



**Technical Service  
BULLETIN**

February 14, 2005

Title:

**HEATER PERFORMANCE IMPROVEMENT**

Models:

'03 – '05 Corolla



**HEATING & AIR CONDITIONING  
AC002-05**

**Introduction** Customers in areas with extremely low ambient temperatures may complain of poor heater performance during city driving conditions. The Air Conditioner Unit Assembly has been modified to improve this condition.

- Applicable Vehicles**
- **2003 – 2005** model year **Corolla** vehicles produced **BEFORE** the Production Change Effective VINs shown below.

**Production Change Information**

MODEL	PLANT	PRODUCTION CHANGE EFFECTIVE VIN
Corolla	Shokki	JTDBR3#E#52049411
	NUMMI	1NXBR3#E#5Z344450
	TMMC	2T1BR3#E#5C323865

**Parts Information**

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	SPECIFICATION	QTY
87010-02230	87010-02700	Unit Assembly, Air Conditioner	STD Spec With A/C	1
87010-02240	87010-02710		STD Spec Less A/C	1
87010-02250	87010-02720		Cold Weather Spec With A/C	1
87010-02260	87010-02730		Cold Weather Spec Less A/C	1
90099-14121	Same	O-ring (Suction Tube)	-	1
90099-14119	Same	O-ring (Discharge Tube)	-	1

**Warranty Information**

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC4012	R & R Air Conditioner Unit Assembly	7.0	87010-022#0	7A	99




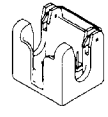

**Applicable Warranty\*:**

**This repair is covered under the Toyota Comprehensive Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.**

\* Warranty application is limited to correction of a problem based upon a customer's specific complaint.



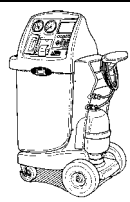
**Required SSTs**

PART NUMBER	SPECIAL SERVICE TOOLS (SSTs)		QTY
01001271	Toyota Diagnostic Tester Kit* 		1
01002744	CAN Interface Module Kit* 		1
01002593-005	12 Megabyte Diagnostic Tester Program Card with version 12.01a Software (or later)* 		1
09870-00005-01	A/C Line Disconnect Kit*		1
	09870-00015	Low Side A/C Line Disconnect Tool (included in A/C Line Disconnect Kit) 	1
09950-50013-01	Universal Puller Set "C" * 		1

\* Essential SSTs.

**NOTE:**  
**Additional Diagnostic Tester Kits, CAN Interface Modules, Program Cards, or other SSTs may be ordered by calling SPX/OTC at 1-800-933-8335.**

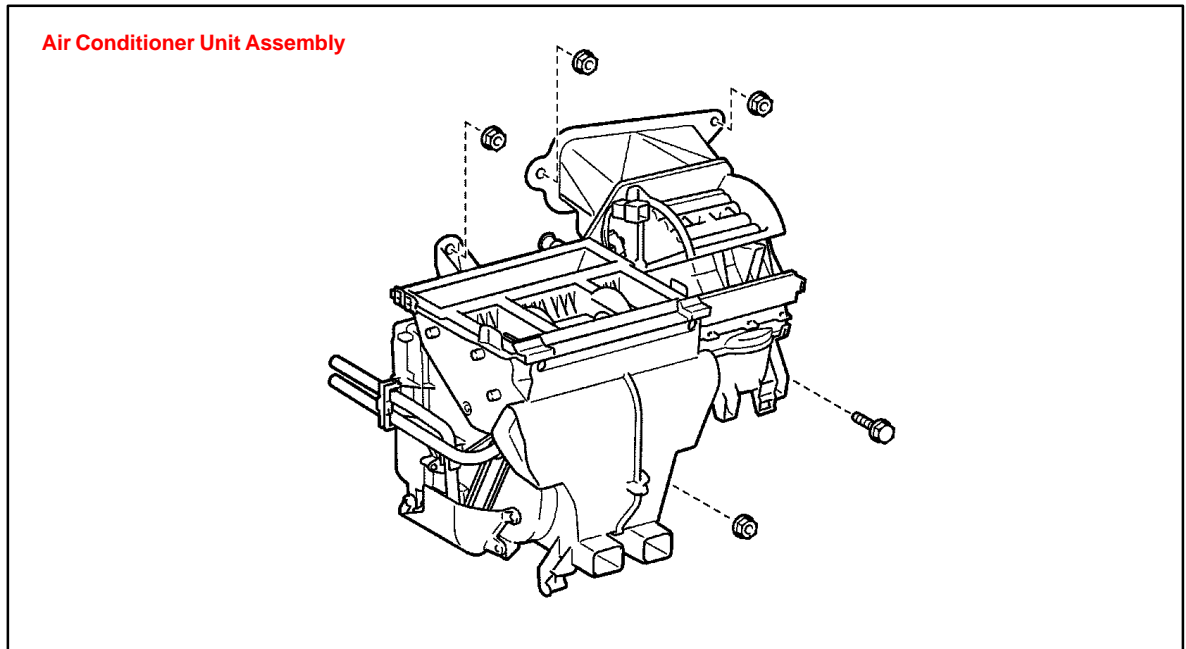
**Required Equipment**

MANUFACTURER	EQUIPMENT	QTY
Robinair 342000 (or equivalent)	R-134a Refrigerant Recovery/Recycling Machine 	1

