Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4300YX
Title: ALIGNMENT / HANDLING DIAGNOSIS: FRONT WHEEL ALIGNMENT: ADJUSTMENT (2010 4Runner)		

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 and the test mode inspection.

1. INSPECT TIRES

(a) Inspect the tires INFO .

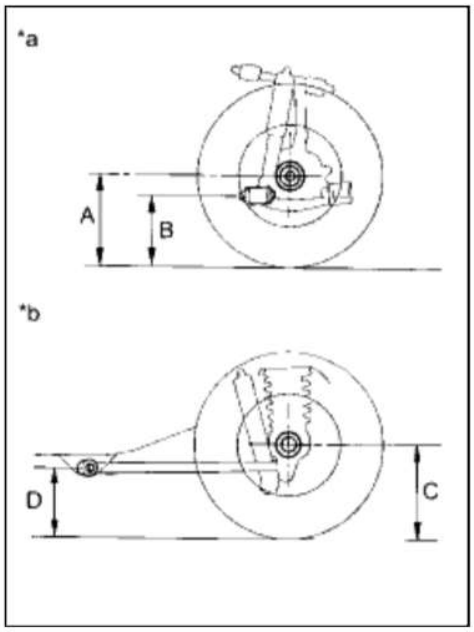
2. MEASURE VEHICLE HEIGHT

NOTICE:

Before inspecting the wheel alignment, adjust the vehicle height to the specification.

(a) Press down on the vehicle several times to stabilize the suspension, and then measure the vehicle height.

Text in Illustration



*a	Front Side
*b	Rear Side

Standard Vehicle Height (Unloaded Vehicle):

VEHICLE MODEL	GRADE	FRONT (A - B)	REAR (C - D)
GRN280L-GKAGKA	SR5	115.9 mm (4.56 in.)	79.9 mm (3.15 in.)
	S-Runner	116.7 mm (4.59 in.)	80.7 mm (3.18 in.)
	X-Runner	117.2 mm (4.61 in.)	85.4 mm (3.36 in.)
GRN285L-GKAGKA	SR5	94.2 mm (3.71 in.)	68.1 mm (2.68 in.)
	S-Runner	94.9 mm (3.74 in.)	68.8 mm (2.71 in.)

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	Trail Edition	95.6 mm (3.76 in.)	69.8 mm (2.75 in.)
	Trail Edition (w/ KDSS)	98.2 mm (3.87 in.)	72.1 mm (2.84 in.)
	X-Runner	97.6 mm (3.84 in.)	72.5 mm (2.85 in.)
TRN280L-GKPGKA	SR5	115.6 mm (4.55 in.)	79.2 mm (3.12 in.)
	DeContent	115.6 mm (4.55 in.)	79.2 mm (3.12 in.)
	S-Runner	116.4 mm (4.58 in.)	79.9 mm (3.15 in.)
TRN285L-GKPGKA	SR5	96.0 mm (3.78 in.)	67.9 mm (2.67 in.)
	DeContent	96.0 mm (3.78 in.)	67.9 mm (2.67 in.)
	S-Runner	96.7 mm (3.81 in.)	68.6 mm (2.70 in.)

Measuring points:

A

Ground clearance of the center of the front wheel

B

Ground clearance of the center of the front adjusting cam bolt

C

Ground clearance of the center of the rear wheel

D

Ground clearance of the center of the rear lower control arm front side

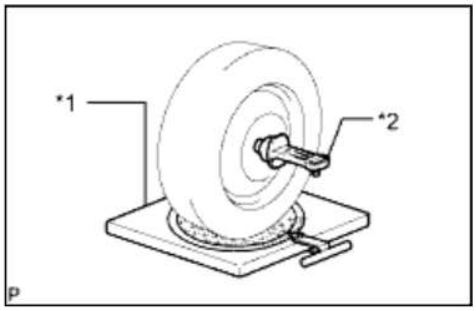
If the vehicle height is not as specified, adjust the height by pressing down on the vehicle several times to stabilize the suspension.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

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

Text in Illustration

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*1	Wheel Alignment Tester
*2	Gauge

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

Standard Camber Inclination (Unloaded Vehicle):

VEHICLE MODEL	GRADE	CAMBER INCLINATION	RIGHT-LEFT DIFFERENCE
GRN280L-GKAGKA	SR5	-0°35' +/-45' (-0.58° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°37' +/-45' (-0.62° +/-0.75°)	45' (0.75°) or less
	X-Runner	-0°38' +/-45' (-0.63° +/-0.75°)	45' (0.75°) or less
GRN285L-GKAGKA	SR5	0°0' +/-45' (0.00°+/-0.75°)	45' (0.75°) or less
	S-Runner	-0°1' +/-45' (-0.02° +/-0.75°)	45' (0.75°) or less
	Trail Edition	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	Trail Edition (w/ KDSS)	-0°7' +/-45' (-0.12° +/-0.75°)	45' (0.75°) or less
	X-Runner	-0°6' +/-45' (-0.10° +/-0.75°)	45' (0.75°) or less
TRN280L-GKPGKA	SR5	-0°34' +/-45' (-0.57° +/-0.75°)	45' (0.75°) or less
	DeContent	-0°34' +/-45' (-0.57° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°36' +/-45' (-0.60° +/-0.75°)	45' (0.75°) or less
TRN285L-GKPGKA	SR5	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	DeContent	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°4' +/-45' (-0.07° +/-0.75°)	45' (0.75°) or less

Standard Caster Inclination (Unloaded Vehicle):

VEHICLE MODEL	GRADE	CASTER INCLINATION	RIGHT-LEFT DIFFERENCE
GRN280L-GKAGKA	SR5	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
	X-Runner	3°50' +/-45' (3.83° +/-0.75°)	45' (0.75°) or less
GRN285L-GKAGKA	SR5	3°13' +/-45' (3.22° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°15' +/-45' (3.25° +/-0.75°)	45' (0.75°) or less

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VEHICLE MODEL	GRADE	CASTER INCLINATION	RIGHT-LEFT DIFFERENCE
	Trail Edition	3°16' +/-45' (3.27° +/-0.75°)	45' (0.75°) or less
	Trail Edition (w/ KDSS)	3°21' +/-45' (3.35° +/-0.75°)	45' (0.75°) or less
	X-Runner	3°22' +/-45' (3.37° +/-0.75°)	45' (0.75°) or less
TRN280L-GKPGKA	SR5	3°39' +/-45' (3.65° +/-0.75°)	45' (0.75°) or less
	DeContent	3°39' +/-45' (3.65° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
TRN285L-GKPGKA	SR5	3°14' +/-45' (3.23° +/-0.75°)	45' (0.75°) or less
	DeContent	3°14' +/-45' (3.23° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°15' +/-45' (3.25° +/-0.75°)	45' (0.75°) or less

Standard Steering Axis Inclination (Unloaded Vehicle):

VEHICLE MODEL	GRADE	STEERING AXIS INCLINATION
GRN280L-GKAGKA	SR5	12°41' +/-45' (12.68° +/-0.75°)
	S-Runner	12°42' +/-45' (12.70° +/-0.75°)
	X-Runner	12°44' +/-45' (12.73° +/-0.75°)
GRN285L-GKAGKA	SR5	12°10' +/-45' (12.17° +/-0.75°)
	S-Runner	12°11' +/-45' (12.18° +/-0.75°)
	Trail Edition	12°12' +/-45' (12.20° +/-0.75°)
	Trail Edition (w/ KDSS)	12°16' +/-45' (12.27° +/-0.75°)
	X-Runner	12°15' +/-45' (12.25° +/-0.75°)
TRN280L-GKPGKA	SR5	12°41' +/-45' (12.68° +/-0.75°)
	DeContent	12°41' +/-45' (12.68° +/-0.75°)
	S-Runner	12°42' +/-45' (12.70° +/-0.75°)
TRN285L-GKPGKA	SR5	12°12' +/-45' (12.20° +/-0.75°)
	DeContent	12°12' +/-45' (12.20° +/-0.75°)
	S-Runner	12°13' +/-45' (12.22° +/-0.75°)

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4. ADJUST CAMBER AND CASTER

HINT:

After the camber has been adjusted, inspect the toe-in.

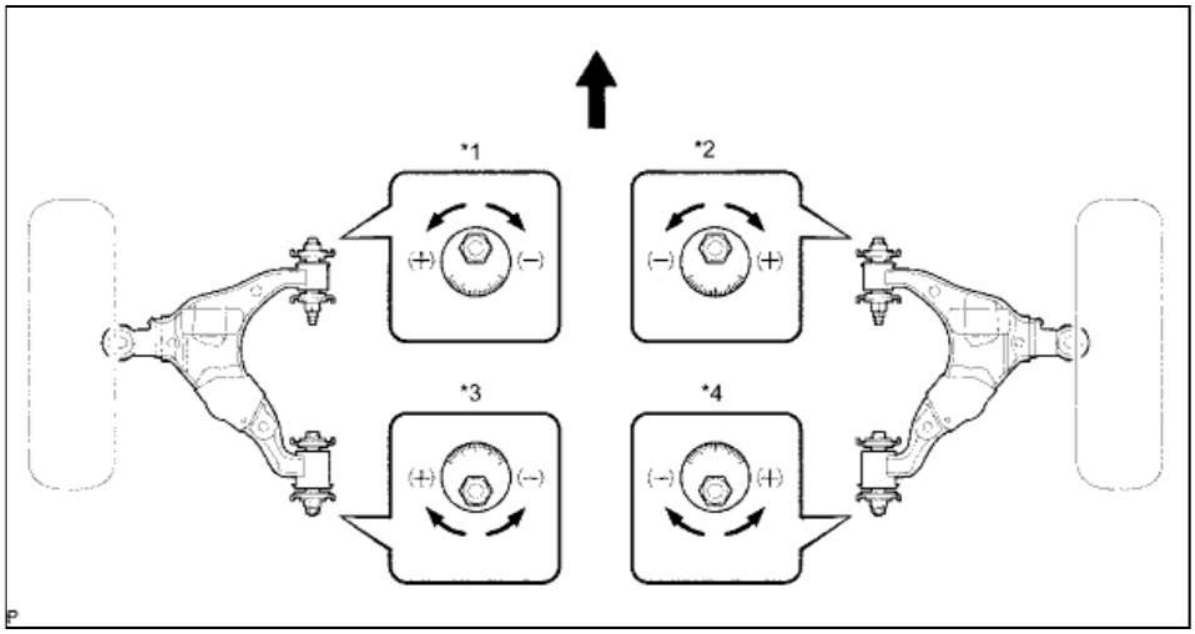
(a) Loosen the front adjusting cam bolt and rear adjusting cam nut.

(b) Turn the front adjusting cam and rear adjusting cam in both directions, and adjust the camber and

caster to the center value.

HINT:

- The camber and caster should be as close as possible to the center value.
- Adjust the camber and caster within +/-30'.



Text in Illustration

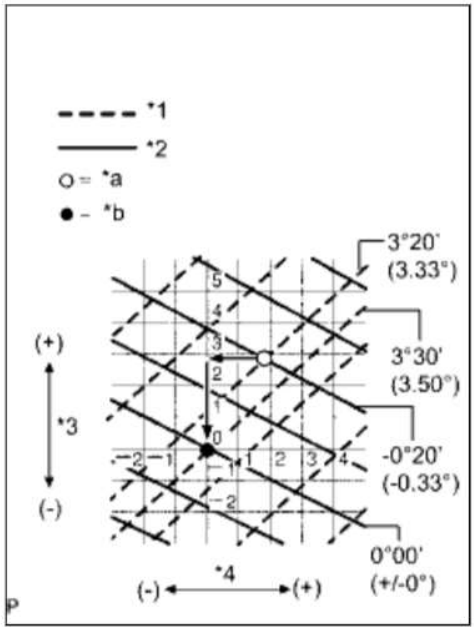
*1	Front Adjusting Cam LH	*2	Front Adjusting Cam RH
*3	Rear Adjusting Cam LH	*4	Rear Adjusting Cam RH
➡	Front	-	-

(c) Read the adjustment chart (example).

Text in Illustration

*1	Caster
*2	Camber
*3	Front Adjusting Cam
*4	Rear Adjusting Cam
*a	Measured Value
*b	Standard Value

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(1) Find the wheel alignment standard value applicable for the particular model.

(2) Mark the selected standard value on the adjustment chart.

Standard Value (Reference)

CAMBER	CASTER
0°00' (0.00°)	3°30' (3.50°)

(3) Mark the alignment value measured when the vehicle is unloaded on the adjustment chart.

Measured Value (Reference)

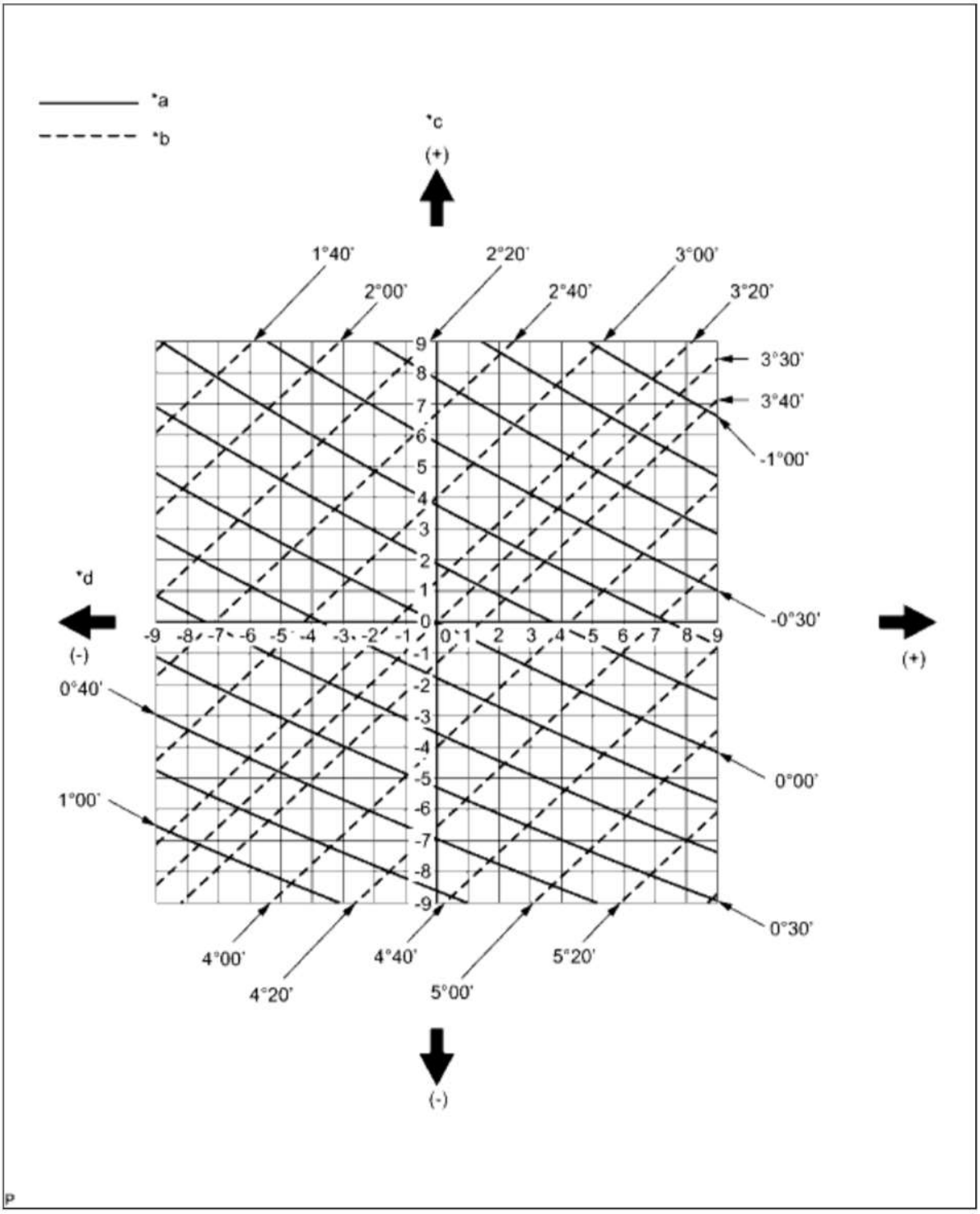
CAMBER	CASTER
-0°20' (-0.33°)	3°20' (3.33°)

(4) As shown in the chart, read the distance from the marked point to 0, and adjust the front and/or rear adjusting cams accordingly.

Amount to Turn Adjusting Cams (by Gradation)

FRONT ADJUSTING CAM	REAR ADJUSTING CAM
+3	+2

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Text in Illustration

*a	Camber	*b	Caster
*c	Front Cam Graduation	*d	Rear Cam Graduation

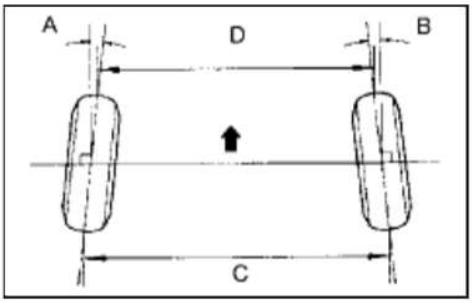
5. INSPECT TOE-IN

(a) Bounce the vehicle up and down at the corners to stabilize the suspension and inspect the toe-in.

Text in Illustration

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	Front



Standard Toe-in (Unloaded Vehicle):

VEHICLE MODEL	GRADE	TOE-IN
GRN280L-GKAGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.52 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.35 +/-2 mm (0.09 +/-0.08 in.)
	X-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.16 +/-2 mm (0.09 +/-0.08 in.)
GRN285L-GKAGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.47 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.29 +/-2 mm (0.09 +/-0.08 in.)
	Trail Edition	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.11 +/-2 mm (0.08 +/-0.08 in.)
	Trail Edition (w/ KDSS)	A + B: 0°3' +/-0°10' (0.05° +/-0.16°) C - D: 1.49 +/-2 mm (0.06 +/-0.08 in.)
	X-Runner	A + B: 0°4' +/-0°10' (0.07° +/-0.16°) C - D: 1.60 +/-2 mm (0.06 +/-0.08 in.)
TRN280L-GKPGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.59 +/-2 mm (0.10 +/-0.08 in.)
	DeContent	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.59 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.41 +/-2 mm (0.09 +/-0.08 in.)
TRN285L-GKPGKA	SR5	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.07 +/-2 mm (0.08 +/-0.08 in.)

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VEHICLE MODEL	GRADE	TOE-IN
	DeContent	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.07 +/-2 mm (0.08 +/-0.08 in.)
	S-Runner	A + B: 0°4' +/-0°10' (0.07° +/-0.16°) C - D: 1.89 +/-2 mm (0.07 +/-0.08 in.)

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

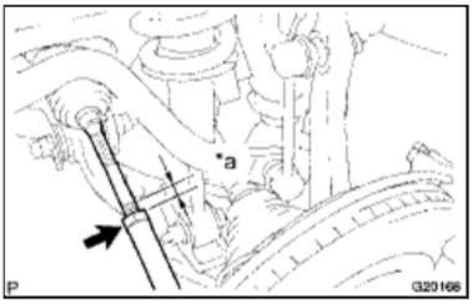
6. ADJUST TOE-IN

(a) Detach the rack boot set clips.

(b) Loosen the tie rod end lock nuts.

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

(d) Check that the lengths of the right and left rack ends are approximately the same.



Standard difference:
0 +/-1 mm (0 +/-0.0394 in.) or less

Text in Illustration

*a	Length
➡	Lock Nut

(e) Tighten the tie rod end lock nuts.

Torque: 88 N·m (897 kgf·cm, 65ft·lbf)

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

HINT:

Make sure that the boots are not twisted.

7. INSPECT WHEEL ANGLE

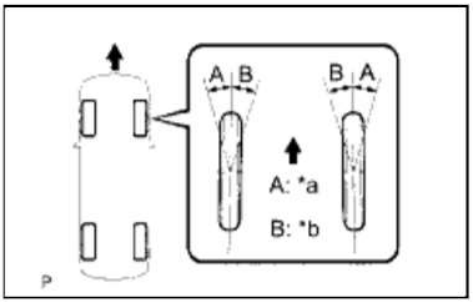
(a) Turn the steering wheel to the left and right full lock positions, and measure the turning angle.

Text in Illustration

*a	Inside

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*b	Outside
	Front



Standard Wheel Turning Angle (Unloaded Vehicle):

VEHICLE MODEL	GRADE	INSIDE WHEEL ANGLE	OUTSIDE WHEEL ANGLE: REFERENCE
GRN280L-GKAGKA	SR5	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	S-Runner	29°48' to 32°48' (29.80° to 32.80°)	29°33' (29.55°)
	X-Runner	29°47' to 32°47' (29.78° to 32.78°)	29°31' (29.52°)
GRN285L-GKAGKA	SR5	30°21' to 33°21' (30.35° to 33.35°)	29°29' (29.48°)
	S-Runner	30°20' to 33°20' (30.33° to 33.33°)	29°28' (29.47°)
	Trail Edition	30°20' to 33°20' (30.33° to 33.33°)	29°27' (29.45°)
	Trail Edition (w/ KDSS)	30°17' to 33°17' (30.28° to 33.28°)	29°23' (29.38°)
	X-Runner	30°18' to 33°18' (30.30° to 33.30°)	29°24' (29.40°)
TRN280L-GKPGKA	SR5	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	DeContent	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	S-Runner	29°48' to 32°48' (29.80° to 32.80°)	29°33' (29.55°)
TRN285L-GKPGKA	SR5	30°19' to 33°19' (30.32° to 33.32°)	29°27' (29.45°)

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VEHICLE MODEL	GRADE	INSIDE WHEEL ANGLE	OUTSIDE WHEEL ANGLE: REFERENCE
	DeContent	30°19' to 33°19' (30.32° to 33.32°)	29°27' (29.45°)
	S-Runner	30°18' to 33°18' (30.30° to 33.30°)	29°26' (29.43°)

If the right and left inside wheel angles differ from the specified range, check the right and left rack end lengths.

8. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

9. PERFORM YAW RATE SENSOR ZERO POINT CALIBRATION

HINT:

Perform the yaw rate sensor zero point calibration INFO .

10. PERFORM INITIALIZATION

HINT:

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

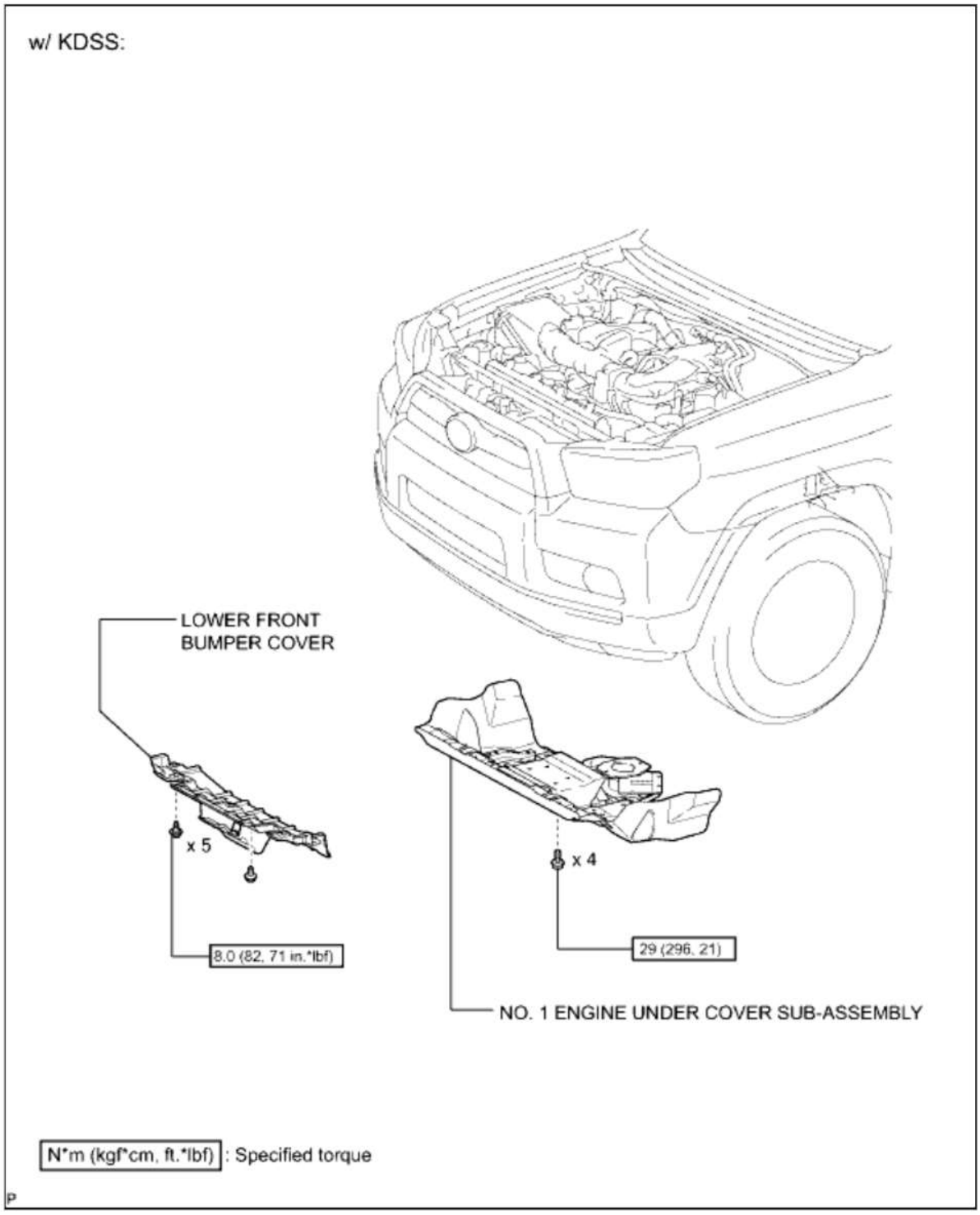


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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001W4L00TX
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: COMPONENTS (2010 4Runner)		

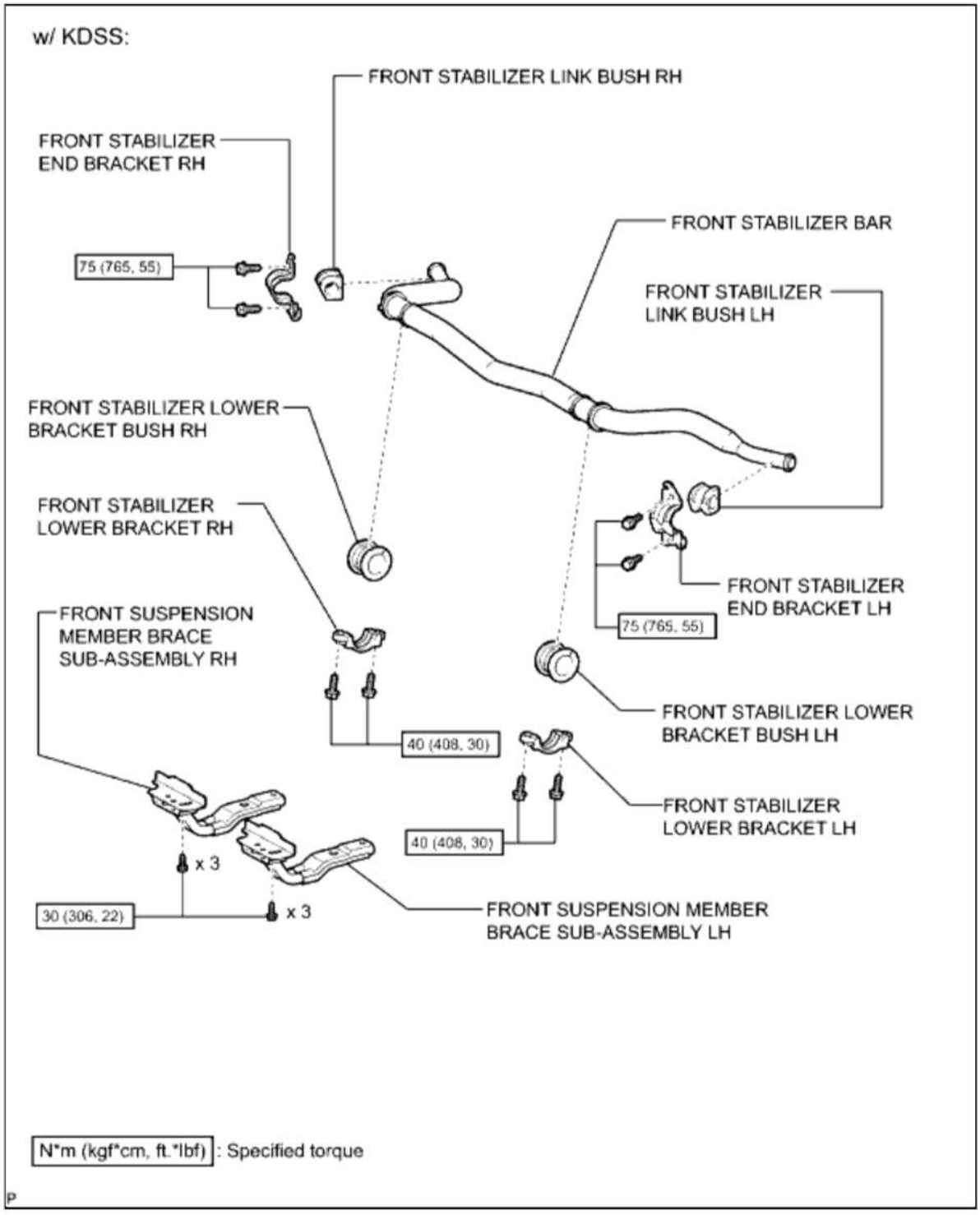
COMPONENTS

ILLUSTRATION



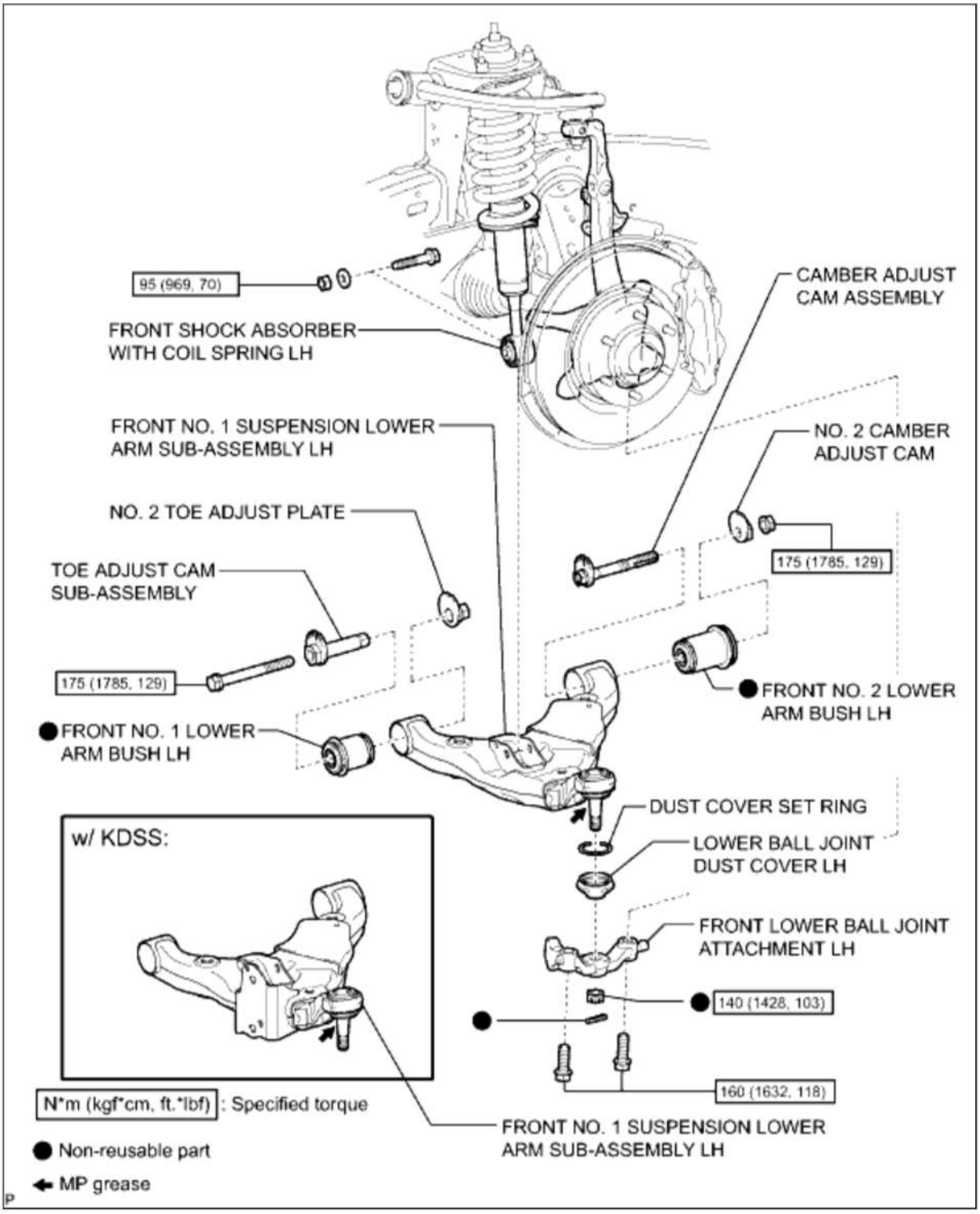
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ILLUSTRATION



ILLUSTRATION

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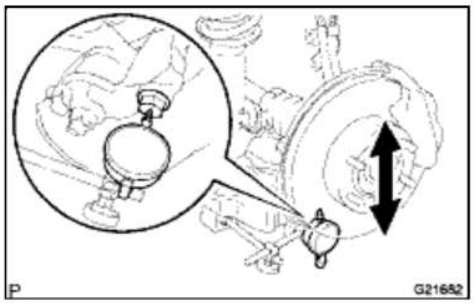
Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455H001X
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. REMOVE FRONT WHEEL

2. INSPECT FRONT SUSPENSION LOWER NO. 1 ARM

(a) Install the hub nuts to the disc.



(b) Using a dial indicator, check the lower ball joint for excessive play by pushing the hub nuts up and down with a force of 294 N (30 kgf, 66 lbf).

Maximum play:
0.5 mm (0.02 in.)

If the play is not within the specification, replace the lower arm.

3. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4800TX
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: REMOVAL (2010 4Runner)		

REMOVAL

HINT:

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

1. REMOVE FRONT WHEEL

2. REMOVE LOWER FRONT BUMPER COVER (w/ KDSS) INFO

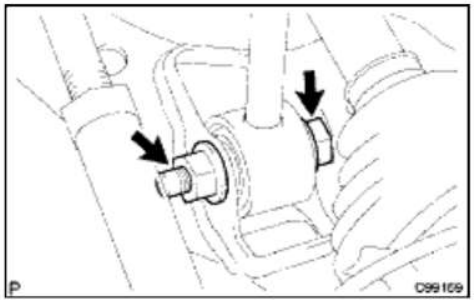
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY (w/ KDSS) INFO

4. REMOVE FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY (w/ KDSS) INFO

5. REMOVE FRONT STABILIZER END BRACKET (w/ KDSS) INFO

6. REMOVE FRONT STABILIZER BAR (w/ KDSS) INFO

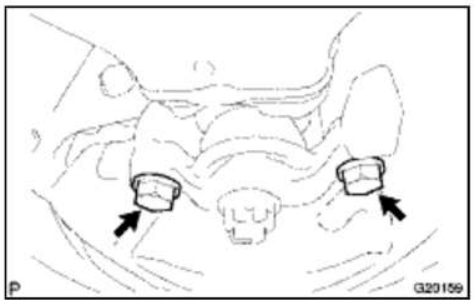
7. DISCONNECT FRONT SHOCK ABSORBER WITH COIL SPRING



(a) Remove the bolt, nut and washer.

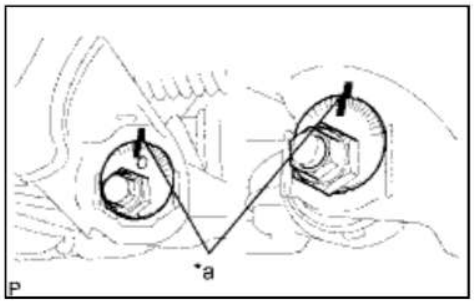
(b) Disconnect the front shock absorber with coil spring from the suspension lower arm.

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



(a) Remove the 2 bolts and disconnect the front lower ball joint attachment LH from the steering knuckle.

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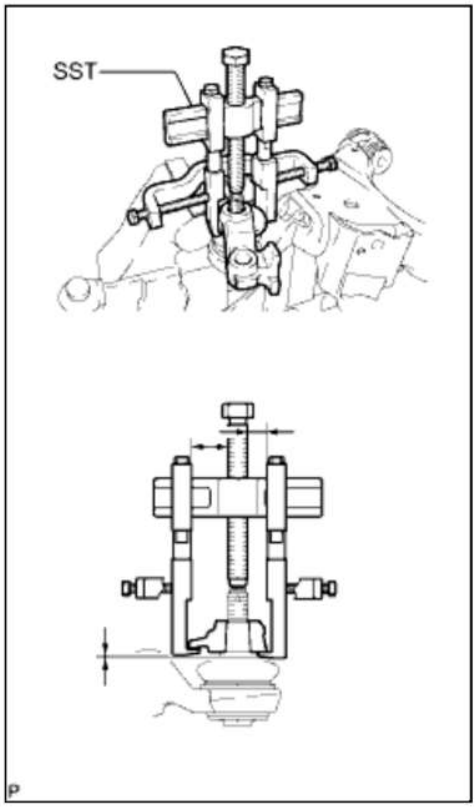
(b) Place matchmarks on the No. 2 camber adjust cam and toe adjust cam sub-assembly.

Text in Illustration

*a	Matchmark

(c) Remove the nut, No. 2 camber adjust cam, camber adjust cam assembly, bolt, toe adjust cam sub-assembly, No. 2 toe adjust plate and front No. 1 suspension lower arm sub-assembly LH.

(d) Remove the cotter pin and nut.



(e) Using SST, remove the front lower ball joint attachment LH.

SST: 09950-40011

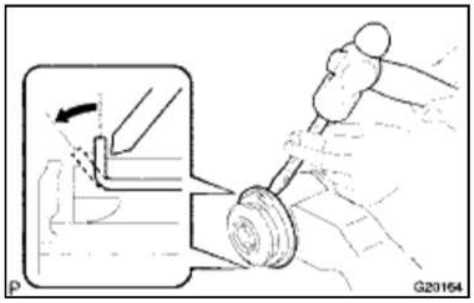
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09955-04031
09955-04061
09958-04011
09952-04010

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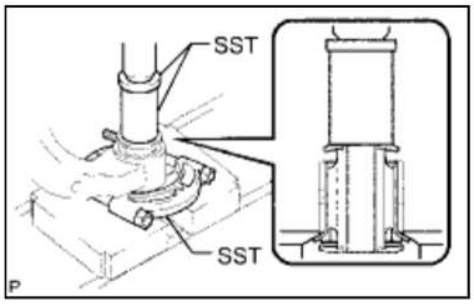
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455F001X
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

1. REMOVE FRONT NO. 1 LOWER ARM BUSH LH



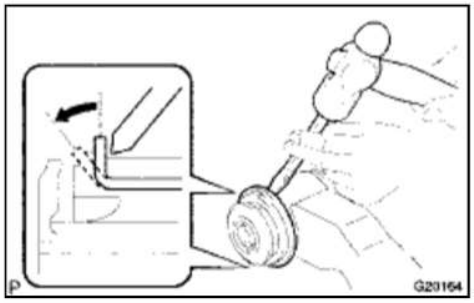
(a) Using a chisel and hammer, pry the flange of the bush outward.



(b) Using SST and a press, press out the bush.

SST: 09632-36010
SST: 09950-00020
SST: 09950-60010
09951-00400

2. REMOVE FRONT NO. 2 LOWER ARM BUSH LH

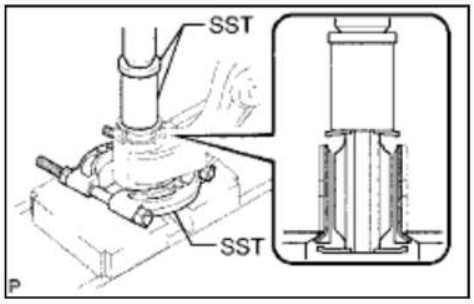


(a) Using a chisel and hammer, pry the flange of the bush outward.

(b) Using SST and a press, press out the bush.

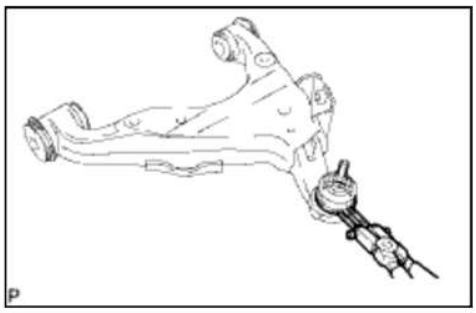
SST: 09632-36010
SST: 09950-00020

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SST: 09950-60010
09951-00400

3. REMOVE LOWER BALL JOINT DUST COVER LH



(a) Using a snap ring expander, remove the dust cover set ring and dust cover from the lower arm.

NOTICE:

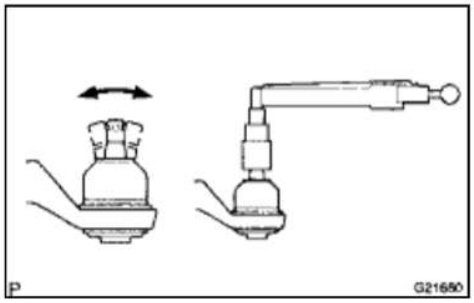
- Do not damage the ball joint dust cover.
- If the ball joint dust cover is damaged, replace it.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002C9000AX
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT FRONT NO. 1 SUSPENSION LOWER ARM SUB-ASSEMBLY LH



(a) As shown in the illustration, flip the ball joint stud back and forth 5 times before installing the nut.

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

Standard turning torque:

0.29 to 2.94 N*m (2.96 to 30.0 kgf*cm, 2.57 to 26.02 in.*lbf) or less

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455G001X
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: REASSEMBLY (2010 4Runner)		

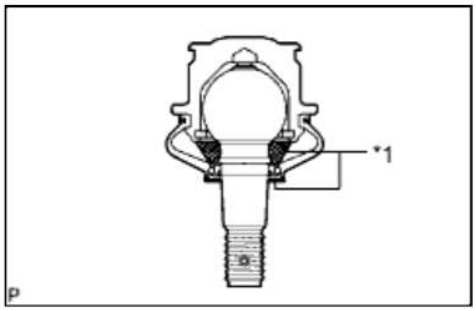
REASSEMBLY

1. INSTALL LOWER BALL JOINT DUST COVER LH

(a) Pack the lower arm ball joint with MP grease.

Grease capacity:
8.0 g (0.282 oz.)

(b) Apply MP grease to the locations shown in the illustration.



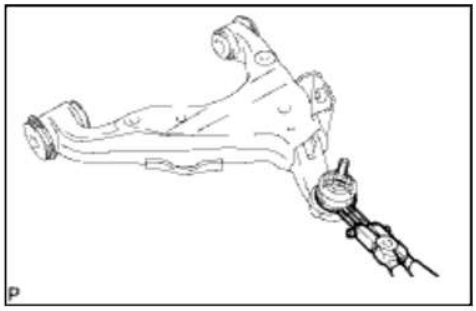
Text in Illustration

*1	MP Grease

NOTICE:

Do not apply MP grease to the tapered or threaded parts of the ball joint.

(c) Install the dust cover to the lower arm.



(d) Using a snap ring expander, install the dust cover set ring.

NOTICE:

Make sure the set ring is securely installed in the groove.

2. INSTALL FRONT NO. 2 LOWER ARM BUSH LH

(a) Using SST and a press, press in a new bush.

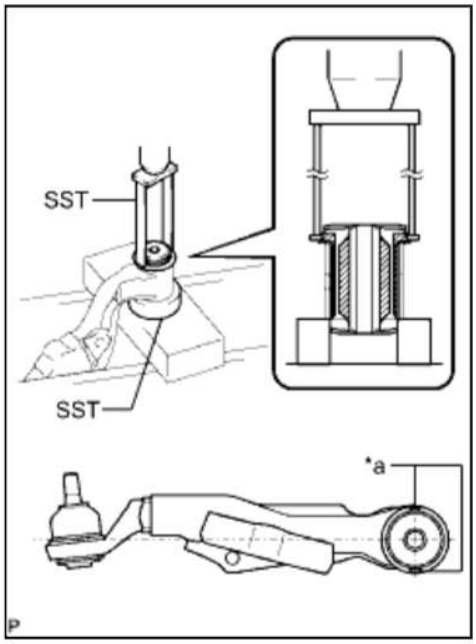
SST: 09387-00020

SST: 09710-30041

09710-03221

Text in Illustration

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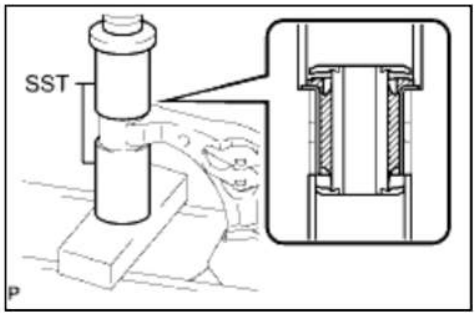


*a	Bush Positioning Protrusion

NOTICE:

Press in the bush while making sure the bush positioning protrusions are perpendicular to the lower arm as shown in the illustration.

3. INSTALL FRONT NO. 1 LOWER ARM BUSH LH



(a) Using SST and a press, press in a new bush.

SST: 09612-30012

SST: 09710-04081

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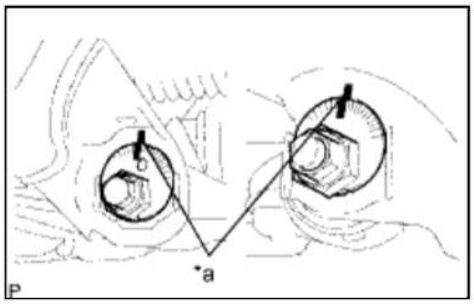
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4700TX
Title: FRONT SUSPENSION: FRONT LOWER SUSPENSION ARM: INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

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



(a) Temporarily install the lower suspension arm, camber adjust cam, No. 2 camber adjust cam, No. 2 toe adjust plate and toe adjust cam with the bolt and nut.

Text in Illustration

*a	Matchmark

(b) Align the matchmarks on the No. 2 camber adjust cam and toe adjust cam sub-assembly with the matchmarks on the vehicle body. Tighten the bolt and nut.

(c) Install the front lower ball joint attachment LH with a new nut and cotter pin.

Torque: 140 N·m (1428 kgf·cm, 103ft·lbf)

(d) Connect the front lower ball joint attachment LH to the steering knuckle with the 2 bolts.

Torque: 160 N·m (1632 kgf·cm, 118ft·lbf)

2. TEMPORARILY INSTALL FRONT SHOCK ABSORBER WITH COIL SPRING

(a) Temporarily install the front shock absorber with coil spring and washer with the bolt and nut.

3. INSTALL FRONT STABILIZER BAR (w/ KDSS) INFO

4. INSTALL FRONT STABILIZER END BRACKET (w/ KDSS) INFO

5. INSTALL FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY (w/ KDSS) INFO

6. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY (w/ KDSS) INFO

7. INSTALL LOWER FRONT BUMPER COVER (w/ KDSS) INFO

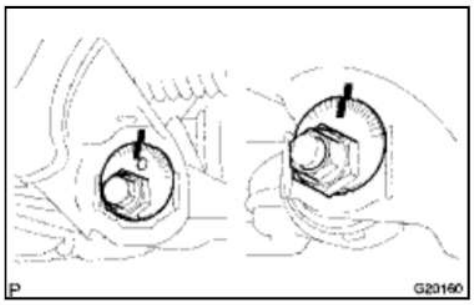
8. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

9. STABILIZE SUSPENSION INFO

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



(a) Tighten the bolt and nut.

Torque: 175 N·m (1785 kgf·cm, 129ft·lbf)

11. TIGHTEN FRONT SHOCK ABSORBER WITH COIL SPRING

(a) Tighten the nut.

Torque: 95 N·m (969 kgf·cm, 70ft·lbf)

12. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .

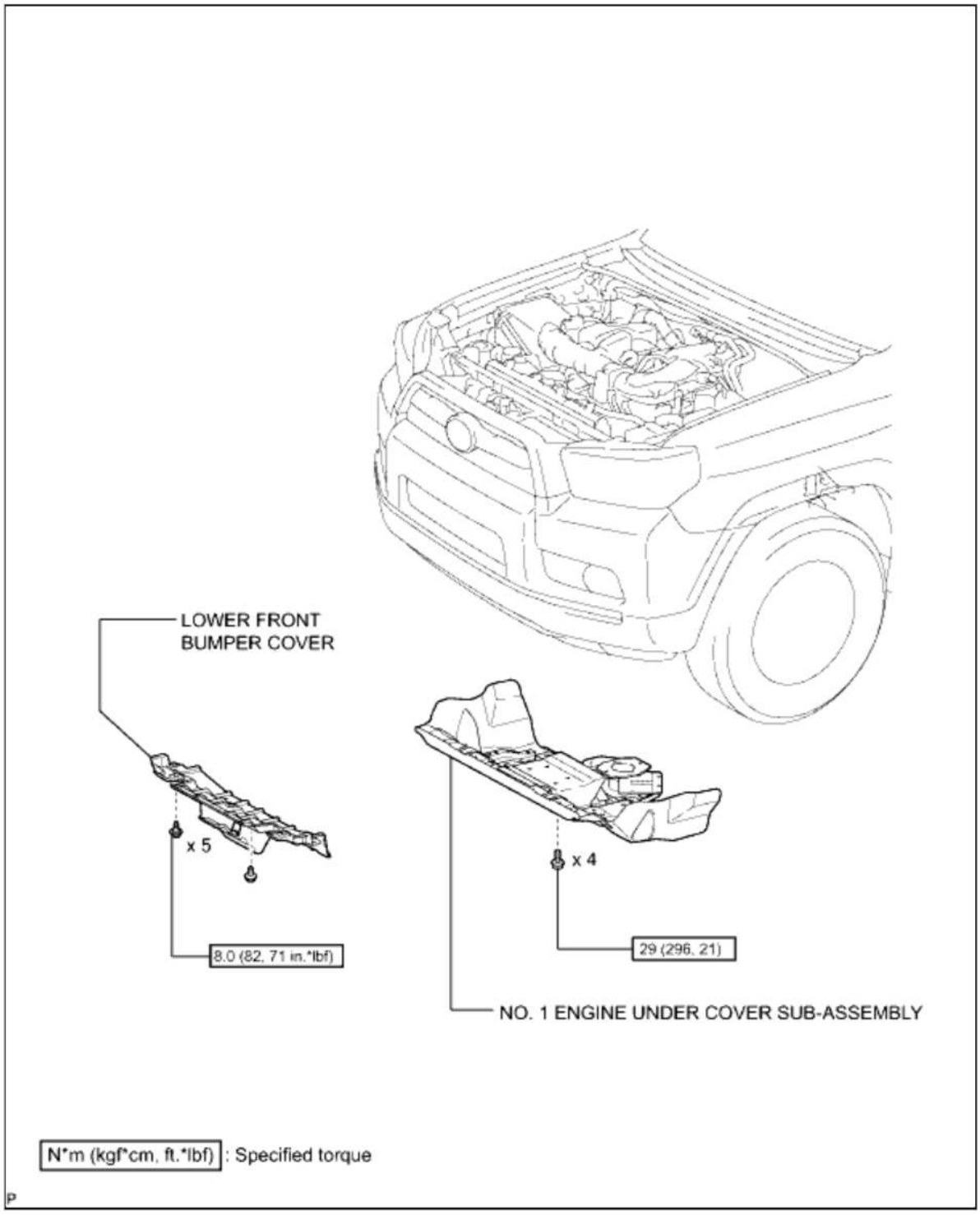
TOYOTA

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001W4K00VX
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: COMPONENTS (2010 4Runner)		

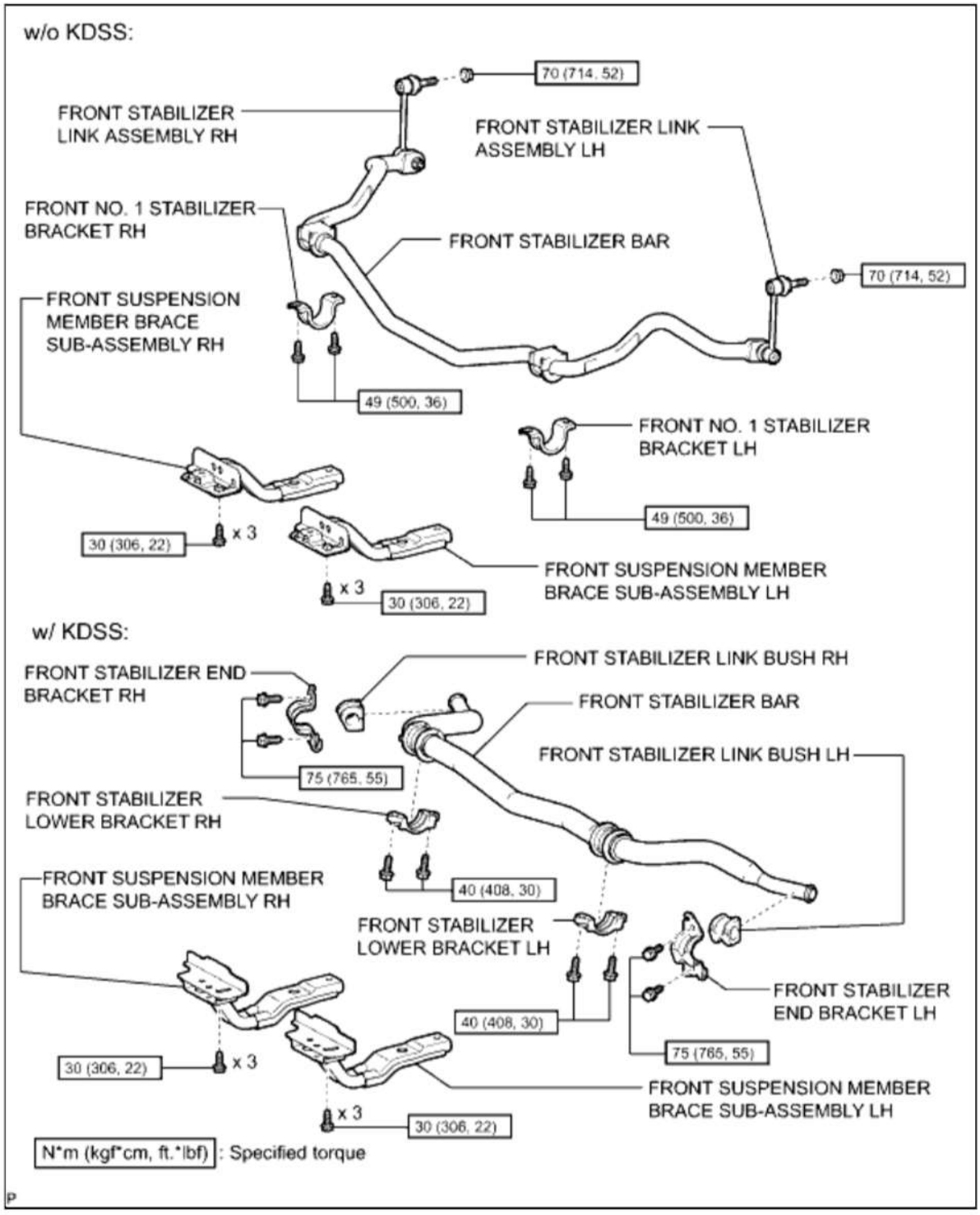
COMPONENTS

ILLUSTRATION



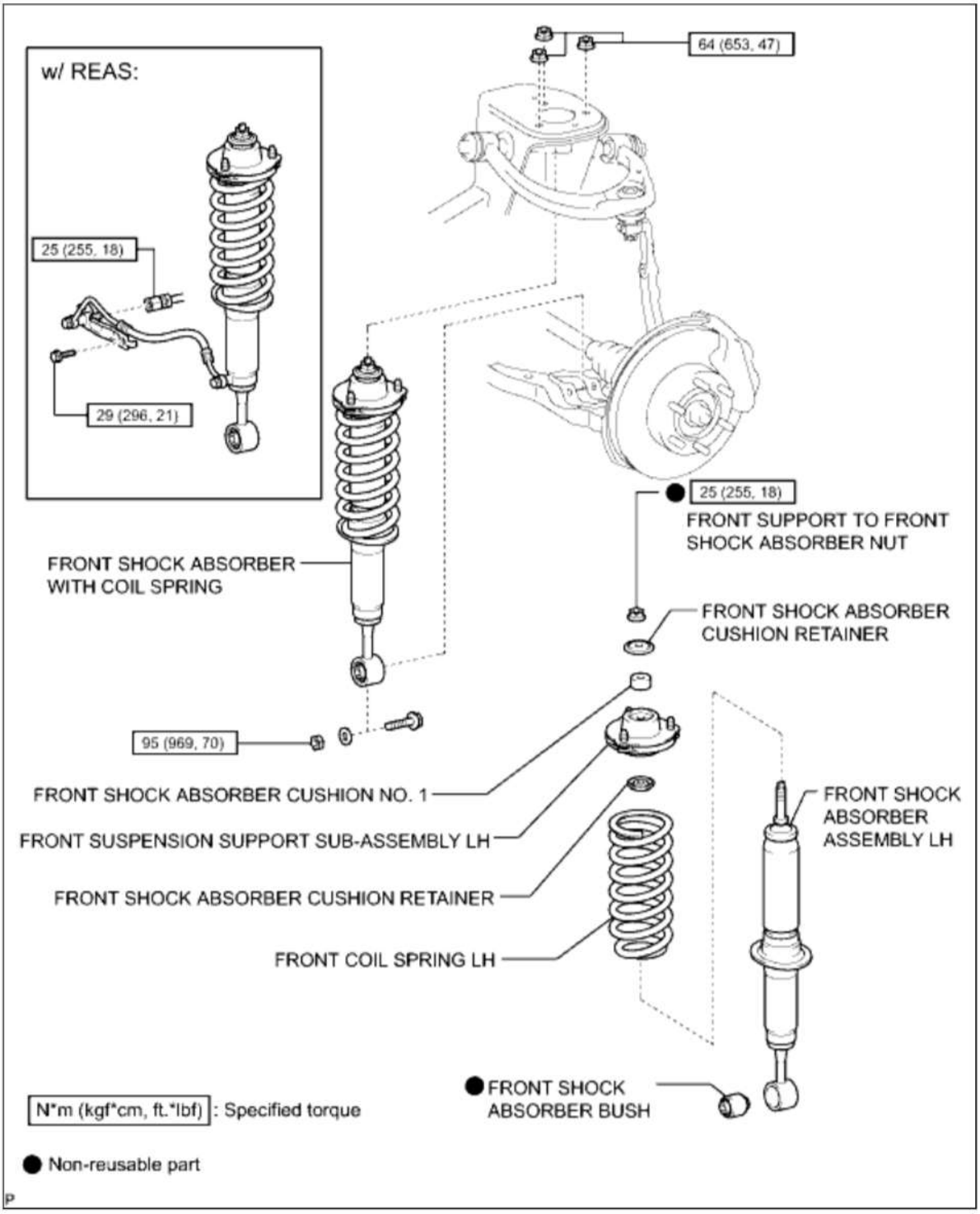
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ILLUSTRATION



ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4600VX
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: REMOVAL (2010 4Runner)		

REMOVAL

NOTICE:

Be sure to read the precaution before performing this procedure INFO .

HINT:

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

1. REMOVE FRONT WHEEL

2. REMOVE LOWER FRONT BUMPER COVER INFO

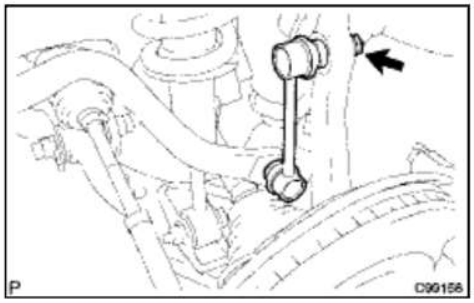
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

4. REMOVE FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY INFO

5. REMOVE FRONT STABILIZER END BRACKET (w/ KDSS) INFO

6. REMOVE FRONT STABILIZER BAR (w/ KDSS) INFO

7. DISCONNECT FRONT STABILIZER LINK ASSEMBLY LH (w/o KDSS)



(a) Remove the nut and disconnect the stabilizer link from the steering knuckle.

HINT:

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

8. DISCONNECT FRONT STABILIZER LINK ASSEMBLY RH (w/o KDSS)

HINT:

Use the same procedure described for the LH side.

9. REMOVE FRONT NO. 1 STABILIZER BRACKET LH (w/o KDSS) INFO

10. REMOVE FRONT NO. 1 STABILIZER BRACKET RH (w/o KDSS) INFO

11. REMOVE FRONT STABILIZER BAR (w/o KDSS)

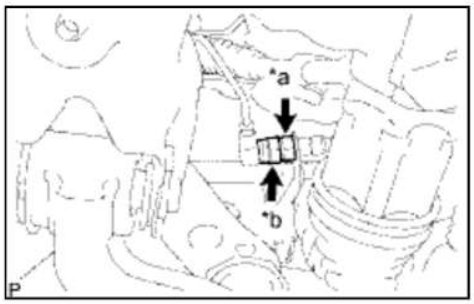
12. REMOVE FRONT SHOCK ABSORBER WITH COIL SPRING (w/ REAS)

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NOTICE:

Perform this procedure with the vehicle jacked up so that all the shock absorbers are extended.

(a) As shown in the illustration, loosen the nut and disconnect the tube.

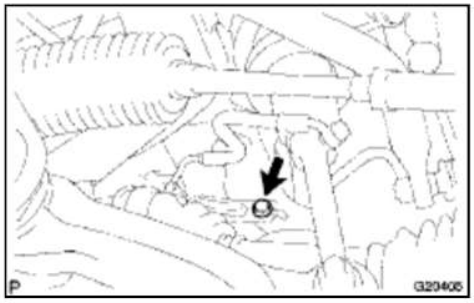


Text in Illustration

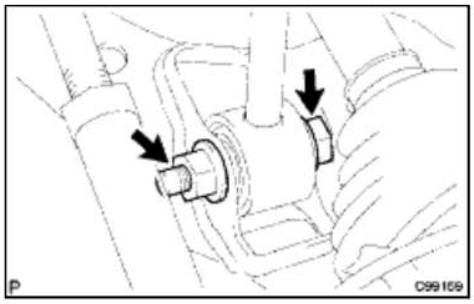
*a	Hold
*b	Turn

NOTICE:

Never loosen the absorber hoses or the flare nuts at the joint parts.



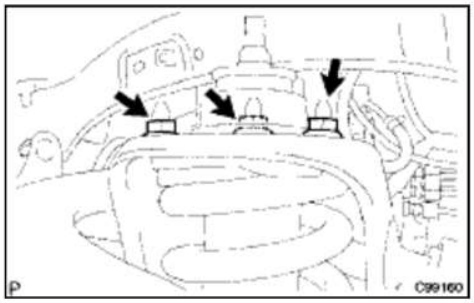
(b) Remove the bolt and bracket.



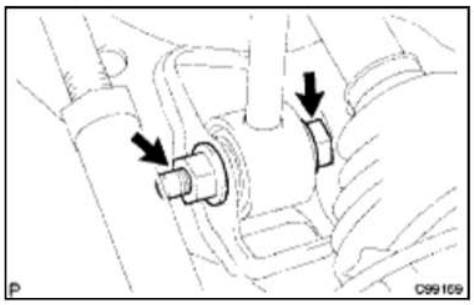
(c) Remove the bolt, nut and washer.

(d) Remove the 3 nuts on the top of the front shock absorber with coil spring.

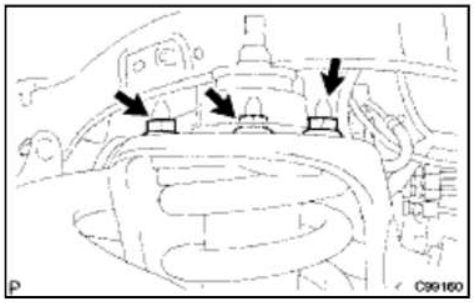
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13. REMOVE FRONT SHOCK ABSORBER WITH COIL SPRING (w/o REAS)



(a) Remove the bolt, nut and washer.



(b) Remove the 3 nuts on the top of the front shock absorber with coil spring.

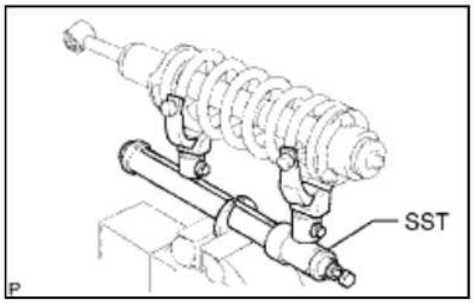
(c) Remove the front shock absorber with coil spring.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000004554001X
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

1. REMOVE FRONT SUPPORT TO FRONT SHOCK ABSORBER NUT



(a) Using SST, compress the coil spring.

SST: 09727-30021

09727-00010

09727-00031

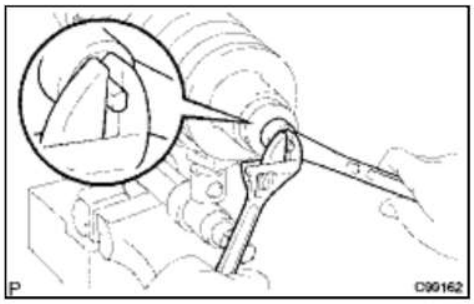
SST: 09727-00060

CAUTION:

Be careful as the coil spring may spring upward and cause an injury.

NOTICE:

- Make sure that the suspension support is free from the coil spring.
- Do not compress the coil spring more than necessary.
- Do not use an impact wrench. It will damage SST.



(b) Remove the front support to front shock absorber nut.

2. REMOVE FRONT SUSPENSION SUPPORT SUB-ASSEMBLY LH

(a) Remove the suspension support, cushion and 2 retainers from the shock absorber rod.

3. REMOVE FRONT COIL SPRING LH

(a) Remove the coil spring from the shock absorber.

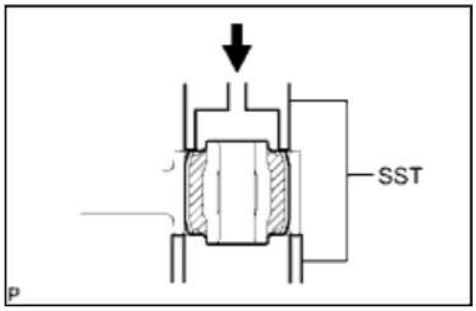
4. REMOVE FRONT SHOCK ABSORBER BUSH

(a) Using SST and a press, remove the absorber bush.

SST: 09710-04071

SST: 09710-04081

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001VPQ00VX
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT FRONT SHOCK ABSORBER ASSEMBLY LH

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

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

NOTICE:

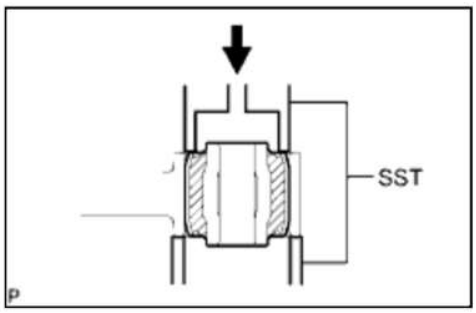
When disposing of the front shock absorber assembly LH, refer to Disposal INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000004555001X
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: REASSEMBLY (2010 4Runner)		

REASSEMBLY

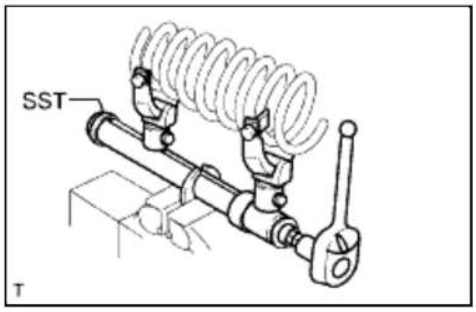
1. INSTALL FRONT SHOCK ABSORBER BUSH



(a) Using SST and a press, install a new absorber bush.

SST: 09710-04071
SST: 09710-04081

2. INSTALL FRONT COIL SPRING LH



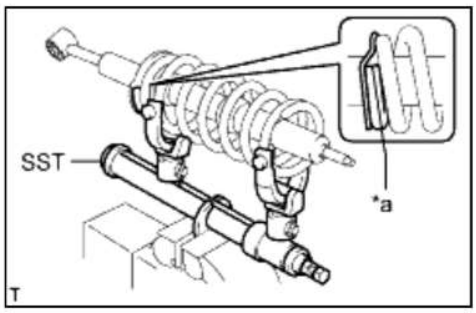
(a) Using SST, compress the coil spring.

SST: 09727-30021
09727-00010
09727-00031
SST: 09727-00060

NOTICE:

- Do not compress the coil spring more than necessary.
- Do not use an impact wrench. It will damage SST.

(b) Install the coil spring to the shock absorber.



HINT:

Fit the lower end of the coil spring into the recess of the spring seat of the shock absorber.

Text in Illustration

*a	Lower End

3. INSTALL FRONT SUSPENSION SUPPORT SUB-ASSEMBLY LH

(a) Install the cushion, 2 retainers and suspension support to the piston rod.

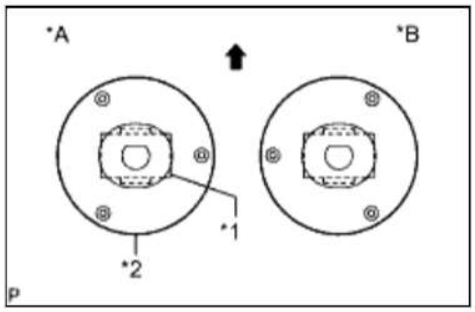
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(b) Temporarily install a new front shock absorber nut to the suspension support.

(c) Position the suspension support as shown in the illustration.

Text in Illustration

*A	LH
*B	RH
*1	Absorber Bush
*2	Suspension Support Sub-assembly
➡	Front



(d) Remove SST.

HINT:

Release the coil spring while checking the position of the suspension support.

NOTICE:

Do not use an impact wrench. It will damage the shock absorber rod.

4. TIGHTEN FRONT SUPPORT TO FRONT SHOCK ABSORBER NUT

(a) Tighten a new nut.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4500VX
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: INSTALLATION (2010 4Runner)		

INSTALLATION

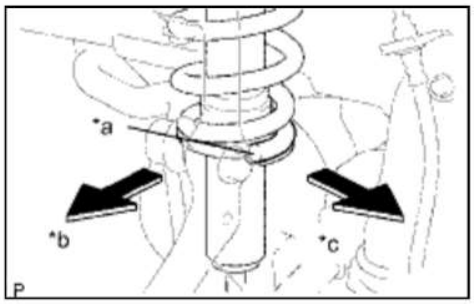
NOTICE:

Be sure to read the precaution before performing this procedure INFO .

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

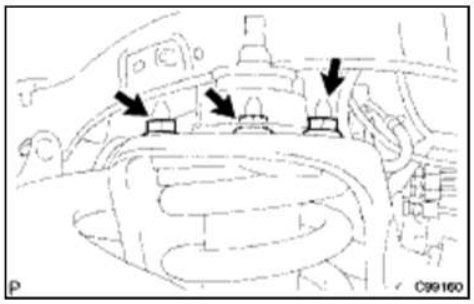
1. TEMPORARILY INSTALL FRONT SHOCK ABSORBER WITH COIL SPRING (w/ REAS)



(a) Install the coil spring to the vehicle body with the lower end of the coil spring facing the rear side of the vehicle.

Text in Illustration

*a	Lower End
*b	Outer Side
*c	Rear Side

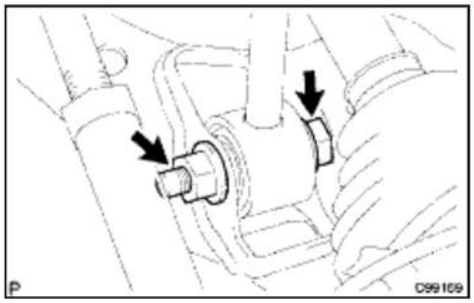


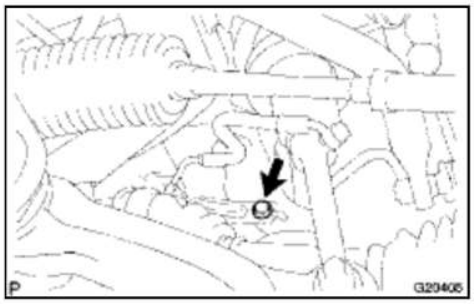
(b) Install the 3 nuts to the upper side of the front shock absorber with coil spring.

Torque: 64 N·m (653 kgf·cm, 47ft·lbf)

(c) Temporarily install the bolt, nut and washer as shown in the illustration.

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(d) Install the bolt.

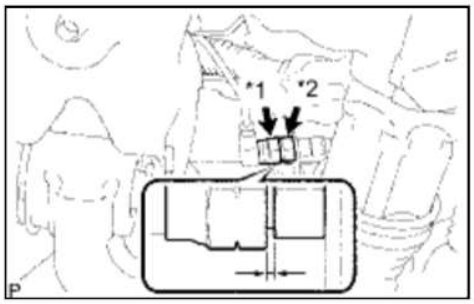
Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

NOTICE:

Be sure to fit the detents attached to the bracket into a hole on the frame side.

(e) As shown in the illustration, tighten the nut so that the clearance reaches the standard value.

Clearance:
1 mm (0.0394 in.)
Reference torque:
25 N*m (255 kgf*cm, 18 ft.*lbf)



Text in Illustration

*1	Turn
*2	Hold

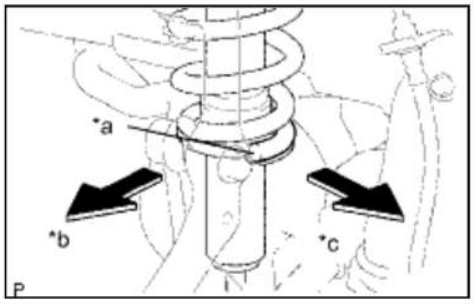
2. TEMPORARILY INSTALL FRONT SHOCK ABSORBER WITH COIL SPRING (w/o REAS)

(a) Install the coil spring to the vehicle body with the lower end of the coil spring facing the rear side of the vehicle.

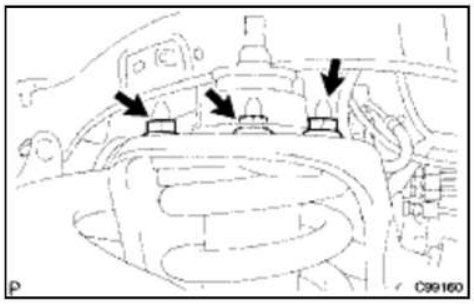
Text in Illustration

*a	Lower End

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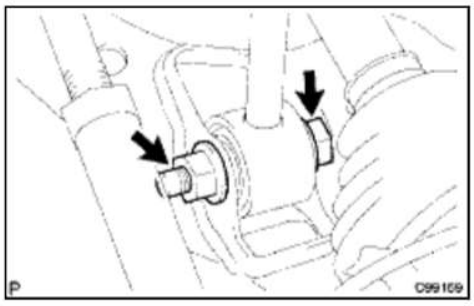


*b	Outer Side
*c	Rear Side



(b) Install the 3 nuts to the upper side of the front shock absorber with coil spring.

Torque: 64 N·m (653 kgf·cm, 47ft·lbf)



(c) Temporarily install the bolt, nut and washer as shown in the illustration.

3. INSTALL FRONT STABILIZER BAR (w/ KDSS) INFO

4. INSTALL FRONT STABILIZER END BRACKET (w/ KDSS) INFO

5. INSTALL FRONT STABILIZER BAR (w/o KDSS)

6. INSTALL FRONT NO. 1 STABILIZER BRACKET LH (w/o KDSS) INFO

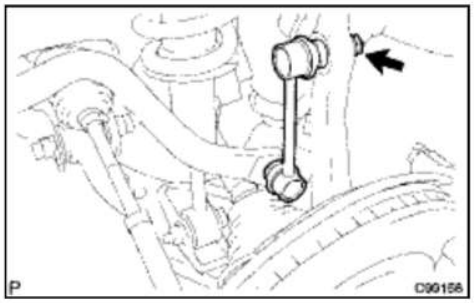
7. INSTALL FRONT NO. 1 STABILIZER BRACKET RH (w/o KDSS) INFO

8. CONNECT FRONT STABILIZER LINK ASSEMBLY LH (w/o KDSS)

(a) Connect the stabilizer link to the steering knuckle with the nut.

Torque: 70 N·m (710 kgf·cm, 52ft·lbf)

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HINT:

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

9. CONNECT FRONT STABILIZER LINK ASSEMBLY RH (w/o KDSS)

HINT:

Use the same procedure described for the LH side.

10. INSTALL FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY INFO

11. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

12. INSTALL LOWER FRONT BUMPER COVER INFO

13. INSTALL FRONT WHEEL

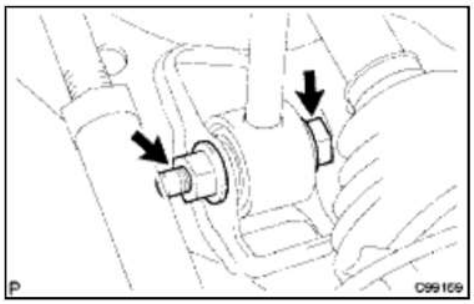
Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

14. STABILIZE SUSPENSION

(a) Lower the vehicle.

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

15. TIGHTEN FRONT SHOCK ABSORBER WITH COIL SPRING



(a) Tighten the nut.

Torque: 95 N·m (969 kgf·cm, 70ft·lbf)

16. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .

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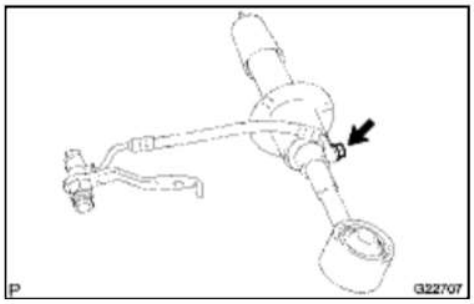
Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4400TX
Title: FRONT SUSPENSION: FRONT SHOCK ABSORBER: DISPOSAL (2010 4Runner)		

DISPOSAL

1. DISPOSE OF FRONT SHOCK ABSORBER ASSEMBLY LH (w/ REAS)

HINT:

Use the same procedure for the other front shock absorber.



(a) Before disposal, loosen the nut slowly to bleed out the oil and to lower the pressure inside the absorber.

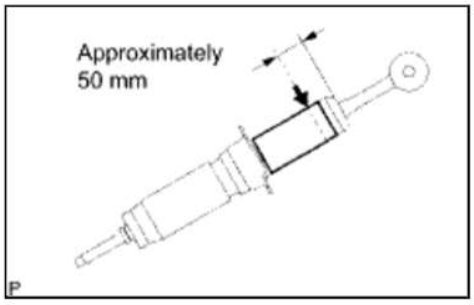
NOTICE:

Never loosen the nut of the eye union except at the time of disposal.

2. DISPOSE OF FRONT SHOCK ABSORBER ASSEMBLY LH (w/o REAS)

HINT:

Use the same procedure for the other front shock absorber.



(a) Fully extend the shock absorber piston rod and fix the shock absorber in place at an angle in a vise or similar tool.

(b) Using a drill or similar tool, slowly make a hole approximately 50 mm (1.97 in.) from the top end of the shock absorber and discharge the gas inside of it.

CAUTION:

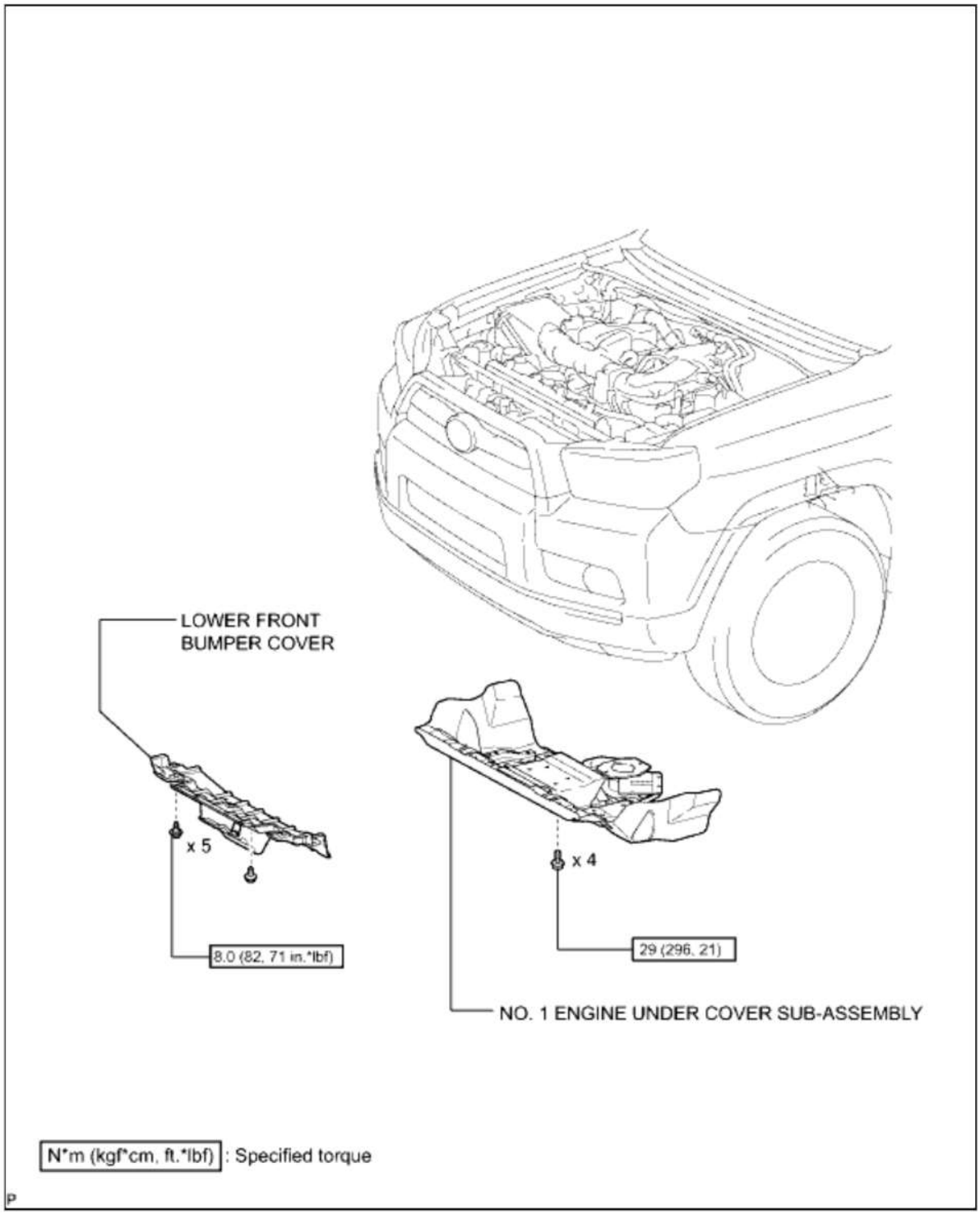
- The gas is colorless, odorless and harmless.
- Since the discharged gas may cause chips to fly off, cover the drill with a cloth when making a hole.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJL006X
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/ KDSS): COMPONENTS (2010 4Runner)		

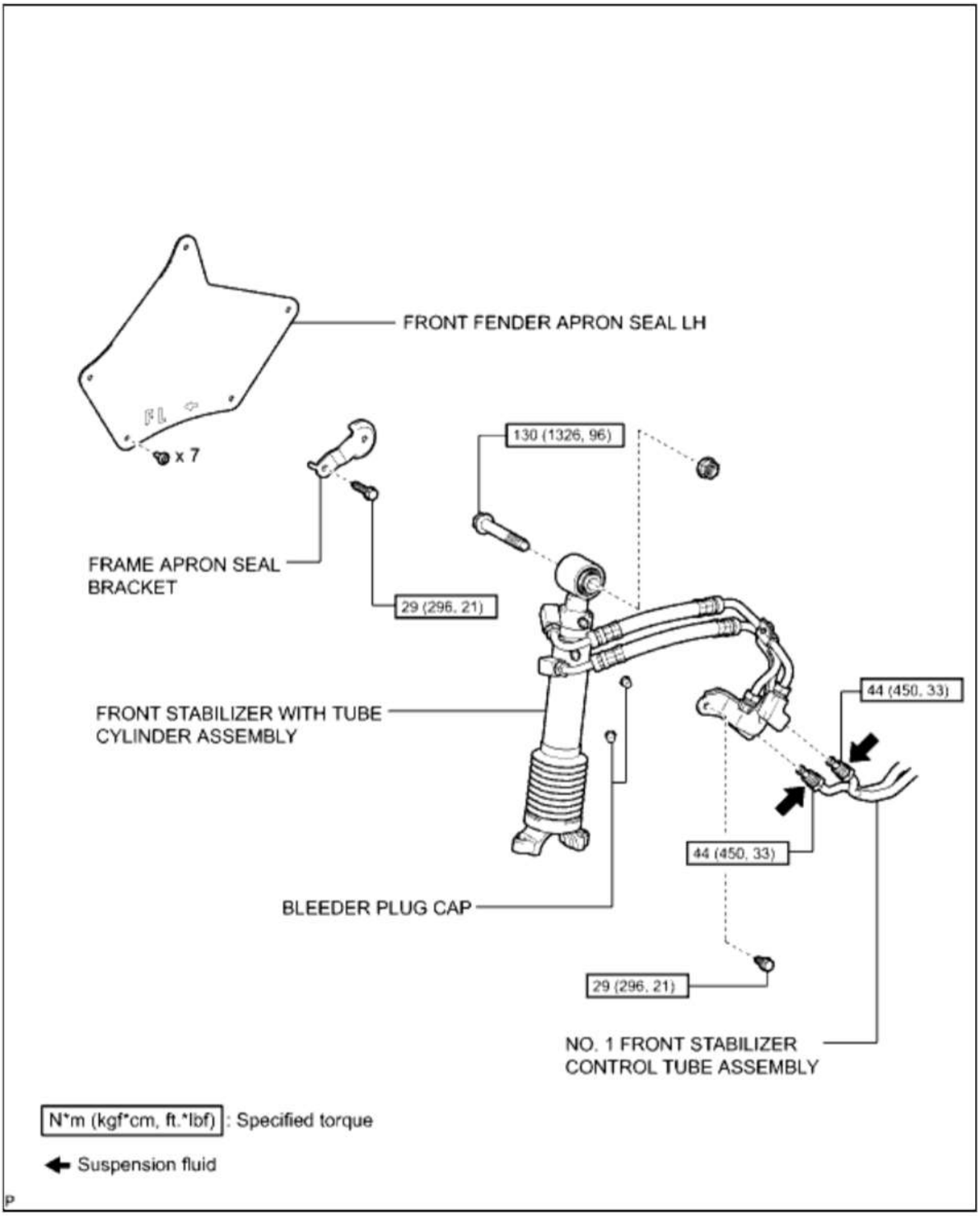
COMPONENTS

ILLUSTRATION



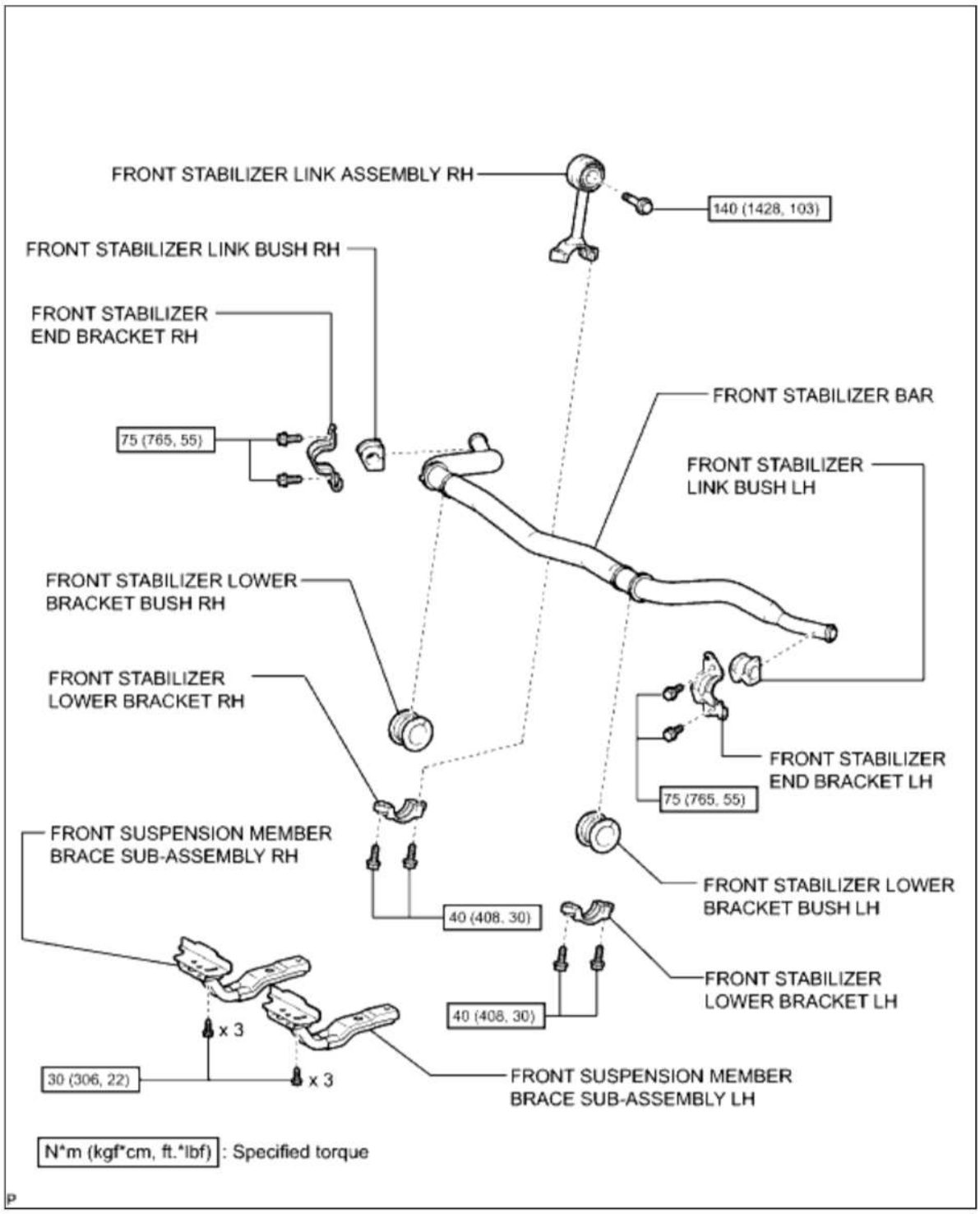
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ILLUSTRATION



ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJM006X
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/ KDSS): REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE FRONT WHEEL

2. REMOVE SIDE STEP ASSEMBLY LH INFO

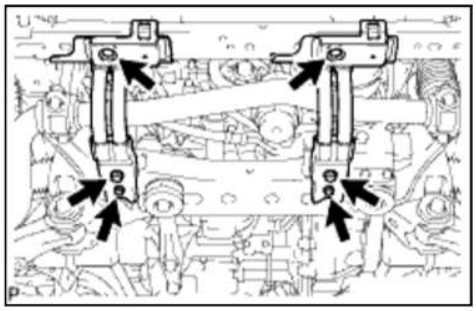
3. REMOVE STABILIZER CONTROL VALVE PROTECTOR INFO

4. DRAIN SUSPENSION FLUID INFO

5. REMOVE LOWER FRONT BUMPER COVER INFO

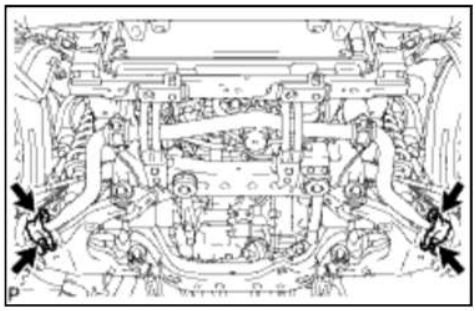
6. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

7. REMOVE FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY



(a) Remove the 6 bolts and 2 member braces from the front frame assembly.

8. REMOVE FRONT STABILIZER END BRACKET

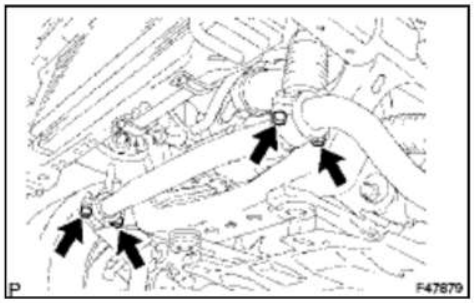


(a) Remove the 4 bolts and 2 brackets from the lower arm.

9. REMOVE FRONT STABILIZER BAR

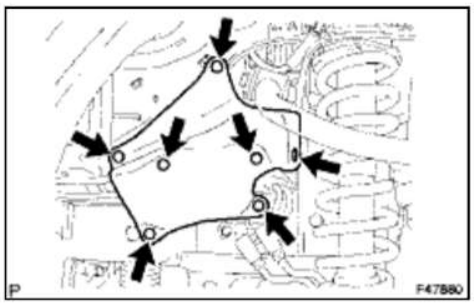
(a) Remove the 4 bolts, 2 front stabilizer lower brackets and front stabilizer bar.

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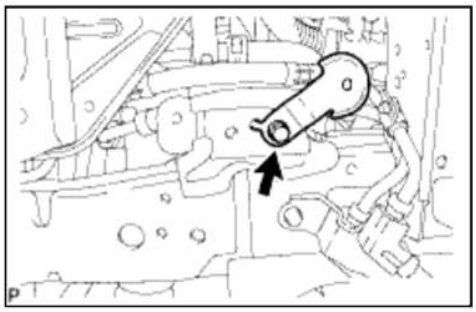
(b) Remove the 2 front stabilizer link bushes and front stabilizer lower bracket bushes from the front stabilizer bar.

10. REMOVE FRONT FENDER APRON SEAL LH



(a) Remove the 7 clips and front apron seal LH.

11. REMOVE FRAME APRON SEAL BRACKET

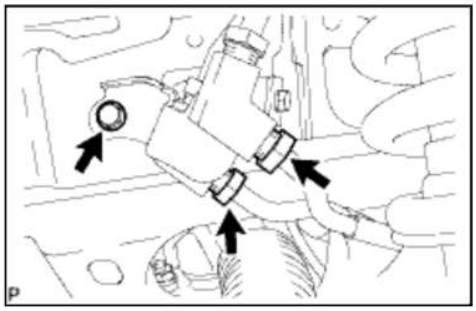


(a) Remove the bolt and bracket.

12. DISCONNECT NO. 1 FRONT STABILIZER CONTROL TUBE ASSEMBLY

(a) Using a union nut wrench, disconnect the 2 front stabilizer control tubes.

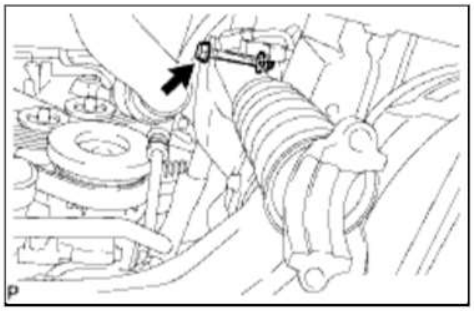
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(b) Remove the bolt.

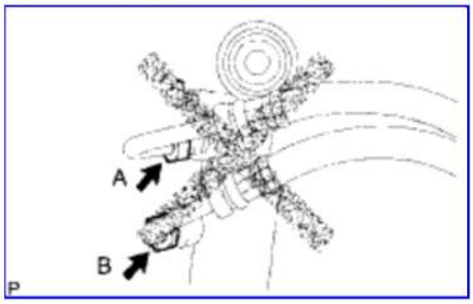
13. REMOVE FRONT STABILIZER WITH TUBE CYLINDER ASSEMBLY

(a) Remove the bolt, nut and front stabilizer with tube cylinder assembly.



NOTICE:

- Turn the bolt while holding the nut.
- Do not loosen or remove the flare nuts labeled A and B in the illustration.



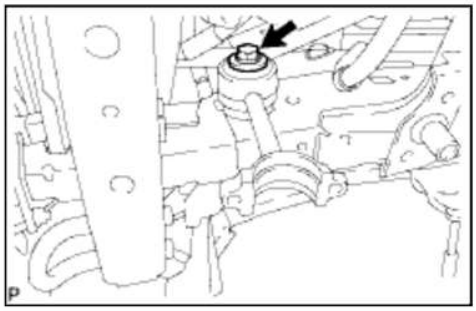
- Do not hold the front stabilizer with tube cylinder assembly by the cylinder boot.

(b) Remove the 2 bleeder plug caps and bleeder plugs from the front stabilizer with tube cylinder assembly.

14. REMOVE FRONT STABILIZER LINK ASSEMBLY RH

(a) Remove the bolt and front stabilizer link assembly.

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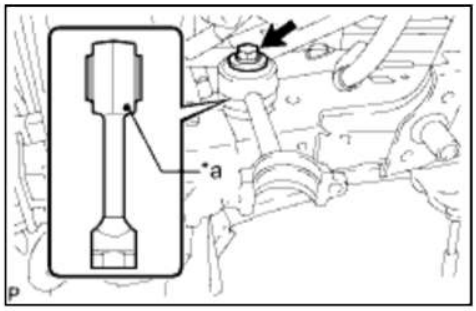
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJK006X
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/ KDSS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. TEMPORARILY INSTALL FRONT STABILIZER LINK ASSEMBLY RH

(a) Temporarily install the front stabilizer link assembly with the bolt.



HINT:

Make sure that the identification mark on the front stabilizer link assembly faces inward and toward the front of the vehicle.

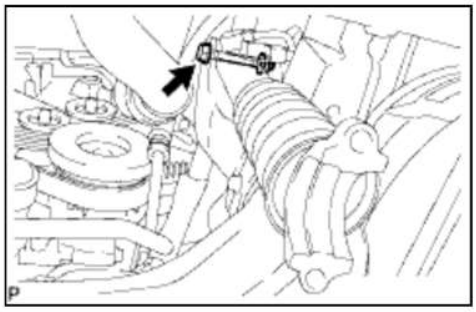
Text in Illustration

*a	Mark Position

2. TEMPORARILY INSTALL FRONT STABILIZER WITH TUBE CYLINDER ASSEMBLY

(a) Install the 2 bleeder plug caps to the front stabilizer cylinder with tube cylinder assembly.

(b) Temporarily install the front stabilizer with tube cylinder assembly with the nut and bolt.



HINT:

Pass the tube side of the front stabilizer with tube cylinder assembly under the return tube sub-assembly before installing it.

NOTICE:

- Turn the bolt while holding the nut.
- Do not hold the front stabilizer with tube cylinder assembly by the cylinder boot.

3. CONNECT NO. 1 FRONT STABILIZER CONTROL TUBE ASSEMBLY

(a) Apply suspension fluid to the threads of the flare nuts.

(b) Using a union nut wrench, connect the No. 1 front stabilizer control tube to the front stabilizer with tube cylinder assembly and tighten the flare nuts.

Torque: 44 N·m (450 kgf·cm, 33ft·lbf)

NOTICE:

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

(c) Tighten the bolt.

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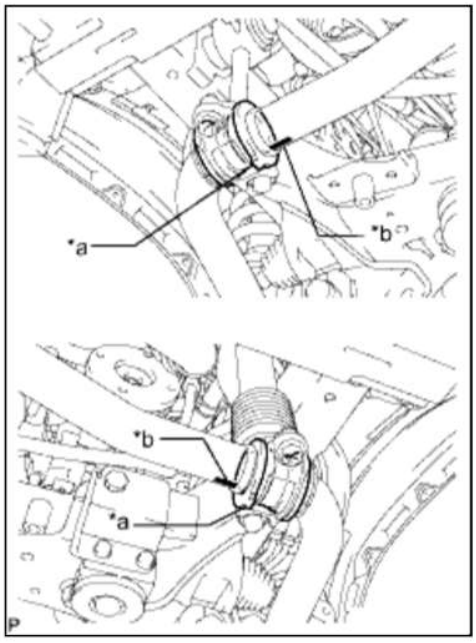
Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

4. INSTALL FRAME APRON SEAL BRACKET

(a) Install the bracket with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

5. INSTALL FRONT STABILIZER BAR



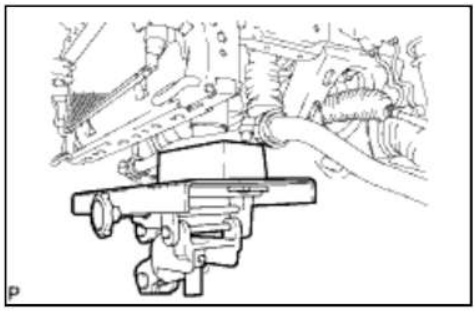
(a) Install the 2 front stabilizer lower bracket bushes to the front stabilizer bar.

HINT:

Align the protrusions on the bushes with the identification marks on the front stabilizer bar with the protrusions facing inward.

Text in Illustration

*a	Protrusion
*b	Mark Position



(b) With the identification marks of the front stabilizer bar facing downwards, support the front stabilizer bar with a jack.

NOTICE:

Place a wooden block between the jack and front stabilizer bar to prevent damage.

HINT:

Place the jack under the center of the vehicle.

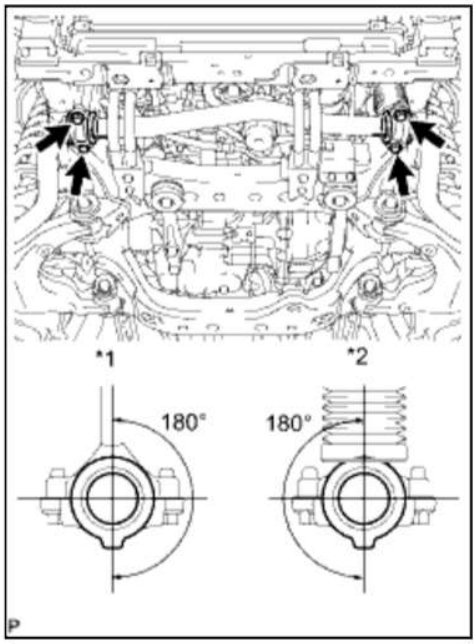
(c) Install the front stabilizer bar and 2 front stabilizer lower brackets with the 4 bolts.

Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

HINT:

Make sure that the protrusions on the front stabilizer lower bracket bushes are positioned within 180° of the stabilizer cylinder and stabilizer link.

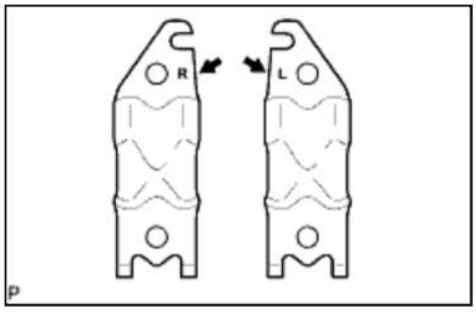
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Text in Illustration

*1	Stabilizer Link
*2	Stabilizer Cylinder

6. INSTALL FRONT STABILIZER END BRACKET



(a) Install the 2 front stabilizer brackets and 2 front stabilizer link bushes with the 4 bolts.

Torque: 75 N·m (765 kgf·cm, 55ft·lbf)

HINT:

There are stamps on the front stabilizer brackets to distinguish between the right and left brackets.

7. INSTALL FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY

(a) Install the 2 member braces with the 6 bolts.

Torque: 30 N·m (306 kgf·cm, 22ft·lbf)

8. BLEED SUSPENSION FLUID

(a) Bleed the suspension fluid INFO .

9. INSTALL FRONT WHEEL

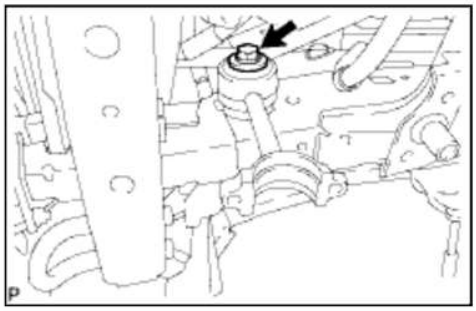
Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

10. TIGHTEN FRONT STABILIZER LINK ASSEMBLY RH

(a) Tighten the bolt on the front stabilizer link assembly.

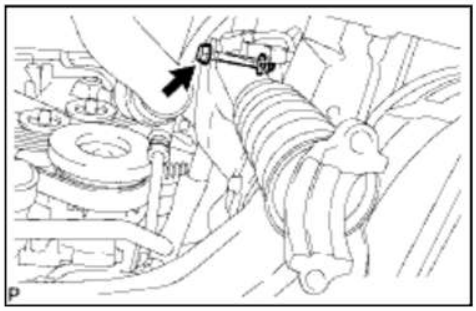
Torque: 140 N·m (1428 kgf·cm, 103ft·lbf)

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NOTICE:
Tighten the bolt with the wheels on the ground.

11. TIGHTEN FRONT STABILIZER WITH TUBE CYLINDER ASSEMBLY



(a) Tighten the bolt on the front stabilizer with tube cylinder assembly.

Torque: 130 N·m (1326 kgf·cm, 96ft·lbf)

NOTICE:
Tighten the bolt with the wheels on the ground.

12. INSTALL FRONT FENDER APRON SEAL LH

(a) Install the front fender apron seal LH with the 7 clips.

13. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

14. INSTALL LOWER FRONT BUMPER COVER INFO

15. INSTALL STABILIZER CONTROL VALVE PROTECTOR INFO

16. INSTALL SIDE STEP ASSEMBLY LH INFO

17. MEASURE VEHICLE HEIGHT

(a) Measure the vehicle height INFO .

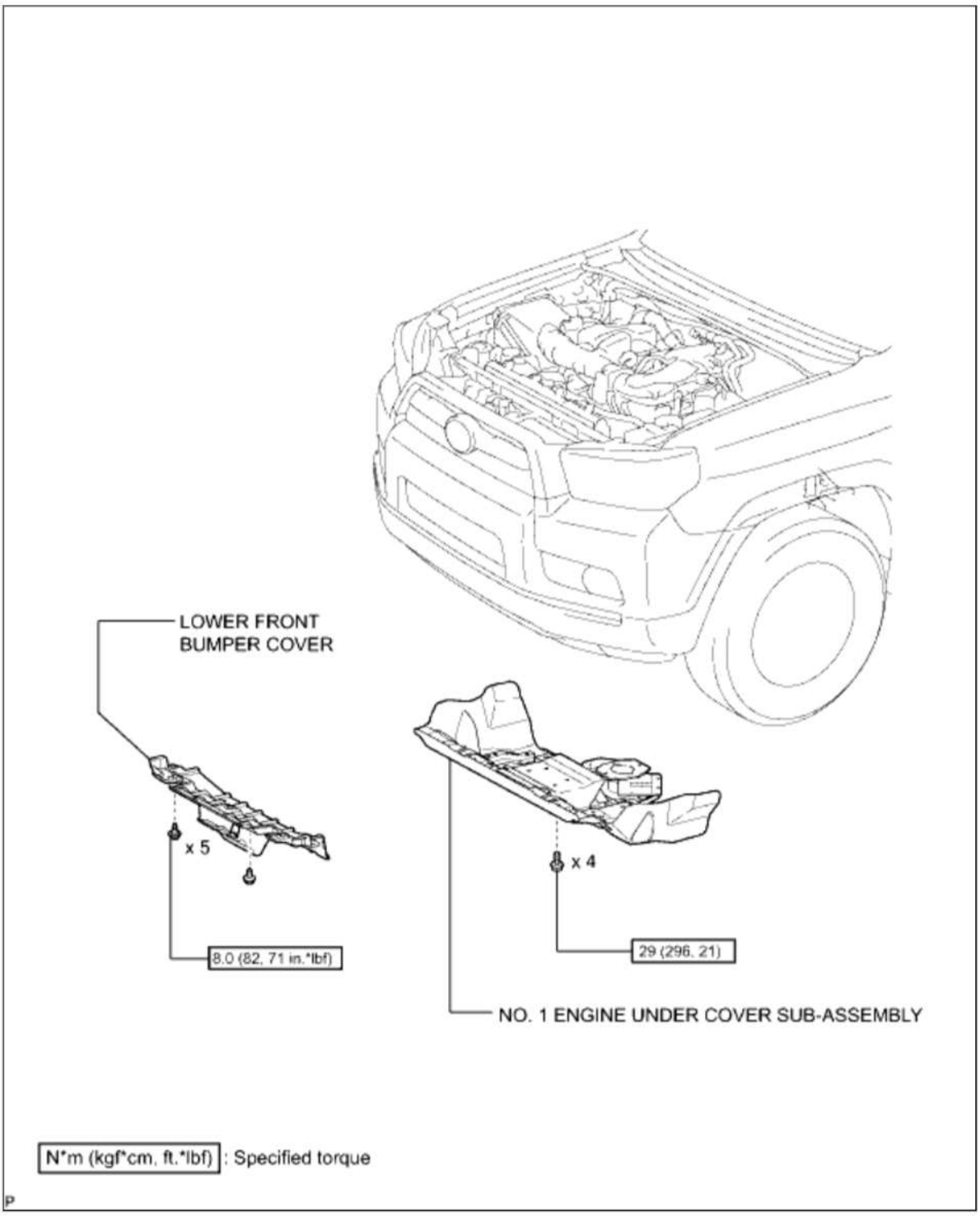
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001W4N00PX
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/o KDSS): COMPONENTS (2010 4Runner)		

COMPONENTS

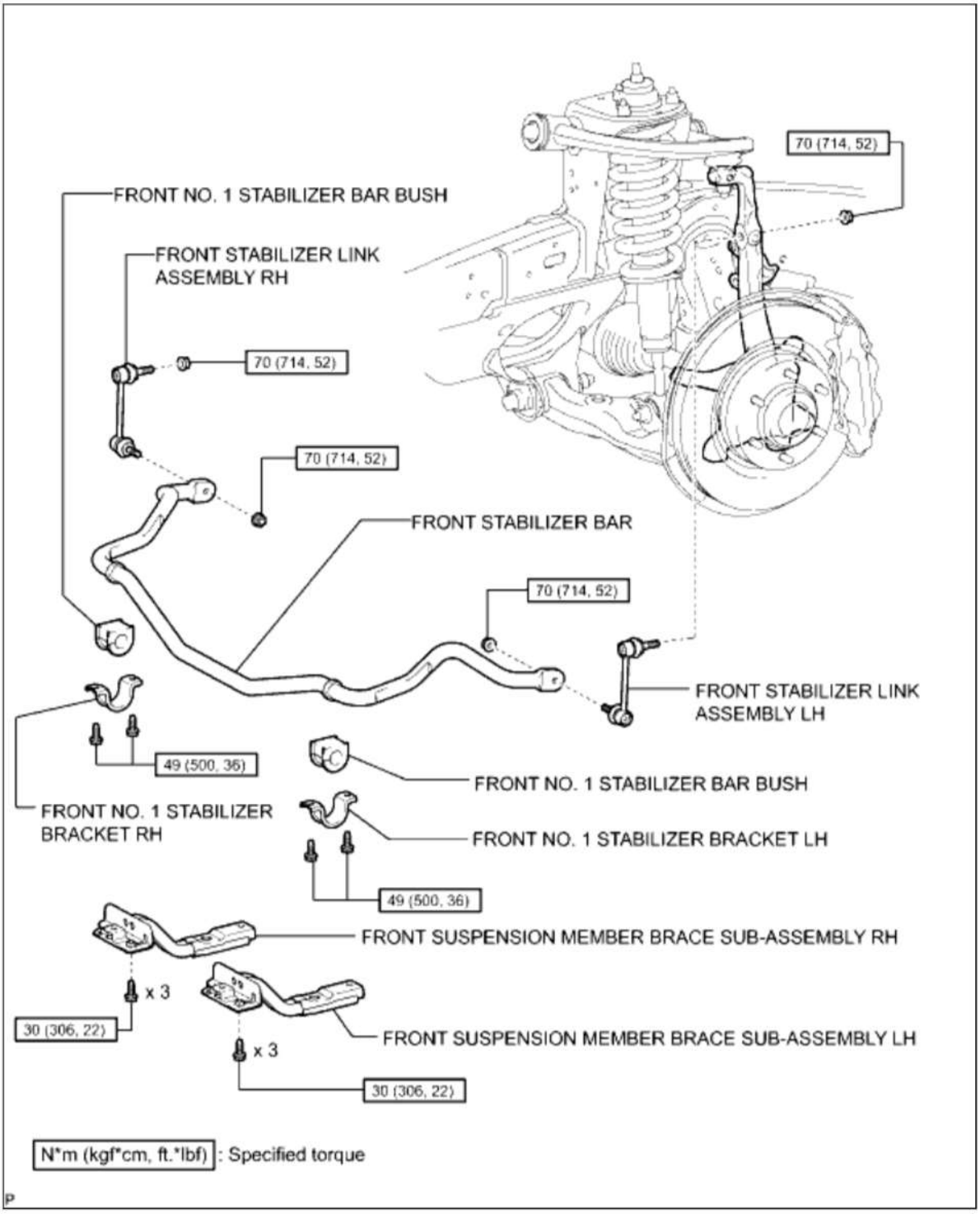
ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4C00PX
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/o KDSS): REMOVAL (2010 4Runner)		

REMOVAL

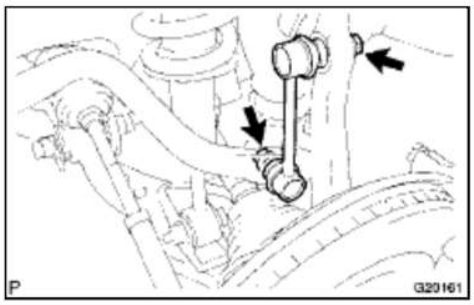
1. REMOVE FRONT WHEEL

2. REMOVE LOWER FRONT BUMPER COVER INFO

3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

4. REMOVE FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY INFO

5. REMOVE FRONT STABILIZER LINK ASSEMBLY LH



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

HINT:

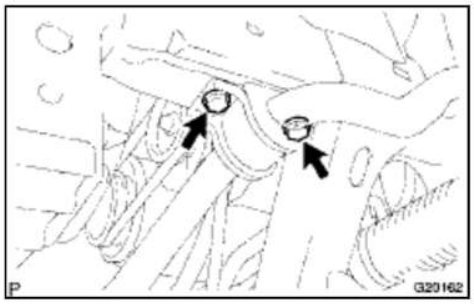
If the ball joint turns together with the nut, use a 6 mm hexagon wrench to hold the stud.

6. REMOVE FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

7. REMOVE FRONT NO. 1 STABILIZER BRACKET LH



(a) Remove the 2 bolts and front No. 1 stabilizer bracket LH.

8. REMOVE FRONT NO. 1 STABILIZER BRACKET RH

HINT:

Use the same procedure described for the LH side.

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9. REMOVE FRONT NO. 1 STABILIZER BAR BUSH

(a) Remove the 2 front No. 1 stabilizer bar bushes.

10. REMOVE FRONT STABILIZER BAR

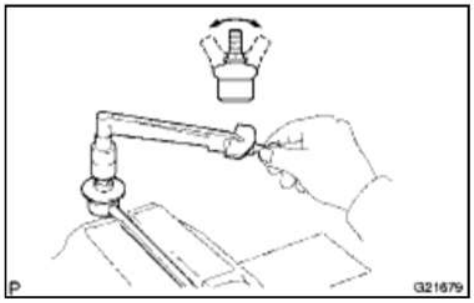


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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001VPS00PX
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/o KDSS): INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT FRONT STABILIZER LINK ASSEMBLY LH



(a) As shown in the illustration, flip the ball joint stud back and forth 5 times.

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

Standard turning torque:

0.05 to 1.96 N*m (0.51 to 20 kgf*cm, 0.44 to 17.3 in.*lbf) or less

(c) Check for cracks and grease leaks on the ball joint dust cover.

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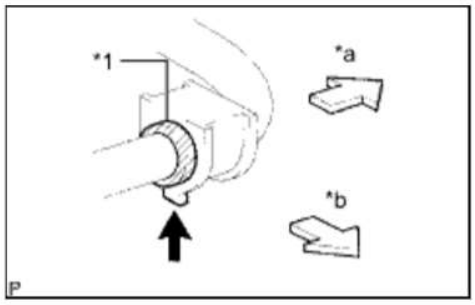
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V4B00PX
Title: FRONT SUSPENSION: FRONT STABILIZER BAR (w/o KDSS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL FRONT STABILIZER BAR

2. INSTALL FRONT NO. 1 STABILIZER BAR BUSH

(a) Install the 2 front No. 1 stabilizer bar bushes.



HINT:

- Install the bush to the inner side of the bushing stopper on the stabilizer bar.
- Install the No. 1 stabilizer bush with the protrusion facing inward.

Text in Illustration

*1	Bushing Stopper
*a	Vehicle Outer Side
*b	Vehicle Front Side
➡	Protrusion

3. INSTALL FRONT NO. 1 STABILIZER BRACKET LH

(a) Install the front No. 1 stabilizer bracket LH with the 2 bolts.

Torque: 49 N·m (500 kgf·cm, 36ft·lbf)

4. INSTALL FRONT NO. 1 STABILIZER BRACKET RH

HINT:

Use the same procedure described for the LH side.

5. INSTALL FRONT STABILIZER LINK ASSEMBLY LH

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

Torque: 70 N·m (714 kgf·cm, 52ft·lbf)

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HINT:

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

6. INSTALL FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

7. INSTALL FRONT SUSPENSION MEMBER BRACE SUB-ASSEMBLY INFO

8. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

9. INSTALL LOWER FRONT BUMPER COVER INFO

10. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V3V00PX
Title: FRONT SUSPENSION: FRONT SUSPENSION SYSTEM: PROBLEM SYMPTOMS TABLE (2010 4Runner)		

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.

Front Suspension System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Bottoming	Vehicle (overloaded)	-
	Front coil spring (weak)	INFO
	Front shock absorber (worn)	INFO
Sways/pitches	Tire (worn or improperly inflated)	INFO
	Stabilizer bar (bent or broken)	INFO
	Front shock absorber (worn)	INFO
Wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Front shock absorber (worn)	INFO
	Wheel alignment (incorrect)	INFO
	Front upper arm ball joint (worn)	INFO
	Front lower arm ball joint (worn)	INFO
	Front hub bearing (loose or worn) for 2WD	INFO
	Front hub bearing (loose or worn) for 4WD	INFO
	Steering linkage (loose or worn)	INFO
	Steering gear (out of adjustment or broken)	-
Abnormal tire wear	Tire (improperly inflated)	INFO
	Wheel alignment (incorrect)	INFO
	Front shock absorber (worn)	INFO
	Suspension parts (worn)	-

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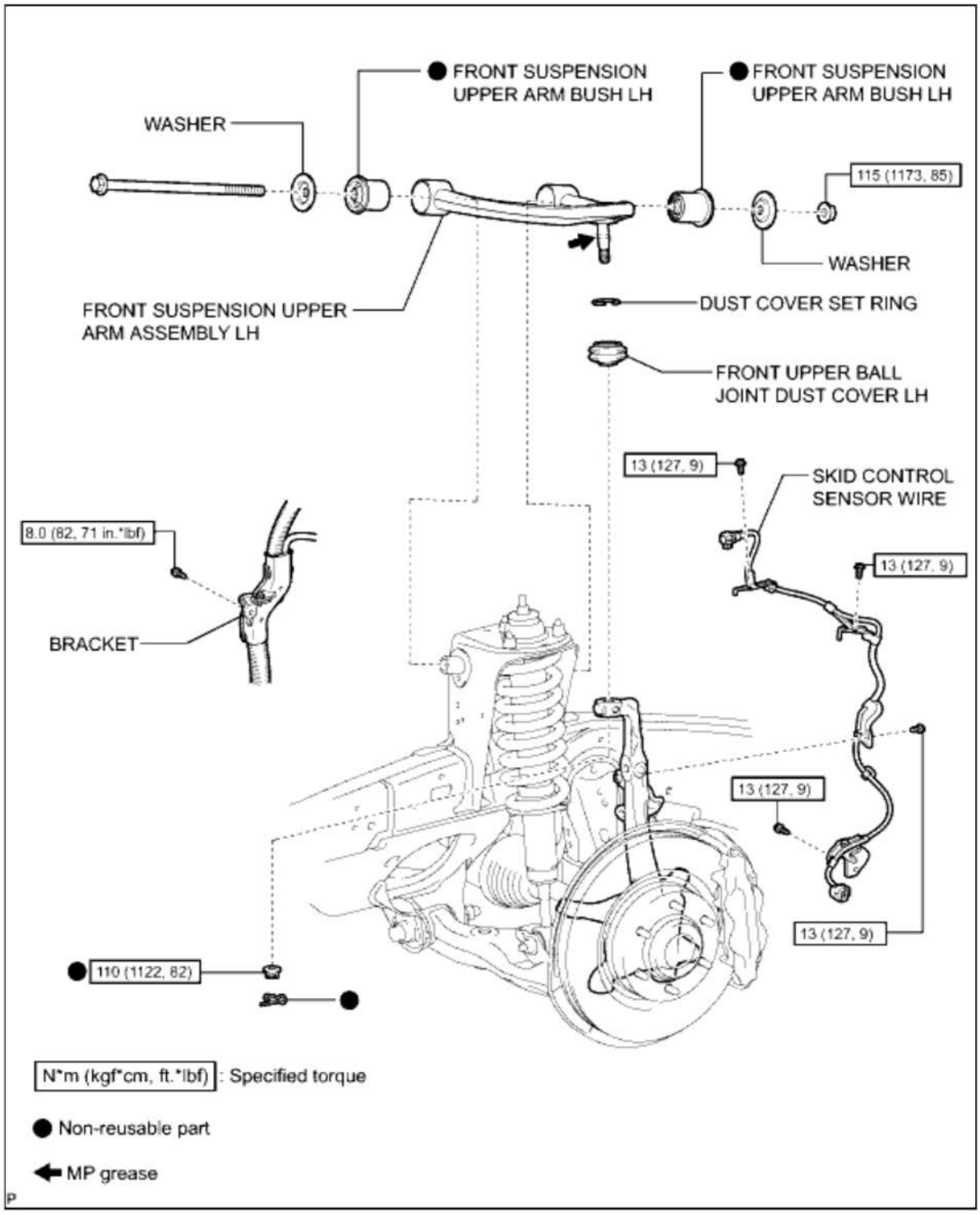


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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002C8J00RX
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455E001X
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT FRONT SUSPENSION UPPER ARM BALL JOINT RATTLE

(a) Jack up the vehicle.

(b) Move the front suspension upper arm up and down by hand and check for rattle.

OK:

No rattle.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002C8K00RX
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: REMOVAL (2010 4Runner)		

REMOVAL

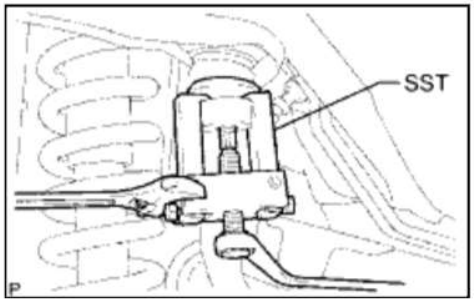
HINT:

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

1. REMOVE FRONT WHEEL

2. REMOVE SKID CONTROL SENSOR WIRE INFO

3. REMOVE FRONT SUSPENSION UPPER ARM ASSEMBLY LH

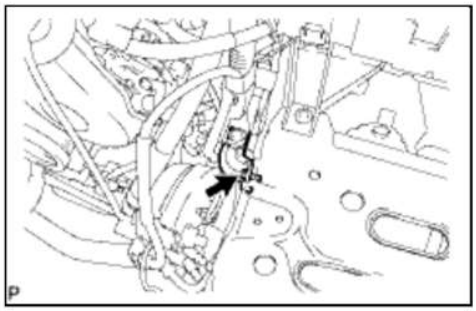


(a) Support the front suspension lower arm LH with a jack.

(b) Remove the clip and nut.

(c) Using SST, disconnect the upper ball joint from the steering knuckle.

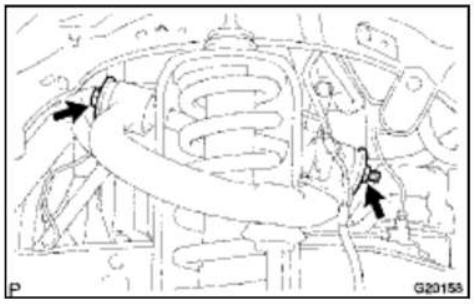
SST: 09628-62011



(d) Remove the bolt and disconnect the bracket.

(e) Remove the bolt, 2 washers and nut.

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(f) Remove the front suspension upper arm assembly.

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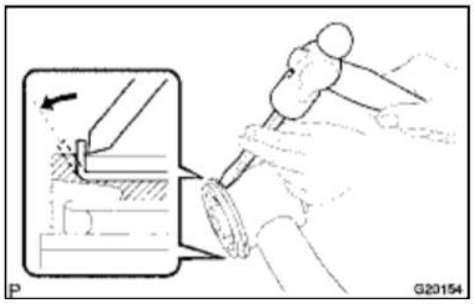
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455C001X
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

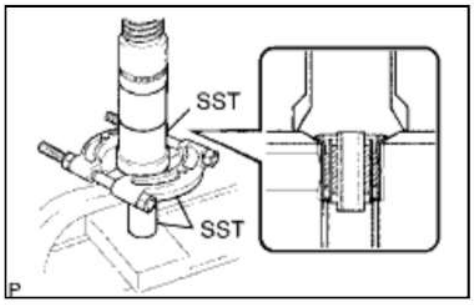
1. REMOVE FRONT SUSPENSION UPPER ARM BUSH LH

HINT:

Use the same procedure for the front and rear sides.



(a) Using a hammer and chisel, strike and bend the entire flange of the upper arm bush as shown in the illustration.



(b) Using SST and a press, press out the bush.

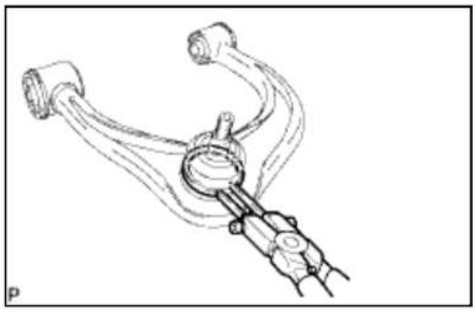
SST: 09613-26010

SST: 09710-22021

09710-01031

SST: 09950-00020

2. REMOVE FRONT UPPER BALL JOINT DUST COVER LH



(a) Using a snap ring expander, remove the dust cover set ring and dust cover from the upper arm.

NOTICE:

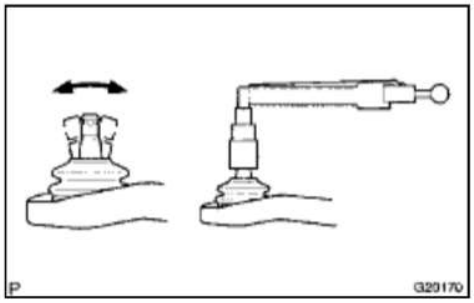
- Do not damage the ball joint dust cover.
- If the ball joint dust cover is damaged, replace it.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002C8O00AX
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT FRONT SUSPENSION UPPER ARM ASSEMBLY LH



(a) As shown in the illustration, flip the ball joint stud back and forth 5 times before installing the nut.

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

Standard turning torque:

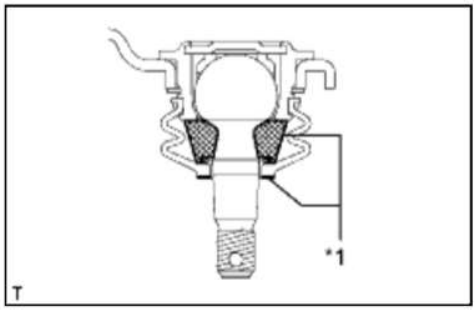
0.98 to 4.41 N*m (1.0 to 45 kgf*cm, 9 to 39 in.*lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000455D001X
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: REASSEMBLY (2010 4Runner)		

REASSEMBLY

1. INSTALL FRONT UPPER BALL JOINT DUST COVER LH



(a) Pack the upper arm ball joint with MP grease.

Grease capacity:
8.0 g (0.282 oz.)

Text in Illustration

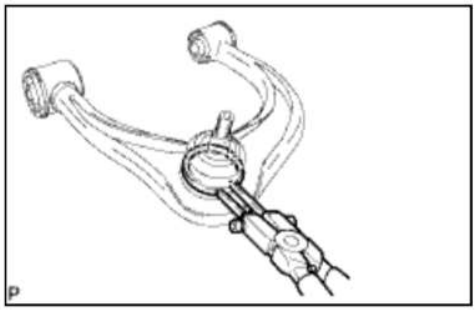
*1	MP Grease

(b) Apply MP grease to the locations shown in the illustration.

NOTICE:

Do not apply MP grease to the tapered or threaded parts of the ball joint.

(c) Install the dust cover to the upper arm.

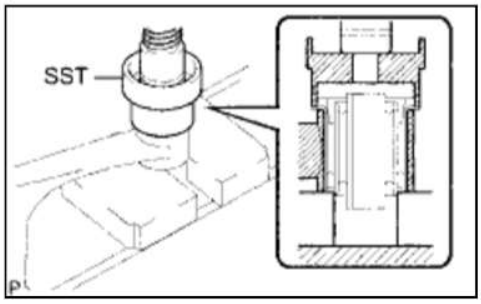


(d) Using a snap ring expander, install the dust cover set ring.

NOTICE:

Make sure the set ring is securely installed in the groove.

2. INSTALL FRONT SUSPENSION UPPER ARM BUSH LH



(a) Using SST and a press, press in a new bush.

SST: 09710-26011

09710-05061

HINT:

Press in the rear side bush using the same procedure as for the front side.

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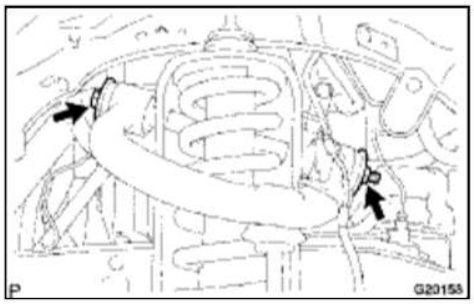
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002C8I00RX
Title: FRONT SUSPENSION: FRONT UPPER SUSPENSION ARM: INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. TEMPORARILY INSTALL FRONT SUSPENSION UPPER ARM ASSEMBLY LH



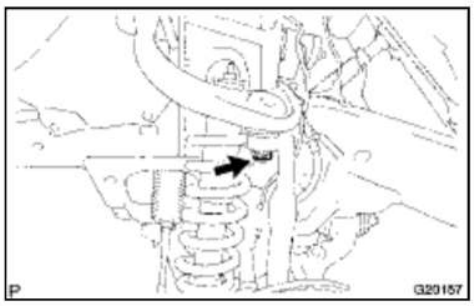
(a) Temporarily install the suspension upper arm and 2 washers with the bolt and nut.

HINT:

After stabilizing the suspension, tighten the nut.

(b) Connect the bracket with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)



(c) Install a new nut and clip.

Torque: 110 N·m (1122 kgf·cm, 81ft·lbf)

2. INSTALL SKID CONTROL SENSOR WIRE INFO

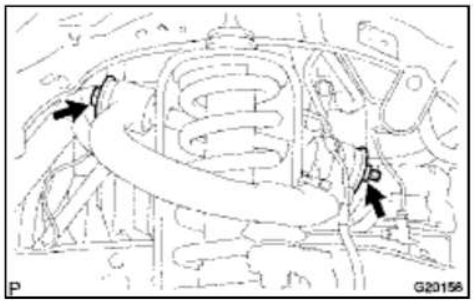
3. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

4. STABILIZE SUSPENSION INFO

5. TIGHTEN FRONT SUSPENSION UPPER ARM ASSEMBLY LH

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(a) Tighten the nut.

Torque: 115 N·m (1173 kgf·cm, 85ft·lbf)

6. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

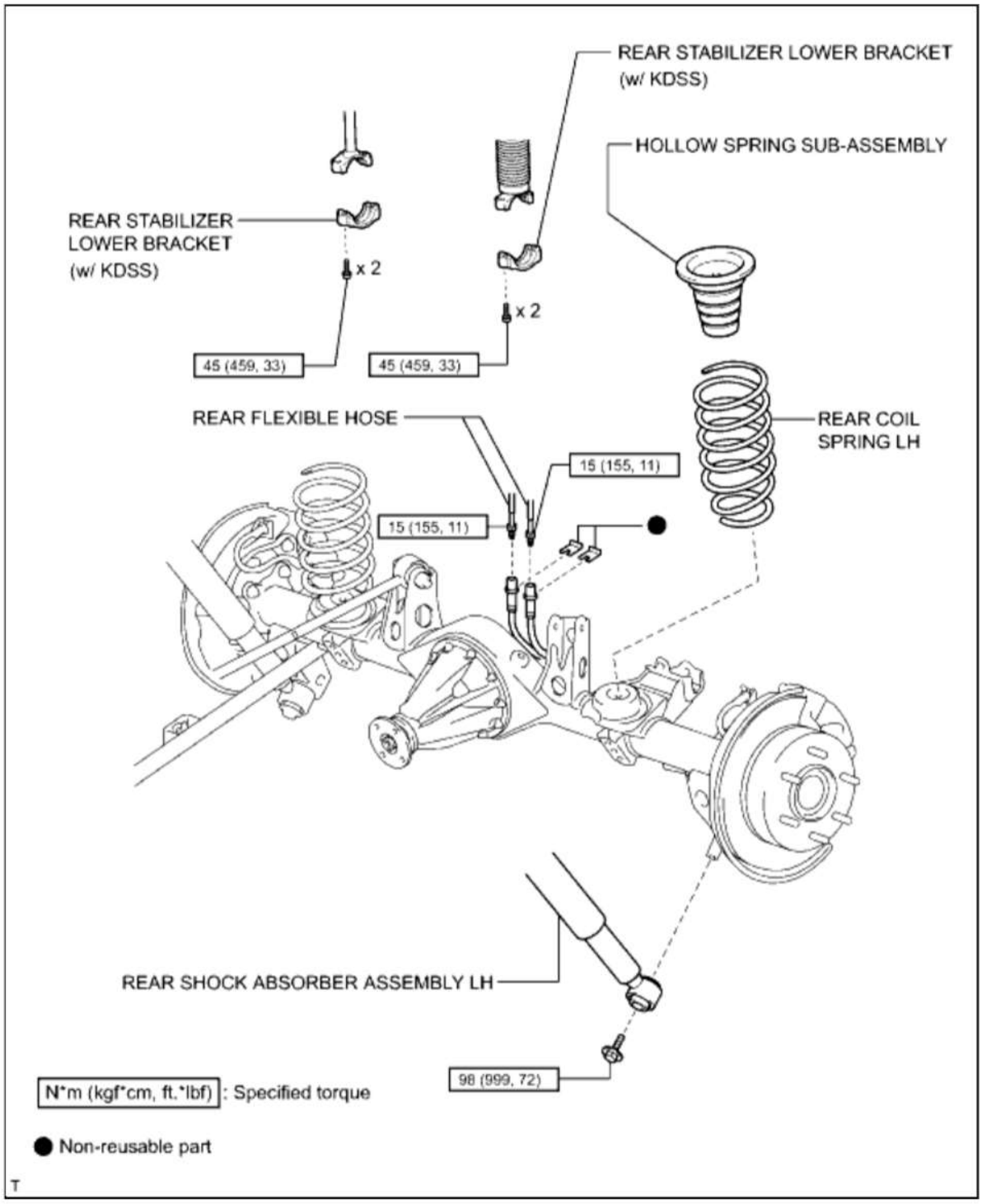
(a) Inspect and adjust the front wheel alignment INFO .

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKE006X
Title: REAR SUSPENSION: REAR COIL SPRING: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKD006X
Title: REAR SUSPENSION: REAR COIL SPRING: INSTALLATION (2010 4Runner)		

INSTALLATION

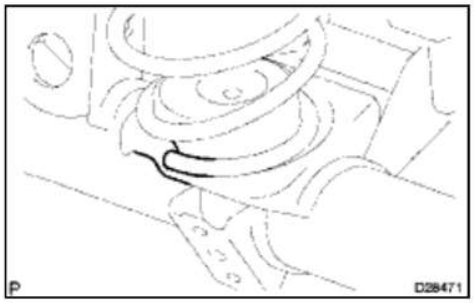
HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. INSTALL HOLLOW SPRING SUB-ASSEMBLY

(a) Install the hollow spring to the frame.

2. INSTALL REAR COIL SPRING LH



(a) Install the rear coil spring to the rear axle housing.

HINT:

Before installing the coil spring, check that the coil spring end is in the correct position. If not, reinstall the coil spring.

3. TEMPORARILY INSTALL REAR SHOCK ABSORBER ASSEMBLY LH

(a) Temporarily install the lower side of the shock absorber with the bolt.

4. INSTALL REAR STABILIZER LOWER BRACKET (w/ KDSS) INFO

5. STABILIZE SUSPENSION INFO

6. TIGHTEN REAR SHOCK ABSORBER ASSEMBLY LH

(a) Tighten the bolt.

Torque: 98 N·m (999 kgf·cm, 72ft·lbf)

7. CONNECT REAR FLEXIBLE HOSE INFO

8. FILL RESERVOIR WITH BRAKE FLUID INFO

9. BLEED BRAKE LINE INFO

10. CHECK FLUID LEVEL IN RESERVOIR INFO

11. CHECK FOR BRAKE FLUID LEAK

12. INSTALL REAR WHEEL

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Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKF006X
Title: REAR SUSPENSION: REAR COIL SPRING: REMOVAL (2010 4Runner)		

REMOVAL

HINT:

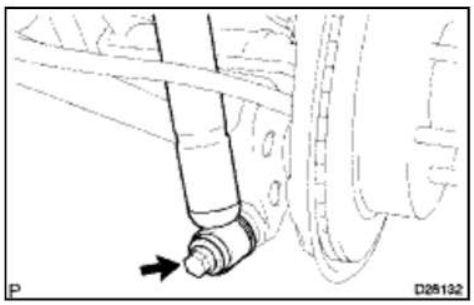
- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

2. REMOVE REAR STABILIZER LOWER BRACKET (w/ KDSS) INFO

3. DISCONNECT REAR SHOCK ABSORBER ASSEMBLY LH

(a) Support the rear axle housing.



(b) Remove the bolt on the lower side of the shock absorber.

(c) Disconnect the shock absorber from the axle housing.

4. DISCONNECT REAR FLEXIBLE HOSE INFO

5. REMOVE REAR COIL SPRING LH

(a) While lowering the axle housing, remove the coil spring.

NOTICE:

Be careful not to snap the brake line and parking brake cable.

6. REMOVE HOLLOW SPRING SUB-ASSEMBLY

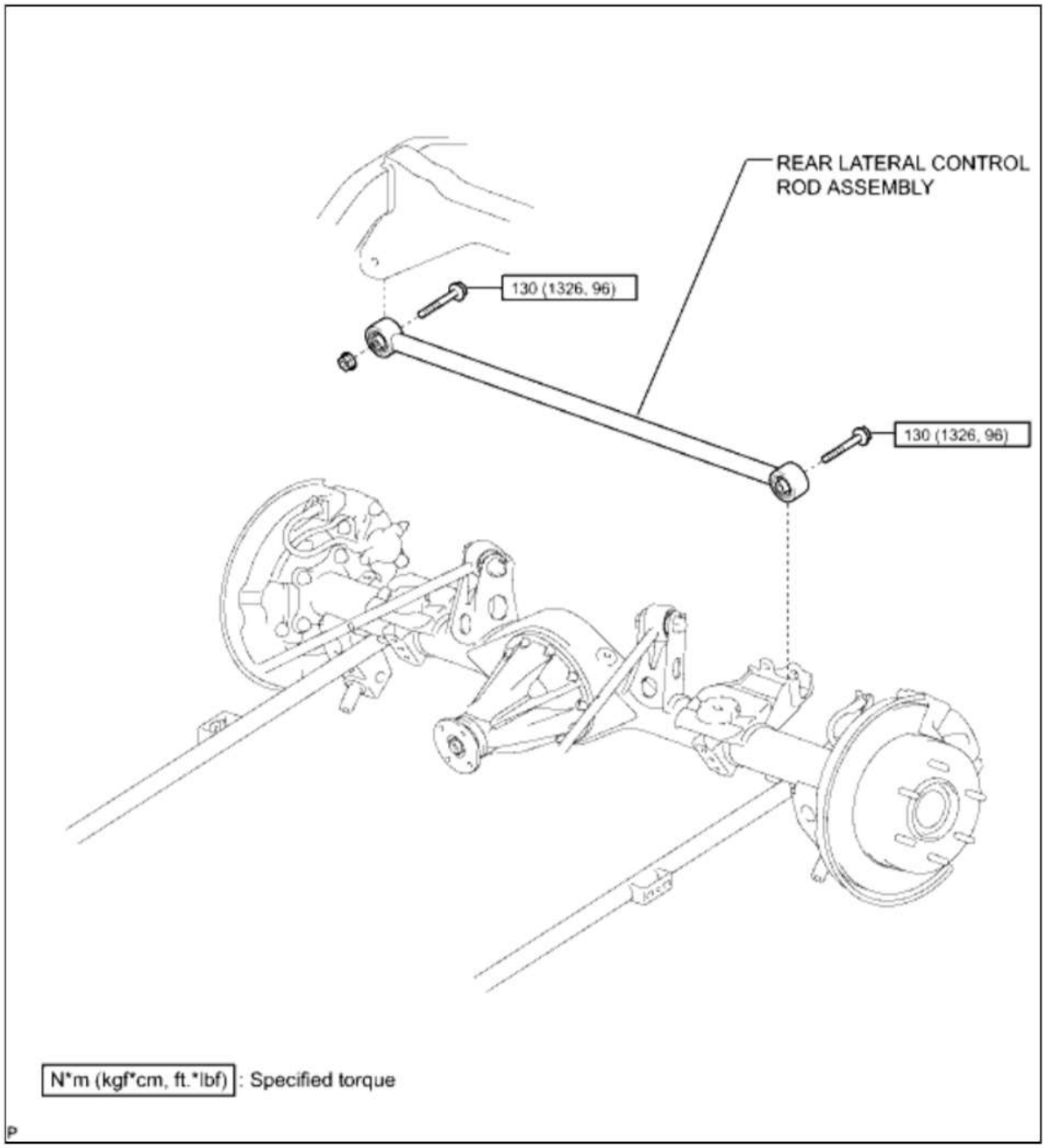
(a) Remove the hollow spring from the frame.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKU00AX
Title: REAR SUSPENSION: REAR LATERAL CONTROL ROD: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

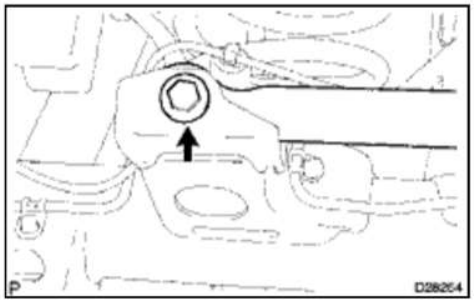


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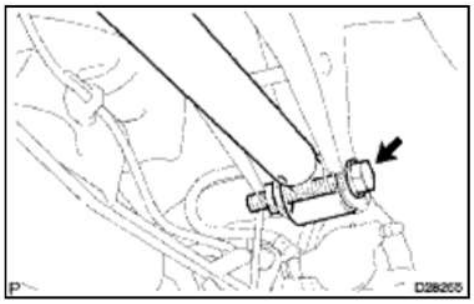
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKV00AX
Title: REAR SUSPENSION: REAR LATERAL CONTROL ROD: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE REAR LATERAL CONTROL ROD ASSEMBLY



(a) Remove the bolt.



(b) Remove the bolt, nut and lateral control rod assembly.

HINT:

Turn the bolt while holding the nut.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKT00AX
Title: REAR SUSPENSION: REAR LATERAL CONTROL ROD: INSTALLATION (2010 4Runner)		

INSTALLATION

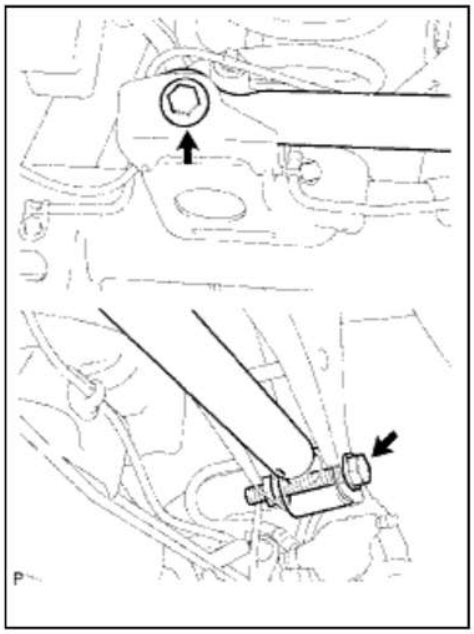
1. TEMPORARILY INSTALL REAR LATERAL CONTROL ROD ASSEMBLY

(a) Temporarily install the lateral control rod assembly with the bolt and nut.

(b) Temporarily tighten the bolt.

2. STABILIZE SUSPENSION INFO

3. TIGHTEN REAR LATERAL CONTROL ROD ASSEMBLY



(a) Tighten the 2 bolts.

Torque: 130 N·m (1326 kgf·cm, 96ft·lbf)

HINT:

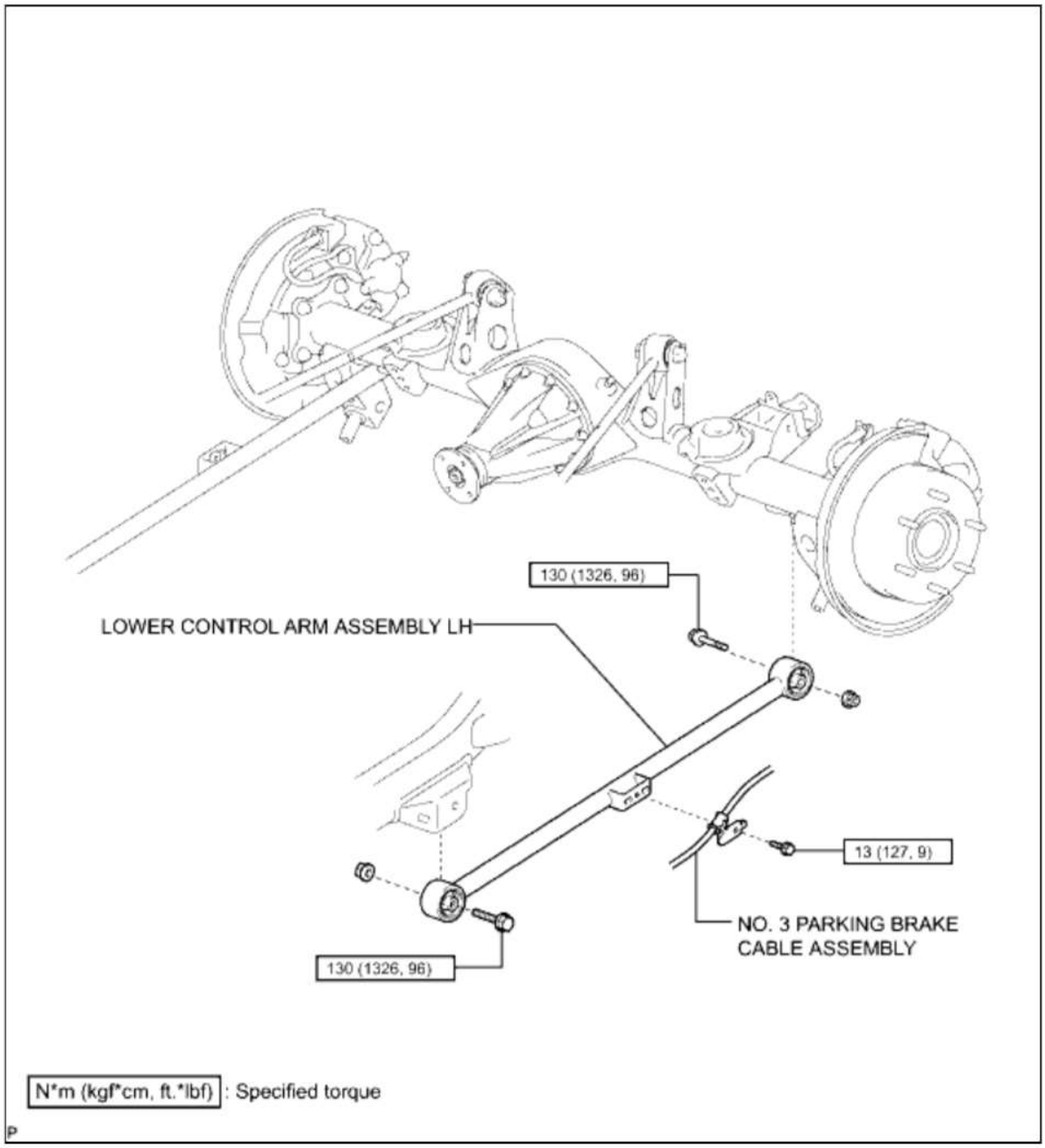
Turn the bolt while holding the nut.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKR00AX
Title: REAR SUSPENSION: REAR LOWER ARM: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKQ00AX
Title: REAR SUSPENSION: REAR LOWER ARM: INSTALLATION (2010 4Runner)		

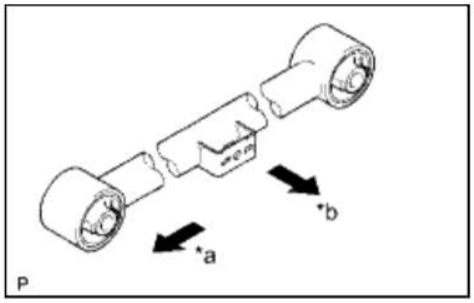
INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. TEMPORARILY INSTALL LOWER CONTROL ARM ASSEMBLY LH

(a) Temporarily install the lower control arm assembly with the bolt and nut.



Text in Illustration

*a	Front
*b	Outer Side

HINT:

Install the lower control arm assembly as shown in the illustration.

(b) Temporarily install the lower control arm assembly to the rear axle housing with the nut and bolt.

2. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY

(a) Connect the No. 3 parking brake cable assembly with the bolt.

Torque: 13 N·m (127 kgf·cm, 9ft·lbf)

3. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

4. STABILIZE SUSPENSION INFO

5. TIGHTEN LOWER CONTROL ARM ASSEMBLY LH

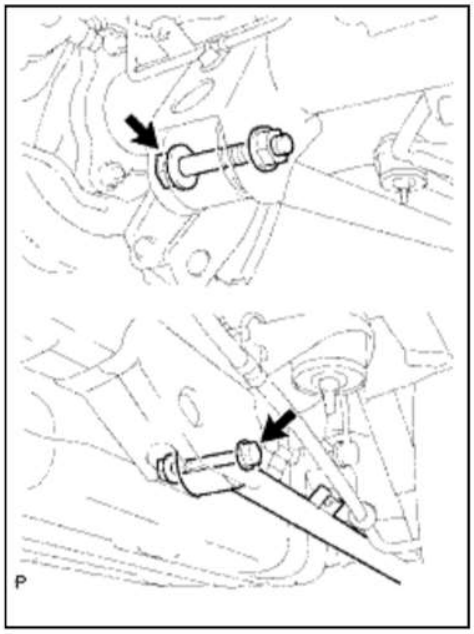
(a) Tighten the 2 bolts.

Torque: 130 N·m (1326 kgf·cm, 96ft·lbf)

HINT:

While holding the nut, turn the bolt.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKS00AX
Title: REAR SUSPENSION: REAR LOWER ARM: REMOVAL (2010 4Runner)		

REMOVAL

HINT:

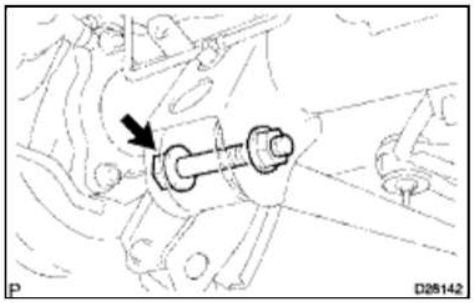
- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

2. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY

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

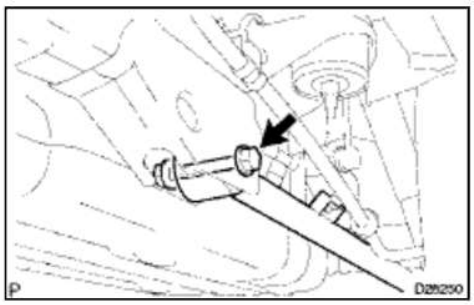
3. REMOVE LOWER CONTROL ARM ASSEMBLY LH



(a) Remove the nut and bolt from the rear axle housing.

HINT:

Turn the bolt while holding the nut.



(b) Remove the nut, bolt and lower control arm assembly.

