	Trouble Area
C2191/91	Test mode procedure is performed	• Combination meter • Vehicle speed sensor • Wire harness or connector • Tire pressure warning ECU

WIRING DIAGRAM

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (VEHICLE SPEED)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Data List.

(f) Check that the values indicated on the Techstream and on the combination meter are the same.

Tire Pressure Monitor

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Vehicle Speed	Vehicle speed/ min.: 0 km/h (0 mph) max.: 255 km/h (158 mph)	Almost same as actual vehicle speed	Speed indicated on combination meter

OK:

Vehicle speed indicated on the Techstream and on the combination meter are the same.

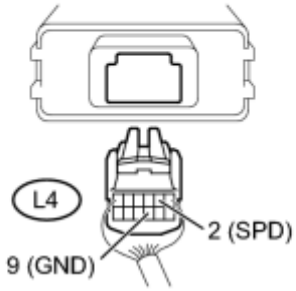
NG ▶ INSPECT TIRE PRESSURE WARNING ECU (SPD SIGNAL)

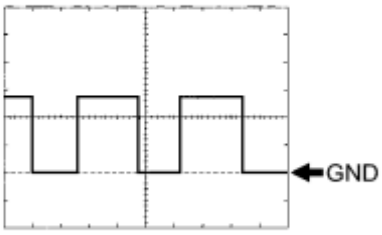
OK ▶ **USE SIMULATION METHOD TO CHECK**

2.	INSPECT TIRE PRESSURE WARNING ECU (SPD SIGNAL)

(a) Disconnect the L4 ECU connector.

*1





(b) Jack up the vehicle.

(c) Move the shift lever to N.

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

(e) Check the waveform of the ECU connector using an oscilloscope while turning the wheel slowly.

OK:

Tester Connection	Switch Condition	Specified Condition
L4-2 (SPD) - L4-9 (GND)	Power switch on (IG)	Correct waveform appears as shown

Text in Illustration

*1	Rear view of wire harness connector (to Tire Pressure Warning ECU)

Tool Setting

Item	Contents
Tool Setting	5 V/DIV., 20 ms/DIV.
Vehicle Condition	Driving wheels rotating slowly

HINT:

The wavelength becomes shorter as the vehicle speed increases.

NG ▶ CHECK HARNESS AND CONNECTOR (ECU - COMBINATION METER)

OK ▶ **REPLACE TIRE PRESSURE WARNING ECU**

3.	CHECK HARNESS AND CONNECTOR (ECU - COMBINATION METER)

(a) Disconnect the L4 ECU connector.

(b) Disconnect the L27 meter connector.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
L4-2 (SPD) - L27-7 (+S)	Always	Below 1 Ω
L4-2 (SPD) - Body ground	Always	10 kΩ or higher

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE MATER CIRCUIT PLATE NO.3**