**NOTE:**  
**Additional Toyota Approved Dealer Equipment may be ordered by calling Toyota Approved Dealer Equipment at 1-800-368-6787.**

Replacement  
Procedure

## Install Air Conditioner Unit Assembly.



## 1. Evacuate Refrigerant HFC–134a (R–134a).

- Equipment: Robinair R–134a Refrigerant Recovery/Recycling Machine (Robinair P/N: 342000)

## 2. Disconnect Negative Terminal of Battery.

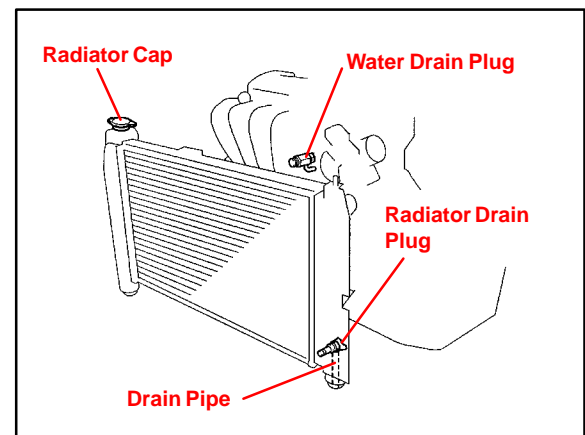
## 3. Drain Coolant.

**CAUTION:**

Do not remove the radiator cap while the engine and radiator are still hot, as coolant and steam can be blown out under pressure.

- Remove the radiator cap.
- Loosen the radiator and engine drain plugs and drain the coolant.
- Close the drain plugs.

**Engine Drain Torque:**  
13 N•m (130 kgf•cm, 9 ft•lbf)

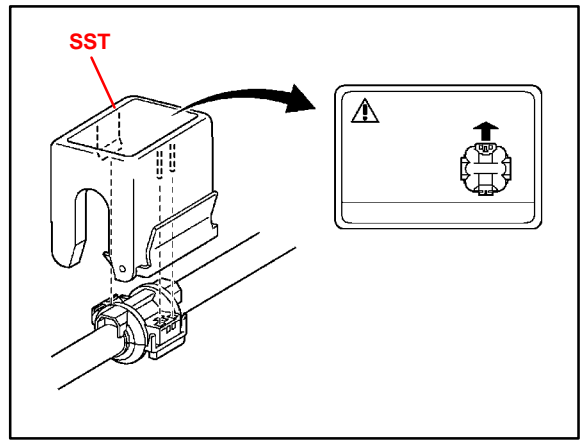


Replacement Procedure  
(Continued)

4. Disconnect Cooler Refrigerant Suction Hose No. 1.

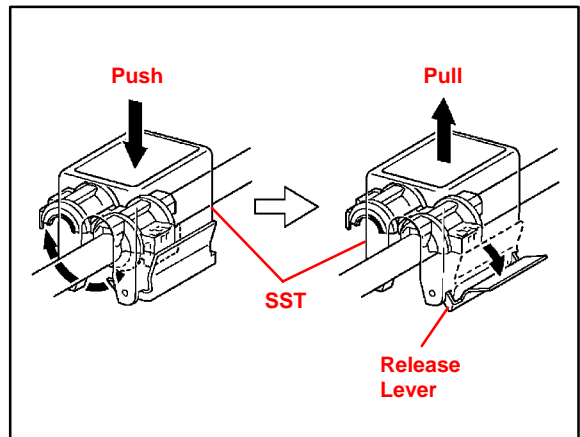
- A. Install the SST to the piping clamp.
  - SST: 09870-00015

**HINT:**  
Confirm the direction of the piping clamp claw and the SST using the illustration shown on the caution label.



- B. Push down the SST and release the clamp lock.

