C1251/51 (05–330)	Pump motor is locked Open circuit in pump motor circuit	●ABS pump motor
Always ON (05–332)	Malfunction in skid control ECU	●Battery ●Charging system ●Power source circuit ●Skid control ECU

DTC of speed sensor check function:

Code No.	Diagnosis	Trouble Area
C1271/71	Low output voltage of right front speed sensor	●Right front speed sensor ●Sensor installation ●Sensor rotor
C1272/72	Low output voltage of left front speed sensor	●Left front speed sensor ●Sensor installation ●Sensor rotor
C1273/73	Low output voltage of right rear speed sensor	●Right rear speed sensor ●Sensor installation ●Sensor rotor
C1274/74	Low output voltage of left rear speed sensor	●Left rear speed sensor ●Sensor installation ●Sensor rotor
C1275/75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
C1276/76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
C1277/77	Abnormal change in output voltage of right rear speed sensor	Right rear speed sensor rotor
C1278/78	Abnormal change in output voltage of left rear speed sensor	Left rear speed sensor rotor

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DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

When removing the part, turn the ignition switch to OFF.

HINT:

- Using SST 09843–18040, it connect the terminal Tc and CG of DLC3.
- If any abnormality is not found when inspecting parts, inspect the ECU and ground points for poor contact.
- If a malfunction code is displayed during the DTC check, check the circuit listed that code. For details of each code, turn to the page referred to under the ”See page” for respective ”DTC No.” in the DTC chart.
- When 2 or more DTC’s are recorded, and the problem is not identified, perform circuit inspection of the other DTC’s.

DTC No. (See Page)	Detection Item	Trouble Area
C0200/31 (05–308)	Right front wheel speed sensor signal malfunction	●Right front speed sensor ●Right front speed sensor circuit ●Right front speed sensor rotor
C0205/32 (05–308)	Left front wheel speed sensor signal malfunction	●Left front speed sensor ●Left front speed sensor circuit ●Left front speed sensor rotor
C0210/33 (05–312)	Right rear wheel speed sensor signal malfunction	●Right rear speed sensor ●Right rear speed sensor circuit ●Right rear speed sensor rotor
C0215/34 (05–312)	Left rear wheel speed sensor signal malfunction	●Left rear speed sensor ●Left rear speed sensor circuit ●Left rear speed sensor rotor
C0226/21 (05–316)	Open or short circuit in ABS actuator solenoid (SFR) circuit	●Brake actuator ●SFRR or SFRH circuit
C0236/22 (05–316)	Open or short circuit in ABS actuator solenoid (SFL) circuit	●Brake actuator ●SFLR or SFLH circuit
C0246/23 (05–316)	Open or short circuit in ABS actuator solenoid (SRR) circuit	●Brake actuator ●SRRR or SRRH circuit
C0256/24 (05–316)	Open or short circuit in ABS actuator solenoid (SRL) circuit	●Brake actuator ●SRLR or SRLH circuit
C0273/13 (05–318)	Open circuit in ABS motor relay circuit	●ABS motor relay ●ABS motor relay circuit
C0274/14 (05–318)	Short circuit in ABS motor relay circuit	
C0278/11 (05–321)	Open circuit in ABS solenoid relay circuit	●ABS solenoid relay ●ABS solenoid relay circuit
C0279/12 (05–321)	Short circuit in ABS solenoid relay circuit	
C1235/35 (05–308)	Foreign matter is attached on the tip of right front sensor	●Right front speed sensor ●Right front speed sensor rotor
C1236/36 (05–308)	Foreign matter is attached on the tip of left front sensor	●Left front speed sensor ●Left front speed sensor rotor
C1238/38 (05–312)	Foreign matter is attached on the tip of right rear sensor	●Right rear speed sensor ●Right rear speed sensor rotor
C1239/39 (05–312)	Foreign matter is attached on the tip of left rear sensor	●Left rear speed sensor ●Left rear speed sensor rotor
C1241/41 (05–324)	Low battery voltage or abnormally high battery voltage	●Battery ●Charging system ●Power source circuit
C1249/49 (05–327)	Open circuit in stop light switch circuit	●Stop light switch ●Stop light switch circuit

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CUSTOMER PROBLEM ANALYSIS CHECK

ABS Check Sheet

Inspector's Name :

Customer's Name		**Registration No.**	
		Registration Date	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

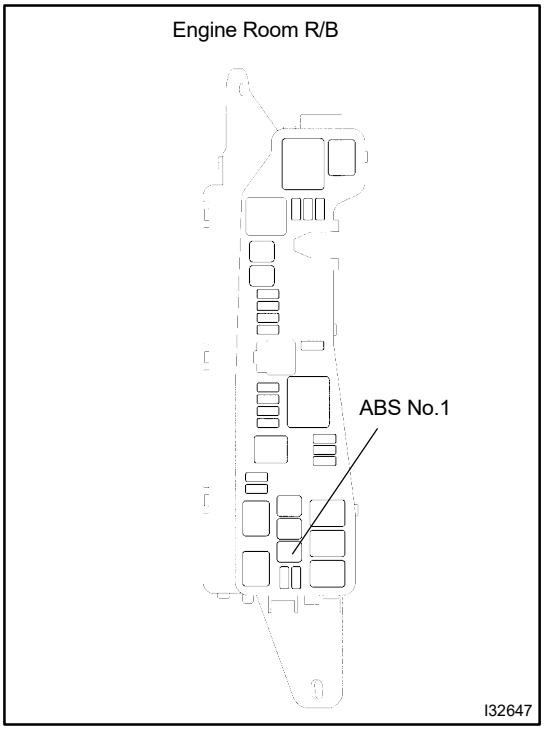
Date Problem First Occurred	/ /
Frequency the Problem Occurs	☐ Continuously ☐ Intermittently (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate efficiently.	
	ABS Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up
	Brake Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

Freeze Frame Data	STOP LIGHT SW	☐ ON ☐ OFF
	SYSTEM	☐ NO SYS ☐ ABS ☐ FAIL SF
	#IG ON	
	VEHICLE SPD	MPH km/h

3	INSPECT CONTACT CONDITION



(a) Inspect the condition of the each connector from engine room R/B to skid control ECU.

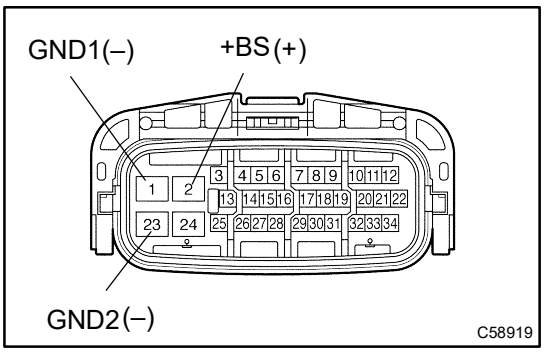
NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

INSPECTION PROCEDURE

1	INSPECT SKID CONTROL ECU CONNECTOR(+BS TERMINAL VOLTAGE)



(a) Disconnect the skid control ECU connector.
(b) Measure the voltage between terminals +BS (2) and GND (1, 23) of skid control ECU harness side connector.
Voltage: 10 – 14 V

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR (+BM CIRCUIT)**

OK

2	RECONFIRM DTC

(a) Check the DTC (See page 05–297).
OK :
Normal code

NG → **END**

OK

DTC	C0278/11	OPEN CIRCUIT IN ABS SOLENOID RELAY CIRCUIT

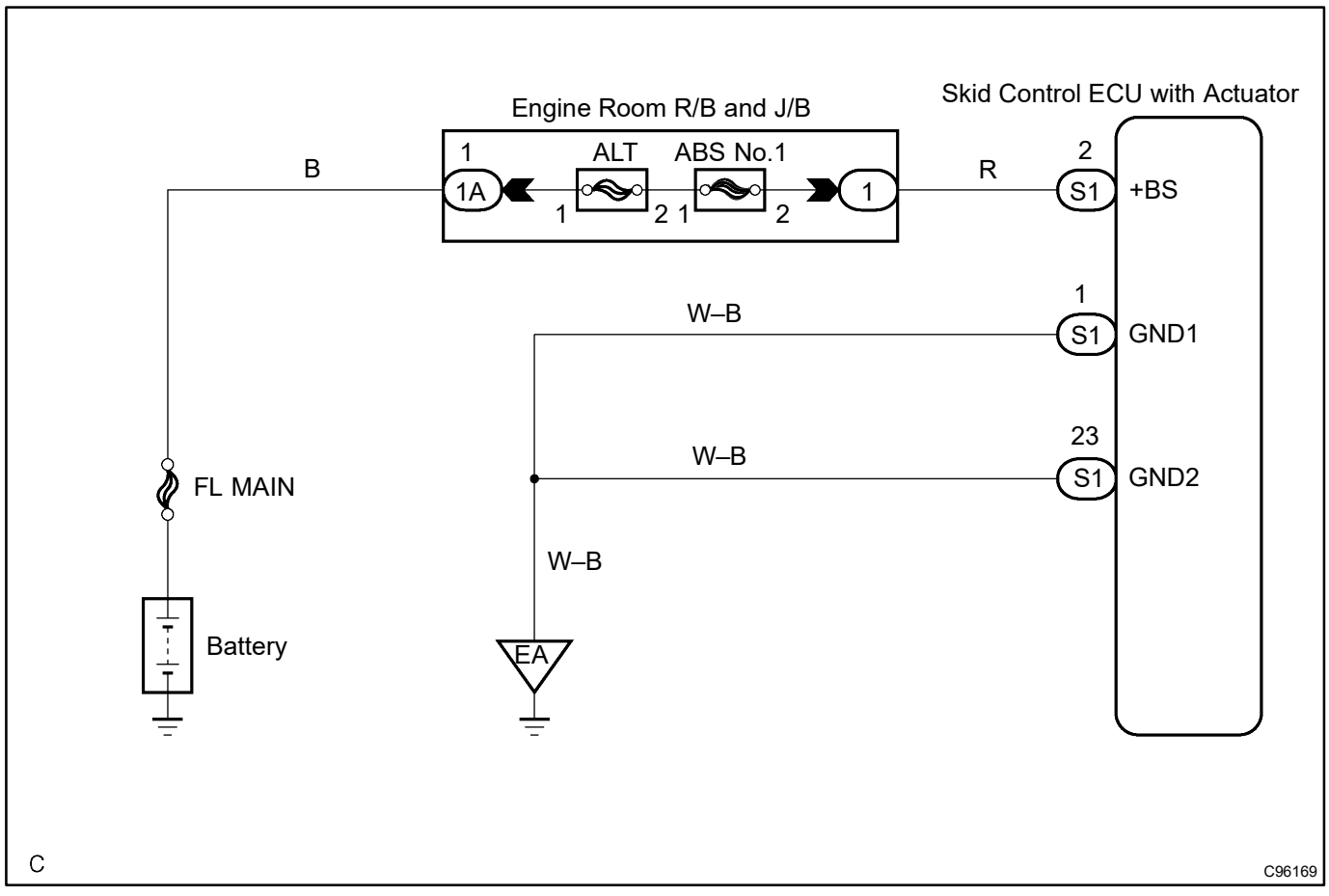
DTC	C0279/12	SHORT CIRCUIT IN ABS SOLENOID RELAY CIRCUIT

CIRCUIT DESCRIPTION

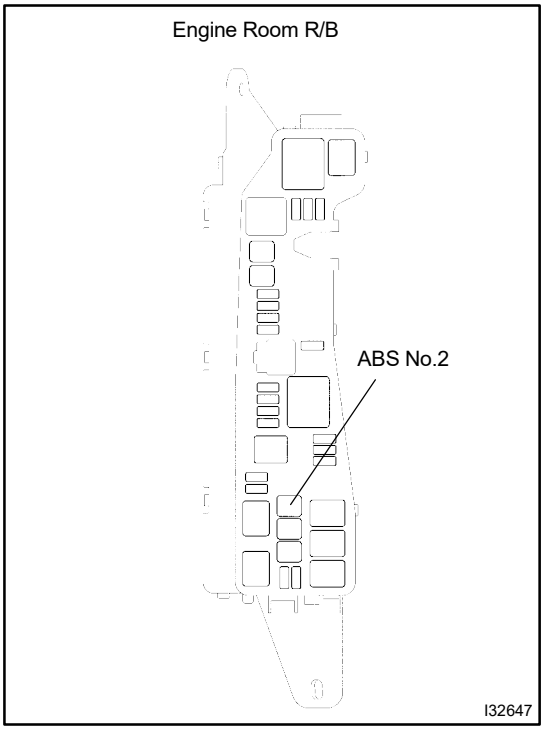
This relay supplies power to each ABS solenoid. After the ignition switch is turned ON, if the initial check is OK, the relay goes on.

DTC No.	DTC Detecting Condition	Trouble Area
C0278/11	When solenoid relay is turned ON, relay contact is OFF for 0.2 sec. or longer.	●ABS solenoid relay ●ABS solenoid relay circuit
C0279/12	Immediately after IG1 is turned ON, when solenoid relay is turned OFF, relay contact is ON for 0.2 sec. or longer.	

WIRING DIAGRAM



3	INSPECT FUSE(ABS No.2 FUSE)

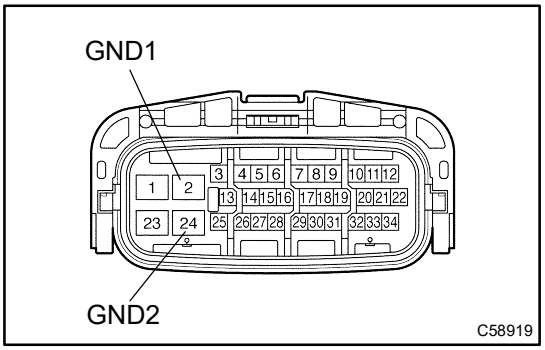


(a) Remove ABS No.2 fuse from the engine room R/B.
(b) Check continuity of ABS No.2 fuse.
OK:
Continuity

NG → **REPLACE INSPECT FOR SHORT CIRCUIT IN ALL HARNESS AND COMPONENTS CONNECTED TO ABS NO. 2 FUSE**

OK

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



(a) Measure resistance between terminal GND (1,23) of skid control ECU harness side connector and body ground.
Resistance: 1 Ω or less

NG → **CHECK AND REPAIR HARNESS AND CONNECTOR**

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

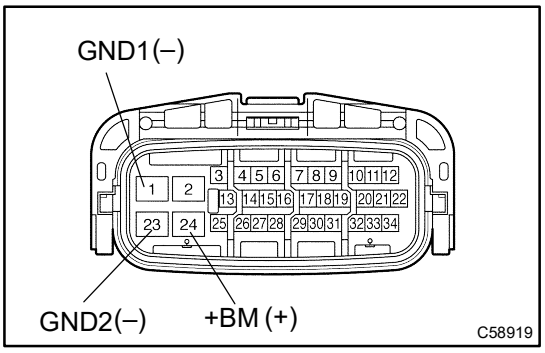
1	PERFORM ACTIVE TEST BY HAND–HELD TESTER(ABS MOTOR RELAY)

(a) Check the operation sound of the ABS motor individually when operaing it with the hand–held tester.
OK:
The operation sound of the ABS motor should be heard.

OK	CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

2	INSPECT SKID CONTROL ECU CONNECTOR(+BM TERMINAL VOLTAGE)



(a) Disconnect the skid control ECU connector.
(b) Measure the voltage between terminals +BM (24) and GND (1, 23) of skid control ECU harness side connector.
Voltage: 10 – 14 V

OK	CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

DTC	C0273/13	OPEN CIRCUIT IN ABS MOTOR RELAY CIRCUIT

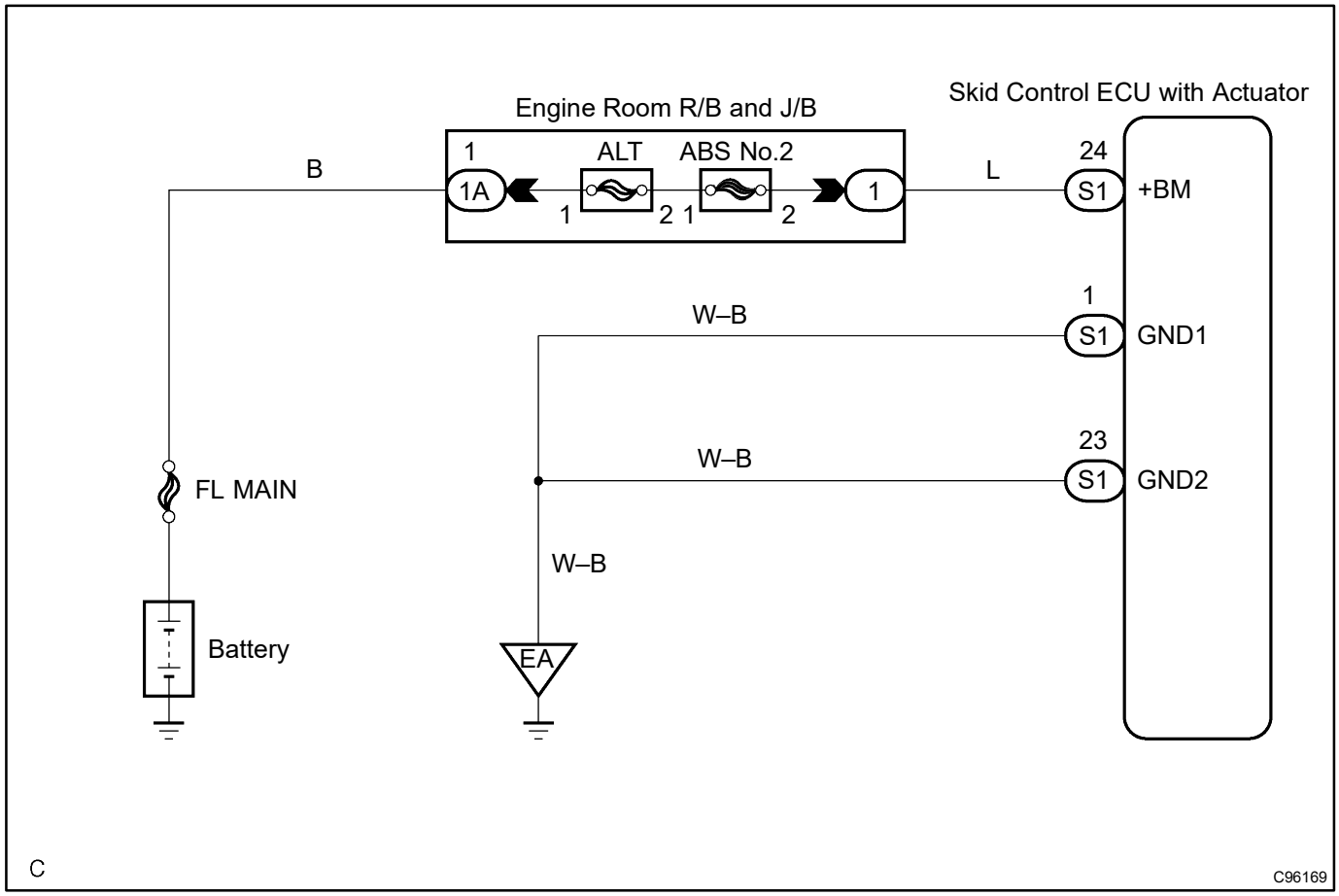
DTC	C0274/14	B+ SHORT CIRCUIT IN ABS MOTOR RELAY CIRCUIT

CIRCUIT DESCRIPTION

The ABS motor relay supplies power to the ABS pump motor. While the ABS is activated, the ECU switches the motor relay ON and operates the ABS pump motor.

DTC No.	DTC Detecting Condition	Trouble Area
C0273/13	With IG1 voltage 10V or below during initial check or ABS control, pump motor relay is turned ON, and relay contact is not ON for 0.2 sec. or longer.	●ABS motor relay ●ABS motor relay circuit
C0274/14	When pump motor relay is turned OFF, relay contact is ON for 3 sec. or longer.	

WIRING DIAGRAM



INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Check if the other DTCs are recorded (See page 05–297).

YES → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

NO

REPLACE BRAKE ACTUATOR ASSY

DTC	C0226/21	SFR SOLENOID CIRCUIT

DTC	C0236/22	SFL SOLENOID CIRCUIT

DTC	C0246/23	SRR SOLENOID CIRCUIT

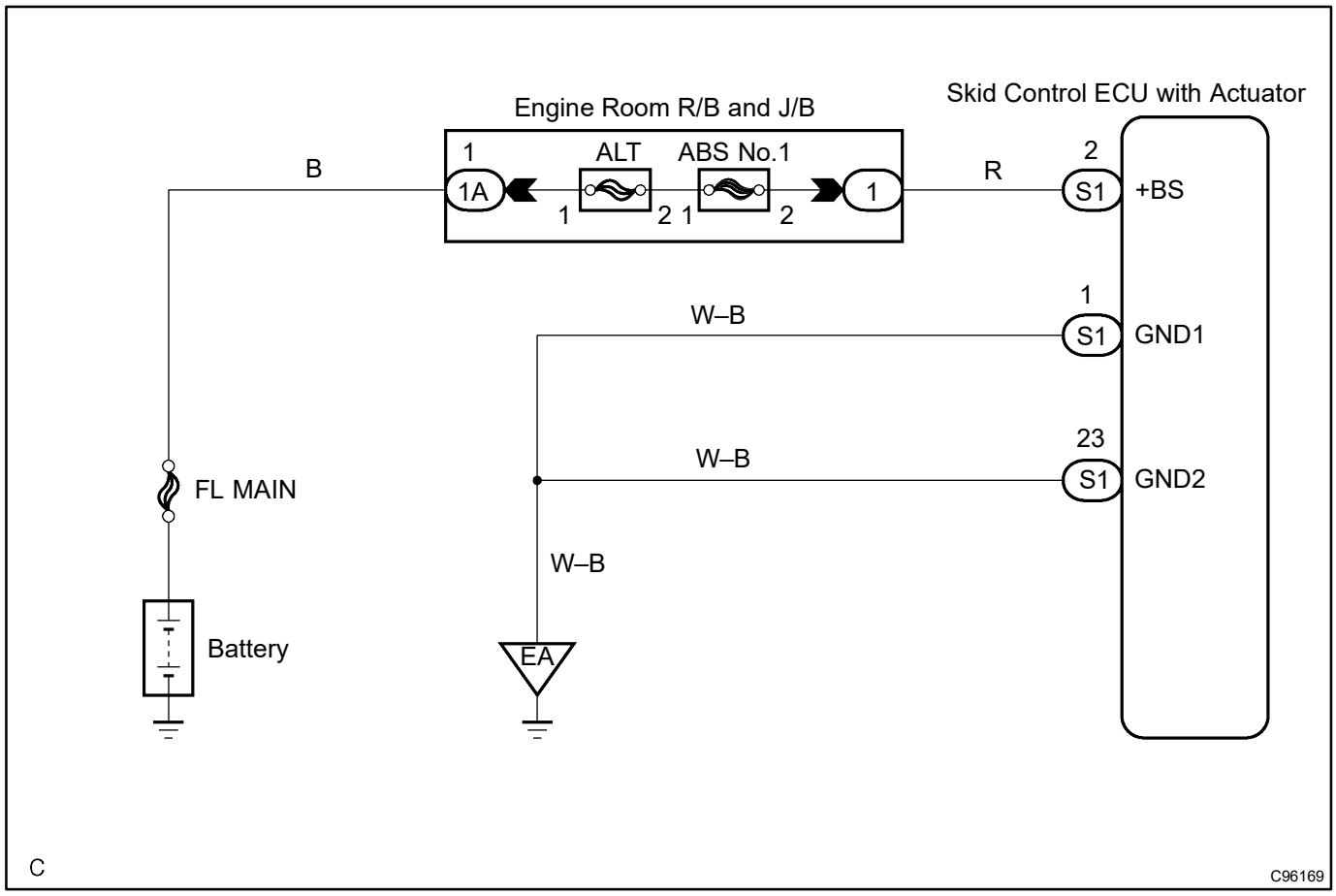
DTC	C0256/24	SRL SOLENOID CIRCUIT

CIRCUIT DESCRIPTION

This solenoid goes on when signals are received from the ECU and controls the pressure acting on the wheel cylinders thus controlling the braking force.

DTC No.	DTC Detecting Condition	Trouble Area
C0226/21 C0236/22 C0246/23 C0256/24	Detection of any condition in 1. and 2.: 1. With IG1 terminal voltage at 10V – 16V, solenoid circuit is open or short circuit for 0.05 sec. or longer. 2. With IG1 terminal voltage at 10V – 16V, during ABS control solenoid relay contact is OFF for 0.05 sec. or longer.	●Each solenoid circuit ●Brake actuator

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using hand–held tester.

1	INSPECT BRAKE ACTUATOR ASSY

(a) Select the DATALIST mode on the hand–held tester.

(b) Check the operation sound of the ABS pump motor when operating it with the hand–held tester.

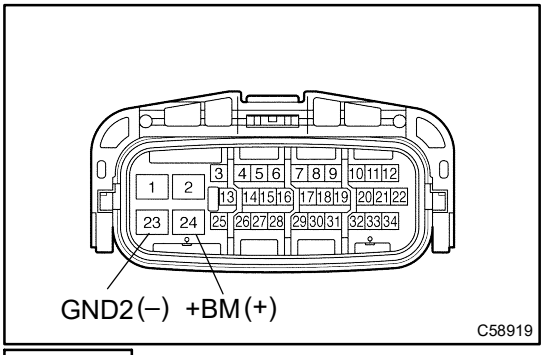
OK:

The operation sound of the ABS pump motor should be heard.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE**

NG

2	INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(+BM TERMINAL VOLTAGE)



(a) Disconnect the skid control ECU connector.

(b) Measure the voltage between terminal +BM (24) and GND (23) of skid control ECU harness side connector.