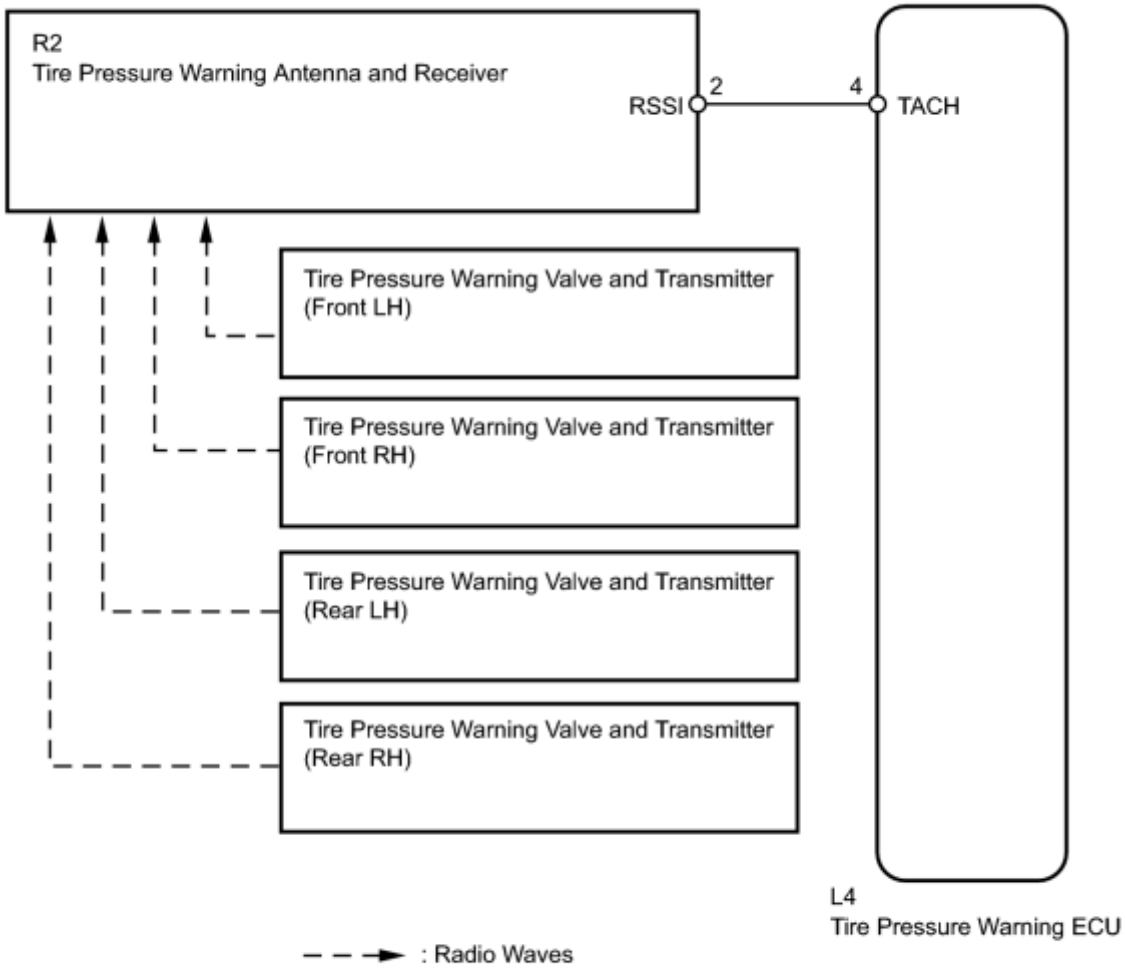
DTC	C2196/96	RSSI Signal Error (Test Mode DTC)

DESCRIPTION

The tire pressure warning ECU receives a RSSI signal from the tire pressure warning antenna and receiver. This DTC is stored upon entering test mode, and cleared when an RSSI signal between 49 mV and 4.95 V is received for 3 seconds or more.

DTC No.	DTC Detection Condition	Trouble Area
C2196/96	Test mode procedure is performed	• Tire pressure warning antenna and receiver • Wire harness or connector • Tire pressure warning ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	CHECK OUTPUT DTC (DTCs C2121/21 to C2124/24)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.

(f) Read the DTCs.

Result:

Result	Proceed to
DTCs C2121/21 to C2124/24 are not output	A
DTCs C2121/21 to C2124/24 are output	B

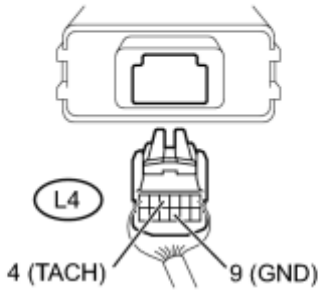
B ▶ GO TO DTCs C2121/21 to C2124/24

A

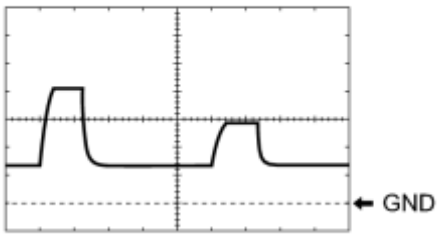
▼

2.	INSPECT TIRE PRESSURE WARNING ECU (RSSI SIGNAL)

*1



(a) Disconnect the L4 ECU connector.



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

(c) Check the waveform of the ECU connector using an oscilloscope while idling the engine.