**NOTE:**  
Be careful not to deform the tube when pushing the SST.

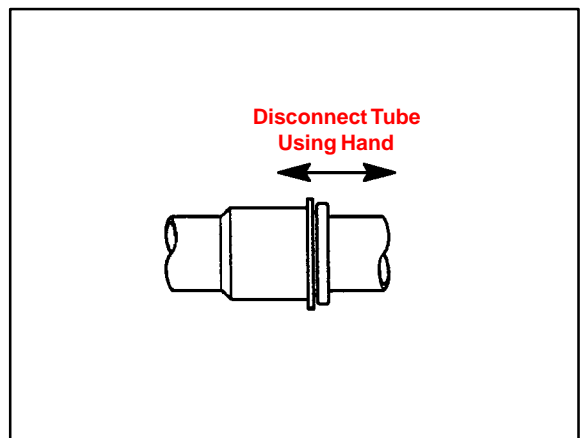


- C. Pull the SST slightly and push the release lever. Then remove the piping clamp with the SST.
- D. Remove the piping clamp from the SST.

- E. Disconnect the cooler refrigerant suction hose No. 1.

**NOTE:**

- Disconnect the tube by hand only. Do not pry the tube apart.
- Cap the open fittings immediately to keep moisture or dirt out of the system.



Replacement  
Procedure  
(Continued)

5. **Disconnect Cooler Refrigerant  
Liquid Pipe A.**

- SST: 09870-00015

**HINT:**

Disconnect the same way as cooler  
refrigerant suction hose No. 1.

6. **Disconnect Heater Inlet  
Water Hose.**

Using pliers, grip the claws of the clip  
and slide the clip and disconnect the  
heater inlet water hose.

7. **Disconnect Heater Outlet  
Water Hose.**

Using pliers, grip the claws of the clip  
and slide the clip and disconnect the  
heater outlet water hose.

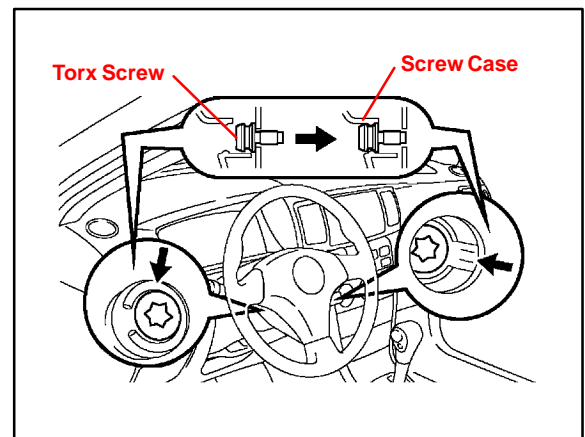
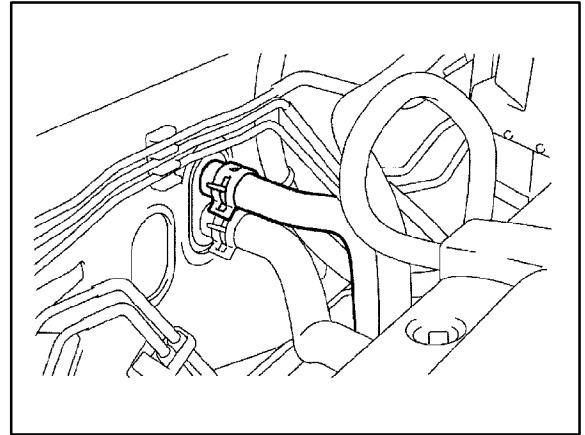
8. **Place Front Wheels Facing  
Straight Ahead.**

9. **Remove Horn Button Assembly.**

**NOTE:**

- If the airbag connector is  
disconnected with the ignition switch  
ON, DTCs will be recorded.
- Before working on SRS, please refer  
to the Technical Information System  
(TIS), 2005 model year Corolla Repair  
Manual: *Supplemental Restraint  
System: Supplemental Restraint  
System: Precaution.*

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

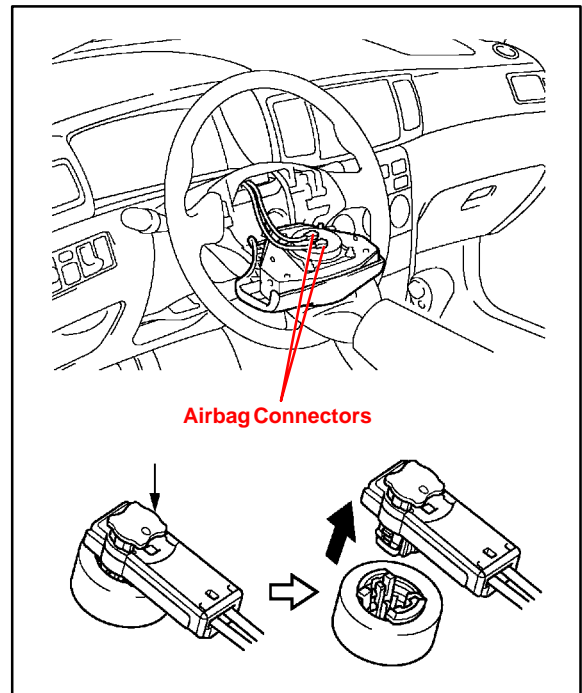


**Replacement Procedure**  
(Continued)

- B. Pull out the horn button assembly from the steering wheel.
- C. Using a screwdriver, release the lock part of each airbag connector and disconnect the 2 airbag connectors.

