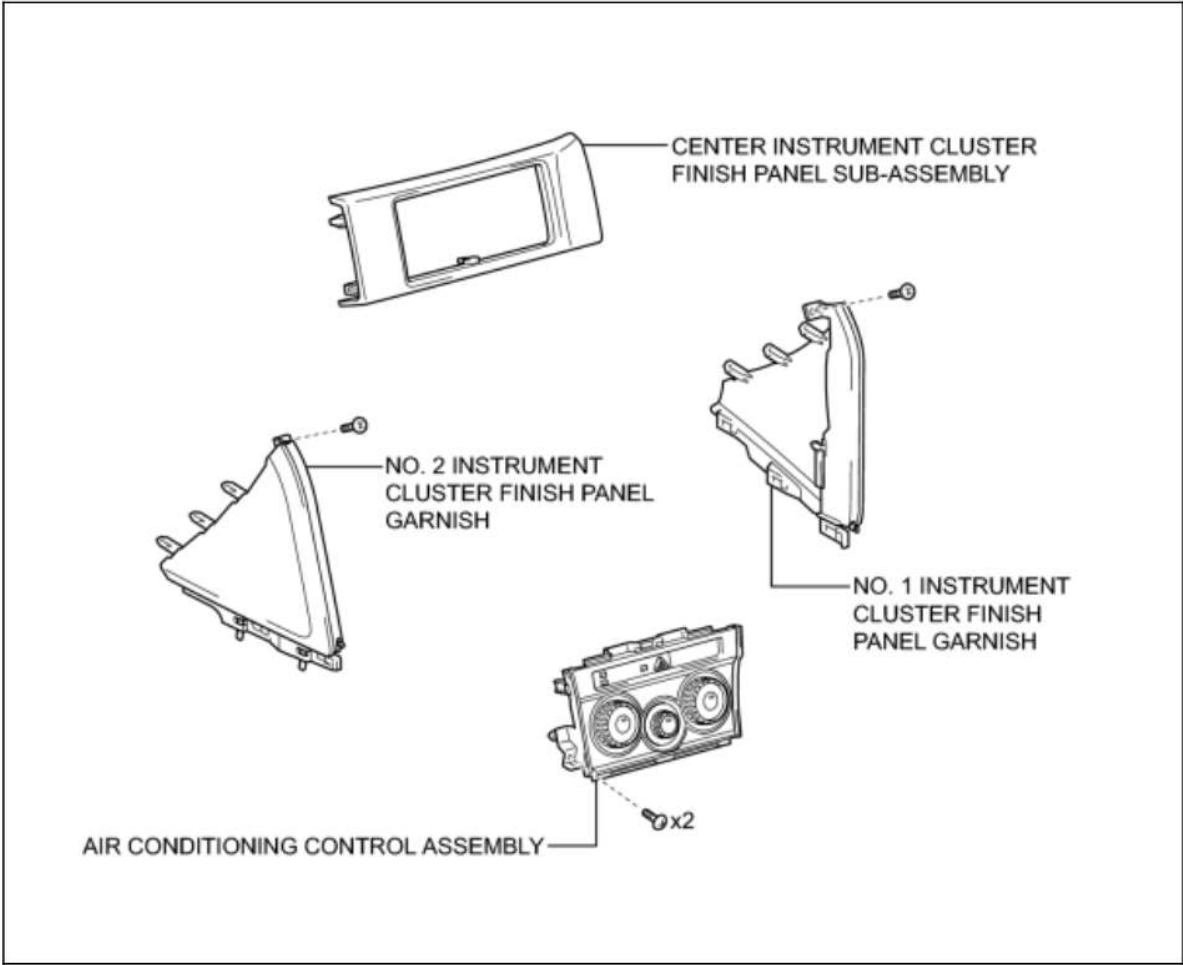


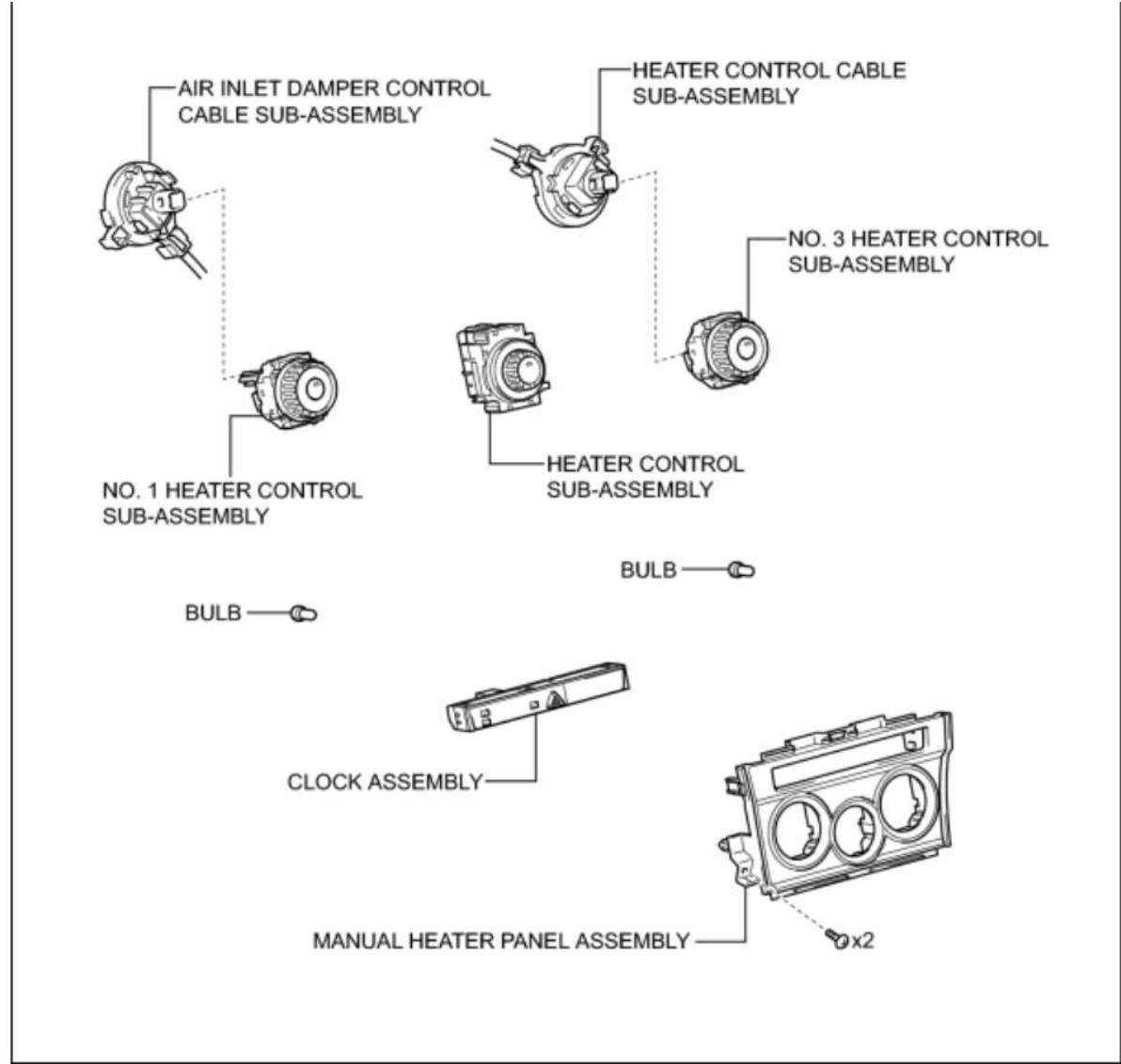
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XM100UX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



ILLUSTRATION

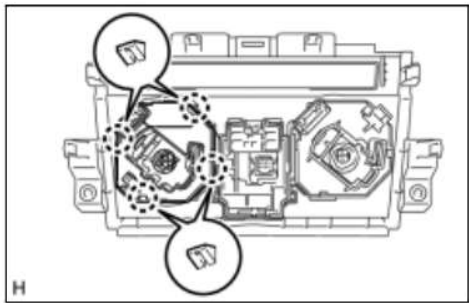


Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XM300UX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: DISASSEMBLY (2013 FR-S)		

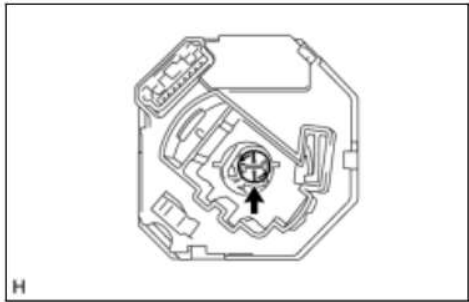
DISASSEMBLY

1. REMOVE CLOCK ASSEMBLY INFO

2. REMOVE NO. 3 HEATER CONTROL SUB-ASSEMBLY

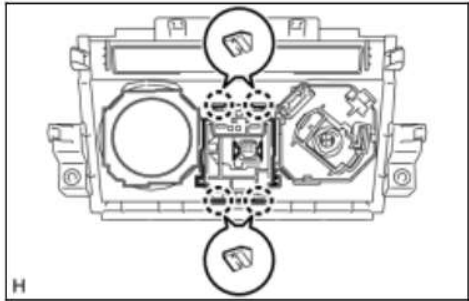


(a) Disengage the 4 claws and remove the No. 3 heater control sub-assembly.



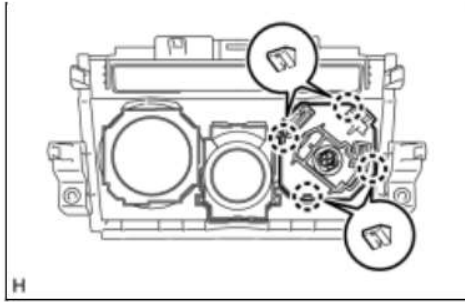
(b) Remove the bulb.

3. REMOVE HEATER CONTROL SUB-ASSEMBLY

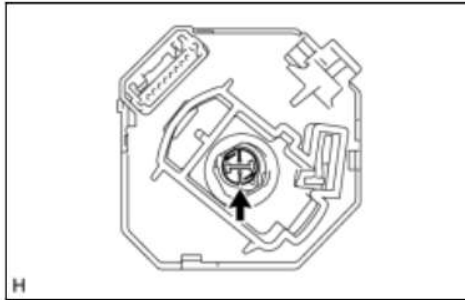


(a) Disengage the 4 claws and remove the heater control sub-assembly.

4. REMOVE NO. 1 HEATER CONTROL SUB-ASSEMBLY



(a) Disengage the 4 claws and remove the No. 1 heater control sub-assembly.



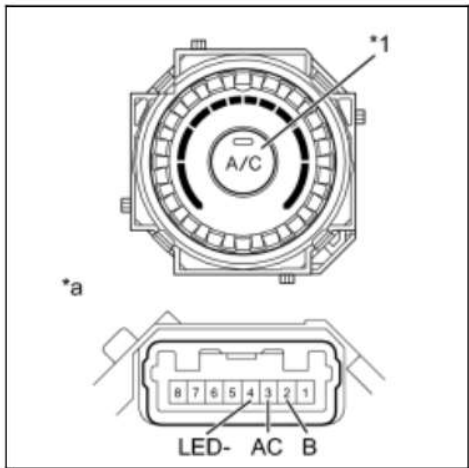
(b) Remove the bulb.



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000314R02FX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT NO. 3 HEATER CONTROL SUB-ASSEMBLY



(a) Check the heater control assembly resistance.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
2(B) - 3(A/C)	A/C switch OFF	10 kΩ or higher
2(B) - 4(LED-)	A/C switch OFF	10 kΩ or higher
3(A/C) - 4(LED-)	Always	Below 1 Ω
2(B) - 3(A/C)	A/C switch ON	Below 1 Ω
2(B) - 4(LED-)	A/C switch ON	Below 1 Ω
5 - 6	Always	Below 1 Ω

Text in Illustration

*1	A/C Switch
*a	Component without harness connected (No. 3 heater control sub-assembly)

(c) Check that the A/C Switch illumination.

OK:

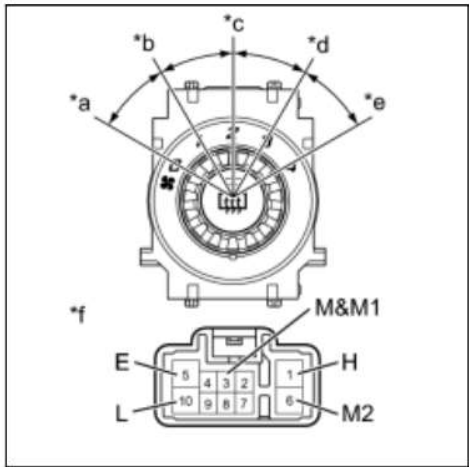
MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → 5	

Battery negative (-) → 6	illuminates
--------------------------	-------------

- (d) Check that the indicator light.
- Standard:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
Battery positive (+) → 2 Battery negative (-) → 4	A/C switch OFF	go out
Battery positive (+) → 2 Battery negative (-) → 4	A/C switch ON	come on

2. INSPECT HEATER CONTROL SUB-ASSEMBLY



- (a) Check the heater control assembly resistance.

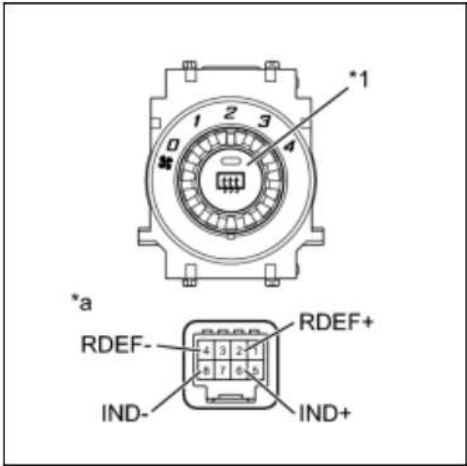
- (b) Measure the resistance according to the value(s) in the table below.
- Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
each terminal - 5(E)	A/C switch OFF	10 kΩ or higher
10(L) - 5(E)	A/C switch LO	Below 1 Ω
10(L) - 5(E) - 3(M&M1)	A/C switch LO - M1	Below 1 Ω
10(L) - 5(E) - 3(M&M1)	A/C switch M1	Below 1 Ω
10(L) - 5(E) - 3(M&M1) - 6(M2)	A/C switch M1 - M2	Below 1 Ω
10(L) - 5(E) - 6(M2)	A/C switch M2	Below 1 Ω
10(L) - 5(E) - 6(M2) - 1(H)	A/C switch M2 - HI	Below 1 Ω
10(L) - 5(E) - 1(H)	A/C switch HI	Below 1 Ω

Text in Illustration

*a	OFF
*b	LO

*c	M1
*d	M2
*e	HI
*f	Component without harness connected (heater control sub-assembly)



(d) Check the heater control assembly resistance.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
2(RDEF+) - 4(RDEF-)	Rr DEF switch OFF	10 kΩ or higher
2(RDEF+) - 4(RDEF-)	Rr DEF switch ON	Below 1 Ω

Text in Illustration

*1	Rr DEF switch
*a	Component without harness connected (heater control sub-assembly)

(f) Check that the Rr DEF switch illumination.

OK:

MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → 7 Battery negative (-) → 5	illuminates

(g) Check that the indicator light.

Standard:

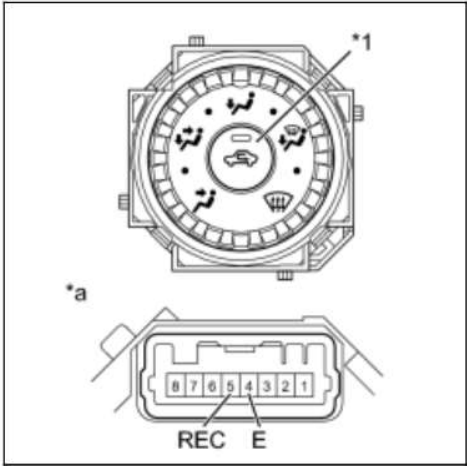
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
Battery positive (+) → 6(IND+) Battery negative (-) → 8(IND-)	Rr DEF switch OFF	go out

Battery positive (+) → 6(IND+)	Rr DEF switch ON	come on
Battery negative (-) → 8(IND-)		

3. INSPECT NO. 1 HEATER CONTROL SUB-ASSEMBLY

(a) Check that the FRS switch illumination.

OK:



MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → 7	illuminates
Battery negative (-) → 6	

Text in Illustration

*1	FRS switch
*a	Component without harness connected (No. 1 heater control sub-assembly)

(b) Check that the indicator light.

Standard:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
Battery positive (+) → 5(REC) Battery negative (-) → 4(E)	FRS switch OFF	go out
Battery positive (+) → 5(REC) Battery negative (-) → 4(E)	FRS switch ON	come on



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XM002AX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL AIR CONDITIONING CONTROL ASSEMBLY

- (a) After aligning with the cables, engage the 2 claws and connect the heater control cable sub-assembly. (for RH side).
- (b) After aligning with the cables, engage the 2 claws and connect the heater control cable sub-assembly. (for LH side).
- (c) Connect each connector.
- (d) Engage the 6 claws.
- (e) Install the air conditioning control assembly with the 2 screws.

2. INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH

INFO

3. INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH

INFO

4. INSTALL CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY

INFO

5. INSTALL CONSOLE BOX ASSEMBLY

INFO

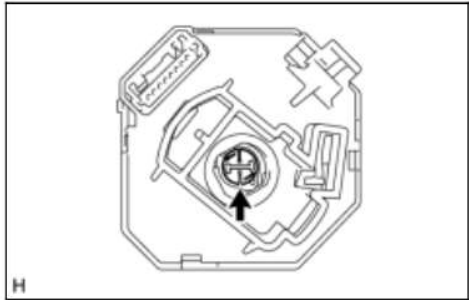


cardiagn.com

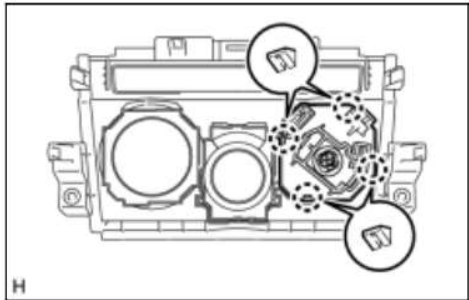
Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XM400UX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: REASSEMBLY (2013 FR-S)		

REASSEMBLY

1. INSTALL NO. 1 HEATER CONTROL SUB-ASSEMBLY

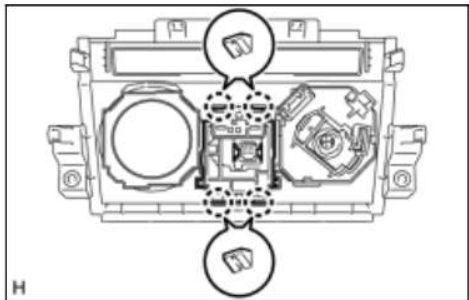


(a) Install the bulb.



(b) Engage the 4 claws and install the No. 1 heater control sub-assembly.

2. INSTALL HEATER CONTROL SUB-ASSEMBLY

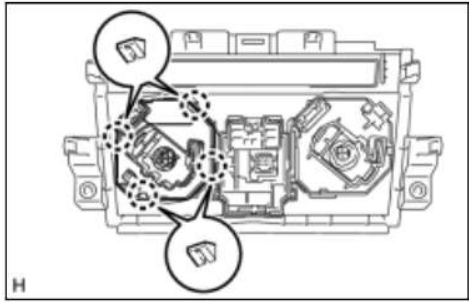


(a) Engage the 4 claws and install the heater control sub-assembly.

3. INSTALL NO. 3 HEATER CONTROL SUB-ASSEMBLY



(a) Install the bulb.



(b) Engage the 4 claws and install the No. 3 heater control sub-assembly.

4. INSTALL CLOCK ASSEMBLY INFO



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XM202AX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PANEL: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE CONSOLE BOX ASSEMBLY

INFO

2. REMOVE CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY

INFO

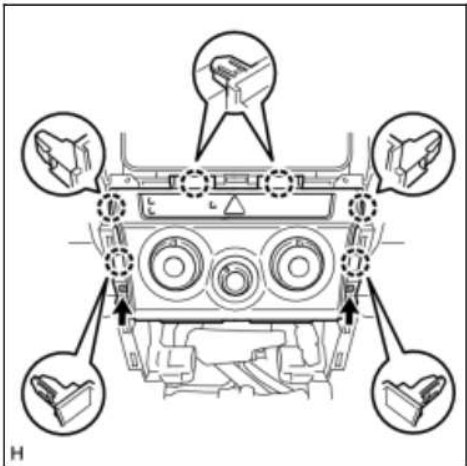
3. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH

INFO

4. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH

INFO

5. REMOVE AIR CONDITIONING CONTROL ASSEMBLY

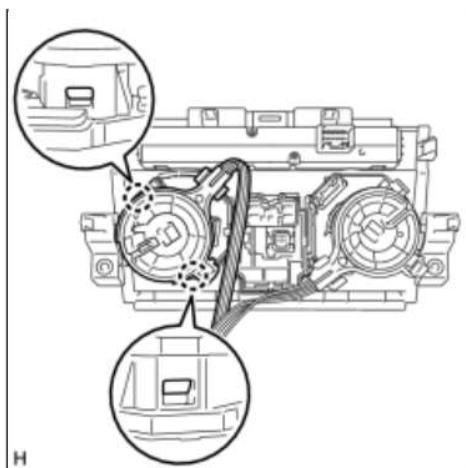


(a) Remove the 2 screws and disengage the 6 claws.



(b) Disconnect each connector and air conditioning control assembly.

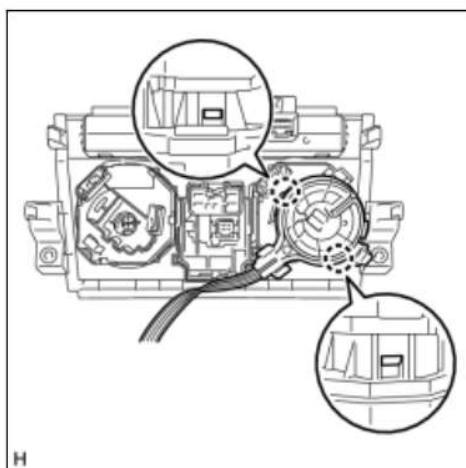
(c) Disengage the 2 claws and the cable assembly (for RH



side).

HINT:

Setting the temperature adjustment dial to **MAX HOT** is useful when replacing the air conditioner unit assembly, and makes positioning easier when attaching cables.



(d) Disengage the 2 claws and the cable assembly (for LH side) and remove the air conditioning control assembly.

HINT:

Setting the blower dial to **FACE** is useful when replacing the air conditioner unit assembly, and makes positioning easier when attaching cables.



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000202W04YX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING PRESSURE SENSOR: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

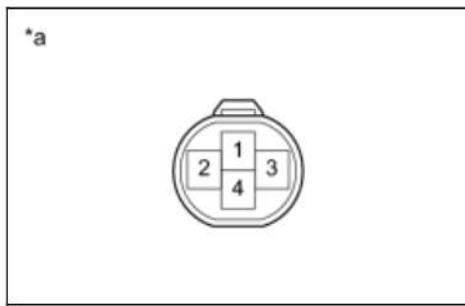
1. INSPECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

(a) Check the wire harness.

(1) Disconnect the air air conditioner tube and accessory assembly connector.

(2) Using an ohmmeter, measure the resistance of the wire harness side connector.

Standard Voltage:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2(E) - Body ground	Always	Below 1 Ω
2(E) - 4(B)	Ignition switch ON	Below 1 Ω

Text in Illustration

*a	Component without harness connected (air conditioner tube and accessory assembly)
----	--

(b) Check the air conditioning pressure sensor.

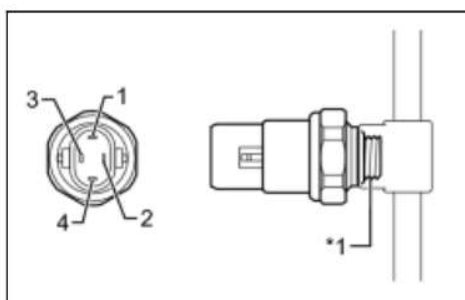
(1) Install a manifold gauge set.

(2) Apply pressure on the sensor as indicated in the table below, and check the resistance between the terminals.

Text in Illustration

*1	Sensor Part
----	-------------

Standard Voltage:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1(AC) - 4(B)	0 kPa (No Pressure applied)	10 k Ω or higher
1(AC) - 4(B)	1520 kPa (15.5 kgf/cm ² , 221 psi)	Below 1 Ω

2(E) - 3(ACP)	0 kPa (No Pressure applied)	10 kΩ or higher
2(E) - 3(ACP)	22.5 kPa (0.23 kgf/cm2, 33.0 psi) or more and below 3140 kPa (32 kgf/cm2, 455 psi)	Below 1 Ω
2(E) - 3(ACP)	3140 kPa (32 kgf/cm2, 455 psi) or more	10 kΩ or higher



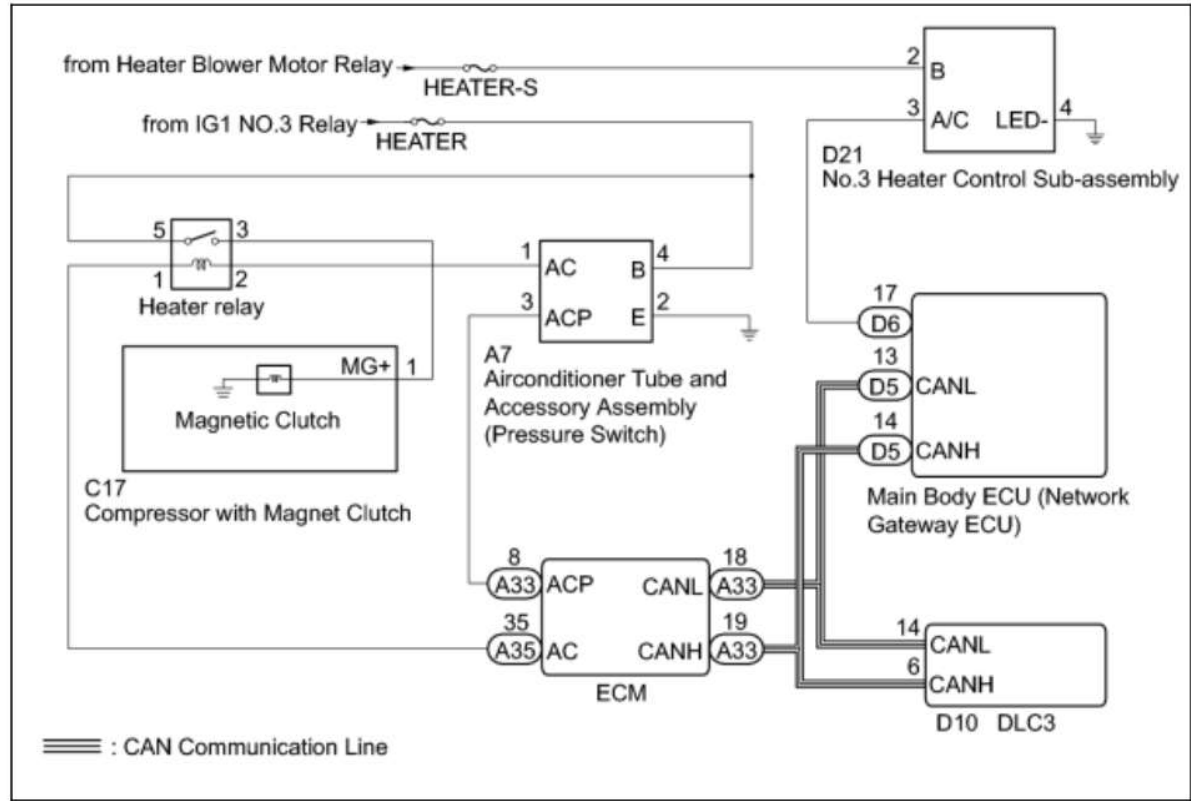
Last Modified: 3-27-2012	6.4 J	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000XCQ06ZX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: Air Conditioning Compressor Magnetic Clutch Circuit (2013 FR-S)		

Air Conditioning Compressor Magnetic Clutch Circuit

DESCRIPTION

When the No. 3 heater control sub-assembly is turned on, a magnetic clutch on signal is sent from the AC terminal of the ECM. Then, the engine room junction block assembly turns on to operate the magnetic clutch assembly.

WIRING DIAGRAM



INSPECTION PROCEDURE

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

PROCEDURE

1.	READ VALUE USING TECHSTREAM
----	-----------------------------

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ETC / Data List.
- (e) Check the value(s) by referring to the table below.

Engine

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
A/C Signal	A/C switch status / ON or OFF	ON: A/C switch on OFF: A/C switch off	The air conditioning control assembly sends the A/C switch signal to the ECM via CAN communication.

OK:

The display is as specified in the normal condition column.

NG**▶ INSPECT NO. 3 HEATER CONTROL SUB-ASSEMBLY****OK**

2.	READ VALUE USING TECHSTREAM
-----------	------------------------------------

- (a) Enter the following menus: Body Electrical/ Air Conditioner/ Data List.
- (b) Check the value(s) by referring to the table below.

Air Conditioner

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Pressure Switch Operation	Pressure Switch status / Normal or Abnormal	Normal	-

OK:

The display is as specified in the normal condition column.

NG**▶ CHECK REFRIGERANT VOLUME****OK**

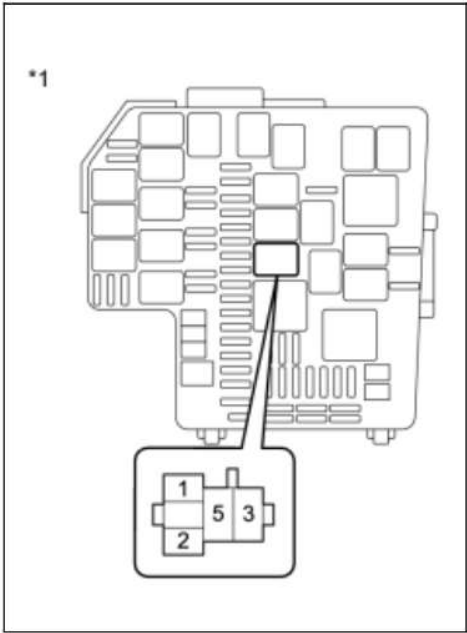
3. INSPECT HEATER RELAY

- (a) Remove the heater relay from the engine room relay block and junction block.
- (b) Inspect the heater relay INFO .