HINT:

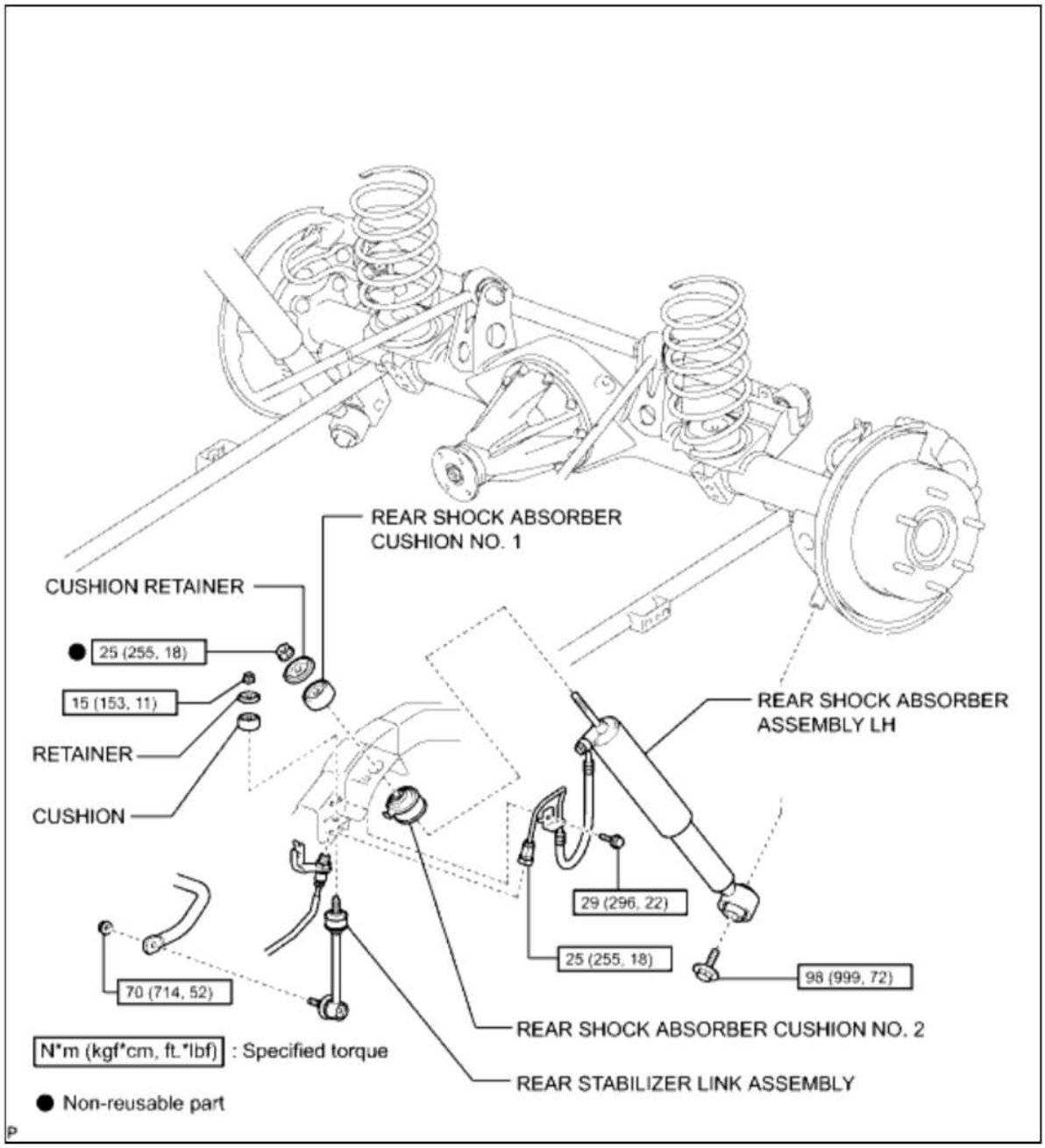
Turn the bolt while holding the nut.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKB005X
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/ REAS): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKC005X
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/ REAS): REMOVAL (2010 4Runner)		

REMOVAL

NOTICE:

Be sure to read the precaution before performing this procedure INFO .

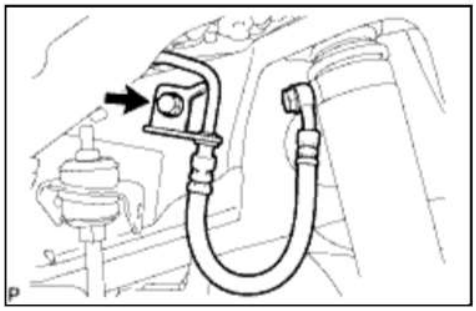
HINT:

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

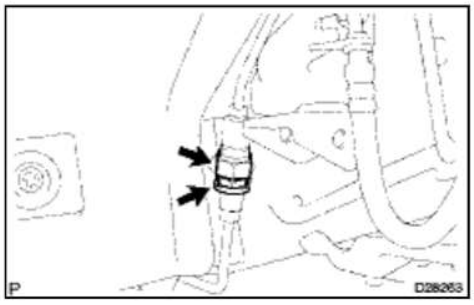
1. REMOVE REAR WHEEL

2. REMOVE REAR STABILIZER LINK ASSEMBLY INFO

3. REMOVE REAR SHOCK ABSORBER ASSEMBLY LH



(a) Remove the bolt and disconnect the bracket.



(b) Using a wrench to hold the bracket, remove the joint.

NOTICE:

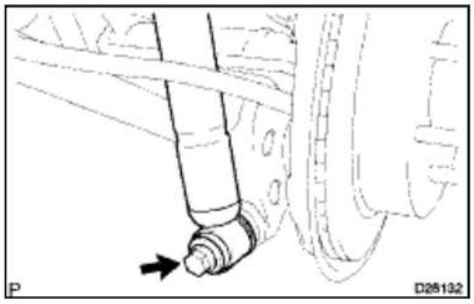
Check that all shock absorbers are fully extended to the normal suspension rebound point.

(c) Remove the bolt and disconnect the rear shock absorber assembly LH from the rear axle housing.

NOTICE:

Make sure that the rear axle housing is supported so that the rear shock absorber assembly LH is not extended beyond the normal suspension rebound point.

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(d) Remove the nut, cushion retainer, cushion No. 1 and rear shock absorber assembly LH.

NOTICE:

- Remove the rear shock absorber assembly LH with the shock absorber rod fully extended.
- Be sure to hold the body part of the rear shock absorber assembly LH when carrying it.

(e) Remove the cushion No. 2 from the rear shock absorber assembly LH.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKA005X
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/ REAS): INSTALLATION (2010 4Runner)		

INSTALLATION

NOTICE:

Be sure to read the precaution before performing this procedure INFO .

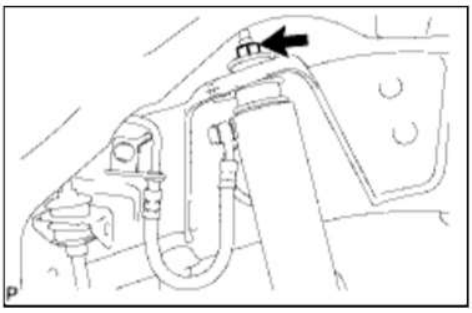
HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. INSTALL REAR SHOCK ABSORBER ASSEMBLY LH

(a) Install the cushion No. 2 to the rear shock absorber assembly LH.

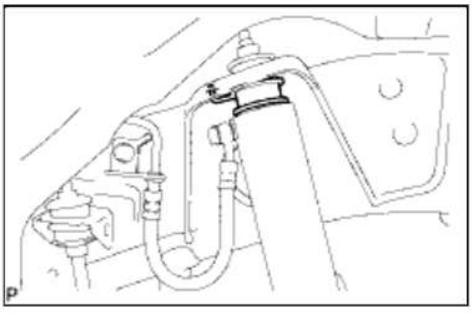
(b) Install the cushion retainer, cushion No. 1 and rear shock absorber assembly LH with the nut.



Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

NOTICE:

Be sure to fit the positioning protrusion of the bracket into a hole on the frame.



(c) Install the rear shock absorber assembly LH with the bolt.

(d) Install the bracket with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

(e) Using a wrench to hold the bracket, install the joint.

HINT:

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Tighten the joint so that the gap is 1 mm (0.0394 in.).

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

2. INSTALL REAR STABILIZER LINK ASSEMBLY

3. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

4. STABILIZE SUSPENSION

(a) Lower the vehicle.

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

5. TIGHTEN REAR SHOCK ABSORBER ASSEMBLY LH

(a) Tighten the bolt.

Torque: 98 N·m (999 kgf·cm, 72ft·lbf)

6. INSPECT FOR FLUID LEAK

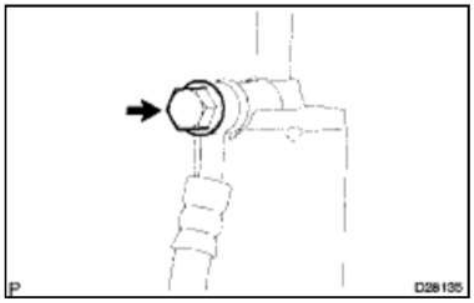
(a) Inspect for fluid leaks .

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Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK9005X
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/ REAS): DISPOSAL (2010 4Runner)		

DISPOSAL

1. DISPOSE OF REAR SHOCK ABSORBER ASSEMBLY LH



(a) Loosen the bolt.

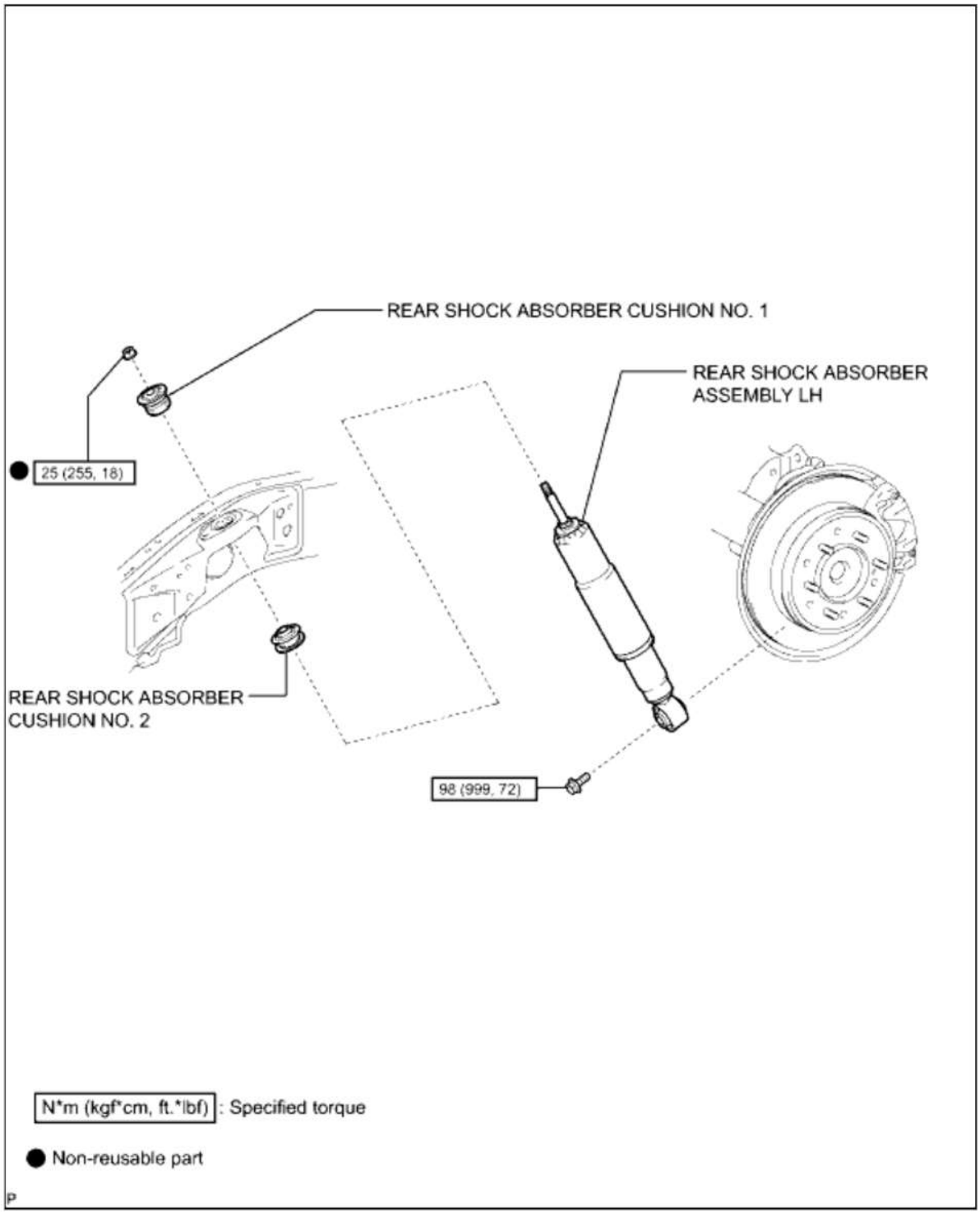
(b) Drain the absorber oil.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK400FX
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/o REAS): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK500FX
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/o REAS): REMOVAL (2010 4Runner)		

REMOVAL

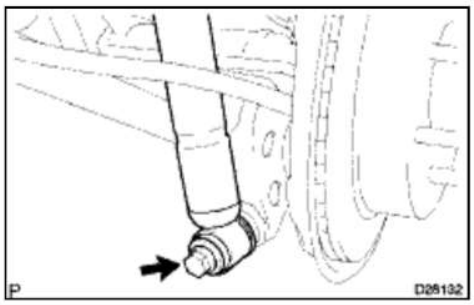
HINT:

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

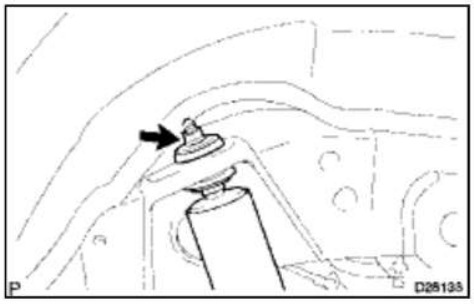
1. REMOVE REAR WHEEL

2. REMOVE REAR SHOCK ABSORBER ASSEMBLY LH

(a) Support the rear axle housing.



(b) Remove the bolt and disconnect the rear shock absorber assembly LH from the rear axle housing.



(c) Remove the nut, cushion No. 1 and rear shock absorber assembly LH.

(d) Remove the cushion No. 2 from the shock absorber assembly rear LH.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK300FX
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/o REAS): INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT REAR SHOCK ABSORBER ASSEMBLY LH

(a) Compress and extend the 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 shock absorber, refer to Disposal INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK200FX
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/o REAS): INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. TEMPORARILY INSTALL REAR SHOCK ABSORBER ASSEMBLY LH

(a) Install the cushion No. 2 to the rear shock absorber assembly LH.

(b) Temporarily install the cushion No. 1 and rear shock absorber assembly LH with a new nut.

(c) Temporarily install the rear shock absorber assembly LH with the bolt.

(d) Tighten the nut.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

2. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

3. STABILIZE SUSPENSION

(a) Lower the vehicle.

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

4. TIGHTEN REAR SHOCK ABSORBER ASSEMBLY LH

(a) Tighten the bolt.

Torque: 98 N·m (999 kgf·cm, 72ft·lbf)

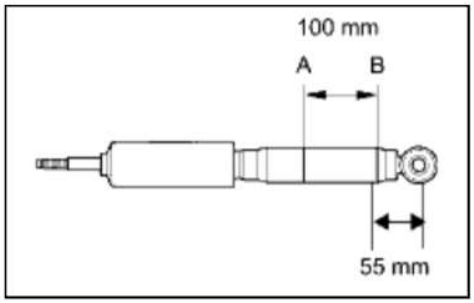
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Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CK600FX
Title: REAR SUSPENSION: REAR SHOCK ABSORBER (w/o REAS): DISPOSAL (2010 4Runner)		

DISPOSAL

1. DISPOSE OF REAR SHOCK ABSORBER ASSEMBLY LH

(a) Fully extend the rear shock absorber rod.



(b) Using a drill, make a hole in the cylinder between A and B in the illustration to discharge the gas inside.

CAUTION:

Be careful when drilling because shards of metal may fly about. Always use the proper safety equipment.

NOTICE:

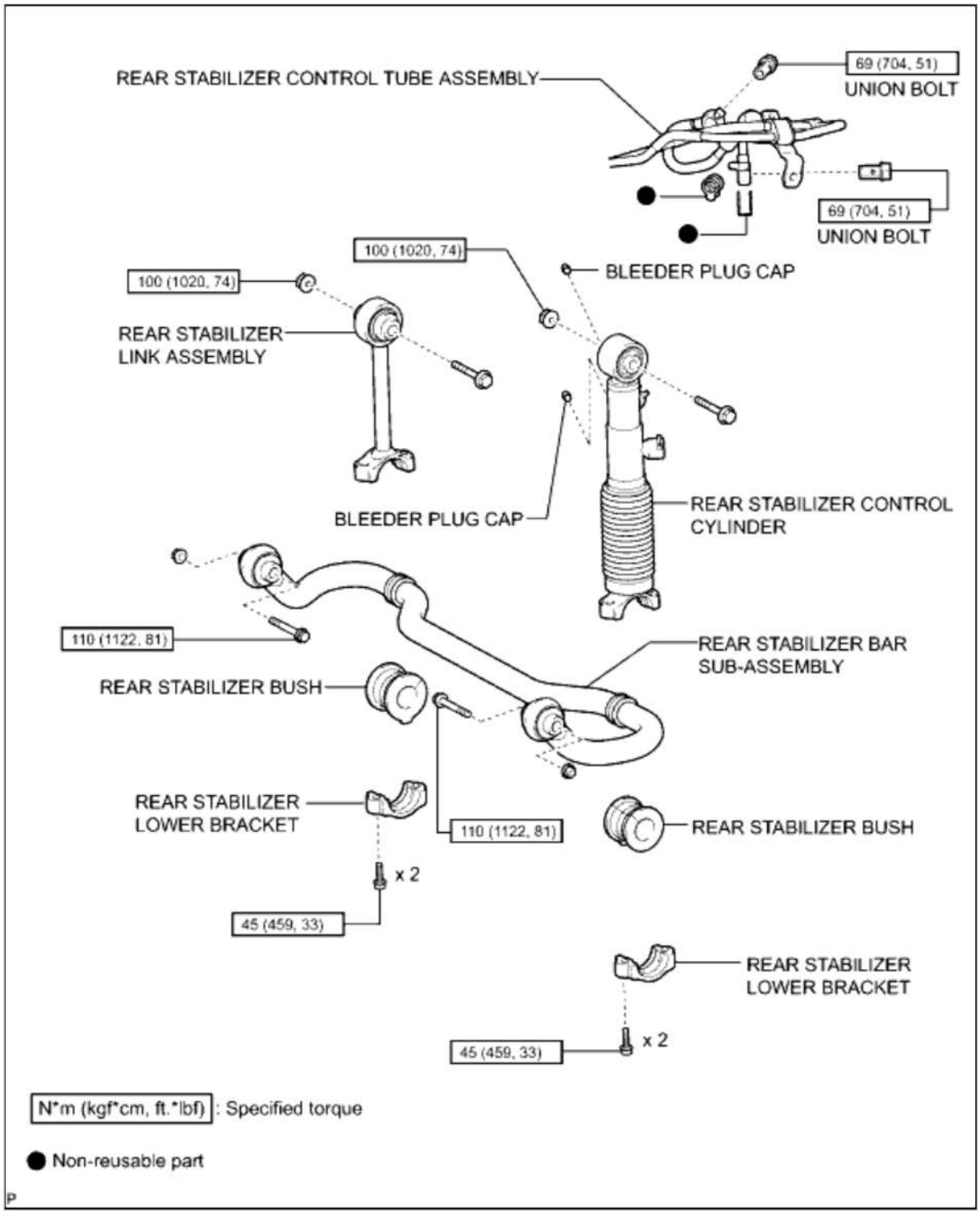
The gas is colorless, odorless and harmless.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJW006X
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/ KDSS): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJV006X
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/ KDSS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL REAR STABILIZER LINK ASSEMBLY

(a) Install the rear stabilizer link assembly with the bolt and nut.

Torque: 100 N·m (1020 kgf·cm, 74ft·lbf)

HINT:

Turn the nut while holding the bolt.

2. INSTALL REAR STABILIZER CONTROL CYLINDER

(a) Install the 2 bleeder plug caps to the rear stabilizer control cylinder.

(b) Install the rear stabilizer control cylinder with the bolt and nut.

Torque: 100 N·m (1020 kgf·cm, 74ft·lbf)

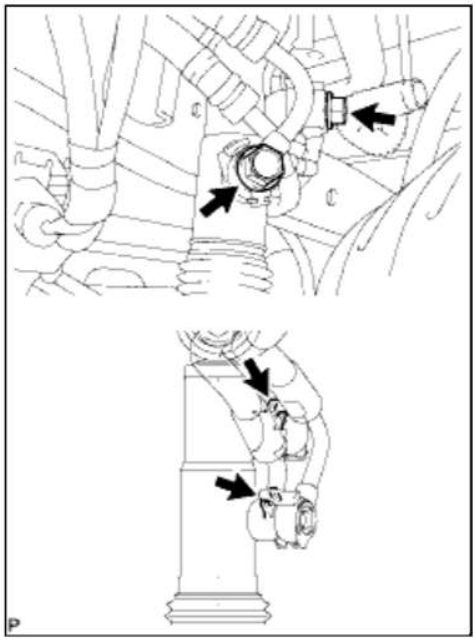
HINT:

Turn the nut while holding the bolt.

NOTICE:

Do not hold the rear stabilizer control cylinder by the cylinder boot.

3. CONNECT REAR STABILIZER CONTROL TUBE ASSEMBLY



(a) Connect the rear stabilizer control tube to the rear stabilizer control cylinder with the 2 union bolts and 2 new pressure port gaskets.

Torque: 69 N·m (704 kgf·cm, 51ft·lbf)

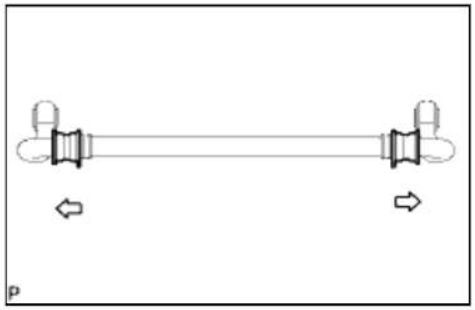
NOTICE:

Insert the stoppers of the rear stabilizer control tube into the rear stabilizer control cylinder.

4. TEMPORARILY INSTALL REAR STABILIZER BAR SUB-ASSEMBLY

(a) Install the 2 rear stabilizer bushes to the rear stabilizer bar.

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HINT:

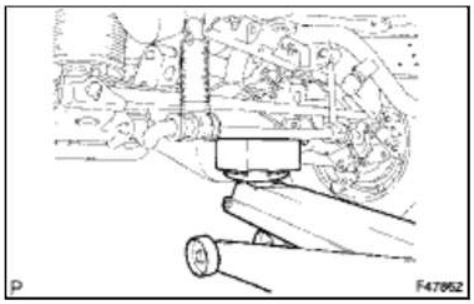
Install the stabilizer bush to the outer side of the stabilizer bush stopper on the stabilizer bar.

Text in Illustration

⇨	Outer Side

(b) Temporarily install the rear stabilizer bar with the 2 bolts and nuts.

5. INSTALL REAR STABILIZER LOWER BRACKET



(a) Support the rear stabilizer bar with a jack.

NOTICE:

Place a wooden block between the jack and rear stabilizer bar to prevent damage.

(b) Install the rear stabilizer bar and 2 rear stabilizer lower brackets with the 4 bolts.

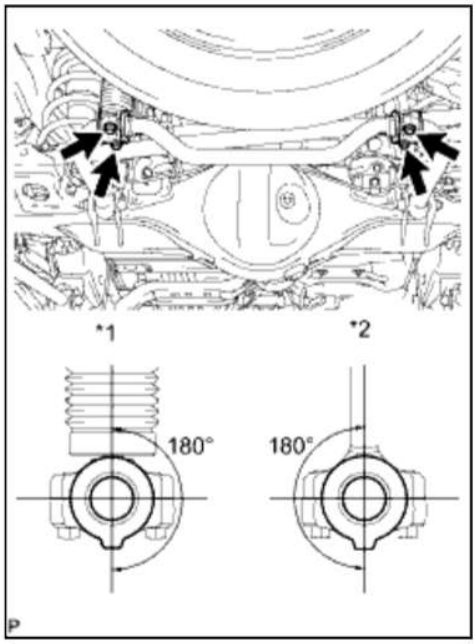
Torque: 45 N·m (459 kgf·cm, 33ft·lbf)

Text in Illustration

*1	Rear Stabilizer Control Cylinder
*2	Rear Stabilizer Link

(1) Check that the protrusions on the rear stabilizer bush are positioned within 180° of the rear stabilizer control

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cylinder and rear stabilizer link.

6. BLEED SUSPENSION FLUID

(a) Bleed the suspension fluid INFO .

7. STABILIZE SUSPENSION INFO

8. TIGHTEN REAR STABILIZER BAR SUB-ASSEMBLY

(a) Tighten the 2 bolts and 2 nuts.

Torque: 110 N·m (1122 kgf·cm, 81ft·lbf)

HINT:

Turn the bolt while holding the nut.

9. INSTALL STABILIZER CONTROL VALVE PROTECTOR INFO

10. INSTALL SIDE STEP ASSEMBLY LH INFO

11. MEASURE VEHICLE HEIGHT

(a) Measure the vehicle height INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJX006X
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/ KDSS): REMOVAL (2010 4Runner)		

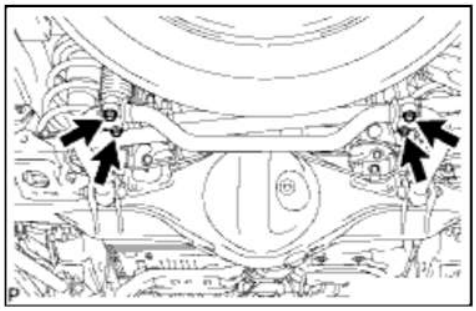
REMOVAL

1. REMOVE SIDE STEP ASSEMBLY LH INFO

2. REMOVE STABILIZER CONTROL VALVE PROTECTOR INFO

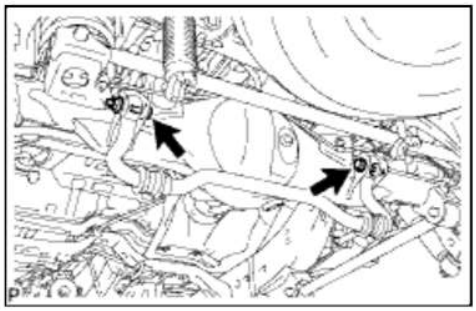
3. DRAIN SUSPENSION FLUID INFO

4. REMOVE REAR STABILIZER LOWER BRACKET



(a) Remove the 4 bolts and 2 rear stabilizer lower brackets.

5. REMOVE REAR STABILIZER BAR SUB-ASSEMBLY



(a) Remove the 2 bolts, 2 nuts and rear stabilizer bar.

NOTICE:

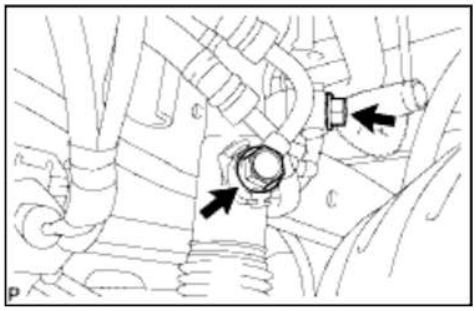
Turn the bolts while holding the nuts.

(b) Remove the 2 stabilizer bushes from the rear stabilizer bar.

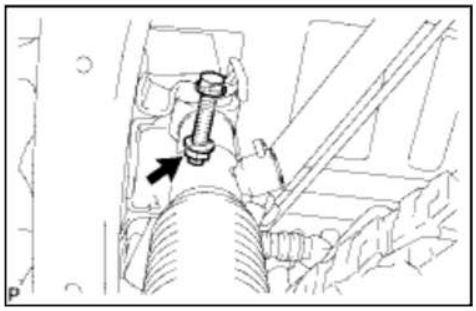
6. DISCONNECT REAR STABILIZER CONTROL TUBE ASSEMBLY

(a) Remove the 2 union bolts and 2 pressure port gaskets and disconnect the rear stabilizer control tube from the rear stabilizer control cylinder.

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7. REMOVE REAR STABILIZER CONTROL CYLINDER



(a) Remove the bolt, nut and rear stabilizer control cylinder.

NOTICE:

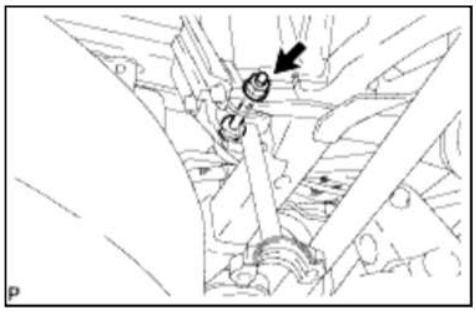
Do not hold the rear stabilizer control cylinder by the cylinder boot.

HINT:

Turn the nut while holding the bolt.

(b) Remove the 2 bleeder plug caps from the rear stabilizer control cylinder.

8. REMOVE REAR STABILIZER LINK ASSEMBLY



(a) Remove the bolt, nut and rear stabilizer link assembly.

HINT:

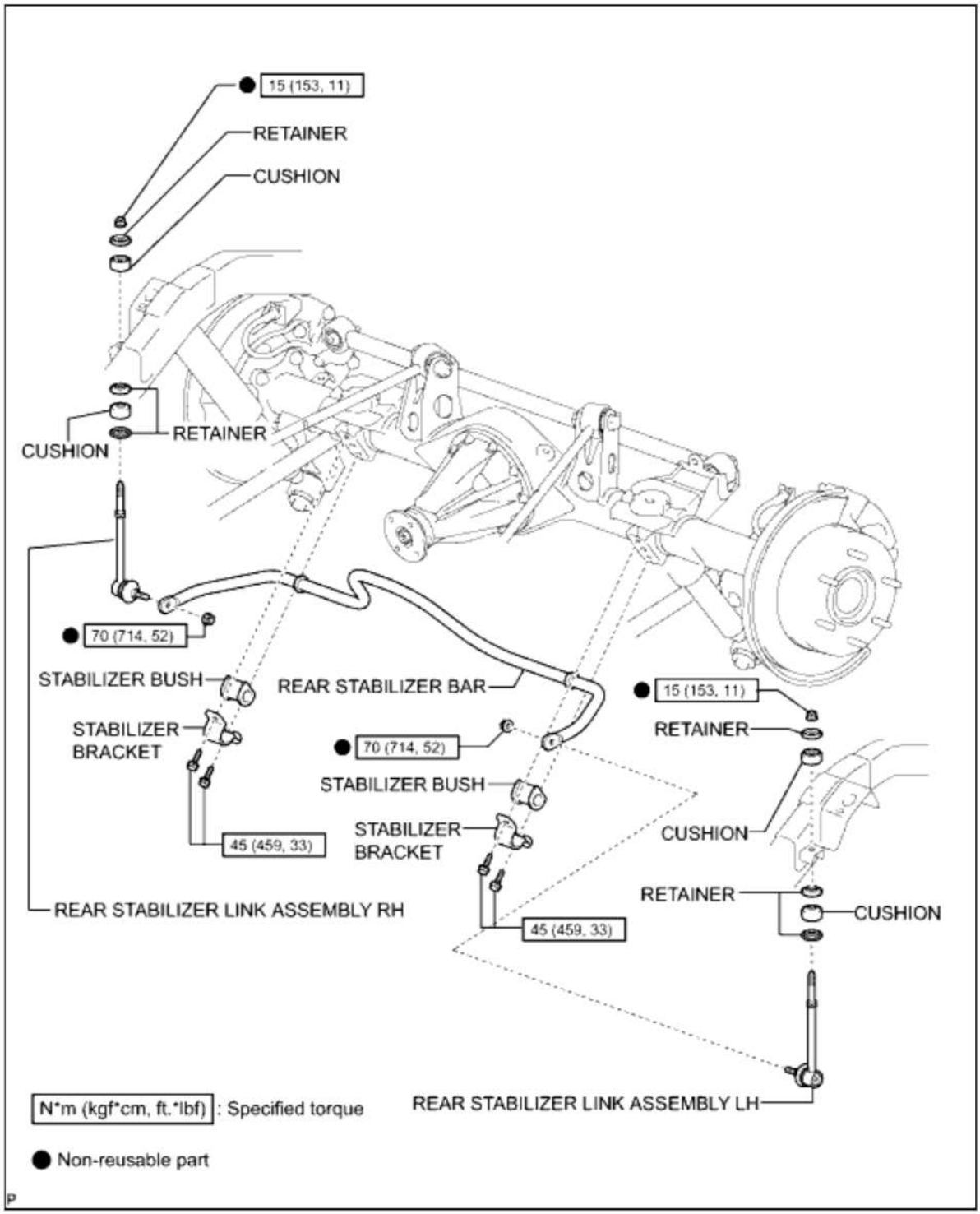
Turn the nut while holding the bolt.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001W4W00DX
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/o KDSS): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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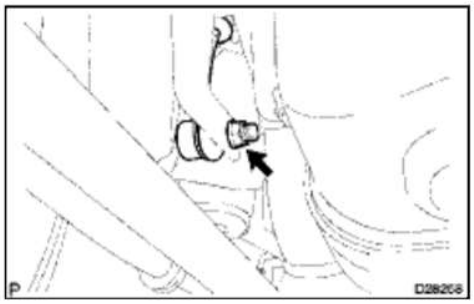
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V5F00DX
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/o KDSS): REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE REAR WHEEL

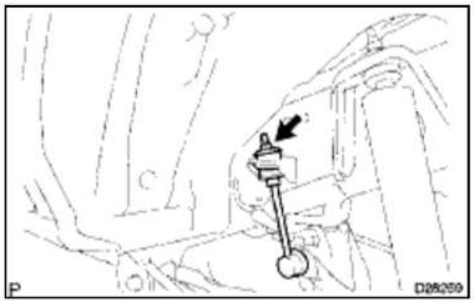
2. REMOVE REAR STABILIZER LINK ASSEMBLY LH



(a) Remove the nut and disconnect the stabilizer bar from the stabilizer link.

HINT:

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



(b) Hold the stabilizer bar link with a wrench and remove the nut, retainer, cushion and link.

(c) Remove the 2 retainers and cushion from the stabilizer link.

3. REMOVE REAR STABILIZER LINK ASSEMBLY RH

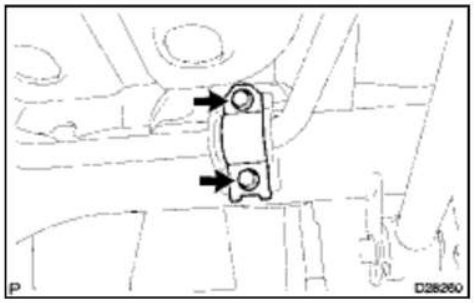
HINT:

Use the same procedure described for the LH side.

4. REMOVE REAR STABILIZER BAR

(a) Remove the 4 bolts, 2 stabilizer brackets and stabilizer bar.

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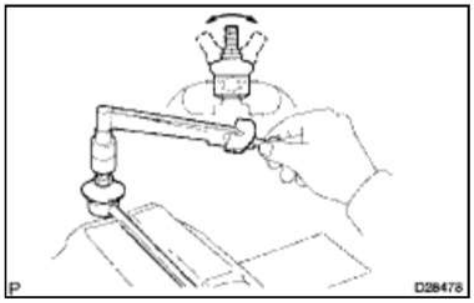
(b) Remove the 2 stabilizer bushes from the stabilizer bar.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001VPV00DX
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/o KDSS): INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT REAR STABILIZER LINK ASSEMBLY



(a) As shown in the illustration, flip the ball joint stud back and forth 5 times.

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

Standard turning torque:

0.05 to 1.96 N*m (0.51 to 20 kgf*cm, 0.44 to 17.3 in.*lbf)

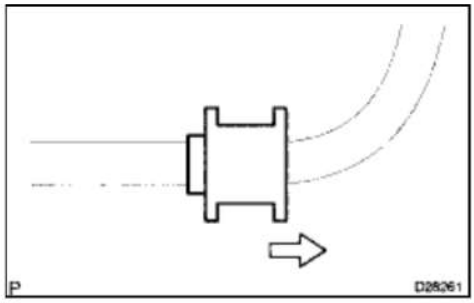
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V5E00DX
Title: REAR SUSPENSION: REAR STABILIZER BAR (w/o KDSS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL REAR STABILIZER BAR

(a) Install the 2 stabilizer bushes to the stabilizer bar.



HINT:

Install the stabilizer bush to the outer side of the stabilizer bush stopper on the stabilizer bar.

Text in Illustration

⇨	Outer Side

(b) Install the stabilizer bar and 2 stabilizer brackets with the 4 bolts.

Torque: 45 N·m (459 kgf·cm, 33ft·lbf)

2. INSTALL REAR STABILIZER LINK ASSEMBLY LH

(a) Install the stabilizer link with a new nut.

Torque: 70 N·m (714 kgf·cm, 52ft·lbf)

HINT:

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

(b) Install the 2 retainers and cushion to the stabilizer link.

(c) Hold the stabilizer bar link with a wrench, and then install the retainer, cushion and link with a new nut.

Torque: 15 N·m (153 kgf·cm, 11ft·lbf)

3. INSTALL REAR STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

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4. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)



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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001V3V00QX
Title: REAR SUSPENSION: REAR SUSPENSION SYSTEM: PROBLEM SYMPTOMS TABLE (2010 4Runner)		

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
Wander/pulls	Tire (worn or improperly inflated)	INFO
	Suspension parts (worn)	-
Bottoming	Vehicle (overloaded)	-
	Rear coil spring (weak)	INFO
	Rear shock absorber (worn) (w/ REAS)	INFO
	Rear shock absorber (worn) (w/o REAS)	INFO
Sways/pitches	Tire (worn or improperly inflated)	INFO
	Stabilizer bar (bent or broken)	INFO
	Rear shock absorber (worn) (w/ REAS)	INFO
	Rear shock absorber (worn) (w/o REAS)	INFO
Wheel shimmy	Tire (worn or improperly inflated)	INFO
	Wheel (out of balance)	INFO
	Rear shock absorber (worn) (w/ REAS)	INFO
	Rear shock absorber (worn) (w/o REAS)	INFO
Abnormal tire wear	Tire (improperly inflated)	INFO
	Rear shock absorber (worn) (w/ REAS)	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
	Rear shock absorber (worn) (w/o REAS)	INFO
	Suspension parts (worn)	-

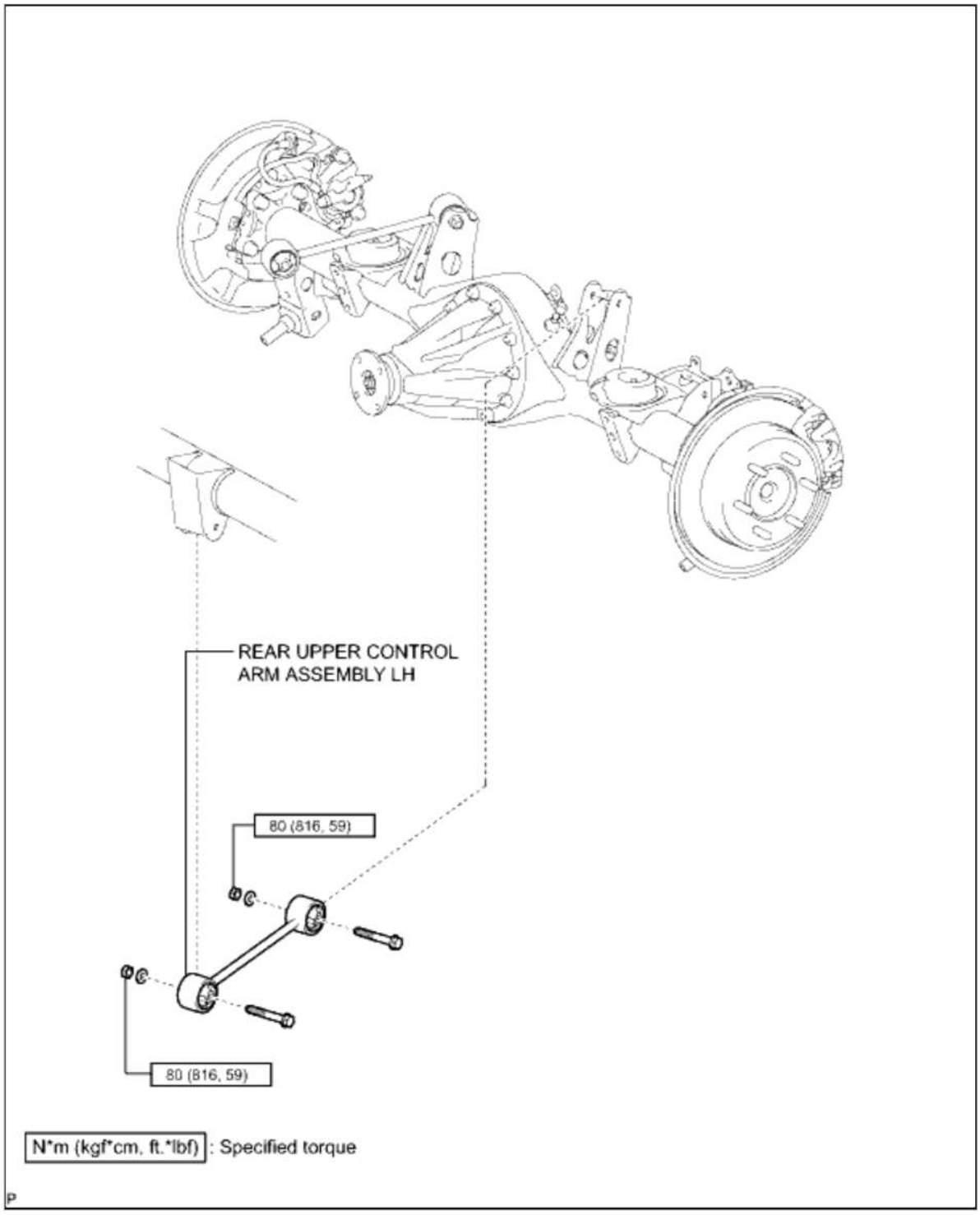


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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKO00AX
Title: REAR SUSPENSION: REAR UPPER ARM: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKP00AX
Title: REAR SUSPENSION: REAR UPPER ARM: REMOVAL (2010 4Runner)		

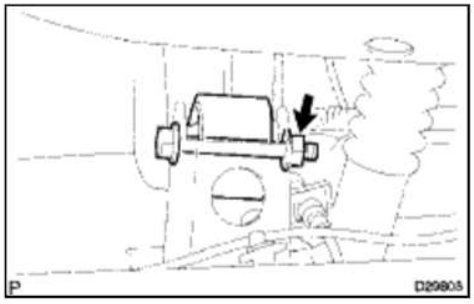
REMOVAL

HINT:

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

1. REMOVE REAR WHEEL

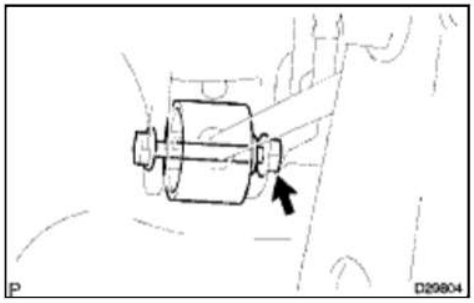
2. REMOVE REAR UPPER CONTROL ARM ASSEMBLY LH



(a) Remove the nut, washer and bolt from the rear axle housing.

HINT:

Turn the nut while holding the bolt.



(b) Remove the nut, washer, bolt and upper control arm assembly.

HINT:

Turn the nut while holding the bolt.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKN00AX
Title: REAR SUSPENSION: REAR UPPER ARM: INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. TEMPORARILY INSTALL REAR UPPER CONTROL ARM ASSEMBLY LH

(a) Temporarily install the upper control arm assembly and washer with the nut and bolt.

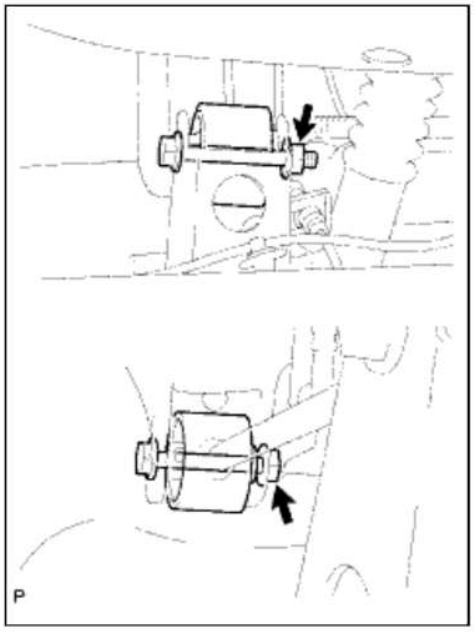
(b) Temporarily install the upper control arm assembly and washer to the rear axle housing with the nut and bolt.

2. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

3. STABILIZE SUSPENSION INFO

4. TIGHTEN REAR UPPER CONTROL ARM ASSEMBLY LH



(a) Tighten the 2 nuts.

Torque: 80 N·m (816 kgf·cm, 59ft·lbf)

HINT:

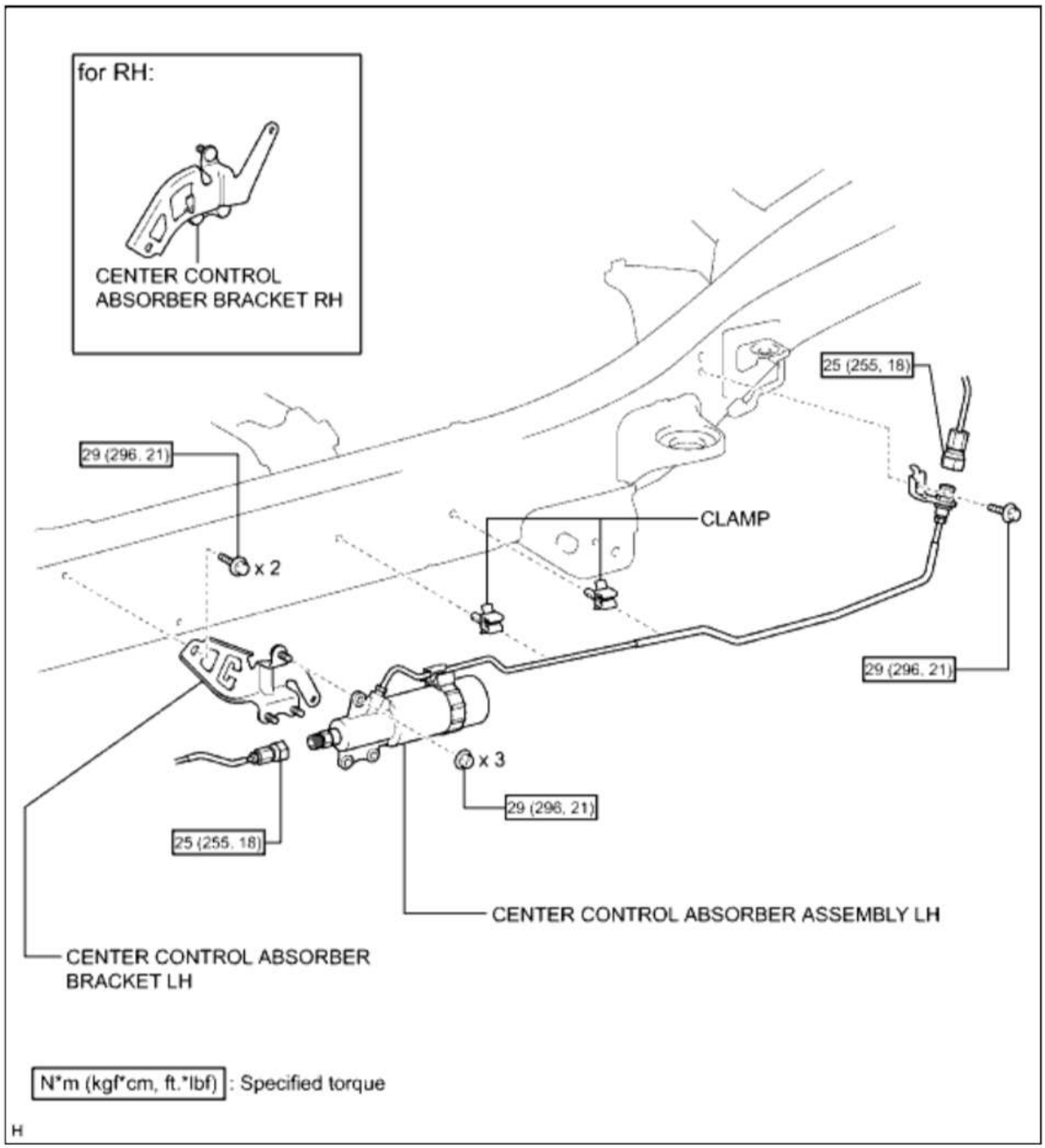
Turn the nut while holding the bolt.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKX005X
Title: SUSPENSION CONTROL: CENTER CONTROL ABSORBER (w/ REAS): COMPONENTS (2010 4Runner)		

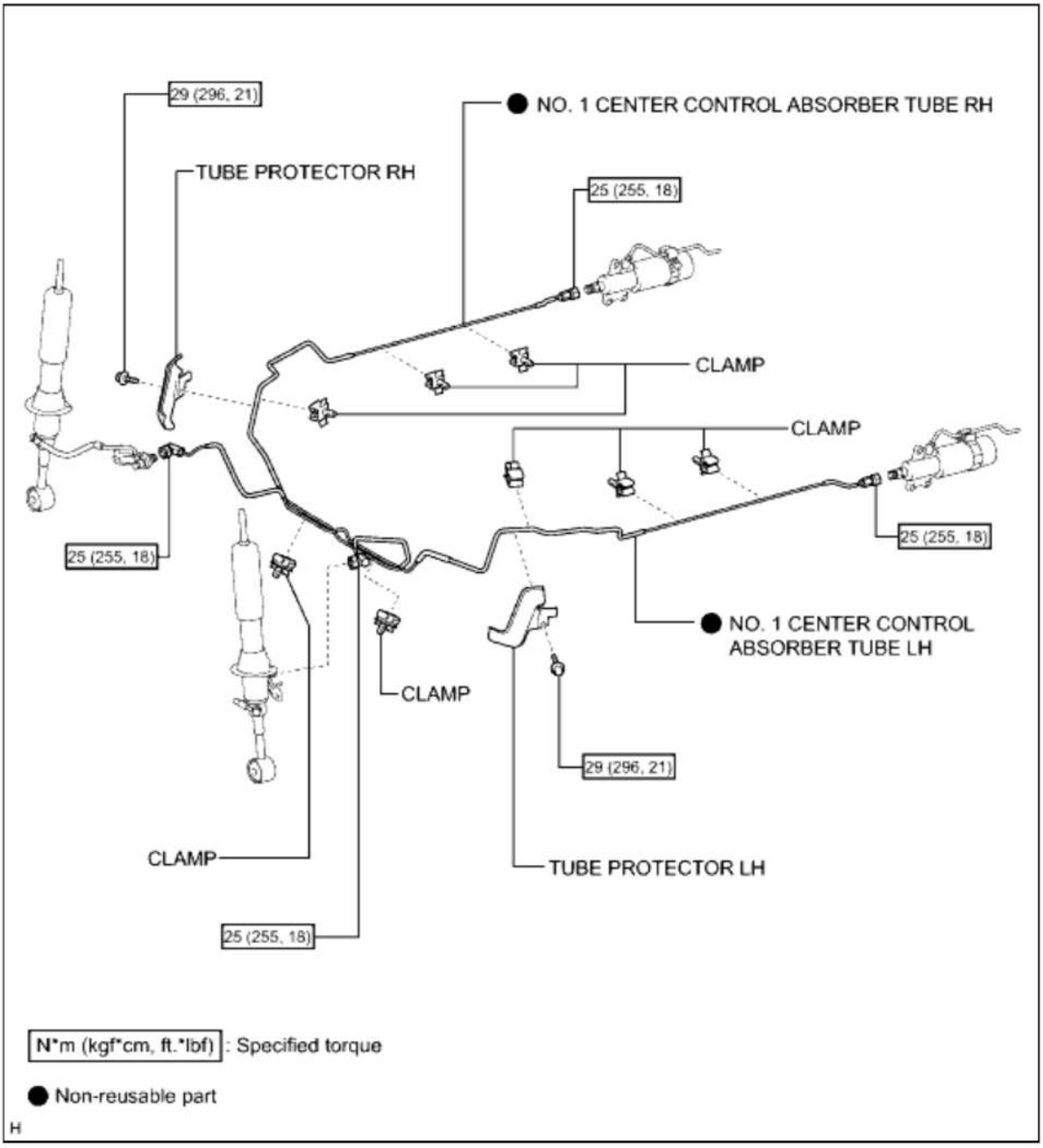
COMPONENTS

ILLUSTRATION



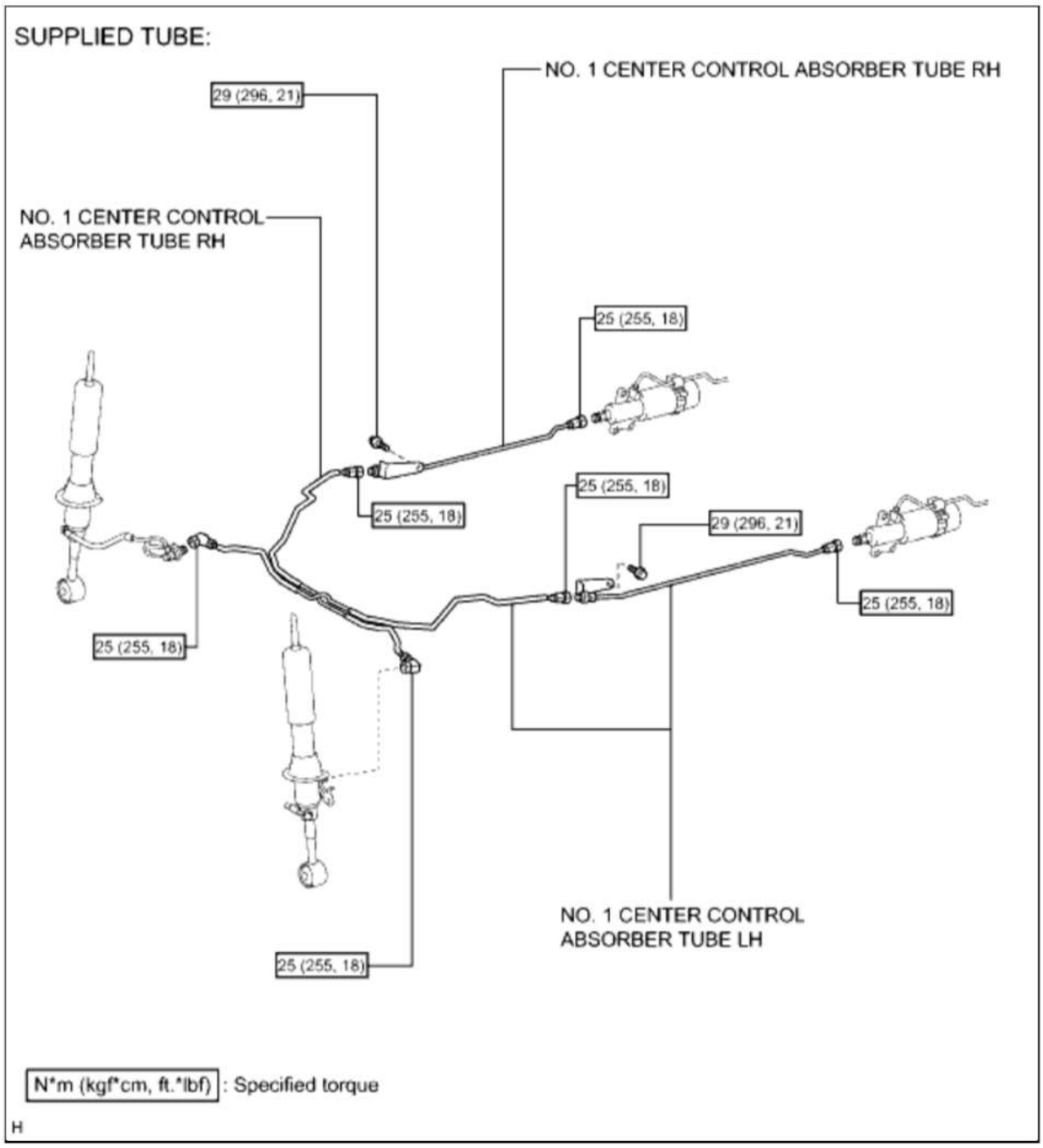
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKW005X
Title: SUSPENSION CONTROL: CENTER CONTROL ABSORBER (w/ REAS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL CENTER CONTROL ABSORBER BRACKET LH

(a) Install the center control absorber bracket with the 2 bolts.