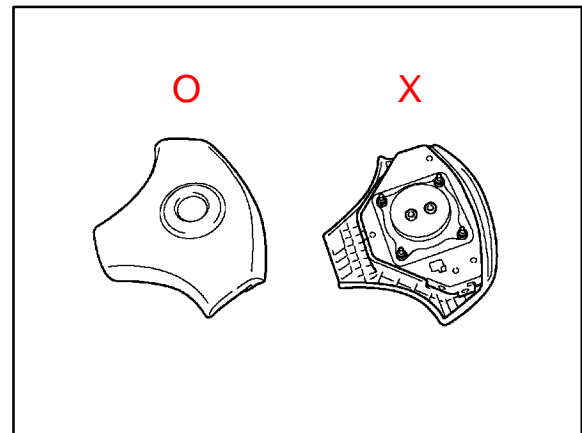
**NOTE:**

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



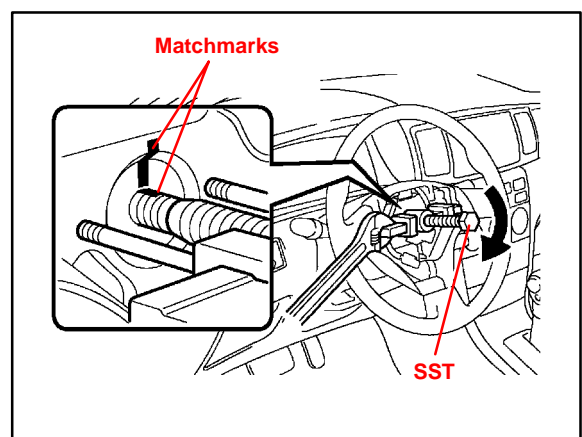
**CAUTION:**

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



**10. Remove Steering Wheel Assembly.**

- A. Disconnect the connector.
- B. Remove the steering wheel assembly set nut.
- C. Place matchmarks on the steering wheel assembly and main shaft assembly.
- D. Using the SST, remove the steering wheel assembly.
  - SST: 09950-50013  
(09951-05010, 09952-05010, 09953-05020, 09954-05021)



**Replacement Procedure**  
(Continued)

**11. Remove Steering Column Cover.**

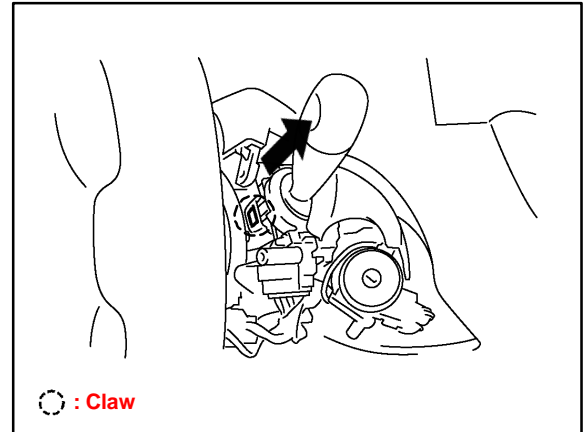
Remove the 3 screws and steering column cover.

**12. Remove Windshield Wiper Switch Assembly.**

- A. Disconnect the connector.
- B. Release the claw and pull out the windshield wiper switch assembly as shown.

**NOTE:**

To prevent the claw from breaking, be careful when releasing.

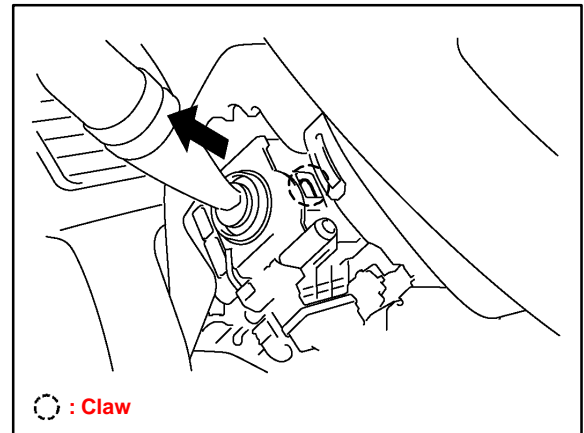


**13. Remove Headlamp Dimmer Switch Assembly.**

- A. Disconnect the connector.
- B. Release the claw and pull out the headlamp dimmer switch assembly.