OK:

Tester Connection	Switch Condition	Specified Condition
L4-4 (TACH) - L4-9 (GND)	Power switch on (IG)	Correct waveform appears as shown

Text in Illustration

*1	Rear view of wire harness connector (to Tire Pressure Warning ECU)

Tool Setting

Item	Contents
Tool Setting	0.5 V/DIV., 10 ms/DIV.

HINT:

- The shape of waves like figure appears approximately 2 times every 3 minutes.
- Figure is one example, and the voltage with few changes might be detected between 49 mV and 4.95 V.

NG ▶ CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - ANTENNA AND RECEIVER)

OK ▶ **REPLACE TIRE PRESSURE WARNING ECU**

3.	CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - ANTENNA AND RECEIVER)

(a) Disconnect the L4 ECU connector.

(b) Disconnect the R2 tire pressure warning antenna and receiver connector.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
L4-4 (TACH) - R2-2 (RSSI)	Always	Below 1 Ω
L4-4 (TACH) - Body ground	Always	10 kΩ or higher

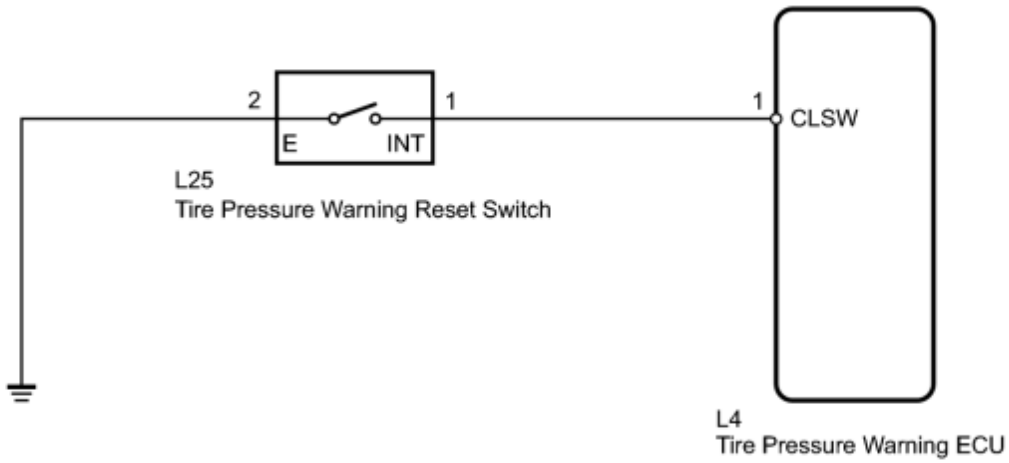
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER**

DESCRIPTION

Initialization can be started by pressing the tire pressure warning reset switch and holding it for 3 seconds or more. If the ECU receives the signal from the switch, the tire pressure warning light blinks 3 times (1 second on, 1 second off).

WIRING DIAGRAM



N

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU, after the ECU has been replaced.

PROCEDURE

1.	CHECK TIRE PRESSURE WARNING RESET SWITCH FUNCTION

(a) Perform the tire pressure warning reset switch test in Test Mode Procedure INFO.

OK:

Reset switch ON

Tire pressure warning light comes on.

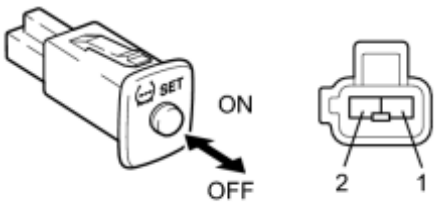
Reset switch OFF

Tire pressure warning light blinks.

NG ▶ INSPECT TIRE PRESSURE WARNING RESET SWITCH
OK ▶ **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE**

2.	INSPECT TIRE PRESSURE WARNING RESET SWITCH

Component without harness connected:
(Tire Pressure Warning Reset Switch)



(a) Disconnect the tire pressure warning reset switch connector.

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

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
1 (INT) - 2 (E)	ON	Below 1 Ω
	OFF	10 kΩ or higher

NG ▶ REPLACE TIRE PRESSURE WARNING RESET SWITCH
OK ▼

3.	CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING RESET SW - TIRE PRESSURE WARNING ECU)

(a) Disconnect the tire pressure warning reset switch L25 connector and tire pressure warning ECU L4 connector.