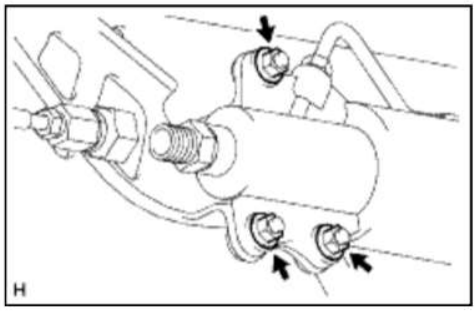
Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

2. INSTALL CENTER CONTROL ABSORBER BRACKET RH

HINT:

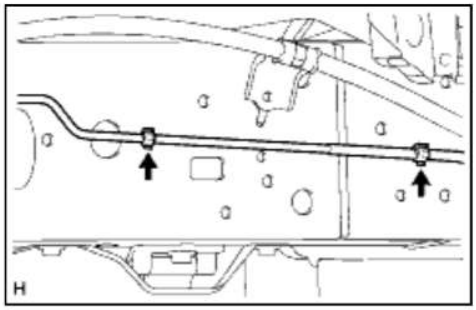
Use the same procedure described for the LH side.

3. INSTALL CENTER CONTROL ABSORBER ASSEMBLY LH



(a) Install the center control absorber assembly with the 3 nuts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

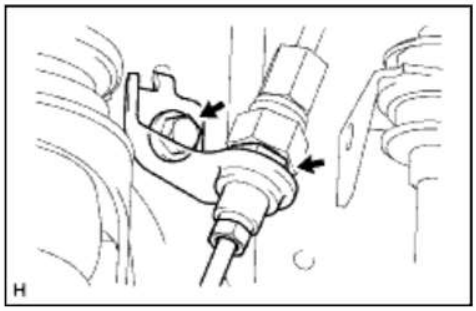


(b) Connect the tube to the 2 clamps.

(c) Install the bracket with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

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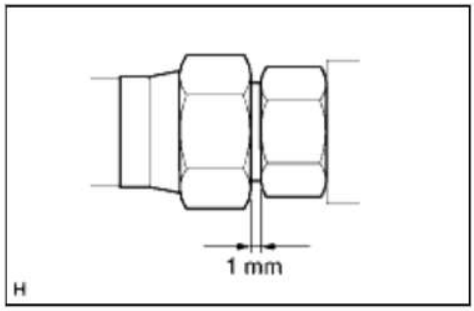


(d) While using a wrench to hold the bracket, connect the joint.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

HINT:

For the joint that connects supplied parts, tighten the joint while checking the gap spacing shown in the illustration.



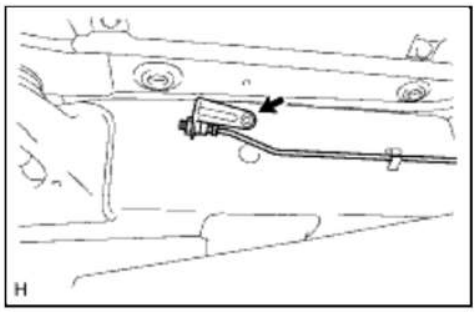
Standard clearance:
1 mm (0.0394 in.)

4. INSTALL CENTER CONTROL ABSORBER ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

5. INSTALL NO. 1 CENTER CONTROL ABSORBER TUBE LH

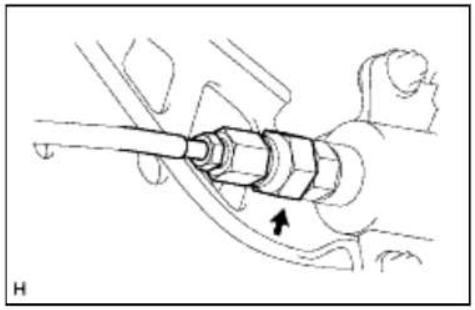


(a) Install a new No. 1 center control absorber tube with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

(b) While using a wrench to hold the center control absorber assembly, connect the joint.

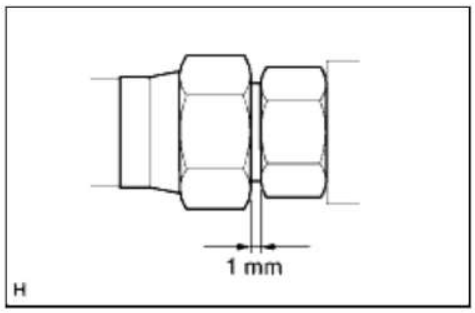
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Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

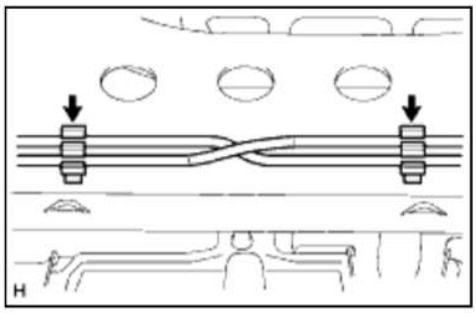
HINT:

For the joint that connects supplied tubes, tighten the joint while checking the gap spacing shown in the illustration.



Standard clearance:
1 mm (0.0394 in.)

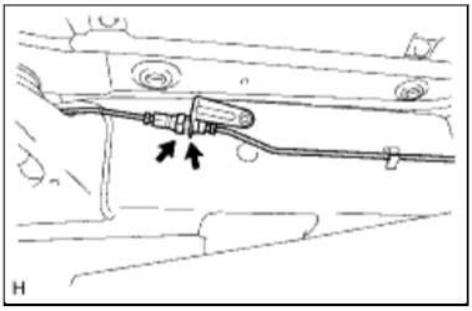
(c) Pass the center control absorber tube between the body and frame.



(d) Attach the 2 clamps.

(e) While using a wrench to hold the bracket, connect the joint.

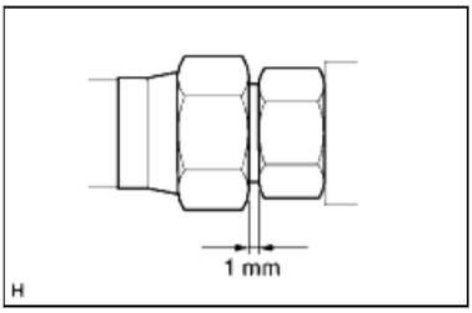
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Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

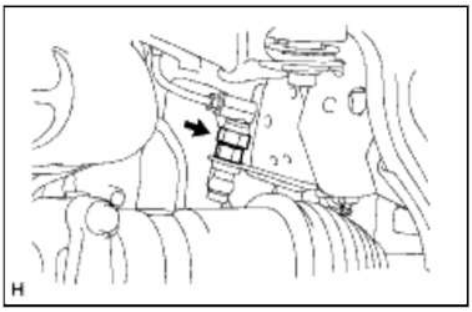
HINT:

For the joint that connects supplied tubes, tighten the joint while checking the gap spacing shown in the illustration.



Standard clearance:
1 mm (0.0394 in.)

(f) While using a wrench to hold the bracket, connect the joint.

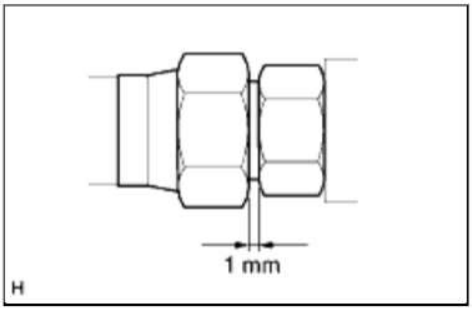


Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

HINT:

For the joint that connects the supplied tubes, tighten the joint while checking the gap spacing shown in the illustration.

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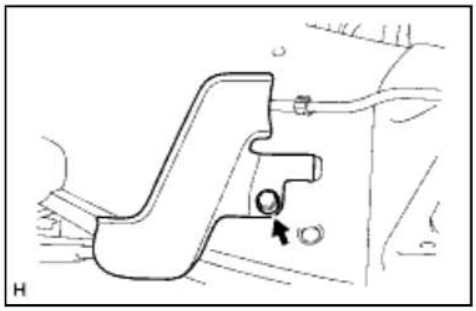
Standard clearance:
1 mm (0.0394 in.)

6. INSTALL NO. 1 CENTER CONTROL ABSORBER TUBE RH

HINT:

Use the same procedure described for the LH side.

7. INSTALL TUBE PROTECTOR LH



(a) Install the tube protector LH with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

8. INSTALL TUBE PROTECTOR RH

HINT:

Use the same procedure described for the LH side.

9. INSTALL FRONT WHEEL INFO

10. INSTALL REAR WHEEL INFO

11. INSPECT FOR FLUID LEAK INFO

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKY005X
Title: SUSPENSION CONTROL: CENTER CONTROL ABSORBER (w/ REAS): REMOVAL (2010 4Runner)		

REMOVAL

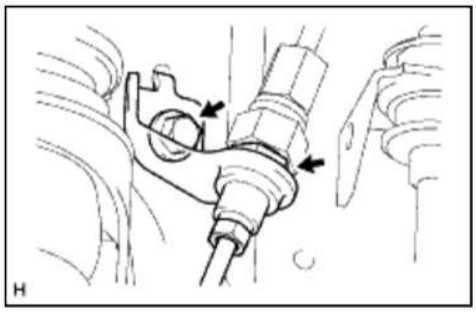
NOTICE:

Be sure to read PRECAUTION before performing this procedure INFO .

1. REMOVE FRONT WHEEL

2. REMOVE REAR WHEEL

3. REMOVE CENTER CONTROL ABSORBER ASSEMBLY LH

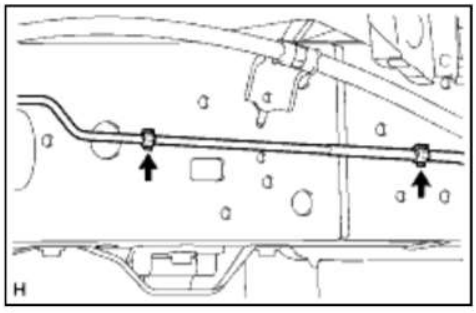


(a) While using a wrench to hold the bracket, disconnect the joint.

NOTICE:

Check that all four shock absorbers are fully extended to the normal suspension rebound point.

(b) Remove the bolt and disconnect the bracket.



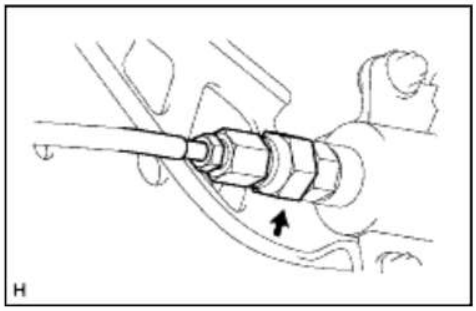
(c) Disconnect the tube from the 2 clamps.

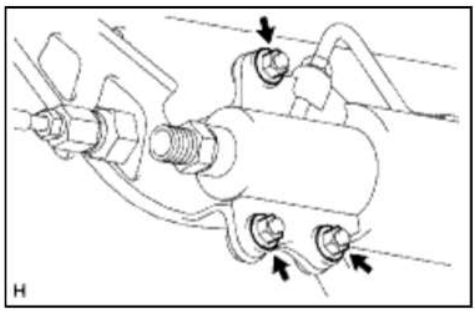
(d) While using a wrench to hold the center control absorber assembly, disconnect the joint.

NOTICE:

- Do not loosen the flare nut.
- Do not deform or damage the tubes.

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(e) Remove the 3 nuts and center control absorber assembly.

NOTICE:

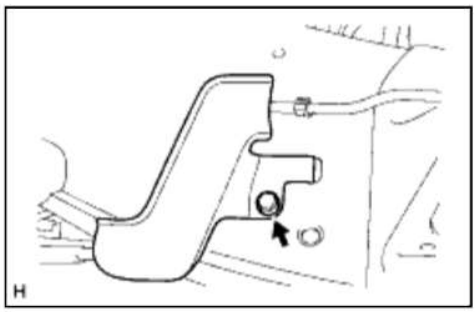
- Do not deform or damage the tubes.
- Be sure to hold the center control absorber assembly by the body when carrying it.

4. REMOVE CENTER CONTROL ABSORBER ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

5. REMOVE TUBE PROTECTOR LH



(a) Remove the bolt and tube protector LH.

6. REMOVE TUBE PROTECTOR RH

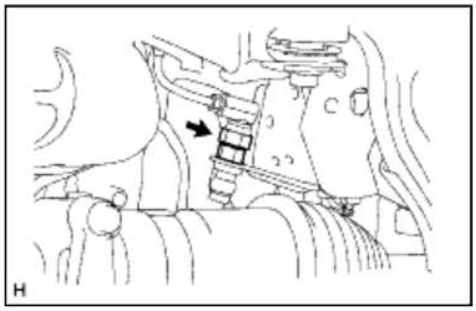
HINT:

Use the same procedure described for the LH side.

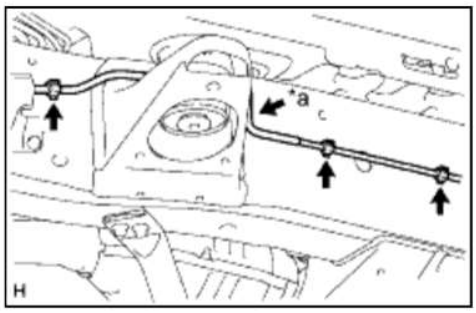
7. REMOVE NO. 1 CENTER CONTROL ABSORBER TUBE LH

(a) While using a wrench to hold the bracket, disconnect the

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joint.

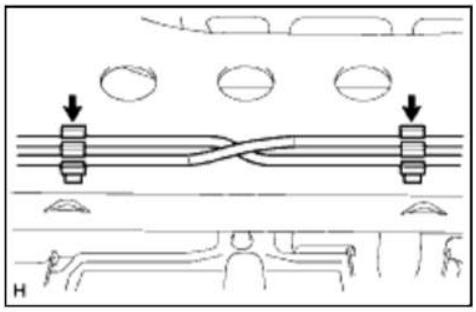


(b) Using pliers, cut the center control absorber tube. Use a container to catch suspension fluid as it drains out.

Text in Illustration

*a	Cut

(c) Detach the 3 clamps from the frame.



(d) Detach the 2 clamps.

(e) Remove the No. 1 center control absorber tube LH.

8. REMOVE NO. 1 CENTER CONTROL ABSORBER TUBE RH

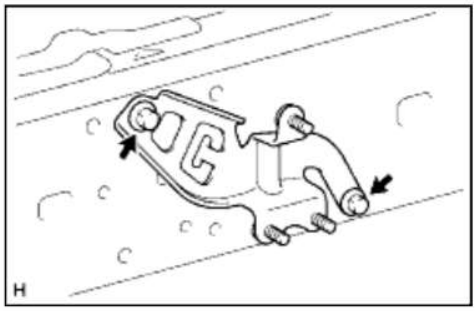
HINT:

Use the same procedure described for the LH side.

9. REMOVE CENTER CONTROL ABSORBER BRACKET LH

(a) Remove the 2 bolts and center control absorber bracket LH from the frame.

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10. REMOVE CENTER CONTROL ABSORBER BRACKET RH

HINT:

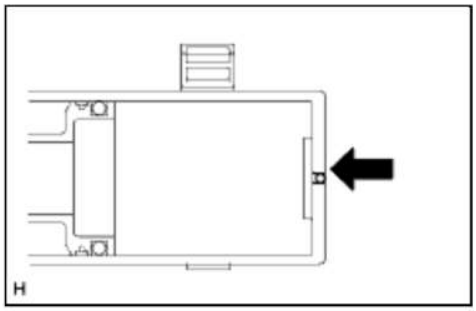
Use the same procedure described for the LH side.

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Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002CKZ005X
Title: SUSPENSION CONTROL: CENTER CONTROL ABSORBER (w/ REAS): DISPOSAL (2010 4Runner)		

DISPOSAL

1. DISPOSE OF CENTER CONTROL ABSORBER ASSEMBLY LH



(a) Using a drill, make a hole in the cylinder as shown in the illustration to discharge the gas inside.

(b) Remove the flare nut.

(c) Drain suspension fluid.

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Last Modified: 5-10-2010	6.4 L	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038U8006X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: PRECAUTION (2010 4Runner)		

PRECAUTION

1. KINETIC DYNAMIC SUSPENSION SYSTEM

CAUTION:

- Be sure to check the pipe connections and whether or not any hydraulic circuit parts are damaged before performing work, as the hydraulic circuits become highly pressurized during air bleeding.
- The pipes become highly pressurized when bleeding air. If a fluid leak is discovered, immediately release the pressure and repair the fluid leak as there is danger involved.

(a) Before removing, installing and disassembling hydraulic circuit parts, clean each part to prevent mud and dirt from entering the hydraulic circuit.

(b) Always drain fluid from the bleeder plug of the stabilizer control with accumulator housing assembly to reduce pressure before removing parts, as the fluid is sealed under high pressure in the hydraulic circuit.

(c) Protect the removed/disassembled parts with plastic bags to prevent foreign matter from adhering to or entering them, and store them in a safe place.

(d) Be careful when removing, installing and disassembling the hydraulic circuit related parts, such as bleeder plugs and tube flare nuts, as fluid may leak when the parts are damaged.

2. IGNITION SWITCH EXPRESSION

HINT:

The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

EXPRESSION	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition Switch off	Off	Off
Ignition Switch ON	ON	On (IG)
Ignition Switch ACC	ACC	On (ACC)
Engine Start	START	Start

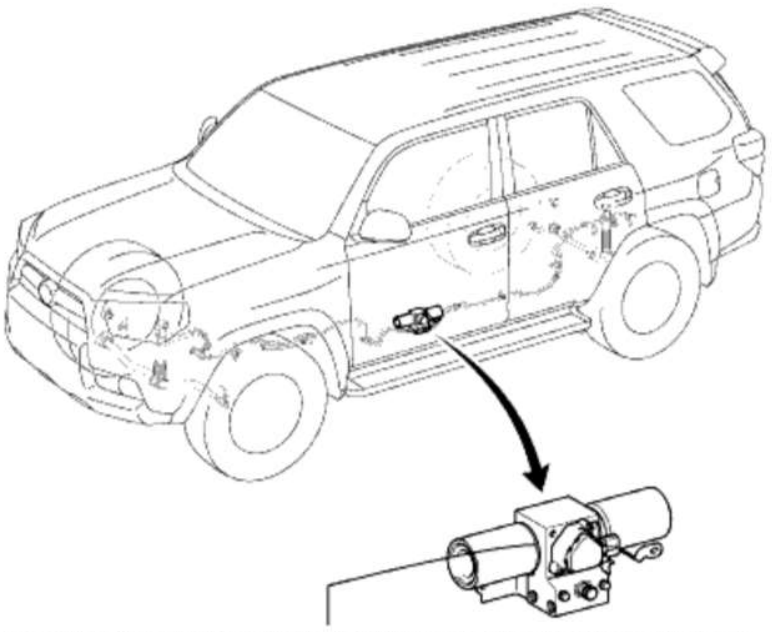
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Last Modified: 5-10-2010	6.4 R	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000468K000X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: PARTS LOCATION (2010 4Runner)		

PARTS LOCATION

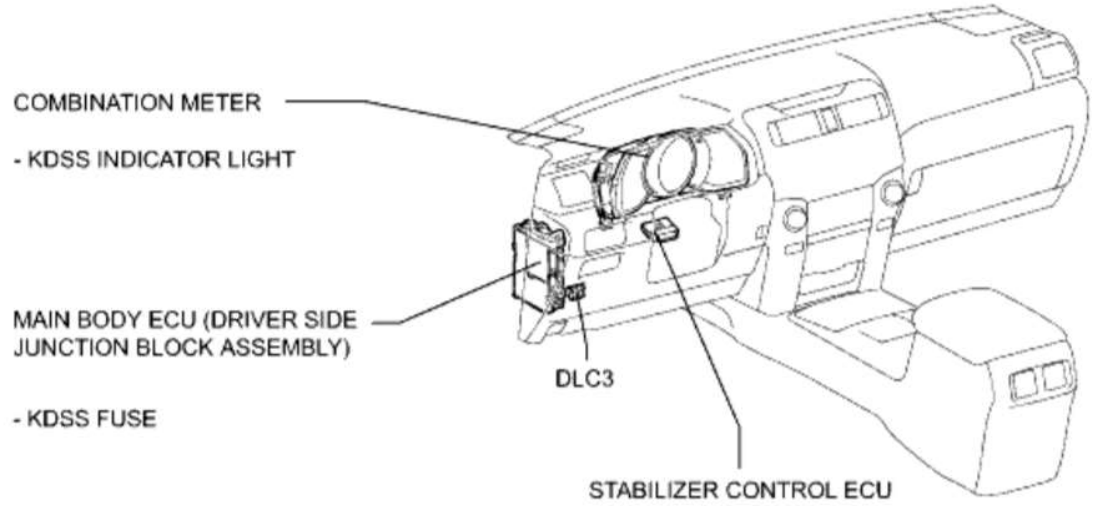
ILLUSTRATION

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STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY

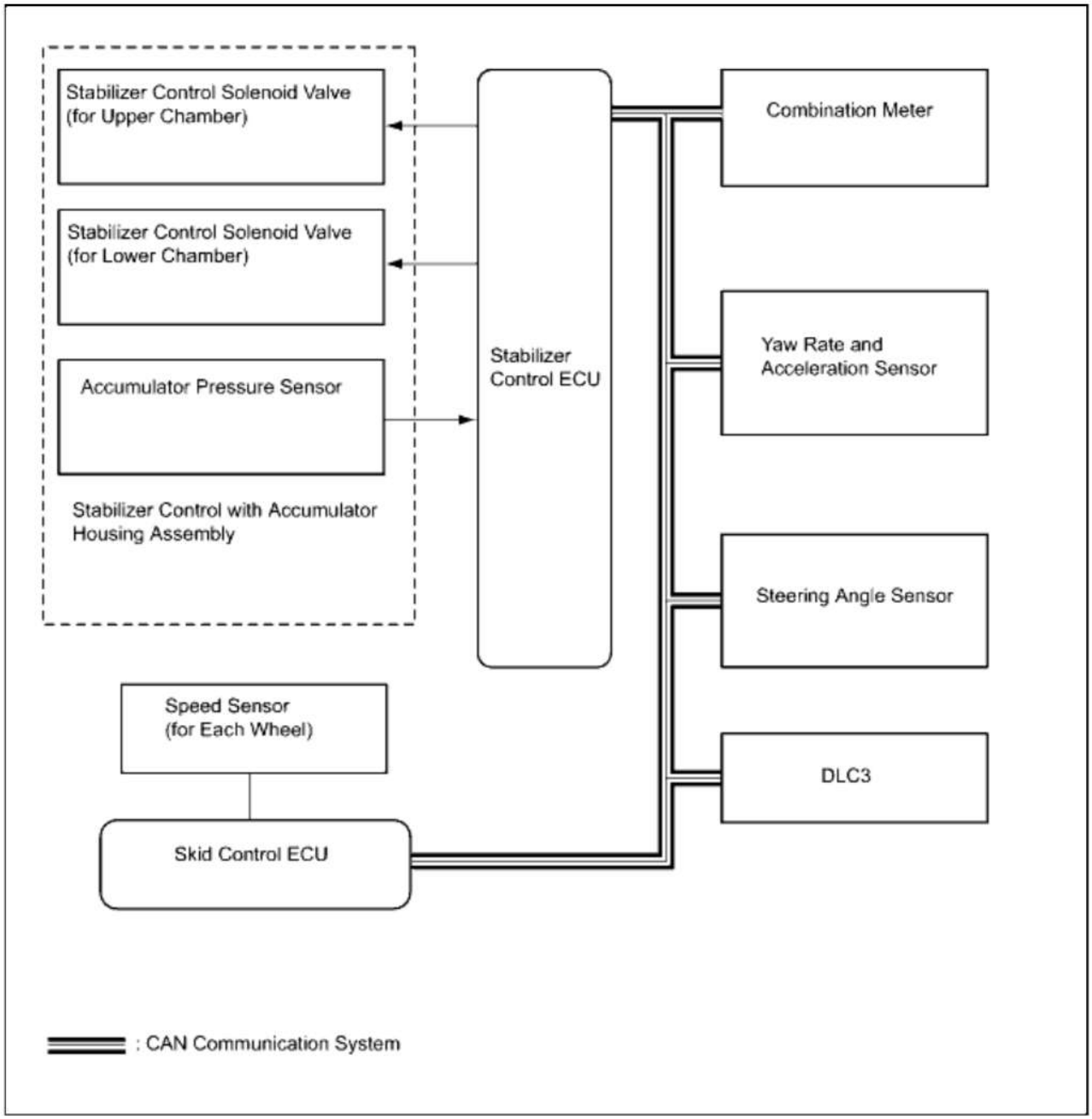
- ACCUMULATOR PRESSURE SENSOR
- STABILIZER CONTROL SOLENOID VALVE (for Upper Chamber)
- STABILIZER CONTROL SOLENOID VALVE (for Lower Chamber)



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Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UE001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: SYSTEM DIAGRAM (2010 4Runner)		

SYSTEM DIAGRAM



Communication Table

SENDER	RECEIVER	SIGNAL	LINE

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SENDER	RECEIVER	SIGNAL	LINE
ECM	Stabilizer control ECU	• Engine type information • Gear information • Drive train information • TC terminal status	CAN communication
Skid control ECU	Stabilizer control ECU	• Wheel speed signal • Stop light switch signal • Speed sensor error signal • Speed sensor power supply decline signal	CAN communication
Yaw rate and acceleration sensor	Stabilizer control ECU	• Yaw rate sensor (Acceleration sensor) signal • Acceleration sensor zero point value • Yaw rate sensor (Acceleration sensor) installation information • Sensor error signal • Acceleration sensor zero point uncorrected status	CAN communication
Steering angle sensor	Stabilizer control ECU	• Steering angle signal • Steering angle sensor BAT terminal disconnection • Sensor error • Memorized zero point value inside steering angle sensor	CAN communication
Stabilizer control ECU	Combination meter	KDSS indicator light signal	CAN communication

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Last Modified: 5-10-2010	6.4 D	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N8X00PX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 4Runner)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

***: Use the Techstream.**

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**CUSTOMER PROBLEM ANALYSIS**

NEXT

3.	**INSPECT BATTERY VOLTAGE**

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

4.	**INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM***

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(a) Inspect the CAN communication function to make sure there are no malfunctions in the communication system INFO .

Result

RESULT	PROCEED TO
CAN DTC is not output	A
CAN DTC is output	B

B ▶ GO TO CAN COMMUNICATION SYSTEM

A ▼

5.	CHECK AND CLEAR DTC

(a) Check for DTCs INFO .

NEXT ▼

6.	PROBLEM SYMPTOM CONFIRMATION

Result

RESULT	PROCEED TO
Symptom does not occur	A
Symptom occurs	B

B ▶ Go to step 9

A ▼

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7.	SYMPTOM SIMULATION

NEXT

8.	CHECK DTC*

(a) Check for DTCs INFO .

Result

RESULT	PROCEED TO
DTC not output	A
DTC output	B

B ▶ **Go to step 10**

A

9.	PROBLEM SYMPTOMS TABLE

(a) Refer to the Problem Symptoms Table INFO .

NEXT ▶ **Go to step 12**

10.	DTC CHART

(a) Refer to the Diagnostic Trouble Code Chart INFO .

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NEXT

11.	CIRCUIT INSPECTION

NEXT

12.	IDENTIFICATION OF PROBLEM

NEXT

13.	REPAIR OR REPLACE

NEXT

14.	CONFIRMATION TEST

NEXT END

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Last Modified: 5-10-2010	6.4 D	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KG9005X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: SYSTEM DESCRIPTION (2010 4Runner)		

SYSTEM DESCRIPTION

1. DESCRIPTION

(a) System description

In the KDSS (Kinetic Dynamic Suspension System), a cylinder is installed to each of the front and rear stabilizer bars. The front and rear cylinder upper chambers and the front and rear lower chambers are each connected by a pipe. The hydraulic circuit is filled with high-pressure suspension fluid. The stabilizer control ECU controls the stabilizer control solenoid valves according to input signals from sensor.

2. FUNCTION OF COMPONENTS

PART NAME		FUNCTION
Stabilizer Control ECU		• Closes the stabilizer control solenoid valves according to input signals from the sensor to cut the fluid flow to the accumulators. • Turns on the KDSS indicator light in the combination meter to inform the driver when an abnormality is detected in the KDSS. When this happens, a DTC is stored.
Stabilizer Control with Accumulator Housing Assembly	Accumulator Pressure Sensor	Detects the pressure in the hydraulic circuit.
	Stabilizer Control Solenoid Valve	Cuts the fluid flow to the accumulator according to a signal from the stabilizer control ECU.
Speed Sensor (Skid Control ECU)		Detects the wheel speed of each wheel.
Steering Angle Sensor		Detects the steering angle and amount of movement of the steering wheel, and then sends signals to the stabilizer control ECU.
Yaw Rate and Acceleration Sensor		Detects the yaw rate and acceleration of the vehicle and sends signals to the stabilizer control ECU.

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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046S9000X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: PROBLEM SYMPTOMS TABLE (2010 4Runner)		

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.

Kinetic Dynamic Suspension System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Kinetic dynamic suspension system DTC cannot be output (When using Techstream)	CAN communication system	INFO
	Harness or connector (power source of stabilizer control ECU)	INFO
	Stabilizer control ECU	INFO
Kinetic dynamic suspension system DTC cannot be output (When not using Techstream)	CAN communication system	INFO
	Harness or connector (power source of stabilizer control ECU)	INFO
	Stabilizer control ECU	INFO
	Combination meter	INFO
KDSS indicator light does not come on	CAN communication system	INFO
	Harness or connector (power source of stabilizer control ECU)	INFO
	Combination meter	INFO
Vehicle is tilted	Stabilizer control solenoid valve	INFO
	Fluid leakage	INFO
	Bleed air (check for clogs in hydraulic circuit and lack or excess of fluid)	INFO
Roll is not controlled when driving	Brake control system	INFO
	Stabilizer control solenoid valve	INFO

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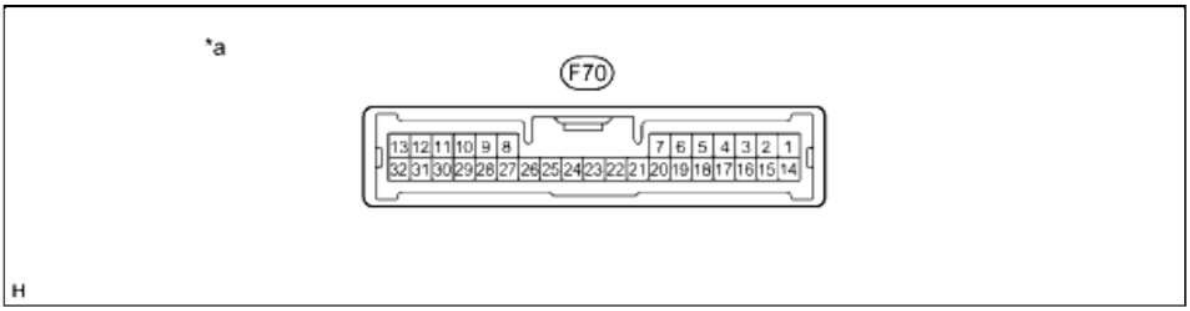
SYMPTOM	SUSPECTED AREA	SEE PAGE
	Fluid leakage	INFO
	Bleed air (check for clogs in hydraulic circuit and lack or excess of fluid)	INFO
	Accumulator pressure sensor	INFO



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Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N9000OX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: TERMINALS OF ECU (2010 4Runner)		

TERMINALS OF ECU



Text in Illustration

*a	Component with harness connected (Stabilizer Control ECU)	-	-

TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
F70-1 (SLAL) - Body ground	LG - Body ground	Stabilizer control solenoid valve output signal (for Upper Chamber)	Ignition switch ON Vehicle stopped	Below 1 V
F70-3 (SLAU) - Body ground	P - Body ground	Stabilizer control solenoid valve output signal (for Lower Chamber)	Ignition switch ON Vehicle stopped	Below 1 V
F70-6 (SGP1) - Body ground	G - Body ground	Pressure sensor ground	Always	Below 1 V
F70-15 (SBP1) - Body ground	R - Body ground	Power source (Pressure sensor)	Ignition switch ON	4.75 to 5.25 V
F70-17 (SOP1) - Body ground	GR - Body ground	Pressure sensor input signal	Ignition switch ON	0.4 to 4.6 V
F70-22 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
F70-24 (IG) - Body ground	B - Body ground	Power source	Ignition switch ON	11 to 14 V
F70-28 (CANL) - F70-29 (CANH)	W - P	CAN communication line	Ignition switch off	54 to 69 Ω

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Last Modified: 5-10-2010	6.4 D	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N9H00OX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: DIAGNOSIS SYSTEM (2010 4Runner)		

DIAGNOSIS SYSTEM

1. DIAGNOSIS SYSTEM

(a) Indicator light

(1) During vehicle stabilizer control operation, the KDSS indicator light comes on when there is a malfunction in the KDSS.

NOTICE:

- When the malfunction has been corrected, the KDSS indicator light goes off.
- There are some malfunctions which do not cause the KDSS indicator light to come on INFO for the items that cause the KDSS indicator light to come on).

(b) DTCs

(1) DTCs are stored in the stabilizer control ECU and output by using SST check wire or the Techstream INFO .

SST: 09843-18040

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Last Modified: 5-10-2010	6.4 D	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046S8000X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: DTC CHECK / CLEAR (2010 4Runner)		

DTC CHECK / CLEAR

1. CHECK/CLEAR DTC (USING TECHSTREAM)

(a) Check DTC:

(1) Connect the Techstream to the DLC3.

(2) Turn the ignition switch to ON.

(3) Turn the Techstream on.

(4) Enter the following menus: Chassis / KDSS / Trouble Codes.

(5) Read DTCs by following the prompts on the Techstream screen.

HINT:

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

(b) Clear DTC:

HINT:

After repairing malfunctions, clear the DTCs.

(1) Connect the Techstream to the DLC3

(2) Turn the ignition switch to ON.

(3) Turn the Techstream on.

(4) Enter the following menus: Chassis / KDSS / Trouble Codes.

(5) Clear the DTCs by following the prompts on the Techstream screen.

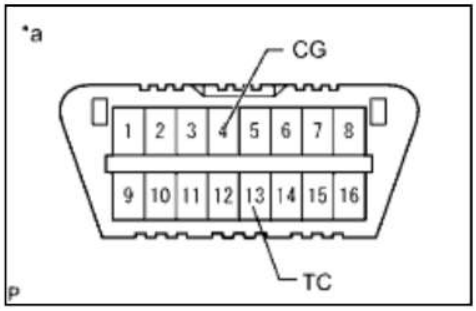
HINT:

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

2. CHECK/CLEAR DTC (USING SST CHECK WIRE)

(a) Check DTC.

(1) Make sure that the ignition switch is off.



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

SST: 09843-18040

NOTICE:

Do not connect the wrong terminals as this will cause damage.

Text in Illustration

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*a	Front view of DLC3

(3) Turn the ignition switch to ON.

(4) Read the DTCs output from the KDSS indicator light in the combination meter.

HINT:

- When only 1 DTC is stored, the KDSS indicator light outputs the same code after an interval of 4 seconds. Example: When DTC 31 is stored, the light blinks 3 times, turns off for 1.5 seconds, blinks once, turns off for 4 seconds, and then repeats this output pattern.
- When 2 or more DTCs are stored, the KDSS indicator light outputs the codes with an interval of 2.5 seconds between each different code, and the output of all codes repeats after an interval of 4 seconds.

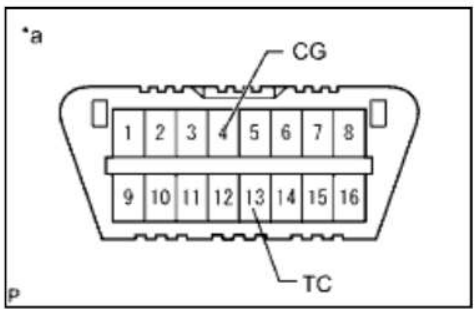
(5) Refer to the Diagnostic Trouble Code Chart INFO for DTC information.

(6) After completing the check, remove SST check wire from the DLC3.

SST: 09843-18040

(b) Clear DTC.

(1) Make sure that the ignition switch is off.



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

SST: 09843-18040

NOTICE:

Do not connect the wrong terminals as this will cause damage.

Text in Illustration

*a	Front view of DLC3

(3) Turn the ignition switch to ON.

(4) Clear the DTCs stored in the stabilizer control ECU by depressing the brake pedal 8 times or more within 5 seconds.

(5) Check that the KDSS indicator light blinks at intervals of 0.25 seconds on and 0.25 seconds off.

(6) Turn the ignition switch off.

(7) Remove SST from the terminals of the DLC3.

SST: 09843-18040

NOTICE:

After clearing the DTCs, check if the malfunction is detected again. As it is necessary to perform certain system operations or drive the vehicle in order to detect some malfunctions, check that malfunctions are no longer present after performing all necessary operations.

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Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N9K00PX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: DATA LIST / ACTIVE TEST (2010 4Runner)		

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) Warm up the engine.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn ON the Techstream.

(e) Enter the following menus: Chassis / KDSS / Data List.

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

KDSS

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Oil Pressure Sensor	Oil pressure sensor/ Min.: -784.79 MPa (-8002.66 kgf/cm^2, -113794.55 psi) Max.: 784.76 MPa (8002.35 kgf/cm^2, 113790.20 psi)	2.6 MPa (26.5 kgf/cm^2, 377 psi) to 3.0 MPa (30.6 kgf/cm^2, 435 psi): When vehicle stopped and fluid temperature 20°C (68°F)	-
Acceleration Sensor	Lateral G/ Min.: -1176.37 m/s^2 Max.: -1176.33 m/s^2	-	Changes in proportion with acceleration during turning.
Stop Light Switch	Stop light switch/ ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
TC Terminal	TC terminal/ ON or OFF	OFF	-
TS Terminal	TS terminal/ ON or OFF	OFF	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	Front wheel RH speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	No large fluctuations when driving at a constant speed.
FL Wheel Speed	Front wheel LH speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	No large fluctuations when driving at a constant speed.
RR Wheel Speed	Rear wheel RH speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	No large fluctuations when driving at a constant speed.
RL Wheel Speed	Rear wheel LH speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	No large fluctuations when driving at a constant speed.
IG Power Source Voltage	IG power source voltage/ Min.: 0.0 V Max.: 25.5 V	Ignition switch ON: 11 to 14 V	-
Steering Angle	Steering angle/ Min.: -49152.0 deg Max.: 49150.5 deg	-	Changes in proportion with the amount of steering wheel rotation during steering operation.
Compatible Constant Information	Compatible constant information/ Min.: 0 Max.: 255	-	-
Design Constant Information	Design constant information/ Min.: 0 Max.: 255	-	-
Accumulator Valve (Downside)	Stabilizer control solenoid valve (for Upper Chamber)/ ON or OFF	ON: Stabilizer control solenoid valve closed OFF: Stabilizer control solenoid valve open	-
Accumulator Valve (Upside)	Stabilizer control solenoid valve (for Lower Chamber)/ ON or OFF	ON: Stabilizer control solenoid valve open OFF: Stabilizer control solenoid valve closed	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Number of Trouble Codes	Number of trouble codes/ Min.: 0 Max.: 255	0	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows 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 troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

(a) Warm up the engine.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn ON the Techstream.

(e) Enter the following menus: Chassis / KDSS / Active Test.

(f) According to the display on the Techstream, perform the Active Test.

KDSS

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Accumulator Valve (Upside)	Stabilizer control solenoid valve (for Upper Chamber)	Valve ON / OFF	The operating sound of the solenoid (clicking sound) can be heard. ON: Data List ON OFF: Data List OFF When the Active Test is performed, the solenoid turns on for 3 seconds.
Accumulator Valve (Downside)	Stabilizer control solenoid valve (for Lower Chamber)	Valve ON / OFF	The operating sound of the solenoid (clicking sound) can be heard. ON: Data List ON OFF: Data List OFF When the Active Test is performed, the solenoid turns on for 3 seconds.



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Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N9L00KX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: FAIL-SAFE CHART (2010 4Runner)		

FAIL-SAFE CHART

1. FAIL-SAFE FUNCTION

(a) If the stabilizer control ECU detects a malfunction, the fail-safe functions shown in the table below operate.

MALFUNCTION ITEM	FAIL-SAFE FUNCTION
Speed Sensor	KDSS control stops.
Yaw Rate and Acceleration Sensor	KDSS control continues using the vehicle speed sensor and steering angle sensor.
Accumulator Pressure Sensor	KDSS control stops.
Steering Angle Sensor	KDSS control continues using the vehicle speed sensor and yaw rate and acceleration sensor.
Stabilizer Control Solenoid Valve	KDSS control stops.
Power Supply	KDSS control stops.
Stabilizer Control ECU	KDSS control stops.

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Last Modified: 5-10-2010	6.4 S	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001N8Y00OX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 4Runner)		

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

Turn the ignition switch off before removing parts.

HINT:

- If no abnormality is found when inspecting parts, inspect the stabilizer control ECU and ground points for poor contact.
- If a trouble code is output during the DTC check, check the circuit indicated by the DTC. For details of each code, refer to the "See page" for the respective "DTC Code" in the DTC chart.
- When 2 or more DTCs are output, perform circuit inspections one by one until the problem is identified.
- Inspect the fuse and relay before investigating the trouble areas as shown in the table below.

Kinetic Dynamic Suspension System

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1812/12	Pressure Sensor Malfunction / Upside	- Harness or connector - Accumulator pressure sensor (Stabilizer control with accumulator housing assembly) - Stabilizer control ECU	INFO
C1831/31	Accumulator Solenoid Malfunction / Upside	- Harness or connector - Stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) - Stabilizer control ECU	INFO
C1832/32	Accumulator Solenoid Malfunction / Downside	- Harness or connector - Stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) - Stabilizer control ECU	INFO
C1851/51	Low Pressure Malfunction in Upside of KDSS System	- Hydraulic circuit - Harness or connector - Accumulator pressure sensor or stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) - Stabilizer control ECU	INFO
C1853/53	High Pressure Malfunction in Upside of KDSS System	- Hydraulic circuit - Harness or connector - Accumulator pressure sensor or stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) - Stabilizer control ECU	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1879/79	Zero Point Calibration of Acceleration Sensor Undone	- Brake control system (Yaw rate and acceleration sensor zero point calibration) - Stabilizer control ECU	INFO
C1881/81	KDSS ECU Malfunction	Stabilizer control ECU	INFO
C1882/82	Power Supply Voltage Malfunction	- Battery - Charging system - KDSS fuse - Harness or connector - Stabilizer control ECU	INFO
C1883/83	Speed Sensor Circuit Malfunction	- Brake control system - CAN communication system - Stabilizer control ECU	INFO
C1884/84	Steering Angle Sensor Circuit Malfunction	- Steering angle sensor (Spiral cable sub-assembly) - CAN communication system - Stabilizer control ECU	INFO
C1887/87	Acceleration Sensor Circuit Malfunction	- Yaw rate and acceleration sensor - CAN communication system - Stabilizer control ECU	INFO
U0100/71	Lost Communication with ECM / PCM "A	CAN communication system	INFO
U0122/71	Lost Communication with Vehicle Dynamics Control Module	CAN communication system	INFO
U0124/71	Lost Communication with Lateral Acceleration Sensor Module	CAN communication system	INFO
U0126/71	Lost Communication with Steering Angle Sensor Module	CAN communication system	INFO

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KGD005X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1812/12: Pressure Sensor Malfunction / Upside (2010 4Runner)		

DTC	**C1812/12**	**Pressure Sensor Malfunction / Upside**

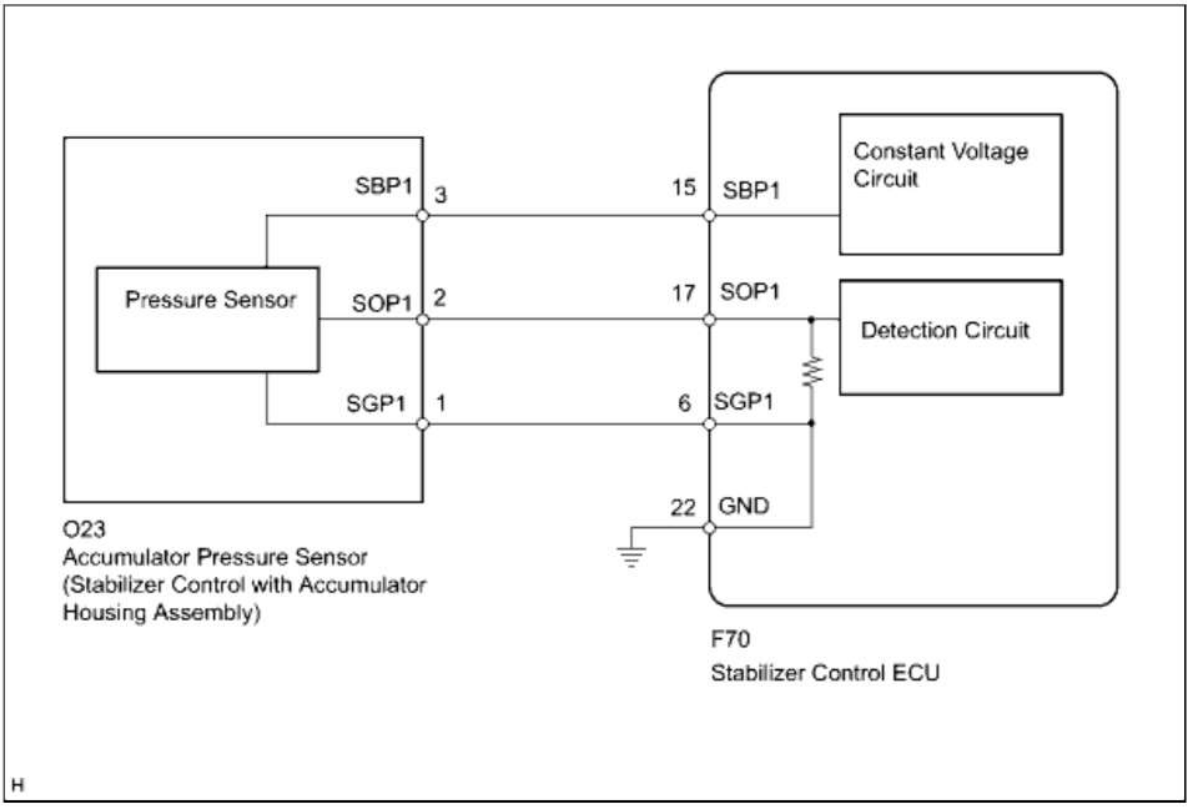
DESCRIPTION

In the KDSS hydraulic circuit, the fluid is contained under pressure. If the fluid temperature is 20°C (68°F), the pressure is approximately 3.0 MPa (30.6 kgf/cm^2, 435 psi).