NG ▶ REPLACE HEATER RELAY

OK
▼

4. CHECK HARNESS AND CONNECTOR (HEATER RELAY - POWER SOURCE)



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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
5 - Body ground	Ignition switch off	Below 1 V
	Ignition switch on	11 to 14V

Text in Illustration

*1	Component without relay installed (Engine Room Relay Block)
----	--

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK
▼

5. CHECK HARNESS AND CONNECTOR (HEATER RELAY - COMPRESSOR WITH

MAGNET CLUTCH)

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
C17-1(MG+) - 3	Always	Below 1 Ω
C17-1(MG+) - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

**6. INSPECT COMPRESSOR WITH MAGNET CLUTCH**

(a) Inspect the compressor with magnet clutch  .

NG  **REPLACE COMPRESSOR WITH MAGNET CLUTCH**

OK

**7. CHECK HARNESS AND CONNECTOR (HEATER RELAY - AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY)**

(a) Disconnect the A7 air conditioning tube and accessory assembly connector.

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

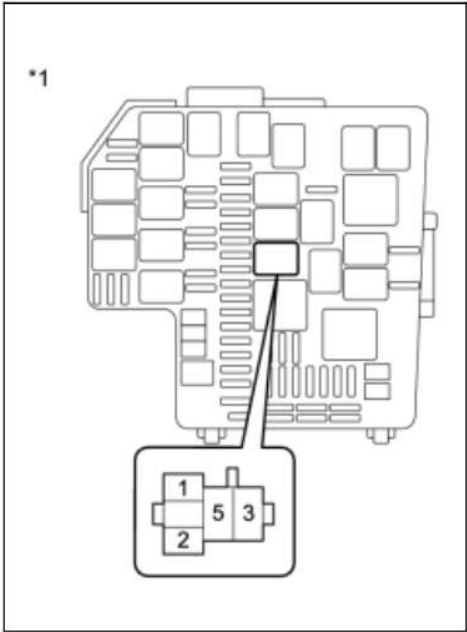
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 - A7-1(AC)	Always	Below 1 Ω
2 - Body ground	Always	10k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK
▼

8. CHECK HARNESS AND CONNECTOR (HEATER RELAY - ECM)



(a) Disconnect the A33 ECM connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - A35-35(AC)	Always	Below 1 Ω
1 - Body ground	Always	10kΩ or higher

Text in Illustration

*1	Component without relay installed (Engine Room Relay Block)
----	--

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► REPLACE ECM

9. INSPECT NO. 3 HEATER CONTROL SUB-ASSEMBLY

(a) Remove the No. 3 heater control sub-assembly .

(b) Inspect the No. 3 heater control sub-assembly .

NG  **REPLACE NO. 3 HEATER CONTROL SUB-ASSEMBLY**

OK


10. CHECK HARNESS AND CONNECTOR (NO. 3 HEATER CONTROL SUB-ASSEMBLY - POWER SOURCE)

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D21-2(B) - Body ground	- Ignition switch on - Blower switch: on	11 to 14 V

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


11. CHECK HARNESS AND CONNECTOR (NO. 3 HEATER CONTROL SUB-ASSEMBLY - MAIN BODY ECU (NETWORK GATEWAY ECU))

(a) Disconnect the D6 main body ECU (network gateway ECU) connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D6-17 - D21-3(A/C)	Always	Below 1 Ω
D6-17 - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK  **REPLACE ECM**

12.

CHECK REFRIGERANT VOLUME

(a) Check the refrigerant volume 

NG  **CHARGE REFRIGERANT**

OK


13.

CHECK HARNESS AND CONNECTOR (AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY - POWER SOURCE)

- (a) Disconnect the A7 air conditioning tube and accessory assembly connector.
- (b) Measure the voltage according to the value(s) in the table below.
- Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A7-4(B) - Body ground	Ignition switch on	11 to 14 V

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


14.

CHECK HARNESS AND CONNECTOR (AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY - BODY GROUND)

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A7-2(E) - Body ground	Always	Below 1 Ω

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



15.	CHECK HARNESS AND CONNECTOR (AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY - ECM)
------------	--

- (a) Disconnect the A33 ECM connector.
 (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A7-3(ACP) - A33-8(ACP)	Always	Below 1 Ω
A7-3(ACP) - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



16.	CHECK HARNESS AND CONNECTOR (AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY - HEATER RELAY)
------------	---

- (a) Remove the heater relay from the engine room relay block and junction block.
 (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A7-1(AC) - 2	Always	Below 1 Ω

A7-1(AC) - Body ground	Always	10 kΩ or higher
------------------------	--------	-----------------

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


17.

INSPECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

(a) Inspect the air conditioning tube and accessory assembly 

NG  **REPLACE AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY**

OK  **REPLACE ECM**



cardiagn.com

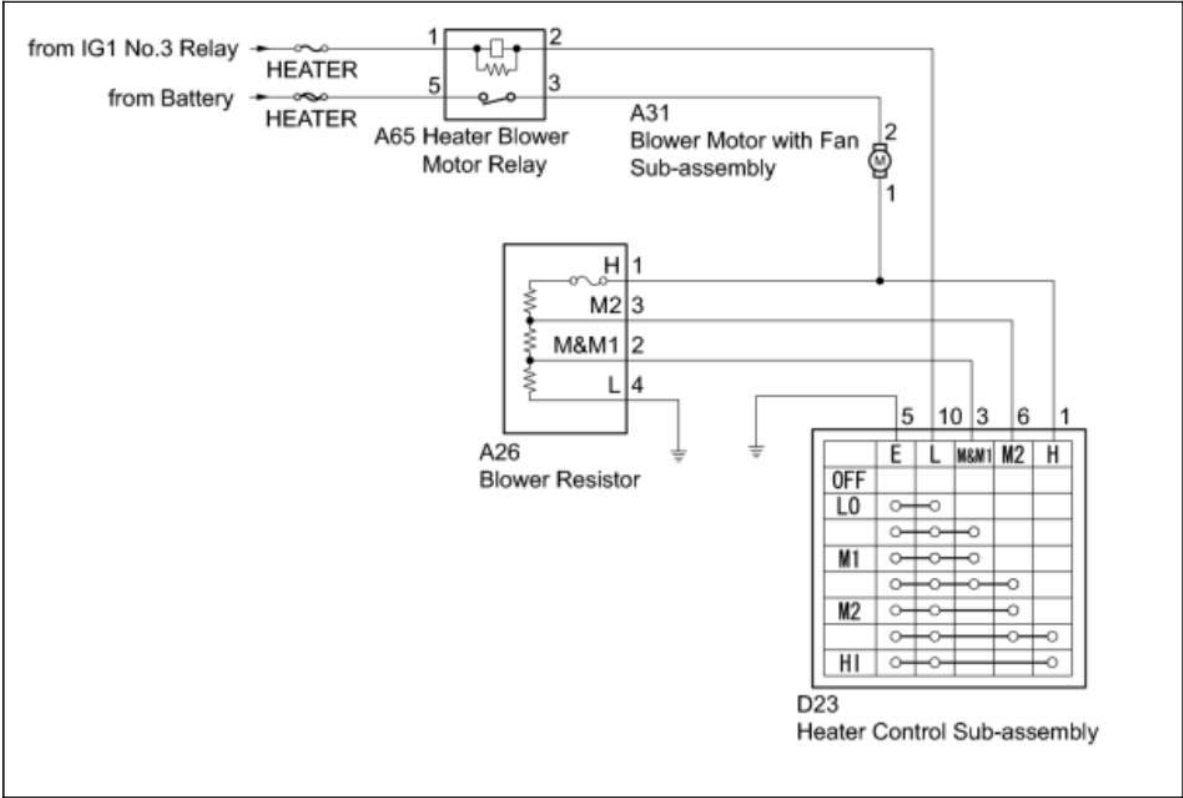
Last Modified: 3-27-2012	6.4 J	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000TS806CX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: Blower Motor Circuit (2013 FR-S)		

Blower Motor Circuit

DESCRIPTION

When the heater control Sub-assembly is operated, the Heater relay will turn on to allow current to flow to the blower motor and then the motor will start rotating. Operating the heater control Sub-assembly switches the current flow between the blower resistor and body ground, thus, shifting the operating speed of the blower motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

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

PROCEDURE

1.	INSPECT HEATER BLOWER MOTOR RELAY
----	-----------------------------------

- (a) Remove the heater blower motor relay.
- (b) Inspect the heater blower motor relay INFO.

NG  **REPLACE HEATER BLOWER MOTOR RELAY**

OK


2.

INSPECT BLOWER MOTOR WITH FAN SUB-ASSEMBLY

- (a) Disconnect the A31 blower motor with fan sub-assembly connector.
- (b) Inspect the blower motor with fan sub-assembly INFO.

NG  **REPLACE BLOWER MOTOR WITH FAN SUB-ASSEMBLY**

OK


3.

CHECK HARNESS AND CONNECTOR (HEATER BLOWER MOTOR RELAY - BLOWER MOTOR WITH FAN SUB-ASSEMBLY)

- (a) Measure the resistance according to the value(s) in the table below.
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A65-3 - A31-2	Always	Below 1 Ω
A65-3 - Body ground	Always	10 kΩ or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


4. INSPECT HEATER CONTROL SUB-ASSEMBLY

- (a) Remove the heater control sub-assembly  .
- (b) Inspect the heater control sub-assembly  .

NG  **REPLACE HEATER CONTROL SUB-ASSEMBLY**

OK



5. CHECK HARNESS AND CONNECTOR (HEATER BLOWER MOTOR RELAY - HEATER CONTROL SUB-ASSEMBLY)

- (a) Disconnect the D23 heater control sub-assembly connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A65-2 - D23-10	Always	Below 1 Ω
A65-2 - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



6. CHECK HARNESS AND CONNECTOR (BLOWER MOTOR WITH FAN SUB-ASSEMBLY - HEATER CONTROL SUB-ASSEMBLY)

- (a) Measure the resistance according to the value(s) in the table below.
- Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A31-1 - D23-1	Always	Below 1 Ω
A31-1 - Body ground	Always	10 k Ω or higher

NG▶REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

7. CHECK HARNESS AND CONNECTOR (HEATER CONTROL SUB-ASSEMBLY - BODY GROUND)

(a) Measure the resistance according to the value(s) in the table below.
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D23-5(E) - Body ground	Always	Below 1 Ω

NG▶REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

8. INSPECT BLOWER RESISTOR

- (a) Remove the blower resistor INFO .
(b) Inspect the blower resistor INFO .

NG▶REPLACE BLOWER RESISTOR

OK

▼

9. CHECK HARNESS OR CONNECTOR (HEATER CONTROL SUB-ASSEMBLY - BLOWER RESISTOR)

- (a) Disconnect the A26 blower resistor connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D23-3(M&M1) - A26-2(M&M1)	Always	Below 1 Ω
D23-6(M2) - A26-3(M2)	Always	Below 1 Ω
D23-3(M&M1) - Body ground	Always	10 k Ω or higher
D23-6(M2) - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



10.	CHECK HARNESS OR CONNECTOR (BLOWER MOTOR WITH FAN SUB-ASSEMBLY - BLOWER RESISTOR)
------------	--

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A31-1 - A26-1(H)	Always	Below 1 Ω
A31-1 - Body ground	Always	10 k Ω or higher

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



11.	CHECK HARNESS AND CONNECTOR (BLOWER RESISTOR - BODY GROUND)
------------	--

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
-------------------	-----------	---------------------

A26-4(L) - Body ground	Always	Below 1 Ω
------------------------	--------	------------------

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE



 TOYOTA

cardiagn.com

Last Modified: 3-27-2012	6.4 U	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001GFL04DX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: DATA LIST / ACTIVE TEST (2013 FR-S)		

DATA LIST / ACTIVE TEST

1. DATA LIST

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

NOTICE:

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

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body ECU / Data List.
- Check the value(s) by referring to the table below.

Main Body ECU

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Evaporator Fin Sensor Voltage	Evaporator temperature sensor / Min.: 0V Max.: 21.4V	Actual evaporator temperature displayed Sensor Voltage	-
A/C SW Input	A/C Switch Input OFF or ON	-	-
A/C SW Output	A/C Switch Output OFF or ON	-	-

Engine

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
A/C Pressure Normal SW	A/C Pressure Normal Switch OFF or ON	-	-
A/C Signal	A/C Signal / OFF or ON	A/C switch operated: ON (when switch is pressed)	-
		A/C switch not operated: OFF (when switch is not pressed)	-
A/C			

Magnetic Clutch Relay	A/C Magnetic Clutch Relay / OFF or ON	-	-
Air Conditioner FB Val	Compensation flow rate according to air conditioner load / Min.: -150 Max.: 149.99	-	For use when engine stall, starting problems or rough idle is present.

2. ACTIVE TEST

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

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Powertrain / Engine / Active Test.
- Check the operation by referring to the table below.

Engine

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
A/C Magnetic Clutch Relay	A/C system operation	OFF, ON	-



Last Modified: 3-27-2012	6.4 D	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000PM609FX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2013 FR-S)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedure to troubleshoot the air conditioning system.
- *: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP
-----------	------------------------------------

NEXT



2.	INSPECT BATTERY VOLTAGE
-----------	--------------------------------

(a) Inspect the battery voltage.

Standard Voltage:

11 to 14 V

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

NEXT



3.	CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*
-----------	--

(a) Use the Techstream to check if the CAN communication system is functioning normally.

Result:

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

B **GO TO CAN COMMUNICATION SYSTEM**

A



4.

PROBLEM SYMPTOMS TABLE

(a) Refer to Problem Symptoms Table [INFO](#) .

Result:

RESULT	PROCEED TO
Fault is not listed in Problem Symptoms Table	A
Fault is listed in Problem Symptoms Table	B

B Go to step 6

A

5.

OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) Data List / Active Test [INFO](#) .

(b) Terminals of ECU [INFO](#) .

(c) On-vehicle Inspection.

(d) Inspection.

NEXT

6.

ADJUST, REPAIR OR REPLACE

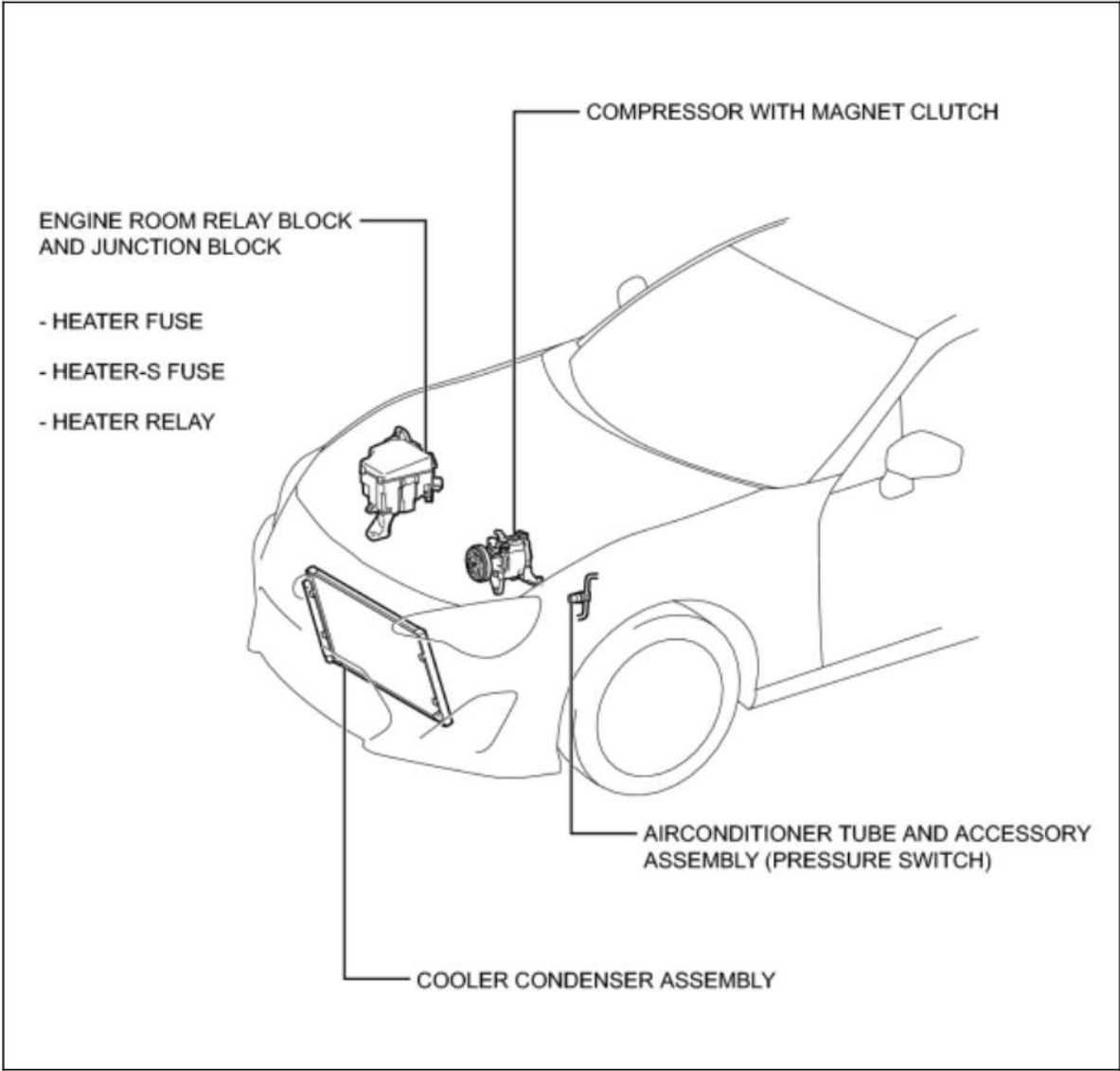
NEXT **END**



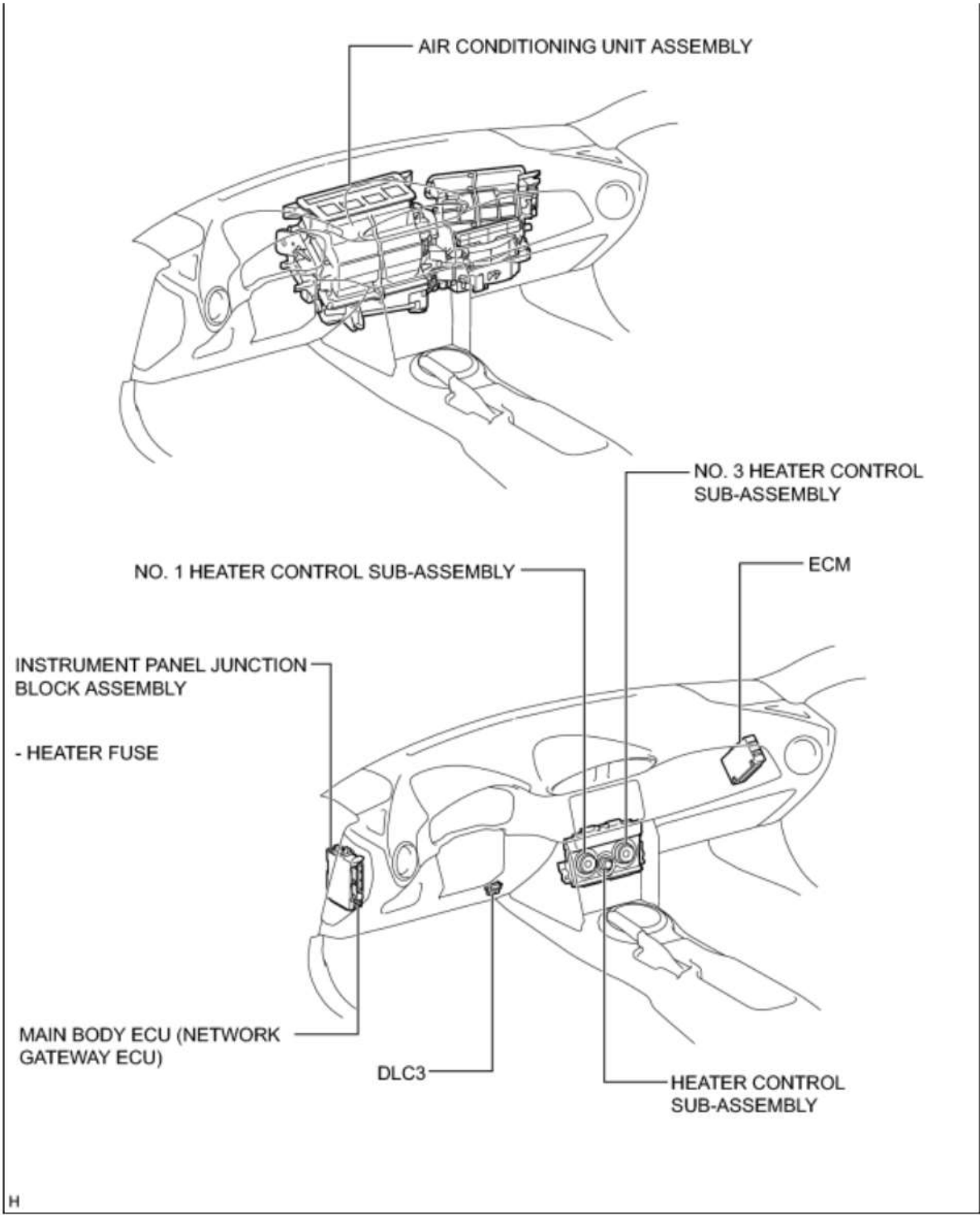
Last Modified: 3-27-2012	6.4 R	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000031BK02JX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: PARTS LOCATION (2013 FR-S)		

PARTS LOCATION

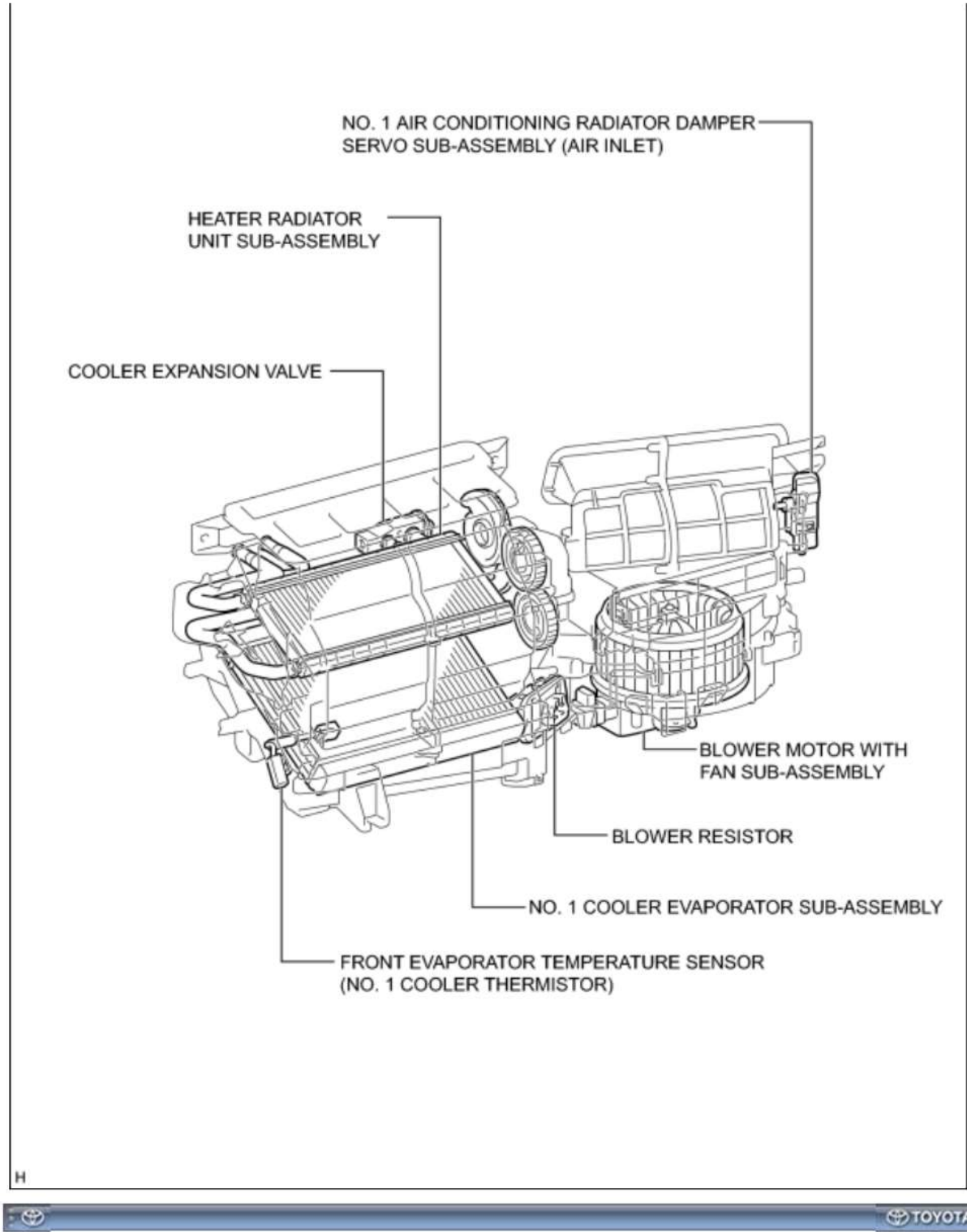
ILLUSTRATION



ILLUSTRATION

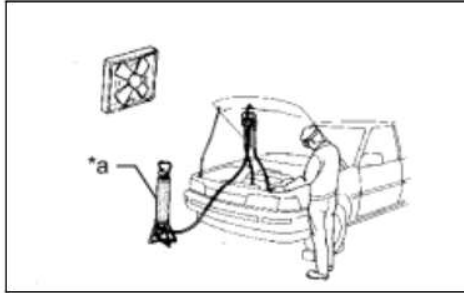


ILLUSTRATION



Last Modified: 3-27-2012	6.4 L	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000Y5Q09MX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: PRECAUTION (2013 FR-S)		

PRECAUTION

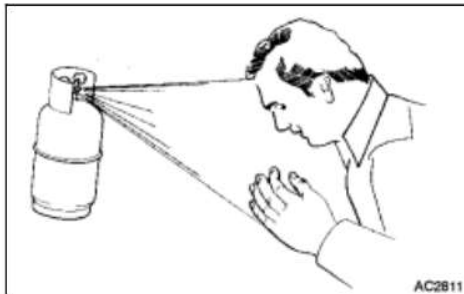


1. DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA OR NEAR AN OPEN FLAME

Text in Illustration

*a	Charging Cylinder
----	-------------------

2. ALWAYS WEAR EYE PROTECTION



3. BE CAREFUL NOT TO GET LIQUID REFRIGERANT IN YOUR EYES OR ON YOUR SKIN

If liquid refrigerant gets in your eyes or on your skin:

- (a) Wash the area with lots of cold water.

CAUTION:

Do not rub your eyes or skin.

- (b) Apply clean petroleum jelly to the skin.
- (c) Go immediately to a hospital or see a physician for professional treatment.

4. NEVER HEAT CONTAINER OR EXPOSE THE CONTAINER TO AN OPEN FLAME

5. BE CAREFUL NOT TO DROP CONTAINER OR APPLY PHYSICAL SHOCKS TO IT

6. DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT SYSTEM

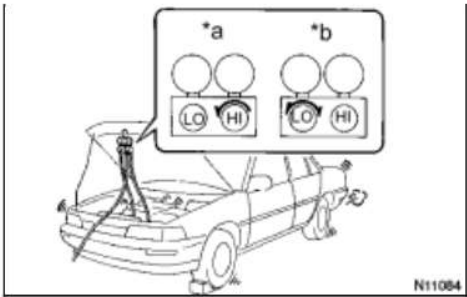
If there is not enough refrigerant in the A/C system, oil lubrication will be insufficient and the compressor may be damaged.

Necessary care should be taken to avoid this.

7. DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATING

- (a) Open and close only the low pressure valve.

If the high pressure valve is opened, refrigerant flows in the reverse direction causing the charging cylinder to rupture.



Text in Illustration

*a	Wrong
*b	Okay

8. BE CAREFUL NOT TO OVERCHARGE SYSTEM WITH REFRIGERANT

If the system is overcharged with refrigerant, it causes problems such as insufficient cooling, poor fuel economy, engine overheating, etc.

9. DO NOT OPERATE ENGINE AND COMPRESSOR WITH NO REFRIGERANT

CAUTION:

Doing so may damage inside the compressor because the compressor parts always move regardless of whether the A/C system is turned on or off.

10. SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

- (a) This vehicle is equipped with a Supplemental Restraint System (SRS) such as the driver, front passenger, side, and curtain shield airbags. Failure to carry out service operations 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 notices [INFO](#) .

11. GENERAL PRECAUTION

- (a) While using the battery during inspection, do not bring the positive (+) and negative (-) tester probes too close to each other as a short circuit may occur.