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

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition

Tester Connection	Switch Condition	Specified Condition
L4-1 (CLSW) - L25-1 (INT)	Always	Below 1 Ω
L4-1 (CLSW) - Body ground		10 kΩ or higher
L25-2 (E) - Body ground		Below 1 Ω

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE TIRE PRESSURE WARNING ECU**

DESCRIPTION

If the tire pressure warning ECU detects any trouble, the tire pressure warning light blinks (stays on after blinking for 1 minute) and tire pressure monitor is cancelled at the same time. At this time, the ECU records a DTC in the memory.

Connecting terminals TC and CG of the DLC3 makes the tire pressure warning light blink to output DTCs.

WIRING DIAGRAM

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

PROCEDURE

1.	CHECK OPERATION OF TIRE PRESSURE WARNING LIGHT (ACTIVE TEST)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

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

(d) Turn the Techstream on.

(e) Enter the following menus: Body Electrical / Combination Meter / Active Test.

(f) Check the condition of the tire pressure warning light by using the Techstream.

Combination Meter

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire pressure warning light	Tire pressure warning light OFF or ON	Confirm that the vehicle is stopped, engine idling

OK:

The warning light turns on when using the Techstream.

NG ▶ GO TO METER / GAUGE SYSTEM

OK

▼

2.	CHECK HARNESS AND CONNECTOR (COMBINATION METER - TIRE PRESSURE WARNING ECU)

(a) Disconnect the L27 combination meter connector.

(b) Disconnect the L4 tire pressure warning ECU connector.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
L27-3 (TIRE) - L4-5 (IND)	Always	Below 1 Ω
L27-3 (TIRE) - Body ground		10 kΩ or higher

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

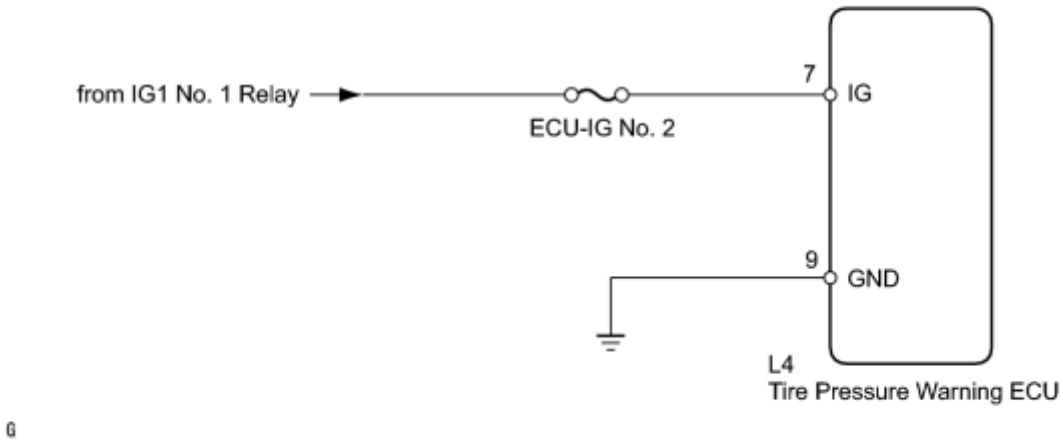
OK ▶ **REPLACE TIRE PRESSURE WARNING ECU**

ECU Power Source Circuit

DESCRIPTION

This is the power source for the tire pressure warning ECU.

WIRING DIAGRAM



G

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU after the ECU has been replaced.

PROCEDURE

1.	INSPECT FUSE (ECU-IG No. 2)

(a) Remove the ECU-IG No. 2 fuse from the instrument panel junction block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
EUC-IG No. 2	Always	Below 1 Ω

NG REPLACE FUSE

OK

2.	CHECK HARNESS AND CONNECTOR (ECU - BATTERY AND BODY GROUND)

*1

(a) Disconnect the L4 ECU connector.

P

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

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
L4-7 (IG) - Body ground	Power switch on (IG)	11 to 14 V
	Power switch off	Below 1 V

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
L4-9 (GND) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector to Tire Pressure Warning ECU

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE**

DESCRIPTION

DTC output mode is set by connecting terminals 13 (TC) and 4 (CG) of the DLC3. The DTCs are indicated by the blinking of the tire pressure warning light.