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1812/12	One of the following conditions is met: • The sensor power source voltage (SBP1 terminal) is 4.3 V or less for 0.5 seconds with the ignition switch ON. • The sensor power source voltage (SBP1 terminal) is 5.5 V or higher for 0.5 seconds with the ignition switch ON. • The sensor output (SOP1 terminal) is 0.3 V or less for 1 second with the ignition switch ON. • The sensor output (SOP1 terminal) is 4.7 V or higher for a second with the ignition switch ON.	• Harness or connector • Accumulator pressure sensor (Stabilizer control with accumulator housing assembly) • Stabilizer control ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

PROCEDURE

1.	READ VALUE USING TECHSTREAM (OIL PRESSURE SENSOR)

NOTICE:

- Perform the inspection on a level surface.
- Perform the inspection with the vehicle empty.
- Make sure that the wheels are on the ground and facing straight ahead.
- Perform the inspection with the vehicle load completely on the suspension.

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / KDSS / Data List.

(f) Select the item below in the Data List, and read the value displayed on the Techstream.

KDSS

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Oil Pressure Sensor	Oil pressure sensor/ Min.: -784.79 MPa (-8002.66 kgf/cm^2, -113794.55 psi) Max.: 784.76 MPa (8002.35 kgf/cm^2, 113790.20 psi)	2.6 MPa (26.5 kgf/cm^2, 377 psi) to 3.0 MPa (30.6 kgf/cm^2, 435 psi): When vehicle stopped and fluid temperature 20°C (68°F)	-

(g) Check the fluid pressure.

OK:
2.6 MPa (26.5 kgf/cm^2, 377 psi) to 3.0 MPa (30.6 kgf/cm^2, 435 psi)

NG ▶ **INSPECT STABILIZER CONTROL ECU (SBP1 VOLTAGE)**

OK ▼

2.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Check for DTCs INFO.

Result

RESULT	PROCEED TO
DTC is output	A
DTC is not output	B

B ▶ **USE SIMULATION METHOD TO CHECK**

A ▶ **REPLACE STABILIZER CONTROL ECU**

3.	INSPECT STABILIZER CONTROL ECU (SBP1 VOLTAGE)

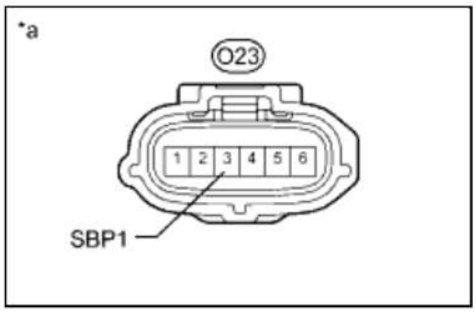
(a) Connect the stabilizer control ECU connector.

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(b) Disconnect the stabilizer control with accumulator housing connector.

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

Standard Voltage:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
O23-3 (SBP1) - Body ground	Ignition switch ON	4.75 to 5.25 V

Text in Illustration

*a	Front view of wire harness connector (to Stabilizer Control with Accumulator Housing Assembly)

NG ▶ **CHECK HARNESS AND CONNECTOR (STABILIZER CONTROL ECU - ACCUMULATOR PRESSURE SENSOR)**

OK ▼

4.	**CHECK HARNESS AND CONNECTOR (STABILIZER CONTROL ECU - ACCUMULATOR PRESSURE SENSOR)**

(a) Disconnect the stabilizer control ECU connector.

(b) Disconnect the stabilizer control with accumulator housing connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F70-17 (SOP1) - O23-2 (SOP1)	Always	Below 1 Ω
F70-17 (SOP1) - Body ground	Always	10 kΩ or higher
F70-6 (SGP1) - O23-1 (SGP1)	Always	Below 1 Ω
F70-6 (SGP1) - Body ground	Always	10 kΩ or higher

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NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

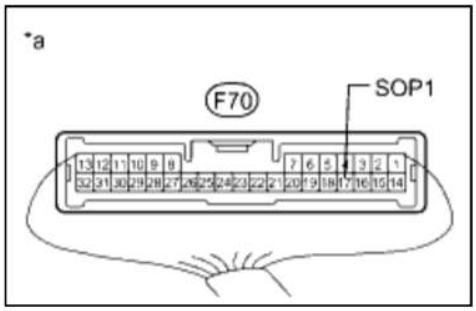
5.	**INSPECT ACCUMULATOR PRESSURE SENSOR (OUTPUT VOLTAGE)**

(a) Connect the stabilizer control ECU connector.

(b) Connect the stabilizer control with accumulator housing connector.

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

Standard Voltage:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
F70-17 (SOP1) - Body ground	Ignition switch ON	0.4 to 4.6 V

Text in Illustration

*a	Component with harness connected (Stabilizer Control ECU)

NG ▶ **READ VALUE USING TECHSTREAM (OIL PRESSURE SENSOR)**

OK ▶ **REPLACE STABILIZER CONTROL ECU**

6.	**READ VALUE USING TECHSTREAM (OIL PRESSURE SENSOR)**

(a) Disconnect the stabilizer control with accumulator housing connector.

(b) Connect the stabilizer control ECU connector.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

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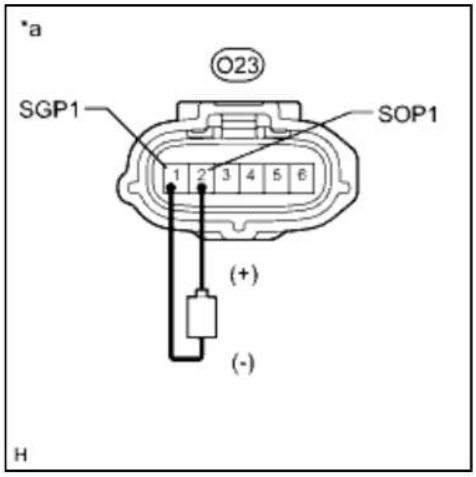
(e) Turn the Techstream on.

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

(g) Select the item below in the Data List, and read the value displayed on the Techstream.

KDSS

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Oil Pressure Sensor	Oil pressure sensor/ Min.: -784.79 MPa (-8002.66 kgf/cm^2, -113794.55 psi) Max.: 784.76 MPa (8002.35 kgf/cm^2, 113790.20 psi)	2.6 MPa (26.5 kgf/cm^2, 377 psi) to 3.0 MPa (30.6 kgf/cm^2, 435 psi): When vehicle stopped and fluid temperature 20°C (68°F)	-



(h) Using a 1.5 V dry cell battery, connect the positive (+) lead to terminal 2 (SOP1) of the stabilizer control with accumulator housing connector and the negative (-) lead to terminal 1 (SGP1), and check that the Data List display changes.

OK:

Data List display changes.

Text in Illustration

*a	Front view of wire harness connector (to Stabilizer Control with Accumulator Housing Assembly)

NG ▶ **REPLACE STABILIZER CONTROL ECU**

OK ▶ **REPLACE STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY**

7.	**CHECK HARNESS AND CONNECTOR (STABILIZER CONTROL ECU - ACCUMULATOR PRESSURE SENSOR)**

(a) Disconnect the stabilizer control ECU connector.

(b) Disconnect the stabilizer control with accumulator housing connector.

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F70-15 (SBP1) - O23-3 (SBP1)	Always	Below 1 Ω
F70-15 (SBP1) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE STABILIZER CONTROL ECU**

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KGE005X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1831/31,C1832/32: Accumulator Solenoid Malfunction / Upside (2010 4Runner)		

DTC	**C1831/31**	**Accumulator Solenoid Malfunction / Upside**

DTC	**C1832/32**	**Accumulator Solenoid Malfunction / Downside**

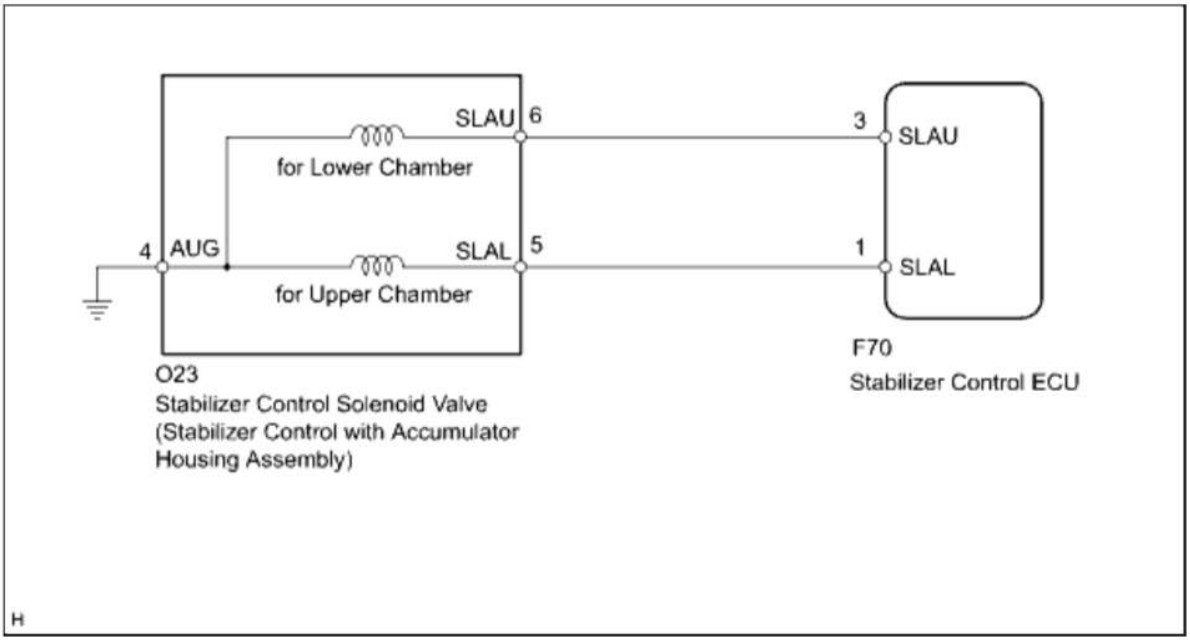
DESCRIPTION

The stabilizer control ECU receives information from the steering angle sensor, skid control ECU (speed signal) and yaw rate and acceleration sensor via CAN communication. Based on this information, the stabilizer control ECU turns the stabilizer control solenoid valve (built into the stabilizer control with accumulator housing assembly) on or off.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1831/31 C1832/32	Either condition is met: • An open circuit signal is detected for 1 second continuously when current is not applied to the solenoid valve. • A short circuit signal is detected 8 times continuously when current is applied to the solenoid valve.	• Harness or connector • Stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) • Stabilizer control ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

PROCEDURE

1.	**READ VALUE USING TECHSTREAM (ACCUMULATOR VALVE)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / KDSS / Data List.

(f) Select the item below in the Data List, and read the value displayed on the Techstream.

KDSS

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Accumulator Valve (Downside)	Stabilizer control solenoid valve (for Lower Chamber)/ ON or OFF	ON: Stabilizer control solenoid valve closed OFF: Stabilizer control solenoid valve open	-
Accumulator Valve (Upside)	Stabilizer control solenoid valve (for Upper Chamber)/ ON or OFF	ON: Stabilizer control solenoid valve open OFF: Stabilizer control	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		solenoid valve closed	

(g) Perform the Active Test of the stabilizer control ECU using the Techstream.

KDSS

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Accumulator Valve (Upside)	Stabilizer control solenoid valve (for Upper Chamber)	Valve ON / OFF	The operating sound of the solenoid (clicking sound) can be heard. ON: Data List ON OFF: Data List OFF When the Active Test is performed, the solenoid turns on for 3 seconds.
Accumulator Valve (Downside)	Stabilizer control solenoid valve (for Lower Chamber)	Valve ON / OFF	The operating sound of the solenoid (clicking sound) can be heard. ON: Data List ON OFF: Data List OFF When the Active Test is performed, the solenoid turns on for 3 seconds.

(h) Check that the solenoid operating sound can be heard, and that the Data List display changes between ON and OFF in response to the Active Test.

OK:

Solenoid operating sound can be heard and display changes between ON and OFF in response to Active Test.

NG ▶ **CHECK HARNESS AND CONNECTOR (STABILIZER CONTROL ECU - STABILIZER CONTROL SOLENOID VALVE)**

OK ▼

2.	**RECONFIRM DTC**

(a) Clear the DTCs INFO.

(b) Check for DTCs INFO.

Result

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RESULT	PROCEED TO
DTC is output	A
DTC is not output	B

B ▶ USE SIMULATION METHOD TO CHECK

A ▶ REPLACE STABILIZER CONTROL ECU

3.	CHECK HARNESS AND CONNECTOR (STABILIZER CONTROL ECU - STABILIZER CONTROL SOLENOID VALVE)

(a) Disconnect the stabilizer control ECU connector.

(b) Disconnect the stabilizer control with accumulator housing assembly connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F70-3 (SLAU) - O23-6 (SLAU)	Always	Below 1 Ω
F70-3 (SLAU) - Body ground	Always	10 kΩ or higher
F70-1 (SLAL) - O23-5 (SLAL)	Always	Below 1 Ω
F70-1 (SLAL) - Body ground	Always	10 kΩ or higher
O23-4 (AUG) - Body ground	Always	Below 1 Ω

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

4.	INSPECT STABILIZER CONTROL SOLENOID VALVE

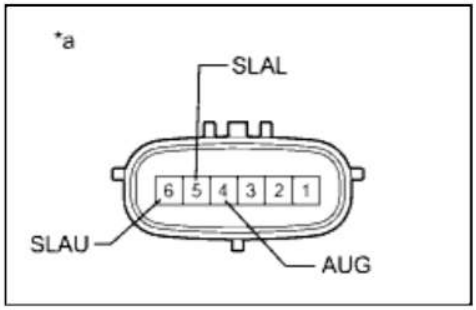
(a) Disconnect the stabilizer control with accumulator housing assembly connector.

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

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Standard Resistance:

for DTC C1831/31 (for Upper Chamber)



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
5 (SLAL) - 4 (AUG)	25°C (77°F)	24.3 to 25.7 Ω

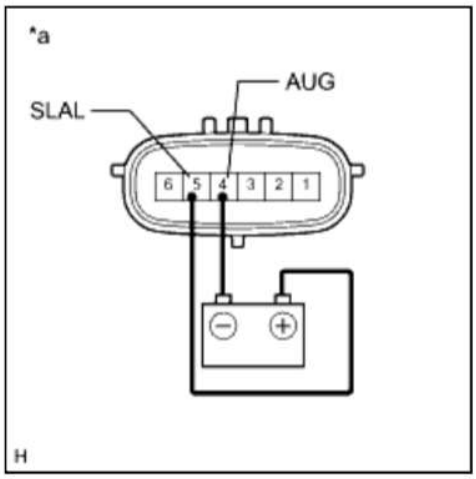
for DTC C1832/32 (for Lower Chamber)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
6 (SLAU) - 4 (AUG)	25°C (77°F)	24.3 to 25.7 Ω

Text in Illustration

*a	Component without harness connected (Stabilizer Control with Accumulator Housing Assembly)

(c) Check for an operating sound of the stabilizer control solenoid valve.



(1) for DTC C1831/31 (for Upper Chamber):

Connect terminal 5 (SLAL) to the positive (+) battery terminal, and terminal 4 (AUG) to the negative (-) battery terminal.

OK:
An operating sound (click sound) can be heard.

Text in Illustration

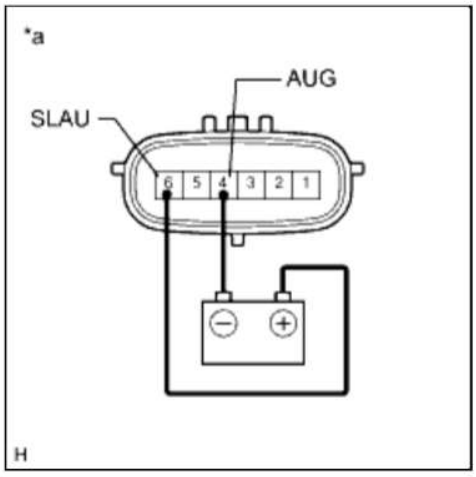
*a	Component without harness connected (Stabilizer Control with Accumulator Housing Assembly)

(2) for DTC C1832/32 (for Lower Chamber):

Connect terminal 6 (SLAU) to the positive (+) battery terminal, and terminal 4 (AUG) to the negative (-) battery terminal.

OK:
An operating sound (click sound) can be heard.

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Text in Illustration

*a	Component without harness connected (Stabilizer Control with Accumulator Housing Assembly)

NG ▶ **REPLACE STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY**

OK ▶ **REPLACE STABILIZER CONTROL ECU**

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046H1001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT INDICATOR LIGHT

(a) Check that the KDSS indicator light comes on for 2 seconds when the ignition switch is turned to ON.

If the indicator check result is not normal, proceed to troubleshooting for the Problem Symptoms Table INFO.

2. INSPECT FLUID PRESSURE

NOTICE:

- Perform the inspection on a level surface.
- Perform the inspection with the vehicle empty.
- Make sure that the wheels are on the ground and facing straight ahead.
- Perform the inspection with the vehicle load completely on the suspension.

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / KDSS / Data List.

(f) Select the item below in the Data List, and read its value displayed on the Techstream.

KDSS

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Oil Pressure Sensor	Oil pressure sensor/ Min.: -784.79 MPa (-8002.66 kgf/cm^2, -113794.55 psi) Max.: 784.76 MPa (8002.35 kgf/cm^2, 113790.20 psi)	2.6 MPa (26.5 kgf/cm^2, 377 psi) to 3.0 MPa (30.6 kgf/cm^2, 435 psi): When vehicle stopped and fluid temperature 20°C (68°F)	-

HINT:

If the value is outside the specified range, there may be fluid leaks, clogs in the hydraulic circuit, or a lack or excess of fluid.

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KGF005X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1851/51,C1853/53: Low Pressure Malfunction in Upside of KDSS System (2010 4Runner)		

DTC	**C1851/51**	**Low Pressure Malfunction in Upside of KDSS System**

DTC	**C1853/53**	**High Pressure Malfunction in Upside of KDSS System**

DESCRIPTION

In the KDSS hydraulic circuit, the fluid is contained under pressure. If the fluid temperature is 20°C (68°F), the pressure is approximately 3.0 MPa (30.6 kgf/cm^2, 435 psi).

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1851/51	The sensor output is 0.9 MPa (9.2 kgf/cm^2, 130 psi) or less for 5 min. continuously with the ignition switch ON.	• Hydraulic circuit • Harness or connector • Accumulator pressure sensor or stabilizer control solenoid valve (Stabilizer control with accumulator housing assembly) • Stabilizer control ECU
C1853/53	The sensor output is 8.8 MPa (89.7 kgf/cm^2, 1276 psi) or more for 20 sec. continuously with the ignition switch ON.	

INSPECTION PROCEDURE

HINT:

- When these DTCs are output, perform the hydraulic circuit inspection first INFO .
- If the DTCs cannot be cleared even after the hydraulic circuit inspection, perform the electrical circuit inspection by following the procedures below.

PROCEDURE

1.	**INSPECT FOR FLUID LEAK**

(a) Inspect for fluid leaks INFO .

OK:

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No fluid leaks.

NG ▶ **REPAIR FLUID LEAK OR REPLACE PARTS AS NECESSARY**

OK ▼

2.	**CHECK ANY OTHER DTCS OUTPUT (DTC C1812/12, C1831/31 AND/OR C1832/32)**

(a) Check if DTC C1812/12, C1831/31 and/or C1832/32 is output INFO.

Result

RESULT	PROCEED TO
No DTC is output	A
DTC C1812/12, C1831/31 and/or C1832/32 is output	B

B ▶ **REPAIR CIRCUITS INDICATED BY OUTPUT DTCS**

A ▼

3.	**INSPECT STABILIZER CONTROL SOLENOID VALVE (CHECK IF VALVE STUCK)**

(a) Disconnect the stabilizer control with accumulator housing assembly connector.

(b) Check for an operating sound of the stabilizer control solenoid valve.

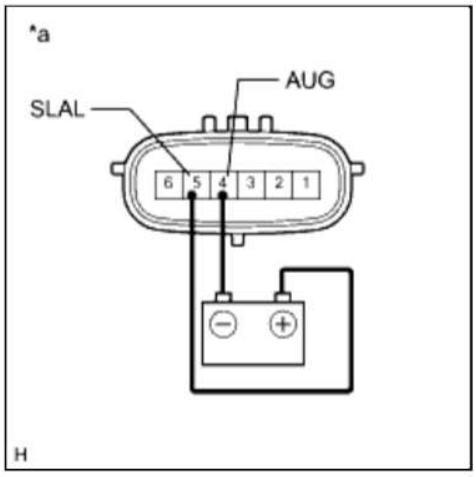
(1) for Upper Chamber:

Connect terminal 5 (SLAL) to the positive (+) battery terminal, and terminal 4 (AUG) to the negative (-) battery terminal.

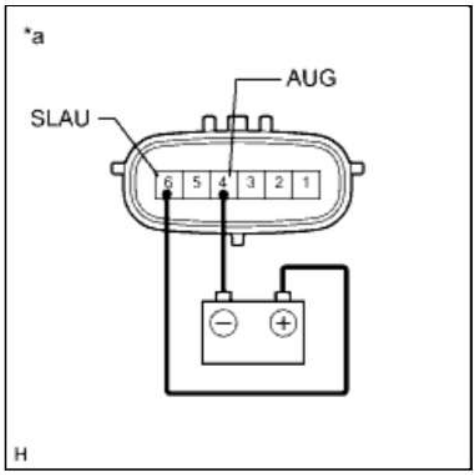
OK:
An operating sound (click sound) can be heard.

Text in Illustration

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*a	Component without harness connected (Stabilizer Control with Accumulator Housing Assembly)



(2) for Lower Chamber:

Connect terminal 6 (SLAU) to the positive (+) battery terminal, and terminal 4 (AUG) to the negative (-) battery terminal.

OK:
An operating sound (click sound) can be heard.

Text in Illustration

*a	Component without harness connected (Stabilizer Control with Accumulator Housing Assembly)

NG ▶ **REPLACE STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY**

OK ▼

4.	**INSPECT FOR CLOGS IN HYDRAULIC CIRCUIT**

(a) Bleed air and check that the hydraulic circuit is not clogged INFO .

OK:
Hydraulic circuit is not clogged.

NG ▶ **REPAIR HYDRAULIC CIRCUIT MALFUNCTIONS OR REPLACE PARTS AS NECESSARY**

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OK

5.	**RECONFIRM DTC**

(a) Clear the DTCs INFO .

(b) Check for DTCs INFO .

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ **REPLACE STABILIZER CONTROL ECU**

A ▶ **USE SIMULATION METHOD TO CHECK**

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KGG005X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1879/79: Zero Point Calibration of Acceleration Sensor Undone (2010 4Runner)		

DTC	**C1879/79**	**Zero Point Calibration of Acceleration Sensor Undone**

DESCRIPTION

The stabilizer control ECU receives the yaw rate and acceleration sensor zero point information from the skid control ECU via CAN communication.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1879/79	A signal indicating that the yaw rate and acceleration sensor zero point calibration has not been performed is continuously received from the skid control ECU for 5 seconds.	• Brake control system (Yaw rate and acceleration sensor zero point calibration) • Stabilizer control ECU

INSPECTION PROCEDURE

HINT:

When this DTC is output, obtain the calibration value of the yaw rate and acceleration sensor zero point first.

PROCEDURE

1.	**PERFORM ZERO POINT CALIBRATION**

(a) Perform brake control system calibration INFO.

NEXT

2.	**RECONFIRM DTC**

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(a) Clear the DTCs INFO .

(b) Check for DTCs INFO .

Result

RESULT	PROCEED TO
DTC is output	A
DTC is not output	B

B ▶ **END**

A ▶ **REPLACE STABILIZER CONTROL ECU**

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UF001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1881/81: KDSS ECU Malfunction (2010 4Runner)		

DTC	**C1881/81**	**KDSS ECU Malfunction**

DESCRIPTION

The stabilizer control ECU stores DTC C1881/81 when internal ECU malfunctions occur.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1881/81	Either condition is met: • A nonvolatile memory error occurs. • A malfunction occurs in the message register used for CAN communication.	Stabilizer control ECU

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK DTC**

(a) Clear the DTCs INFO.

(b) Check for DTCs INFO.

Result

RESULT	PROCEED TO
DTC is output	A
DTC is not output	B

B ▶ **USE SIMULATION METHOD TO CHECK**

A ▶ **REPLACE STABILIZER CONTROL ECU**

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UG001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1882/82: Power Supply Voltage Malfunction (2010 4Runner)		

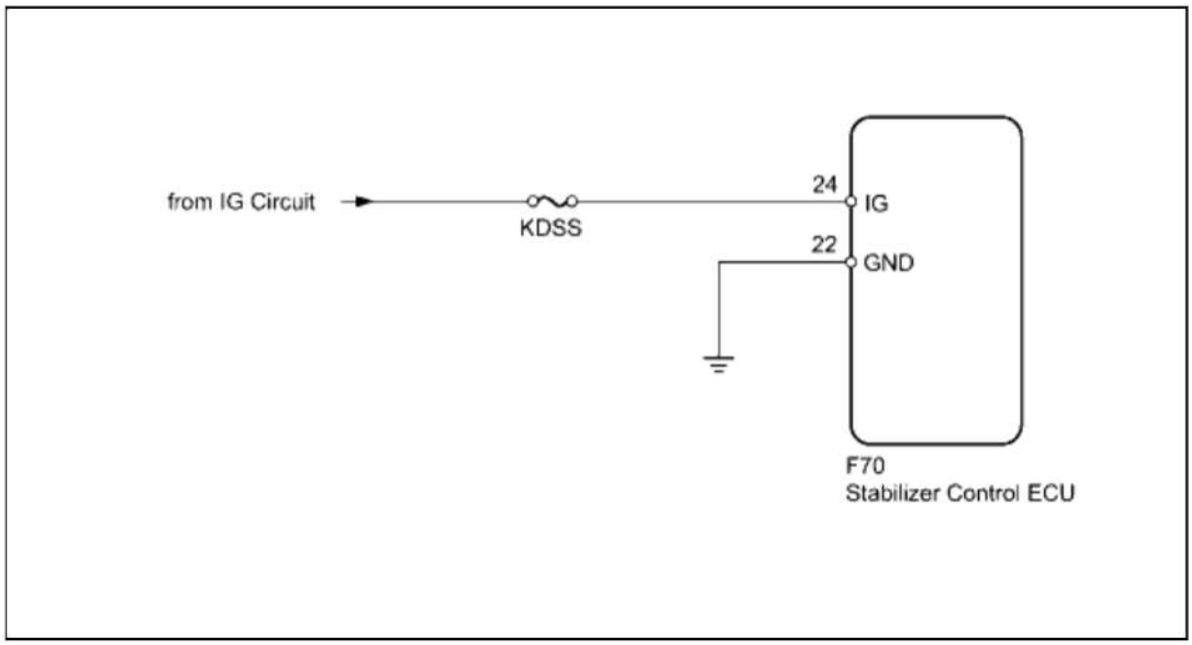
DTC	**C1882/82**	**Power Supply Voltage Malfunction**

DESCRIPTION

The stabilizer control ECU recognizes the ignition switch ON signal based on the voltage input to the IG terminal.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1882/82	The IG terminal voltage is 10 V or less or 16 V or higher for 0.5 seconds.	• Battery • Charging system • KDSS fuse • Harness or connector • Stabilizer control ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (IG POWER SOURCE VOLTAGE)

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Turn the Techstream on.

(e) Enter the following menus: Chassis / KDSS / Data List.

(f) Select the item below in the Data List, and read the value displayed on the Techstream.

KDSS

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
IG Power Source Voltage	IG Power Source Voltage/ Min.: 0.0 V Max.: 25.5 V	Ignition switch ON: 11 to 14 V	-

Standard voltage:
11 to 14 V

NG ▶ **CHECK HARNESS AND CONNECTOR (IG TERMINAL)**

OK
▼

2.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Check for DTCs INFO.

Result

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RESULT	PROCEED TO
DTC is output	A
DTC is not output	B

B ▶ **USE SIMULATION METHOD TO CHECK**

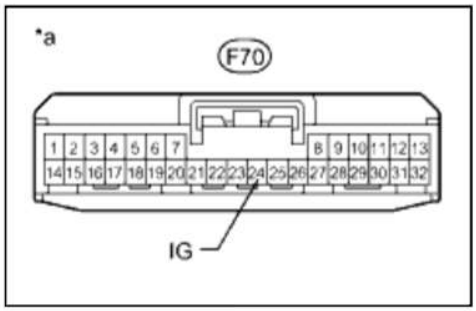
A ▶ **REPLACE STABILIZER CONTROL ECU**

3.	**CHECK HARNESS AND CONNECTOR (IG TERMINAL)**

(a) Disconnect the stabilizer control ECU connector.

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

Standard Voltage:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
F70-24 (IG) - Body ground	Ignition switch ON	11 to 14 V

Text in Illustration

*a	Front view of wire harness connector (to Stabilizer Control ECU)

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

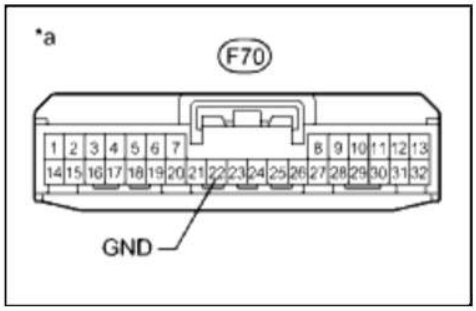
4.	**CHECK HARNESS AND CONNECTOR (GND TERMINAL)**

(a) Disconnect the stabilizer control ECU connector.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F70-22 (GND) - Body ground	Always	Below 1 Ω

Text in Illustration

*a	Front view of wire harness connector (to Stabilizer Control ECU)

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE STABILIZER CONTROL ECU**

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UH001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1883/83: Speed Sensor Circuit Malfunction (2010 4Runner)		

DTC	**C1883/83**	**Speed Sensor Circuit Malfunction**

DESCRIPTION

The stabilizer control ECU receives the speed signal from the skid control ECU via CAN communication.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1883/83	The stabilizer control ECU continuously receives a speed sensor malfunction signal from the skid control ECU for 1 second.	• Brake control system • CAN communication system • Stabilizer control ECU

INSPECTION PROCEDURE

HINT:

If DTC U0122/71 and C1883/83 are output at the same time, perform the inspection necessary for the CAN communication system first INFO **.**

PROCEDURE

1.	**CHECK DTC (VEHICLE STABILITY CONTROL SYSTEM)**

(a) Check for speed sensor malfunction DTCs INFO.

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

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B ▶ GO TO VEHICLE STABILITY CONTROL SYSTEM (DIAGNOSTIC TROUBLE CODE CHART)

A ▼

2.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Perform a road test.

(c) Check for DTCs INFO.

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ REPLACE STABILIZER CONTROL ECU

A ▶ USE SIMULATION METHOD TO CHECK

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UI001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1884/84: Steering Angle Sensor Circuit Malfunction (2010 4Runner)		

DTC	**C1884/84**	**Steering Angle Sensor Circuit Malfunction**

DESCRIPTION

The stabilizer control ECU receives steering angle information from the steering angle sensor via CAN communication.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1884/84	Either condition is met: • The stabilizer control ECU receives an error signal from the steering sensor for 5 seconds. • A steering sensor BAT terminal open circuit malfunction signal is continuously received for 5 seconds.	• Steering angle sensor (Spiral cable sub-assembly) • CAN communication system • Stabilizer control ECU

INSPECTION PROCEDURE

HINT:

If DTC U0126/71 and C1884/84 are output at the same time, perform the inspection necessary for the CAN communication system first INFO **.**

PROCEDURE

1.	**CHECK DTC (VEHICLE STABILITY CONTROL SYSTEM)**

(a) Check for steering angle sensor malfunction DTCs INFO .

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

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B ▶ GO TO VEHICLE STABILITY CONTROL SYSTEM (DIAGNOSTIC TROUBLE CODE CHART)

A ▼

2.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Perform a road test.

(c) Check for DTCs INFO.

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ REPLACE STABILIZER CONTROL ECU

A ▶ USE SIMULATION METHOD TO CHECK

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000045UJ001X
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: C1887/87: Acceleration Sensor Circuit Malfunction (2010 4Runner)		

DTC	**C1887/87**	**Acceleration Sensor Circuit Malfunction**

DESCRIPTION

The stabilizer control ECU receives forward, backward and lateral acceleration information from the yaw rate and acceleration sensor via CAN communication.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1887/87	The stabilizer control ECU receives an error signal from the yaw rate sensor for 1 second.	• Yaw rate and acceleration sensor • CAN communication system • Stabilizer control ECU

INSPECTION PROCEDURE

HINT:

If DTC U0124/71 and C1887/87 are output at the same time, perform the inspection necessary for the CAN communication system first INFO .

PROCEDURE

1.	**CHECK DTC (VEHICLE STABILITY CONTROL SYSTEM)**

(a) Check for yaw rate and acceleration sensor malfunction DTCs INFO .

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ **GO TO VEHICLE STABILITY CONTROL SYSTEM**

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(DIAGNOSTIC TROUBLE CODE CHART)

A

2.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Perform a road test.

(c) Check for DTCs INFO.

Result

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ REPLACE STABILIZER CONTROL ECU

A ▶ USE SIMULATION METHOD TO CHECK

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Last Modified: 5-10-2010	6.4 C	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002PEG00FX
Title: SUSPENSION CONTROL: KINETIC DYNAMIC SUSPENSION SYSTEM: U0100/71,U0122/71,U0124/71,U0126/71: Lost Communication with ECM / PCM "A (2010 4Runner)		

DTC	**U0100/71**	**Lost Communication with ECM / PCM "A**

DTC	**U0122/71**	**Lost Communication with Vehicle Dynamics Control Module**

DTC	**U0124/71**	**Lost Communication with Lateral Acceleration Sensor Module**

DTC	**U0126/71**	**Lost Communication with Steering Angle Sensor Module**

DESCRIPTION

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
U0100/71	While driving at 30 km/h (19 mph), the ECM indicates a CAN communication stop for 3 seconds or more.	CAN communication system
U0122/71	The skid control ECU indicates a CAN communication stop for 3 seconds or more.	CAN communication system
U0124/71	The yaw rate sensor indicates a CAN communication stop for 3 seconds or more.	CAN communication system
U0126/71	The steering angle sensor indicates a CAN communication stop for 3 seconds or more.	CAN communication system

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK DTC**

(a) Clear the DTCs INFO.

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(b) Perform a road test.

(c) Check for DTCs INFO.

Result

CONDITION	PROCEED TO
DTC is not output	A
DTC is output	B

HINT:

If a CAN communication malfunction DTC and a related sensor malfunction DTC are output at the same time, the CAN communication malfunction must be repaired before troubleshooting the sensor malfunction DTC.

B ▶ GO TO CAN COMMUNICATION SYSTEM (HOW TO PROCEED WITH TROUBLESHOOTING)

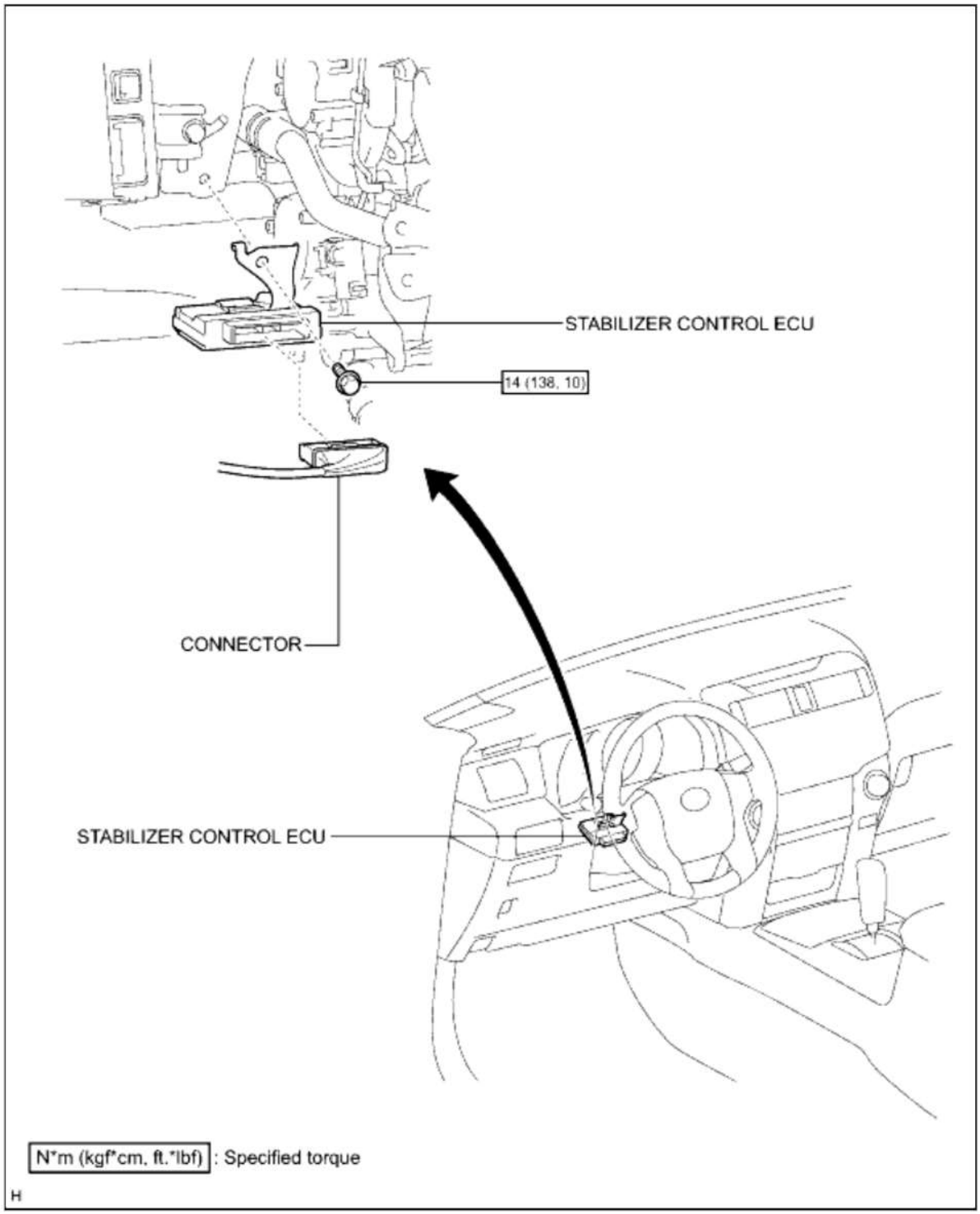
A ▶ USE SIMULATION METHOD TO CHECK

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KLF005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL ECU: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KLG005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL ECU: REMOVAL (2010 4Runner)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

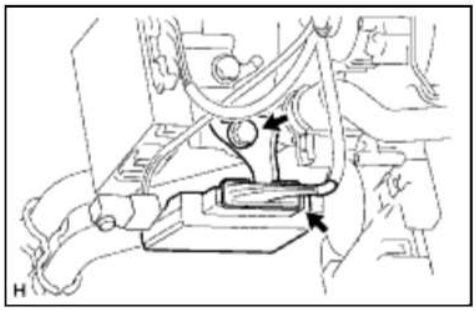
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

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

2. REMOVE LOWER NO. 1 INSTRUMENT PANEL AIRBAG ASSEMBLY

(a) Remove the lower No. 1 instrument panel airbag assembly INFO .



3. REMOVE STABILIZER CONTROL ECU

(a) Disconnect the connector.

(b) Remove the bolt and stabilizer control ECU.

NOTICE:

- Avoid any impact to the stabilizer control ECU.
- Replace the stabilizer control ECU with a new one if it is dropped.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KLE005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL ECU: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL STABILIZER CONTROL ECU

(a) Install the stabilizer control ECU with the bolt.

Torque: 14 N·m (138 kgf·cm, 10ft·lbf)

NOTICE:

- Replace the stabilizer control ECU with a new one if it is dropped.
- Make sure the bracket rotation stopper touches the installation position.

(b) Connect the connector.

NOTICE:

Securely connect the connector.

2. INSTALL LOWER NO. 1 INSTRUMENT PANEL AIRBAG ASSEMBLY

(a) Install the lower No. 1 instrument panel airbag 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 .

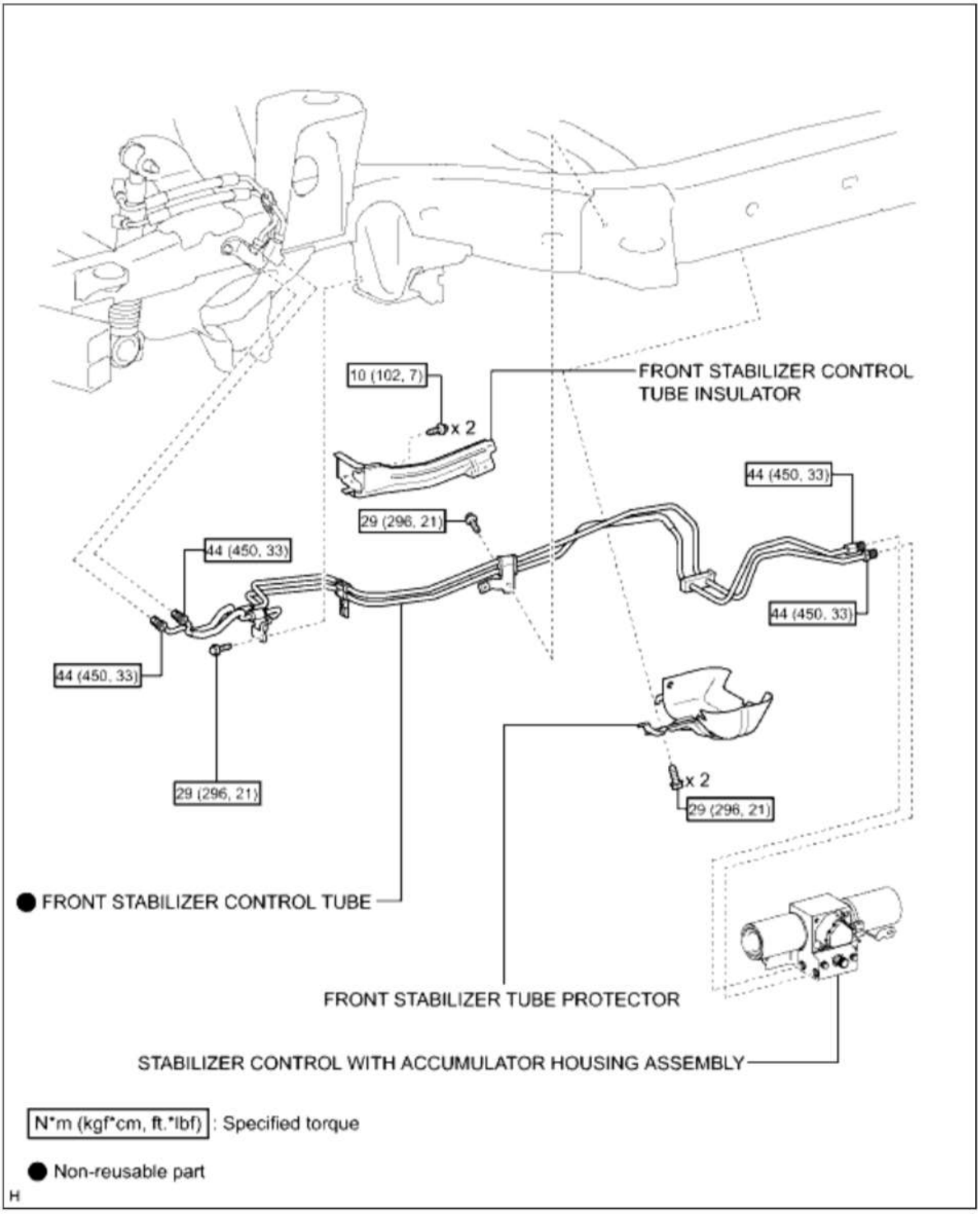
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJZ005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL VALVE (w/ KDSS): COMPONENTS (2010 4Runner)		

COMPONENTS

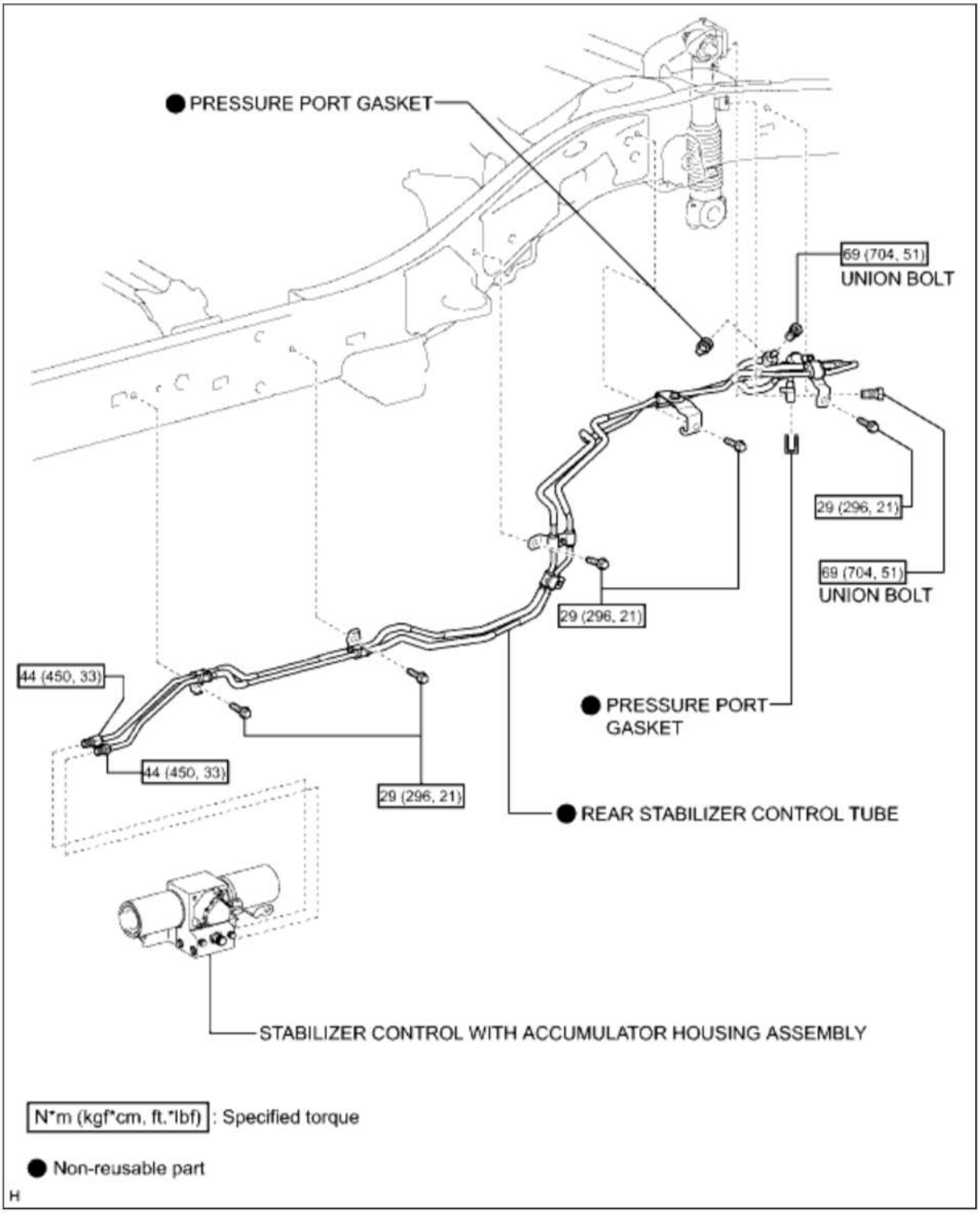
ILLUSTRATION

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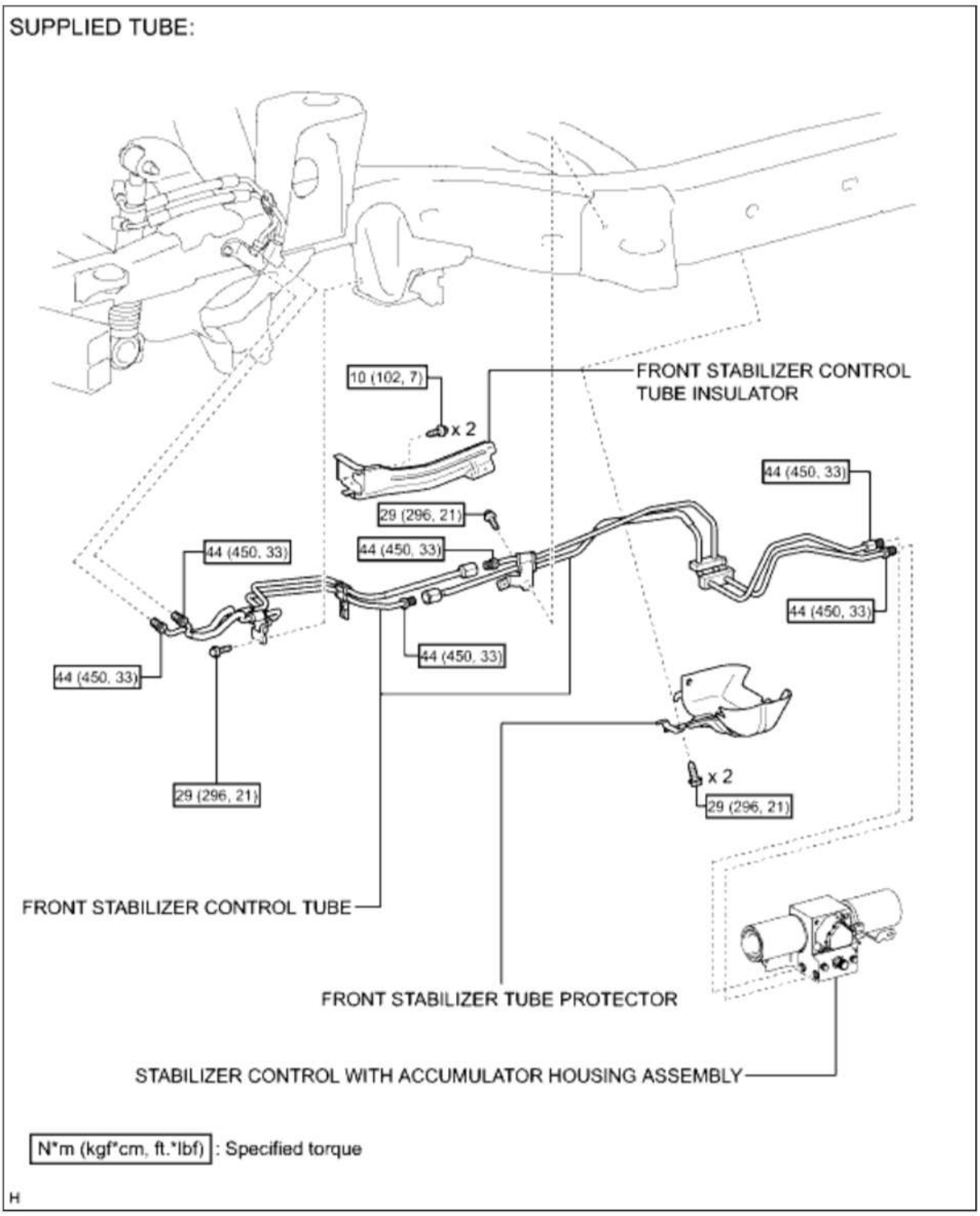
ILLUSTRATION