Last Modified: 3-27-2012	6.4 T	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000107X03IX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: PROBLEM SYMPTOMS TABLE (2013 FR-S)		

PROBLEM SYMPTOMS TABLE

HINT:

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

Air Conditioning System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Air flow control: No blower operation	Blower motor circuit	INFO
	Heater control sub-assembly	INFO
	No. 1 heater control sub-assembly	INFO
	No. 3 heater control sub-assembly	INFO
	Main body ECU (Network gateway ECU)	INFO
Switch operation not possible	Heater control sub-assembly	INFO
	No. 1 heater control sub-assembly	INFO
	No. 3 heater control sub-assembly	INFO
Air flow control: No blower operation	Blower motor with fan sub-assembly	INFO
	Heater control sub-assembly	INFO
	Blower motor circuit	INFO
	Blower Resistor	INFO
Air flow control: No blower control	Heater control sub-assembly	INFO
	Blower motor circuit	INFO
	Blower Resistor	INFO
Air flow control: Insufficient air flow	Blower motor circuit	INFO
Temperature control: Cooling effectiveness is poor	Refrigerant volume	INFO
	Refrigerant pressure	INFO
	Cooler expansion valve	INFO
	Compressor with magnet clutch	INFO
	Main body ECU (Network gateway ECU)	INFO
Temperature control: No cool air comes out	Refrigerant volume	INFO

	Refrigerant pressure	INFO
	Heater control sub-assembly	INFO
	Air Conditioner tube and accessory assembly	INFO
	Air conditioning compressor magnetic clutch circuit	INFO
	Compressor with magnet clutch	INFO
	Cooler expansion valve	INFO
	Main body ECU (Network gateway ECU)	INFO
No air inlet control	Heater control sub-assembly	INFO
	No. 1 air conditioning radiator damper servo sub-assembly	INFO
Temperature adjustment not possible (temperature cannot be changed)	Heater control sub-assembly	INFO
	No. 1 heater control sub-assembly	INFO
	No. 3 heater control sub-assembly	INFO
Indicator does not come on	Heater control sub-assembly	INFO
	No. 1 heater control sub-assembly	INFO
	No. 3 heater control sub-assembly	INFO



Last Modified: 3-27-2012	6.4 D	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001O7U06TX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: SYSTEM DESCRIPTION (2013 FR-S)		

SYSTEM DESCRIPTION

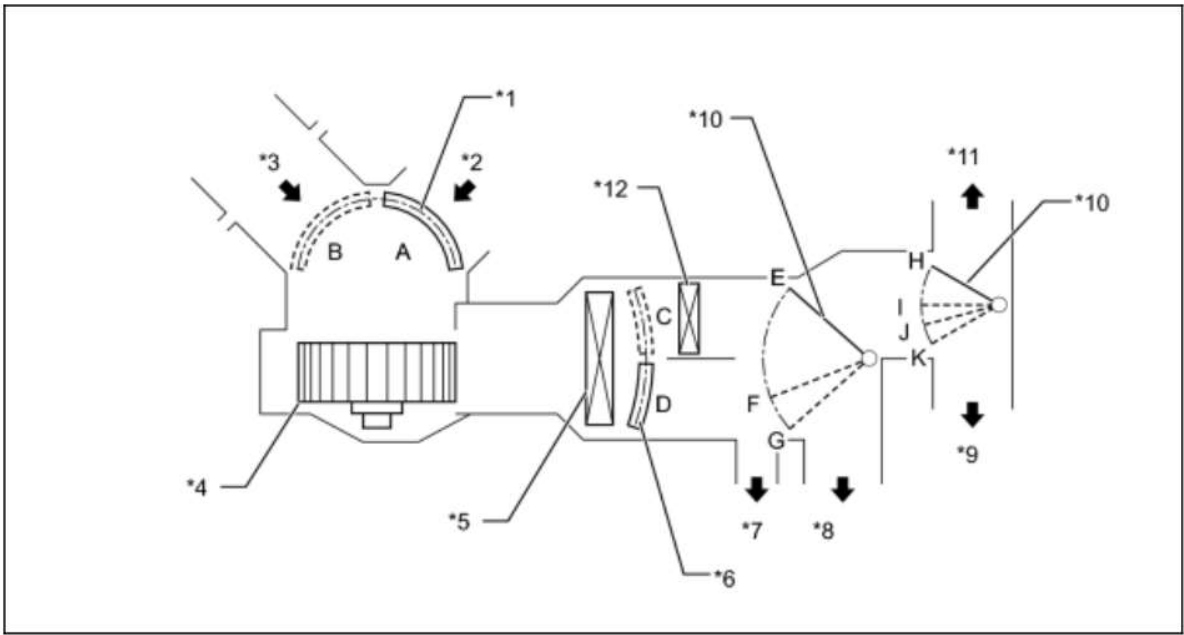
1. GENERAL

(a) The air conditioning system has the following controls.

CONTROL	OUTLINE
Manual Control	The air conditioning control assembly controls the damper positions and blower speed in accordance with the positions of the switches and dials (temperature control dial, blower switch, mode control dial and inlet control switch).
Defroster Control	Defroster control logic is used to improve defroster performance.
Diagnosis	A Diagnostic Trouble Code (DTC) is stored in memory when the air conditioning amplifier detects a problem with the air conditioning system.

2. MODE POSITION AND DAMPER OPERATION

(a) Mode Position and Damper Operation



Text in Illustration

*1	Air Inlet Control Door	*2	Recirculated Air
*3	Fresh Air	*4	Blower Motor with Fan Sub-assembly
*5	No. 1 Cooler Evaporator Sub-assembly	*6	Air Mix Control Door
*7	Side Register	*8	Center Register
*9	Footwell Register Duct	*10	Mode Control Door

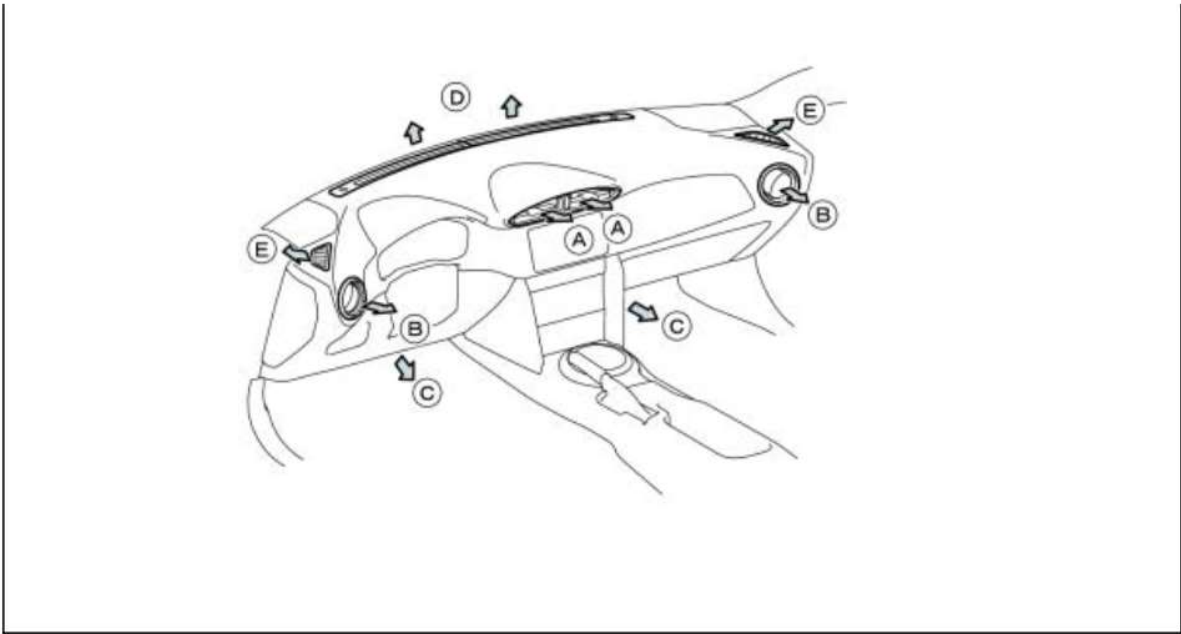
*11	Front Defroster, Side Defroster	*12	Heater Radiator Unit Sub-assembly
*13	Passenger Side	*14	Driver Side

Functions of Main Dampers:

CONTROL DAMPER	OPERATION POSITION		DAMPER POSITION	OPERATION
Air Inlet Control Damper	FRESH		A	Brings in fresh air.
	RECIRCULATION		B	Recirculates internal air.
Air Mix Control Damper	MAX COLD to MAX HOT Temperature Setting		C - D (C' - D')	Varies the mixture ratio of warm air and cool air in order to regulate the temperature continuously between hot and cold.
Mode Control Door		FACE	E, H,	Air blows out of the center register and side register ducts.
		BI-LEVEL	F, H,	Air blows out of the center register, side register and footwell register ducts.
		FOOT	G, I,	Air blows out of the footwell register and side register ducts. In addition, air blows out slightly from the front defroster and side defroster.
		FOOT AND DEFROSTER	G, J,	Defrosts the windshield through the front defroster, side defroster and side register ducts, while air is also blown out from footwell register ducts.
		DEFROSTER	G, K,	Defrosts the windshield through the front defroster, side defroster and side register ducts.

3. AIR OUTLETS AND AIRFLOW VOLUME

(a) Air Outlets and Airflow Volume



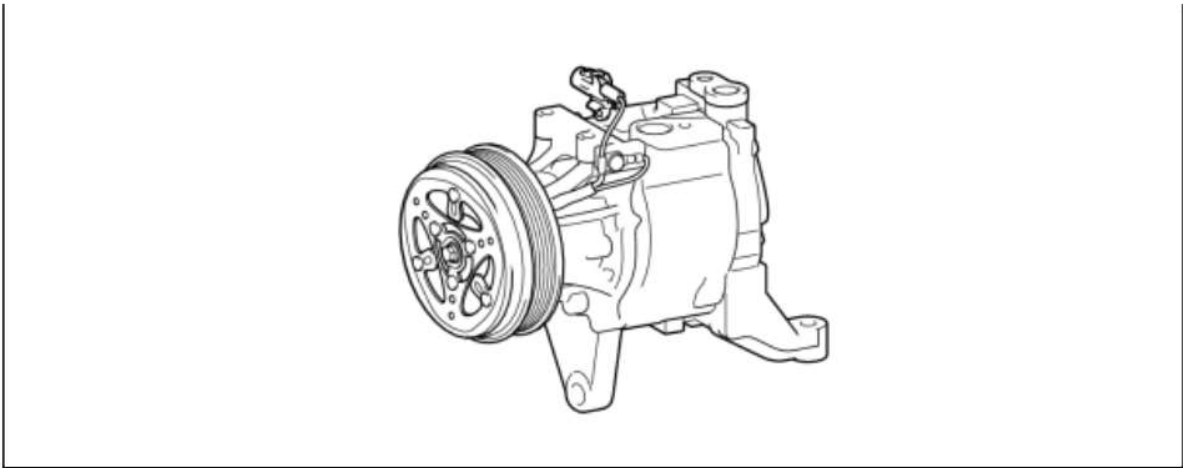
INDICATION	MODE	FACE		FOOTWELL	DEFROSTER	
		CENTER	SIDE		FRONT	SIDE
		A	B	C	D	E
	FACE					
	BI-LEVEL					
	FOOT					
	FOOT AND DEFROSTER					
	F/D					

• The size of each circle ◦ indicates the ratio of airflow volume.

4. COMPRESSOR

(a) General:

(1) A compact and high performance scroll compressor with separator has been adopted.



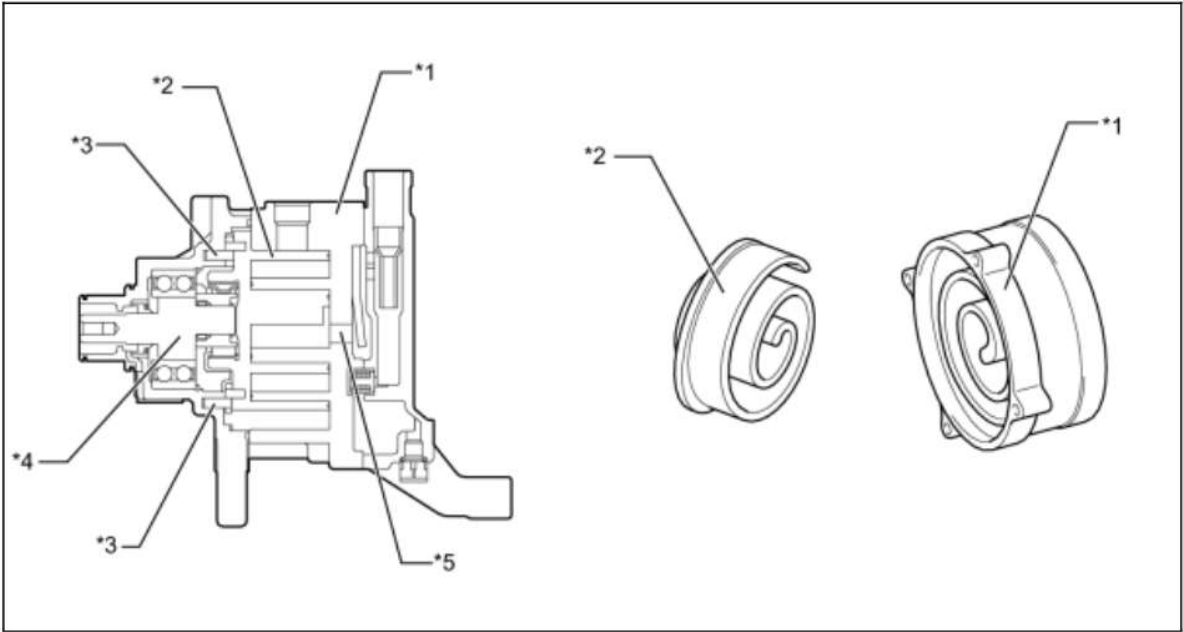
(2) The scroll compressor with oil separator consists of a spirally wound fixed scroll and rotating scroll that form a pair, and oil separator, and a magnetic clutch.

The fixed scroll is integrated with the housing. Because the rotation of the shaft causes the rotating scroll to revolve while maintaining the same posture, the volume of the space that is partitioned by both scrolls varies to perform the suction, compression, and the discharge of the refrigerant gas.

A pin is attached behind the rotating scroll to prevent the autorotation of the rotating scroll, allowing it only to revolve.

Locating the suction port directly above the scrolls enables direct suction, thus realizing improved suction efficiency.

Containing a built-in oil separator, this compressor is able to separate the compressor oil that is intermixed with the refrigerant and circulates in the refrigeration cycle, thus realizing a reduction in the oil circulation rate.

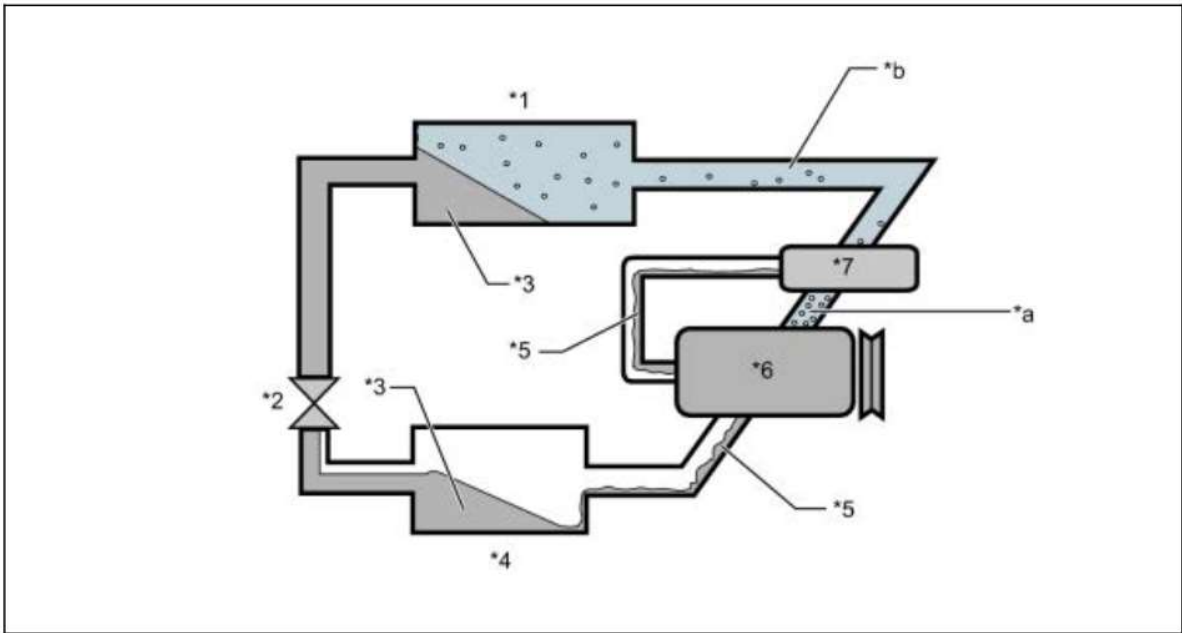


Text in Illustration

*1	Fixed Scroll	*2	Rotating Scroll
*3	Pins	*4	Shaft

*5	Discharge Port	-	-
----	----------------	---	---

- (3) A CS (Centrifugal with Shutter) type oil separator has been adopted to reduce the circulation rate of the compressor oil that is intermixed with the refrigerant and circulates in the refrigeration cycle.
- This oil separator is provided with a cylindrical pipe in the separator case, enabling the refrigerant gas that has been discharged through the discharge gas inlet to be separated into refrigerant gas and oil through centrifugal force, and minimizing the outflow of the oil to the discharge service port. As a result, the oil circulation rate has been reduced and makes energy savings possible.

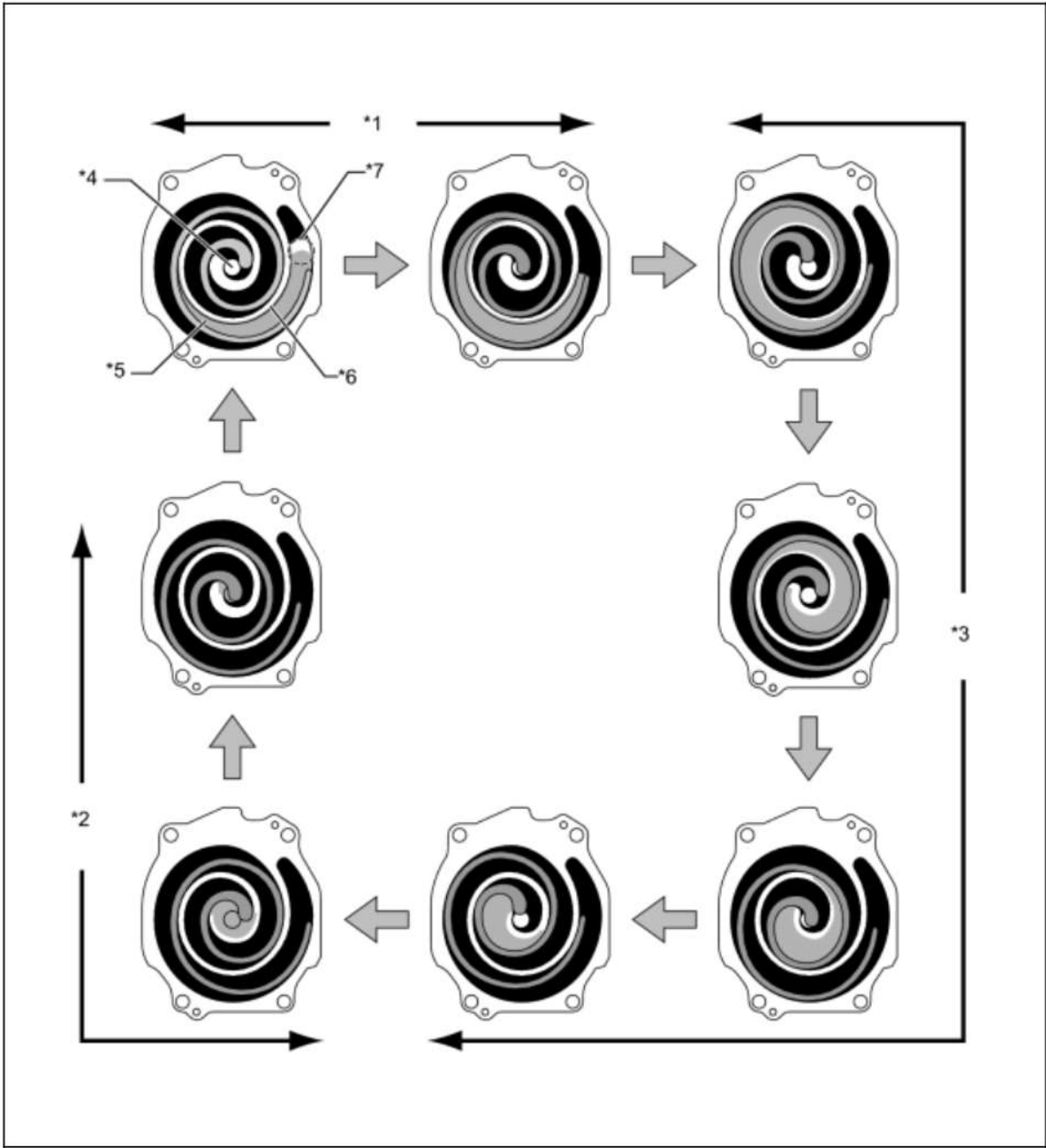


Text in Illustration

*1	Cooler Condenser Assembly and Modulator	*2	Cooler Expansion Valve
*3	Refrigerant Gas + Compressor Oil	*4	No.1 Cooler Evaporator Sub-assembly
*5	Oil	*6	Compressor Assembly
*7	Oil Separator	-	-
*a	Oil Circulation Ratio of 4%	*b	Oil Circulation Ratio of 1%

(b) Compressor with Magnet Clutch Operation

- (1) As the capacity of the compression chamber, which is created between the rotating scroll and the fixed scroll, increases in accordance with the revolution of the rotating scroll, refrigerant gas is drawn in from the intake port.
- (2) From the state at which the suction process has been completed, as the revolution of the rotating scroll advances further, the capacity of the compression chamber decreases gradually. Consequently, the refrigerant gas that has been drawn in becomes compressed gradually and is sent to the center of the fixed scroll. The compression of the refrigerant gas is completed when the rotating scroll completes approximately 2 revolutions.
- (3) When the compression of the refrigerant gas is completed and the refrigerant pressure becomes high, the refrigerant gas discharges through the discharge port located in the center of the fixed scroll by pushing the discharge valve.

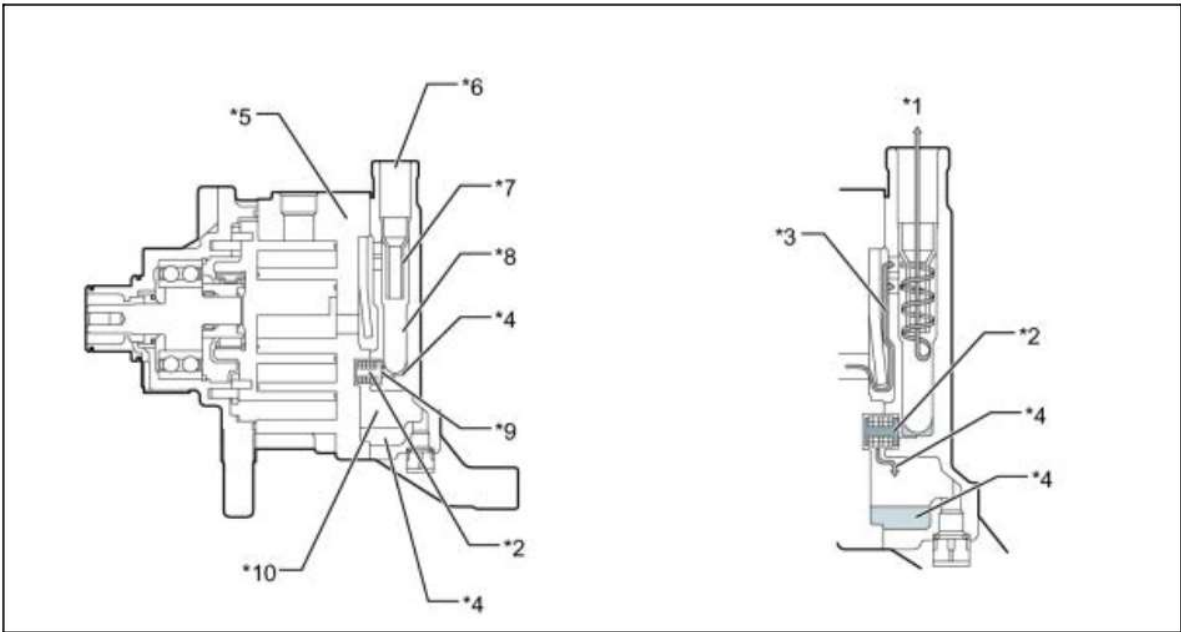


Text in Illustration

*1	Suction	*2	Discharge
*3	Compression	*4	Discharge Port
*5	Rotating Scroll	*6	Fixed Scroll
*7	Intake Port	-	-

(4) The refrigerant gas that is discharged from the discharge port flows by rotating around the cylindrical pipe in the oil separator. At this time, the centrifugal force that is created during the rotation separates the refrigerant gas and the compressor oil due to the difference in their specific gravity. The refrigerant gas with the lighter specific gravity passes through the inside of the pipe and travels from the discharge service port to the outside of the compressor. The compressor oil with the heavier specific gravity is discharged through the oil discharge hole in the shutter and is stored in the oil storage chamber. Then, the

compressor oil is fed again into the compressor and circulates inside the compressor.



Text in Illustration

*1	Refrigerant	*2	Shutter
*3	Refrigerant and Compressor Oil	*4	Compressor Oil
*5	Valve Chamber D	*6	Service Port
*7	Pipe	*8	Case
*9	Oil Discharge Hole	*10	Oil Storage Chamber

5. EVAPORATOR TEMPERATURE SENSOR (NO. 1 COOLER THERMISTOR)

The evaporator temperature sensor (No. 1 cooler thermistor) detects the temperature of the cooled air immediately past the evaporator in the form of resistance changes, and outputs this data to the main body ECU (network gateway ECU).

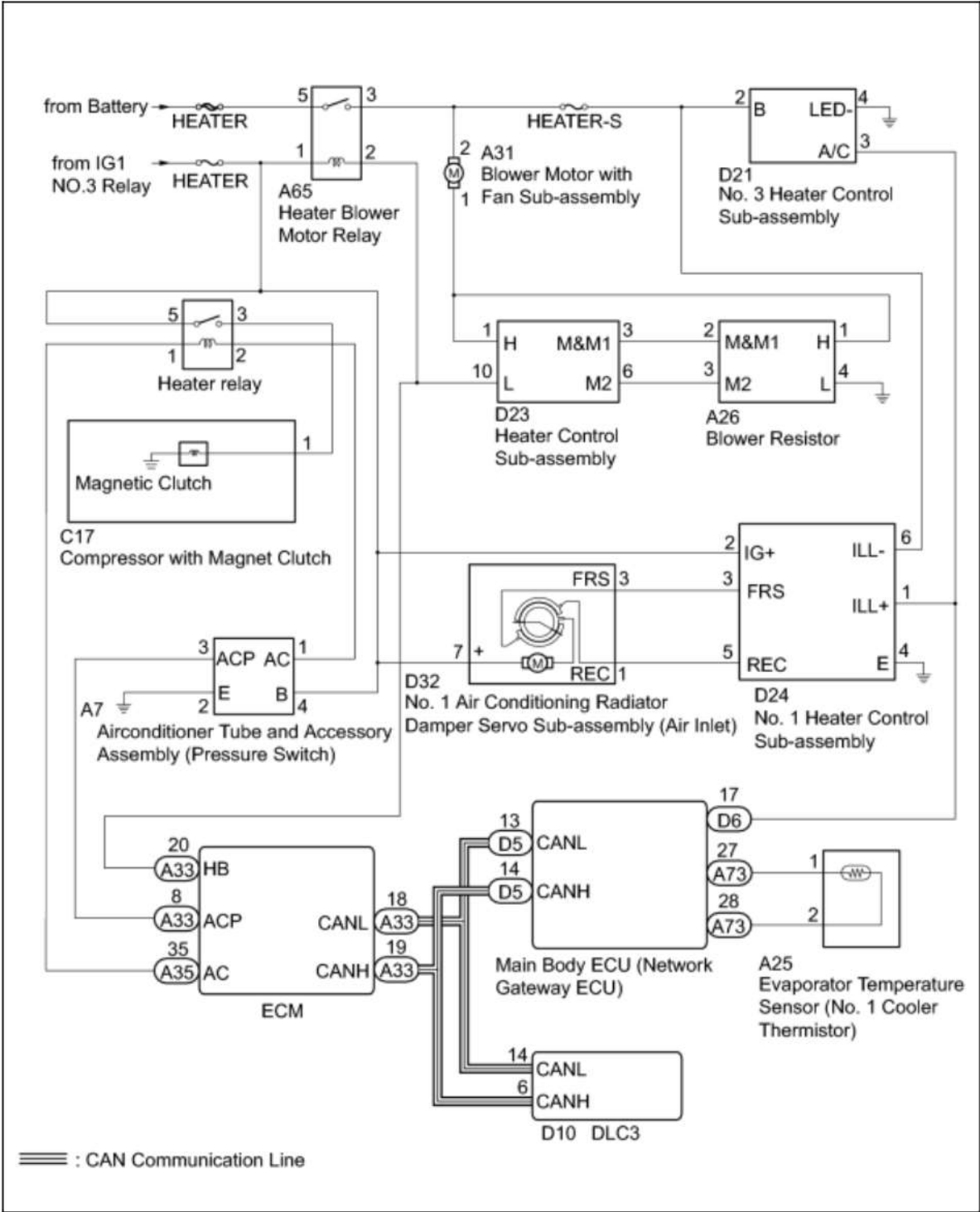
6. Air Conditioning Pressure Switch (Airconditioner Tube Assembly)

The air conditioning pressure switch (airconditioner tube assembly) uses refrigerant pressure to output an on/off signal to the ECM to control the compressor with magnet clutch.