WIRING DIAGRAM

Y

HINT:

When various warning lights blink continuously, a ground short in the wiring of terminal TC of the DLC3 or an internal ground short in an ECU connected to this circuit may have occurred.

INSPECTION PROCEDURE

NOTICE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization INFO after registration INFO of the transmitter IDs into the tire pressure warning ECU after the ECU has been replaced.

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (DLC3 - TIRE PRESSURE WARNING ECU)

(a) Disconnect the L4 ECU connector.

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

Standard Resistance:

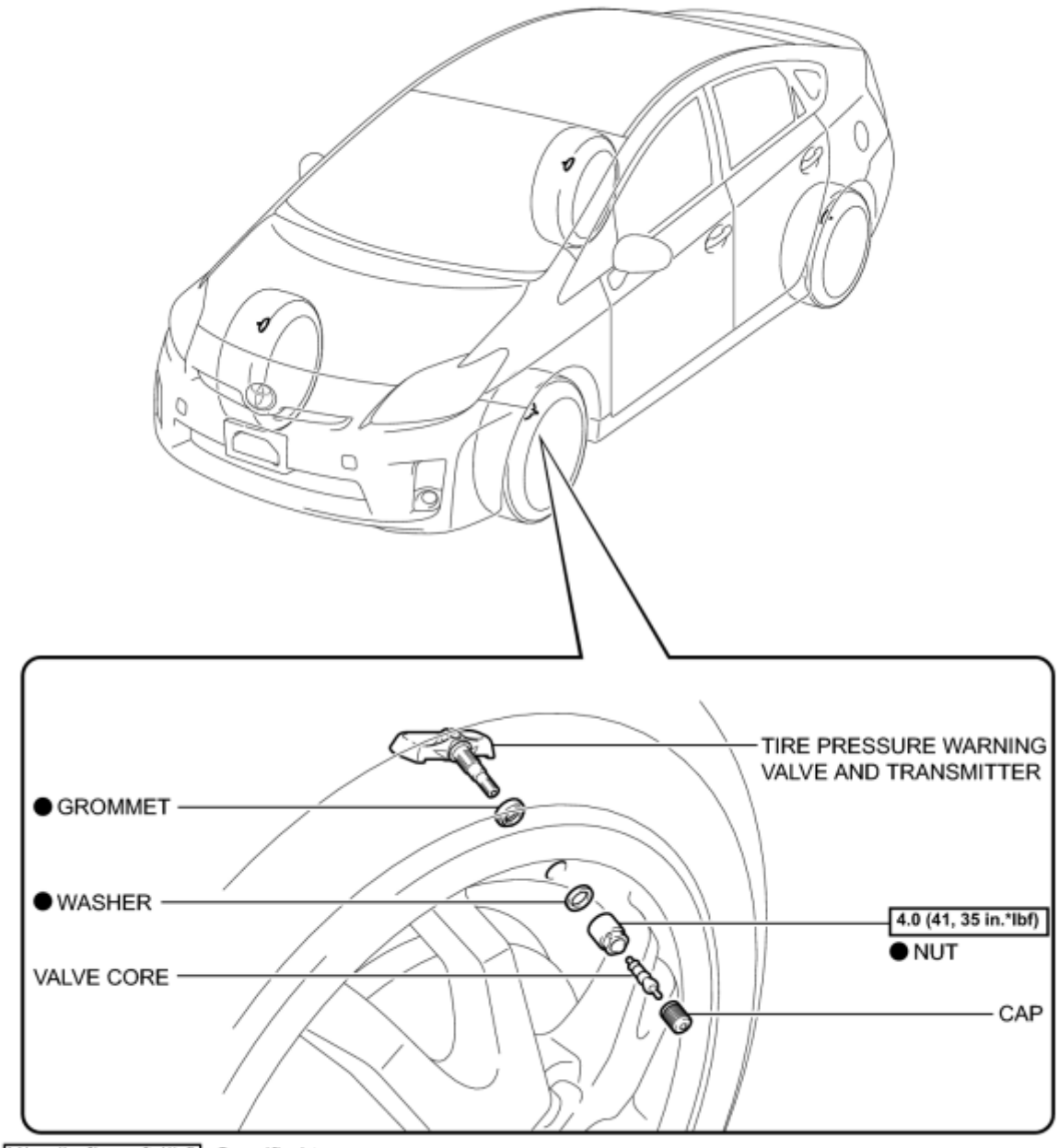
Tester Connection	Condition	Specified Condition
L4-3 (TC) - L61-13 (TC)	Always	Below 1 Ω
L61-4 (CG) - Body ground		