**14. Remove Instrument Panel Sub-assembly Upper and Lower.**

For additional information, refer to TIS, 2005 model year Corolla Repair Manual: *Instrument Panel/meter: Instrument Panel Sub-Assy Lower: Replacement.*



**15. Remove Air Conditioner Unit Assembly.**

For additional information, refer to TIS, 2005 model year Corolla Repair Manual: *Heater & Air Conditioner: Air Conditioning Unit Assy: Overhaul.*

**Replacement  
Procedure**  
(Continued)

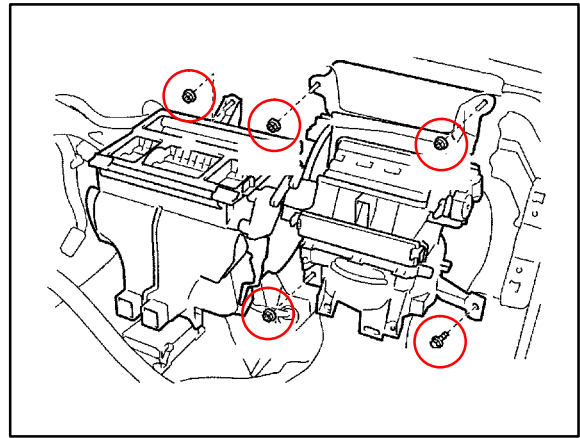
**16. Install Air Conditioner  
Unit Assembly.**

- A. Install the new air conditioner unit assembly with the 4 nuts and bolt.

**Torque: 9.8 N•m  
(100 kgf•cm, 87 in.•lbf)**

**NOTE:**

Tighten the nuts and bolt as shown in the illustration to install the Air Conditioner Unit Assembly.



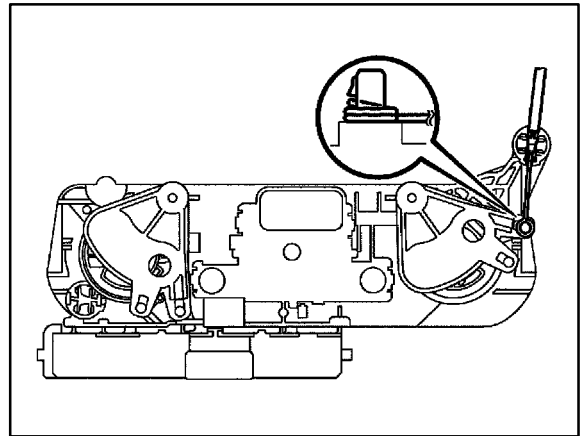
**17. Reassemble Air Conditioner Unit  
Assembly and Upper and Lower  
Instrument Panel in Reverse Order  
of Disassembly.**

**18. Reinstall Heater Control and  
Accessory Assembly.**

- A. Install the inner cable end of the air mix damper control cable to the heater control lever.
- B. Install the outer cable of the air mix damper control cable to the cable clamp.

**NOTE:**

- Be careful not to bend the cable wire.
- If the cable wire bends, the heater control and accessory assembly could become difficult to operate.



**HINT:**

Operate the heater control knob and check that it properly stops at both MAX COOL and MAX HOT and no recoil is identified.

**Replacement Procedure**  
(Continued)

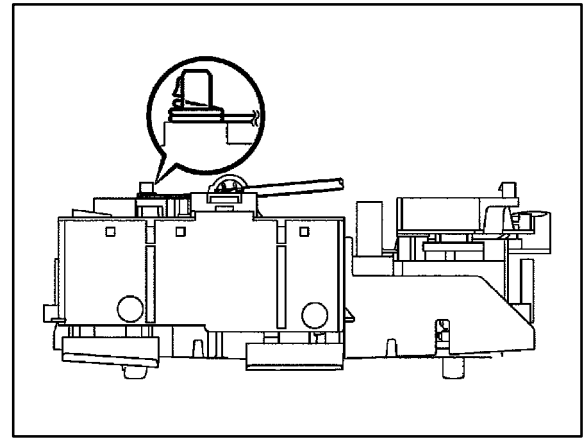
- C. Install the inner cable end of the defroster damper control cable to the heater control lever.
- D. Install the outer cable of the defroster damper control cable to the cable clamp.

**NOTE:**

- Be careful not to bend the cable wire.
- If the cable wire bends, the heater control and accessory assembly could become difficult to operate.

**HINT:**

Operate the heater control knob and check that it properly stops at both MAX COOL and MAX HOT and no recoil is identified.