Last Modified: 3-27-2012	6.4 U	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HZL04IX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: SYSTEM DIAGRAM (2013 FR-S)		

SYSTEM DIAGRAM



Communication Table

SENDER	RECEIVER	SIGNAL	COMMUNICATION
--------	----------	--------	---------------

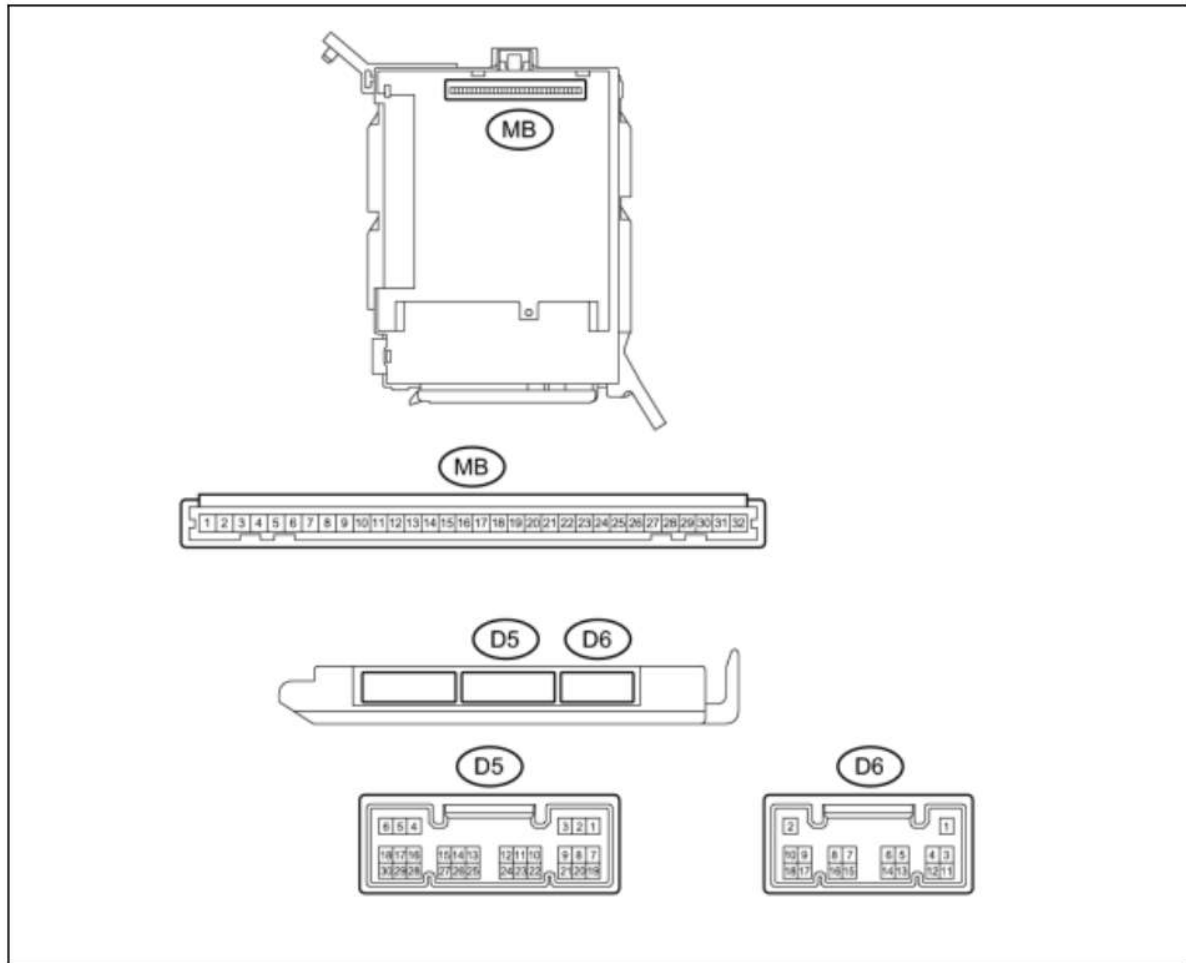
			LINE
Main body ECU (network gateway ECU)	ECM	Prior A/C control request signal	CAN

  TOYOTA

Last Modified: 3-27-2012	6.4 U	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000026DR05PX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM: TERMINALS OF ECU (2013 FR-S)		

TERMINALS OF ECU

1. INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY, MAIN BODY ECU (NETWORK GATEWAY ECU)



- Remove the main body ECU (network gateway ECU) from the instrument panel junction block assembly.
- Measure the values on the wire harness side with the connector disconnected.

CONNECTOR MB

TERMINAL NO. (SYMBOL)	WIRING COLOR	DESCRIPTION	CONDITION	SPECIFIED CONDITION
MB8 - Body ground	-	Power source (IG)	Ignition switch : ON	11 to 14 V
MB9 - Body ground	-	Power source (ACC)	Ignition switch : ACC	11 to 14 V

MB11 - Body ground	-	Ground for main power supply	Always	Below 1 Ω
--------------------	---	------------------------------	--------	------------------

If the result is not as specified, there may be a malfunction in the wire harness.

- (c) Install the main body ECU (network gateway ECU) to the instrument panel junction block assembly.
- (d) Measure the voltage and resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

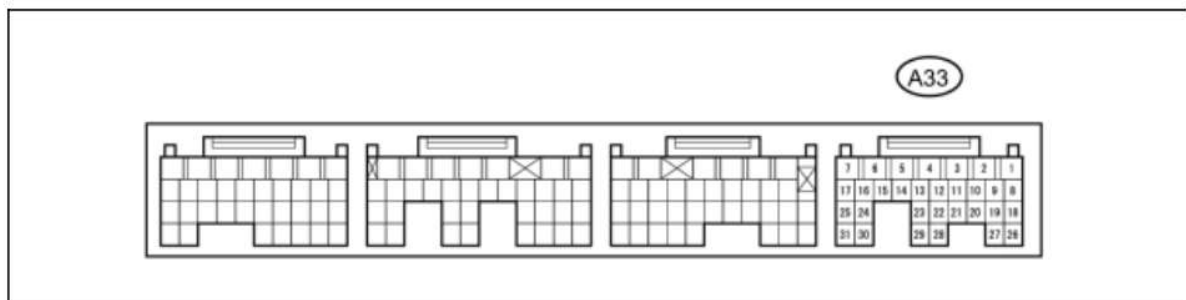
MAIN BODY ECU (NETWORK GATEWAY ECU) D5

TERMINAL NO. (SYMBOL)	WIRING COLOR	DESCRIPTION	CONDITION	SPECIFIED CONDITION
D5- 13(CANL) - D5-14(CANH)	LG - P	CAN communication system	CAN communication circuit	Pulse generation

MAIN BODY ECU (NETWORK GATEWAY ECU) D6

TERMINAL NO. (SYMBOL)	WIRING COLOR	DESCRIPTION	CONDITION	SPECIFIED CONDITION
D6-17 - Body ground	Y - Body ground	A/C switch signal	- Ignition switch : ON - A/C switch : ON	Below 1 Ω

2. ECM



HINT:

Check from the rear of the connector while it is connected to the Air conditioning control assembly.

TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
			Engine running A/C system operating Refrigerant pressure: Abnormal pressure (more than 2980kPa)	Below 1 V

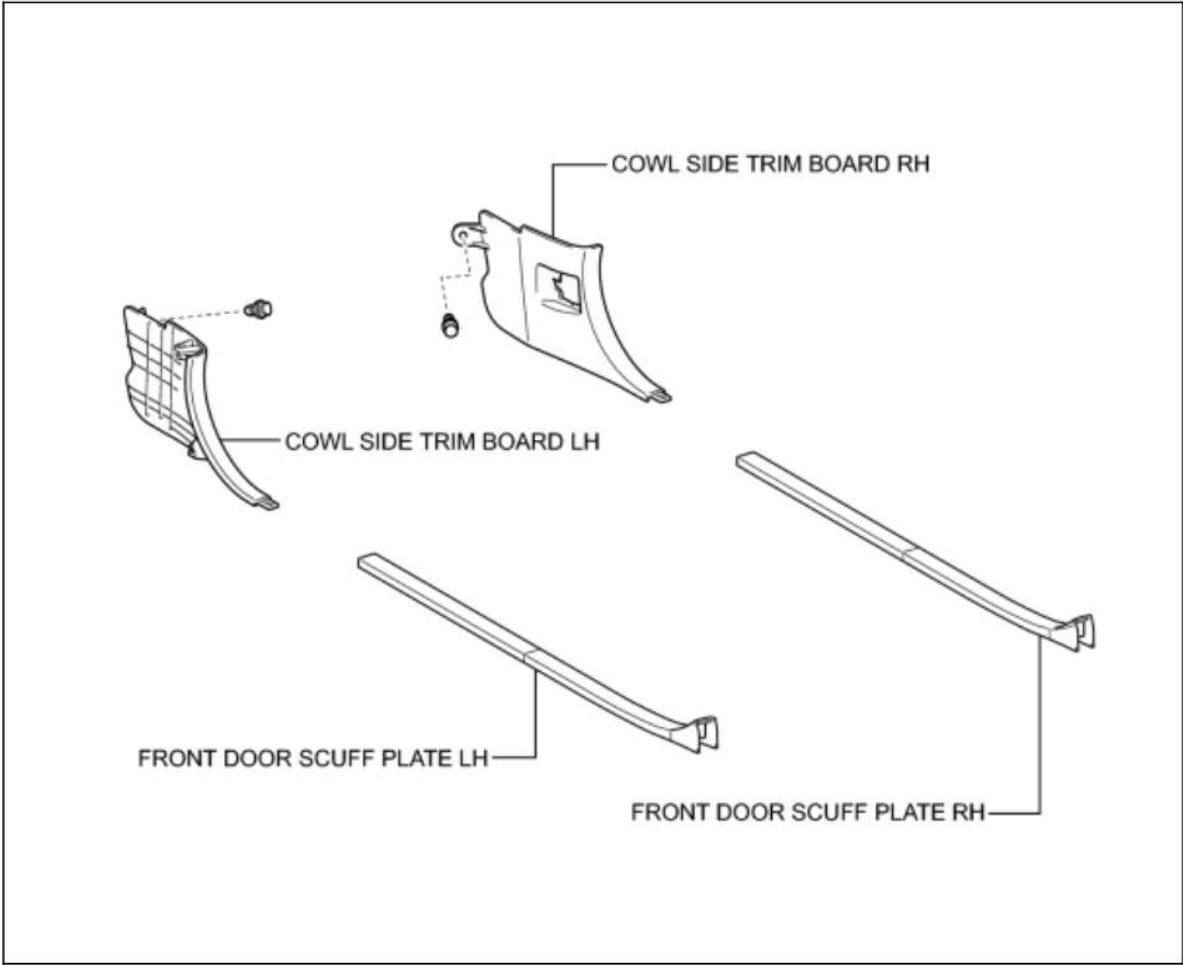
A33-8(ACP) - Body ground	G - Body ground	Air conditioning pressure switch signal	(30.4kgf/cm ² ,438psi))	
			Engine running A/C system operating Refrigerant pressure: Abnormal • pressure (less than 248kPa (2.58kgf/cm²,36.5psi))	Below 1 V
			Engine running A/C system operating Refrigerant pressure: Normal • pressure (less than 2980kPa (30.4kgf/cm²,438psi) and more than 248kPa (2.53kgf/cm²,36.5psi))	10 to 16 V
A33- 18(CANL) - A33- 19(CANH)	B-P - O	CAN communication system	CAN communication circuit	Pulse generation



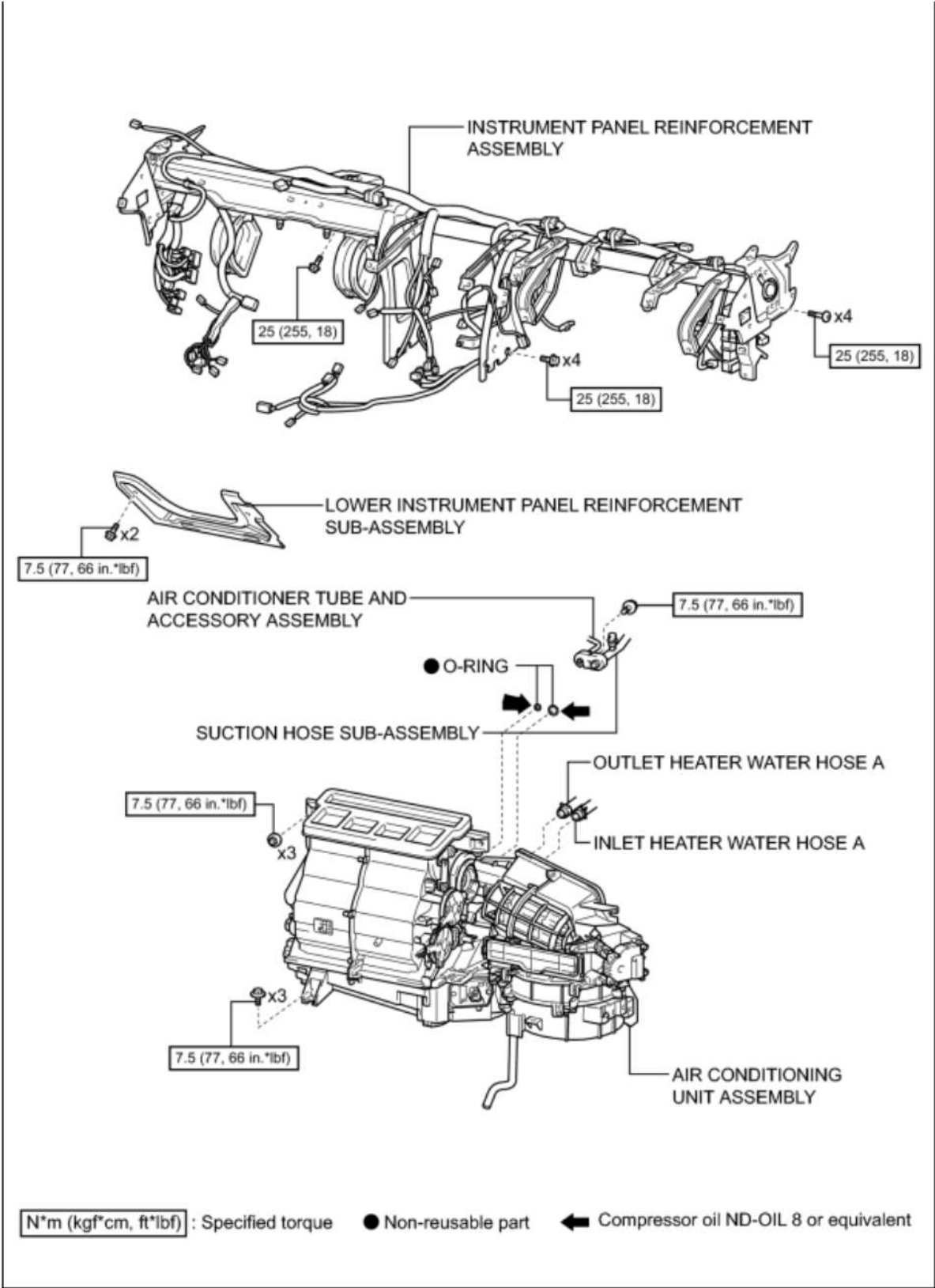
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXE004X
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING UNIT: COMPONENTS (2013 FR-S)		

COMPONENTS

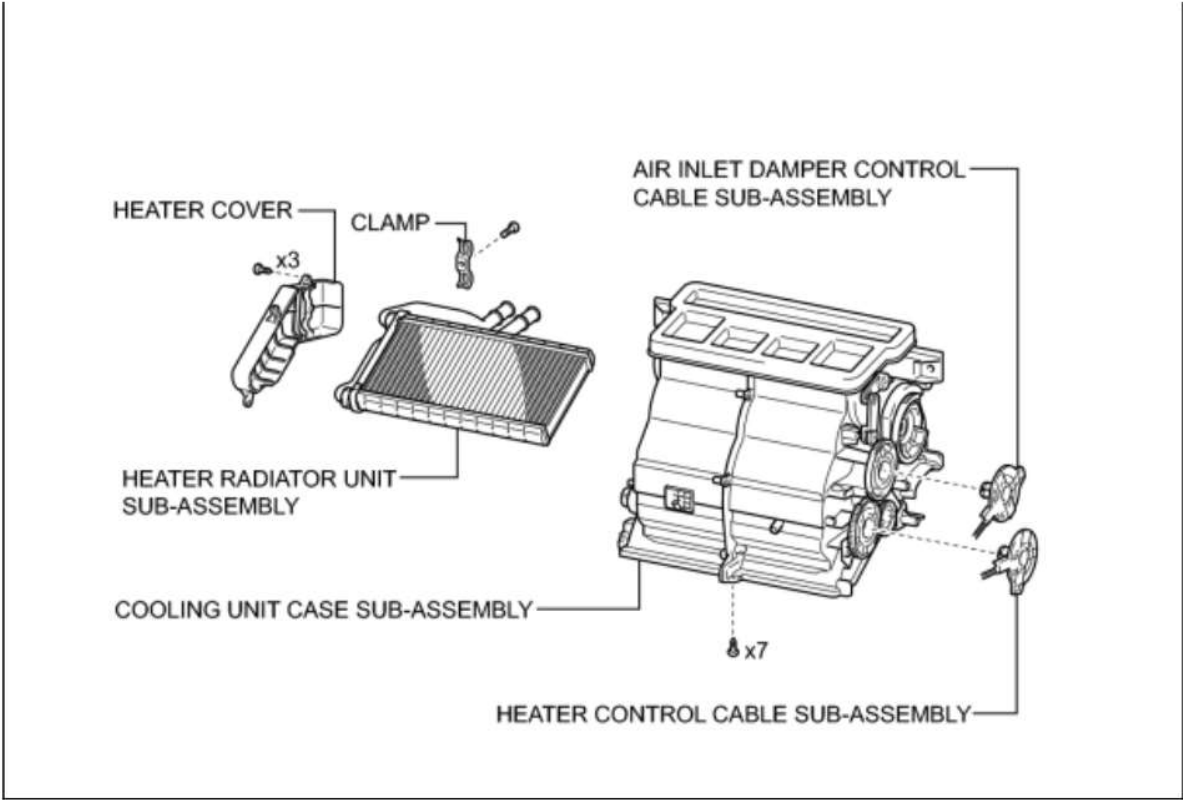
ILLUSTRATION



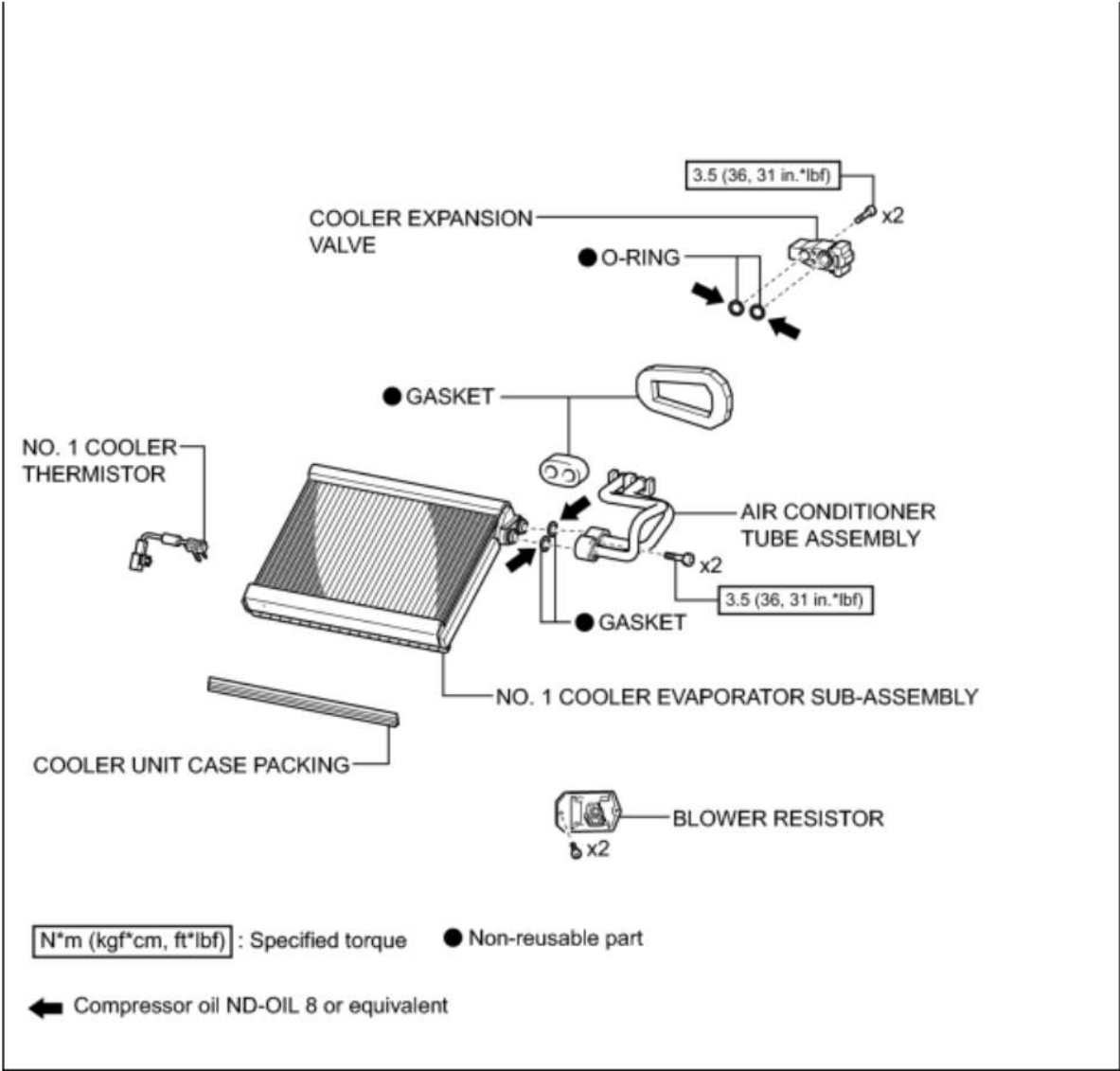
ILLUSTRATION



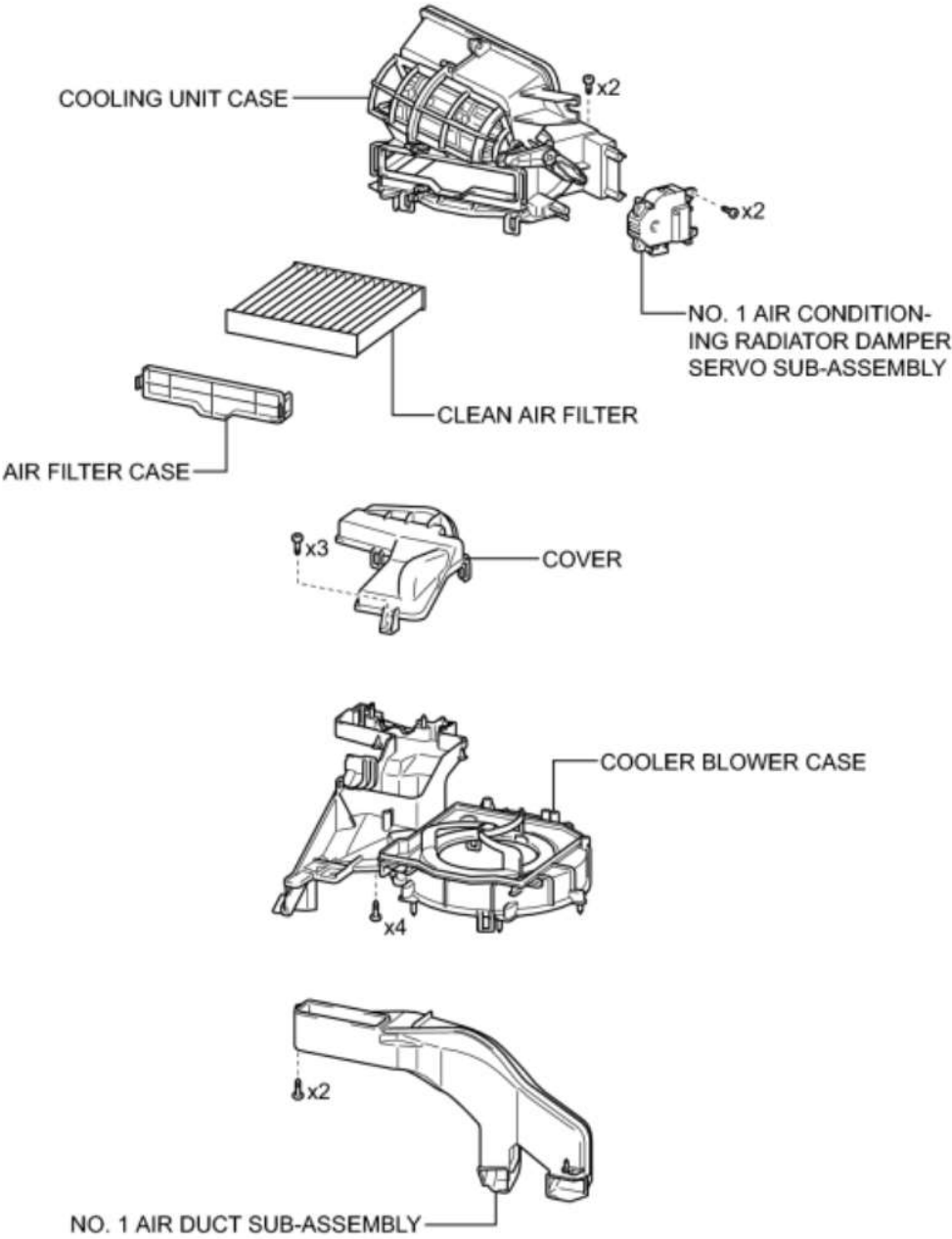
ILLUSTRATION



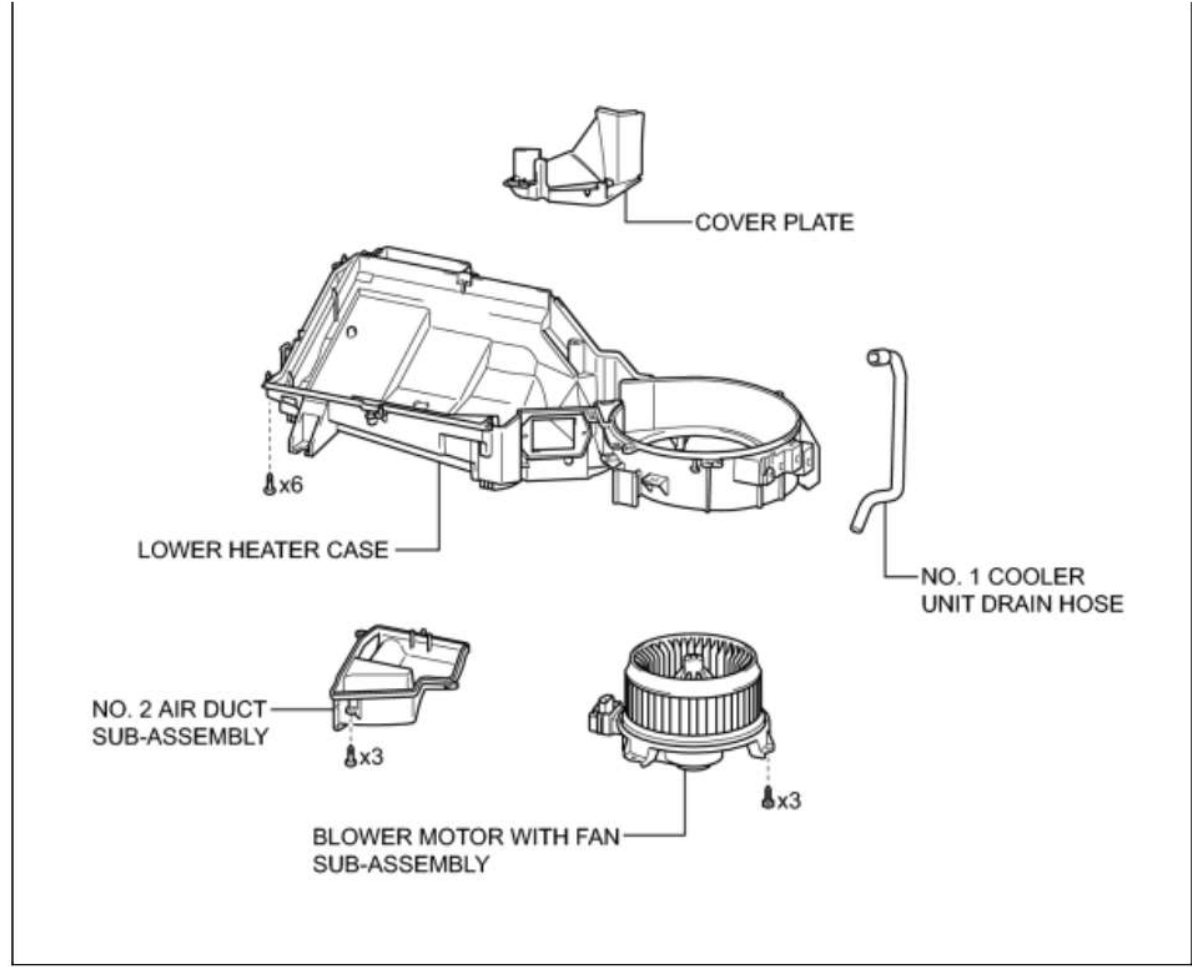
ILLUSTRATION



ILLUSTRATION



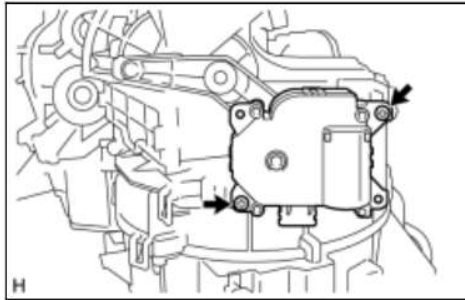
ILLUSTRATION



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLX057X
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING UNIT: DISASSEMBLY (2013 FR-S)		

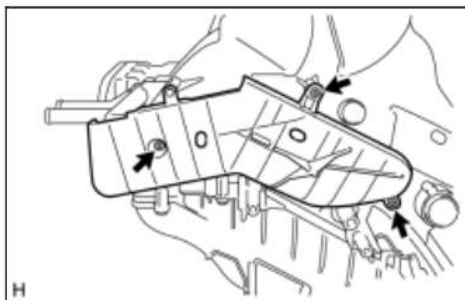
DISASSEMBLY

1. REMOVE NO. 1 AIR CONDITIONING RADIATOR DAMPER SERVO SUB-ASSEMBLY



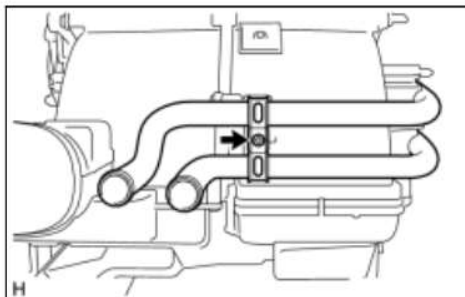
- (a) Remove the 2 screws and No. 1 air conditioning radiator damper servo sub-assembly.

2. REMOVE HEATER COVER

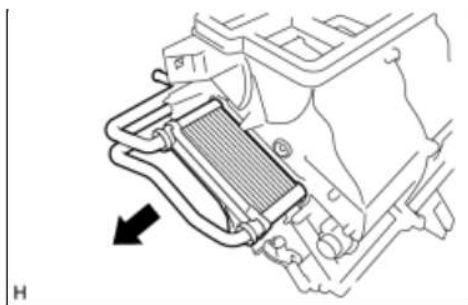


- (a) Remove the 3 screws and heater cover.