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE**

COMPONENTS

ILLUSTRATION



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

● Non-reusable part

c

REMOVAL

1. REMOVE FRONT WHEEL

2. REMOVE REAR WHEEL

3. REMOVE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Remove the valve core and cap to release the air from the tire.

(b) After ensuring that a sufficient amount of air has been released, remove the nut and washer used to secure the tire pressure warning valve and transmitter. Drop the tire pressure warning valve and transmitter with the grommet into the tire.

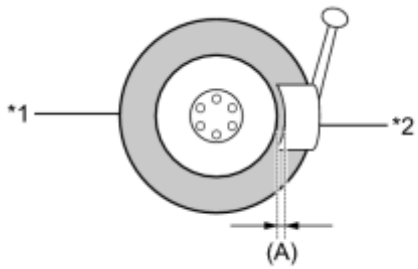
NOTICE:

Keep the removed cap and valve core.

HINT:

The grommet may remain attached to the rim.

(c) After dropping the tire pressure warning valve and transmitter into the tire, disengage the bead using the shoe of a tire remover.



c

Text in Illustration

*1	Tire
*2	Shoe

- Be careful not to damage the tire pressure warning valve and transmitter due to interference between the valve and the tire bead.
- Set the tire remover shoe as shown in the illustration.

  Width (A):

  10 to 20 mm (0.394 to 0.787 in.)

(d) Separate the upper bead.

(e) Take out the tire pressure warning valve and transmitter with the grommet from the tire and separate the lower bead.

(f) Remove the grommet from the tire pressure warning valve and transmitter.

INSTALLATION

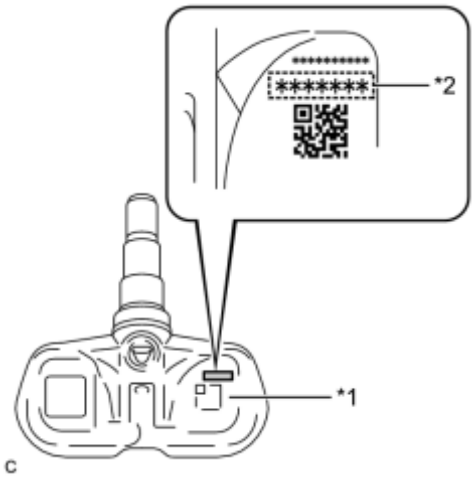
NOTICE:

- Always use a new grommet, washer and nut when installing the tire pressure warning valve and transmitter.
- If installing a new tire pressure warning valve and transmitter, write down the ID number before installation.
- Check that there is no oil, water or lubricant around the rim hole, tire pressure warning valve and transmitter, washer and nut. Failing to do so may result in improper installation.

1. INSTALL TIRE PRESSURE WARNING VALVE AND TRANSMITTER

(a) Install a new grommet to the tire pressure warning valve and transmitter.

(b) Insert the tire pressure warning valve and transmitter into the valve installation hole. Insert it from the inside of the rim so that the printed surface can be seen.



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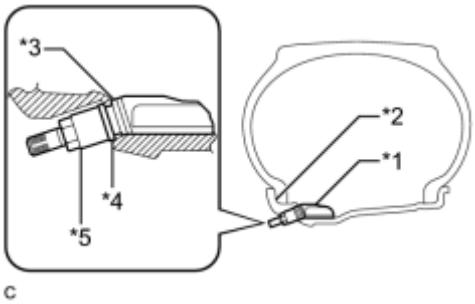
Text in Illustration

*1	Printed Surface
*2	7-digit Number Transmitter ID

- Check that there is no visible deformation, damage, or other abnormalities on the tire pressure warning valve and transmitter.
- Check that there is no foreign matter on the grommet and around the rim hole.
- If the tire pressure warning valve and transmitter is installed upside down, it may be damaged or fail to transmit signals when driving at high speeds.