OK:

The operation sound of the ABS pump motor should be heard.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

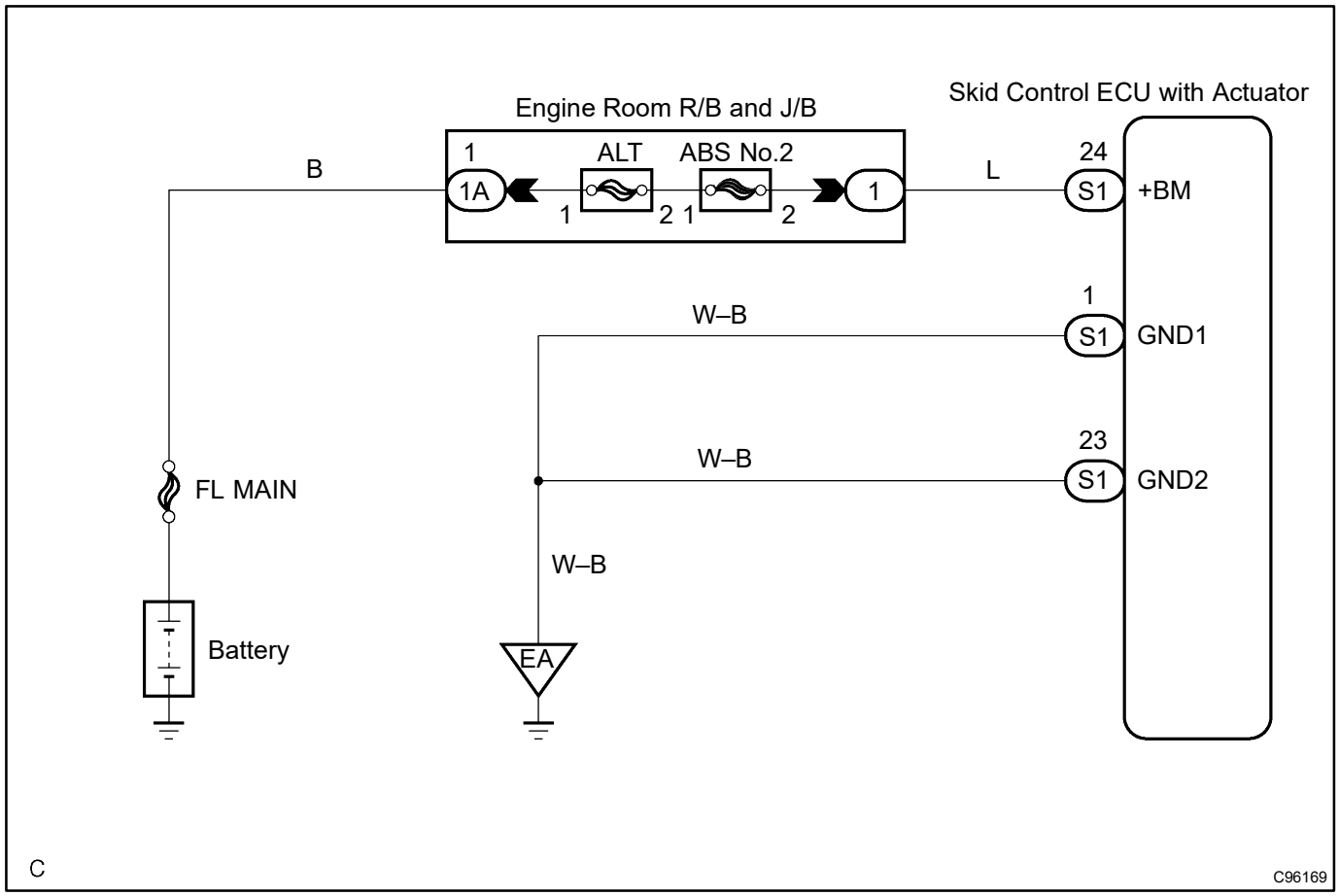
REPLACE BRAKE ACTUATOR ASSY

DTC	C1251/51	PUMP MOTOR IS LOCKED/OPEN CIRCUIT IN PUMP MOTOR GROUND

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1251/51	ABS actuator pump motor is not operating normally during initial check.	ABS pump motor

WIRING DIAGRAM



INSPECTION PROCEDURE

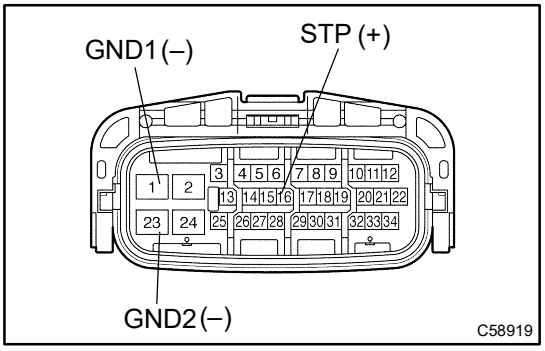
1	INSPECT STOP LAMP SWITCH ASSY

(a) Check that the stop light lights up when brake pedal is depressed and turns OFF when the brake pedal is released.

NG → Go to step 4

OK

2	INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(STP TERMINAL)



(a) Disconnect skid control ECU connector.
(b) Measure voltage between terminal STP (16) and GND (1, 23) of skid control ECU harness side connector when the brake pedal is depressed.
Voltage: 10 – 14 V

OK → CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

3	CHECK HARNESS AND CONNECTOR(STOP LIGHT SWITCH – SKID CONTROL ECU)

(a) Check for open and short circuit in harness and connector between stop light switch and skid control ECU (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE

4	CHECK HARNESS AND CONNECTOR(STOP LIGHT CIRCUIT)

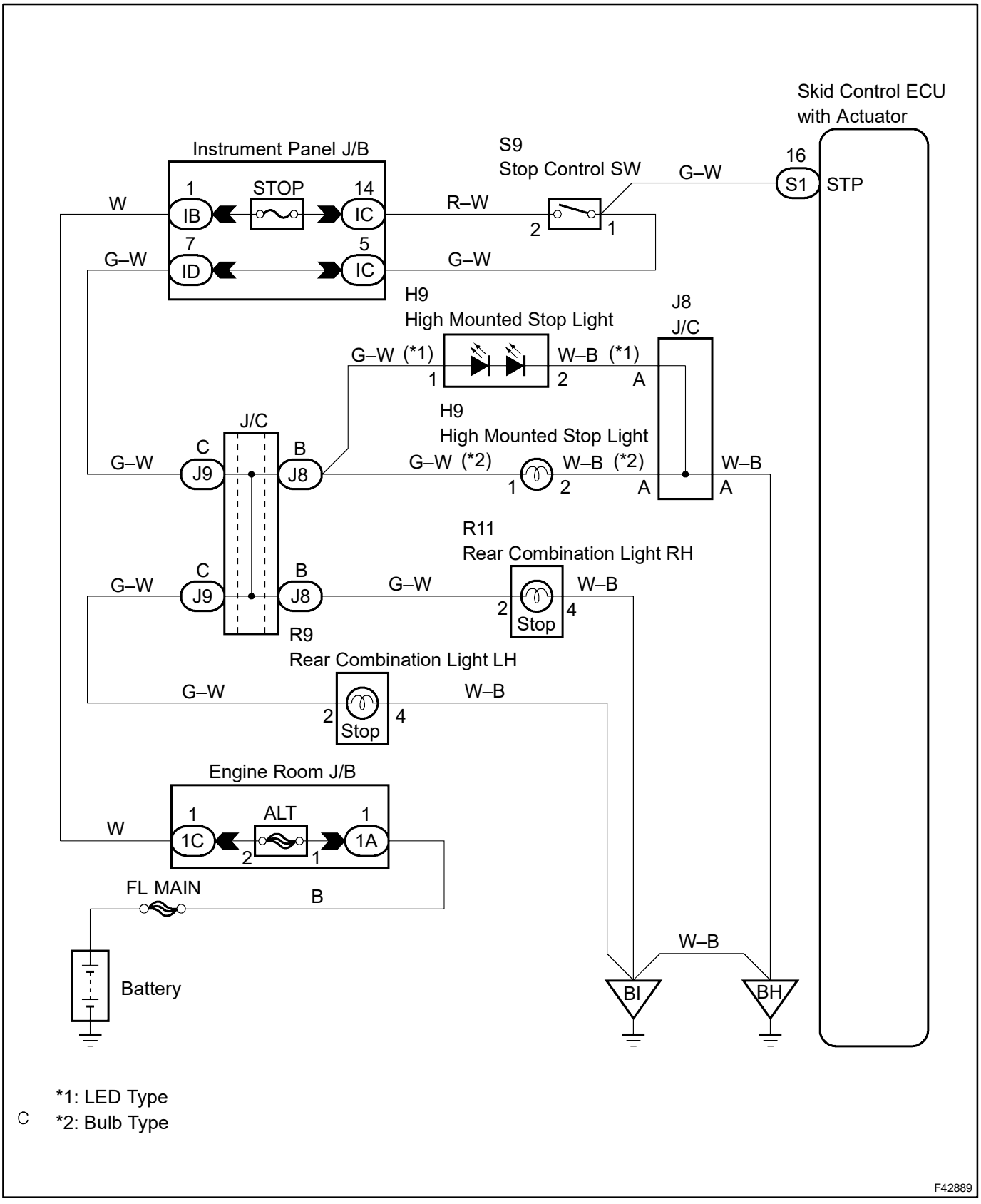
(a) Check for open and short circuit in harness and connector of the stop light circuit (See page 01–30).

OK → REPLACE STOP LAMP SWITCH ASSY

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

WIRING DIAGRAM



DTC	C1249/49	OPEN CIRCUIT IN STOP LIGHT SWITCH CIRCUIT

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1249/49	With IG1 terminal voltage at 10V – 16V, ABS not controlling stop light switch circuit is open for 1.0 sec. or longer.	●Stop light switch ●Stop light switch circuit

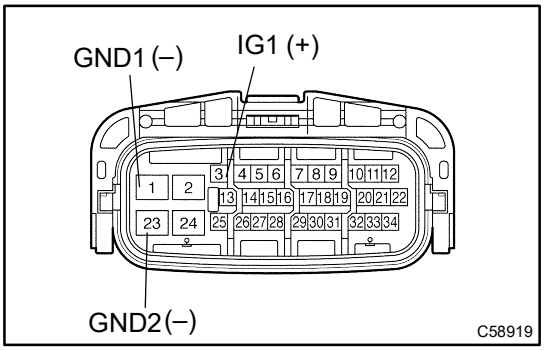
3	INSPECT SKID CONTROL ECU CONNECTOR(IG1 TERMINAL VOLTAGE)

IN CASE OF USING HAND–HELD TESTER:

(a) Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

”Normal” is displayed.



IN CASE OF NOT USING HAND–HELD TESTER:

(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(c) Measure voltage between terminals IG1 (3) and GND (1, 23) of skid control ECU harness side connector.

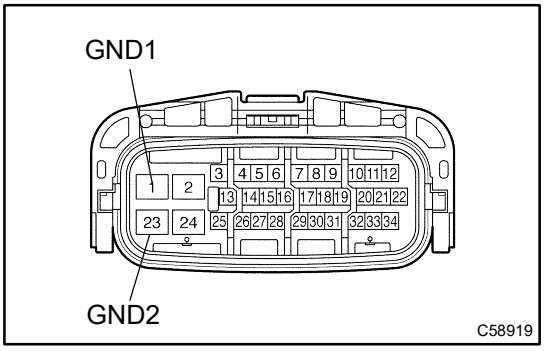
OK:

oltage: 10 – 14 V

OK	CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



(a) Measure resistance between terminal GND (1, 23) of skid control ECU harness side connector and body ground.

OK:

Resistance: 1 Ω or less

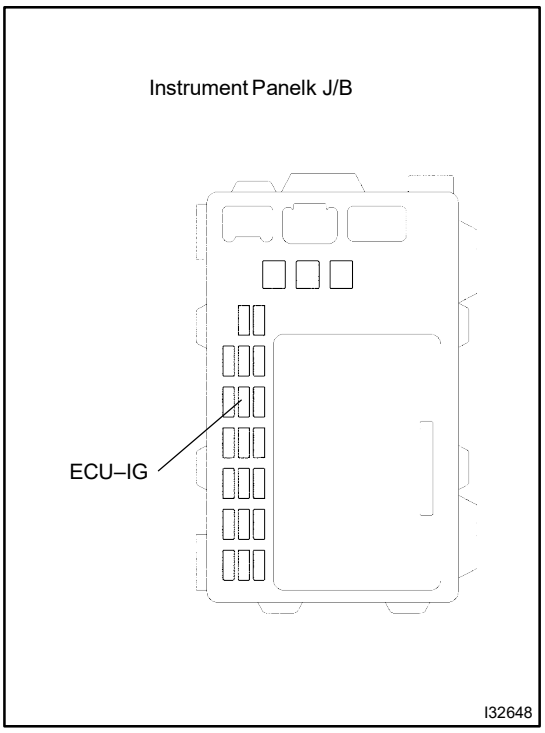
NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

INSPECTION PROCEDURE

1	INSPECT FUSE(ECU–IG FUSE)



(a) Remove ECU–IG fuse from the instrument panel J/B.
(b) Check continuity of ECU–IG fuse.
OK:
Continuity

NG → **INSPECT FOR SHORT CIRCUIT IN ALL HARNESS AND COMPONENTS CONNECTED TO ECU–IG FUSE**

OK

2	INSPECT BATTERY

OK:
Voltage: 10 – 14 V

NG → **INSPECT CHARGING SYSTEM**

OK

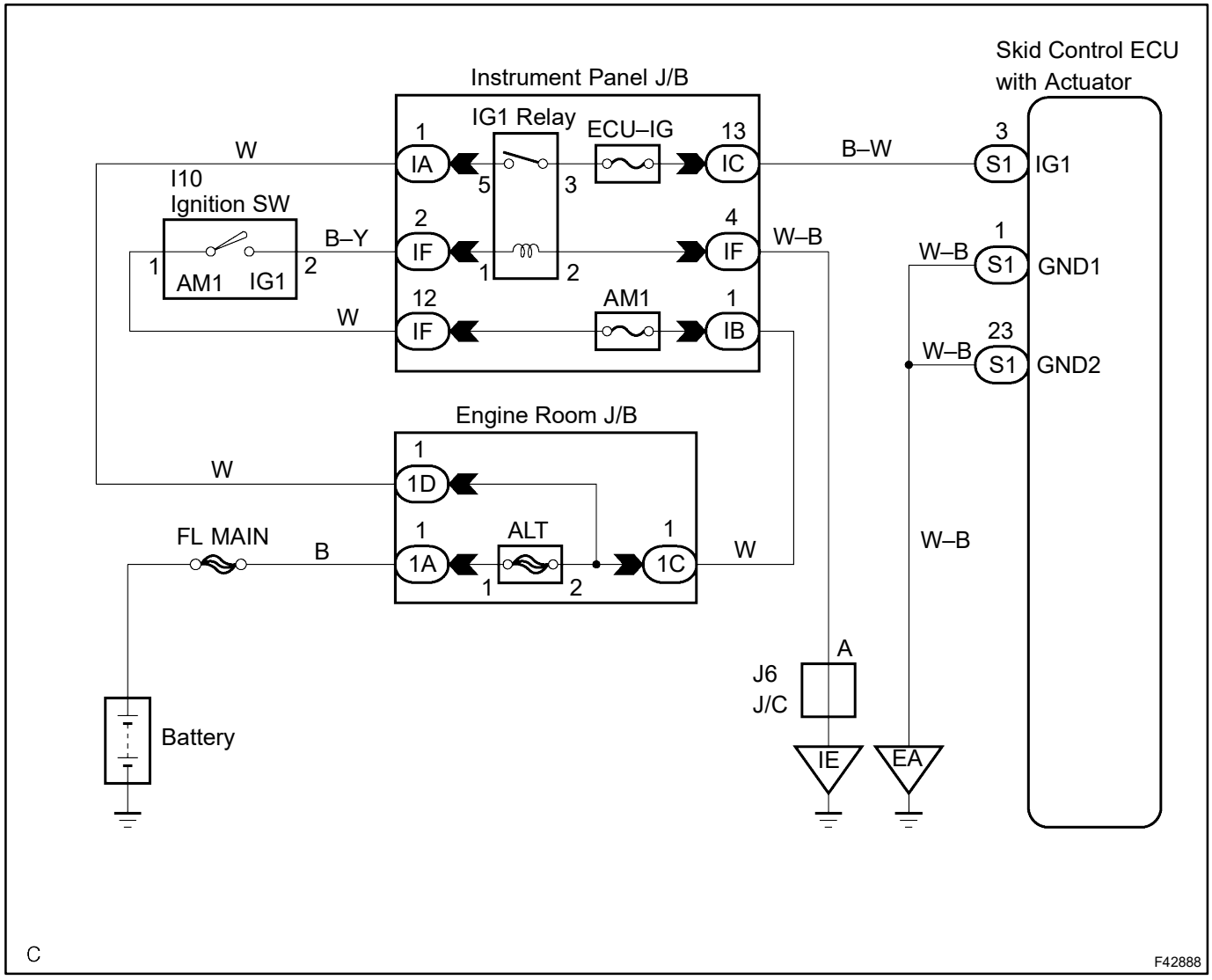
DTC	C1241/41	LOW BATTERY POSITIVE VOLTAGE OR ABNORMALLY HIGH BATTERY POSITIVE VOLTAGE

CIRCUIT DESCRIPTION

This is the power source of the ECU, hence the actuators.

DTC No.	DTC Detecting Condition	Trouble Area
C1241/41	Detection of any of conditions 1. through 3. : 1. With vehicle speed at 3 km/h or more, IG1 terminal voltage is 10V or below for 10 sec. or longer. 2. With IG1 terminal voltage at 10V or below, solenoid relay open, pump motor relay open, solenoid fault detecting condition are established 3. Voltage of ECU terminal IG1 remains at more than 17V continues for 1.2 sec. or more.	●Battery ●Charging system ●Power source circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT PARKING BRAKE SWITCH CIRCUIT

(a) Check for open and short circuit in parking brake switch circuit (See page 01–30).

NG → REPAIR OR REPLACE PARKING BRAKE SWITCH CIRCUIT

OK

2	INSPECT BRAKE FLUID LEVEL WARNING SWITCH CIRCUIT

(a) Check the brake fluid level in reservoir.
(b) Check for open and shot circuit in brake fluid level warning switch circuit (See page 01–30).

NG → REPAIR OR REPLACE BRAKE FLUID LEVEL WARNING SWITCH CIRCUIT

OK

3	CHECK DTC ONCE MORE

(a) Check for open and short circuit in harness and connector between vacuum warning switch and skid control ECU (See page 05–297).

NG → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

OK

4	INSPECT COMBINATION METER ASSEMBLY(BRAKE WARNING LIGHT CIRCUIT)

(a) Check for open and short circuit in combination meter (See page 01–30).

NG → REPAIR OR REPLACE COMBINATION METER ASSEMBLY

OK

5	CHECK HARNESS AND CONNECTOR(BRAKE ACTUATOR – COMBINATION METER)

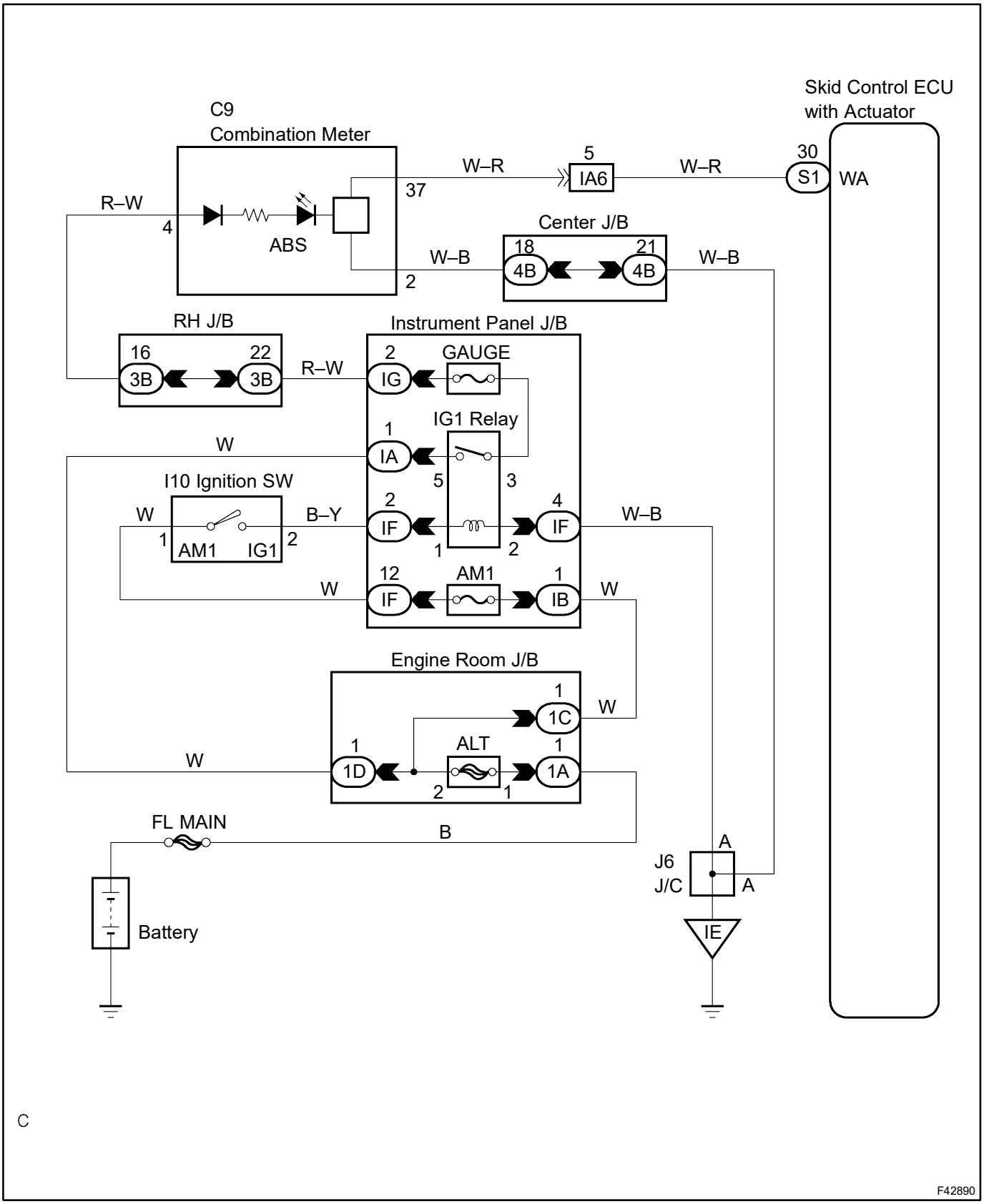
(a) Check for open and short circuit in harness and connector between brake actuator and combination meter (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY

WIRING DIAGRAM

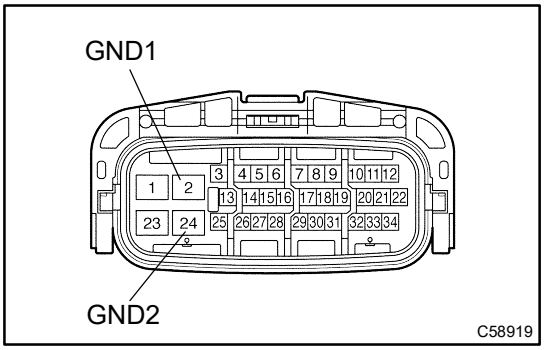


BRAKE WARNING LIGHT CIRCUIT

CIRCUIT DESCRIPTION

If the ECU detects trouble, it lights the brake warning light at the same time of prohibiting ABS control. At this time, the ECU records a DTC in memory.
Connect terminals Tc and CG of the DLC3 to make the brake warning light blink and output the DTC.

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



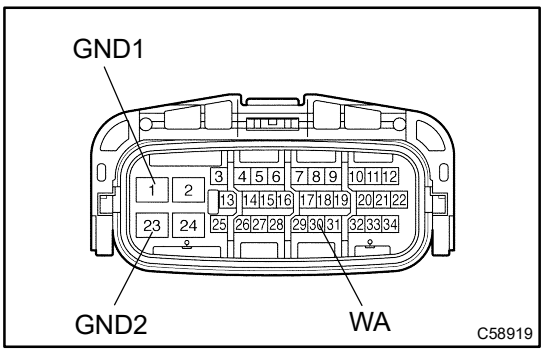
(a) Measure resistance between terminal GND (S1–2, 24) of skid control ECU harness side connector and body ground.
Resistance: 1 Ω or less

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPAIR HARNESS AND CONNECTOR

5	GO TO COMBINATION METER SYSTEM(ABS WARNING LIGHT)



(a) Disconnect the skid control ECU connector.
(b) Using service wire, connect terminals WA (30) and GND (1, 23) of skid control ECU harness side connector.
(c) Turn the ignition switch to ON.
OK:
ABS warning light goes off.

NG → **REPAIR OR REPLACE COMBINATION METER ASSEMBLY**

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY(See page 05–306)

INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Check the DTC (See page 05–297).

YES → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

NO

2	INSPECT SKID CONTROL ECU CONNECTOR SECURELY CONNECTED

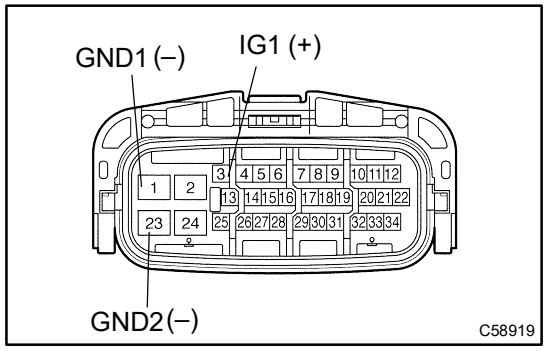
NO → CONNECT CONNECTOR TO ECU

YES

3	INSPECT SKID CONTROL ECU CONNECTOR(IG1 TERMINAL VOLTAGE)

IN CASE OF USING HAND–HELD TESTER:

(a) Check the voltage condition output from the ECU displayed on the hand–held tester.
OK:
”Normal” is displayed.