3. REMOVE HEATER RADIATOR UNIT SUB-ASSEMBLY

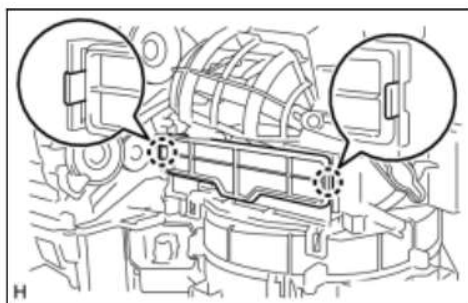


- (a) Remove the screw and the clamp.



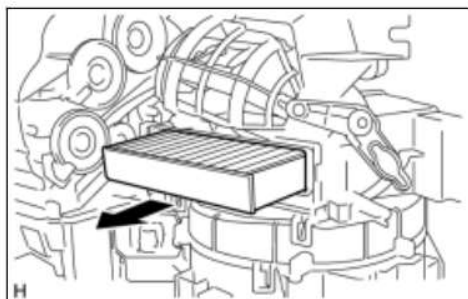
(b) Remove the heater radiator unit sub-assembly as shown in the illustration.

4. REMOVE AIR FILTER CASE



(a) Disengage the 2 claws and remove the air filter case.

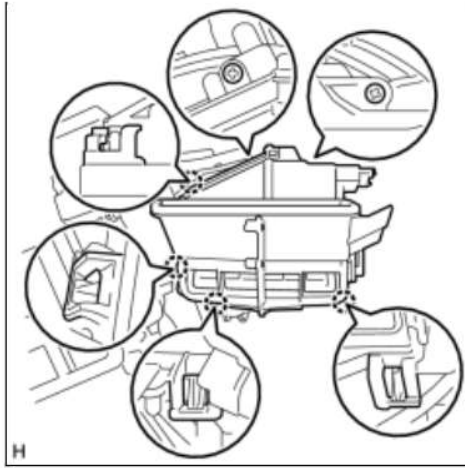
5. REMOVE CLEAN AIR FILTER



(a) Remove the clean air filter as shown in the illustration.

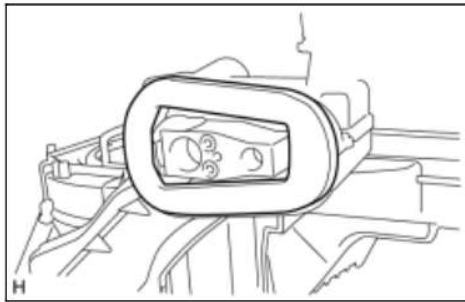
6. REMOVE COOLING UNIT CASE

(a) Remove the 2 screws.

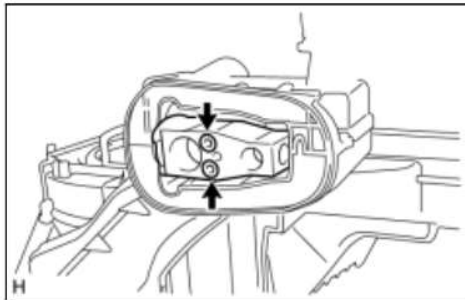


(b) Disengage the 4 claws and remove the cooling unit case.

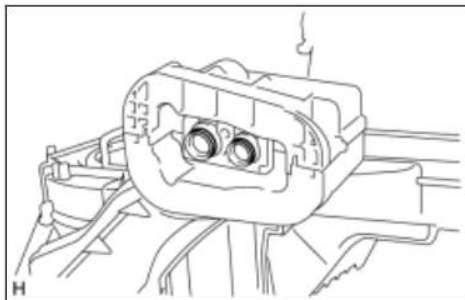
7. REMOVE COOLER EXPANSION VALVE



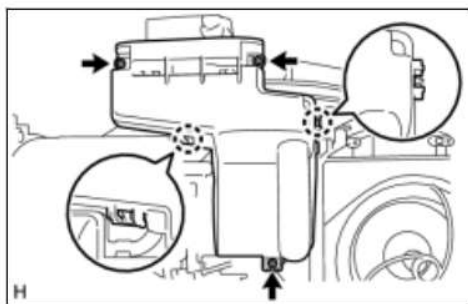
(a) Remove the gasket.



(b) Using a 4 mm hexagon socket wrench, remove the 2 hexagon bolts and cooler expansion valve.

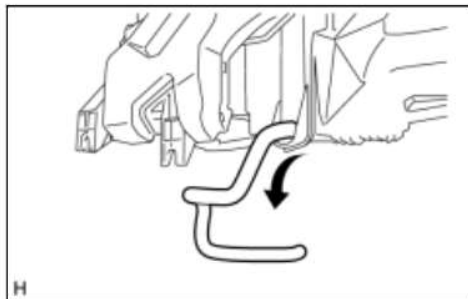


(c) Remove the 2 O-rings from the evaporator pipe.

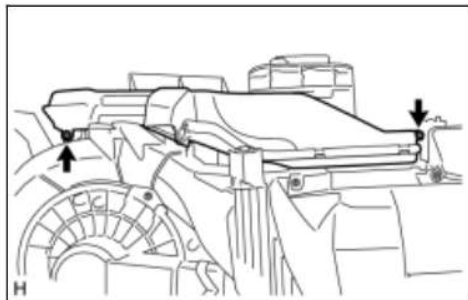
8. REMOVE COVER

(a) Remove the 3 screws.

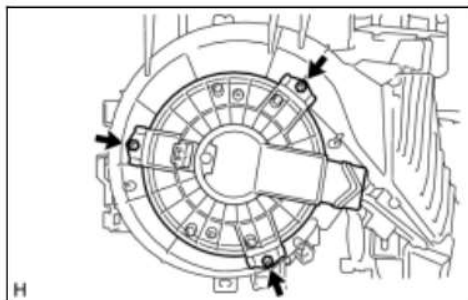
(b) Disengage the 2 claws and remove the cover.

9. REMOVE NO. 1 COOLER UNIT DRAIN HOSE

(a) Remove the No. 1 cooler unit drain hose.

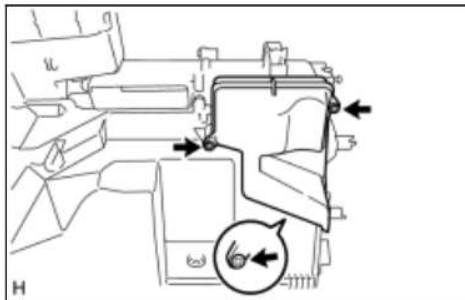
10. REMOVE NO. 1 AIR DUCT SUB-ASSEMBLY

(a) Remove the 2 screws and remove the No. 1 air duct sub-assembly.

11. REMOVE BLOWER MOTOR WITH FAN SUB-ASSEMBLY

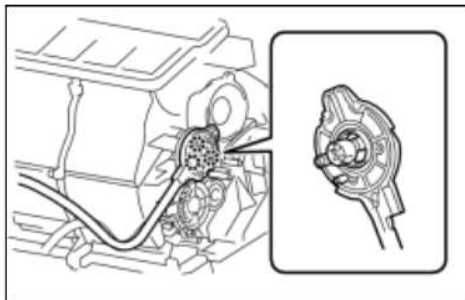
(a) Remove the 3 screws and remove the blower motor with fan sub-assembly.

12. REMOVE NO. 2 AIR DUCT SUB-ASSEMBLY



- (a) Remove the 3 screws and remove the No. 2 air duct sub-assembly.

13. REMOVE AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY

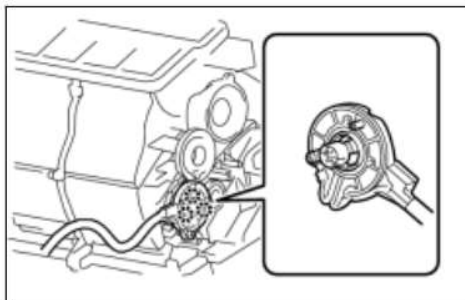


- (a) Disengage the 3 claws and remove the air inlet damper control cable sub-assembly.

NOTICE:

Hold the control cable and remove the drive gear on the unit side slowly, without pulling it.

14. REMOVE HEATER CONTROL CABLE SUB-ASSEMBLY



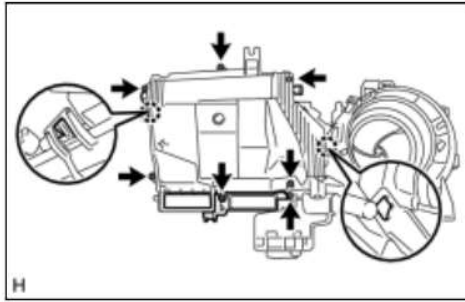
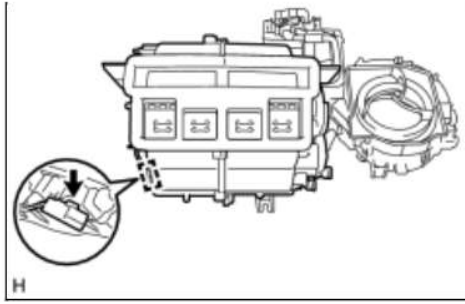
- (a) Disengage the 3 claws and remove the heater control cable sub-assembly.

NOTICE:

Hold the control cable and remove the drive gear on the unit side slowly, without pulling it.

15. REMOVE COOLING UNIT CASE SUB-ASSEMBLY

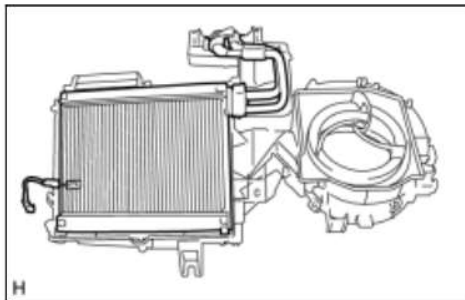
- (a) Disengage the clamp.



(b) Remove the 7 screws.

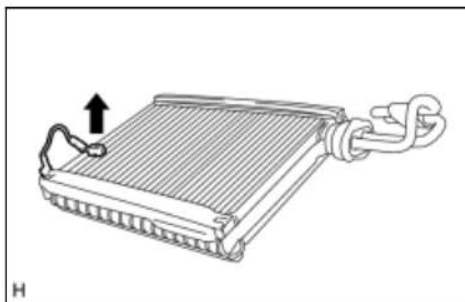
(c) Disengage the 2 claws and remove the cooling unit case sub-assembly.

16. REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY



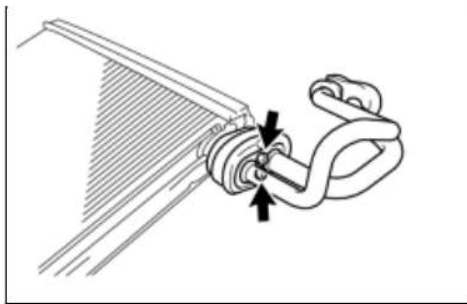
(a) Remove the No. 1 cooler evaporator sub-assembly with evaporator pipe as a unit.

17. REMOVE NO. 1 COOLER THERMISTOR



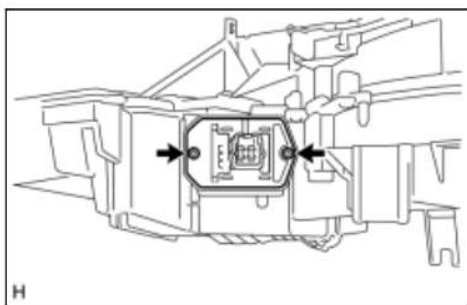
(a) Remove the No. 1 cooler thermistor.

18. REMOVE AIR CONDITIONER TUBE ASSEMBLY



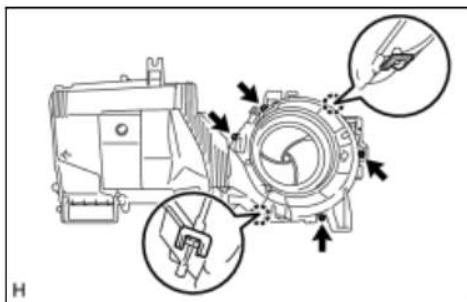
(a) Using a 4 mm hexagon socket wrench, remove the 2 hexagon bolts and air conditioner tube assembly.

19. REMOVE BLOWER RESISTOR



(a) Remove the 2 screws and remove the blower resistor.

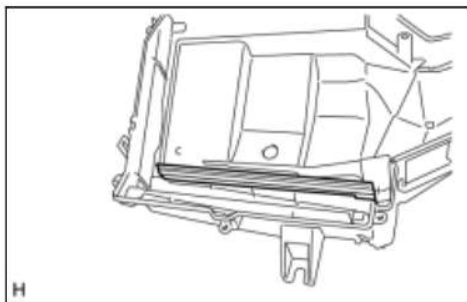
20. REMOVE COOLER BLOWER CASE



(a) Remove the 4 screws and disengage the 2 claws.

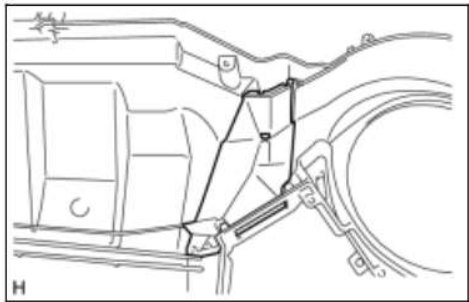
(b) Remove the cooler blower case from the lower heater case.

21. REMOVE COOLER UNIT CASE PACKING



(a) Remove the cooler unit case packing.

22. REMOVE COVER PLATE



(a) Remove the cover plate.



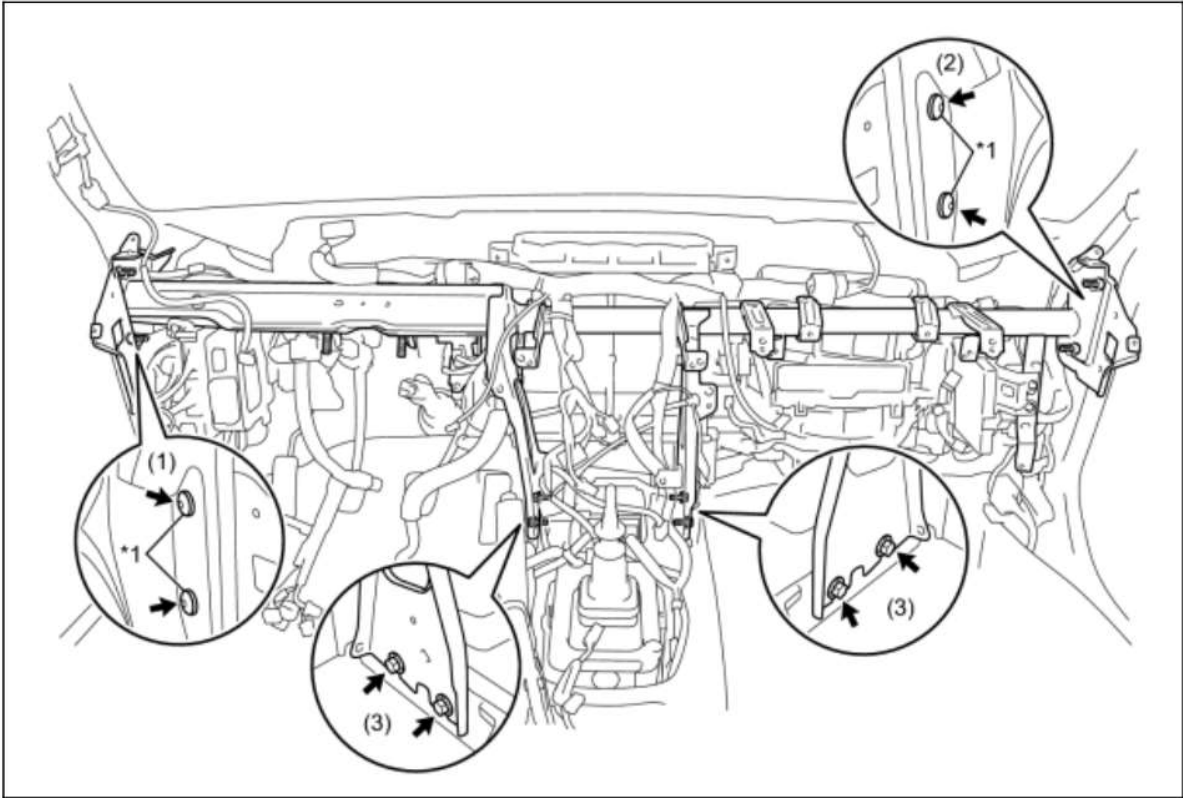
Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLU0WYX
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING UNIT: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL AIR CONDITIONING UNIT ASSEMBLY

- (a) Install the 3 bolts and 3 nuts.
Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)
- (b) Engage the drain cooler hose.
- (c) Connect each connector and engage each clamp and install the air conditioning unit assembly.

2. INSTALL INSTRUMENT PANEL REINFORCEMENT ASSEMBLY



Text in Illustration

*1	"TORX" Bolt	-	-
----	-------------	---	---

- (a) Using a 4 mm "TORX" wrench, install the 4 "TORX" Bolts in the order shown in the illustration.
Torque: 25 N·m (255 kgf·cm, 18ft·lbf)
- (b) Install the instrument panel reinforcement assembly with the 5 bolts in the order shown in the illustration.
Torque: 25 N·m (255 kgf·cm, 18ft·lbf)
- (c) Connect each connector and engage each clamp.

(d) Connect the 2 earth wires with the 2 bolts.

3. INSTALL COWL SIDE TRIM BOARD LH INFO

4. INSTALL COWL SIDE TRIM BOARD RH INFO

5. INSTALL FRONT DOOR SCUFF PLATE LH INFO

6. INSTALL FRONT DOOR SCUFF PLATE RH INFO

7. INSTALL STEERING COLUMN ASSEMBLY

INFO

8. INSTALL LOWER INSTRUMENT PANEL REINFORCEMENT SUB-ASSEMBLY

(a) Install the lower instrument panel reinforcement sub-assembly with the 2 bolts.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)

9. INSTALL INSTRUMENT PANEL SUB-ASSEMBLY

INFO

10. CONNECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

(a) Remove the vinyl tape from the pipe.

(b) Sufficiently apply compressor oil to a new O-ring and fitting surface of the air conditioner tube and accessory assembly.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

(c) Install the O-ring to the air conditioner tube and accessory assembly.

(d) Install the air conditioner tube and accessory assembly.

11. CONNECT SUCTION HOSE SUB-ASSEMBLY

(a) Remove the vinyl tape from the pipe.

(b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the suction hose sub-assembly.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

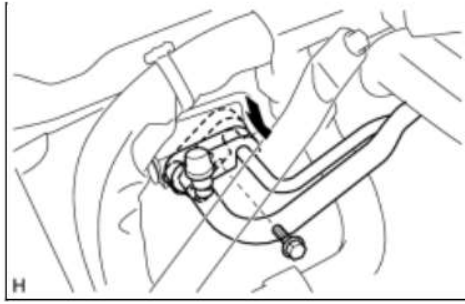
(c) Connect the O-ring to the suction hose sub-assembly.

(d) Connect the suction hose sub-assembly.

(e) Rotate the hook connector in the direction indicated by the arrow in the illustration.

(f) Insert the pipe joint into the cooler expansion valve securely and tighten the bolt.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)



12. CONNECT OUTLET HEATER WATER HOSE A

- (a) Install the outlet heater water hose A and attach the clip.

HINT:

Install the outlet heater water hose A while aligning it with the matching marks made when it was removed.

13. CONNECT INLET HEATER WATER HOSE A

- (a) Install the inlet heater water hose A and attach the clip.

HINT:

Install the inlet heater water hose A while aligning it with the matching marks made when it was removed.

14. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 6.0 N·m (61 kgf·cm, 53in·lbf)

15. ADD ENGINE COOLANT

INFO

16. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT

INFO

17. INSPECT FOR COOLANT LEAK

INFO

18. WARM UP ENGINE

INFO

19. INSPECT FOR REFRIGERANT LEAK

INFO

20. INSPECT SRS WARNING LIGHT

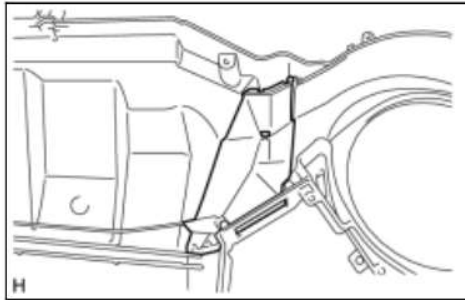
INFO



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLY057X
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING UNIT: REASSEMBLY (2013 FR-S)		

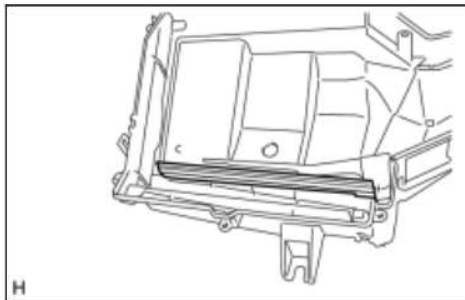
REASSEMBLY

1. INSTALL COVER PLATE



(a) Install the cover plate.

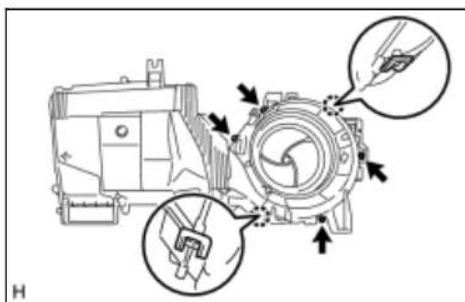
2. INSTALL COOLER UNIT CASE PACKING



(a) Install the cooler unit case packing.

3. INSTALL COOLER BLOWER CASE

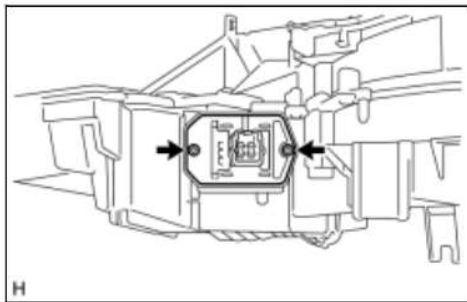
(a) Install the cooler blower case from the lower heater case.



(b) Engage the 2 claws.

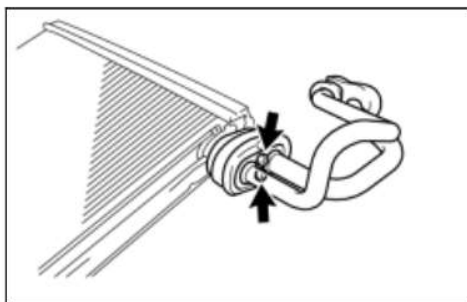
(c) Install the blower case assembly with the 4 screws.

4. INSTALL BLOWER RESISTOR



(a) Install the blower resistor with the 2 screws.

5. INSTALL AIR CONDITIONER TUBE ASSEMBLY

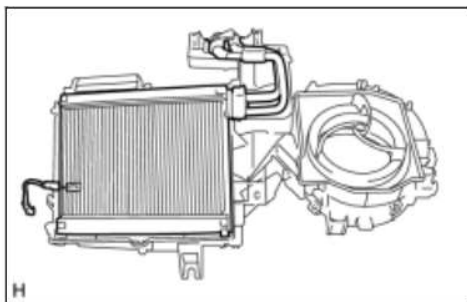


(a) Using a 4 mm hexagon wrench, install the air conditioner tube assembly with the 2 hexagon bolts.

Torque: 3.5 N·m (36 kgf·cm, 31 in·lbf)

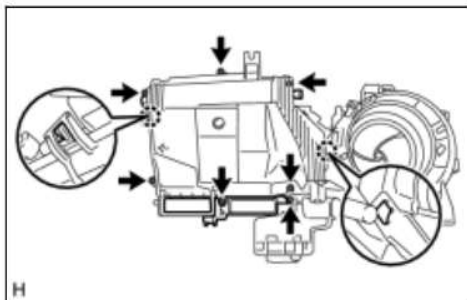
6. INSTALL NO. 1 COOLER THERMISTOR INFO

7. INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY



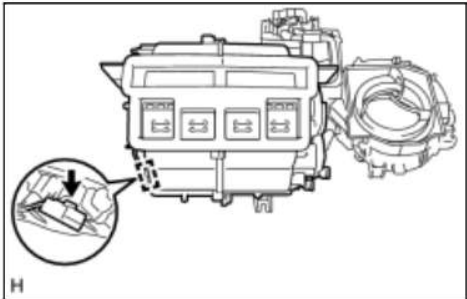
(a) Install the No. 1 cooler evaporator sub-assembly with evaporator pipe as a unit.

8. INSTALL COOLING UNIT CASE SUB-ASSEMBLY



(a) Engage the 2 claws.

(b) Install the cooling unit case sub-assembly with the 7 screws.

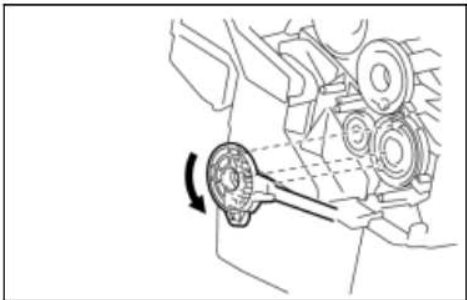


(c) Engage the clamp.

9. INSTALL HEATER CONTROL CABLE SUB-ASSEMBLY

NOTICE:

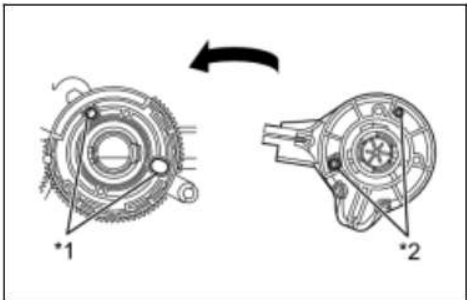
- When working, take care not to get dirt or dust in the gear grease.
- Do not hold gear sections while wearing cotton work gloves.



(a) Turn the pin on the cable side as far as possible in the direction of the arrow, and position it so that it matches the hole in the gear.

HINT:

Set the temperature adjustment dial to MAX HOT.



(b) Hold the protrusion on the drive gear, and rotate the gear until the protrusion is aligned with the cylindrical section of the case.

Text in Illustration

*1	Drive gear hole
*2	Control cable positioning pin

HINT:

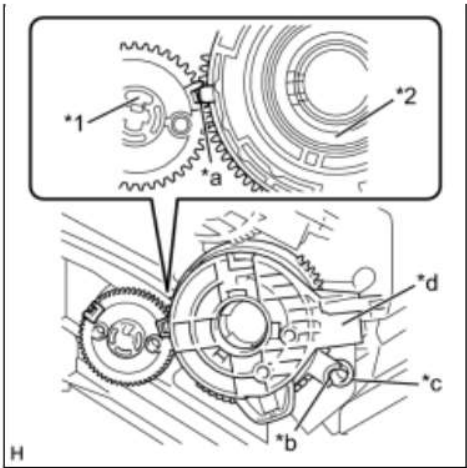
Temperature adjustment dial: MAX HOT

(c) Push the control cable positioning pin in slowly until it matches the drive gear hole, and install the heater control cable sub-assembly.

(d) Replacing the drive gear.

(1) When replacing the drive gear, pull the resin portion of the control cable forward slowly and remove it.

Text in Illustration



*1	Shaft Gear
*2	Drive Gear
*a	Reference Position
*b	Drive gear protrusion
*c	Cylindrical section of the case
*d	Resin portion of the control cable

NOTICE:
Do not pull the drive gear.

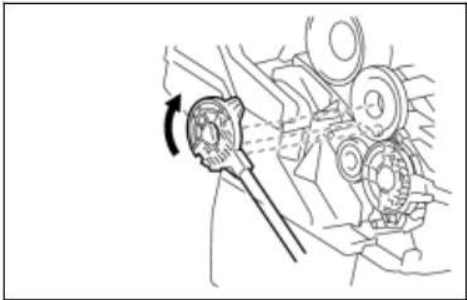
- (2) Pull the drive gear forward slowly and remove it.
- (3) Rotate the shaft gear clockwise slowly until it stops.

NOTICE:
Be sure not to turn too forcefully.

- (4) Match the shaft gear and the drive gear with their specified positions, and insert the drive gear slowly into the heater case.

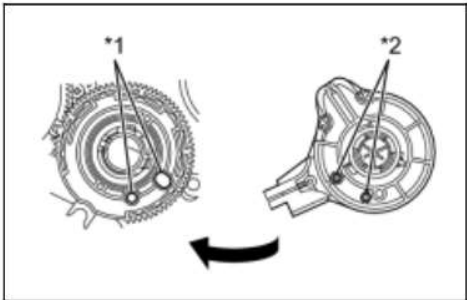
10. INSTALL AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY

- NOTICE:**
- When working, take care not to get dirt or dust in the gear grease.
 - Do not hold gear sections while wearing cotton work gloves.



- (a) Turn the pin on the cable side as far as possible in the direction of the arrow, and position it so that it matches the hole in the gear.

HINT:
Set the blower dial to FACE.



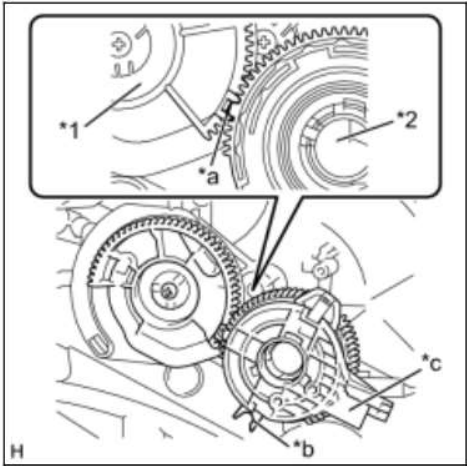
- (b) Hold the protrusion on the drive gear, and rotate the gear clockwise until it stops.

Text in Illustration

*1	Drive gear hole
*2	Control cable positioning pin

HINT:
Temperature control position: VENT

- (c) Push the control cable positioning pin in slowly until it matches the drive gear hole, and install the air inlet damper control cable sub-assembly.
- (d) Replacing the drive gear.



- (1) When replacing the drive gear, pull the resin portion of the control cable forward slowly and remove it.

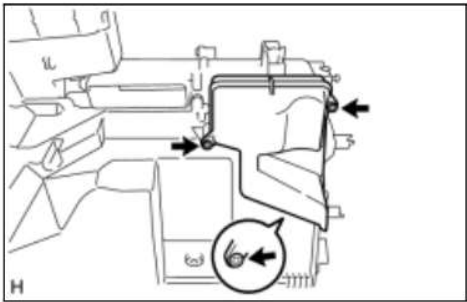
Text in Illustration

*1	Mode Main Link
*2	Drive Gear
*a	Reference Position
*b	Drive gear protrusion
*c	Resin portion of the control cable

NOTICE:
Do not pull the drive gear.