(c) Install a new washer on the tire pressure warning valve and transmitter with the grommet from the rim side and tighten a new nut.

Text in Illustration



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*1	Tire Pressure Warning Valve and Transmitter
*2	Rim
*3	Grommet
*4	Washer
*5	Nut

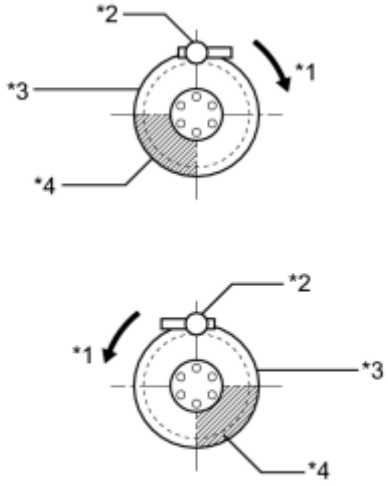
Torque: **4.0 N·m (41 kgf·cm, 35in·lbf)**

- No further tightening is required once the nut is tightened to the

specified torque.

- Check that there is no foreign matter on the washer and nut.

(d) Set the wheel onto the mounting machine and install the lower bead. Position the main body of the tire pressure warning valve and transmitter in the shaded area shown in the illustration.



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Text in Illustration

*1	Rim Rotating Direction
*2	Mount Tool of the Mounting Machine
*3	Rim
*4	Area for Tire Pressure Warning Valve and Transmitter

- If the tire pressure warning valve and transmitter is positioned outside this area, it will interfere with the tire bead and may be damaged.
- If the use of lubricant is required when installing the bead, do not apply lubricant directly to the tire pressure warning valve and transmitter.

(e) Install the upper bead.

NOTICE:

Make sure that the tire bead and tool do not interfere with the main body of the tire pressure warning valve and transmitter and that it is not clamped by the bead.

(f) Install the valve core.

(g) After the tire is inflated, the valve nut may be loose. Retighten the nut to the specified torque.

Torque: **4.0 N·m (41 kgf·cm, 35in·lbf)**

NOTICE:

No further tightening is required once the nut is tightened to the specified torque.

(h) Check for air leaks with soapy water.

If there is air leakage, push the valve core 2 or 3 times to remove any dirt attached to the valve core. If air continues leak, replace the grommet, washer and nut.

(i) Install the cap.

2. INSTALL FRONT WHEEL

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

3. INSTALL REAR WHEEL

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

4. INSPECT TIRES INFO

5. REGISTER TRANSMITTER ID

(a) Register all transmitter IDs INFO.

6. PERFORM INITIALIZATION

(a) Perform initialization INFO.

7. INSPECT TIRE PRESSURE WARNING SYSTEM

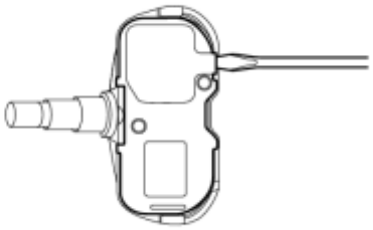
(a) Inspect the tire pressure warning system INFO.

DISPOSAL

NOTICE:

The tire pressure warning valve and transmitter is powered by a lithium battery. When disposing of the tire pressure warning valve and transmitter, remove the battery and dispose of it correctly.

1. DISPOSE OF TIRE PRESSURE WARNING VALVE AND TRANSMITTER



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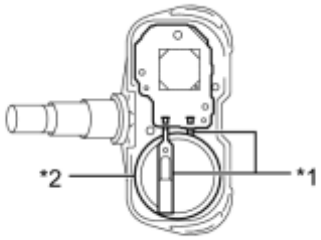
(a) Using the tip of a screwdriver, pry off the back cover.

(b) Cut the 2 terminals that connect the battery to the base board to remove the battery.



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Text in Illustration

*1	Terminal
*2	Lithium Battery

HINT:

The battery and base board are covered with silicone.