IN CASE OF NOT USING HAND–HELD TESTER:

(a) Disconnect the skid control ECU connector.
(b) Turn the ignition switch to ON.
(c) Measure voltage between terminals IG1 (3) and GND (1, 23) of skid control ECU harness side connector.
OK:
oltage: 10 – 14 V

OK → Go to step 5

NG

DTC AlwaysON MALFUNCTION IN ABS ECU

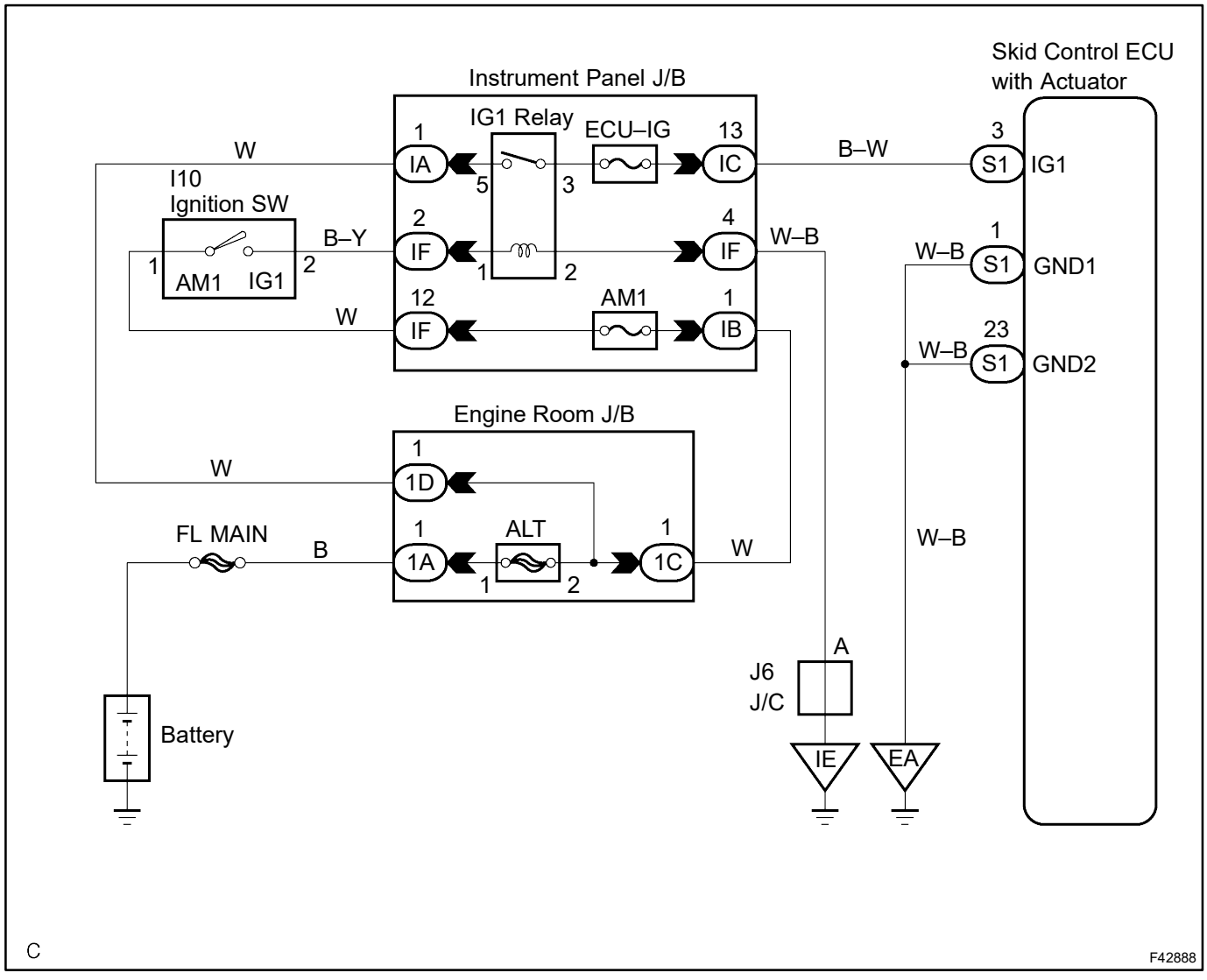
CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Either of the following 1. or 2. is detected: 1. The ECU connectors are OFF from the ECU. 2. There is a malfunction in the ECU internal circuit.	●Battery ●Charging system ●Power source circuit ●Skid control ECU

HINT:

There is a case that hand–held tester cannot be used when ECU is abnormal.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	PERFORM ACTIVE TEST BY HAND–HELD TESTER(ABS WARNING LIGHT)

(a) Check that ”ON” and ”OFF” of the ABS warning light can be shown on the combination meter by the hand–held tester.

OK → CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

NG

2	INSPECT COMBINATION METER ASSY(ABS WARNING LIGHT)

(a) Disconnect the connector from the skid control ECU.
(b) Turn the ignition switch to ON.
(c) Check the ABS warning light.
OK:
ABS warning light goes ON

NG → REPAIR OR REPLACE COMBINATION METER ASSY

OK

3	CHECK HARNESS AND CONNECTOR(WA CIRCUIT)

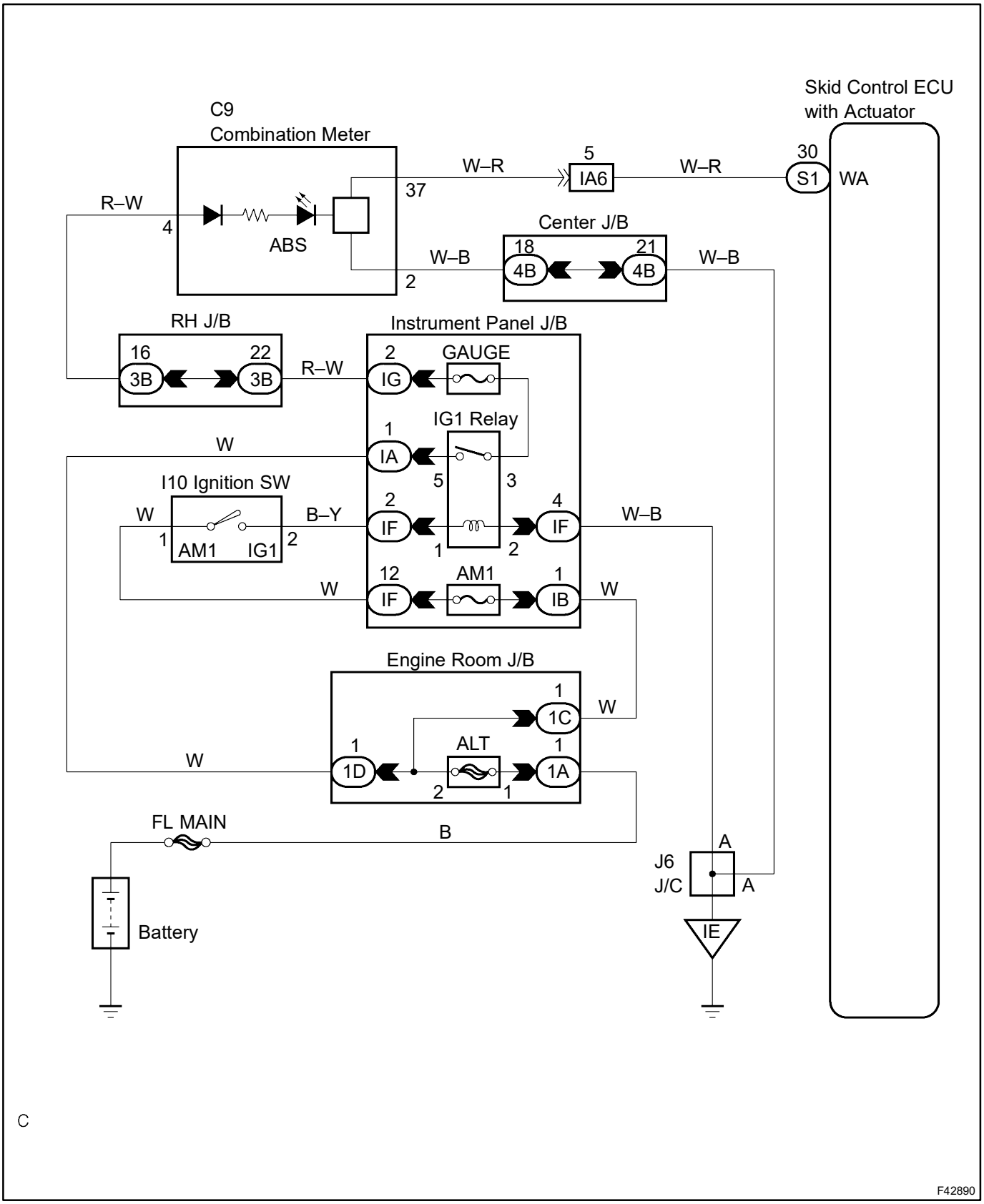
(a) Check for short circuit in harness and connector of the between terminal WA of skid control ECU and combination meter (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

WIRING DIAGRAM



ABS WARNING LIGHT CIRCUIT (DOES NOT LIGHT UP)

CIRCUIT DESCRIPTION

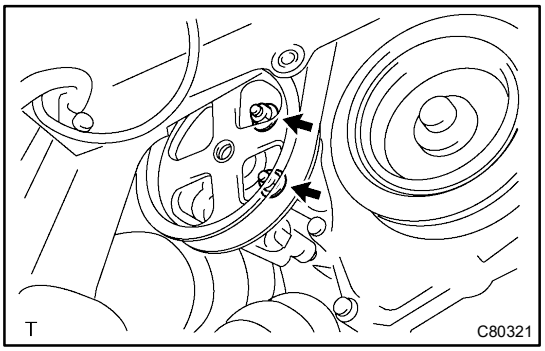
If the ECU detect trouble, it will prohibit ABS control, turn on ABS warning light, and store the DTC. Connect terminals Tc and CG of the DLC3 to make the ABS warning light blink and output the DTC.

33. INSTALL POWER STEERING SUCTION PORT UNION

(a) Coat a new O–ring with power steering fluid, and install it to the power steering suction port union.

(b) Install the power steering suction port union with the bolt.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)



34. INSTALL VANE PUMP ASSY

(a) Install the vane pump assy with the 2 bolts and nuts.

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

(b) Connect the oil pressure switch connector.

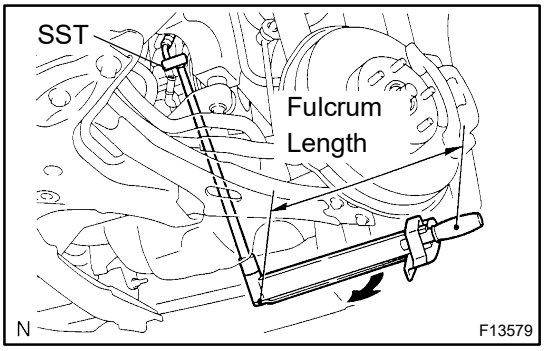
NOTICE:

Be careful that the oil does not adhere to the connector.

35. INSTALL VANE PUMP BRACKET REAR

(a) Install the vane pimp bracket rear with the bolt.

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



36. CONNECT PRESSURE FEED TUBE ASSY

(a) Using SST, connect the pressure feed tube assy.

SST 09023–38400

Torque: 41 N·m (420 kgf·cm, 30 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective when SST is parallel to a torque wrench.

(b) Connect the pressure feed tube clamp with the bolt.

Torque: 7.8 N·m (80 kgf·cm, 69 ft·lbf)

37. CONNECT OIL RESERVOIR TO PUMP HOSE NO.1

(a) Connect the oil reservoir to pump hose No.1 with the clip.

38. INSTALL FAN AND GENERATOR V BELT

39. INSTALL FRONT WHEEL RH

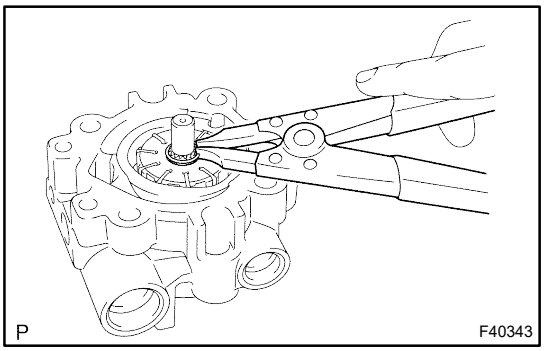
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

40. ADD POWER STEERING FLUID

41. BLEED POWER STEERING FLUID(See page 51–3)

42. INSPECT FLUID LEAK

43. INSTALL ENGINE UNDER COVER RH



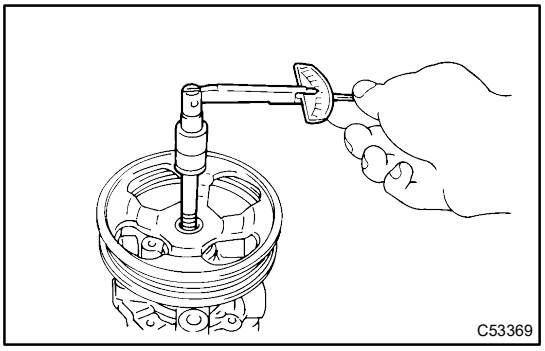
(d) Using a snap ring expander, install a new snap ring to the w/ pulley shaft sub–assy.

29. INSTALL VANE PUMP HOUSING REAR

(a) Coat a new O–ring with power steering fluid and install it to the pump housing rear.

(b) Align the straight pin of the vane pump housing rear with the dents of the vane pump cam ring, vane pump side plate front and vane pump housing front, and install the vane pump housing rear with the 4 bolts.

Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)



30. INSPECT PRELOAD

(a) Check that the pump rotates smoothly without abnormal noise.

(b) Temporarily install the service bolt.

Recommended service bolt:
Thread diameter: 10 mm (0.3937 in.)
Thread pitch: 1.25 mm (0.0492 in.)
Bolt length: 50 mm (1.9685 in.)

(c) Using a torque wrench, check the pump rotating torque.

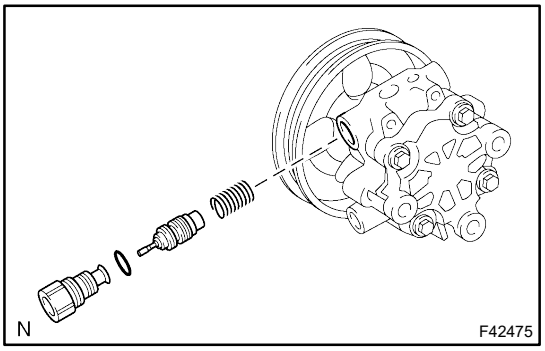
Rotating torque:
0.27 N·m (2.8 kgf·cm, 2.4 ft·lbf) or less

31. INSTALL POWER STEERING OIL PRESSURE SWITCH

(a) Coat a new O–ring with power steering fluid and install it to the power steering oil pressure switch.

(b) Install the power steering oil pressure switch to the vane pump assy.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)



32. INSTALL FLOW CONTROL VALVE

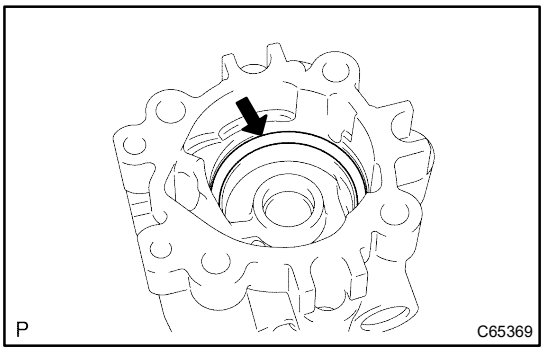
(a) Coat the flow control valve compression spring and flow control valve with power steering fluid.

(b) Install the flow control valve compression spring and flow control valve.

(c) Coat a new O–ring with power steering fluid and install it to the pressure port union.

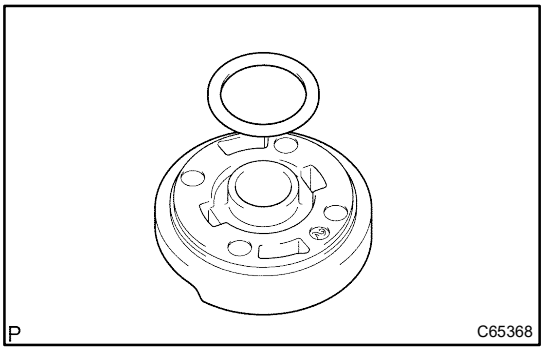
(d) Install the pressure port union.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

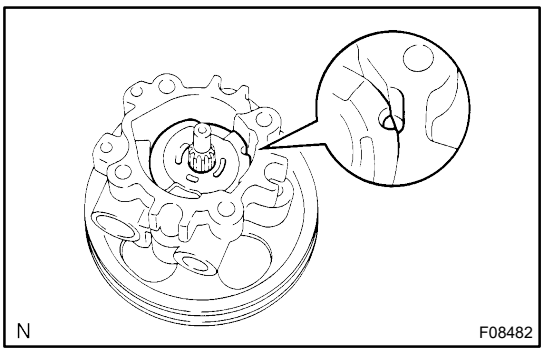


26. INSTALL VANE PUMP SIDE PLATE FRONT

(a) Coat a new O–ring with power steering fluid and install it to the vane pump housing front.



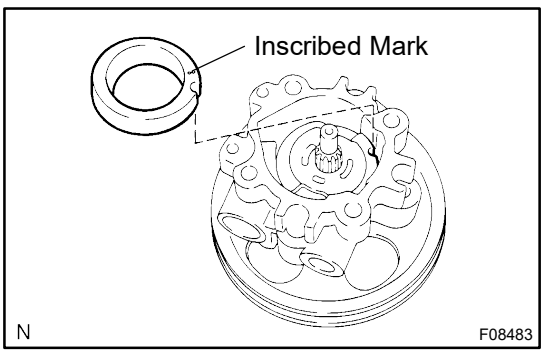
(b) Coat a new O–ring with power steering fluid and install it to the side plate front.



(c) Align the dent of the vane pump side plate front with that of the vane pump housing front, and install the vane pump side plate front.

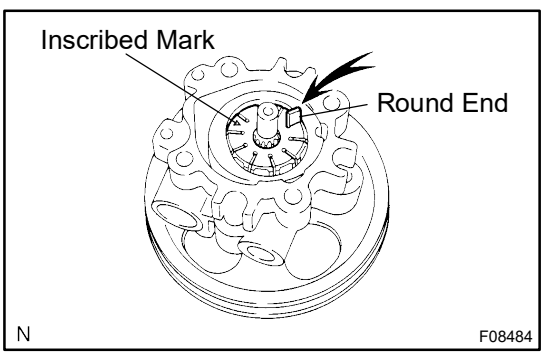
NOTICE:

Make sure that the side plate front is installed facing in the correct direction.



27. INSTALL VANE PUMP CAM RING

(a) Align the dent of the cam ring with that of the side plate front, and install the cam ring with the inscribed mark facing outward.

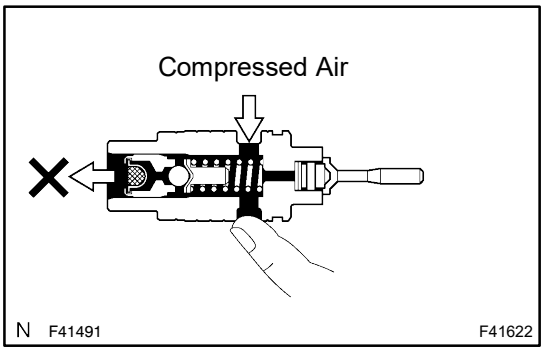


28. INSTALL VANE PUMP ROTOR

(a) Install the vane pump rotor with the inscribed mark facing outward.

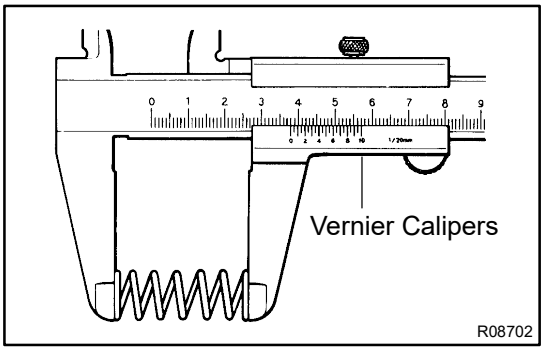
(b) Coat 10 vane plates with power steering fluid.

(c) Install the vane plates with the round end facing outward.



(b) Check the flow control valve for leakage. Close one of the holes and apply compressed air of 392 – 490 kPa (4 – 5 kgf·cm^2, 57 – 71 psi) into the opposite side hole, and confirm that air does not come out from the end holes.

If necessary, replace the vane pump assy.



22. INSPECT FLOW CONTROL VALVE COMPRESSION SPRING

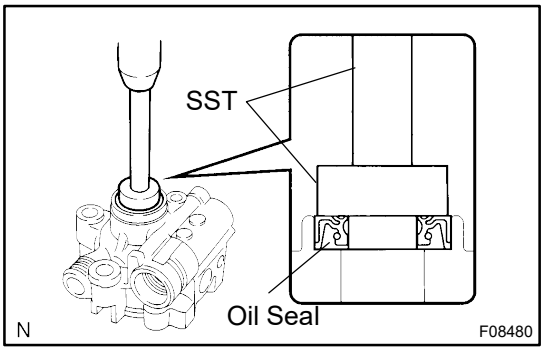
(a) Using vernier calipers, measure the free length of the spring.

Minimum free length: 36.9 mm (1.453 in.)

If it is not within the specification, replace the vane pump assy.

23. INSPECT PRESSURE PORT UNION

(a) If the union seat in the pressure port union is remarkably damaged and it may cause fluid leakage, replace the vane pump assy.



24. INSTALL VANE PUMP HOUSING OIL SEAL

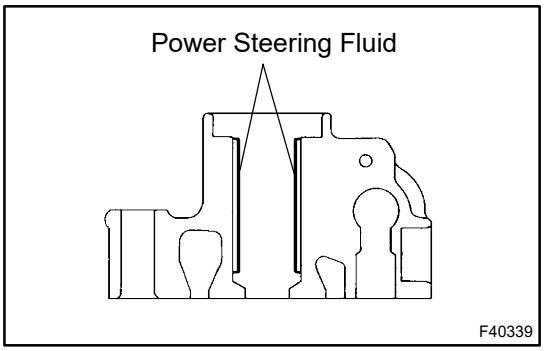
(a) Coat a new vane pump housing oil seal lip with power steering fluid.

(b) Using SST and a press, install a new vane pump housing oil seal.

SST 09950–60010 (09951–00280), 09950–70010 (09951–07100)

NOTICE:

Make sure that the vane pump housing oil seal is installed facing in the correct direction.



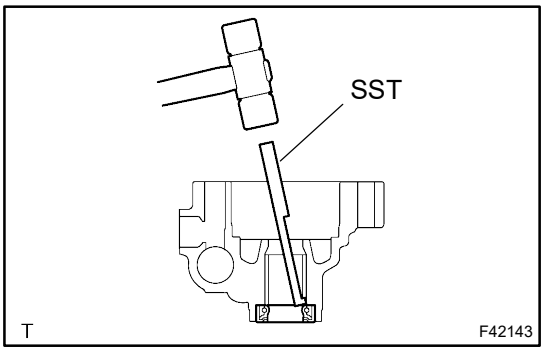
25. INSTALL W/PULLEY SHAFT SUB–ASSY

(a) Coat inside bushing surface of the vane pump housing front with power steering fluid.

(b) Gradually insert the vane pump shaft.

NOTICE:

Do not damage the vane pump housing oil seal lip in the vane pump housing front.

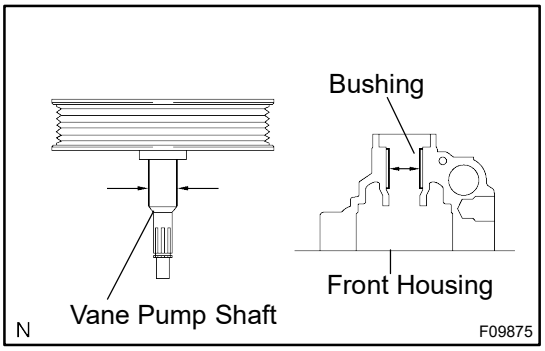


18. REMOVE VANE PUMP HOUSING OIL SEAL

(a) Using SST and a hammer, remove the vane pump housing oil seal.
SST 09631–10030

NOTICE:

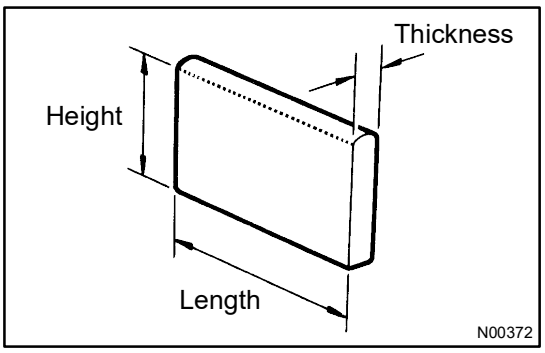
Be careful not to damage the pump housing.



19. INSPECT OIL CLEARANCE

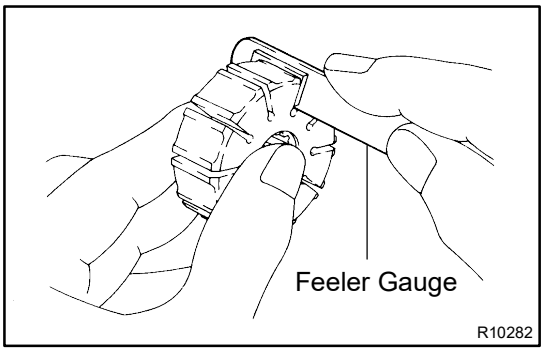
(a) Using a micrometer and a caliper gauge, measure the oil seal clearance.
Standard clearance:
0.021 – 0.043 mm (0.0008 – 0.0017 in.)
Maximum clearance: 0.07 mm (0.0028 in.)

If it is more than the maximum, replace the vane pump assy.



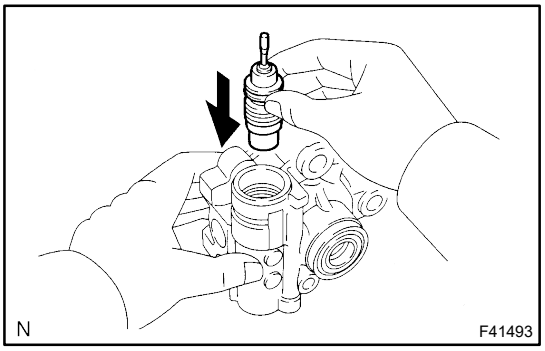
20. INSPECT VANE PUMP ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the vane plates.
Minimum height: 7.6 mm (0.299 in.)
Minimum thickness: 1.405 mm (0.0553 in.)
Minimum length: 11.993 mm (0.4722 in.)



(b) Using a feeler gauge, measure the clearance between a side face of the vane pump rotor groove and vane plate.
Maximum clearance: 0.03 mm (0.0012 in.)

If it is more than the maximum, replace the vane pump assy.



21. INSPECT FLOW CONTROL VALVE

(a) Coat the flow control valve with power steering fluid and check that it falls smoothly into the flow control valve hole by its own weight.

10. REMOVE POWER STEERING SUCTION PORT UNION

(a) Remove the bolt and power steering suction port union.

(b) Remove the O–ring from the power steering suction port union.

11. REMOVE FLOW CONTROL VALVE

(a) Remove the pressure port union.

(b) Remove the O–ring from the pressure port union.

(c) Remove the flow control valve and flow control valve compression spring.

12. REMOVE POWER STEERING OIL PRESSURE SWITCH

NOTICE:

Be careful so that oil pressure switch is not dropped or strongly damaged, however if it is damaged replace it with a new one.

13. REMOVE VANE PUMP HOUSING REAR

(a) Remove the 4 bolts and vane pump housing rear from the vane pump housing front.

(b) Remove the O–ring from the vane pump housing front.

14. REMOVE W/PULLEY SHAFT SUB–ASSY

(a) Using a screwdriver, remove the snap ring from the w/ pulley shaft sub–assy.