**19. Reinstall Defroster Damper Control Cable Sub-assembly.**

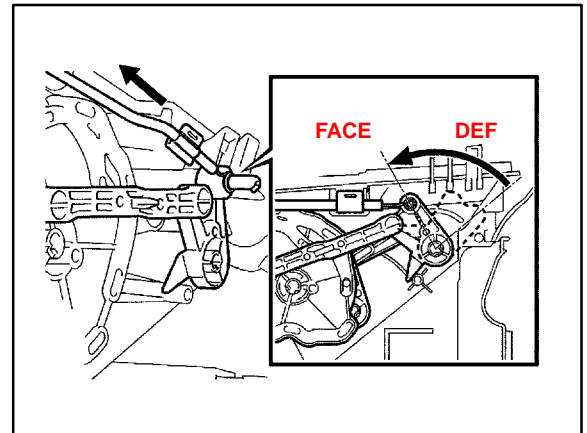
- A. Set the arm in FACE position.
- B. Install the inner cable end to the control lever with the arm in FACE position.
- C. Install the outer cable to the cable clamp while slightly pressing it in the direction of the arrow.

**NOTE:**

- Be careful not to bend the cable wire.
- If the cable wire bends, the heater control and accessory assembly could become difficult to operate.

**HINT:**

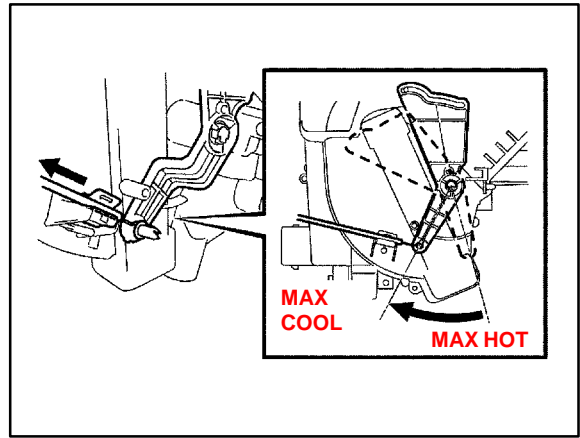
Operate the mode control lever and check that it properly stops at both ends of FACE and DEF and no recoil is identified.



**Replacement Procedure**  
(Continued)

**20. Reinstall Airmix Damper Control Cable Sub-assembly.**

- A. Set the arm in MAX COOL position.
- B. Install the inner cable end to the control lever with the arm in MAX COOL position.
- C. Install the outer cable to the cable clamp while slightly pressing it in the direction of the arrow.



**NOTE:**

- Be careful not to bend the cable wire.
- If the cable wire bends, the heater control and accessory assembly could become difficult to operate.

**HINT:**

Operate the temperature control lever and check that it properly stops at both ends of MAX COOL and MAX HOT and no recoil is identified.

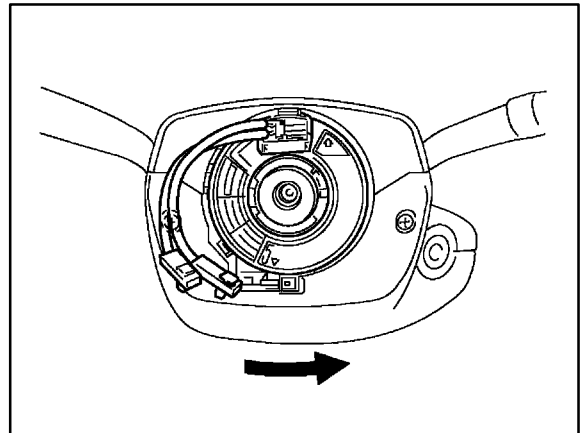
**21. Center Spiral Cable.**

- A. Check that the ignition switch is OFF.
- B. Check that the battery negative terminal is disconnected.

**NOTE:**

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.



**Replacement Procedure**  
(Continued)

- 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 the right or left of the center.

**22. Reinstall Steering Wheel Assembly.**

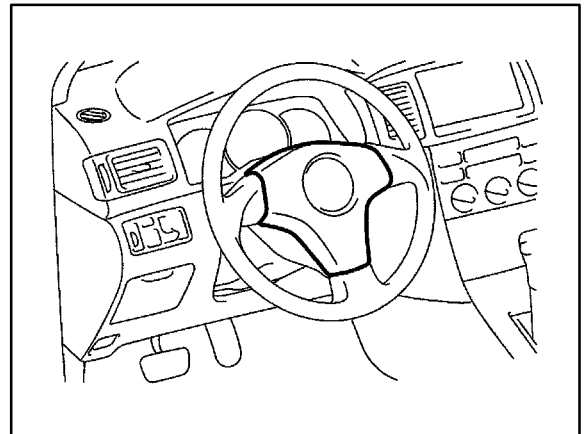
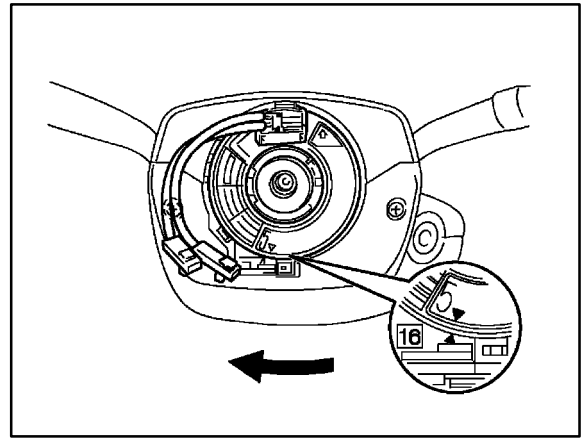
- A. Align the matchmark with the one on the steering wheel assembly and steering main shaft assembly.
- B. Install the steering wheel assembly with the set nut.