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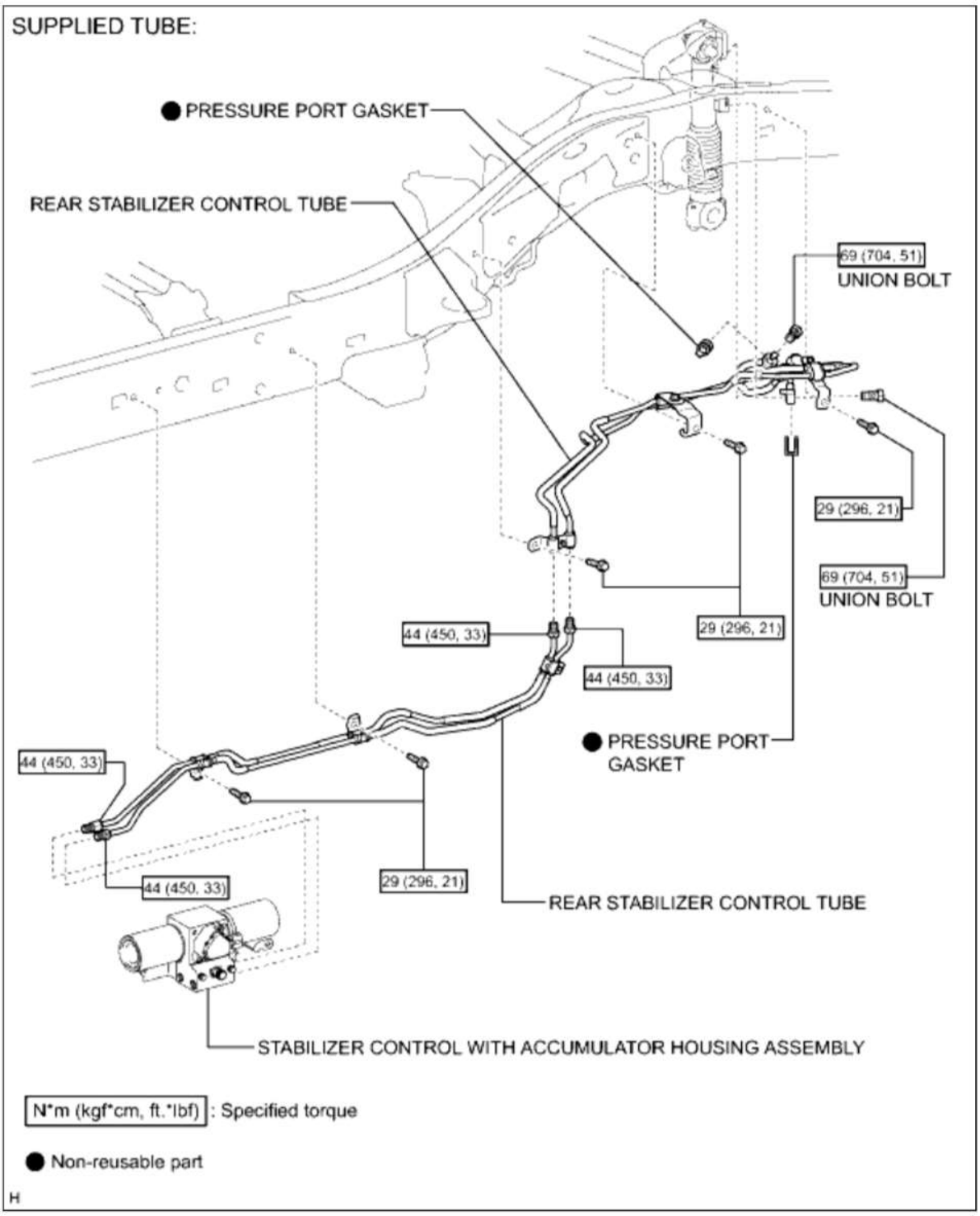
ILLUSTRATION

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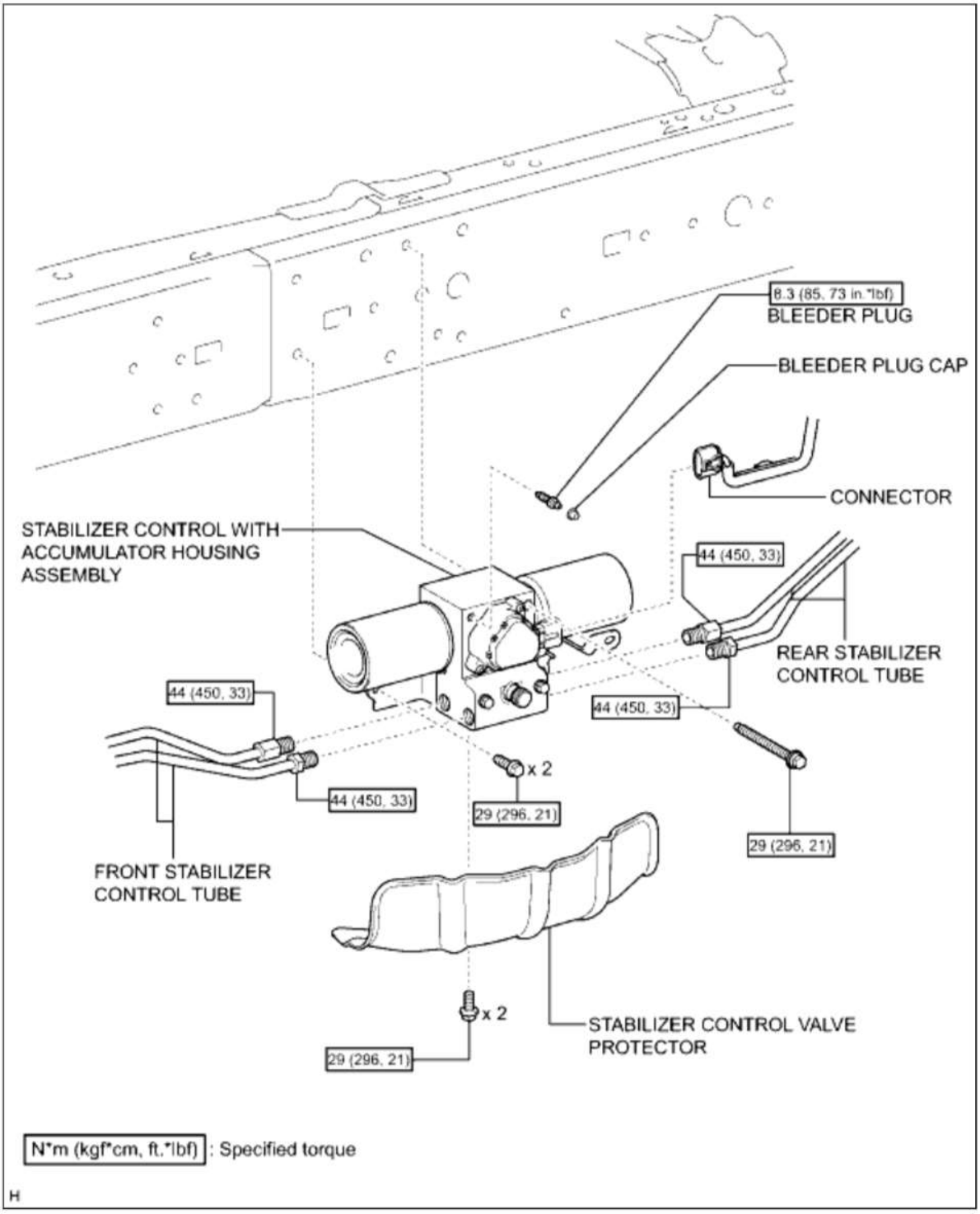
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KK0005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL VALVE (w/ KDSS): REMOVAL (2010 4Runner)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

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

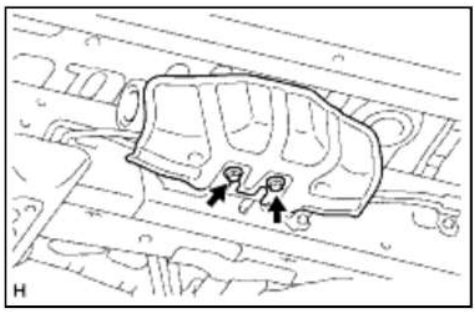
2. REMOVE FRONT WHEEL

3. REMOVE REAR WHEEL

4. REMOVE SIDE STEP ASSEMBLY LH INFO

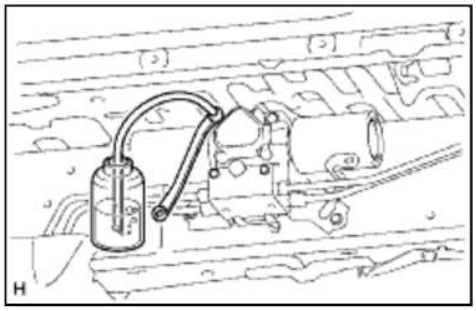
5. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

6. REMOVE STABILIZER CONTROL VALVE PROTECTOR



(a) Remove the 2 bolts and stabilizer control valve protector.

7. DRAIN SUSPENSION FLUID



(a) Loosen the bleeder plug on the stabilizer control with accumulator housing assembly and drain suspension fluid.

HINT:

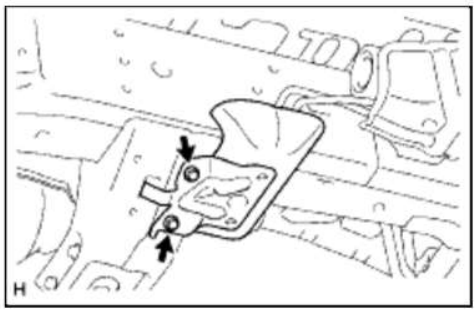
- Drain suspension fluid when performing operations related to the hydraulic circuits.
- Draining suspension fluid decreases suspension fluid pressure.

(b) Tighten the bleeder plug.

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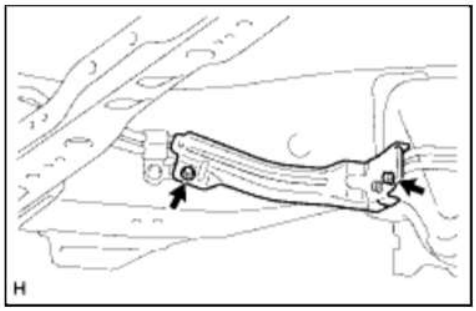
Torque: 8.3 N·m (85 kgf·cm, 73in·lbf)

8. REMOVE FRONT STABILIZER TUBE PROTECTOR



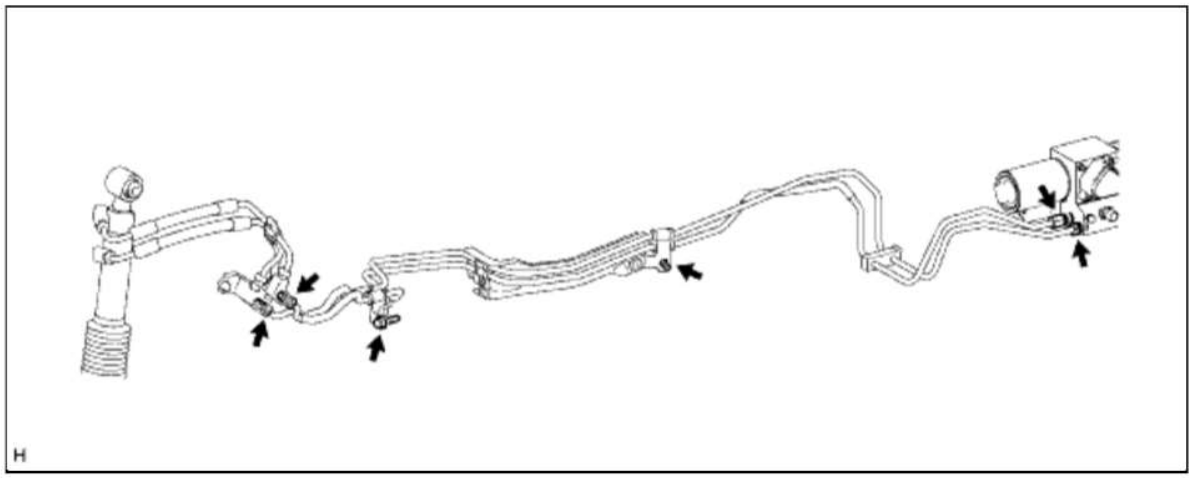
(a) Remove the 2 bolts and front stabilizer tube protector.

9. REMOVE FRONT STABILIZER CONTROL TUBE INSULATOR



(a) Remove the 2 bolts and front stabilizer control tube insulator.

10. REMOVE FRONT STABILIZER CONTROL TUBE

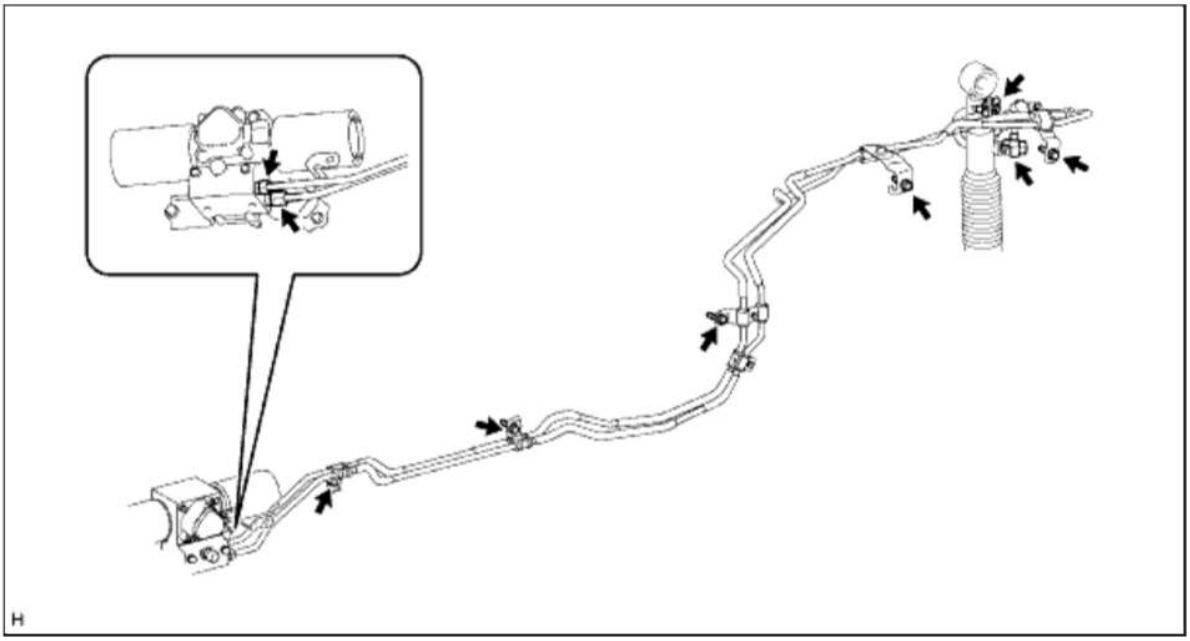


(a) Using a union nut wrench, disconnect the 4 flare nuts.

(b) Remove the 2 bolts and front stabilizer control tubes.

11. REMOVE REAR STABILIZER CONTROL TUBE

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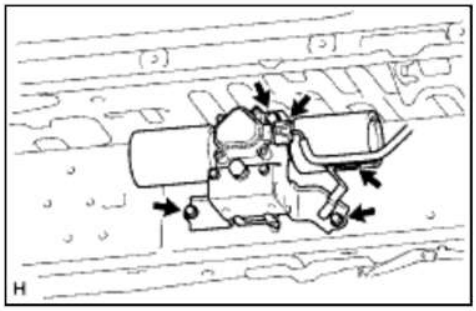


(a) Using a union nut wrench, disconnect the 2 flare nuts.

(b) Remove the 2 union bolts of the rear stabilizer control cylinder and the 2 pressure port gaskets.

(c) Remove the 4 bolts and rear stabilizer control tubes.

12. REMOVE STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY



(a) Disconnect the connector, and then detach the clamp from the sensor bracket.

(b) Remove the 3 bolts and stabilizer control with accumulator housing.

NOTICE:

Do not disassemble the stabilizer control with accumulator housing assembly or expose it to an open flame as the accumulator of the stabilizer control with accumulator housing assembly contains gas.

TOYOTA

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KJY005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL VALVE (w/ KDSS): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY

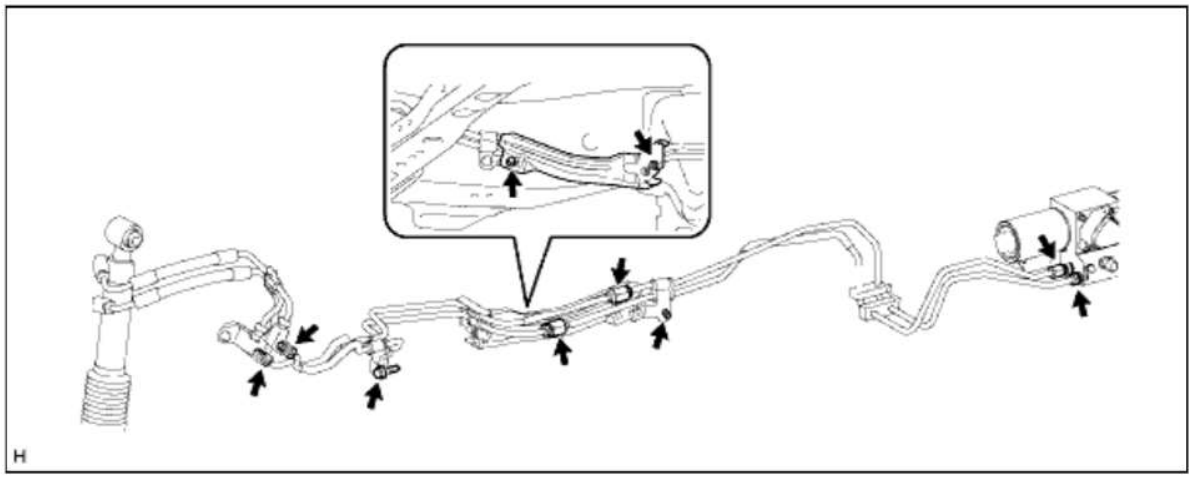
(a) Install the stabilizer control with accumulator housing with the 3 bolts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

(b) Connect the connector, and then attach the clamp to the hole of the bracket.

2. INSTALL FRONT STABILIZER CONTROL TUBE

(a) Install a new front stabilizer control tube (front side and rear side).



(1) Apply suspension fluid to the threads of the flare nuts.

(2) Temporarily install the 6 flare nuts on the front stabilizer control tubes.

NOTICE:

- Do not bend the control tubes.
- Make sure that the control tubes do not contact other parts.
- Do not damage the control tubes or flare nuts.

(b) Install the 2 bolts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

(c) Using a union nut wrench, tighten the 6 flare nuts on the front stabilizer control tubes.

Torque: 44 N·m (450 kgf·cm, 33ft·lbf)

NOTICE:

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

3. INSTALL FRONT STABILIZER CONTROL TUBE INSULATOR

(a) Install the front stabilizer control tube insulator with the 2 bolts.

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Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

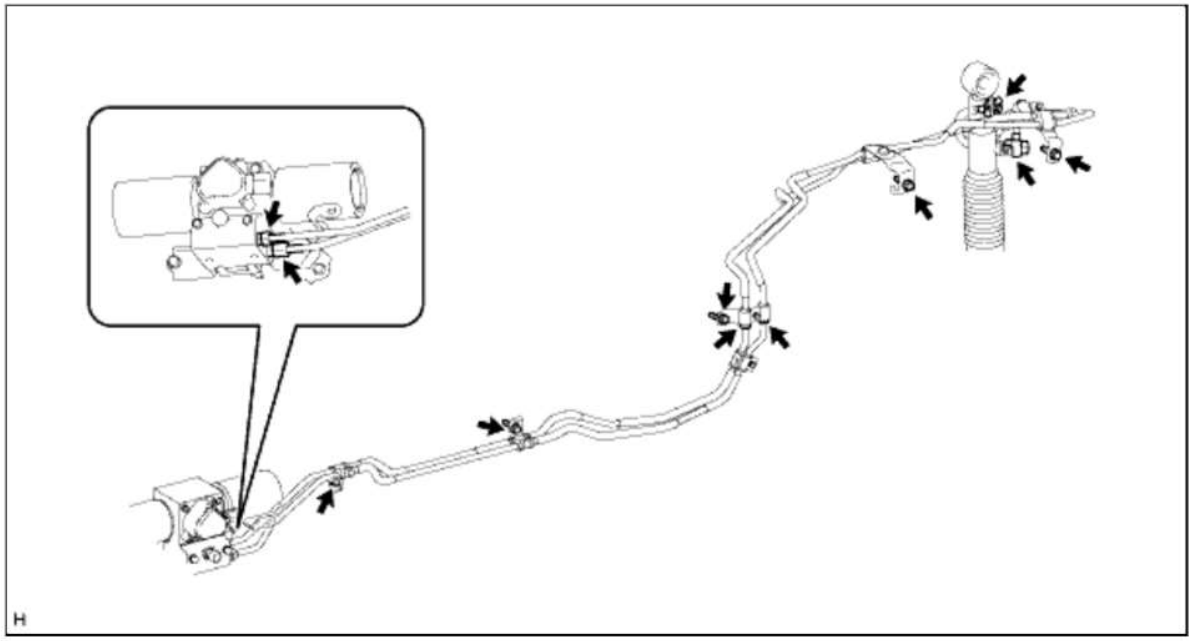
4. INSTALL FRONT STABILIZER TUBE PROTECTOR

(a) Install the front stabilizer tube protector with the 2 bolts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

5. INSTALL REAR STABILIZER CONTROL TUBE

(a) Install a new rear stabilizer control tube (front side and rear side).



(1) Apply suspension fluid to the threads of the flare nuts.

(2) Temporarily install the 4 flare nuts on the rear stabilizer control tubes.

NOTICE:

- Make sure that the control tubes do not contact other parts.
- Do not bend the control tubes.
- Do not damage the control tubes or flare nuts.

(b) Install the 5 bolts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

(c) Using a union nut wrench, tighten the 4 flare nuts on the rear stabilizer control tubes.

Torque: 44 N·m (450 kgf·cm, 33ft·lbf)

NOTICE:

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

(d) Install the rear stabilizer control tubes to the rear stabilizer control cylinder with the 2 union bolts and 2 new pressure port gaskets.

Torque: 69 N·m (704 kgf·cm, 51ft·lbf)

NOTICE:

Insert the stoppers of the rear stabilizer control tubes into the rear stabilizer control cylinder.

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6. BLEED AIR FROM SUSPENSION FLUID INFO

7. APPLY PRESSURE ACCORDING TO TEMPERATURE MANAGEMENT CHART WHEN FILLING FLUID INFO

8. INSPECT FOR SUSPENSION FLUID LEAK INFO

9. INSTALL FRONT WHEEL INFO

10. INSTALL REAR WHEEL INFO

11. INSPECT VEHICLE HEIGHT INFO

12. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO

13. INSTALL STABILIZER CONTROL VALVE PROTECTOR

(a) Install the stabilizer control valve protector with the 2 bolts.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

14. INSTALL SIDE STEP ASSEMBLY LH INFO

15. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

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

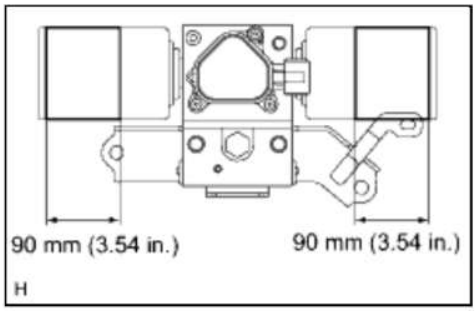


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Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002KL7005X
Title: SUSPENSION CONTROL: STABILIZER CONTROL VALVE (w/ KDSS): DISPOSAL (2010 4Runner)		

DISPOSAL

1. DISPOSE OF STABILIZER CONTROL WITH ACCUMULATOR HOUSING ASSEMBLY



(a) Using a drill, make a hole in the areas of the accumulator housing indicated in the illustration to discharge the gas inside.

CAUTION:

- Be careful and always use the proper safety equipment when drilling because shards of metal may fly about.
- The gas is colorless, odorless and non-poisonous.

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Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038U7007X
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ KDSS): BLEEDING (2010 4Runner)		

BLEEDING

1. BLEED AIR FROM SUSPENSION FLUID

CAUTION:

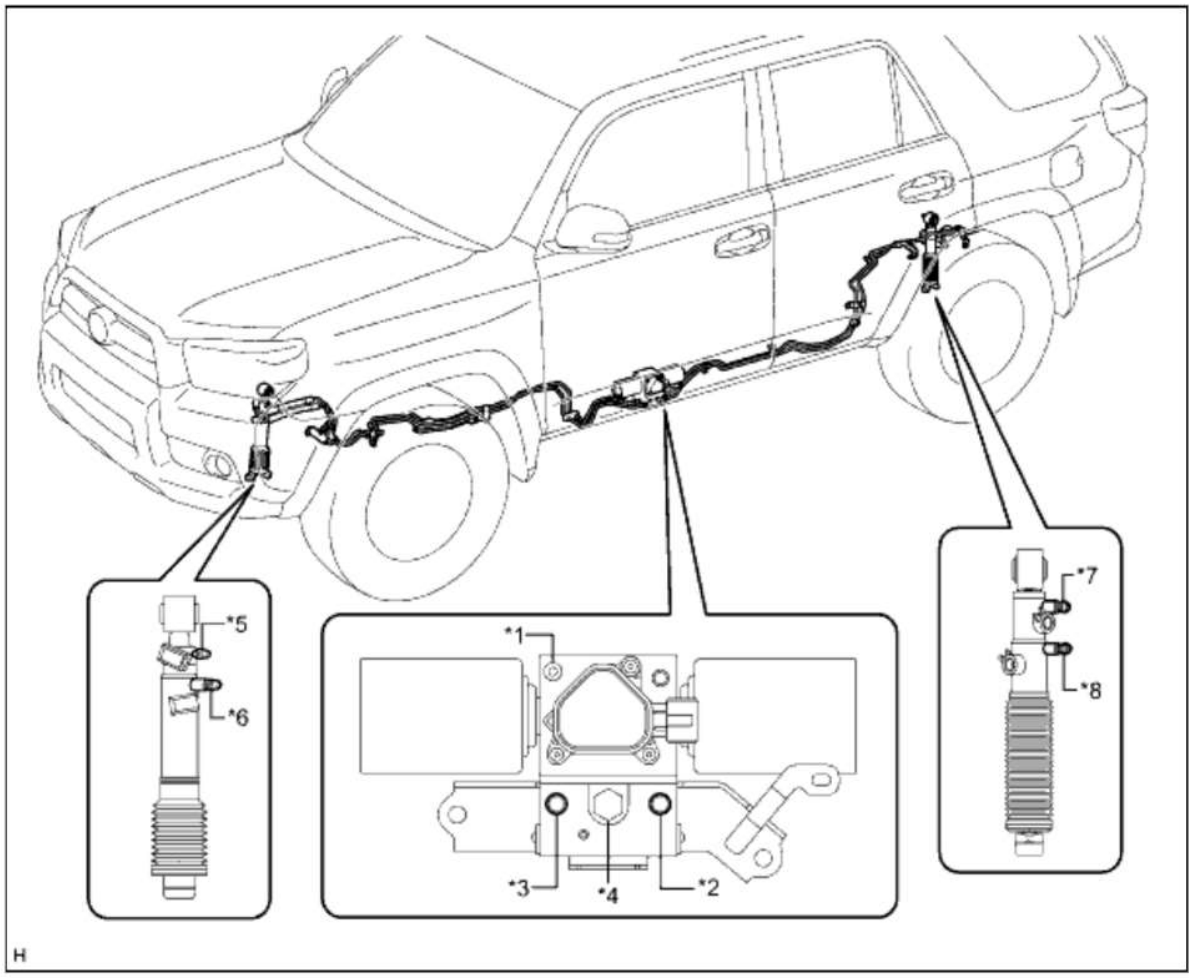
- Be sure to check the pipe connections and whether or not any hydraulic circuit parts are damaged before performing work as the hydraulic circuits become highly pressurized during air bleeding.
- The pipes become highly pressurized when bleeding air. If a fluid leak is discovered, immediately release the pressure and repair the fluid leak as there is danger involved.

HINT:

When bleeding air, approximately 6 liters of new fluid is needed.

(a) Remove the stabilizer control valve protector INFO .

(b) Check the pipe connections and whether or not any hydraulic circuit parts are damaged.



Text in Illustration

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*1	Stabilizer Control with Accumulator Housing Bleeder Plug	*2	Upper Chamber Stabilizer Control with Accumulator Housing Shutter Valve
*3	Lower Chamber Stabilizer Control with Accumulator Housing Shutter Valve	*4	Stabilizer Control Accumulator Housing Inlet Port
*5	Front Stabilizer Control Cylinder Upper Chamber Bleeder Plug	*6	Front Stabilizer Control Cylinder Lower Chamber Bleeder Plug
*7	Rear Stabilizer Control Cylinder Upper Chamber Bleeder Plug	*8	Rear Stabilizer Control Cylinder Lower Chamber Bleeder Plug

(c) Add new fluid to SST (high pressure oil pump) and bleed air from SST hoses.

SST: 09760-60020

Fluid:

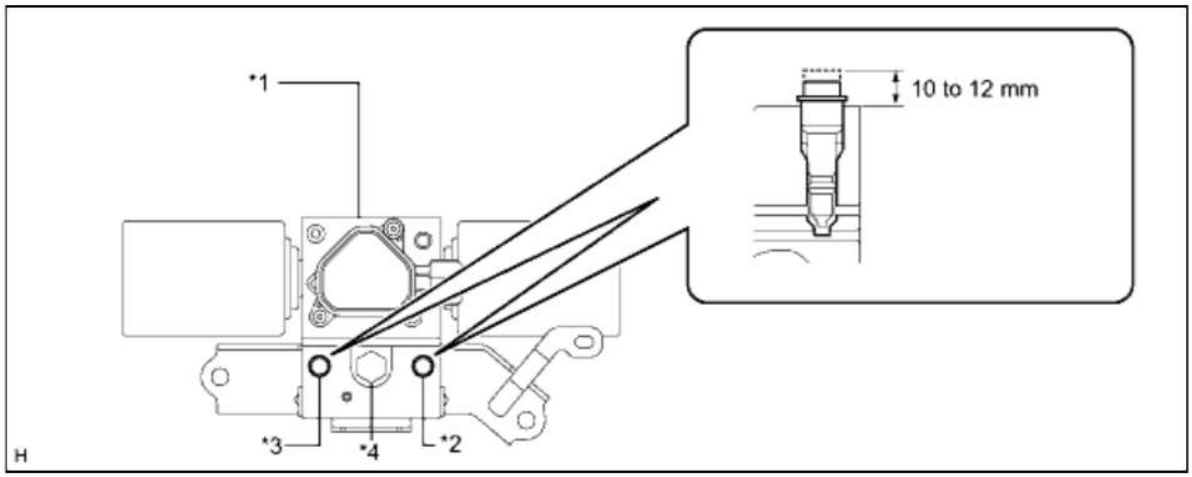
Suspension fluid AHC

NOTICE:

If air is not bled from the hoses, the air will mix into the hydraulic circuit.

(d) Remove the service valve cap. Then put fluid into SST (high pressure oil pump) and connect SST to the suspension fluid inlet port.

(e) Loosen the shutter valves of the stabilizer control with accumulator housing.



Text in Illustration

*1	Stabilizer Control with Accumulator Housing Assembly	*2	Upper Chamber Stabilizer Control with Accumulator Housing Shutter Valve
*3	Lower Chamber Stabilizer Control with Accumulator Housing Shutter Valve	*4	Stabilizer Control Accumulator Housing Inlet Port

NOTICE:

- When loosening a shutter valve, make sure that the end protrudes 10 to 12 mm (0.394 to 0.472 in.) from the surface of the block. Do not turn the shutter valve any further.
- Do not remove the shutter valves.

(f) Using SST (high pressure oil pump), add fluid.

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CAUTION:

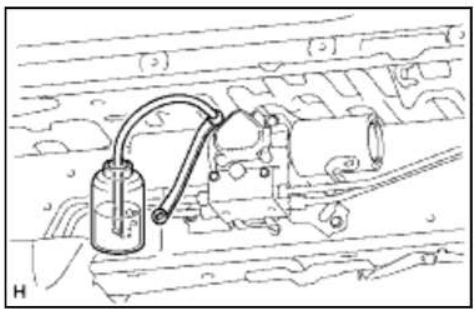
If a fluid leak is discovered, immediately release the pressure and repair the fluid leak as there is danger involved due to the high pressure.

NOTICE:

Do not allow the pressure to reach 8 MPa (81.6 kgf/cm^2, 1160 psi) or higher as the accumulator may be damaged.

(1) Pump SST (high pressure oil pump) to add fluid until the pressure reaches 5 MPa (51.0 kgf/cm^2, 725 psi).*1

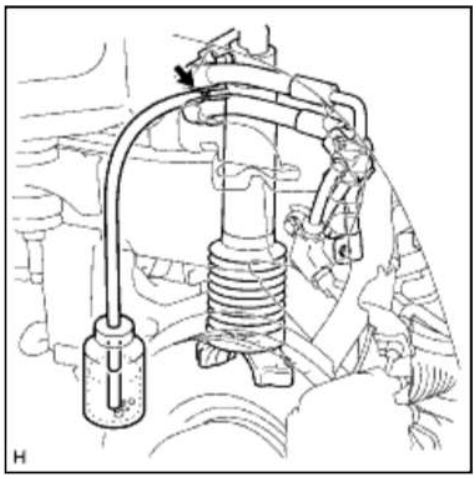
(2) Check for fluid leaks from the pipe connections and hydraulic circuit parts.



(3) Add fluid to the stabilizer control with accumulator housing.*2

1. Loosen the bleeder plug of the stabilizer control with accumulator housing.
2. Pump SST (high pressure oil pump) and maintain a pressure of 5 MPa (51.0 kgf/cm^2, 725 psi) until air stops coming out.
3. Tighten the bleeder plug of the stabilizer control with accumulator housing.

Torque: 8.3 N·m (85 kgf·cm, 73in·lbf)



(4) Add fluid to the lower chamber of the front stabilizer control cylinder.*3

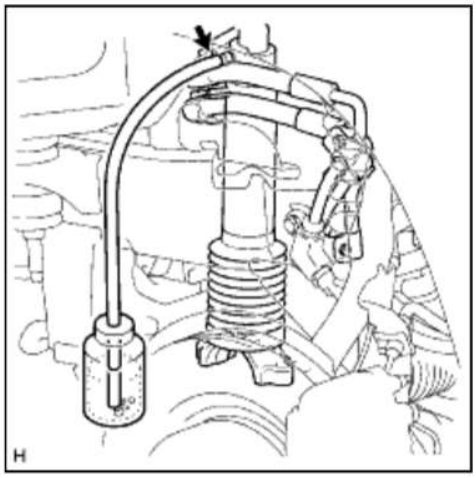
1. Pump SST (high pressure oil pump) to add fluid until the pressure reaches 5 MPa (51.0 kgf/cm^2, 725 psi).
2. Loosen the lower chamber bleeder plug of the front stabilizer control cylinder.
3. Pump SST (high pressure oil pump) and maintain a pressure of 5 MPa (51.0 kgf/cm^2, 725 psi) until air stops coming out.
4. Tighten the lower chamber bleeder plug of the front stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)

(5) Add fluid to the upper chamber of the front stabilizer control cylinder.*4

1. Pump SST (high pressure oil pump) to add fluid until the pressure reaches 5 MPa (51.0 kgf/cm^2, 725 psi).
2. Loosen the upper chamber bleeder plug of the front stabilizer control cylinder.
3. Pump SST (high pressure oil pump) and maintain a pressure of 5 MPa (51.0 kgf/cm^2,

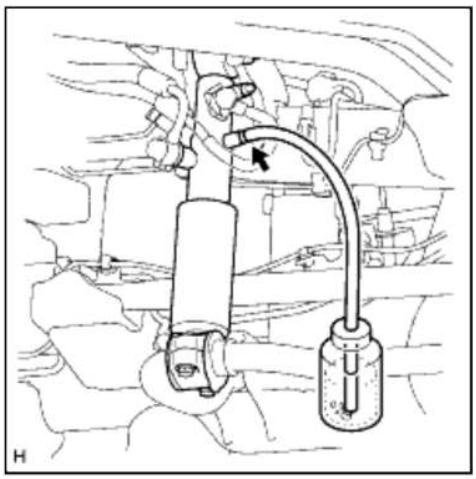
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725 psi) until air stops coming out.

4. Tighten the upper chamber bleeder plug of the front stabilizer control cylinder.

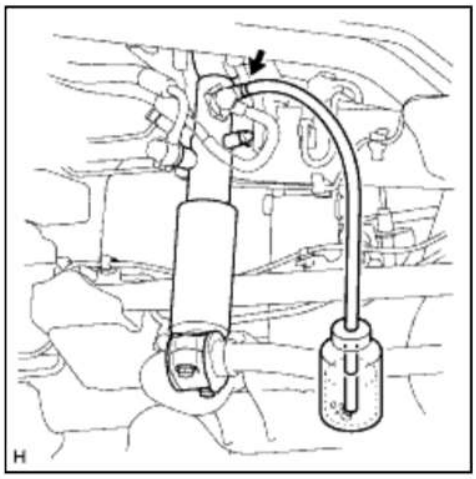
Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)



(6) Add fluid to the lower chamber of the rear stabilizer control cylinder.*5

1. Pump SST (high pressure oil pump) to add fluid until the pressure reaches 5 MPa (51.0 kgf/cm^2, 725 psi).
2. Loosen the lower chamber bleeder plug of the rear stabilizer control cylinder.
3. Pump SST (high pressure oil pump) and maintain a pressure of 5 MPa (51.0 kgf/cm^2, 725 psi) until air stops coming out.
4. Tighten the lower chamber bleeder plug of the rear stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)



(7) Add fluid to the upper chamber of the rear stabilizer control cylinder.*6

1. Pump SST (high pressure oil pump) to add fluid until the pressure reaches 5 MPa (51.0 kgf/cm^2, 725 psi).
2. Loosen the upper chamber bleeder plug of the rear stabilizer control cylinder.
3. Pump SST (high pressure oil pump) and maintain a pressure of 5 MPa (51.0 kgf/cm^2, 725 psi) until air stops coming out.
4. Tighten the upper chamber bleeder plug of the rear stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)

(8) Repeat procedures *1 to *6 until the air in the fluid is gone.

(g) Using SST (high pressure oil pump), bleed the air.

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NOTICE:

- Be sure to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure to all parts. If the pressure is low, the air may not be released.
- Do not allow the pressure to reach 8 MPa (81.6 kgf/cm^2, 1160 psi) or higher as the accumulator may be damaged.

(1) Bleed air from the stabilizer control with accumulator housing.

1. Pump SST (high pressure oil pump) to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure.
2. Loosen the bleeder plug of the stabilizer control with accumulator housing to bleed the air.
3. Tighten the bleeder plug so pressure can be applied. Repeat these steps until the air in the fluid is gone.
4. Tighten the bleeder plug of the stabilizer control with accumulator housing.

Torque: 8.3 N·m (85 kgf·cm, 73in·lbf)

(2) Bleed air from the upper chamber of the front stabilizer control cylinder.

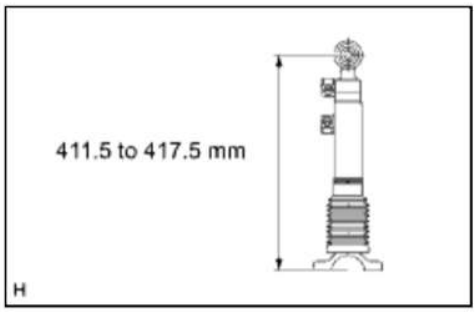
1. Pump SST (high pressure oil pump) to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure.
2. Loosen the upper chamber bleeder plug of the front stabilizer control cylinder to bleed the air.
3. Tighten the bleeder plug so pressure can be applied. Repeat these steps until the air in the fluid is gone.
4. Tighten the upper chamber bleeder plug of the front stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)

(3) Bleed air from the upper chamber of the rear stabilizer control cylinder.

1. Pump SST (high pressure oil pump) to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure.
2. Loosen the upper chamber bleeder plug of the rear stabilizer control cylinder to bleed the air.
3. Tighten the bleeder plug so pressure can be applied. Repeat these steps until the air in the fluid is gone.
4. Tighten the upper chamber bleeder plug of the rear stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)



(h) Disconnect the front stabilizer control arm and front stabilizer link, and set the front stabilizer control cylinder to the maximum length.

Maximum length:
411.5 to 417.5 mm (16.2 to 16.4 in.)

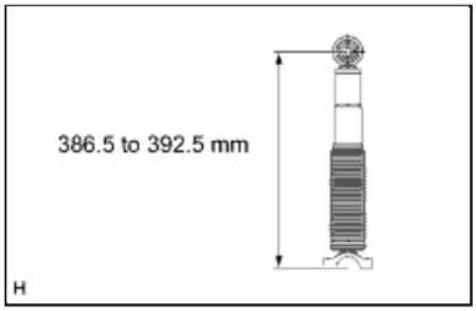
NOTICE:

Set the front stabilizer control cylinder to the maximum length to completely bleed the air.

HINT:

Refer to the following procedures to disconnect the front stabilizer control arm and front stabilizer link INFO **.**

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(i) Disconnect the rear stabilizer bar and rear stabilizer link, and set the rear stabilizer control cylinder to the maximum length.

Maximum length:
386.5 to 392.5 mm (15.2 to 15.4 in.)

NOTICE:

Set the rear stabilizer control cylinder to the maximum length to completely bleed the air.

HINT:

Refer to the following procedures to disconnect the rear stabilizer bar and rear stabilizer link INFO .

(j) Bleed air from the lower chamber of the front stabilizer control cylinder.

(1) Pump SST (high pressure oil pump) to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure.

(2) Loosen the lower chamber bleeder plug of the front stabilizer control cylinder to bleed the air.

(3) Tighten the bleeder plug so pressure can be applied. Repeat these steps until the air in the fluid is gone.

(4) Tighten the lower chamber bleeder plug of the front stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)

(k) Bleed air from the lower chamber of the rear stabilizer control cylinder.

(1) Pump SST (high pressure oil pump) to apply 7 MPa (71.4 kgf/cm^2, 1015 psi) of pressure.

(2) Loosen the lower chamber bleeder plug of the rear stabilizer control cylinder to bleed the air.

(3) Tighten the bleeder plug so pressure can be applied. Repeat these steps until the air in the fluid is gone.

(4) Tighten the lower chamber bleeder plug of the rear stabilizer control cylinder.

Torque: 7.9 N·m (81 kgf·cm, 70in·lbf)

(l) Connect the front stabilizer control arm to the front stabilizer link and the rear stabilizer bar to the rear stabilizer link.

HINT:

- For the front side, refer to the following procedures INFO .
- For the rear side, refer to the following procedures INFO .

(m) With all wheels on the ground, apply the specified amount of pressure using SST. Maintain this pressure for 2 to 3 minutes to stabilize the pressure.

NOTICE:

- Refer to the Temperature Management Chart when Filling Fluid as the specified pressure changes according to the fluid temperature.
- Perform the inspection with the vehicle empty.
- Perform the inspection with the vehicle load completely on the suspension.

Standard Fluid Pressure:

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CONDITION	SPECIFIED CONDITION
Fluid temperature is 20°C (68°F)	2.6 to 3 MPa (26.6 to 30.5 kgf/cm^2, 377 to 435 psi)

(n) Measure vehicle height INFO .

If the result is not as specified, perform the vehicle tilt calibration INFO .

(o) Tighten the shutter valves of the stabilizer control with accumulator housing.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

(p) Remove SST (high pressure oil pump) from the suspension fluid inlet port.

NOTICE:

Make sure that no pressure is applied to SST (high pressure oil pump).

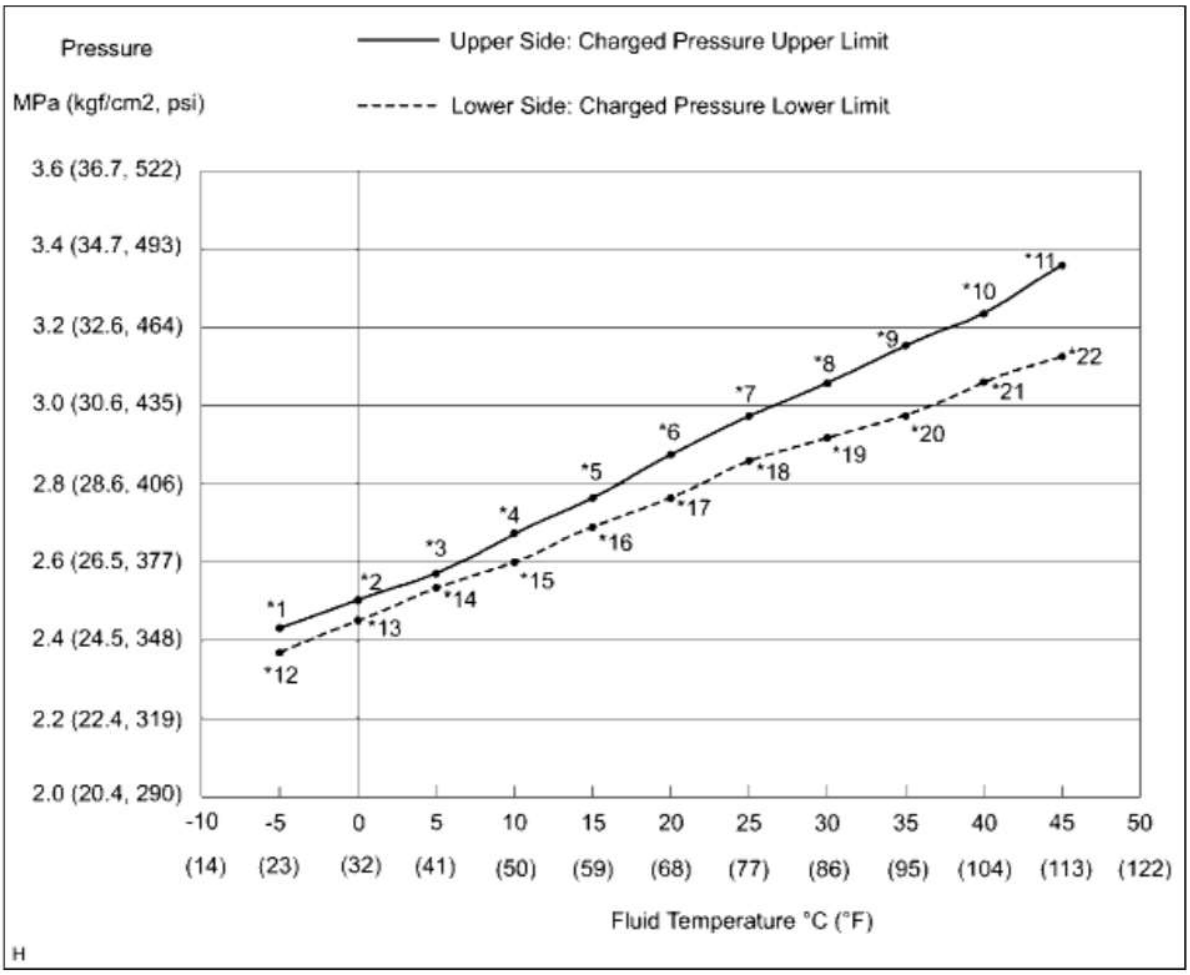
(q) Install the service valve caps to the suspension fluid inlet port.

Torque: 0.6 N·m (6.0 kgf·cm, 5.0in·lbf)

(r) Inspect for suspension fluid leaks INFO .

(s) Install the stabilizer control valve protector INFO .

2. TEMPERATURE MANAGEMENT CHART WHEN FILLING FLUID



Text in Illustration

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*1	2.42 MPa (24.7 kgf/cm^2, 351 psi)	*2	2.50 MPa (25.5 kgf/cm^2, 363 psi)
*3	2.59 MPa (26.4 kgf/cm^2, 376 psi)	*4	2.67 MPa (27.2 kgf/cm^2, 387 psi)
*5	2.76 MPa (28.1 kgf/cm^2, 400 psi)	*6	2.85 MPa (29.1 kgf/cm^2, 413 psi)
*7	2.95 MPa (30.1 kgf/cm^2, 428 psi)	*8	3.05 MPa (31.1 kgf/cm^2, 442 psi)
*9	3.16 MPa (32.2 kgf/cm^2, 458 psi)	*10	3.27 MPa (33.3 kgf/cm^2, 474 psi)
*11	3.38 MPa (34.5 kgf/cm^2, 490 psi)	*12	2.39 MPa (24.4 kgf/cm^2, 347 psi)
*13	2.46 MPa (25.1 kgf/cm^2, 357 psi)	*14	2.53 MPa (25.8 kgf/cm^2, 367 psi)
*15	2.60 MPa (26.5 kgf/cm^2, 377 psi)	*16	2.67 MPa (27.2 kgf/cm^2, 387 psi)
*17	2.75 MPa (28.0 kgf/cm^2, 399 psi)	*18	2.82 MPa (28.8 kgf/cm^2, 409 psi)
*19	2.90 MPa (29.6 kgf/cm^2, 421 psi)	*20	2.98 MPa (30.4 kgf/cm^2, 432 psi)
*21	3.06 MPa (31.2 kgf/cm^2, 444 psi)	*22	3.14 MPa (32.0 kgf/cm^2, 455 psi)

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038UA006X
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ KDSS): ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

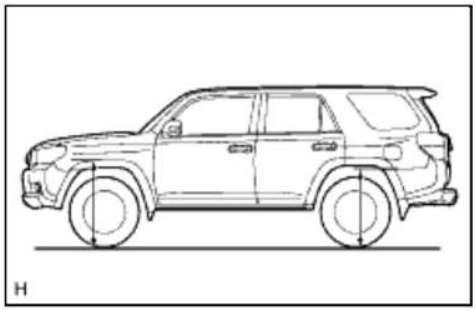
1. INSPECT VEHICLE HEIGHT

NOTICE:

- Perform the calibration on a level surface.
- Perform the calibration with the vehicle empty.
- Make sure that the wheels are on the ground and facing straight ahead.
- Perform the calibration with the vehicle load completely on the suspension.