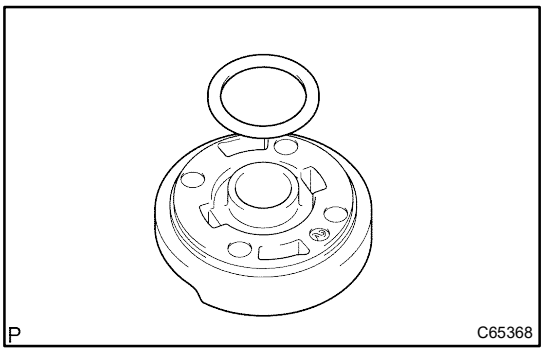
(b) Remove the w/ pulley shaft sub–assy.

15. REMOVE VANE PUMP ROTOR

(a) Remove the 10 vane plates.

(b) Remove the vane pump rotor.

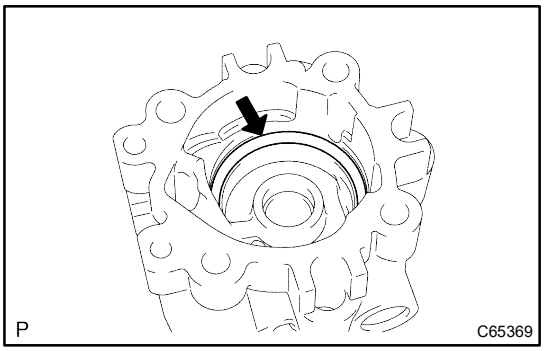
16. REMOVE VANE PUMP CAM RING



17. REMOVE VANE PUMP SIDE PLATE FRONT

(a) Remove the side plate from the pump housing front.

(b) Remove the O–ring from the side plate front.



(c) Remove the O–ring from the pump housing front.

5107W–01

OVERHAUL

NOTICE:

- **When using a vise, do not over tighten.**
- **When installing, coat the parts indicated by the arrows with power steering fluid (See page 51–7).**

1. REMOVE FRONT WHEEL RH

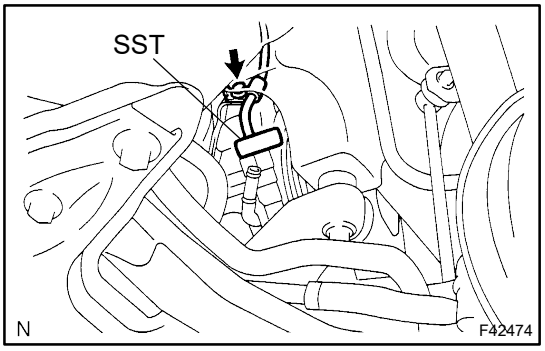
2. DRAIN POWER STEERING FLUID

3. REMOVE ENGINE UNDER COVER RH

4. REMOVE FAN AND GENERATOR V BELT

5. DISCONNECT OIL RESERVOIR TO PUMP HOSE NO.1

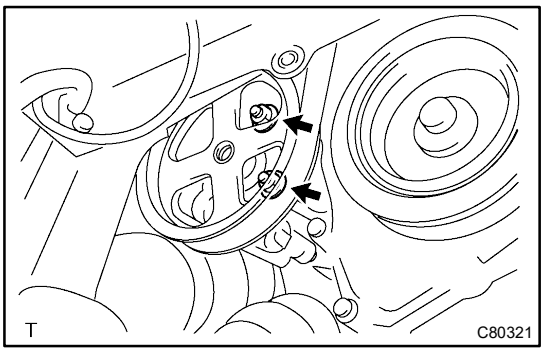
(a) Remove the clip and disconnect the oil reservoir to pump hose No.1.



6. DISCONNECT PRESSURE FEED TUBE ASSY

(a) Using SST, disconnect the pressure feed tube assy.
SST 09023–38400

(b) Remove the bolt and disconnect the pressure feed tube clamp.



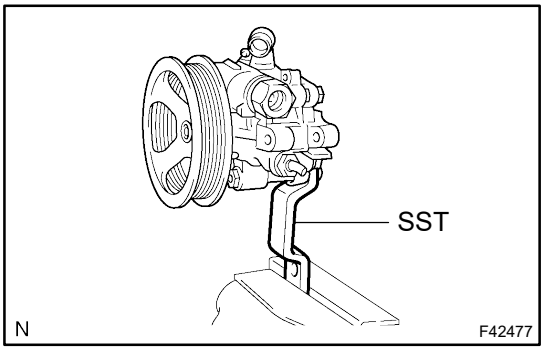
7. REMOVE VANE PUMP ASSY

(a) Disconnect the oil pressure switch connector.

(b) Remove the 2 bolts, nuts and vane pump assy.

8. REMOVE VANE PUMP BRACKET REAR

(a) Remove the bolt and vane pump bracket rear.



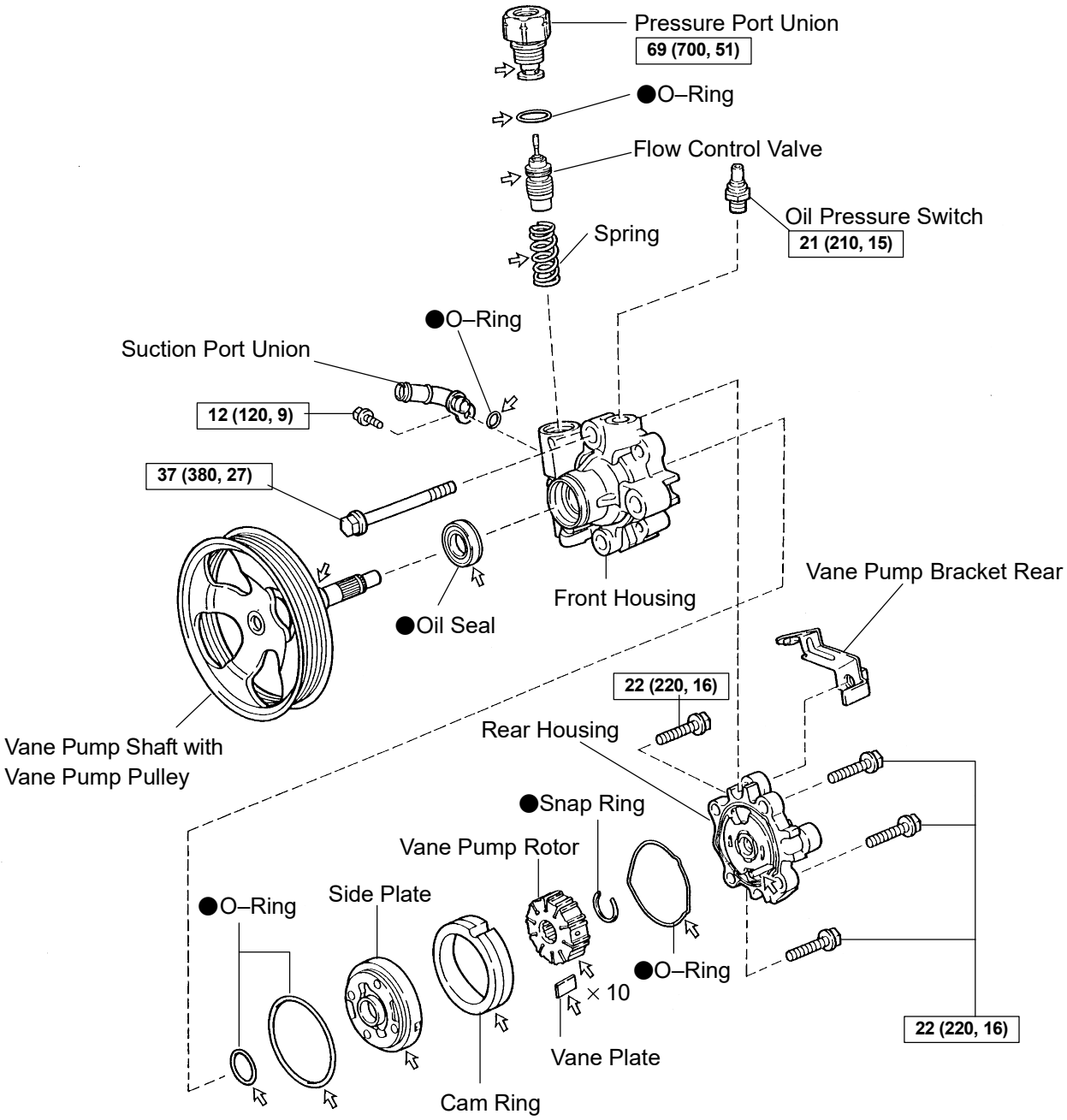
9. FIX VANE PUMP ASSY

(a) Using SST, hold the vane pump assy in a vise.
SST 09630–00014 (09631–00132)

VANE PUMP ASSY

COMPONENTS

5107V–01



N·m (kgf·cm, ft·lbf) : Specified torque
●Non–reusable part
⇦ Power steering fluid

N

F42473

5105L–02

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help you find the cause of the problem. The numbers indicate the probability of the cause of the problem. Check each part in the order shown. If necessary, repair or replace these parts.

Symptom	Suspect Area	See page
Hard steering	1. Tires (Improperly inflated)	28–1
	2. Power steering fluid level (Low)	51–3
	3. Drive belt (Loose)	14–4
	4. Front wheel alignment (Incorrect)	26–5
	5. Steering system joints (Worn)	–
	6. Suspension arm ball joints (Worn)	26–17
	7. Steering column (Binding)	–
	8. Power steering vane pump	51–8
	9. Power steering gear	51–18
Poor return	1. Tires (Improperly inflated)	28–1
	2. Front wheel alignment (Incorrect)	26–5
	3. Steering column (Binding)	–
	4. Power steering gear	51–18
Excessive play	1. Steering system joints (Worn)	–
	2. Suspension arm ball joints (Worn)	26–17
	3. Intermediate shaft, Sliding yoke (Worn)	–
	4. Front wheel bearing (Worn)	30–17
	5. Power steering gear	51–18
Abnormal noise	1. Power steering fluid level (Low)	51–3
	2. Steering system joints (Worn)	–
	3. Power steering vane pump	51–8
	4. Power steering gear	51–18

72. CONNECT STEERING INTERMEDIATE SHAFT(See page 50–8)

73. CONNECT TIE ROD END SUB–ASSY LH

(a) Connect the tie rod end sub–assy LH with the nut.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

(b) Install a new cotter pin.

NOTICE:
If the holes for a new cotter pin are not aligned, tighten the nut further up to 60°.

74. CONNECT TIE ROD END SUB–ASSY RH

HINT:
Use the same manner described above to the other side.

75. INSTALL ENGINE UNDER COVER LH

76. INSTALL ENGINE UNDER COVER RH

77. INSTALL FRONT WHEELS
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

78. INSPECT CENTER FRONT WHEEL

79. INSTALL COLUMN HOLE COVER SILENCER SHEET

(a) Install the column hole cover silencer sheet with the 2 nuts.

80. ADD POWER STEERING FLUID

81. BLEED POWER STEERING FLUID(See page 51–3)

82. INSPECT FLUID LEAK

83. INSTALL CYLINDER HEAD COVER NO.2

(a) Install the cylinder head cover No.2 with 2 nuts and 2 clips.
Torque: 7.0 N·m (71 kgf·cm, 62 ft·lbf)

84. INSTALL HOOD SUB–ASSY

85. INSPECT HOOD SUB–ASSY

86. ADJUST HOOD SUB–ASSY(See page 75–1)

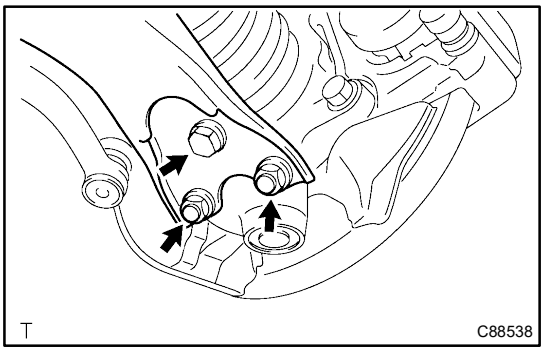
87. CENTER SPIRAL CABLE(See page 50–8)

88. INSTALL STEERING WHEEL ASSY(See page 50–8)

89. INSTALL HORN BUTTON ASSY(See page 50–8)

90. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT(See page 26–5)

91. INSPECT SRS WARNING LIGHT(See page 05–424)



66. CONNECT FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 LH

(a) Connect the front suspension lower arm No.1 to the lower ball joint with the bolt and 2 nuts.
Torque: 89 N·m (910 kgf·cm, 66 ft·lbf)

67. CONNECT FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 RH

HINT:

Use the same manner described above to the other side.

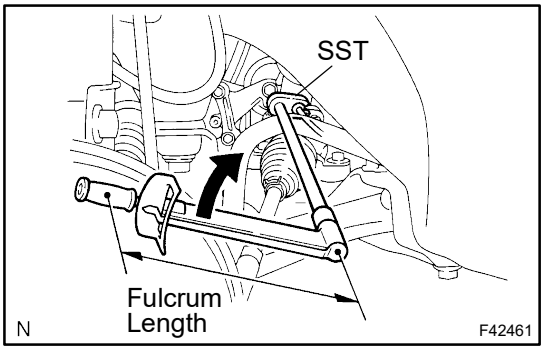
68. CONNECT FRONT STABILIZER LINK ASSY LH

(a) Connect the front stabilizer link assy LH with the nut.
Torque: 74 N·m (755 kgf·cm, 55 ft·lbf)

69. CONNECT FRONT STABILIZER LINK ASSY RH

HINT:

Use the same manner described above to the other side.



70. CONNECT RETURN TUBE SUB–ASSY

(a) Using SST, connect the return tube sub–assy.
SST 09023–38400
Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)

HINT:

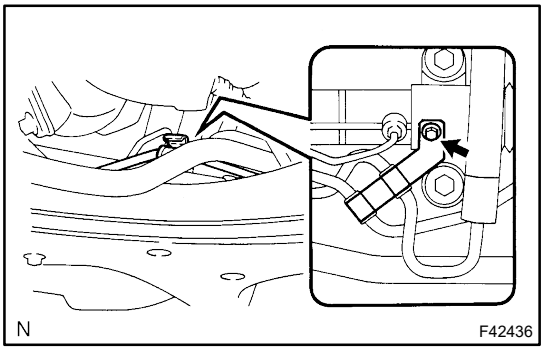
- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

71. CONNECT PRESSURE FEED TUBE ASSY

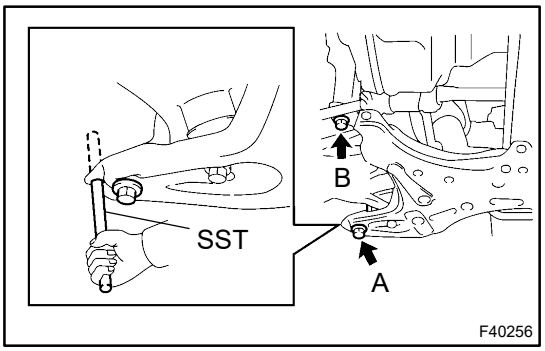
(a) Using SST, connect the pressure feed tube assy.
SST 09023–38400
Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

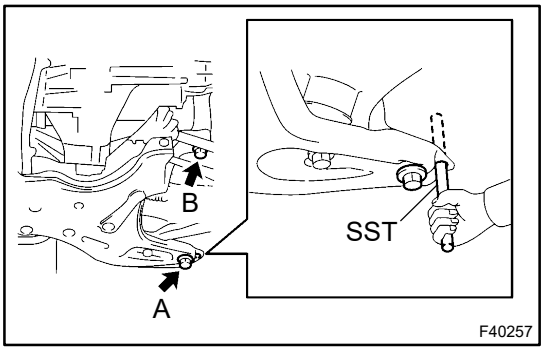


(b) Connect the tube clamp with the bolt.
Torque: 7.8 N·m (80 kgf·cm, 69 ft·lbf)



65. INSTALL FRONT SUSPENSION CROSSMEMBER SUB–ASSY

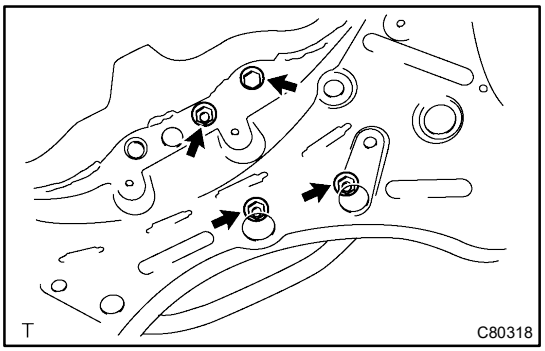
(a) Using SST, align the holes of the front suspension member RH and body, and temporarily tighten the bolt in order of A, B.
SST 09670–00010



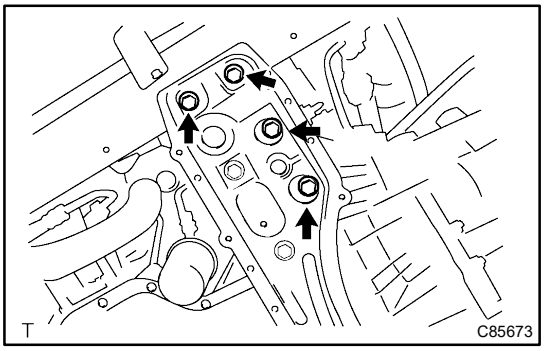
(b) Using SST, align the holes of the front suspension member LH and body, and temporarily tighten the bolt in order of A, B.
SST 09670–00010

(c) Using SST, align the holes of the front suspension member RH and body, and torque the bolt A and B.
SST 09670–00010
Torque:
Bolt A: 157 N·m (1,600 kgf·cm, 116 ft·lbf)
Bolt B: 157 N·m (1,600 kgf·cm, 116 ft·lbf)

(d) Using SST, align the holes of the front suspension member LH and body, and torque the bolt A and B.
SST 09670–00010
Torque:
Bolt A: 157 N·m (1,600 kgf·cm, 116 ft·lbf)
Bolt B: 157 N·m (1,600 kgf·cm, 116 ft·lbf)



(e) Connect the engine mounting insulator RR to the crossmember with the bolt and 3 nuts.
Torque: 52 N·m (530 kgf·cm, 38 ft·lbf)



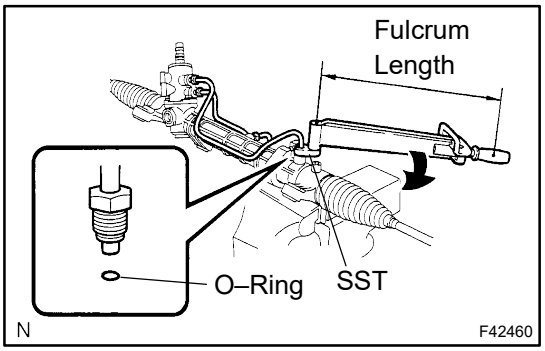
(f) Install the center member to the frame with the 2 bolts.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

(g) Connect the engine mounting insulator FR to the center member with the 2 bolts.
Torque: 52 N·m (530 kgf·cm, 38 ft·lbf)

59. INSTALL TIE ROD END SUB–ASSY RH

HINT:

Install the RH side by the same procedures as the LH side.



60. INSTALL STEERING RIGHT TURN PRESSURE TUBE

(a) Coat 2 new O–rings with power steering fluid and install them to the right turn pressure tube.

(b) Using SST, install the right turn pressure tube to the steering gear assy.

SST 09023–38200

Torque:12 N·m (120 kgf·cm, 8 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in the case that SST is parallel to a torque wrench.

61. INSTALL STEERING LEFT TURN PRESSURE TUBE

(a) Coat 2 new O–rings with power steering fluid and install them to the left turn pressure tube.

(b) Using SST, install the left turn pressure tube to the steering gear assy.

SST 09023–38200

Torque 12 N·m (120 kgf·cm, 8 ft·lbf)

HINT:

- Use a toque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in the case that SST is parallel to a torque wrench.

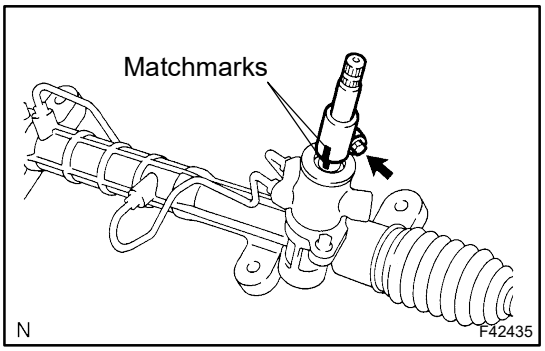
62. INSTALL RACK & PINION POWER STEERING GEAR ASSY

(a) Install the power steering gear assy with the 4 bolts and nuts.

Torque 58 N·m (590 kgf·cm, 43 ft·lbf)

NOTICE:

- **The 4 bush must be securely installed to the power steering gear assy.**
- **When tightening the installation bolt for power steering gear, the bush should not bitten in.**



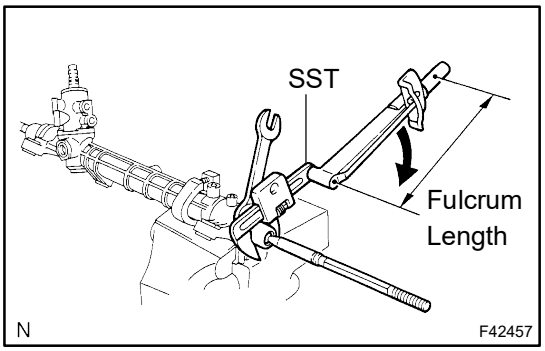
63. INSTALL STEERING INTERMEDIATE SHAFT

(a) Align the matchmarks on the steering intermediate shaft with steering pinion shaft.

(b) Install the bolt.

Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)

64. INSTALL STEERING COLUMN HOLE COVER SUB–ASSY NO.1



55. INSTALL STEERING RACK END SUB–ASSY

(a) Using a spanner, hold the steering rack steadily and using SST, install the 2 rack ends.

SST 09922–10010

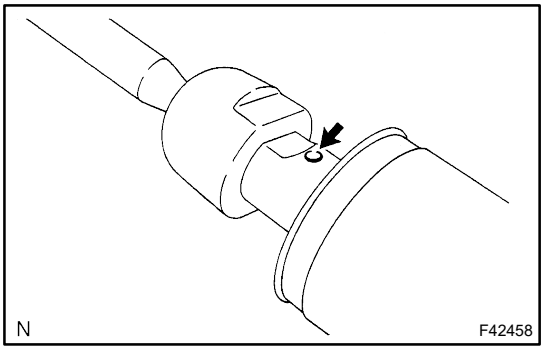
Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

NOTICE:

Use SST 09922–10010 in the direction shown in the illustration.

HINT:

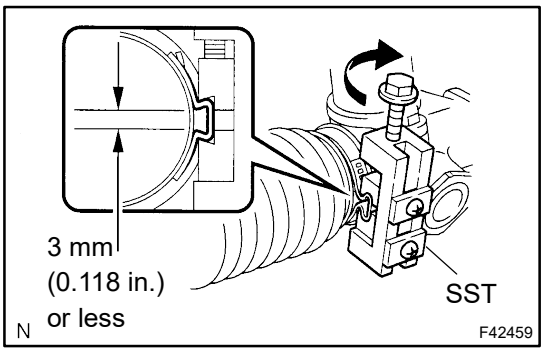
- Using SST, hold the rack and install the rack and sub–assy.
- Use a torque wrench with a fulcrum length of 380 mm (14.96 in.).



(b) Ensure that the steering rack hole is not clogged with grease.

HINT:

If the hole is clogged, the pressure inside the boot will change after it is assembled and steering wheel is turned.



56. INSTALL STEERING RACK BOOT NO.2

(a) Install the steering rack boot No.2.

(b) Using SST, tighten the steering rack boot No.2 clamp, as shown in the illustration.

SST 09521–24010

Clearance: 3.0 mm (0.118 in.) or less

NOTICE:

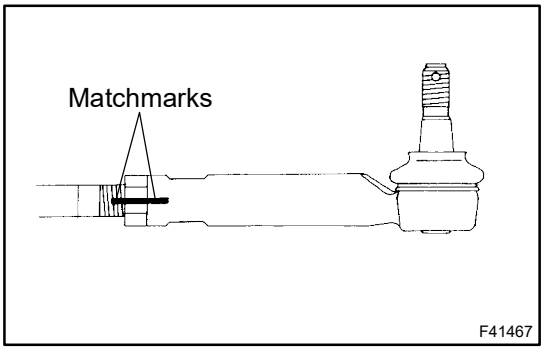
Be careful not to damage the boot.

(c) Using a pliers, install the rack boot clip.

57. INSTALL STEERING RACK BOOT NO.1

HINT:

Install the rack boot No.1 by the same procedures as the rack boot No.2.



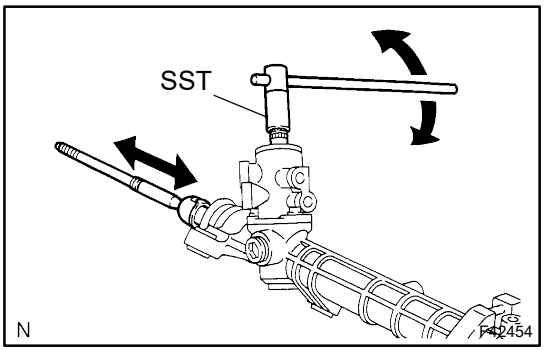
58. INSTALL TIE ROD END SUB–ASSY LH

(a) Screw the lock nut and tie rod end sub–assy LH onto the rack end until the matchmarks are aligned.

HINT:

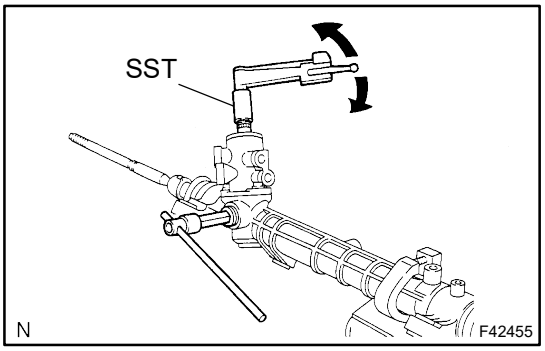
After adjusting toe–in, torque the lock nut (See page 26–5).

Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)



(d) Using SST, turn the control valve shaft right and left 1 or 2 times.
SST 09616–00011

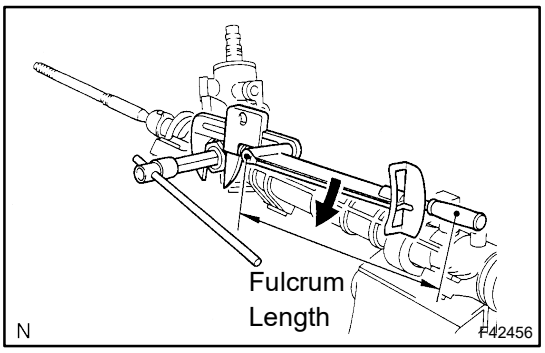
(e) Loosen the rack guide spring cap until the rack guide spring is not functioning.