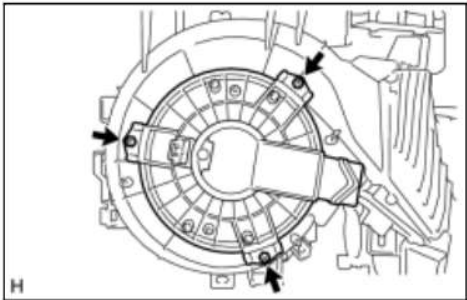
- (2) Pull the drive gear forward slowly and remove it.
- (3) Match the mode main link and the drive gear with their specified positions, and insert the drive gear slowly into the heater case.

11. INSTALL NO. 2 AIR DUCT SUB-ASSEMBLY



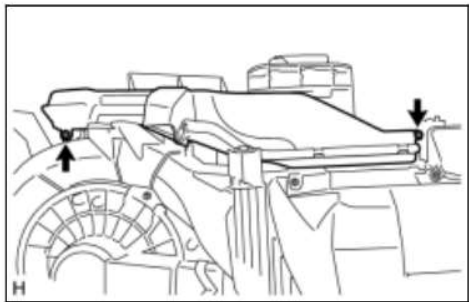
- (a) Install the No. 2 air duct sub-assembly with the 3 screws.

12. INSTALL BLOWER MOTOR WITH FAN SUB-ASSEMBLY



- (a) Install the blower motor with fan sub-assembly with the 3 screws.

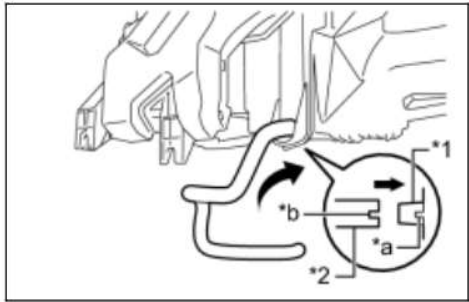
13. INSTALL NO. 1 AIR DUCT SUB-ASSEMBLY



(a) Install the No. 1 air duct sub-assembly with the 2 screws.

14. INSTALL NO. 1 COOLER UNIT DRAIN HOSE

(a) Install the No. 1 cooler unit drain hose as shown in the illustration.



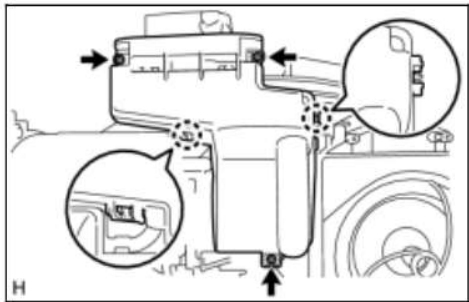
Text in Illustration

*1	Case
*2	Hose
*a	Rib
*b	Notched section

HINT:

Align the notched section of the hose with the rib on the case.

15. INSTALL COVER

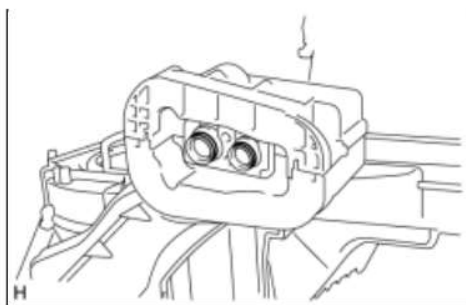


(a) Engage the 2 claws.

(b) Install the cover with the 3 screws.

16. INSTALL COOLER EXPANSION VALVE

(a) Sufficiently apply compressor oil to 2 new O-rings and

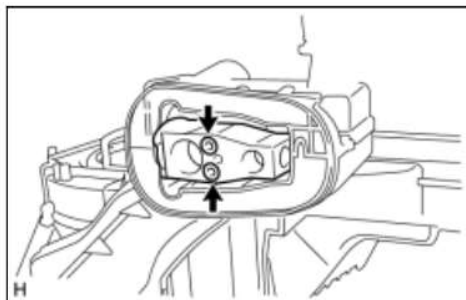


the fitting surfaces. Install the 2 O-rings to the No. 1 cooler evaporator sub-assembly.

Compressor oil:

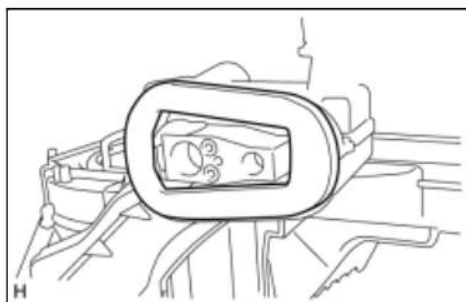
for HFC-134a (R134a)

ND-OIL 8 or equivalent



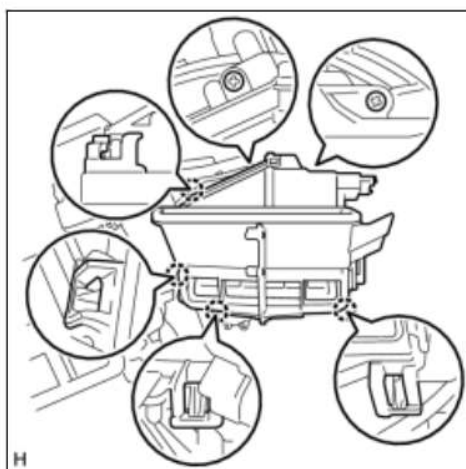
(b) Using a 4 mm hexagon wrench, install the cooler expansion valve with packing with the 2 hexagon bolts.

Torque: 3.5 N·m (36 kgf·cm, 31 in·lbf)



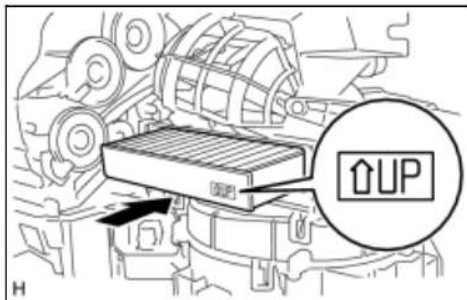
(c) Install the new gasket.

17. INSTALL COOLING UNIT CASE

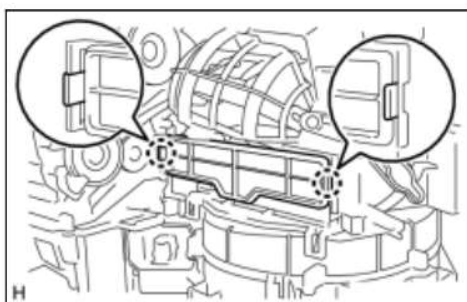


(a) Engage the 4 claws.

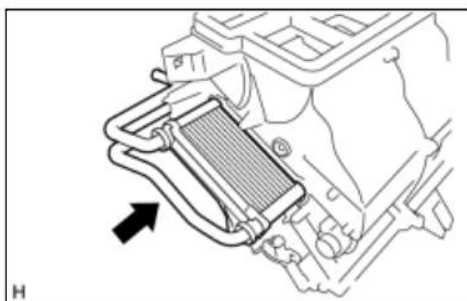
(b) Install the cooling unit case with the 2 screws.

18. INSTALL CLEAN AIR FILTER

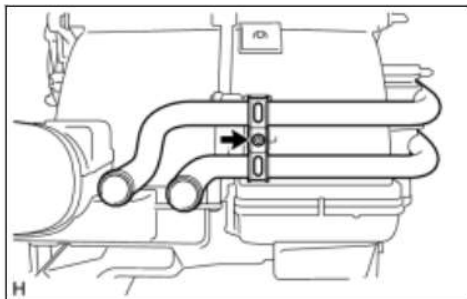
(a) Install the clean air filter as shown in the illustration.

19. INSTALL AIR FILTER CASE

(a) Engage the 2 claws to install the air filter case.

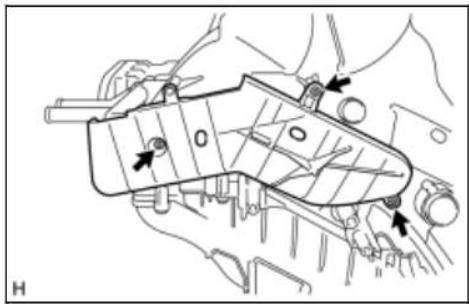
20. INSTALL HEATER RADIATOR UNIT SUB-ASSEMBLY

(a) Install the heater radiator unit sub-assembly as shown in the illustration.



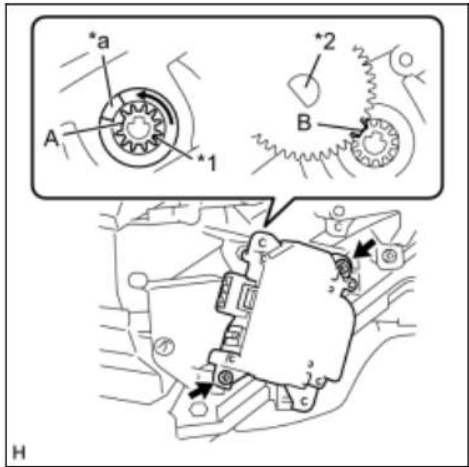
(b) Install the clamp with the screw.

21. INSTALL HEATER COVER



(a) Install the heater cover with the 3 screws.

22. INSTALL NO. 1 AIR CONDITIONING RADIATOR DAMPER SERVO SUB-ASSEMBLY



(a) Turn the air mix shaft slowly in the direction of the arrow until it stops.

Text in Illustration

*1	Air Mix Shaft
*2	Drive Gear
*a	Reference Position

NOTICE:

Be sure not to turn the air mix shaft too strongly.

- (b) Turn the mix shaft so that section A of the air mix shaft matches the reference position of the case.
- (c) Match the air mix damper server gear B section and the shaft gear A section.
- (d) Install the No. 1 air conditioning radiator damper servo sub-assembly with the 2 screws.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLW0W7X
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING UNIT: REMOVAL (2013 FR-S)		

REMOVAL

1. PRECAUTION

CAUTION:

Be sure to read Precaution thoroughly before servicing [INFO](#) .

NOTICE:

After turning the ignition switch off, waiting time may be required before disconnecting the cable from the negative (-) battery terminal. Therefore, make sure to read the disconnecting the cable from the negative (-) battery terminal notices before proceeding with work [INFO](#) .

2. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

[INFO](#)

3. DRAIN ENGINE COOLANT [INFO](#)

4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

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

NOTICE:

- The power window system utilizes a mechanism that the door glass moves down slightly when the door is opened, and that the glass moves up when closing the door in order to prevent the door molding from being damaged. When the battery negative (-) terminal needs to be disconnected for servicing, fully open the driver and passenger door glasses in advance.

5. DISCONNECT INLET HEATER WATER HOSE A



- (a) Using pliers, grip the claws of the clip and slide the clip to disconnect the inlet heater water hose A.

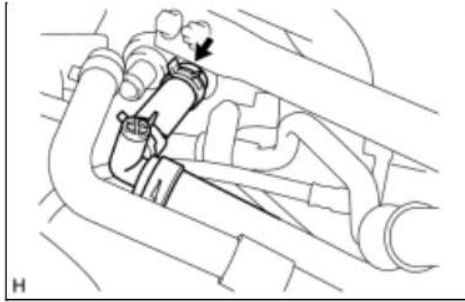
NOTICE:

- Do not apply excessive force to the inlet heater water hose A.
- Prepare a drain pan or cloth in case the coolant leaks.
- Since the inlet heater water hose A must be installed in a predefined position, apply matching marks before removing it.

6. DISCONNECT OUTLET HEATER WATER HOSE A

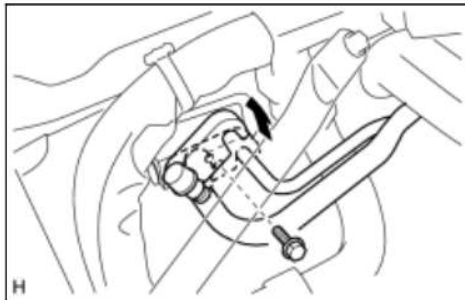
- (a) Using pliers, grip the claws of the clip and slide the clip to disconnect the outlet heater water hose A.

NOTICE:



- Do not apply excessive force to the outlet heater water hose A.
- Prepare a drain pan or cloth in case the coolant leaks.
- Since the outlet heater water hose A must be installed in a predefined position, apply matching marks before removing it.

7. DISCONNECT SUCTION HOSE SUB-ASSEMBLY



- (a) Remove the bolt and slide the hook connector.

(b) Disconnect the suction hose sub-assembly.

(c) Remove the O-ring from the suction hose sub-assembly.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

8. DISCONNECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

(a) Disconnect the air conditioner tube and accessory assembly.

(b) Remove the O-ring from the air conditioner tube and accessory assembly.

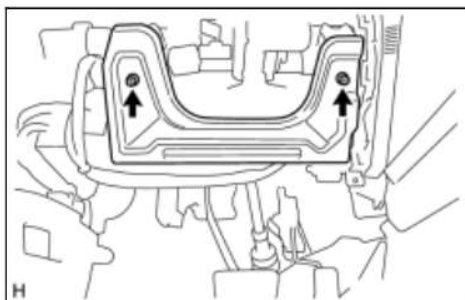
NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

9. REMOVE INSTRUMENT PANEL SUB-ASSEMBLY

INFO

10. REMOVE LOWER INSTRUMENT PANEL REINFORCEMENT SUB-ASSEMBLY



- (a) Remove the 2 bolts and lower instrument panel reinforcement sub-assembly.

11. REMOVE STEERING COLUMN ASSEMBLY

INFO

12. REMOVE FRONT DOOR SCUFF PLATE LH

INFO

13. REMOVE FRONT DOOR SCUFF PLATE RH INFO

INFO

14. REMOVE COWL SIDE TRIM BOARD LH

INFO

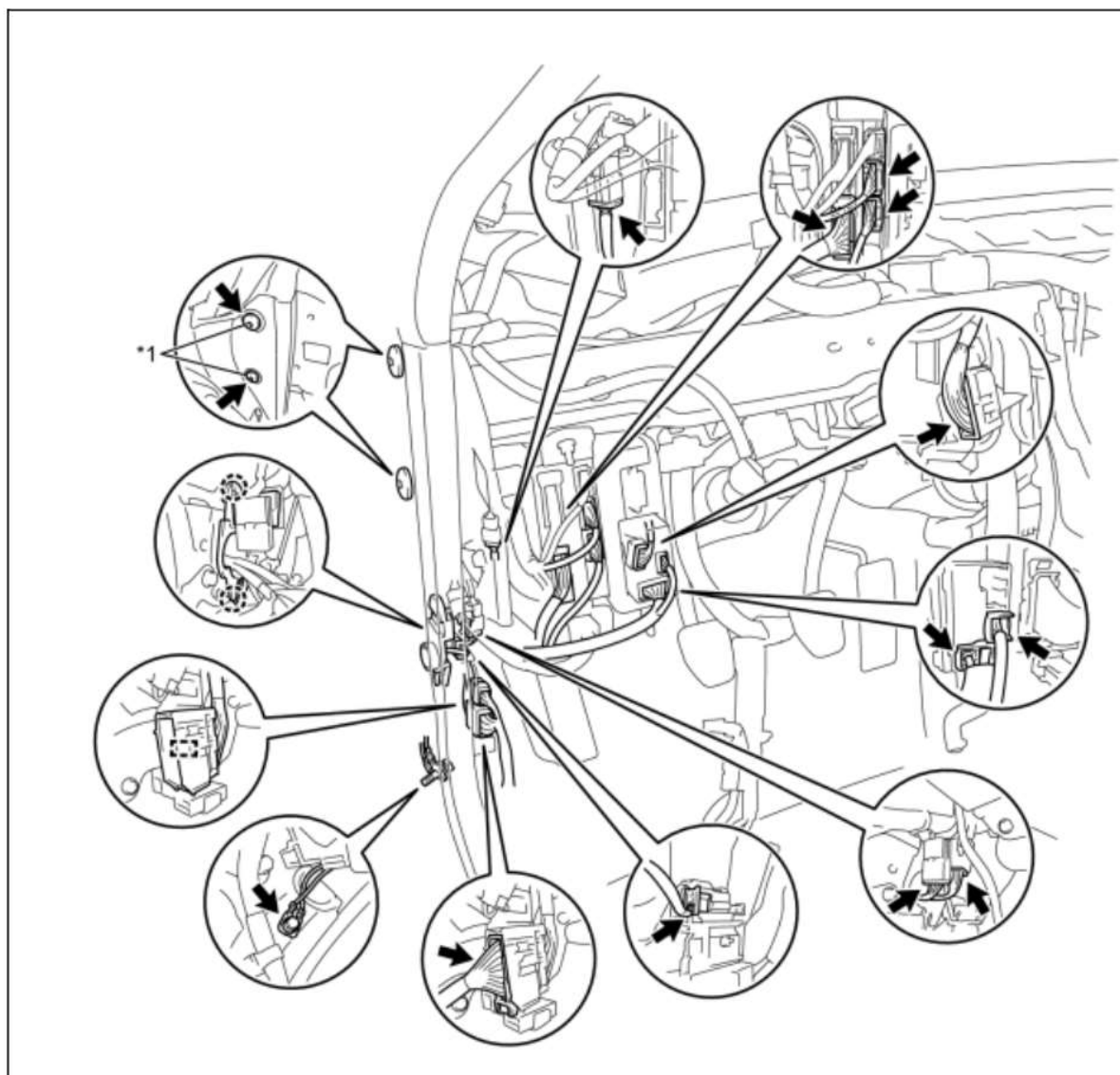
15. REMOVE COWL SIDE TRIM BOARD RH INFO

INFC

16. REMOVE INSTRUMENT PANEL REINFORCEMENT ASSEMBLY

(a) for Driver Side

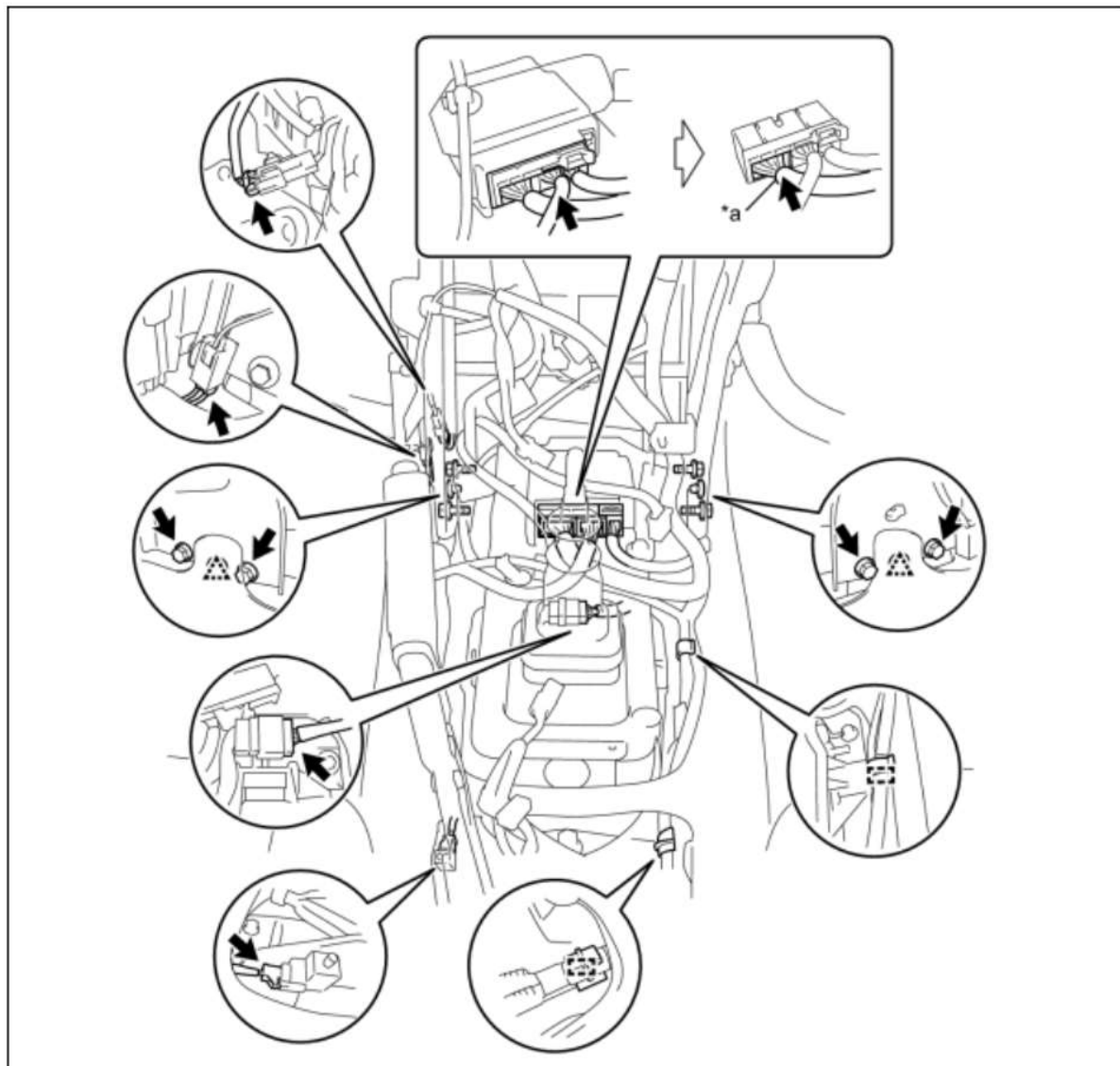
(1) Remove the each bolts.



Text in Illustration

*1	"TORX" Bolt	-	-
----	-------------	---	---

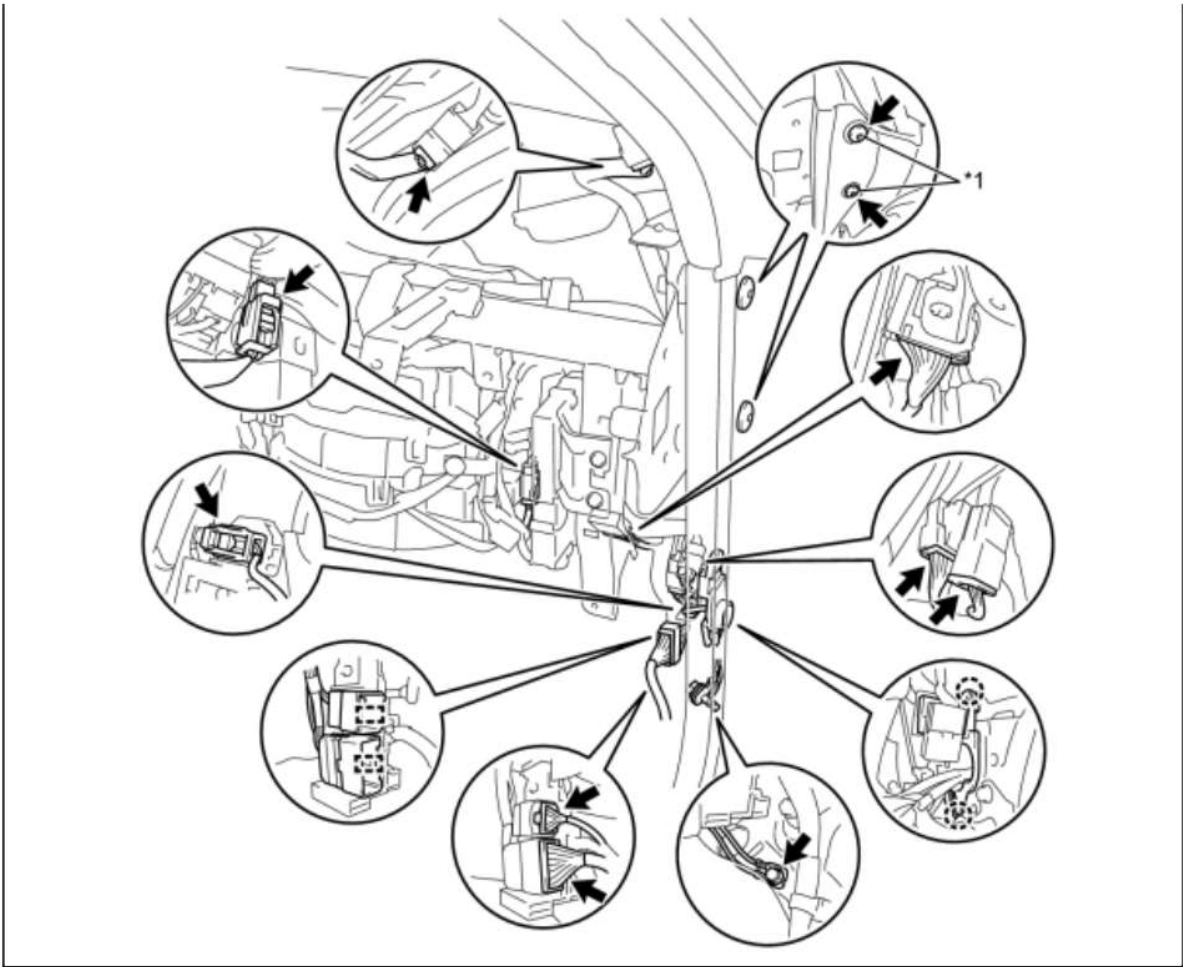
- (2) Disconnect each connector and disengage the clamp and 2 claws.
- (b) for Center Side
- (1) Remove the each bolts and disengage the clip.



Text in Illustration

*a	Disengage the lock plate and disconnect connector.	-	-
----	--	---	---

- (2) Disconnect each connector and disengage the each clamp.
- (c) for Front Passenger Side
- (1) Remove the each bolts.



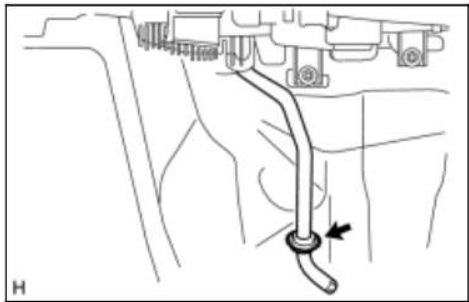
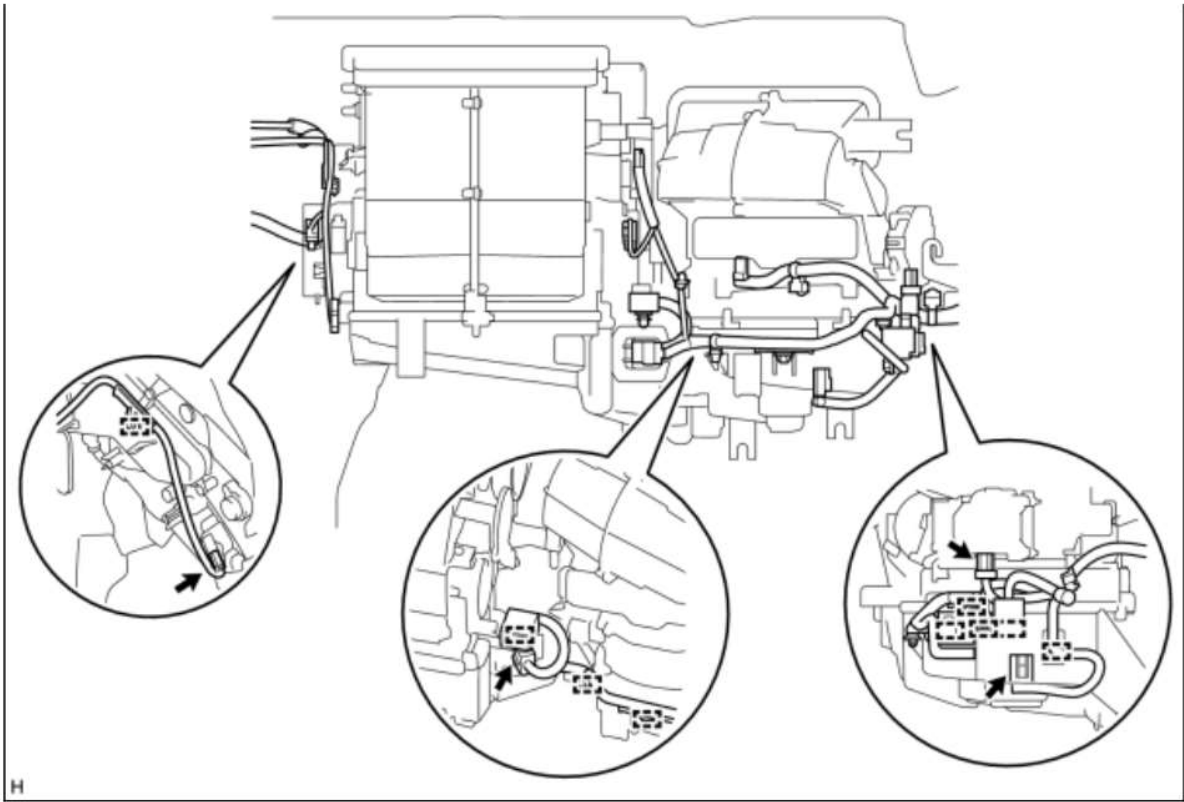
Text in Illustration

*1	"TORX" Bolt	-	-
----	-------------	---	---

- (2) Disconnect each connector and disengage the 2 clamps and 2 claws.
- (d) Remove the instrument panel reinforcement assembly.