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

- C. Connect the connector.

**23. Inspect Horn Button Assembly.**

Visually inspect the horn button assembly (with airbag) prior to installation on the vehicle. Check for cuts, minute cracks, or marked discoloration on the horn button assembly top surface and in the grooved portion. If damage or discoloration is found, replace the horn button assembly.



Replacement  
Procedure  
(Continued)

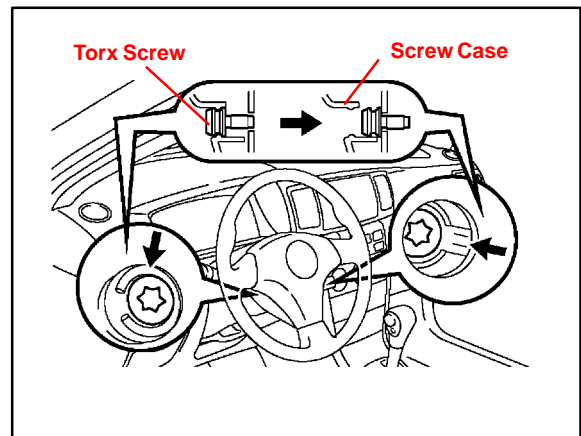
## 24. Reinstall Horn Button Assembly.

**NOTE:**

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

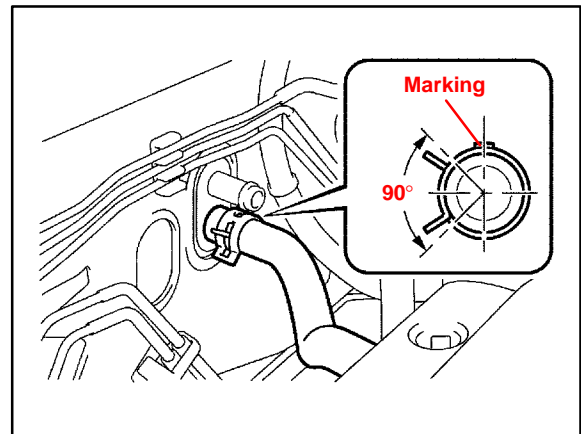
- Connect the 2 airbag connectors.
- Install the horn button assembly after confirming that the circumference groove of the torx screws is caught on the screw case.
- Using a torx socket wrench, torque the 2 torx screws.

**Torque: 8.8 N•m  
(90 kgf•cm, 78 in.•lbf)**



## 25. Reinstall Heater Outlet Water Hose.

- Inspect hose for damage or brittleness. If damage or brittleness is found, replace the heater outlet water hose.
- Using pliers, grip the claws of the clip and slide the clip and connect the heater outlet water hose.



## 26. Reinstall Heater Inlet Water Hose.

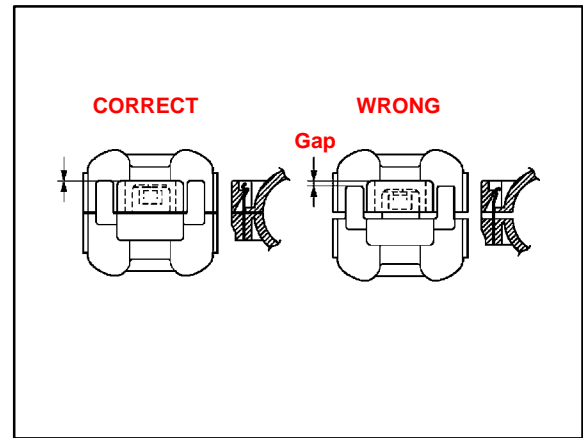
**Replacement Procedure**  
(Continued)

**27. Reinstall Cooler Refrigerant Suction Hose No. 1.**

- A. Lubricate a new O–ring with compressor oil and install them to the hose.

**Compressor oil: ND–OIL 8 (or equivalent)**

- B. Install the cooler refrigerant suction hose No. 1 and piping clamp.



**28. Reinstall Cooler Refrigerant Liquid Pipe A.**

- A. Lubricate a new O–ring with compressor oil and install them to the pipe.