(f) Using SST and torque wrench, tighten the rack guide spring cap until the preload is within the specification.
SST 09616–00011
Preload (turning):
1.0 – 1.8 N·m (20 – 18 kgf·cm, 8.6 – 15.7 ft·lbf)

(g) Apply sealant to 2 or 3 threads of the rack guide spring cap lock nut.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(h) Temporarily install the lock nut.



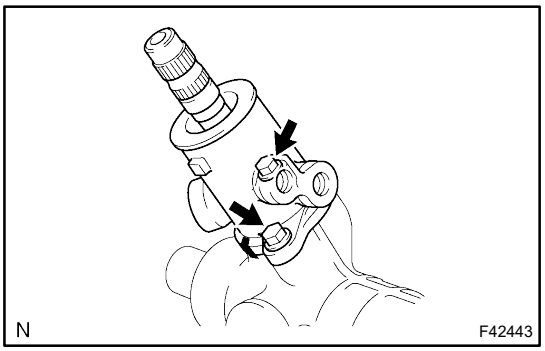
(i) Using a hexagon wrench (19 mm), hold the rack guide spring cap and using SST, torque the nut.
SST 09922–10010
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

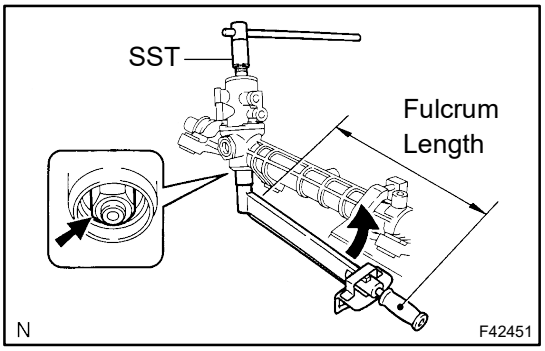
HINT:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

(j) Recheck the total preload.
Preload (turning):
1.0 – 1.8 N·m (10 – 18 kgf·cm, 8.6 – 15.7 ft·lbf)

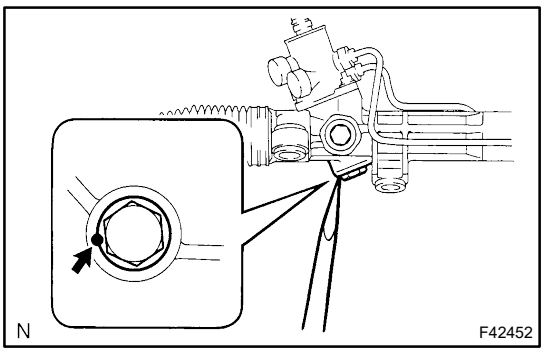
(k) Remove the RH and LH rack ends.



(i) Apply grease to the needle bearing.
(j) Install a new gasket to the valve housing.
(k) Wind vinyl tape around the serration part of the control valve.
(l) Install the valve housing to the rack housing with the 2 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



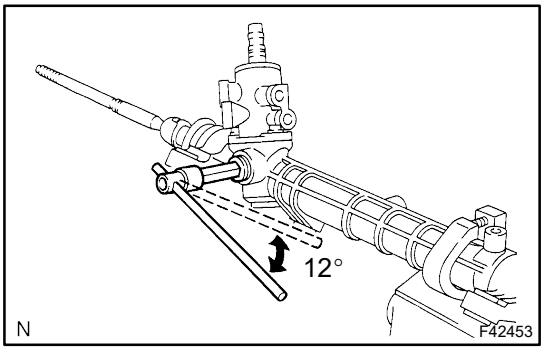
(m) Using SST, stop the control valve shaft rotation and install a self–locking nut.
SST 09616–00011
Torque: 25 N·m (250 kgf·cm,18 ft·lbf)
(n) Apply sealant to 2 or 3 threads of the rack housing cap.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(o) Install the rack housing cap.
Torque: 59 N·m (600kgf·cm, 43 ft·lbf)



(p) Using a punch and a hummer, stake the rack housing cap and rack housing.

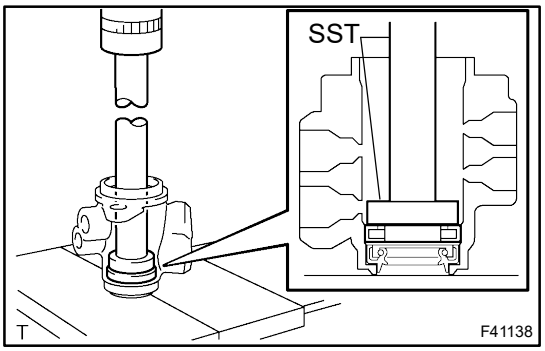
53. INSTALL RACK GUIDE

(a) Apply molybdenum disulfide lithium base grease to the contact surface of the power steering rack and of the rack guide.
(b) Install the rack guide and compression spring to the rack housing.
(c) Apply sealant to 2 or 3 threads of the rack guide spring cap.
Sealant:
Part No. 0.8833–00080, THREE bOND 1344, LOCTITE 242 or equivalent
(d) Temporarily install the rack guide spring cap.

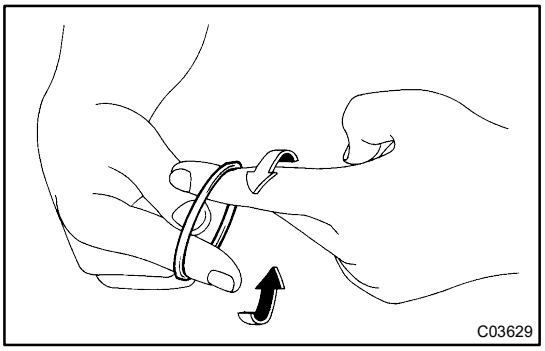


54. INSPECT TOTAL PRELOAD

(a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.
(b) Torque the rack guide spring cap.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)
(c) Back off the rack guide spring cap 12°.



(c) Using SST and a press, install the upper bearing.
SST 09950–60010 (09951–00190, 09951–00360, 09952–06010), 09950–70010 (09951–07100)



52. INSTALL POWER STEERING CONTROL VALVE

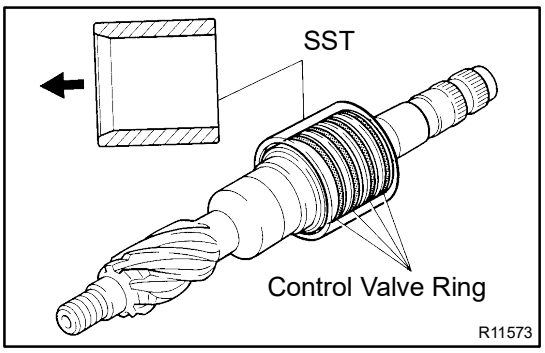
(a) Expand 4 new control valve rings with your fingers.

NOTICE:

Be careful not to over expand the valve ring.

(b) Coat the 4 control valve rings with power steering fluid.

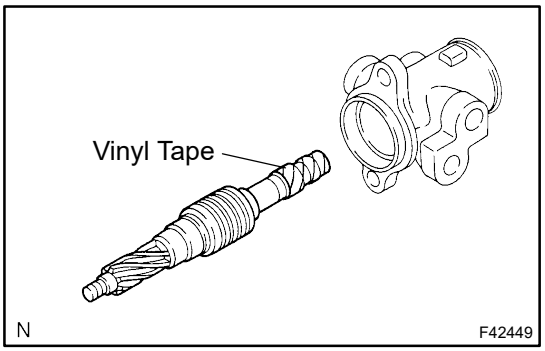
(c) Install the 4 control valve rings to the control valve, and settle them down with your fingers.



(d) Carefully slide the tapered end of SST over the control valve rings until they fit to the control valve.
SST 09631–20081

NOTICE:

Be careful not to damage the control valve rings.

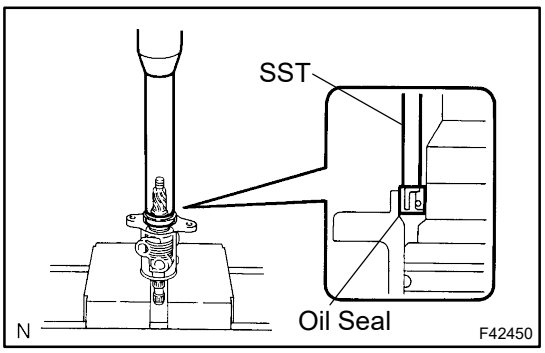


(e) To prevent oil seal lip damage, wind vinyl tape around the serrated part of the control valve.

(f) Install the control valve to the valve housing.

NOTICE:

Be careful not to damage the control valve rings and oil seal lip.



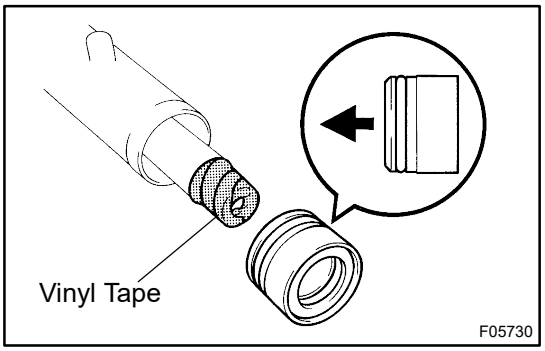
(g) Coat a new oil seal lip with power steering fluid.

(h) Using SST and a press, install the oil seal.
SST 09612–22011

NOTICE:

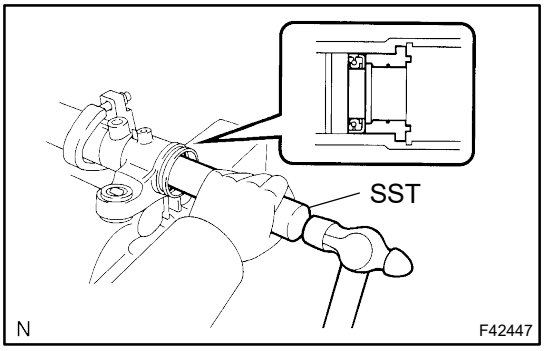
Make sure that the oil seal is installed facing in the correct direction.

(b) Coat a new O–ring with power steering fluid and install it to the power steering rack bush.



(c) To prevent rack bush oil seal lip damage, wind vinyl tape around the steering rack end, and apply power steering fluid.

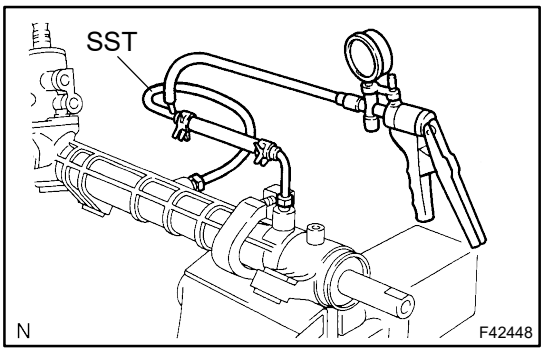
(d) Install the rack bush to the steering rack.



49. INSTALL CYLINDER END STOPPER

(a) Using SST and a hammer, drive in the cylinder end stopper.
SST 09612–22011

(b) Using snap ring pliers, install a new snap ring to the rack housing.



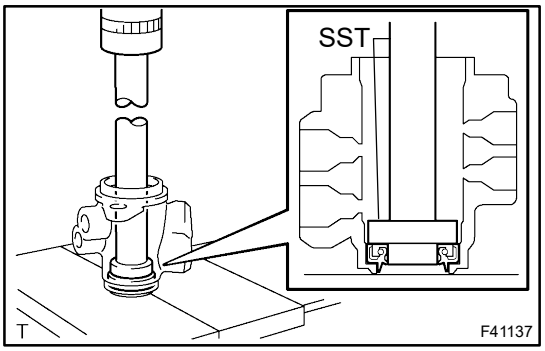
50. INSPECT RACK & PINION POWER STEERING GEAR ASSY

(a) Install SST to the rack housing.
SST 09631–12071 (09633–00010)

(b) Apply vacuum of 53 kPa (400 mmHg, 15.75 in. Hg) for about 30 seconds.

(c) Check that there is no change in the vacuum.

If there is a change in the vacuum, check the installation of the oil seals.

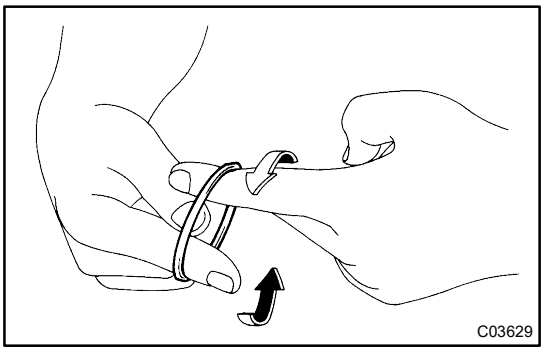


51. INSTALL POWER STEERING CONTROL VALVE UPPER OIL SEAL

(a) Coat an upper bearing and a new upper oil seal with power steering fluid.

(b) Using SST and a press, install the upper oil seal.
SST 09950–60010 (09951–00180, 09951–00320, 09952–06010), 09950–70010 (09951–07100)

NOTICE:
Make sure that the oil seal is installed facing in the correct direction.



47. INSTALL POWER STEERING RACK

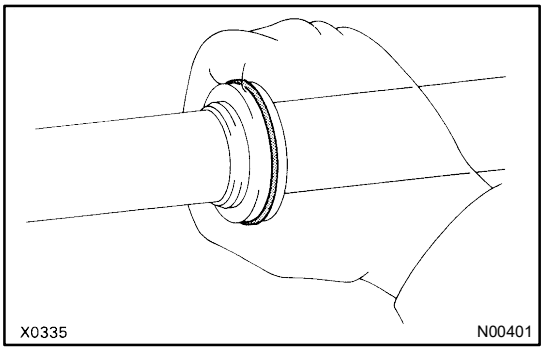
(a) Coat a new power piston O–ring with power steering fluid and install it to the steering rack.

(b) Coat a new power piston oil seal with power steering fluid.

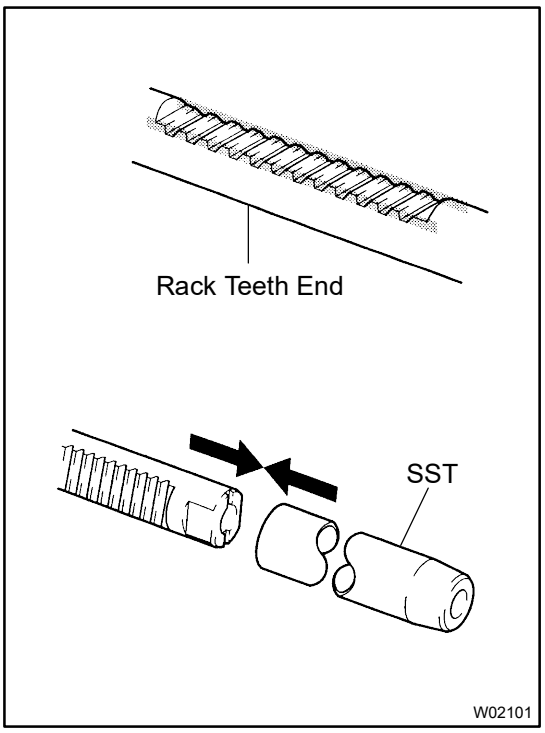
(c) Expand the power piston oil seal with your fingers.

NOTICE:

Be careful not to expand the power piston oil seal excessively.



(d) Install the power piston oil seal to the steering rack, and settle it down with your fingers.
SST 09631–16020



(e) Install SST to the steering rack.
SST 09631–16020

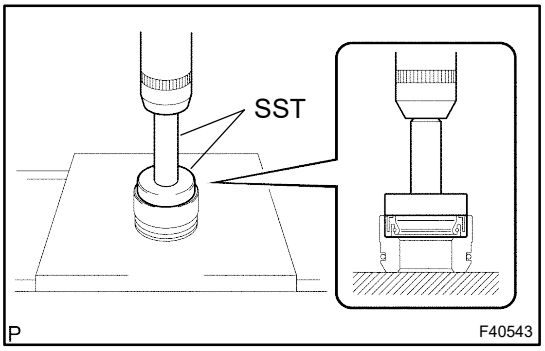
HINT:

If necessary, scrape the burrs off the steering rack teeth end and burnish.

(f) Coat the SST with power steering fluid.

(g) Install the steering rack into the rack housing.

(h) Remove the SST.
SST 09631–16020

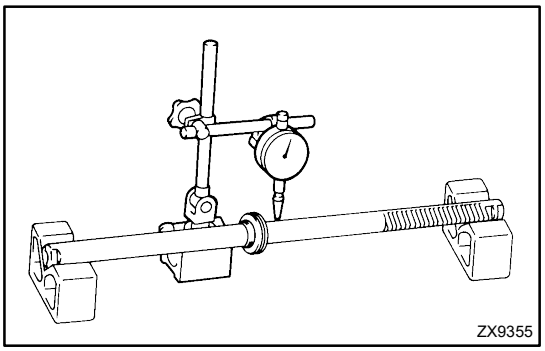


48. INSTALL POWER STEERING RACK BUSH SUB–ASSY

(a) Using SST and a press, install the rack bush oil seal to the power steering rack bush.
SST 09950–60010 (09951–00400), 09950–70010 (09951–07100)

NOTICE:

Make sure that the rack bush oil seal is installed facing in the correct direction.



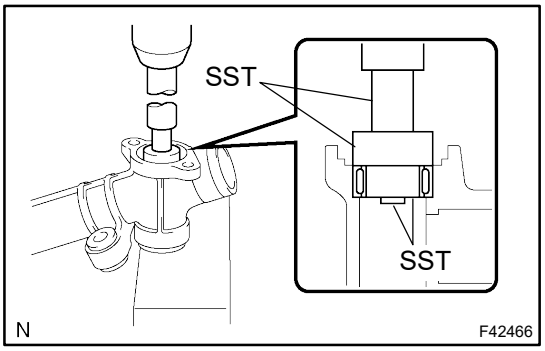
44. INSPECT POWER STEERING RACK

(a) Using a screwdriver, remove the O–ring from the power steering rack bush sub–assy.

(b) Using a dial indicator, check the steering rack for run out and for teeth wear and damage.

Maximum run out: 0.1 mm (0.004 in.)

(c) Check the back surface for wear and damage.

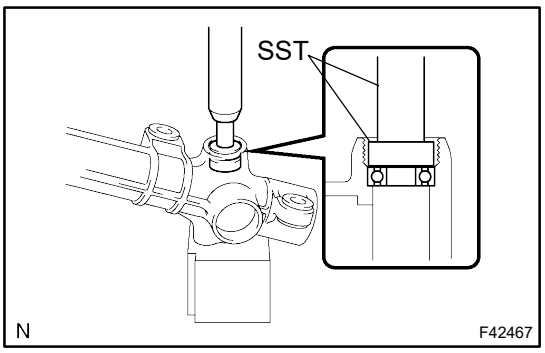


45. INSTALL POWER STEERING CONTROL VALVE LOWER BEARING

(a) Coat a new bearing with molybdenum disulfide lithium base grease.

(b) Using SST and a press, install the control valve center bearing.

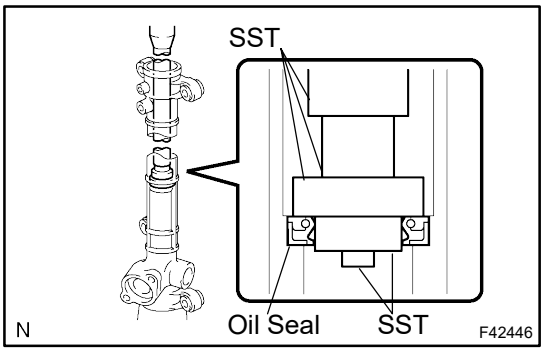
SST 09950–60010 (09951–00220, 09951–00280, 09952–06010), 09950–70010 (09951–07100)



(c) Coat a new bearing with molybdenum disulfide lithium base grease.

(d) Using SST and a press, install the control valve lower bearing.

SST 09950–60010 (09951–00280), 09950–70010 (09951–07100)



46. INSTALL POWER STEERING CYLINDER TUBE OIL SEAL

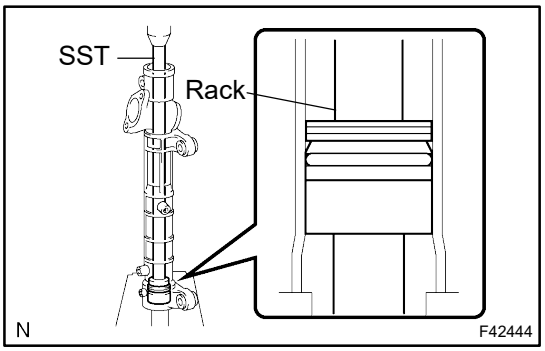
(a) Coat a new power steering cylinder tube oil seal lip with power steering fluid.

(b) Using SST and a press, install the power steering cylinder tube oil seal.

SST 09950–60010 (09951–00240, 09951–00400, 09952–06010), 09950–70010 (09951–07360)

NOTICE:

- **Make sure that the power steering cylinder tube oil seal is installed facing in the correct direction.**
- **Take care so that the power steering cylinder tube oil seal will not be reversed when you install it.**



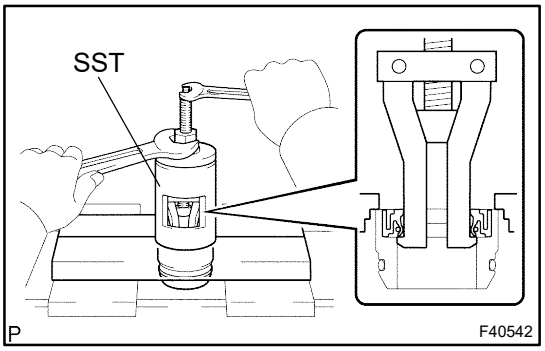
40. REMOVE POWER STEERING RACK

(a) Using SST and a press, remove the steering rack with the bushing.
SST 09612–24014 (09612–10061)

NOTICE:

Take care not to drop the steering rack.

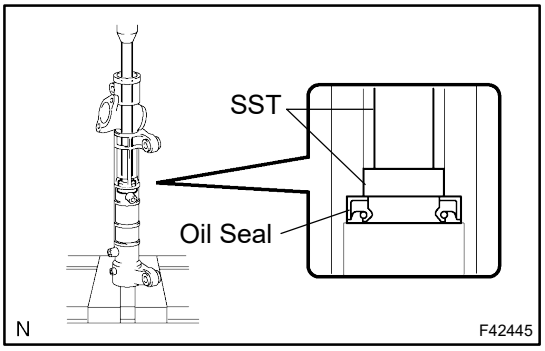
(b) Remove the O–ring from the bushing.



41. REMOVE POWER STEERING RACK BUSH SUB–ASSY

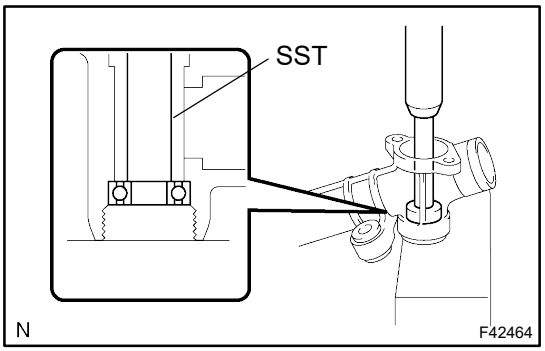
(a) Remove the power steering rack bush from the power steering rack.

(b) Using SST, remove the rack bush oil seal.
SST 09612–24014 (09613–22011)



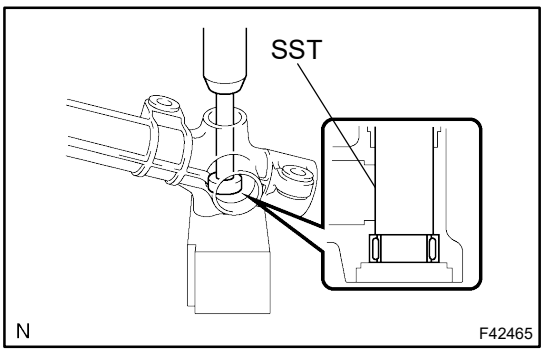
42. REMOVE POWER STEERING CYLINDER TUBE OIL SEAL

(a) Using SST and a press, remove the power steering cylinder tube oil seal.
SST 09950–60010 (09951–00260), 09950–70010 (09951–07360)

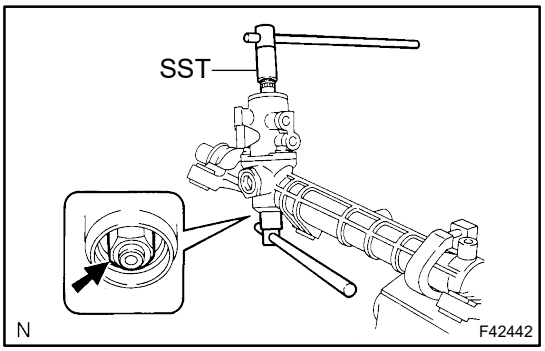


43. REMOVE POWER STEERING CONTROL VALVE LOWER BEARING

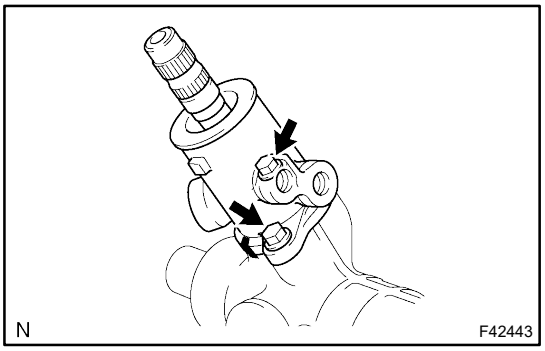
(a) Using SST and a press, remove the power steering control valve lower bearing.
SST 09950–70010 (09951–07100)



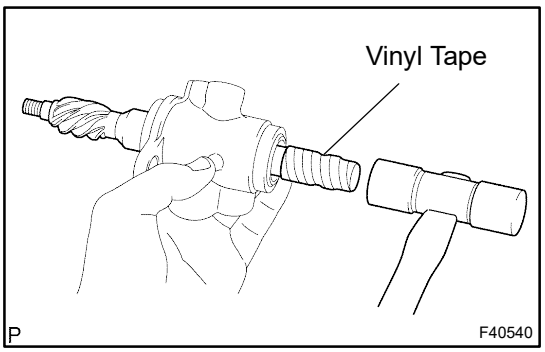
(b) Using SST and a press, remove the power steering control valve center bearing.
SST 09950–70010 (09951–07100)



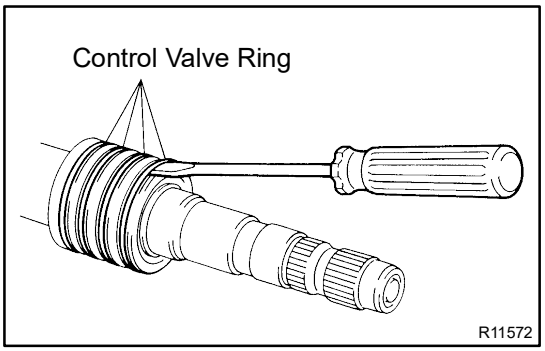
(b) Using SST, hold the control valve shaft and remove the self–locking nut.
SST 09616–00011



(c) Remove the 2 bolts and power steering control valve.
(d) Remove the gasket.