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

(b) Bounce the vehicle to stabilize the suspension.



(c) Measure the distance from the ground to the top of the bumper and calculate the difference in the vehicle height between the left and right sides. Perform this procedure for both the front and rear wheels.

Height difference of left and right sides:
20 mm (0.787 in.) or less

If the result is not as specified, perform vehicle tilt calibration.

2. VEHICLE TILT CALIBRATION

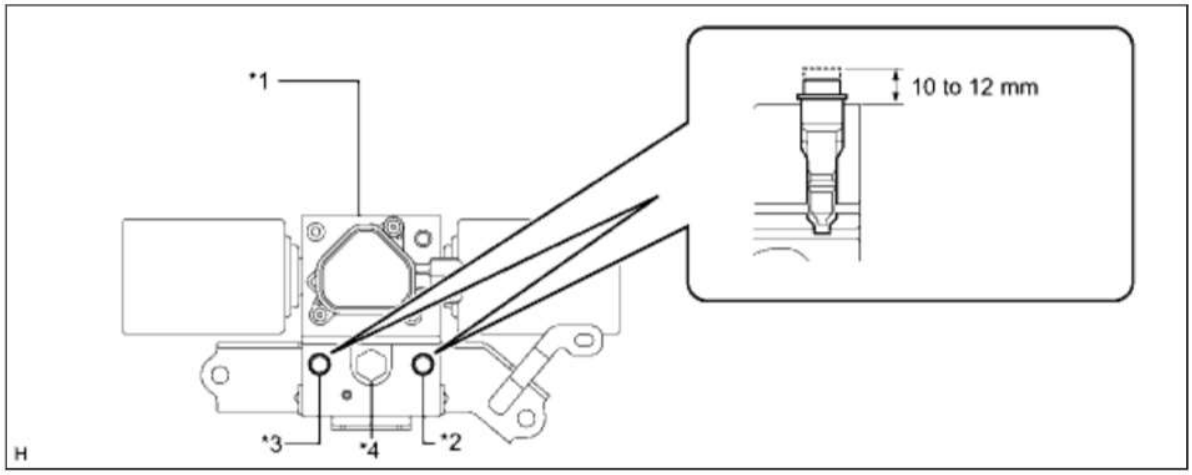
NOTICE:

- Perform inspection on a level surface.
- Perform inspection with the vehicle empty.
- Make sure that the wheels are on the ground and facing straight ahead.
- Perform inspection with the vehicle load completely on the suspension.

(a) Remove the stabilizer control valve protector INFO .

(b) Loosen the lower and upper chamber shutter valves of the stabilizer control with accumulator housing.

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Text in Illustration

*1	Stabilizer Control with Accumulator Housing Assembly	*2	Upper Chamber Stabilizer Control with Accumulator Housing Shutter Valve
*3	Lower Chamber Stabilizer Control with Accumulator Housing Shutter Valve	*4	Stabilizer Control Accumulator Housing Inlet Port

NOTICE:

- When loosening a shutter valve, make sure that the end protrudes 10 to 12 mm (0.394 to 0.472 in.) from the surface of the block. Do not turn the shutter valve any further.
- Do not remove the shutter valves.

HINT:

By loosening the shutter valves, the upper and lower chamber will be fully connected, and the vehicle height is corrected by the equalization of the upper and lower chamber oil pressure.

(c) Bounce the vehicle to stabilize the suspension.

(d) Check the difference in height between the left and right sides of the vehicle. Refer to Measure Vehicle Height.

HINT:

When the vehicle height of the left and right side of the vehicle is not within the specified range, bleed the air INFO .

(e) Tighten the lower and upper chamber shutter valves of the stabilizer control with accumulator housing.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

(f) Install the stabilizer control valve protector INFO .

3. INSPECT FOR SUSPENSION FLUID LEAK

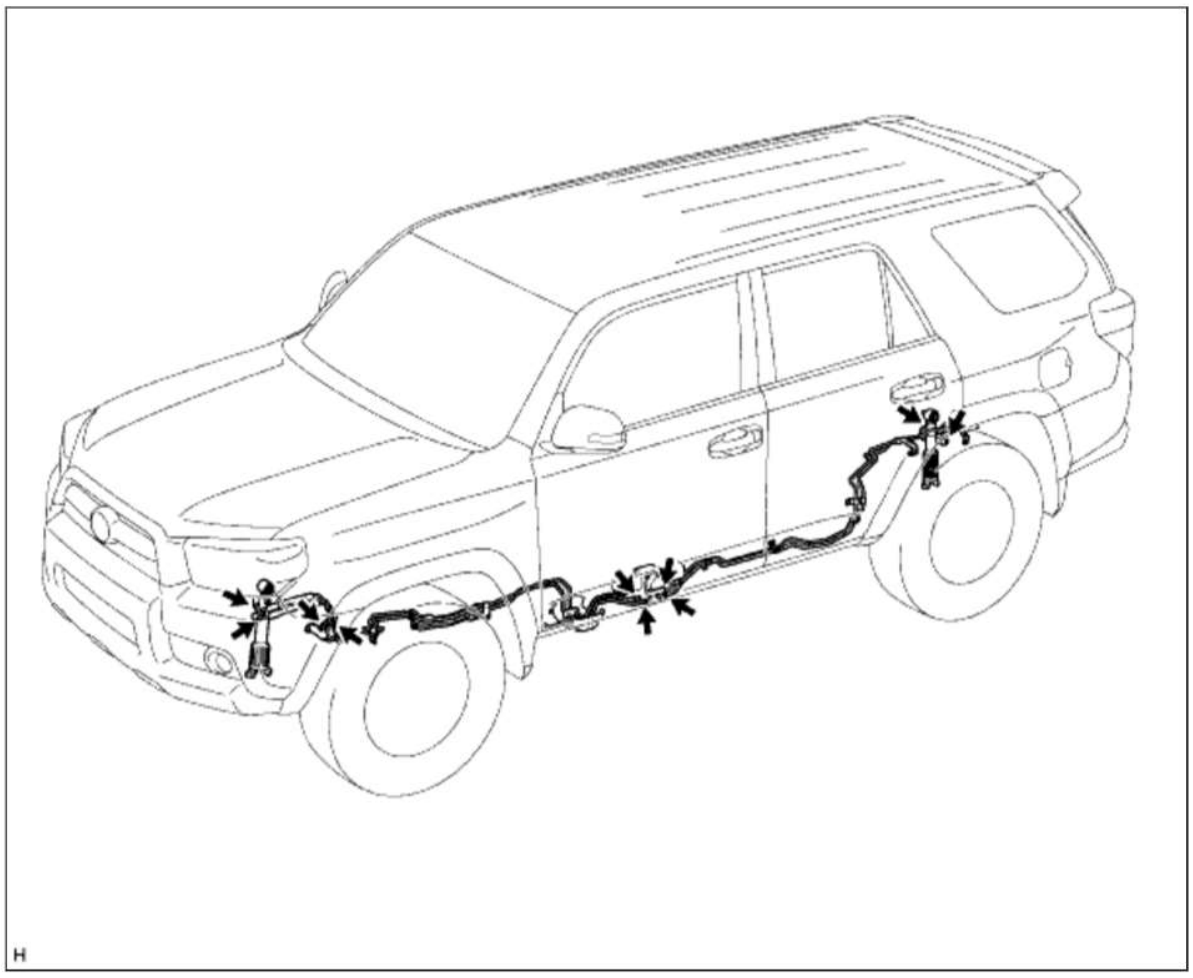
CAUTION:

Fluid is pumped into the system at a high pressure of approximately 3 MPa (30.6 kgf/cm^2, 435 psi). If a fluid leak is discovered, immediately release the pressure and repair the fluid leak.

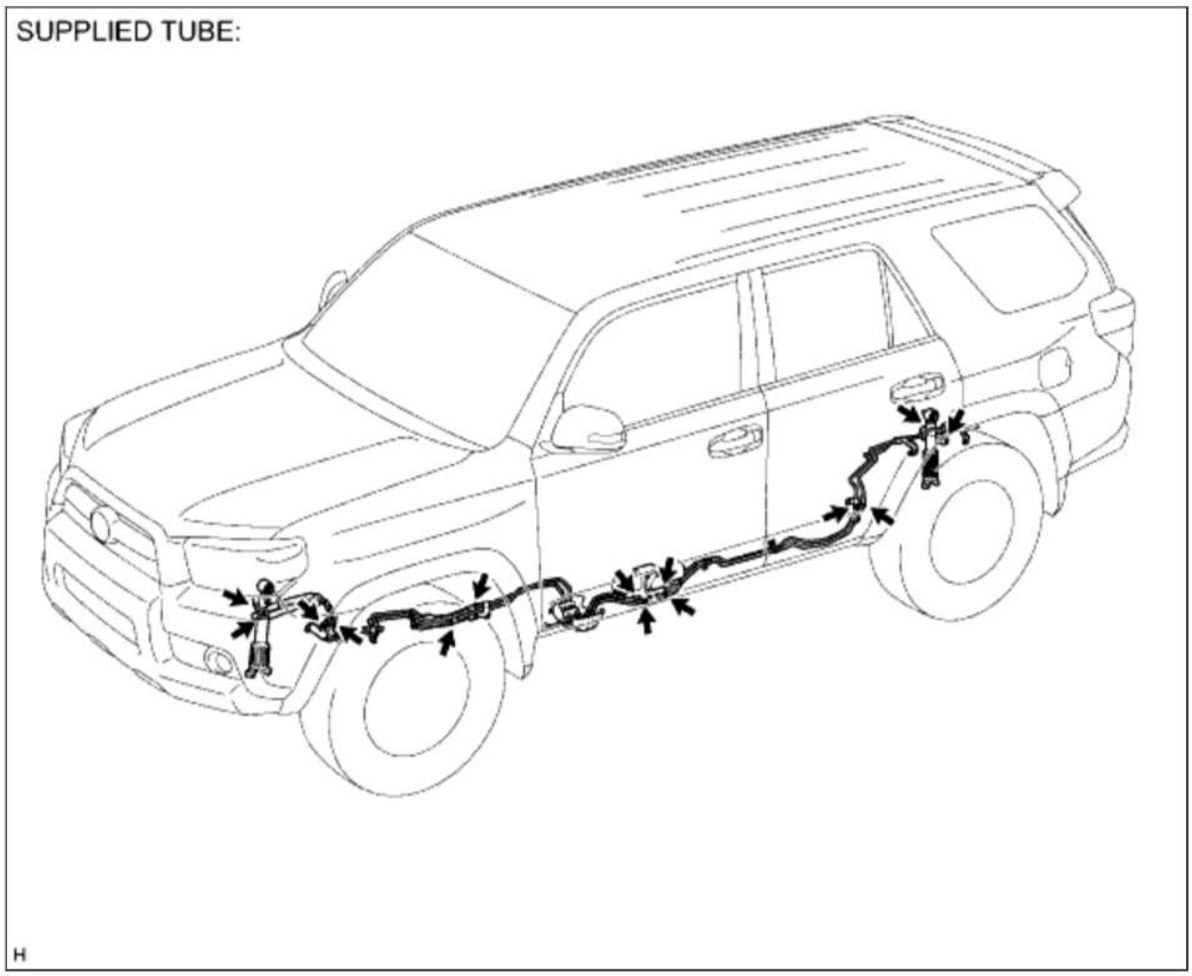
(a) Perform a driving test.

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(b) Check for fluid leakage from the parts and connections shown in the illustration.



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Last Modified: 5-10-2010	6.4 L	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038U8007X
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ KDSS): PRECAUTION (2010 4Runner)		

PRECAUTION

1. Kinetic Dynamic Suspension System

CAUTION:

- Be sure to check the pipe connections and whether or not any hydraulic circuit parts are damaged before performing work as the hydraulic circuits become highly pressurized during air bleeding.
- The pipes become highly pressurized when bleeding air. If a fluid leak is discovered, immediately release the pressure and repair the fluid leak as there is danger involved.
- Do not disassemble the stabilizer control with accumulator housing assembly or expose it to an open flame as the accumulator of the stabilizer control with accumulator housing assembly contains gas.

NOTICE:

- Before removing or installing hydraulic circuit parts, clean each part to prevent mud and dirt from entering the hydraulic circuit.
- Always drain fluid from the bleeder plug of the stabilizer control with accumulator housing to reduce pressure before removing parts as the fluid is sealed under high pressure in the hydraulic circuit.
- Protect the removed parts with plastic bags to prevent foreign matter from adhering to or entering them, and store them in a safe place.
- Be careful when removing or installing the hydraulic circuit related parts, such as bleeder plugs and tube flare nuts, as fluid may leak when the parts are damaged.

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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038U9006X
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ KDSS): PROBLEM SYMPTOMS TABLE (2010 4Runner)		

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.

Kinetic Dynamic Suspension System

SYMPTOM	SUSPECTED AREA	SEE PAGE
The height of the left and right side of the vehicle is different	After confirming the difference between the left and right sides, perform vehicle tilt calibration	INFO
The height of the left and right side of the vehicle is different even after performing vehicle tilt calibration	Perform air bleeding	INFO
The height of the left and right side of the vehicle is different even after bleeding air	Front stabilizer control cylinder	INFO
	Rear stabilizer control cylinder	INFO
	Stabilizer control with accumulator housing assembly	INFO
Excessive roll (Decrease in roll stiffness)	Bushes or similar parts are missing or damaged	-
	Oil leakage	INFO
	Perform air bleeding	INFO
Excessive roll even after bleeding air	Stabilizer control with accumulator housing assembly	INFO
Excessive roll even after replacing stabilizer control with accumulator housing assembly	Front stabilizer control cylinder	INFO
	Rear stabilizer control cylinder	INFO

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Last Modified: 5-10-2010	6.4 L	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001U5400FX
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ REAS): PRECAUTION (2010 4Runner)		

PRECAUTION

1. HANDLING PRECAUTIONS FOR CENTER UNIT AND SHOCK ABSORBER

(a) Replacement of each unit is allowed if there is no fluid leakage. However, in the case of fluid leakage from the system, replace both the absorber and center unit as a set.

(b) It is possible to replace a unit only if it is the first time the part is being replaced. Replace the system parts as a set if it is the second time or later.

(c) When carrying each unit, be sure to hold the body of the unit. Never hold the body by the joint parts or hoses.

Also, do not deform metal tubes.

(d) The units should not be at a high temperature at the time of replacement.

(e) As the shock absorber could be damaged by sudden temperature changes after it is disconnected from the center unit, be careful when storing it.

(f) Do not loosen the union bolt except when disposing of a unit.

(g) Never loosen the absorber hoses or the flare nuts at the joint parts.

2. REMOVAL AND INSTALLATION PRECAUTIONS FOR CENTER UNIT AND SHOCK ABSORBER

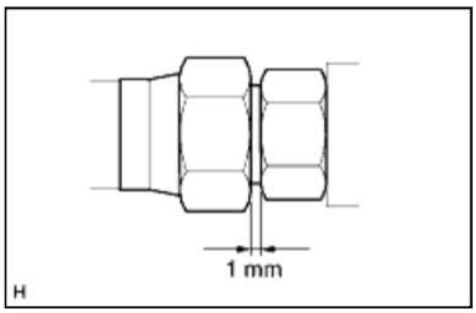
(a) Conduct the operations with the shock absorbers extended by jacking up the vehicle.

(b) Never apply a large compressive load to the shock absorbers, such as that applied when the tires contact the ground, before connecting the shock absorbers to the center unit to avoid damaging them.

(c) Do not allow any foreign matter to contact the joint surfaces of the parts. If any foreign matter adheres to a part, wipe it away to avoid damage to the O-rings.

(d) Be sure to insert the claws of the brackets on the front absorber hose side, rear absorber hose side and middle unit joint part into the holes in the frame.

(e) Never loosen the absorber hoses or the flare nuts at the joint parts.



(f) For the joint that connects supplied parts, tighten the joint while checking the gap spacing shown in the illustration.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

Standard clearance:

1 mm (0.0394 in.)

3. SERVICE PARTS FOR NO. 1 CENTER CONTROL ABSORBER TUBE

(a) The No. 1 center control absorber tubes are divided into 2 parts (front and rear) when supplied as

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replacement parts.



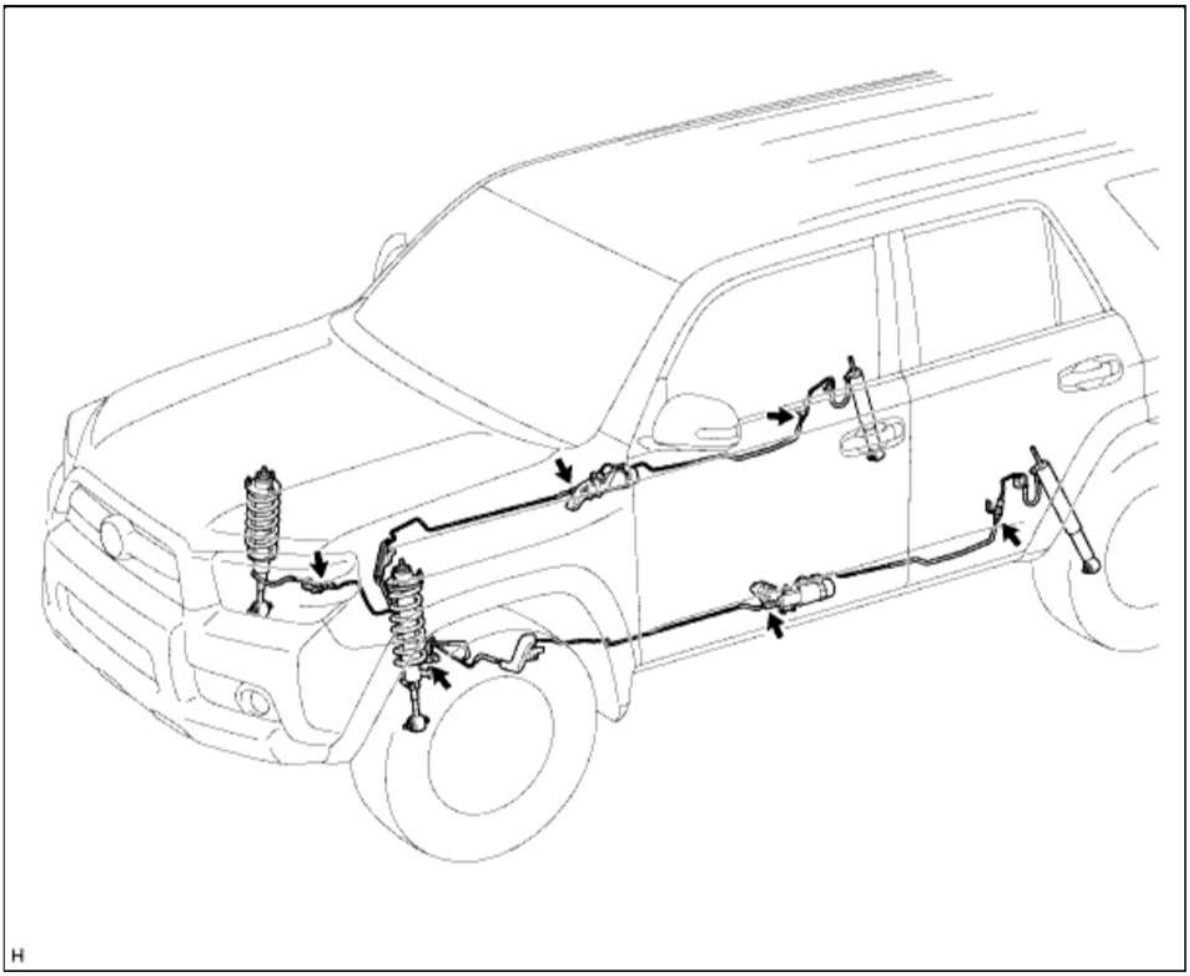
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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002BG1005X
Title: SUSPENSION CONTROL: SUSPENSION CONTROL SYSTEM (w/ REAS): ON-VEHICLE INSPECTION (2010 4Runner)		

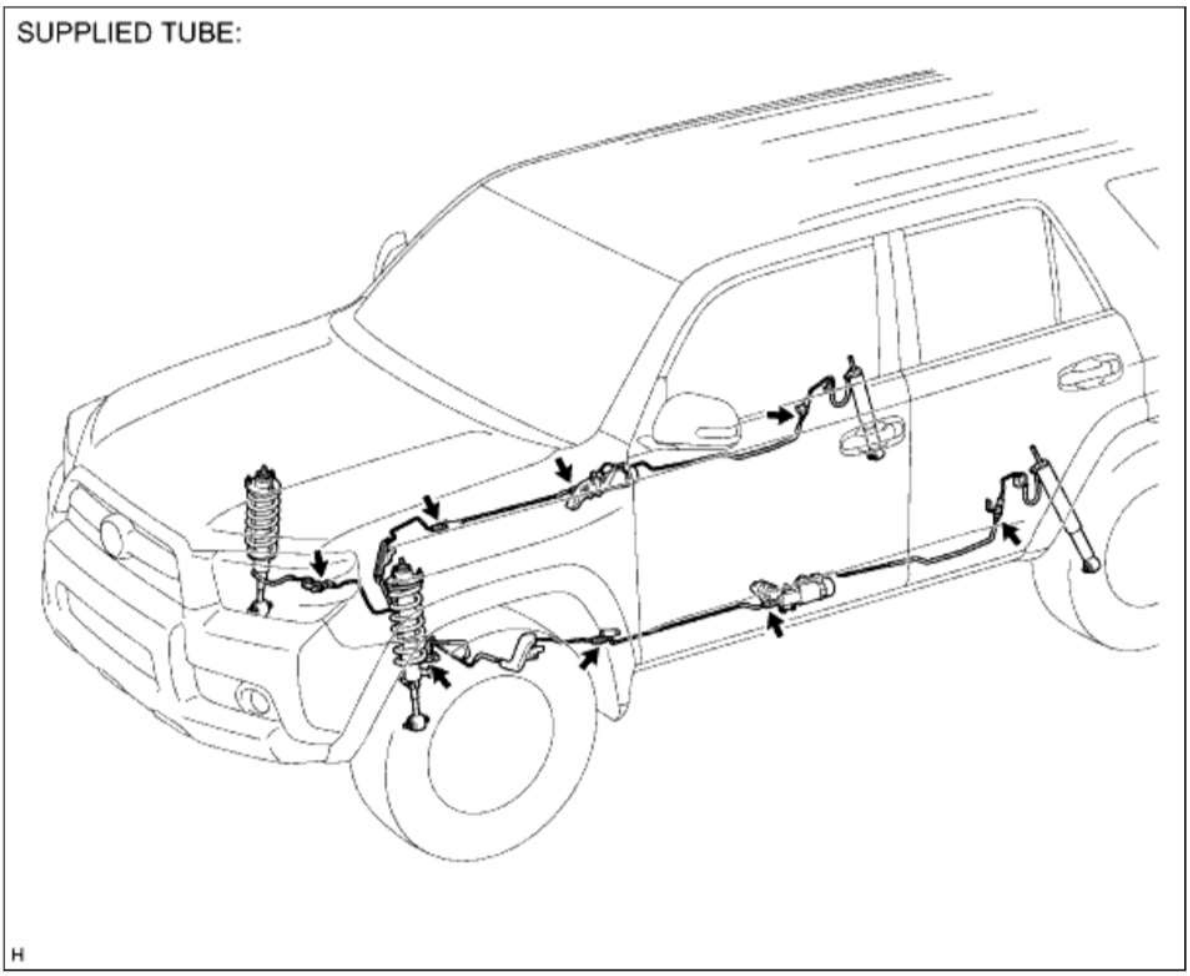
ON-VEHICLE INSPECTION

1. CHECK FLUID LEAKAGE

(a) Check the tube connections and parts shown in the illustration for fluid leakage.



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Last Modified: 5-10-2010	6.4 D	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001F0B02RX
Title: TIRE / WHEEL: TIRE AND WHEEL SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 4Runner)		

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

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5.	INSPECT FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT (for 2WD: INFO , for 4WD: INFO)

NG ▶ Go to step 6

OK ▶ Go to step 7

6.	REPAIR FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT (for 2WD: INFO , for 4WD: INFO)

NEXT ▼

7.	PERFORM ROAD TEST

NEXT ▶ RETURN VEHICLE TO CUSTOMER

2. DIAGNOSIS OF IRREGULAR TIRE WEAR

1.	INSPECT TIRES INFO

NEXT ▼

2.	REPAIR OR REPLACE TIRE(S)

NEXT ▼

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3.	INSPECT AND/OR ADJUST FRONT WHEEL ALIGNMENT INFO

NEXT

4.	PERFORM ROAD TEST

NEXT RETURN VEHICLE TO CUSTOMER

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DGS003X
Title: TIRE / WHEEL: TIRE AND WHEEL SYSTEM: INSPECTION (2010 4Runner)		

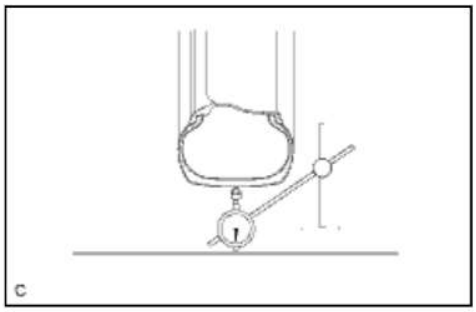
INSPECTION

1. INSPECT TIRES

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

Cold Tire Inflation Pressure (Unloaded Vehicle):

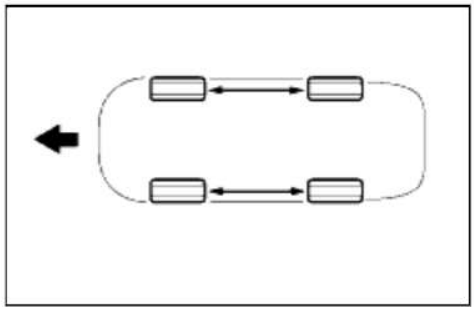
TIRE SIZE	VEHICLE MODEL	FRONT KPA (KGF/CM^2, PSI)	REAR KPA (KGF/CM^2, PSI)
P265/70R17 113S	GRN280L-GKAGKA GRN285L-GKAGKA TRN285L-GKPGKA	220 (2.2, 32)	220 (2.2, 32)
P265/70R17 113S	TRN280L-GKPGKA	230 (2.3, 33)	230 (2.3, 33)
P245/60R20 107H	GRN280L-GKAGKA GRN285L-GKAGKA	220 (2.2, 32)	220 (2.2, 32)
245/70R17 110S (for Mexico)	GRN280L-GKAGKA GRN285L-GKAGKA	200 (2.0, 29)	200 (2.0, 29)



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

Standard tire runout:
3.0 mm (0.118 in.) or less

2. ROTATE TIRES



HINT:

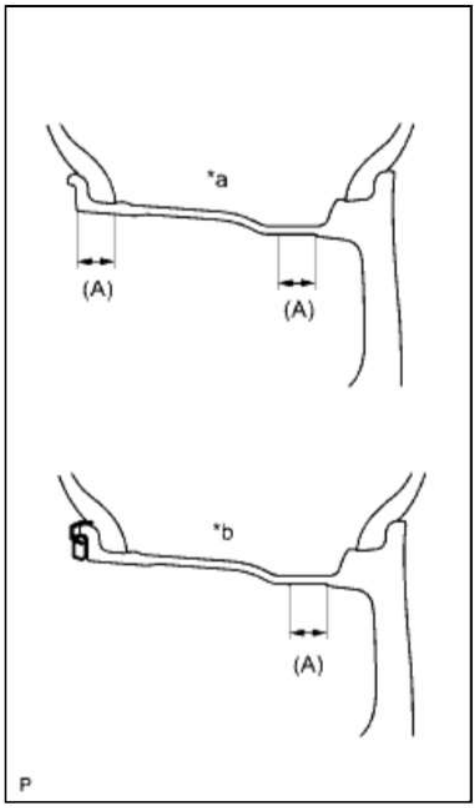
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Rotate the tires as shown in the illustration.

Text in Illustration

➡	Front

3. INSPECT WHEEL BALANCE



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

Text in Illustration

*a	P245/60R20 107H
*b	P265/70R17 113S 245/70R17 110S

(b) If necessary, check and adjust the on-the-car balance.

Standard Imbalance after Adjustment:

TIRE SIZE	WHEEL SIZE	IMBALANCE
P265/70R17	17 x 7J, 17 x 7.5J (Aluminum Wheel)	6.0 g (0.0132 lb) or less
	17 x 7J, 17 x 7.5J (Steel Wheel)	12 g (0.0265 lb) or less
P245/60R20	20 x 7J (Aluminum Wheel)	6.0 g (0.0132 lb) or less
245/70R17 (for Mexico)	17 x 7J (Aluminum Wheel)	6.0 g (0.0132 lb) or less

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NOTICE:

- The imbalance after adjustment value is the conversion value at the rim flange position.
- Using a cleaning detergent, 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.
- Attach 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 with your finger so that it securely adheres to the position.
- Do not reuse the balance weight.

4. INSPECT FRONT AXLE HUB

(a) for 2WD:

Inspect the front axle hub INFO .

(b) for 4WD:

Inspect the front axle hub INFO .

5. INSPECT REAR AXLE SHAFT

(a) Inspect the rear axle shaft INFO .



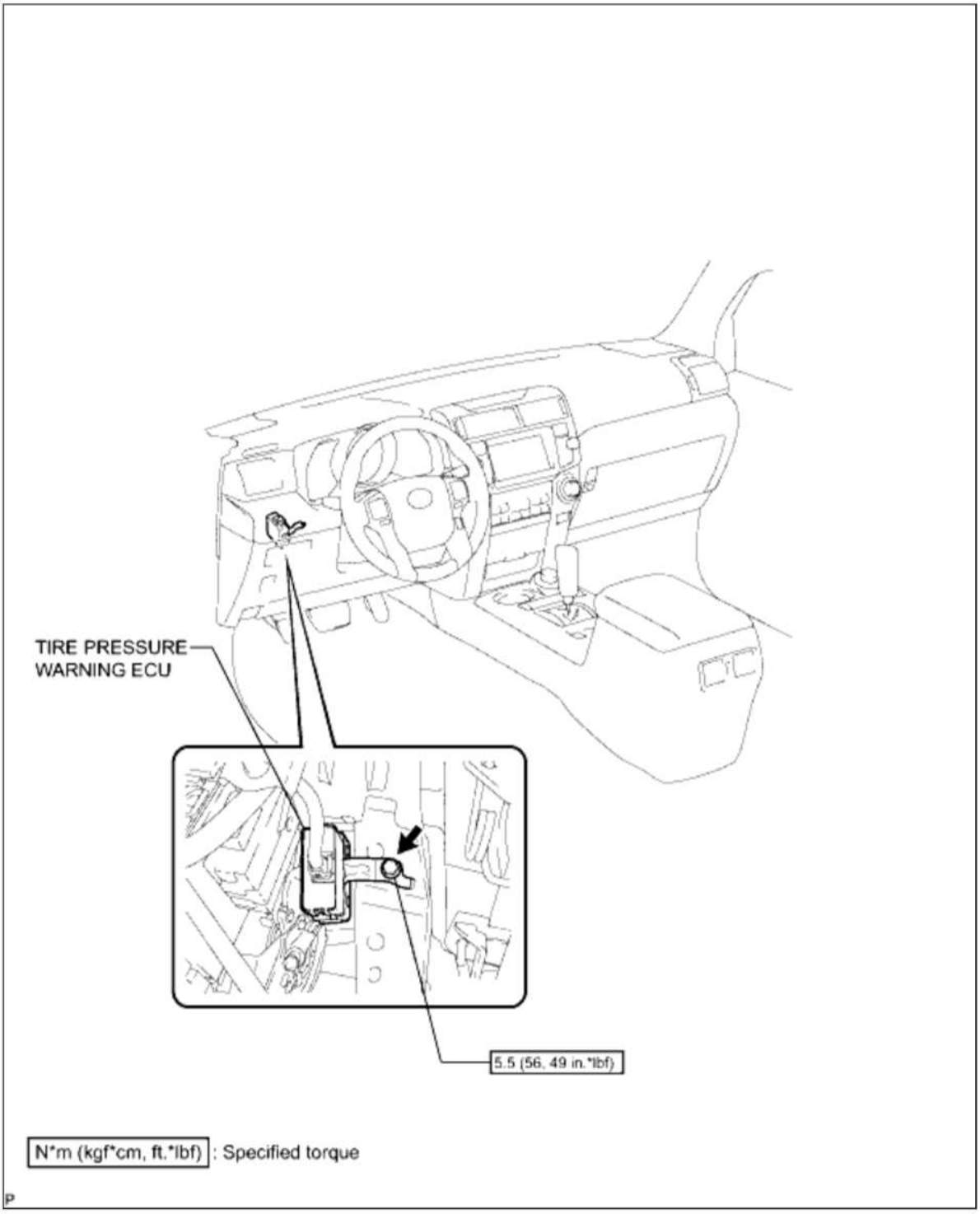
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AS6004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING ECU: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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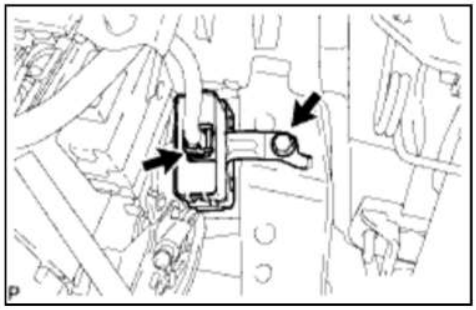
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AS7004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING ECU: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE LOWER NO. 1 INSTRUMENT PANEL AIRBAG ASSEMBLY

(a) Remove the lower No. 1 instrument panel airbag assembly INFO .

2. REMOVE TIRE PRESSURE WARNING ECU



(a) Disconnect the connector.

(b) Remove the bolt and tire pressure warning ECU.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AS5004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING ECU: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING ECU

(a) Install the tire pressure warning ECU with the bolt.

Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)

(b) Connect the connector.

2. INSTALL LOWER NO. 1 INSTRUMENT PANEL AIRBAG ASSEMBLY

(a) Install the lower No. 1 instrument panel airbag assembly INFO .

3. PERFORM REGISTRATION OF TRANSMITTER ID

(a) Perform registration of the transmitter ID INFO .

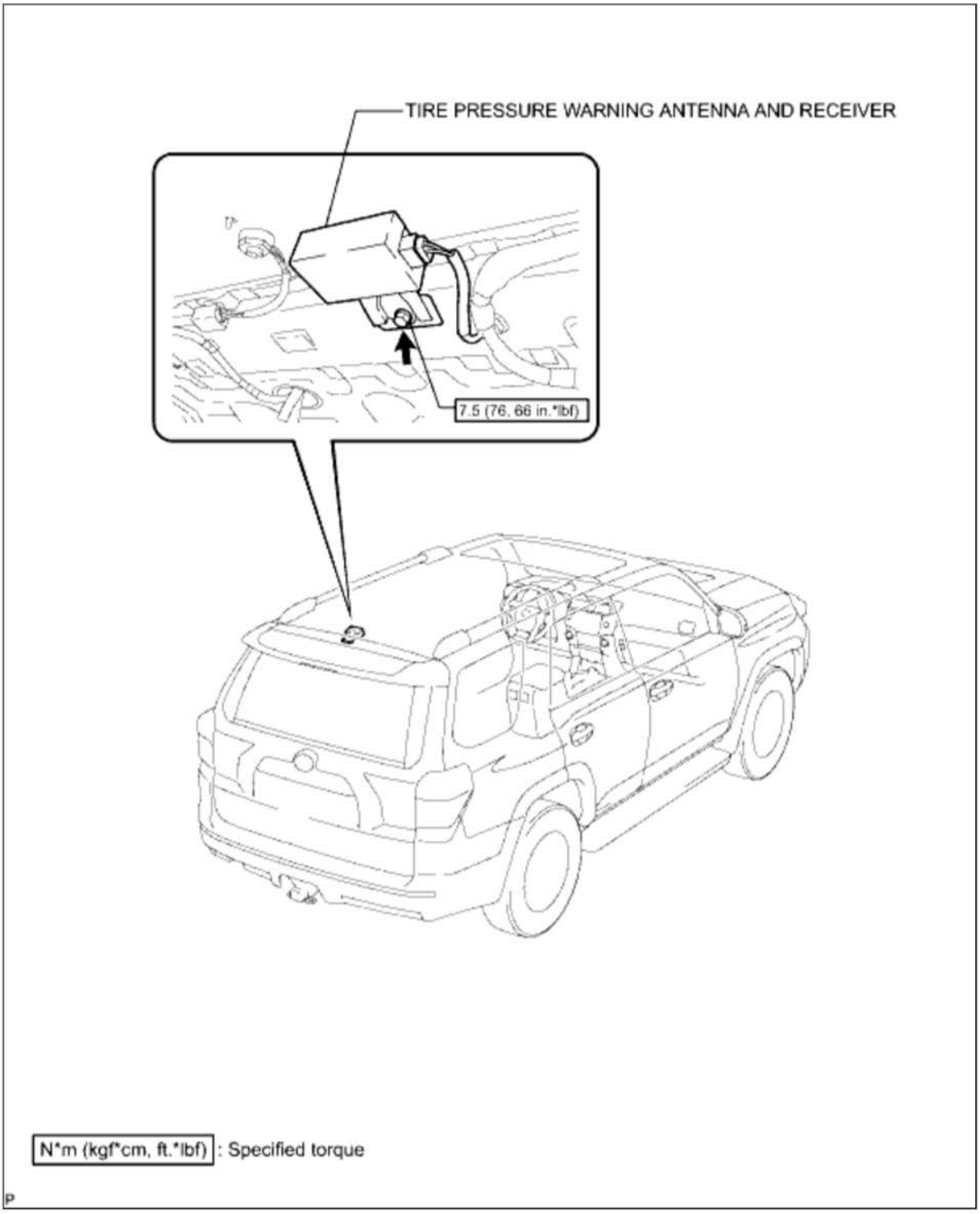
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AT0004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING RECEIVER (w/ Antenna): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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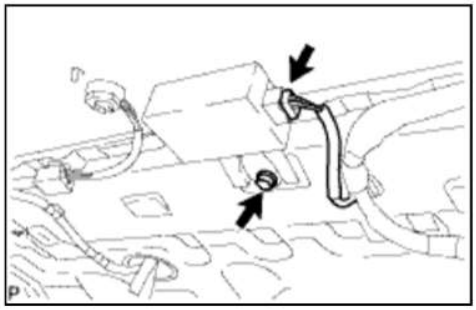
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AT1004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING RECEIVER (w/ Antenna): REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE ROOF HEADLINING ASSEMBLY

(a) Remove the roof headlining assembly INFO .

2. REMOVE TIRE PRESSURE WARNING ANTENNA AND RECEIVER



(a) Disconnect the connector.

(b) Remove the bolt and receiver assembly.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002ASZ004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING RECEIVER (w/ Antenna): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING ANTENNA AND RECEIVER

(a) Install the receiver assembly with the bolt.

Torque: 7.5 N·m (76 kgf·cm, 66in·lbf)

(b) Connect the connector.

2. INSTALL ROOF HEADLINING ASSEMBLY

(a) Install the roof headlining assembly INFO .

3. PERFORM REGISTRATION OF TRANSMITTER ID

(a) Perform registration of the transmitter ID INFO .

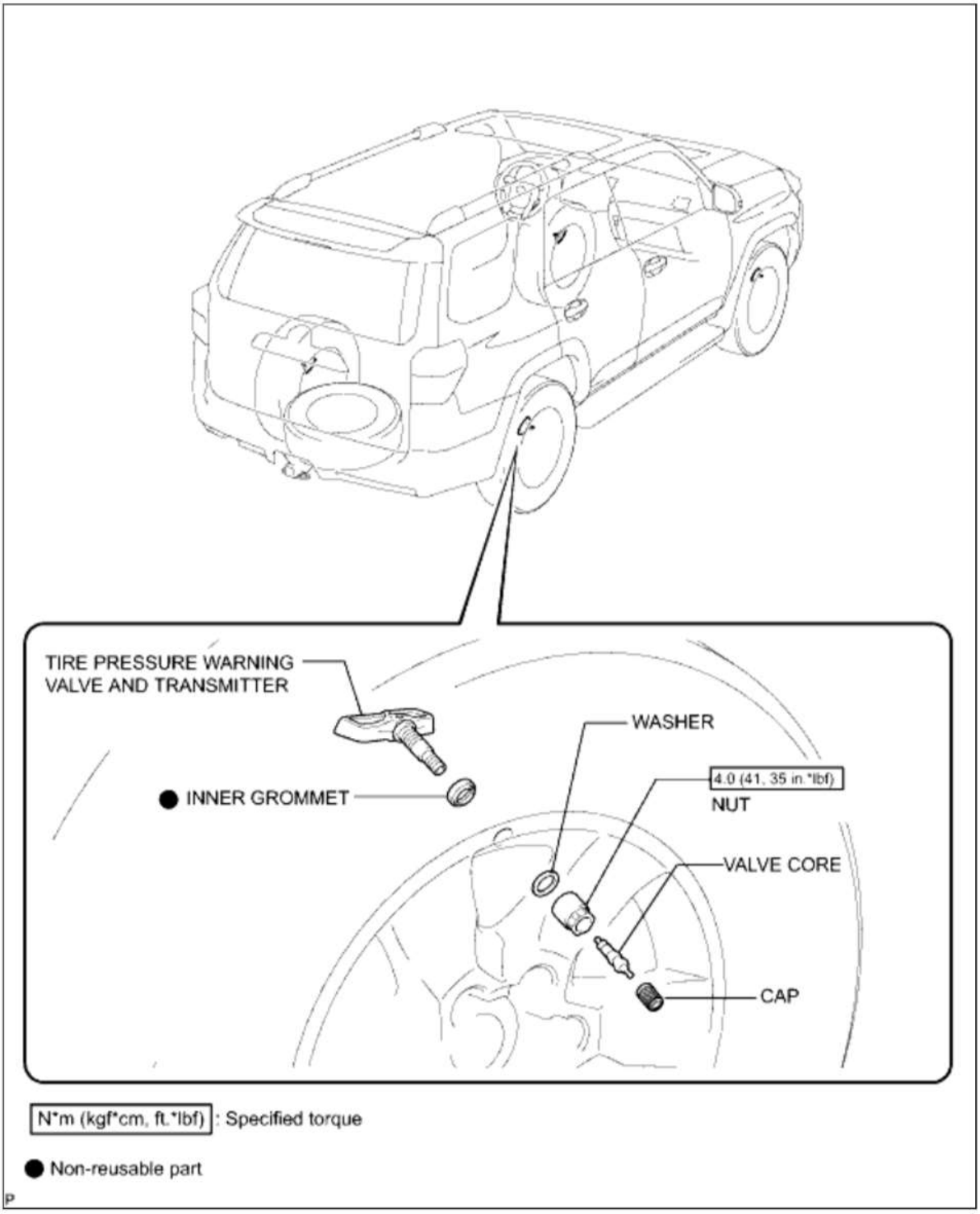
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002AS3004X
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING VALVE: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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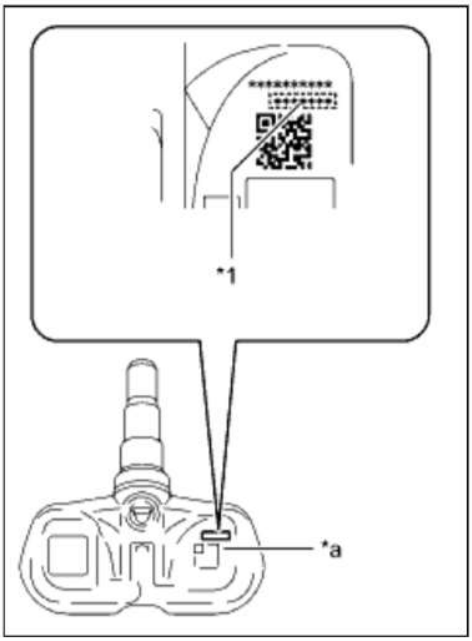


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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002L8A00IX
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING VALVE: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL TIRE PRESSURE WARNING VALVE AND TRANSMITTER



(a) Install a new inner grommet to the tire pressure warning valve and transmitter.

Text in Illustration

*1	7-digit Number (Transmitter ID)
*a	Print Surface

HINT:

A new tire pressure warning valve and transmitter comes with a grommet. Therefore, it is not necessary to replace the grommet or install a new one.

(b) Insert the tire pressure warning valve and transmitter into the valve installation hole from the inside of the rim so that the print surface can be seen.

NOTICE:

- 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 inner grommet or around the rim hole.
- If the tire pressure warning valve and transmitter is installed in the reverse direction, it may be damaged or fail to transmit signals when running at high speeds.
- If installing a new tire pressure warning valve and transmitter, write down the ID number before installation.

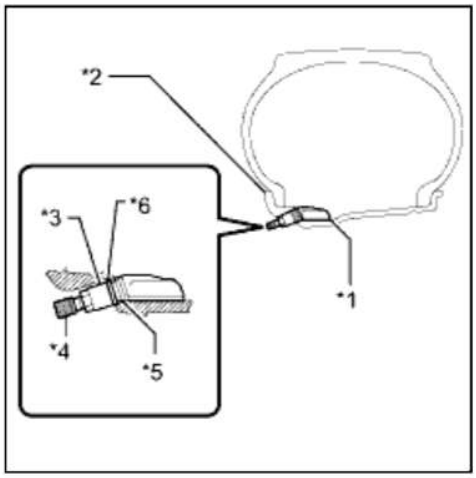
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- It is necessary to register the ID in the ECU after installation INFO .

(c) Install the washer and nut to the tire pressure warning valve and transmitter from the rim side.

Torque: 4.0 N·m (41 kgf·cm, 35in·lbf)

Text in Illustration



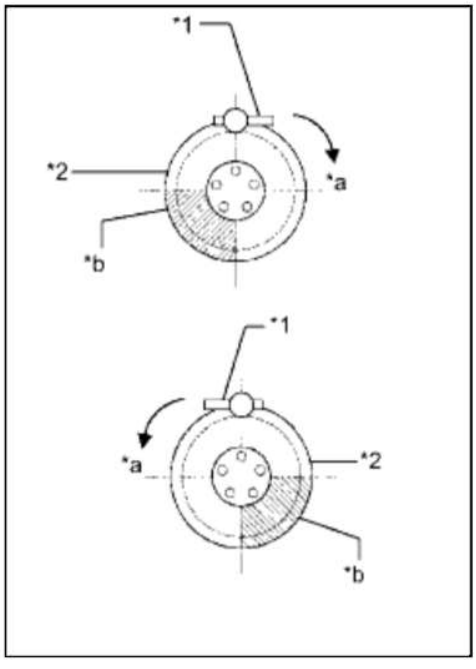
*1	Tire Pressure Warning Valve and Transmitter
*2	Rim
*3	Nut
*4	Cap
*5	Grommet
*6	Washer

NOTICE:

- Check that there is no foreign matter on the washer or nut.
- If the tire and tire pressure warning valve and transmitter have been removed, replace the grommet with a new one.
- Check that there is no oil, water or lubricant around the rim hole, tire pressure warning valve and transmitter, washer or nut. Failing to do so may result in improper installation.

(d) Install the wheel disc to a mounting machine and install the lower tire bead. Position the main body of the tire pressure warning valve and transmitter in the shaded area shown in the illustration.

Text in Illustration



*1	Mount Tool of Mounting Machine
*2	Rim
*a	Rim Rotating Direction
*b	Area for Transmitter

NOTICE:

If the tire pressure warning valve and transmitter is positioned outside this area, it will interfere with the tire bead and this may cause damage to the tire pressure warning valve and transmitter. If the use of lubricant is required when installing the bead, do not apply the lubricant directly to the tire pressure warning valve and transmitter.

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(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 the tire pressure warning valve and transmitter is not clamped by the bead.

(f) Install the valve core to the tire pressure warning valve and transmitter.

(g) Inflate the tire. If the valve nut is loose after inflating the tire, retighten the nut to the specified torque and then check for air leaks with soapy water.

Torque: 4.0 N·m (41 kgf·cm, 35in·lbf)

NOTICE:

Do not tighten the nut further after tightening it to the specified torque.

(h) Set the air pressure of the tires to the specified value.

(i) Install the cap to the tire pressure warning valve and transmitter.

2. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

3. INSTALL REAR WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

4. INSTALL GROUND SPARE TIRE

5. INSPECT TIRE

(a) Inspect the tire INFO .

6. REGISTER TRANSMITTER ID

(a) Register the transmitter ID INFO .

7. CHECK TIRE PRESSURE AFTER REPAIRS

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

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002L8C00FX
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING VALVE: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE FRONT WHEEL

2. REMOVE REAR WHEEL

3. REMOVE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

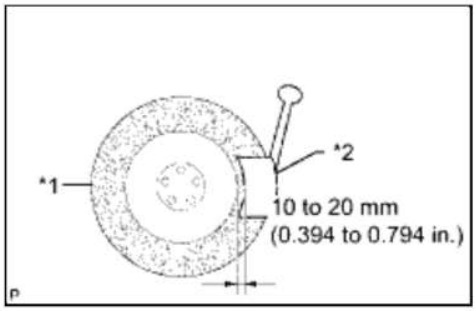
(a) Remove the valve core and cap, and release the air from the tire.

(b) After ensuring that a sufficient amount of air has been released, remove the nut and washer that are used to secure the tire pressure warning valve and transmitter in place, and drop the tire pressure warning valve and transmitter inside the tire.

HINT:

Keep the removed cap, valve core, nut and washer.

(c) Disengage the bead using the shoe of a tire remover.



Text in Illustration

*1	Tire
*2	Shoe

NOTICE:

Be careful as the tire pressure warning valve and transmitter may become damaged due to interference between the tire pressure warning valve and transmitter and tire bead.

(d) Remove the bead on the upper side.

(e) Take out the tire pressure warning valve and transmitter from the tire and remove the bead on the lower side.

(f) Remove the grommet from the tire pressure warning valve and transmitter.

HINT:

Do not reuse the grommet.

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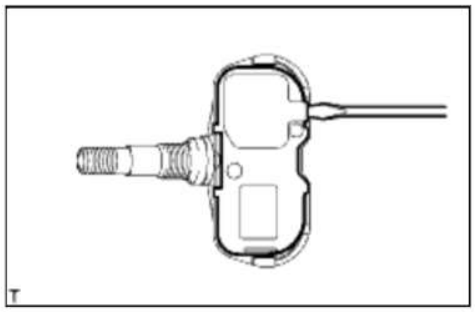
Last Modified: 5-10-2010	6.4 N	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002L8900FX
Title: TIRE PRESSURE MONITORING: TIRE PRESSURE WARNING VALVE: DISPOSAL (2010 4Runner)		

DISPOSAL

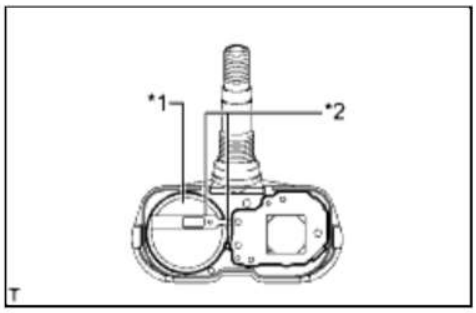
HINT:

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



(a) Use the tip of a screwdriver to pry off the back cover.



(b) The battery and base board, which is covered with resin, are exposed. While taking out the battery, cut the 2 terminals that connect the battery to the base board.

Text in Illustration

*1	Lithium Battery
*2	Terminal

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