**Compressor oil: ND–OIL 8 (or equivalent)**

- B. Install the cooler refrigerant liquid pipe A and piping clamp.

**29. Add Coolant.**

Slowly fill the system with coolant.

**HINT:**

- Use of improper coolants may damage engine cooling system.
- Use “Toyota Long Life Coolant” (or equivalent) and mix it with plain water according to the manufacturer’s directions.
- The use of coolant that has more than 50% (freezing protection down to  $-31^{\circ}\text{F}$  [ $-35^{\circ}\text{C}$ ]) or 60% (freezing protection down to  $-58^{\circ}\text{F}$  [ $-50^{\circ}\text{C}$ ]) of ethylene–glycol is recommended, but not more than 70%.

**NOTE:**

- Do not use an alcohol type coolant or plain water alone.
- The coolant should be mixed with plain water (preferably demineralized water) before filling.  
Capacity: 6.5 liters (6.9 U.S. qts, 5.7 Imp. qts)

**30. Reconnect Negative Terminal of Battery.**

Replacement  
Procedure  
(Continued)

### 31. Inspect Cooling System for Leaks.

**CAUTION:**

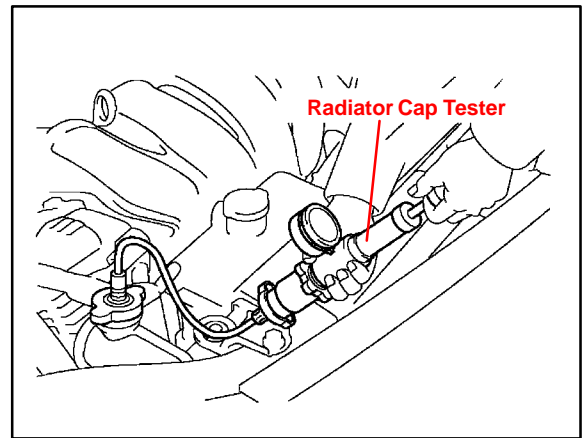
To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot, as fluid and steam can be blown out under pressure.

- A. Fill the radiator with coolant and attach a radiator cap tester.
- B. Warm up the engine.
- C. Pump it to the following specification and check that the pressure does not drop.

Pressure: 118 kPa (1.2 kgf/cm<sup>2</sup>, 17.1 psi)

**NOTE:**

If the pressure drops, check the hoses, radiator, or water pump for leaks. If no external leaks are found, check the heater core, cylinder block, and head.



### 32. Check Engine Coolant Level at Reservoir.

The engine coolant level should be between the “LOW” and “FULL” line.

**HINT:**

If low, check for leaks and add “Toyota Long Life Coolant” (or equivalent) up to the “FULL” line.

### 33. Charge Refrigerant HFC–134a (R–134a).

Supply refrigerant, HFC–134a (R134a).

- Equipment: Robinair R–134a Refrigerant Recovery/Recycling Machine (Robinair P/N: 342000)

Standard: 490 +/- 30 g (17.28 +/- 1.06 oz.)

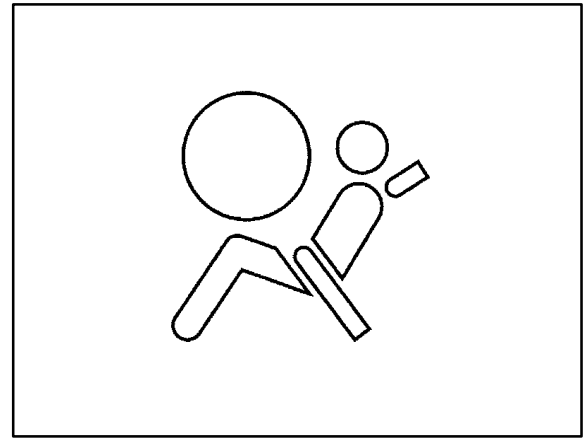
### 34. Check for Refrigerant Leakage and Verify A/C Performance.

**Replacement  
Procedure**  
(Continued)**35. Check SRS Warning Light.**

- A. Turn the ignition switch to the ON position and check that the SRS warning light lights up.
- B. Check that the SRS warning light goes out after approximately 6 seconds.

**HINT:**

- When the ignition switch is at ON and the SRS warning light remains on or flashes, the airbag sensor assembly has detected a malfunction code.
- If, after approximately 6 seconds have elapsed, the SRS warning light sometimes lights up or the SRS warning light lights up even when the ignition switch is OFF, a short in the SRS warning light circuit can be considered likely.

**36. Check DTCs.**

- A. Hook up the Diagnostic Tester to DLC3.
- B. Read the DTCs by following the prompts on the tester screen.

**HINT:**

Please refer to the Diagnostic Tester operator's manual for further details.