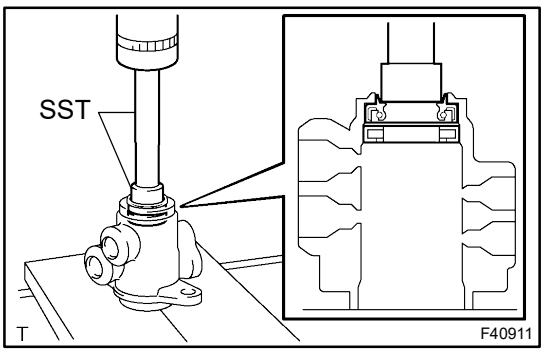
(e) To prevent oil seal lip damage, wind vinyl tape around the serrated part of the control valve.
(f) Using a plastic hammer, remove the control valve with oil seal from the control valve housing.
(g) Remove the oil seal from the control valve.



(h) Using a screwdriver, remove the 4 control valve rings.

NOTICE:

Be careful not to damage the grooves for the control valve ring.



38. REMOVE POWER STEERING CONTROL VALVE UPPER OIL SEAL

(a) Using SST and a press, remove the control valve upper bearing and upper oil seal from the control valve housing.
SST 09950–60010 (09951–00260), 09950–70010 (09951–07150)

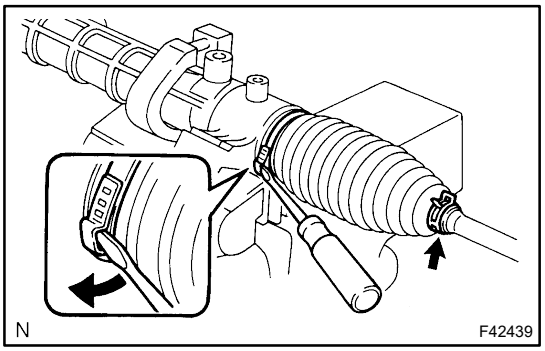
39. REMOVE CYLINDER END STOPPER

(a) Using snap ring pliers, remove the snap ring.
(b) Pull out the cylinder end stopper.

32. INSPECT TIE ROD END SUB–ASSY RH

HINT:

Inspect the RH side by the same procedures as the LH side.



33. REMOVE STEERING RACK BOOT NO.1

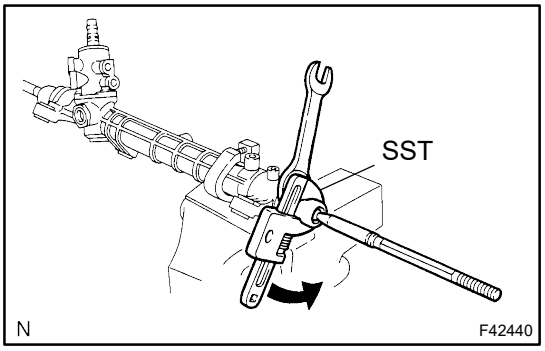
(a) Remove the steering rack boot clip.

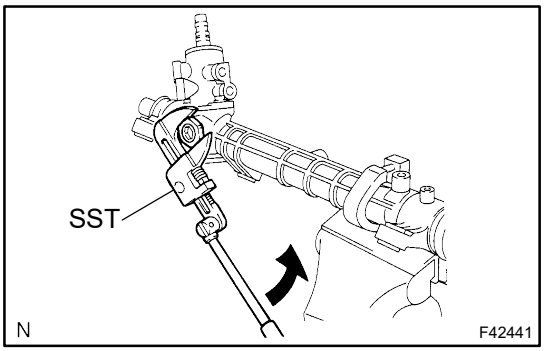
(b) Using a screwdriver, remove the clamp and steering rack boot No.1.

34. REMOVE STEERING RACK BOOT NO.2

HINT:

Remove the steering rack boot No.2 by same procedures as the No.1.





35. REMOVE STEERING RACK END SUB–ASSY

(a) Using a spanner, hold the steering rack steadily and using SST, remove the rack end.

SST 09922–10010

NOTICE:

Use SST 09922–10010 in the direction shown in the illustration.

HINT:

Mark the RH and LH rack ends.

(b) Use the same manner described above to the other side.

36. REMOVE RACK GUIDE

(a) Using SST, remove the rack guide spring cap nut.

SST 09922–10010

NOTICE:

Use SST 09922–10010 in the direction shown in the illustration.

(b) Using a hexagon wrench (19 mm), remove the rack guide spring cap.

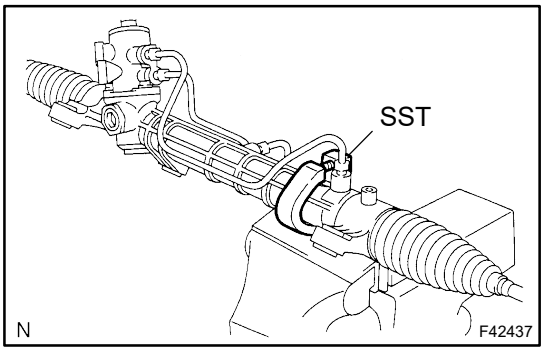
(c) Remove the conical spring, rack guide spring and rack guide.

37. REMOVE POWER STEERING CONTROL VALVE

(a) Remove the rack housing cap.

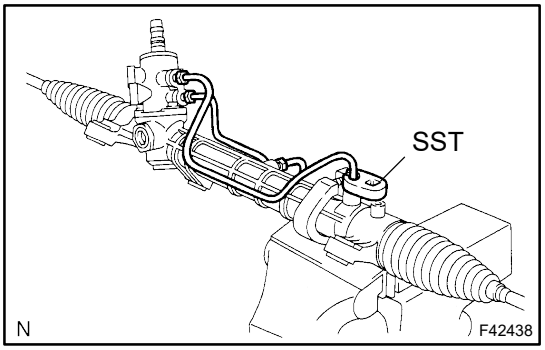
25. REMOVE RACK & PINION POWER STEERING GEAR ASSY

(a) Remove the 4 bolts and rack & pinion power steering gear assy from the crossmember.



26. FIX RACK & PINION POWER STEERING GEAR ASSY

(a) Using SST, secure the rack & pinion power steering gear assy in a vise.
SST 09612–00012



27. REMOVE STEERING LEFT TURN PRESSURE TUBE

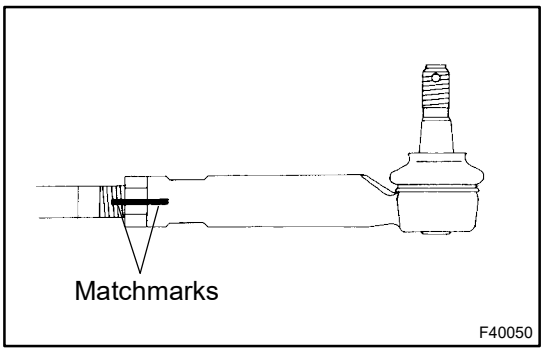
(a) Using SST, remove the left turn pressure tube.
SST 09023–38200

(b) Remove the 2 O–rings from the left turn pressure tube.

28. REMOVE STEERING RIGHT TURN PRESSURE TUBE

(a) Using SST, remove the right turn pressure tube.
SST 09023–38200

(b) Remove the 2 O–rings from the right turn pressure tube.



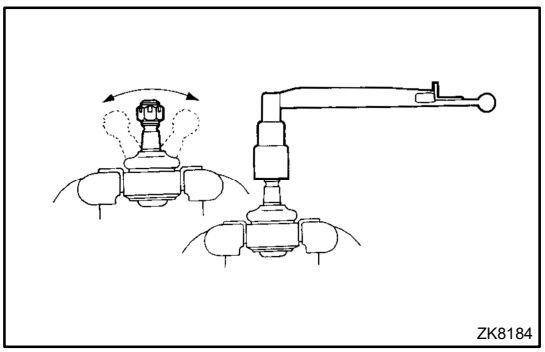
29. REMOVE TIE ROD END SUB–ASSY LH

(a) Place matchmarks on the tie rod end with rack end.

(b) Loosen the lock nut, and remove the tie rod end and lock nut.

30. REMOVE TIE ROD END SUB–ASSY RH

HINT:
Remove the RH side by the same procedures as the LH side.



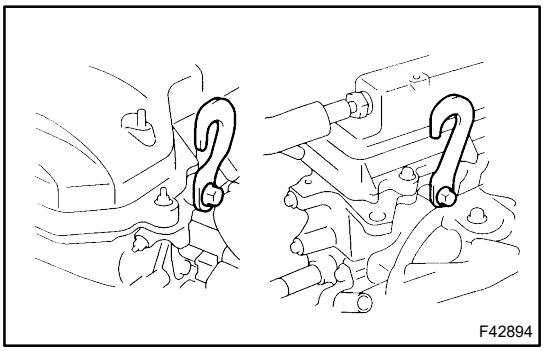
31. INSPECT TIE ROD END SUB–ASSY LH

(a) Secure the tie rod end LH in a vise.

(b) Install the nut to the stud bolt.

(c) Flip the ball joint stud back and forth 5 times.

(d) Using a torx wrench, turn the nut continuously at a rate of 2 – 4 seconds per 1 turn and take the torque reading of the 5th turn.
Turning torque:
0.49 – 3.43 N·m (5.0 – 35 kgf·cm, 4.34 – 30.38 in.·lbf)



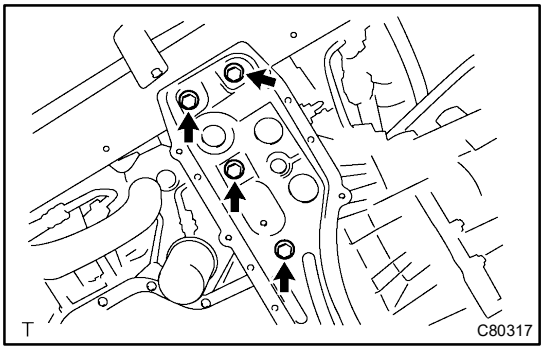
21. SUSPEND ENGINE ASSEMBLY

(a) Install the 2 engine hangers with the bolts in the correct direction.

Parts No.:
No.1 engine hanger: 12281 – 22021
No.2 engine hanger: 12281 – 15040
Bolt: 91512 – B1016
Torque:
38 N·m (390 kgf·cm, 28 ft·lbf)

(b) Attach the engine chain hoist to the engine hangers.

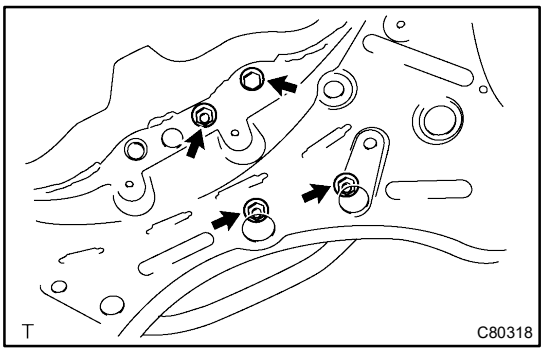
CAUTION:
Do not attempt to hang the engine by hooking the chain to any other parts.



22. REMOVE FRONT SUSPENSION CROSSMEMBER SUB–ASSY

(a) Remove the 2 bolts and disconnect the center member from the engine mounting insulator FR.

(b) Remove the 2 bolts and disconnect the center member from the frame.

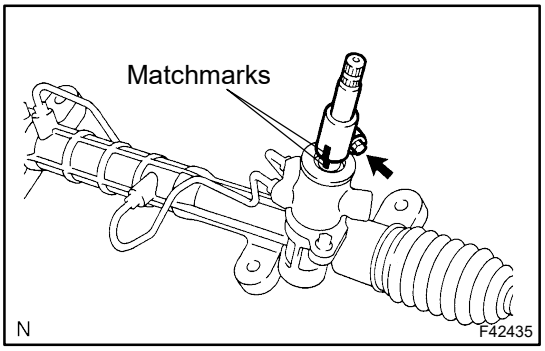


(c) Remove the bolt and 3 nuts, disconnect the engine mounting insulator RR from the crossmember.

(d) Using a transmission jack, support the crossmember.

(e) Remove the 4 bolts and front suspension crossmember sub–assy with the steering gear assy.

23. REMOVE STEERING COLUMN HOLE COVER SUB–ASSY NO.1



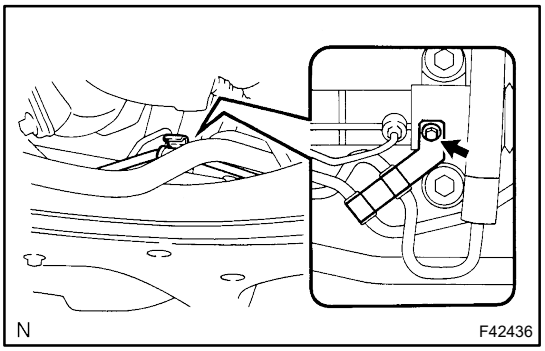
24. REMOVE STEERING INTERMEDIATE SHAFT

(a) Place matchmarks on the intermediate shaft with control valve.

(b) Remove the bolt and steering intermediate shaft.

14. DISCONNECT RETURN TUBE SUB–ASSY

(a) Using SST, disconnect the return tube sub–assy.
SST 09023–38400



(b) Remove the bolt and disconnect the tube clamp.

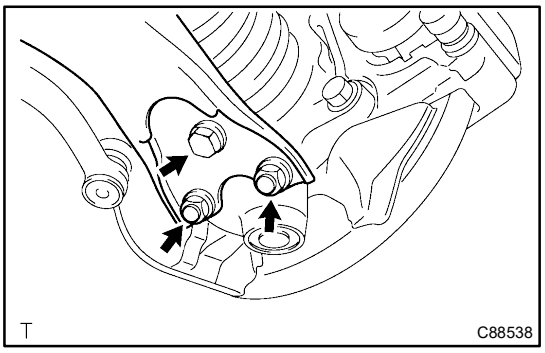
15. DISCONNECT FRONT STABILIZER LINK ASSY LH

(a) Remove the nut and disconnect the front stabilizer link assy LH.

16. DISCONNECT FRONT STABILIZER LINK ASSY RH

HINT:

Remove the RH side by the same procedures as the LH side.



17. DISCONNECT FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 LH

(a) Remove the bolt and 2 nuts and disconnect the front suspension arm sub–assy lower No.1 LH from the lower ball joint.

18. DISCONNECT FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 RH

HINT:

Remove the RH side by the same procedures as the LH side.

19. REMOVE HOOD SUB–ASSY

20. REMOVE CYLINDER HEAD COVER NO.2

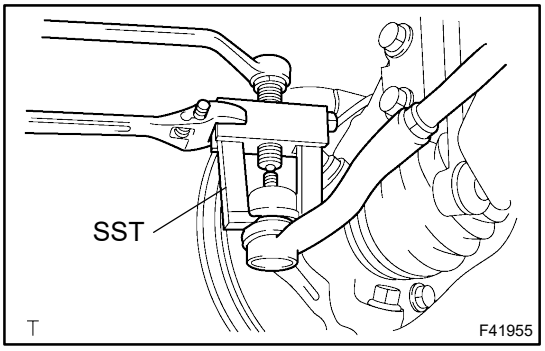
5107Y–02

OVERHAUL

NOTICE:

When installing, coat the parts indicated by the arrow with power steering fluid or molybdenum disulfide lithium base grease(See page 51–15).

1. **PRECAUTION(See page 60–1)**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**
3. **INSPECT CENTER FRONT WHEEL**
4. **REMOVE HORN BUTTON ASSY(See page 50–8)**
5. **REMOVE STEERING WHEEL ASSY(See page 50–8)**
   SST 09950–50013 (09951–05010, 09952–05010, 09953–05020, 09954–05021)
6. **REMOVE FRONT WHEELS**
7. **REMOVE ENGINE UNDER COVER LH**
8. **REMOVE ENGINE UNDER COVER RH**



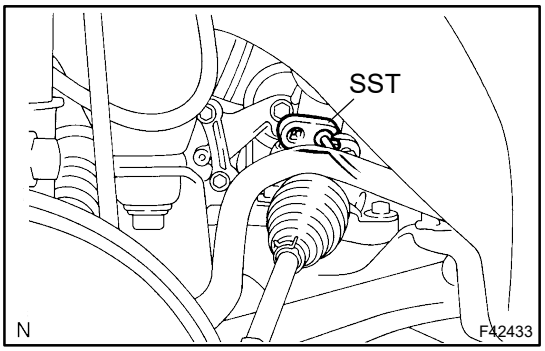
9. **DISCONNECT TIE ROD END SUB–ASSY LH**
   (a) Remove the cotter pin and nut.
   (b) Using SST, disconnect tie rod end sub–assy LH from the steering knuckle.
   SST 09628–62011

10. **DISCONNECT TIE ROD END SUB–ASSY RH**
    SST 09628–62011

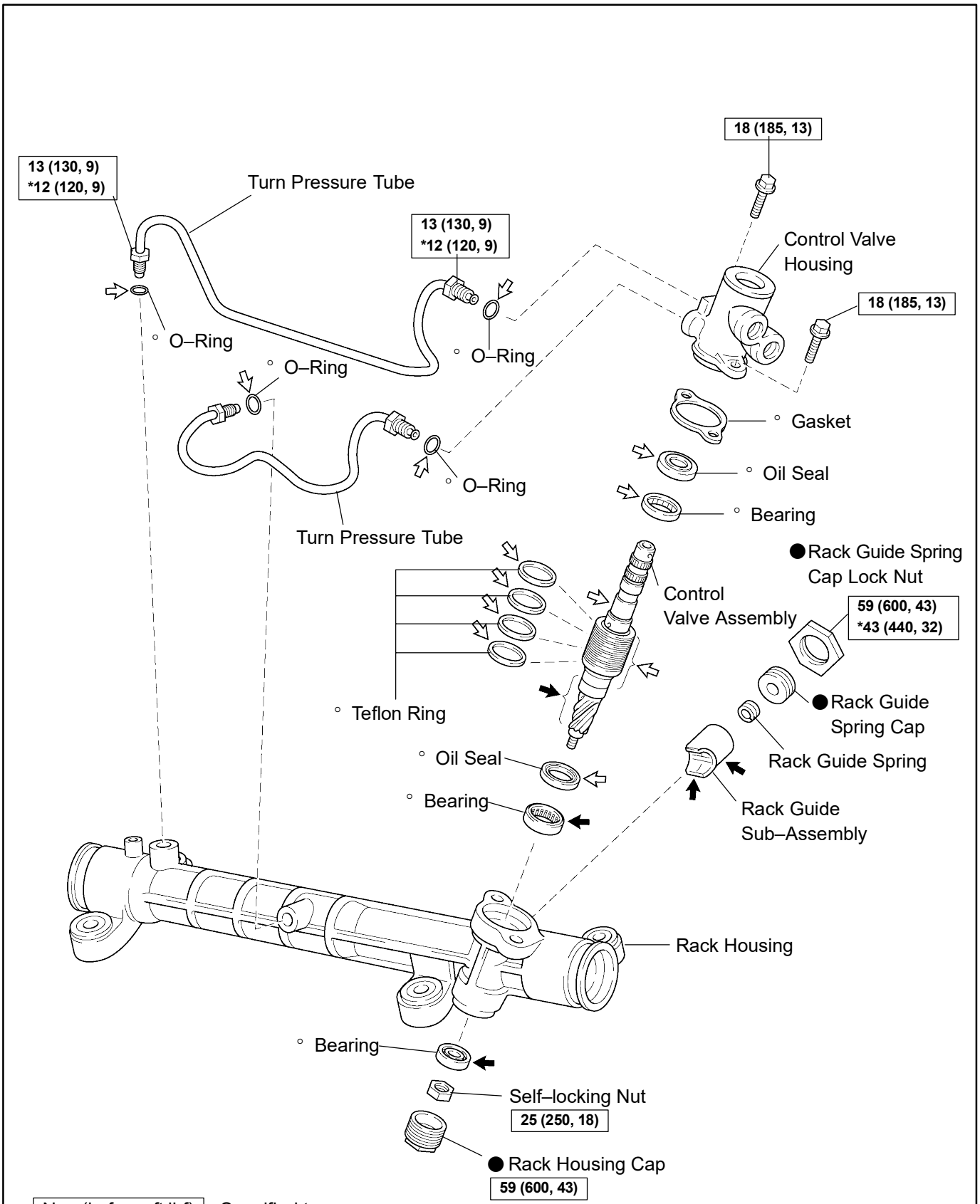
HINT:

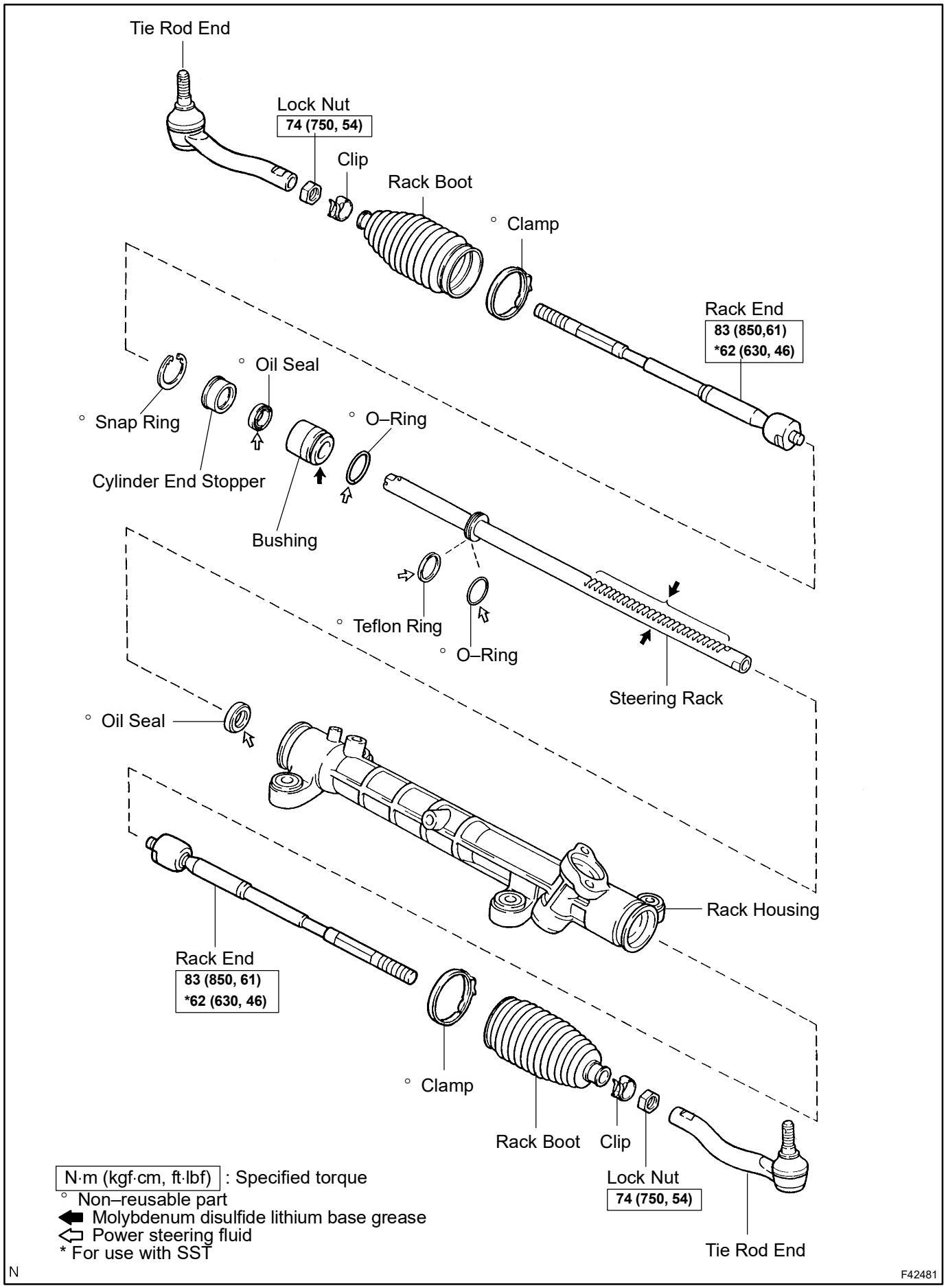
Remove the RH side by the same procedures as of the LH side.

11. **REMOVE COLUMN HOLE COVER SILENCER SHEET**
12. **DISCONNECT STEERING INTERMEDIATE SHAFT(See page 50–8)**



13. **DISCONNECT PRESSURE FEED TUBE ASSY**
    (a) Using SST, disconnect the pressure feed tube assy.
    SST 09023–38400

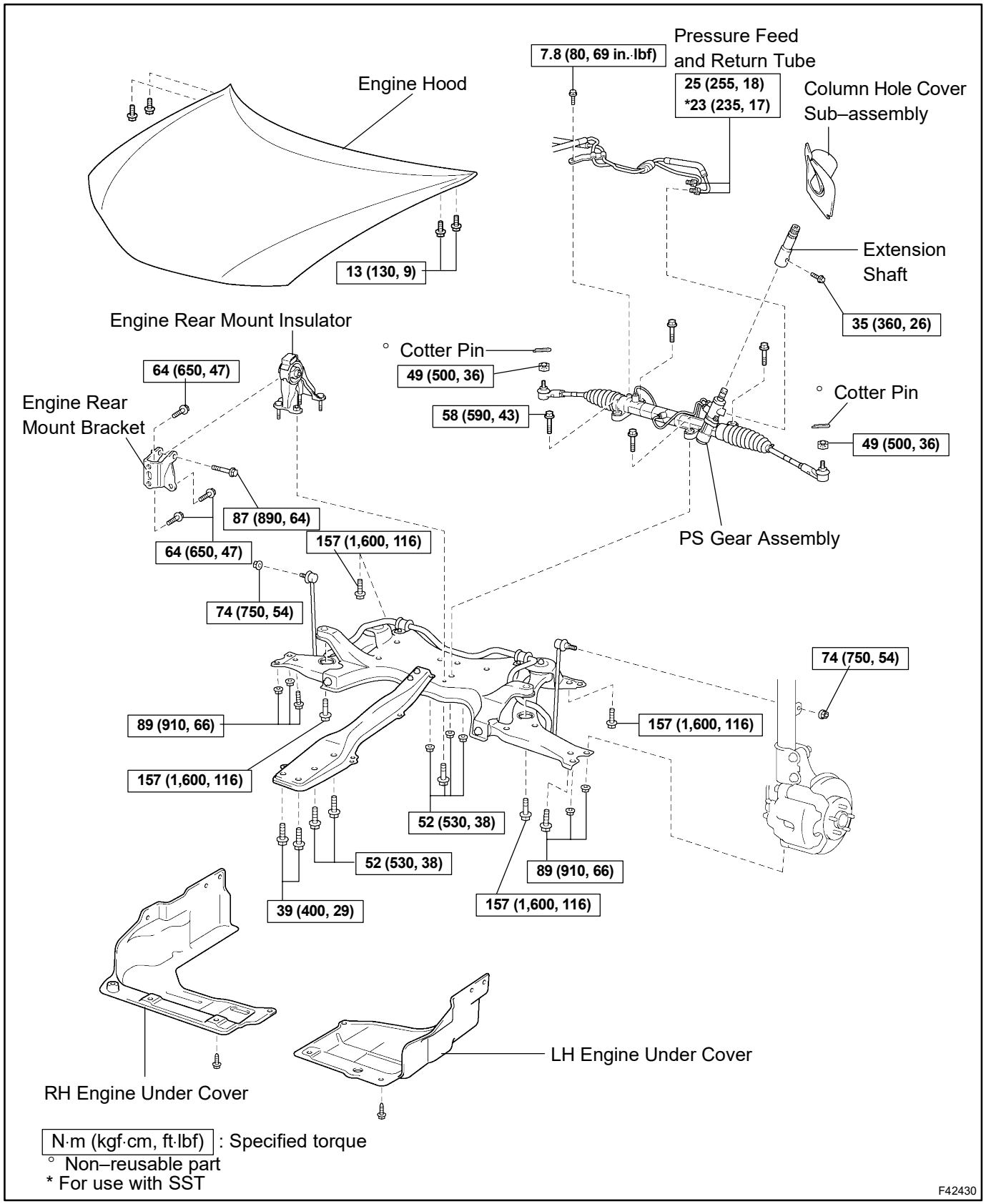




RACK & PINION POWER STEERING GEAR ASSY

COMPONENTS

5107X–01



POWER STEERING SYSTEM

5107U–01

PRECAUTION

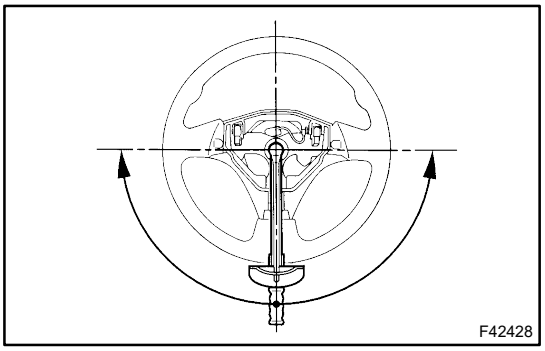
1. HANDLING PRECAUTIONS ON SRS AIRBAG SYSTEM

(a) The vehicle is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (See page 60–1).

(j) Disconnect the SST.
SST 09640–10010 (09641–01010, 09641–01020, 09641–01030)

(k) Connect the pressure feed tube to the PS gear (See page 51–18).

(l) Bleed the power steering system.



5. CHECK STEERING EFFORT

(a) Center the steering wheel assy.

(b) Remove the horn button assy (See page 50–8).

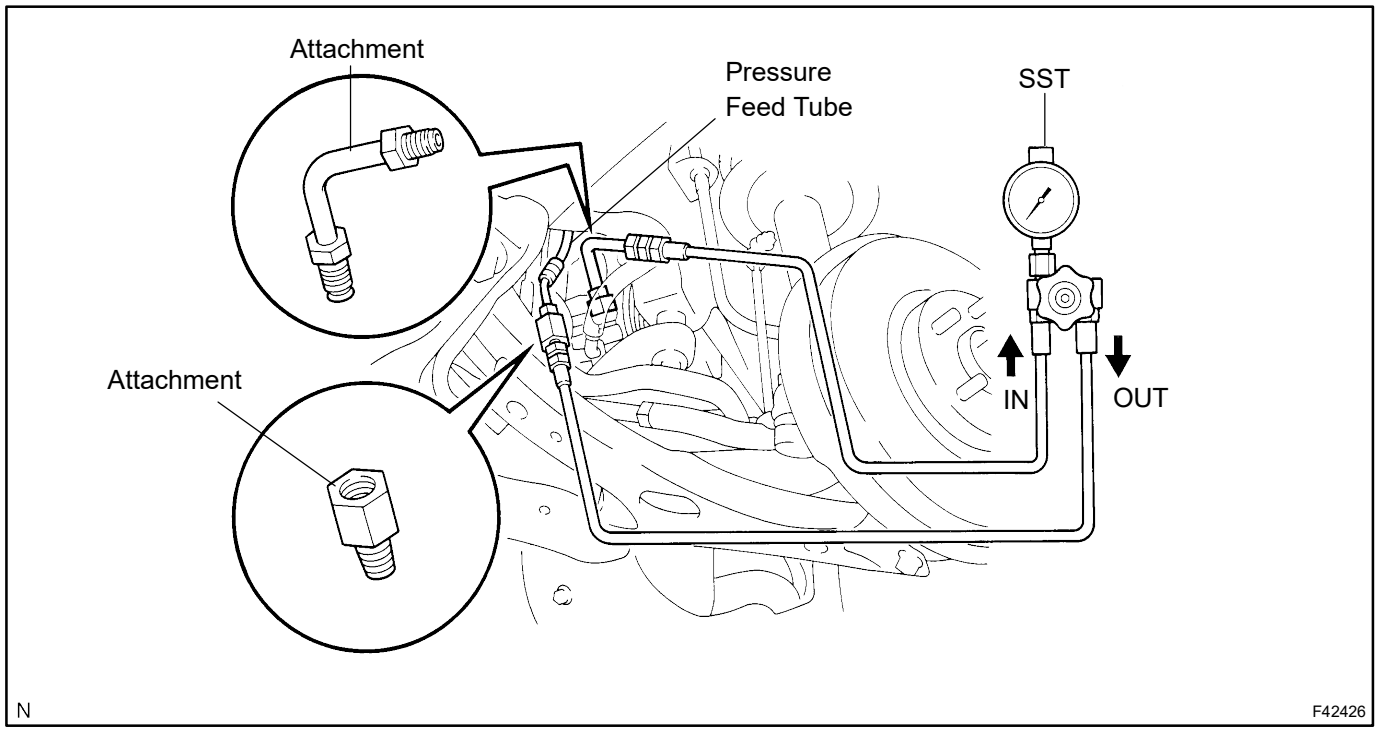
(c) Start the engine and run it at idle.

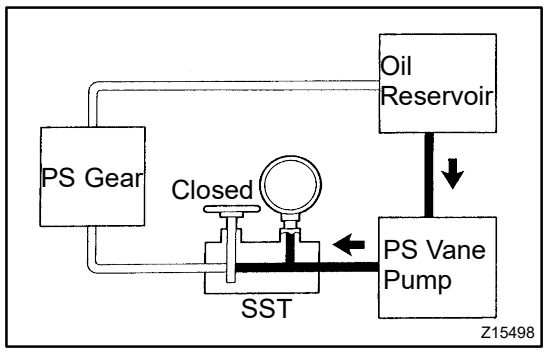
(d) Measure the steering effort in both directions.
Steering effort (Reference):
6 N·m (60 kgf·cm, 53 in.·lbf) or less

HINT:
Take the tire type, pressure and contact surface into consideration before making your diagnosis.

(e) Install the steering wheel assy set nut.
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

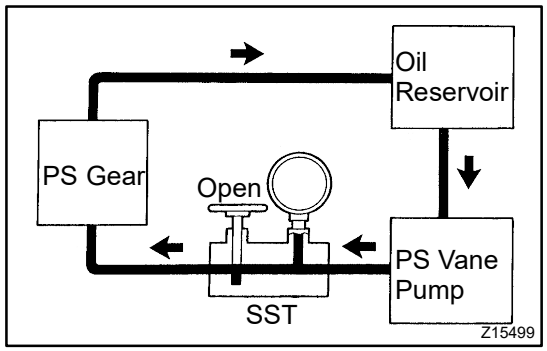
(f) Install the horn button assy (See page 50–8).





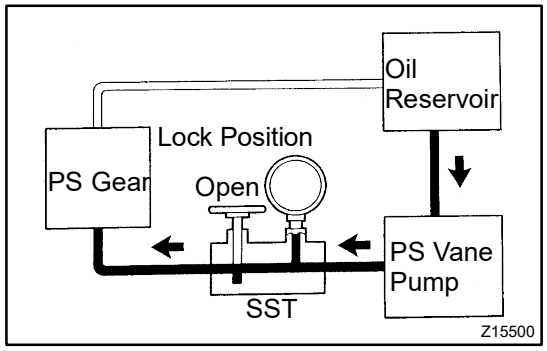
(f) With the engine idling, close the valve of the SST and observe the reading on the SST.
Fluid pressure:
7,300 – 7,800 kPa (75 – 80 kgf/cm^2, 1,067 – 1,138 psi)

NOTICE:
- **Do not keep the valve closed for more than 10 seconds.**
- **Do not let the fluid temperature become too high.**



(g) With the engine idling, open the valve fully.
(h) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.
Fluid pressure difference:
490 kPa (5 kgf/cm^2, 71 psi) or less

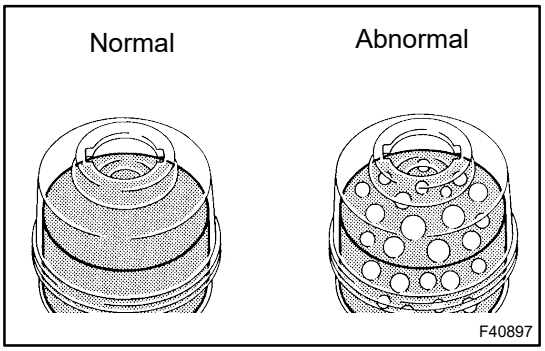
NOTICE:
Do not turn the steering wheel.



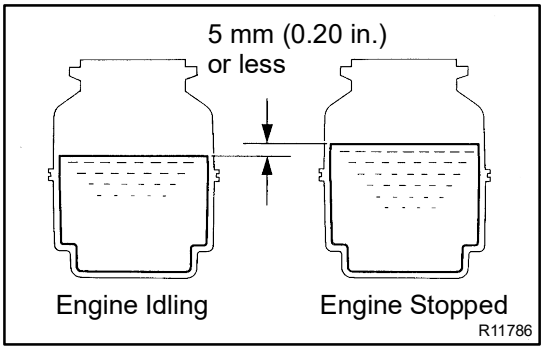
(i) With the engine idling and valve fully opened, turn the steering wheel to full lock position.
Fluid pressure:
7,300 – 7,800 kPa (75 – 80 kgf/cm^2, 1,067 – 1,138 psi)

NOTICE:
- **Do not maintain lock position for more than 10 seconds.**
- **Do not let the fluid temperature become too high.**

(c) Start the engine and run it at idle.
(d) Turn the steering wheel from lock to lock several times to raise fluid temperature.
Fluid temperature: 75 – 80°C (167 – 176°F)



(e) Check for foaming or emulsification.
If foaming or emulsification is identified, bleed the power steering system.



(f) With the engine idling, measure the fluid level in the oil reservoir.
(g) Stop the engine.
(h) Wait a few minutes and measure the fluid level in the oil reservoir again.
Maximum fluid level rise: 5 mm (0.20 in.)
If a problem is found, bleed the power steering system.
(i) Check the fluid level.

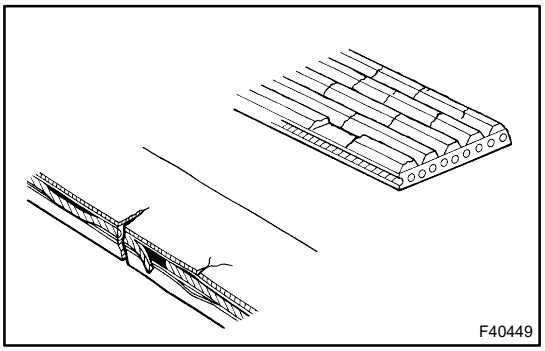
4. CHECK STEERING FLUID PRESSURE

(a) Disconnect the pressure feed tube from the PS gear (See page 51–18).
(b) Connect SST, as shown in the illustration.
SST 09640–10010 (09641–01010, 09641–01020, 09641–01030)

NOTICE:
Check that the valve of the SST is in the open position.

(c) Bleed the power steering system.
(d) Start the engine and run it at idle.
(e) Turn the steering wheel from lock to lock several times to raise fluid temperature.
Fluid temperature: 75 – 80 °C (167 – 176 °F)

ON–VEHICLE INSPECTION



1. INSPECT DRIVE BELT

(a) Visually check the belt for excessive wear, frayed cords, etc.

If any defect is found, replace the drive belt.

HINT:

Cracks on the rib side of a belt are considered acceptable. If the missing chunks from the ribs are found on the belt, it should be replaced.

2. BLEED POWER STEERING SYSTEM

(a) Check the fluid level.

(b) Jack up the front of the vehicle and support it with the stands.

(c) Turn the steering wheel.

(1) With the engine stopped, turn the wheel slowly from lock to lock several times.

(d) Lower the vehicle.

(e) Start the engine.

(1) Run the engine at idle for a few minutes.

(f) Turn the steering wheel.

(1) With the engine idling, turn the wheel to left or right full lock position and keep it there for 2 – 3 seconds, then turn the wheel to the opposite full lock position and keep it there for 2 – 3 seconds.

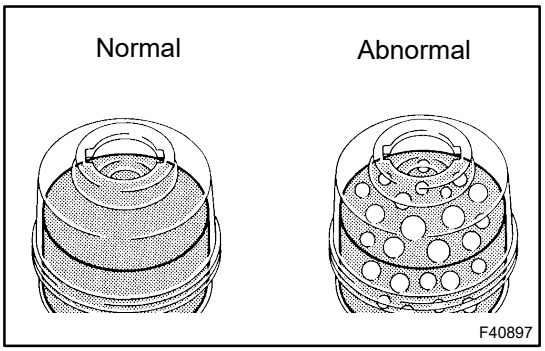
(2) Repeat (1) several times.

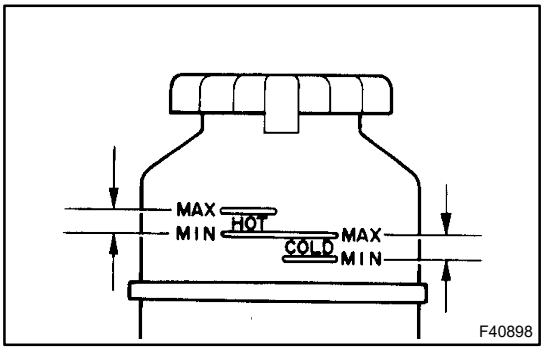
(g) Stop the engine.

(h) Check for foaming or emulsification.

Especially, if the system has to be bled twice because of foaming or emulsification, check for fluid leaks in the system.

(i) Check the fluid level.





3. CHECK FLUID LEVEL

(a) Keep the vehicle level.

(b) With the engine stopped, check the fluid level in the oil reservoir.

If necessary, add fluid.

Fluid: ATF DEXRON® II or III

HINT:

Check that the fluid level is within the HOT LEVEL range on the reservoir tank. If the fluid is cold, check that it is within the COLD LEVEL range.

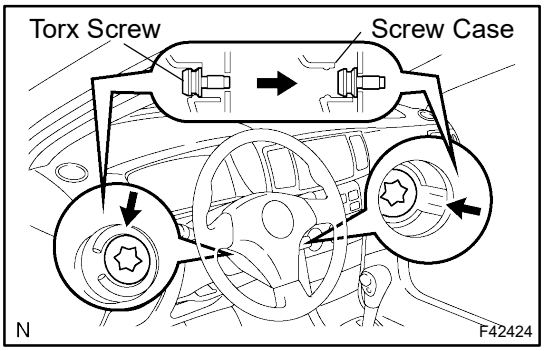
5002P–02

PROBLEM SYMPTOMS TABLE

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in the order shown. If necessary, repair or replace these parts.

Symptom	Suspect Area	See page
Hard steering	1. Tires (Improperly inflated)	28–1
	2. Power steering fluid level (Low)	51–3
	3. Front wheel alignment (Incorrect)	26–5
	4. Steering system joints (Worn)	–
	5. Suspension arm ball joints (Worn)	26–17
	6. Steering column (Binding)	–
	7. Power steering vane pump	51–8
	8. Power steering gear	51–18
Poor return	1. Tires (Improperly inflated)	28–1
	2. Front wheel alignment (Incorrect)	26–5
	3. Steering column (Binding)	–
	4. Power steering gear	51–18
Excessive play	1. Steering system joints (Worn)	–
	2. Suspension arm ball joints (Worn)	26–17
	3. Intermediate shaft, Sliding yoke (Worn)	–
	4. Front wheel bearing (Worn)	30–17
	5. Power steering gear	51–18
Abnormal noise	1. Power steering fluid level (Low)	51–3
	2. Steering system joints (Worn)	–
	3. Power steering vane pump	51–8
	4. Power steering gear	51–18

(a) Connect the 2 airbag connectors.
(b) Install the horn button assy after confirming that the circumference groove of the torx screws is caught on the screw case.



(c) Using a torx socket wrench, torque the 2 torx screws.
Torque: 8.8 N·m (90 kgf·cm, 78 in.·lbf)

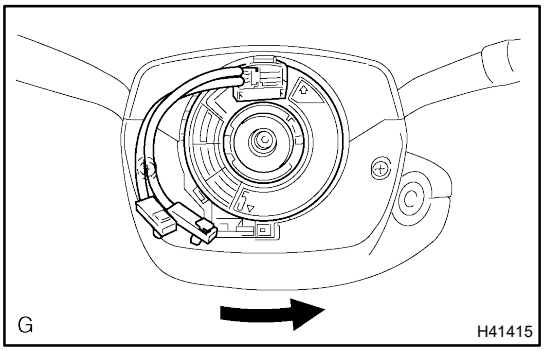
38. STEERING WHEEL CENTER POINT

39. INSPECT SRS WARNING LIGHT (See page 05–424)

32. CONNECT CHECK KEY INTERLOCK OPERATION

33. INSTALL COVER SET STEERING COLUMN

(a) Install the steering column cover with the 3 screws.



34. CENTER SPIRAL CABLE

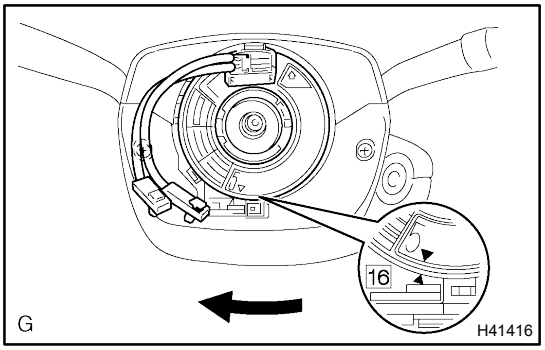
(a) Check that the ignition switch is at OFF.

(b) Check that the battery negative terminal is disconnected.

NOTICE:

Do not start the operation for 90 seconds after removing the terminal.

(c) Turn the cable counterclockwise by hand until it becomes harder to turn.



(d) Then rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

The cable will rotate about 2.5 turns to either right or left of the center.

35. INSTALL STEERING WHEEL ASSY

(a) Align the matchmark with the one on the steering wheel assy and steering main shaft assy.

(b) Install the steering wheel assy with the set nut.

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

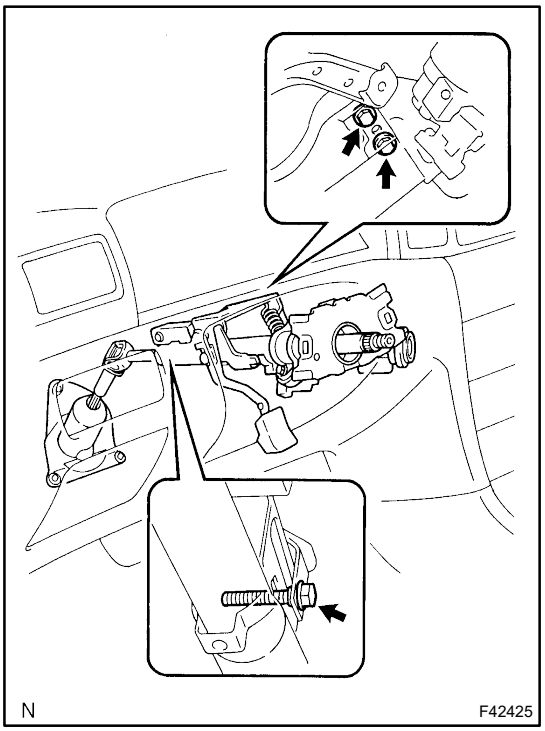
(c) Connect the connector.

36. INSPECT HORN BUTTON ASSY (See page 60–8)

37. INSTALL HORN BUTTON ASSY

NOTICE:

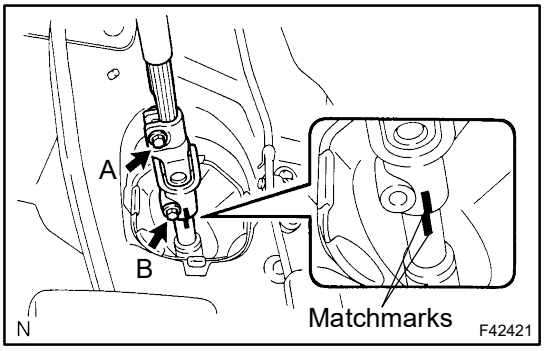
- **Never use the airbag parts removed from another vehicle. When replacing parts, replace with new ones.**
- **Make sure that the horn button assy is installed to the specified torque.**
- **If the horn button assy has been dropped, or there are cracks, dents or other defects in the case or connector, replace the horn button assy with a new one.**
- **When installing the horn button assy, take care so that the wirings do not interfere with other parts and that they are not pinched between other parts.**



24. INSTALL STEERING COLUMN ASSY

(a) Install the steering column assy with the 3 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

(b) Connect the connectors and wire harness clamps.



25. CONNECT STEERING INTERMEDIATE SHAFT

(a) Align the matchmarks on the sliding yoke and steering intermediate shaft.

(b) Install the bolt B and torque the bolt A.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)

26. INSTALL COLUMN HOLE COVER SILENCER SHEET

27. INSTALL WINDSHIELD WIPER SWITCH ASSY

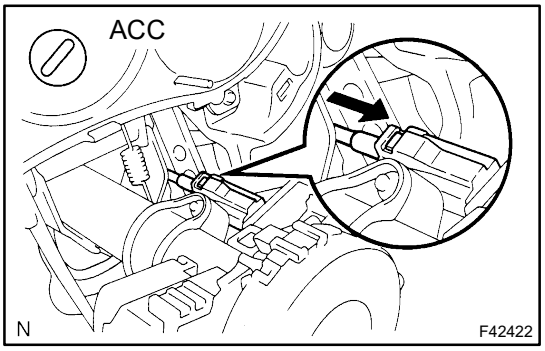
(a) Install the windshield wiper switch assy and connect the connector.

28. INSTALL HEADLAMP DIMMER SWITCH ASSY

(a) Install the headlamp dimmer switch assy and connect the connector.

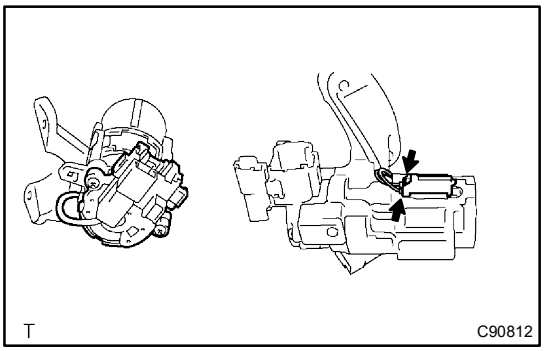
29. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

30. INSTALL SPIRAL CABLE SUB–ASSY



31. CONNECT FLOOR SHIFT PARKING LOCK CABLE ASSY (A/T TRANSAXLE)

(a) With the key in ACC, push into the floor shift parking lock cable and install it.



17. REMOVE UN–LOCK WARNING SWITCH ASSY

(a) Disconnect the un–lock warning switch assy connector from the ignition or starter switch assy.

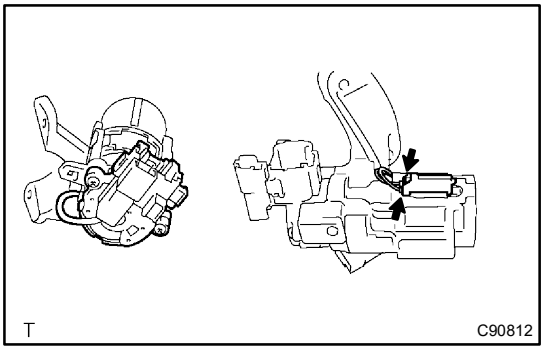
(b) Remove the un–lock warning switch assy.

18. REMOVE IGNITION OR STARTER SWITCH ASSY

(a) Remove the 2 screws and ignition or starter switch assy from the steering column bracket assy.

19. INSTALL IGNITION OR STARTER SWITCH ASSY

(a) Install the ignition or starter switch assy to the steering column bracket assy with the 2 screws.



20. INSTALL UN–LOCK WARNING SWITCH ASSY

(a) Install the un–lock warning switch assy.

(b) Connect the un–lock warning switch assy connector to the ignition or starter switch assy.

21. INSTALL IGNITION SWITCH LOCK CYLINDER ASSY

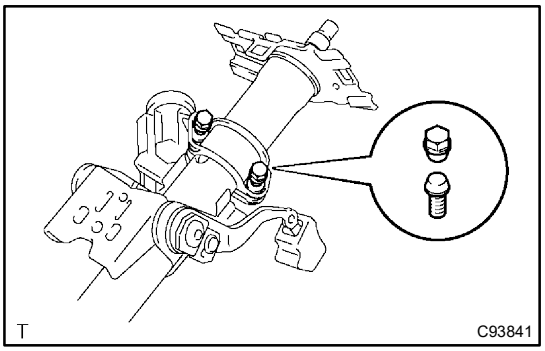
(a) Make sure that the ignition switch lock cylinder assy is at the ACC position.

(b) Install the ignition switch lock cylinder assy.

22. INSPECT STEERING LOCK OPERATION

(a) Check that the steering lock mechanism is activated when removing the key.

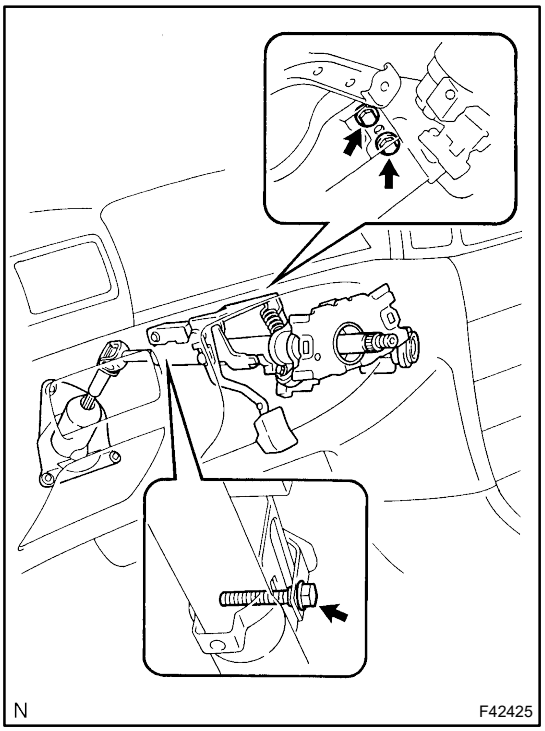
(b) Check that the steering lock mechanism is deactivated when inserting the key and turning it to ACC position.



23. INSTALL STEERING COLUMN UPPER W/SWITCH BRACKET ASSY

(a) Temporarily install the steering column upper w/switch bracket assy and steering column upper clamp with 2 new tapered–head bolts.

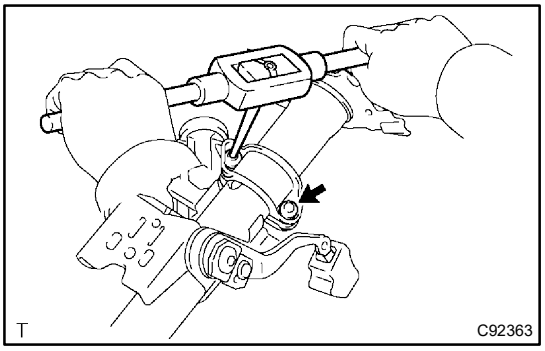
(b) Tighten the 2 tapered–head bolts until the bolt heads break off.



13. REMOVE STEERING COLUMN ASSY

(a) Disconnect the connectors and wire harness clamps from the steering column assy.

(b) Remove the 3 bolts and steering column assy.



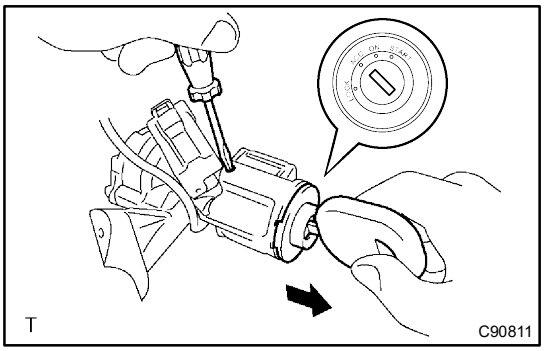
14. REMOVE STEERING COLUMN UPPER W/SWITCH BRACKET ASSY

(a) Using a centering punch, mark the center of the 2 tapered–head bolts.

(b) Using a 3 – 4 mm (0.12 – 0.16 in.) drill, drill into the 2 bolts.

(c) Using a screw extractor, remove the 2 bolts and steering column upper w/switch bracket assy.

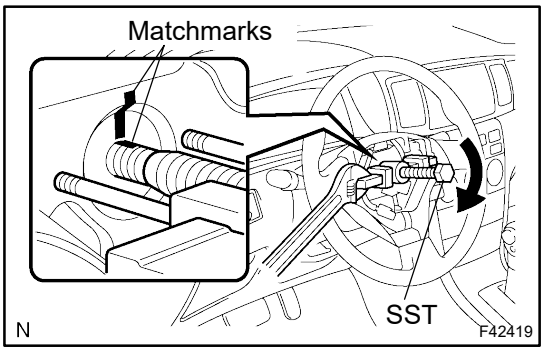
15. REMOVE STEERING COLUMN CLAMP UPPER



16. REMOVE IGNITION SWITCH LOCK CYLINDER ASSY

(a) Place the ignition switch lock cylinder assy at the ACC position.

(b) Push down the stop pin with a screwdriver, and pull out the cylinder assy.

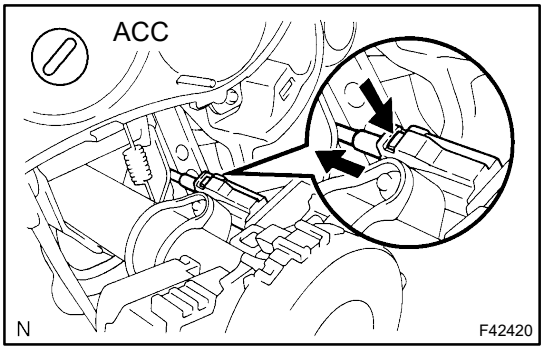


5. REMOVE STEERING WHEEL ASSY

(a) Disconnect the connector.
(b) Remove the steering wheel assy set nut.
(c) Place matchmarks on the steering wheel assy and main shaft assy.
(d) Using SST, remove the steering wheel assy.
SST 09950–50013 (09951–05010, 09952–05010, 09953–05020, 09954–05021)

6. REMOVE STEERING COLUMN COVER

(a) Remove the 3 screws and steering column cover.



7. DISCONNECT FLOOR SHIFT PARKING LOCK CABLE ASSY (A/T TRANSAXLE)

(a) With the key in ACC, push the claw and pull out the floor shift parking lock cable.

8. REMOVE SPIRAL CABLE SUB–ASSY

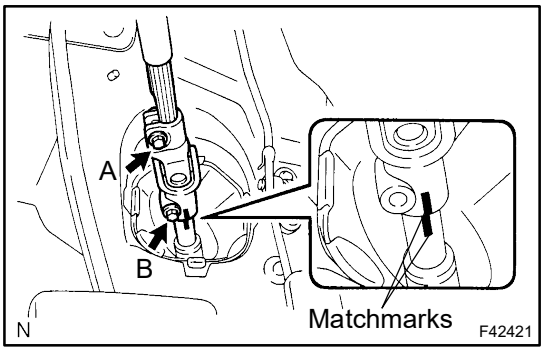
9. REMOVE HEADLAMP DIMMER SWITCH ASSY

(a) Disconnect the connector and remove the headlamp dimmer switch assy.

10. REMOVE WINDSHIELD WIPER SWITCH ASSY

(a) Disconnect the connector and remove the windshield wiper switch assy.

11. REMOVE COLUMN HOLE COVER SILENCER SHEET



12. DISCONNECT STEERING INTERMEDIATE SHAFT

(a) Place matchmarks on the sliding yoke and steering intermediate shaft.
(b) Loosen the bolt A and remove the bolt B, then disconnect the steering intermediate shaft.

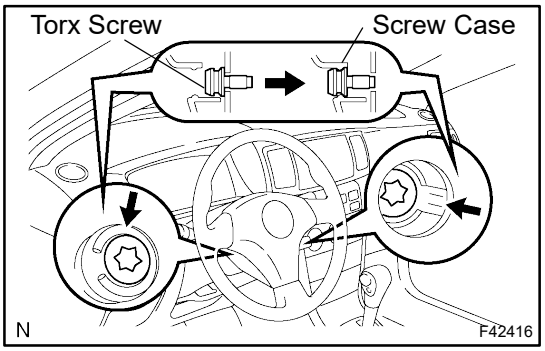
5003V–02

OVERHAUL

1. PRECAUTION

2. DISCONNECT BATTERY NEGATIVE TERMINAL

3. INSPECT PLACE FRONT WHEELS FACING STRAIGHT AHEAD

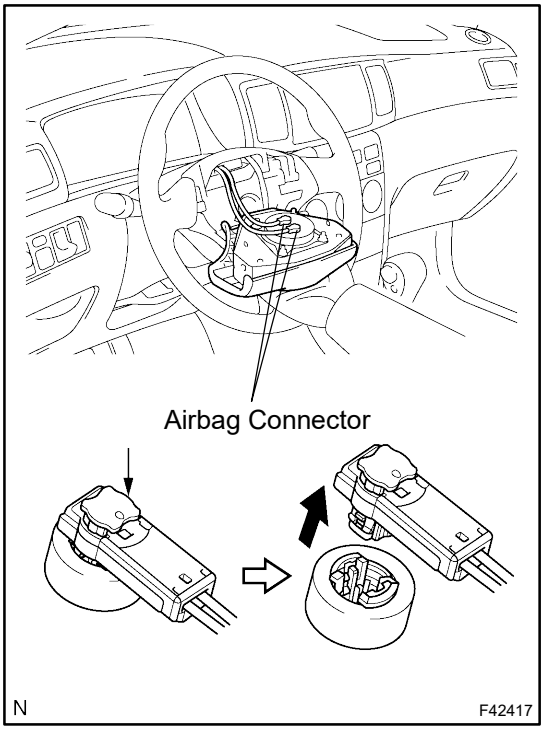


4. REMOVE HORN BUTTON ASSY

NOTICE:

If the airbag connector is disconnected with the ignition switch being at ON, DTCs will be recorded.

(a) Using a torx socket wrench, loosen the 2 torx screws until the groove along the screw circumference catches on the screw case.

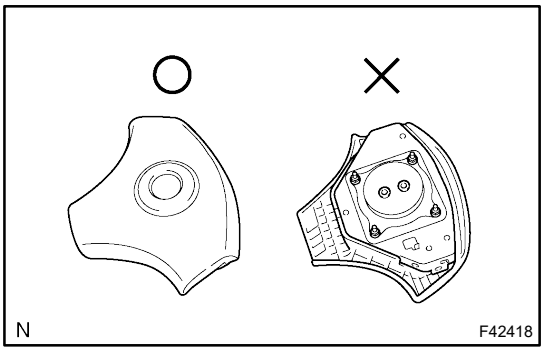


(b) Pull out the horn button assy from the steering wheel.

(c) Using a screwdriver, release the lock part of each airbag connector and disconnect the 2 airbag connectors.

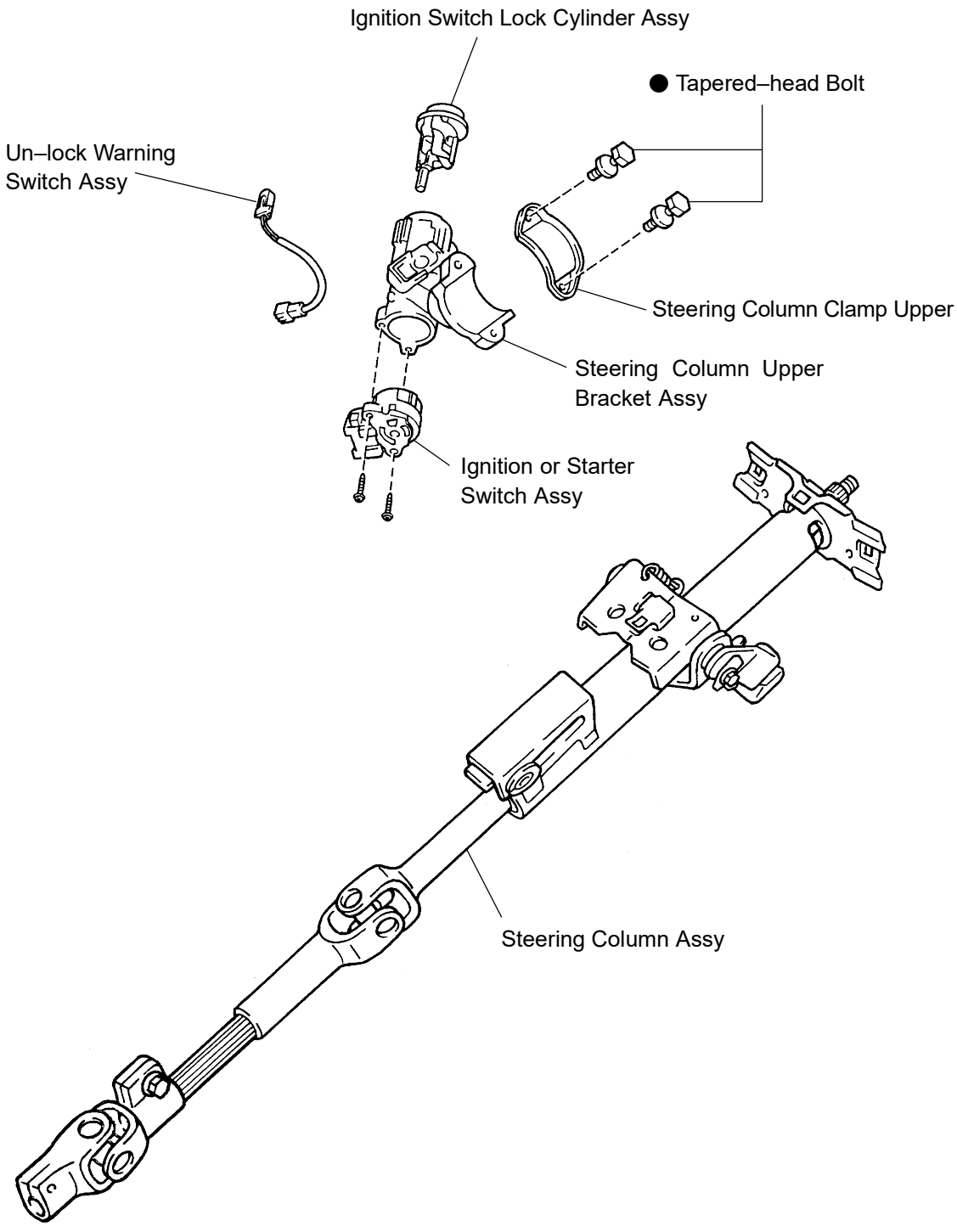
NOTICE:

When removing the horn button assy, take care not to pull the airbag wire harness.



CAUTION:

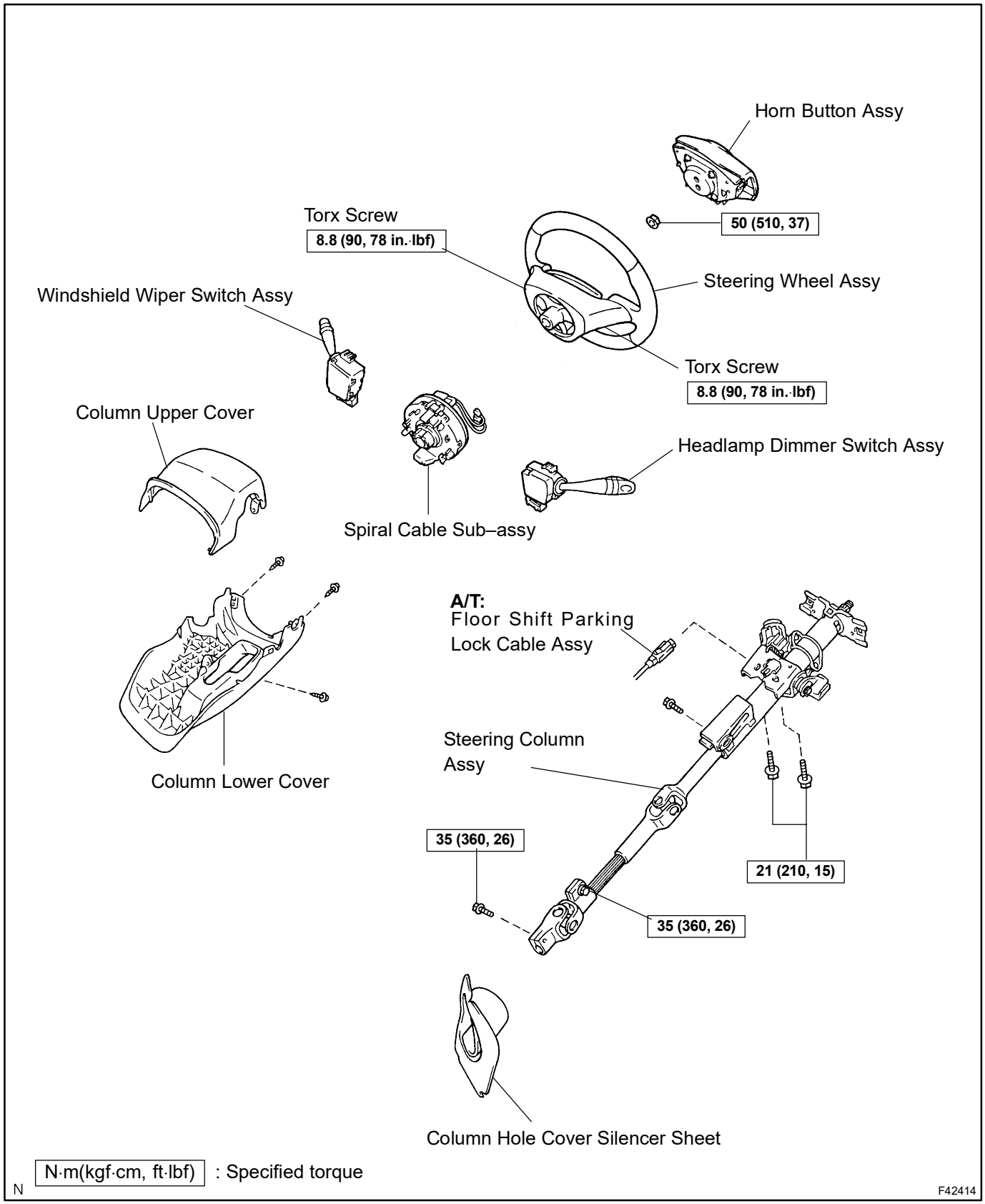
- **When storing the horn button assy, keep the upper surface of the pad facing upward.**
- **Never disassemble the horn button assy.**



STEERING COLUMN ASSY

COMPONENTS

5003U–01

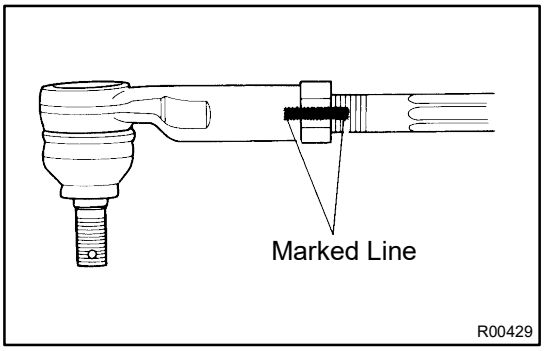


(7) Convert the measured distance to steering angle.
Measured distance 1 mm (0.04 in.) = Steering angle approximately 1 deg.

HINT:
Make a note of the steering angle.

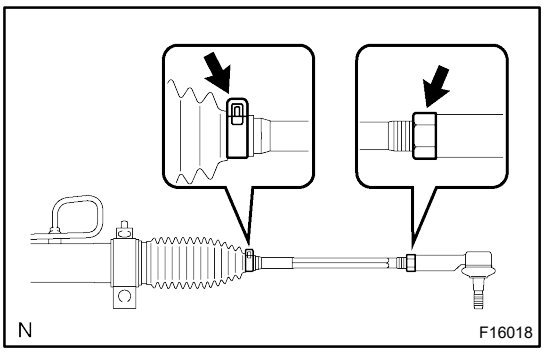
(b) Adjust steering angle.

NOTICE:
The adjustment method for steering angle varies depending on the models. Check whether it is type A or B.



(1) Draw a line on the RH and LH tie rod and rack ends where it can easily be seen.
(2) Using a paper gauge, measure the distance from RH and LH tie rod ends to the rack end screws.

HINT:
- Measure the RH side and LH side.
- Make a note of the measured values.



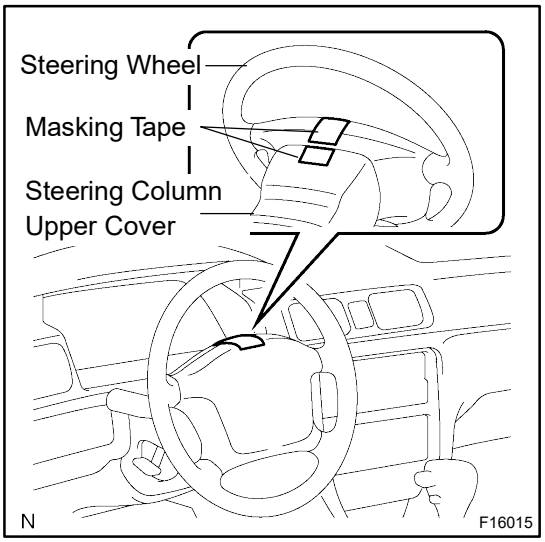
(3) Remove the RH and LH boot clips from the rack boots.
(4) Loosen the RH and LH lock nuts.
(5) Turn the RH and LH rack end by the same amount (but in different directions) according to the steering angle.
1 turn 360 deg. of rack end (1.5 mm (0.059 in.) horizontal movement) – 12 deg. of steering angle.
(6) Tighten the RH and LH lock nuts by the specified torque.
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

NOTICE:
Make sure that the difference in length between RH and LH tie rod ends and rack end screws are within 1.5 mm (0.059 in.).

(7) Install the RH and LH boot clips.

5002Q-02

REPAIR

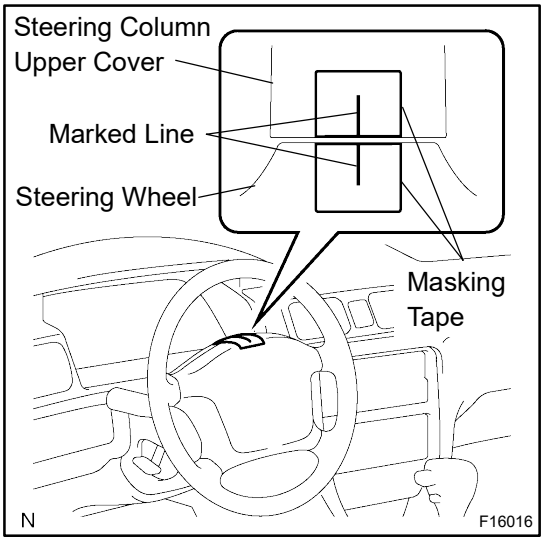


1. STEERING OFF CENTER REPAIR PROCEDURE

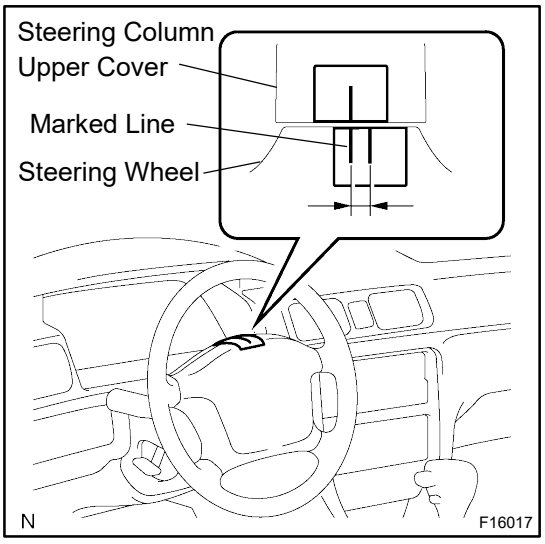
(a) Inspect steering wheel off center.

(1) Apply masking tape on the top center of the steering wheel and steering column upper cover.

(2) Driving the vehicle on a straight line for 100 meters at a constant speed of 35 mph (56 km/h), and hold the steering wheel to maintain the course.



(3) Draw a line on the masking tape as shown in the illustration.



(4) Turn the steering wheel to its straight position.

HINT:

Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

(5) Draw a new line on the masking tape or the steering wheel as shown in the illustration.

(6) Measure the distance between the 2 lines on the masking tape of the steering wheel.

STEERING SYSTEM

5003T–01

PRECAUTION

1. HANDLING PRECAUTIONS ON STEERING SYSTEM

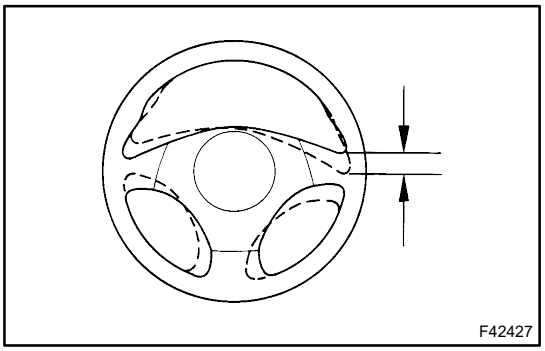
(a) Care must be taken when replacing parts. Incorrect replacement may affect the performance of the steering system and result in a driving hazard.

2. HANDLING PRECAUTIONS ON SRS AIRBAG SYSTEM

(a) The vehicle is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (See page 60–1).

5000P–03

ON–VEHICLE INSPECTION



1. CHECK STEERING WHEEL FREEPLAY

(a) Stop the vehicle and face the tires straight ahead.

(b) Rock the steering wheel gently up and down by your hand, check the steering wheel freeplay.

Maximum freeplay: 30 mm (1.18 in.)

CLUTCH SYSTEM (MTM)

PROBLEM SYMPTOMS TABLE

4203K–01

HINT:

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

Symptom	Suspect Area	See page
Clutch grabs/chatters	5. Engine mounting (Loosen)	–
	6. Clutch disc assy (Runout is excessive)	42–18
	7. Clutch disc assy (Oily)	42–18
	8. Clutch disc assy (Worn out)	42–18
	9. Clutch disc torsion rubber (Damaged)	42–18
	10. Clutch disc assy (Glazed)	42–18
	11. Diaphragm spring (Out of tip alignment)	42–18
Clutch pedal spongy	1. Clutch Line (Air in line)	–
	2. Master cylinder cup (Damaged)	42–10
	3. Release cylinder rubber (Damaged)	42–15
Clutch noisy	1. Clutch release bearing assy (Worn, dirty, or damaged)	42–15
	2. Clutch disc torsion rubber (Damaged)	42–18
Clutch slips	1. Clutch pedal (Free play out of adjustment)	42–2
	2. Clutch disc assy (Oily)	42–18
	3. Clutch disc assy (Worn out)	42–18
	4. Diaphragm spring (Damaged)	42–18
	5. Pressure plate (Distortion)	42–18
	6. Flywheel sub–assy (Distortion)	–
Clutch does not disengage	1. Clutch pedal (Free play out of adjustment)	42–2
	2. Clutch line (Air in line)	–
	3. Master cylinder cup (Damaged)	42–10
	4. Release cylinder cup (Damaged)	42–15
	5. Clutch disc assy (Out of true)	42–18
	6. Clutch disc assy (Runout of excessive)	42–18
	7. Clutch disc assy (Lining broken)	42–18
	8. Clutch disc assy (Dirty or burned)	42–18
	9. Clutch disc assy (Oily)	42–18
	10. Clutch disc assy (Lack of spline grease)	42–18