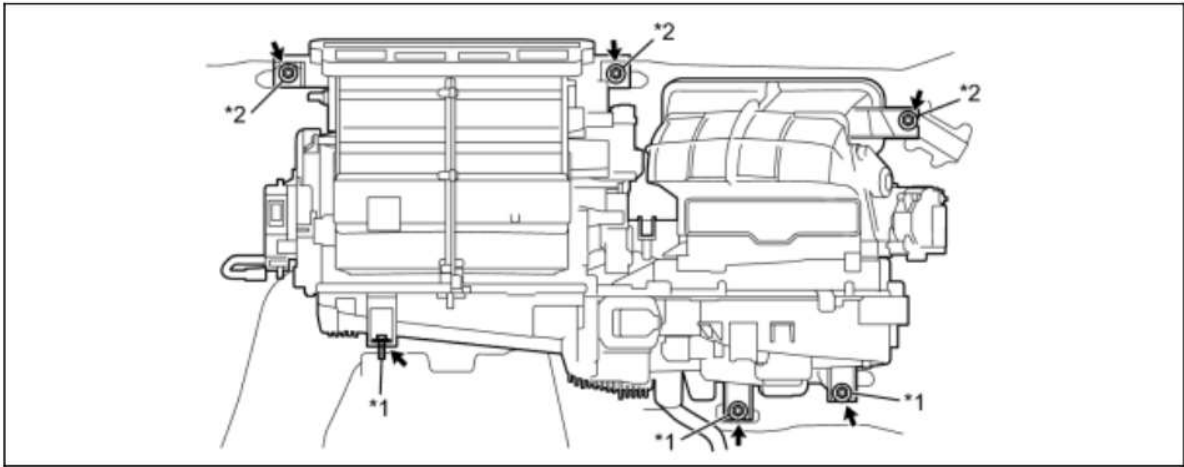
17. REMOVE AIR CONDITIONING UNIT ASSEMBLY

- (a) Disconnect each connector and disengage each clamp.



(b) Disengage the drain cooler hose.

(c) Remove the 3 bolts, 3 nuts and air conditioning unit assembly.



Text in Illustration

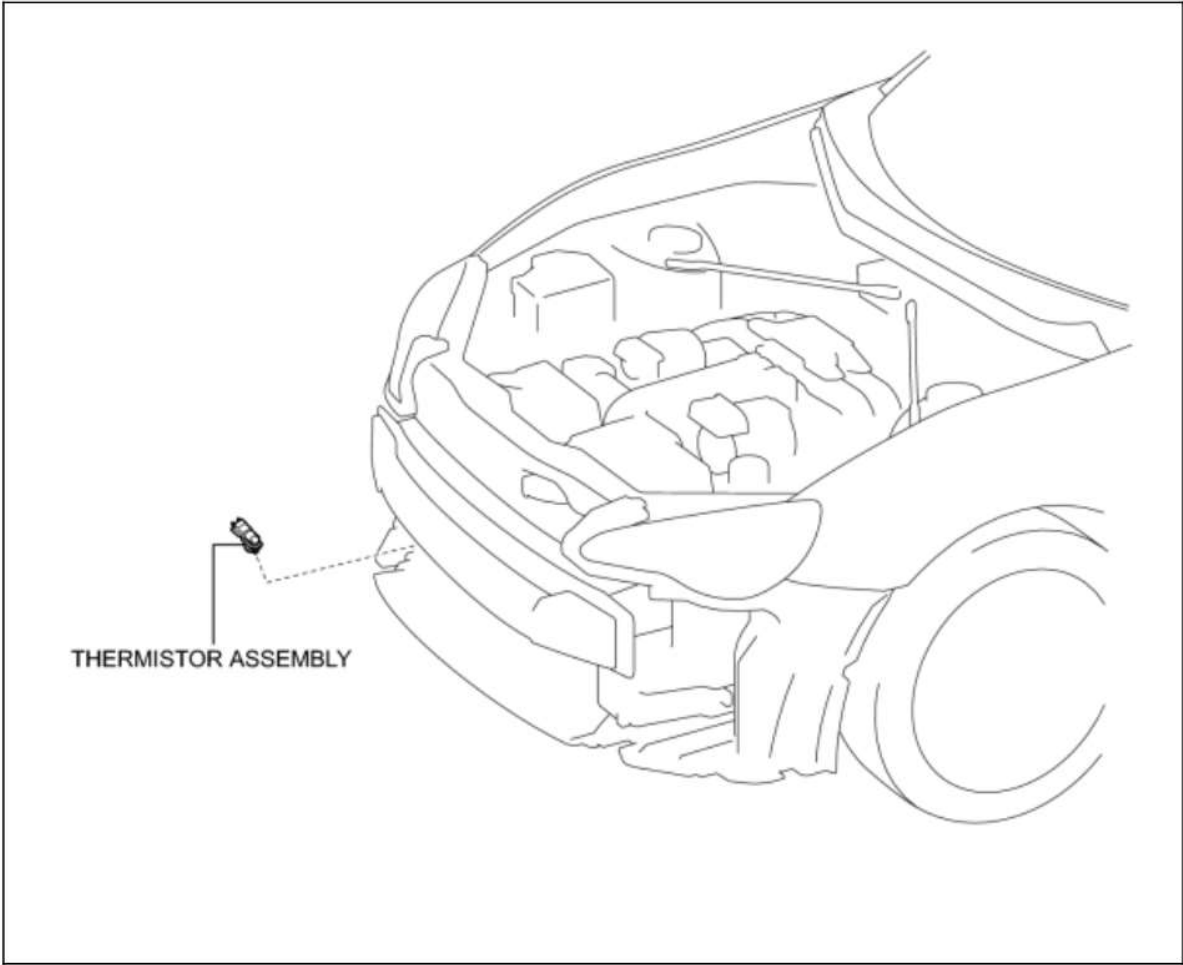
*1	Bolt	*2	Nut
----	------	----	-----

  TOYOTA

Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXQ007X
Title: HEATING / AIR CONDITIONING: AMBIENT TEMPERATURE SENSOR: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION

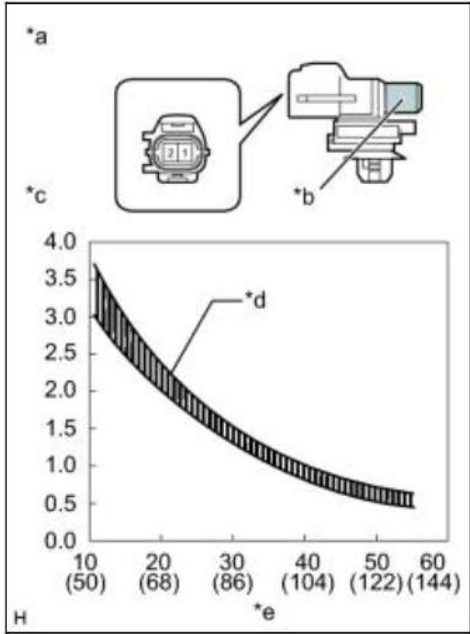


cardiagn.com

Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000201P076X
Title: HEATING / AIR CONDITIONING: AMBIENT TEMPERATURE SENSOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT THERMISTOR ASSEMBLY



(a) Disconnect the connector from the thermistor assembly.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	10°C (50°F)	3.00 to 3.73 kΩ
	15°C (59°F)	2.45 to 2.88 kΩ
	20°C (68°F)	1.95 to 2.30 kΩ
	25°C (77°F)	1.60 to 1.80 kΩ
	30°C (86°F)	1.28 to 1.47 kΩ
	35°C (95°F)	1.00 to 1.22 kΩ
	40°C (104°F)	0.80 to 1.00 kΩ
	45°C (113°F)	0.65 to 0.85 kΩ
	50°C (122°F)	0.50 to 0.70 kΩ
	55°C (131°F)	0.44 to 0.60 kΩ
	60°C (140°F)	0.36 to 0.50 kΩ

NOTICE:

- Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.
- When measuring, the sensor temperature must be the same as the thermistor assembly.

HINT:

As the temperature increases, the resistance decreases (see the graph).

If the resistance is not as specified, replace the thermistor assembly.

Text in Illustration

*a	Component without harness connected (thermistor assembly)
*b	Sensing Portion
*c	Resistance (kΩ)
*d	Allowable Range
*e	Temperature (°C (°F))



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XMG01CX
Title: HEATING / AIR CONDITIONING: AMBIENT TEMPERATURE SENSOR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL THERMISTOR ASSEMBLY

- (a) Engage the clamp and install the thermistor assembly.
- (b) Connect the connector.

2. INSTALL FRONT BUMPER COVER



cardiagn.com

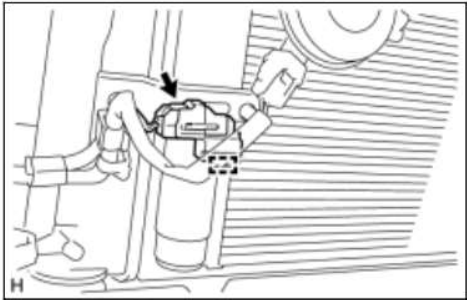
Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XMI01BX
Title: HEATING / AIR CONDITIONING: AMBIENT TEMPERATURE SENSOR: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE FRONT BUMPER COVER

INFO

2. REMOVE THERMISTOR ASSEMBLY



(a) Disconnect the connector.

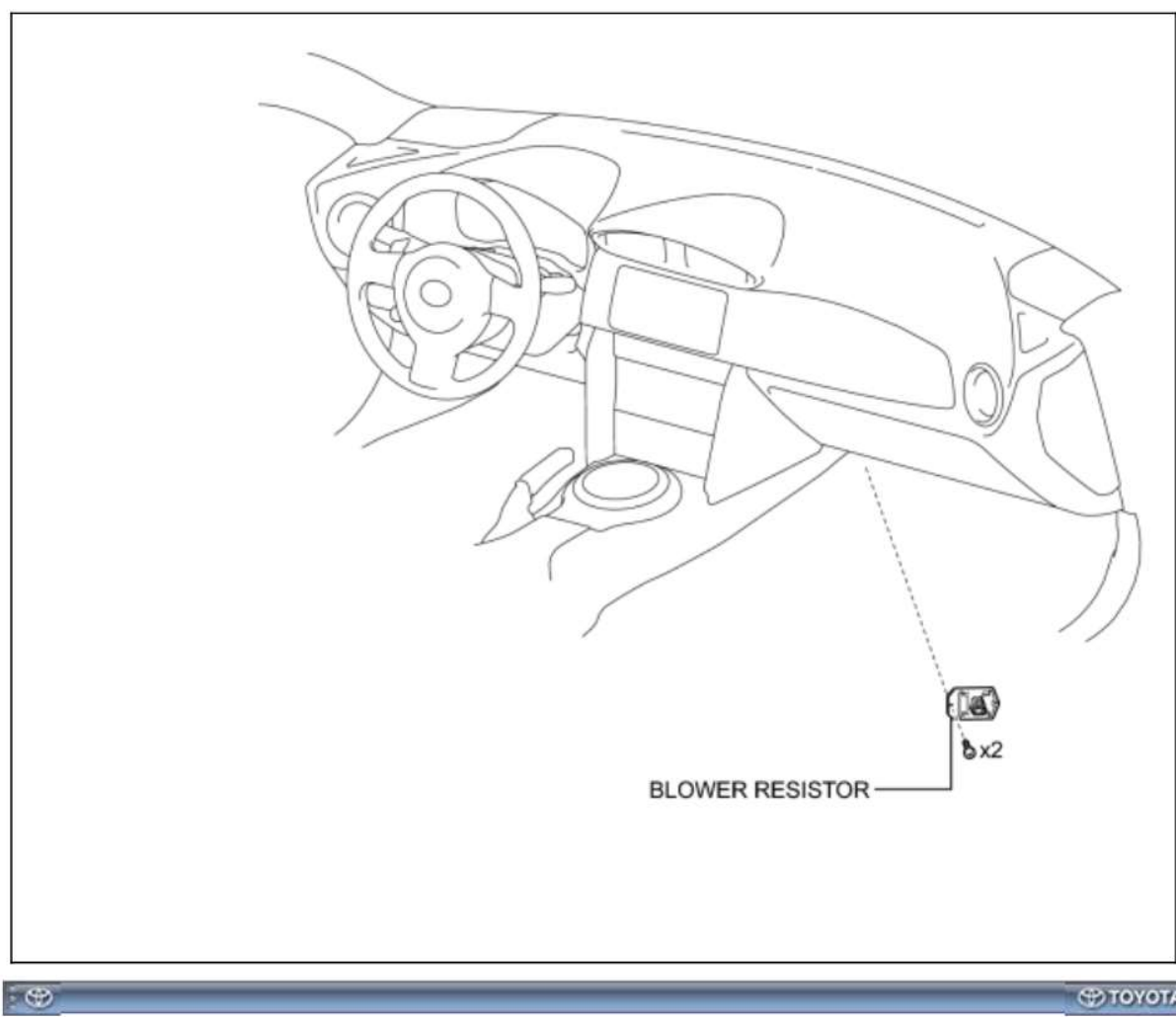
(b) Disengage the clamp and the thermistor assembly.



Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXK004X
Title: HEATING / AIR CONDITIONING: BLOWER RESISTOR: COMPONENTS (2013 FR-S)		

COMPONENTS

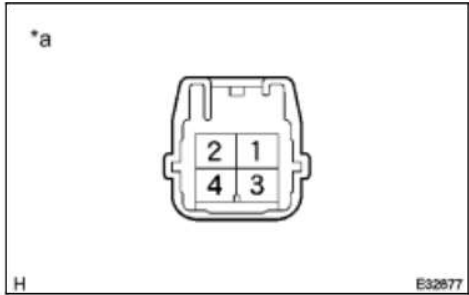
ILLUSTRATION



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000314S01YX
Title: HEATING / AIR CONDITIONING: BLOWER RESISTOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT BLOWER RESISTOR



(a) Disconnect the connector from the blower resistor.

Text in Illustration

*a	Component without harness connected (Blower Resistor)
----	---

HINT:

There is a fuse between terminals 1 and 3.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 4	Always	2.92 Ω
1 - 3	Always	0.44 Ω
1 - 2	Always	1.12 Ω

If the resistance is not as specified, replace the blower resistor.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XU1016X
Title: HEATING / AIR CONDITIONING: BLOWER RESISTOR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL BLOWER RESISTOR

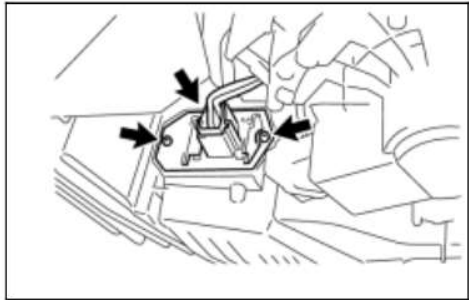
- (a) Install the blower resistor with the 2 screws.
- (b) Connect the connector.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XU3016X
Title: HEATING / AIR CONDITIONING: BLOWER RESISTOR: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE BLOWER RESISTOR



(a) Disconnect the connector.

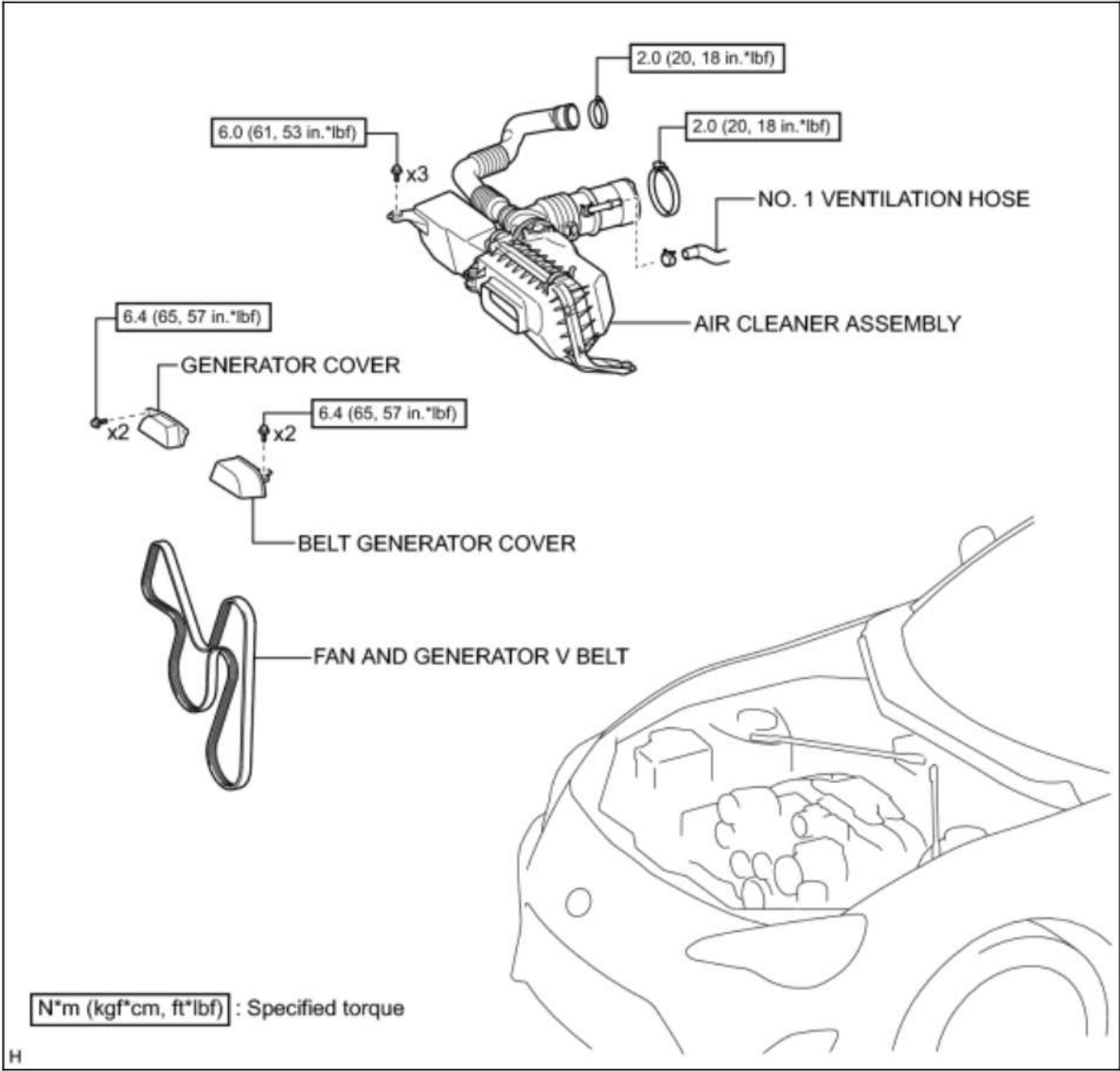
(b) Remove the 2 screws and the blower resistor.



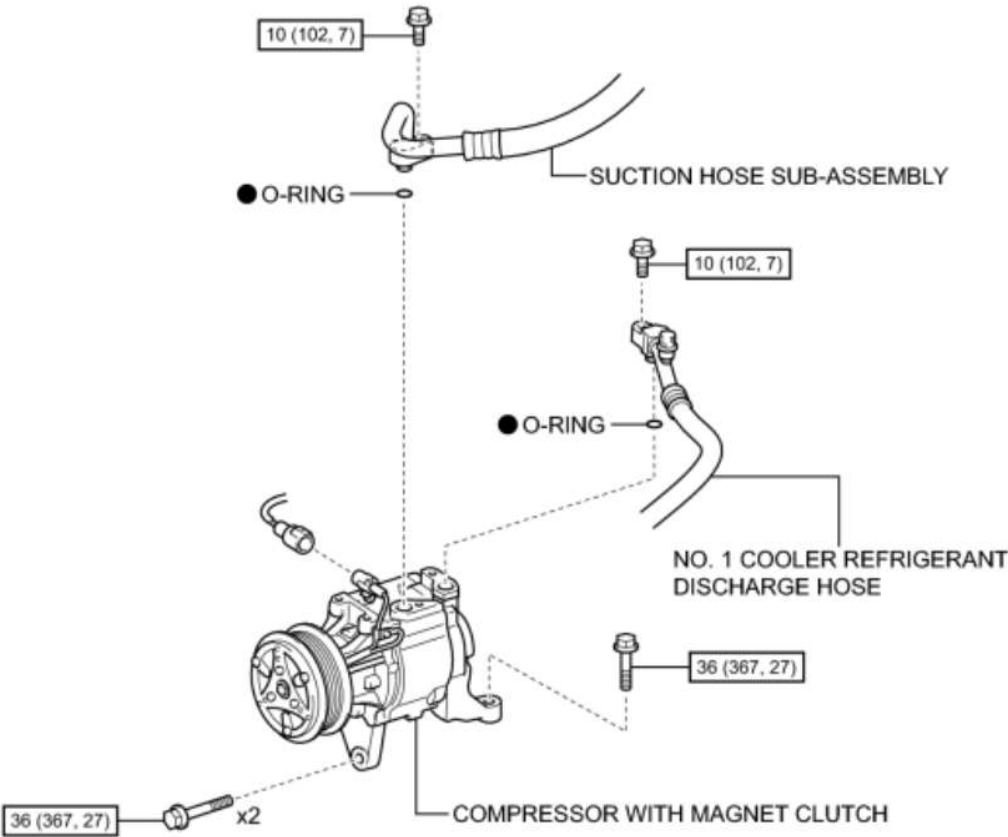
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXM004X
Title: HEATING / AIR CONDITIONING: COMPRESSOR: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



ILLUSTRATION



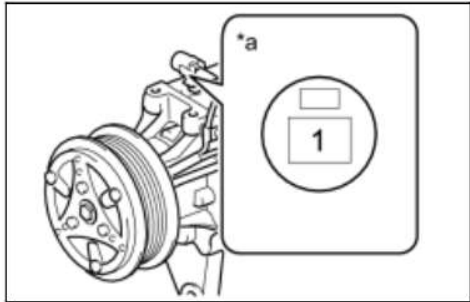
N*m (kgf*cm, ft*lb) : Specified torque ● Non-reusable part

← Compressor oil ND-OIL 8 or equivalent

Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002CVX05BX
Title: HEATING / AIR CONDITIONING: COMPRESSOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT COMPRESSOR WITH MAGNET CLUTCH



(a) Disconnect the connector from the compressor with magnet clutch.

Text in Illustration

*a	Component without harness connected (compressor with magnet clutch)
----	---

(b) Apply battery voltage to the clutch and check operation of the clutch.

Standard Resistance:

CONDITION	SPECIFIED CONDITION
Battery positive (+) → Terminal 1 Battery negative (-) → Body ground	Magnet clutch is engaged

If the result is not as specified, replace the compressor.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XUK01YX
Title: HEATING / AIR CONDITIONING: COMPRESSOR: INSTALLATION (2013 FR-S)		

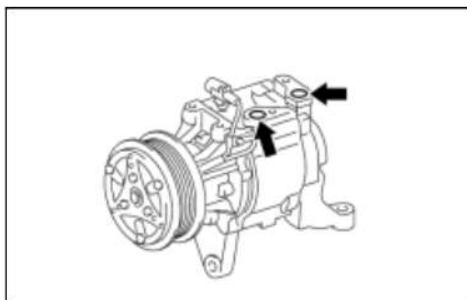
INSTALLATION

1. ADJUST COMPRESSOR OIL LEVEL

- (a) When replacing the compressor with motor assembly with a new one, gradually discharge the refrigerant gas from the service valve, and drain the following amount of oil from the new compressor with motor assembly before installation.

Standard:

Drain oil from the new compressor assembly, and then add new oil so that the amount of oil in the new compressor assembly is the same as that in the compressor assembly to be replaced.



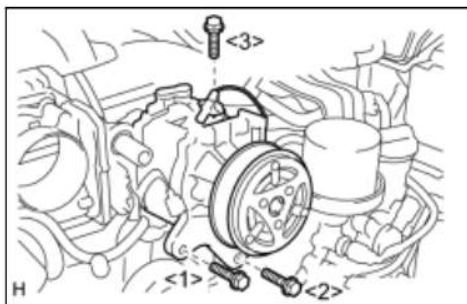
HINT:

The drain bolt and washer can be reused.

NOTICE:

- When checking the compressor oil level, observe the precautions on the cooler removal/installation.
- If a new compressor is installed without removing some oil remaining in the pipes of the vehicle, the oil amount will be excessive. This prevents heat exchange in the refrigerant cycle and causes refrigeration system failure.
- If the volume of oil remaining in the removed compressor is too small, check for oil leaks.
- Be sure to use ND-OIL 8 or equivalent for compressor oil.

2. INSTALL COMPRESSOR WITH MAGNET CLUTCH



- (a) Install the compressor with magnet clutch with the 3 bolts.

HINT:

Tighten the bolts in the order shown in the illustration.

Torque: 36 N·m (367 kgf·cm, 27ft·lbf)

- (b) Connect the connector.

3. CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the attached vinyl tape from the hose.
(b) Apply sufficient compressor oil to a new O-ring and the fitting surface of the compressor with magnet clutch.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

- (c) Install the O-ring onto the No. 1 cooler refrigerant discharge hose.
(d) Install the No. 1 cooler refrigerant discharge hose onto the compressor with magnet clutch with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

4. CONNECT SUCTION HOSE SUB-ASSEMBLY

- (a) Remove the attached vinyl tape from the hose.
(b) Apply sufficient compressor oil to a new O-ring and the fitting surface of the compressor with magnet clutch.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

- (c) Install the O-ring onto the suction hose sub-assembly.
(d) Install the suction hose sub-assembly onto the compressor with magnet clutch with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

5. INSTALL FAN AND GENERATOR V BELT INFO

6. INSTALL BELT GENERATOR COVER INFO

7. INSTALL GENERATOR COVER INFO

8. INSTALL AIR CLEANER ASSEMBLY INFO

9. CHARGE WITH REFRIGERANT

INFO

10. WARM UP ENGINE

INFO

11. INSPECT FOR REFRIGERANT LEAK

INFO



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XUM01YX
Title: HEATING / AIR CONDITIONING: COMPRESSOR: REMOVAL (2013 FR-S)		

REMOVAL

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

INFO

2. REMOVE AIR CLEANER ASSEMBLY

INFO

3. REMOVE GENERATOR COVER

INFO

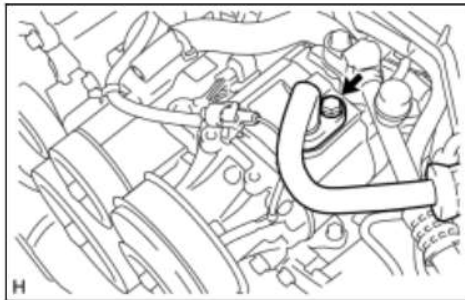
4. REMOVE BELT GENERATOR COVER

INFO

5. REMOVE FAN AND GENERATOR V BELT

INFO

6. DISCONNECT SUCTION HOSE SUB-ASSEMBLY



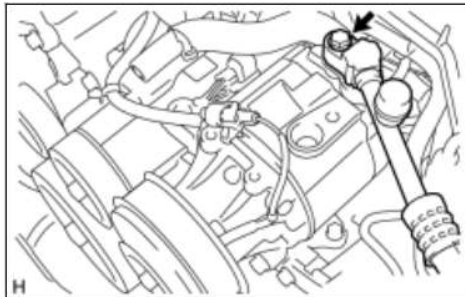
- (a) Remove the bolt and disconnect the suction hose sub-assembly from the compressor with magnet clutch.

- (b) Remove the O-ring from the suction hose sub-assembly.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

7. DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

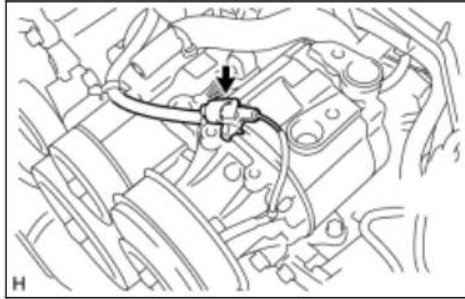


- (a) Remove the bolt and disconnect the No. 1 cooler refrigerant discharge hose from the compressor with magnet clutch.

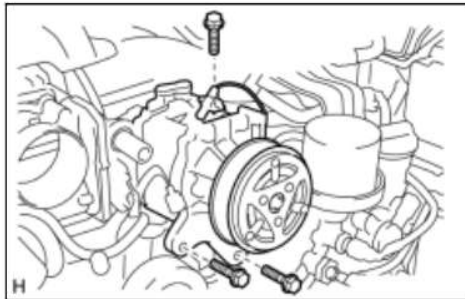
- (b) Remove the O-ring from the No. 1 cooler refrigerant discharge hose.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

8. REMOVE COMPRESSOR WITH MAGNET CLUTCH

(a) Disconnect the connector.



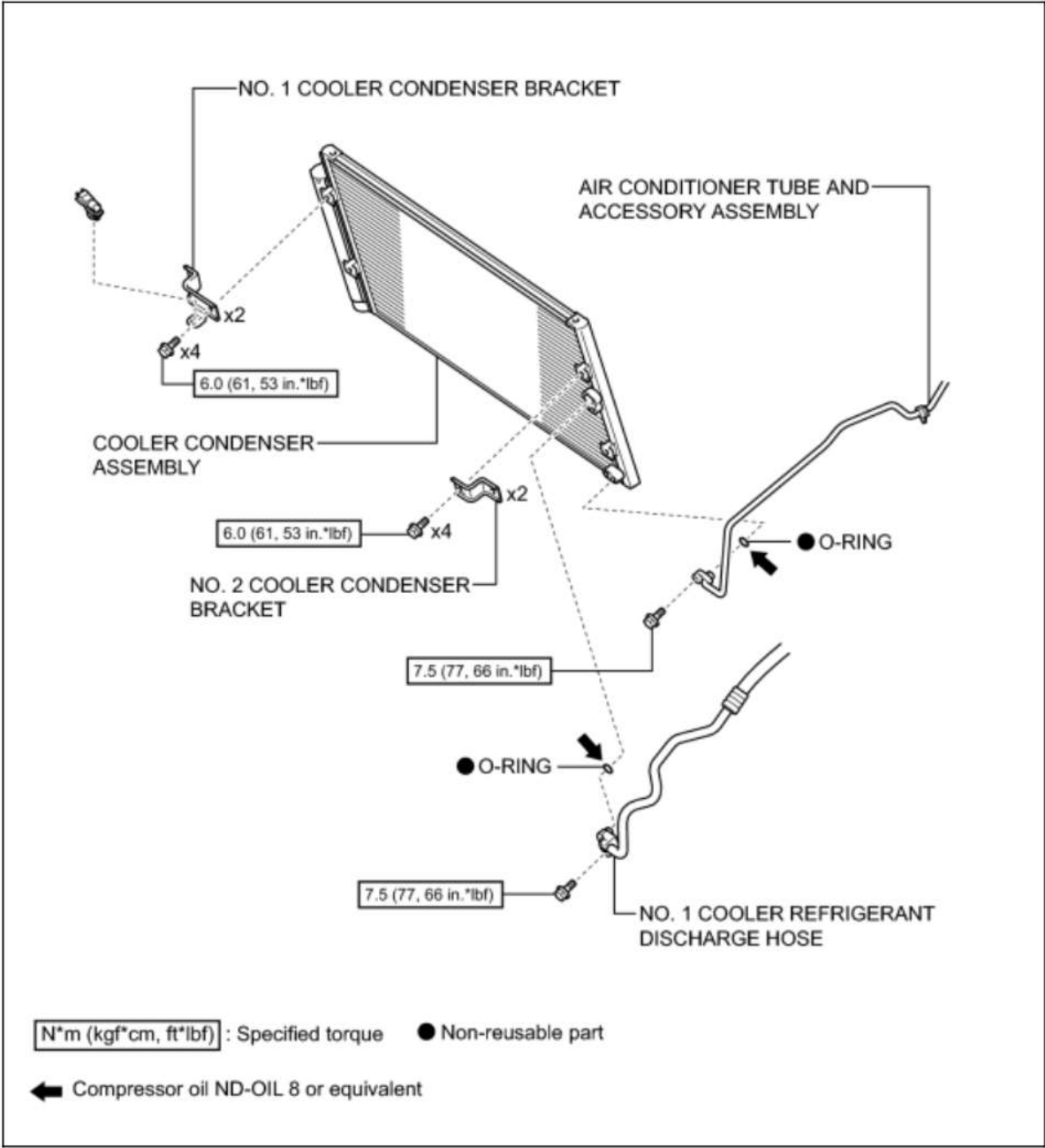
(b) Remove the 3 bolts and the compressor with magnet clutch.



Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXO004X
Title: HEATING / AIR CONDITIONING: CONDENSER: COMPONENTS (2013 FR-S)		

COMPONENTS

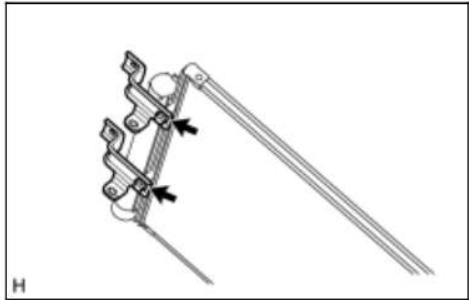
ILLUSTRATION



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XLU05TX
Title: HEATING / AIR CONDITIONING: CONDENSER: DISASSEMBLY (2013 FR-S)		

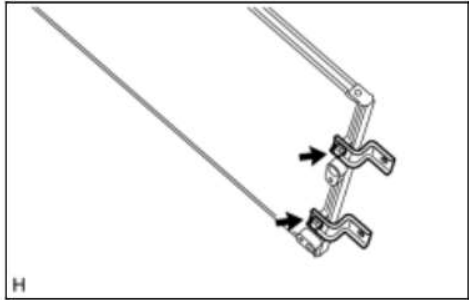
DISASSEMBLY

1. REMOVE NO. 1 COOLER CONDENSER BRACKET



(a) Remove the 2 bolts and the 2 No. 1 cooler condenser bracket.

2. REMOVE NO. 2 COOLER CONDENSER BRACKET



(a) Remove the 2 bolts and the 2 No. 2 cooler condenser bracket.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XLR04KX
Title: HEATING / AIR CONDITIONING: CONDENSER: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL COOLER CONDENSER ASSEMBLY

- (a) Install the cooler condenser assembly with the 4 bolts.

Torque: 6.0 N·m (61 kgf·cm, 53in·lbf)

HINT:

Do not damage the condenser or radiator when installing the condenser.

- (b) Connect the external air temperature sensor clamp and connector.

2. CONNECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

- (a) Remove the attached vinyl tape from the tube and the connecting part of the cooler condenser assembly.

- (b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the tube joint.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

- (c) Install the O-ring on the air conditioner tube and accessory assembly.

- (d) Install the air conditioner tube and accessory assembly on the cooler condenser assembly with the bolt.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)

3. CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the attached vinyl tape from the pipe and the connecting part of the cooler condenser assembly.

- (b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the pipe joint.

Compressor oil:

for HFC-134a (R134a)

ND-OIL 8 or equivalent

- (c) Install the O-ring on the No. 1 cooler refrigerant discharge hose.

- (d) Install the No. 1 cooler refrigerant discharge hose on the cooler condenser assembly with the bolt.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)

4. CHARGE WITH REFRIGERANT

INFO

5. WARM UP ENGINE

INFO

6. INSPECT FOR REFRIGERANT LEAK



cardiagn.com

Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000012UU039X
Title: HEATING / AIR CONDITIONING: CONDENSER: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT COOLER CONDENSER ASSEMBLY

- (a) If the cooler condenser assembly fins are dirty, clean them with water and dry with compressed air.

NOTICE:

Do not damage the condenser assembly fins.

- (b) If any cooler condenser assembly fins are bent, straighten them using a screwdriver or pliers.

2. INSPECT FOR REFRIGERANT LEAK

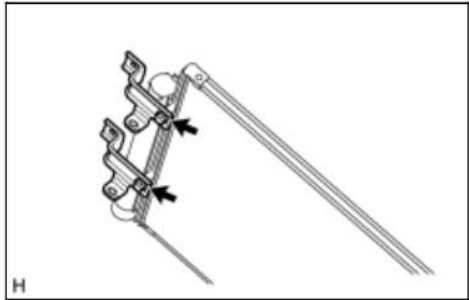
- (a) Using a halogen leak detector, check pipe joints for refrigerant leakage.
- (b) If refrigerant leakage is detected in a joint, check the torque of the joint.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XLV05TX
Title: HEATING / AIR CONDITIONING: CONDENSER: REASSEMBLY (2013 FR-S)		

REASSEMBLY

1. INSTALL NO. 1 COOLER CONDENSER BRACKET

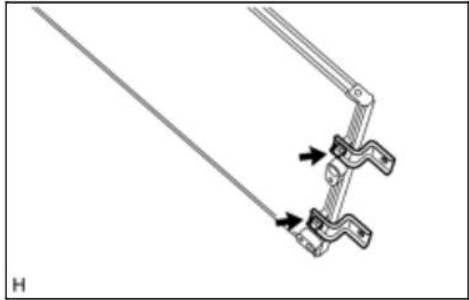


(a) Install the 2 No. 1 cooler condenser bracket with the 2 bolts.

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

HINT:
Install the bracket in parallel (horizontally).

2. INSTALL NO. 2 COOLER CONDENSER BRACKET



(a) Install the 2 No. 2 cooler condenser bracket with the 2 bolts.

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

HINT:
Install the bracket in parallel (horizontally).



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XLT04IX
Title: HEATING / AIR CONDITIONING: CONDENSER: REMOVAL (2013 FR-S)		

REMOVAL

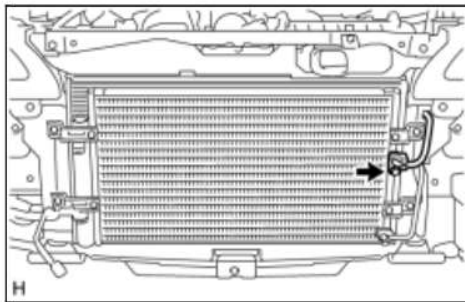
1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

INFO

2. REMOVE FRONT BUMPER COVER

INFO

3. DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE



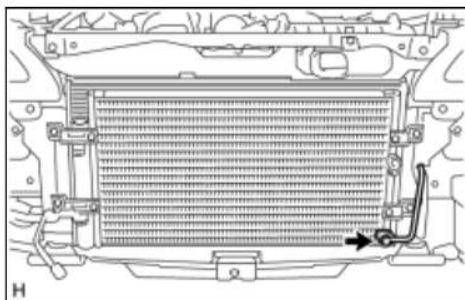
- (a) Remove the bolt and disconnect the No. 1 cooler refrigerant discharge hose from the condenser.

- (b) Remove the O-ring from the No. 1 cooler refrigerant discharge hose.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

4. DISCONNECT AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY



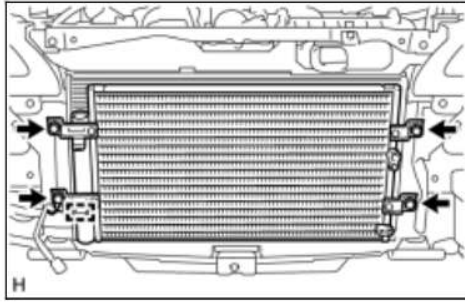
- (a) Remove the bolt and disconnect the air conditioning tube and accessory assembly from the condenser.

- (b) Remove the O-ring from the air conditioning tube and accessory assembly.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

5. REMOVE COOLER CONDENSER ASSEMBLY



(a) Disconnect the connector.

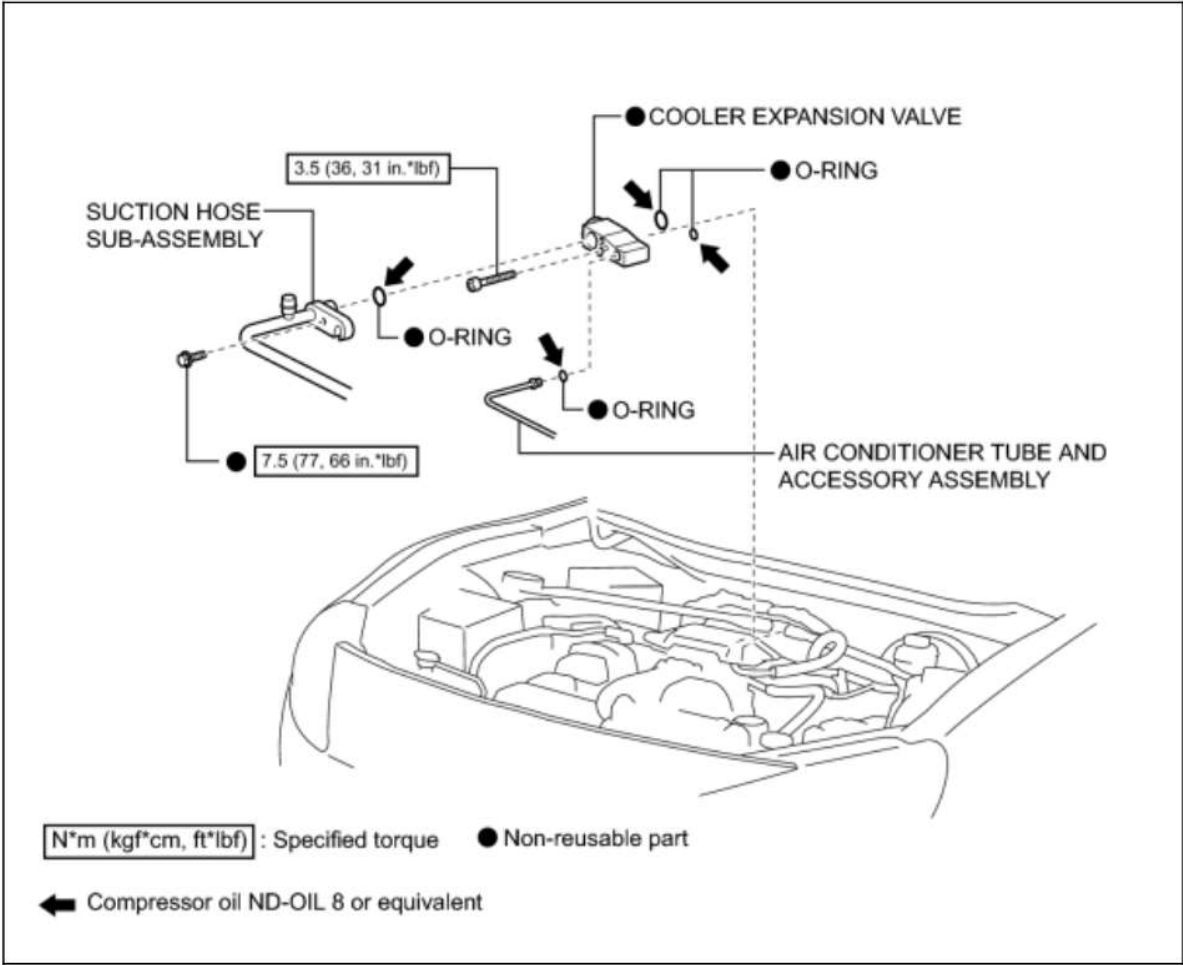
(b) Remove the 4 bolts and the cooler condenser assembly.



Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000004N9800RX
Title: HEATING / AIR CONDITIONING: COOLER EXPANSION VALVE: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



cardiagn.com

Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000004N9700LX
Title: HEATING / AIR CONDITIONING: COOLER EXPANSION VALVE: INSTALLATION (2013 FR-S)		

INSTALLATION

NOTICE:

When removing the cooler expansion valve by itself, be sure to install a new cooler expansion valve and new bolt for suction hose sub-assembly.

1. INSTALL COOLER EXPANSION VALVE

- (a) Apply sufficient compressor oil to 2 new O-rings and the fitting surfaces of the cooler expansion valve.
Compressor oil:
for HFC-134a (R134a)
ND-OIL 8 or equivalent
- (b) Install the 2 new O-rings onto the No. 1 cooler evaporator sub-assembly.
- (c) Using a 4 mm hexagon wrench, install the new cooler expansion valve with the new 2 hexagon bolts.

Torque: 3.5 N·m (36 kgf·cm, 31in·lbf)

2. INSTALL AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

INFO

3. INSTALL SUCTION HOSE SUB-ASSEMBLY

INFO

4. CHARGE REFRIGERANT

INFO

5. WARM UP ENGINE

INFO

6. INSPECT FOR REFRIGERANT LEAK

INFO



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000004N9900LX
Title: HEATING / AIR CONDITIONING: COOLER EXPANSION VALVE: REMOVAL (2013 FR-S)		

REMOVAL

NOTICE:
When removing the cooler expansion valve by itself, be sure to install a new cooler expansion valve and new bolt for suction tube sub-assembly.

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

INFO

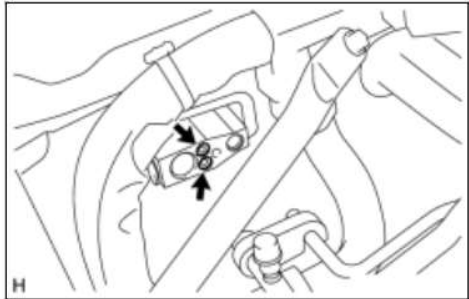
2. SEPARATE SUCTION HOSE SUB-ASSEMBLY

INFO

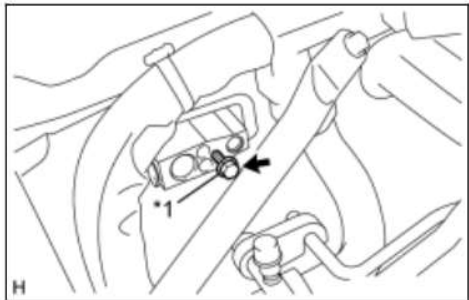
3. SEPARATE AIR CONDITIONER TUBE AND ACCESSORY ASSEMBLY

INFO

4. REMOVE COOLER EXPANSION VALVE



(a) Using a 4 mm hexagon wrench, remove the 2 hexagon bolts.

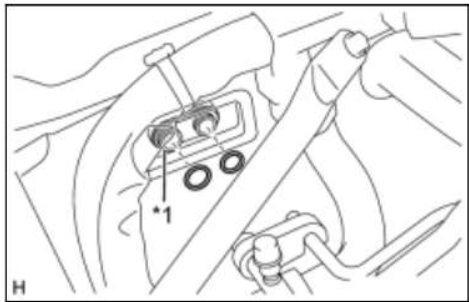
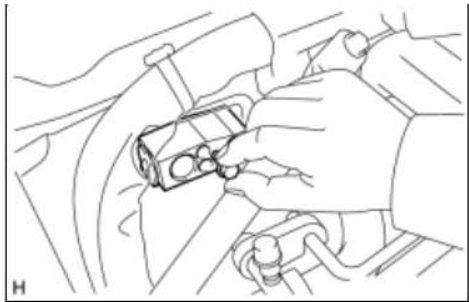


(b) Temporarily install the bolt for the suction hose sub-assembly halfway to the cooler expansion valve.

Text in Illustration

*1	Bolt For The Suction Tube Sub-assembly
----	--

(c) Hold the bolt and pull it to remove the cooler expansion valve as shown in the illustration.



(d) Remove the 2 O-rings from the evaporator pipe.

Text in Illustration

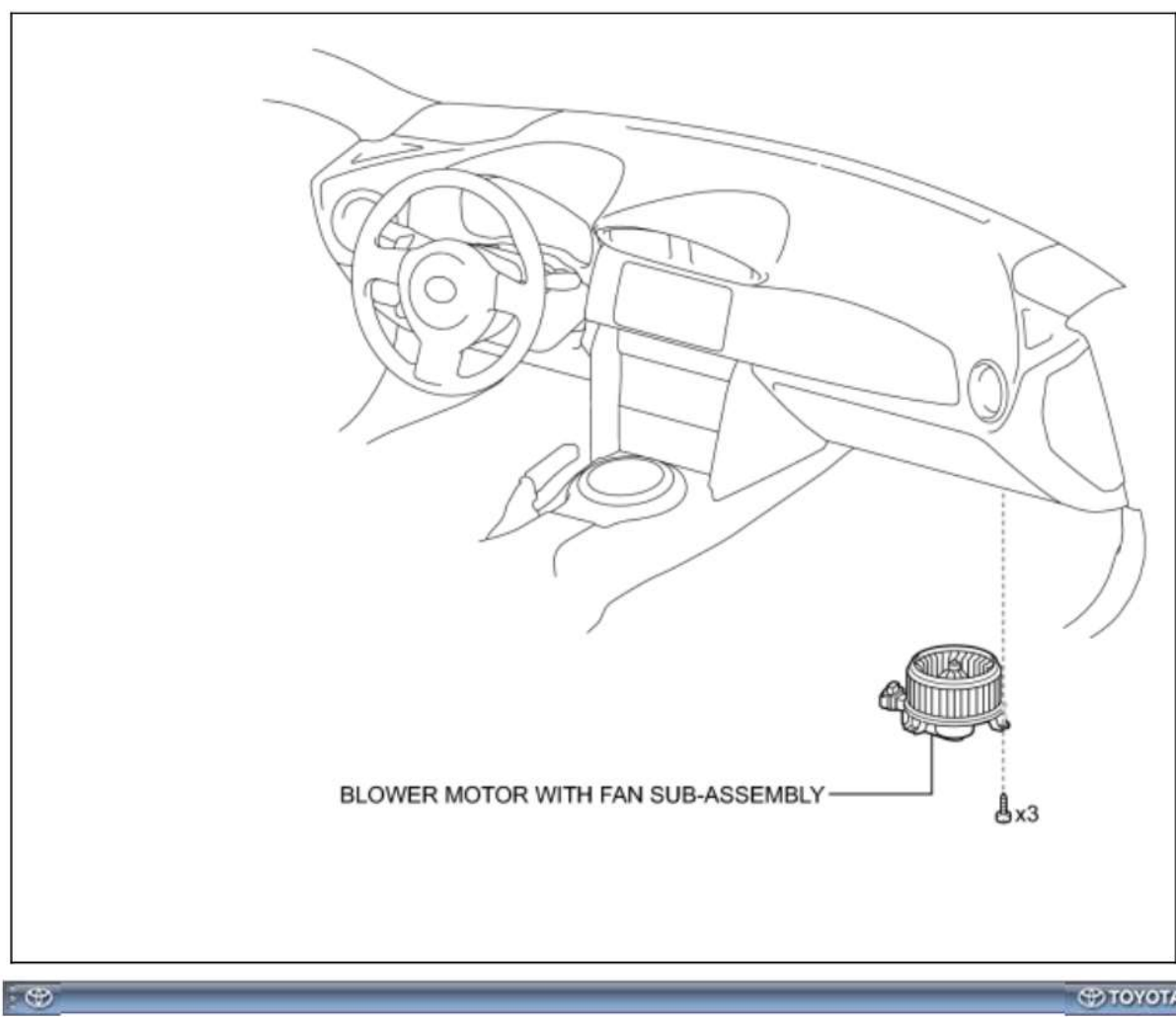
*1	Evaporator Pipe
----	-----------------



Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXI004X
Title: HEATING / AIR CONDITIONING: FRONT BLOWER MOTOR: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



cardiagn.com

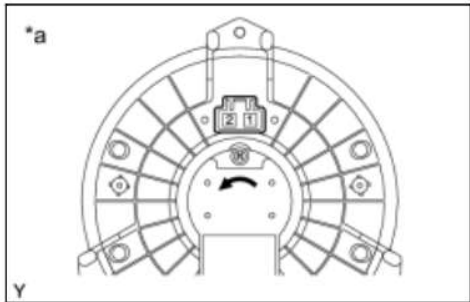
Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000314T027X
Title: HEATING / AIR CONDITIONING: FRONT BLOWER MOTOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT BLOWER MOTOR

(a) Disconnect the connector from the blower motor.

Text in Illustration



*a	Component without harness connected (Blower Motor)
----	---

OK:

MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → 2 Battery negative (-) → 1	The blower motor operates smoothly

If the result is not as specified, replace the blower motor.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XU7017X
Title: HEATING / AIR CONDITIONING: FRONT BLOWER MOTOR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL BLOWER MOTOR WITH FAN SUB-ASSEMBLY

- (a) Install the blower motor with fan sub-assembly with the 3 screws.
- (b) Connect the connector.

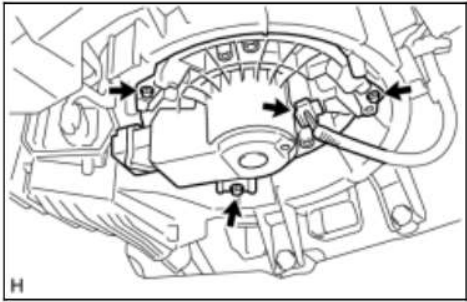


cardiagn.com

Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002XU9017X
Title: HEATING / AIR CONDITIONING: FRONT BLOWER MOTOR: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE BLOWER MOTOR WITH FAN SUB-ASSEMBLY



(a) Disconnect the connector.

(b) Remove the 3 screws and the blower motor with fan sub-assembly.

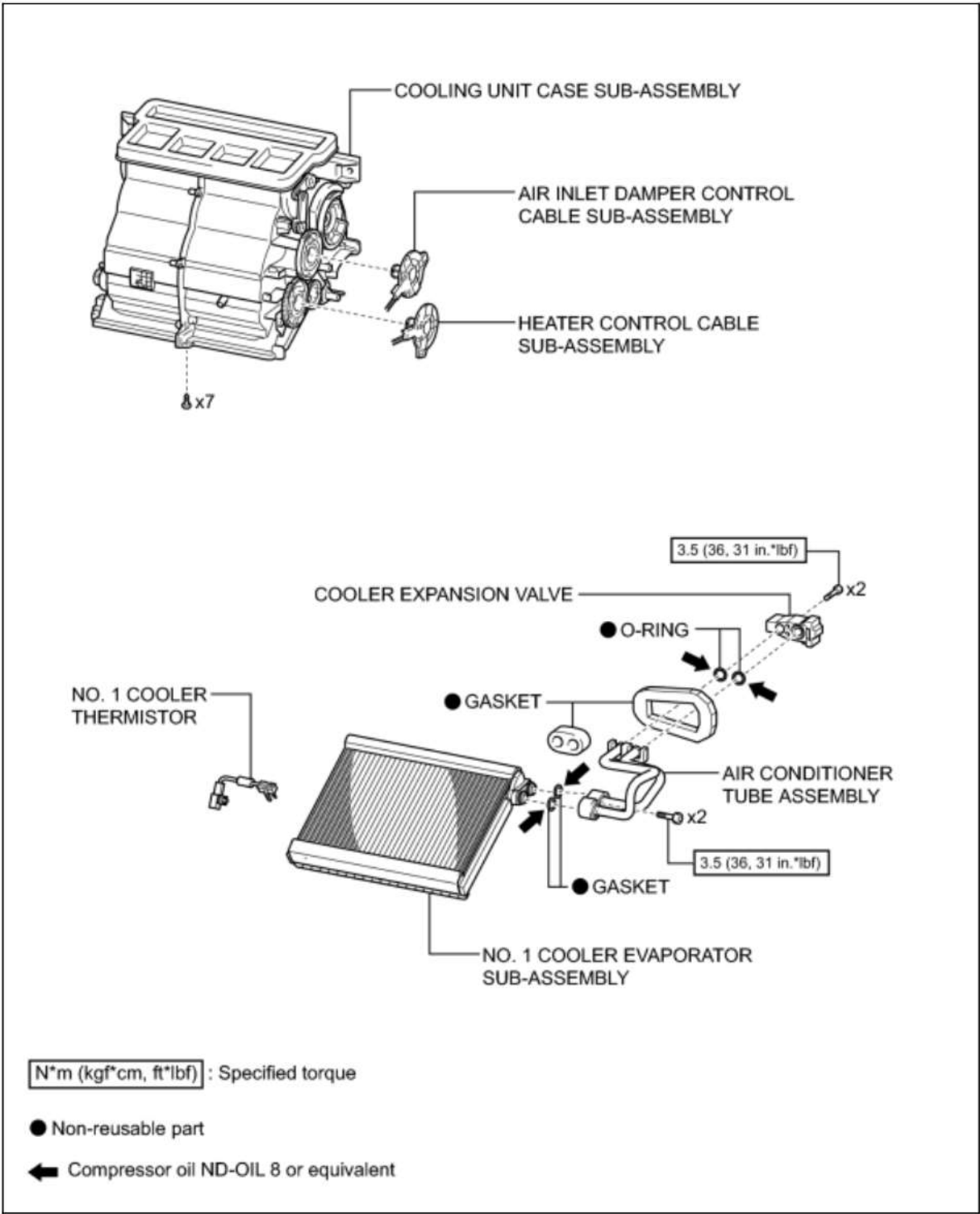


cardiagn.com

Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXR004X
Title: HEATING / AIR CONDITIONING: FRONT EVAPORATOR TEMPERATURE SENSOR: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION





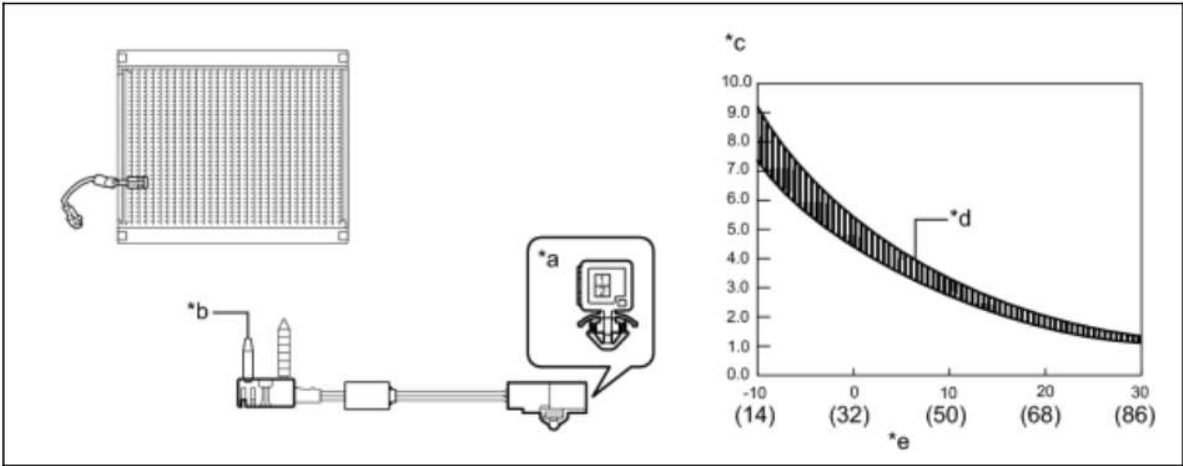
cardiagn.com

Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000202X050X
Title: HEATING / AIR CONDITIONING: FRONT EVAPORATOR TEMPERATURE SENSOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT NO. 1 COOLER THERMISTOR

(a) Disconnect the connector from the No. 1 cooler thermistor.



Text in Illustration

*a	Component without harness connected (No. 1 cooler thermistor)	*b	Sensing Portion
*c	Resistance (kΩ)	*d	Allowable Range
*e	Temperature (°C (°F))	-	-

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	-10°C (14°F)	7.30 to 9.10 kΩ
	-5°C (23°F)	5.65 to 6.95 kΩ
	0°C (32°F)	4.40 to 5.35 kΩ
	5°C (41°F)	3.40 to 4.15 kΩ
	10°C (50°F)	2.70 to 3.25 kΩ
	15°C (59°F)	2.14 to 2.58 kΩ
	20°C (68°F)	1.71 to 2.05 kΩ
	25°C (77°F)	1.38 to 1.64 kΩ
	30°C (86°F)	1.11 to 1.32 kΩ

NOTICE:

- Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.
- When measuring, the sensor temperature must be the same as the ambient temperature.

HINT:

As the temperature increases, the resistance decreases (see the graph).

If the resistance is not as specified, replace the No. 1 cooler thermistor.

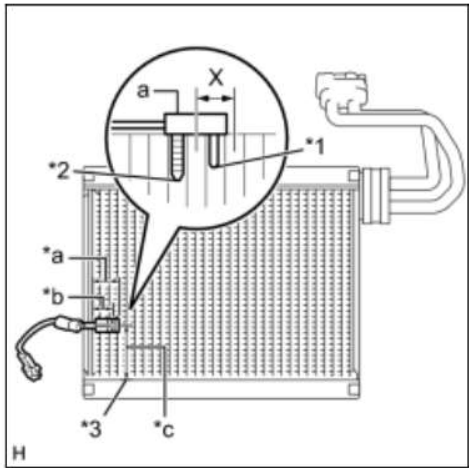


Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLU0WZX
Title: HEATING / AIR CONDITIONING: FRONT EVAPORATOR TEMPERATURE SENSOR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL NO. 1 COOLER THERMISTOR

(a) Install the No. 1 cooler thermistor as shown in the illustration.



PART	LENGTH
*a	34.3 mm
*b	27.6 mm
*c	50 mm

Text in Illustration

*1	Sensor Part
*2	Fixed Part
*3	from Tank

NOTICE:

- Be sure to insert the thermistor only once because reinserting it will not allow it to be firmly secured.
- When reusing the evaporator, insert the thermistor one row next to the one that has been used previously (X in the illustration).
- After inserting the thermistor, do not apply excessive force to the wire.
- Directly insert the thermistor until the edge of plastic case "a" comes into contact with evaporator "b".

2. INSTALL AIR CONDITIONER TUBE ASSEMBLY INFO

3. INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY INFO

4. INSTALL COOLING UNIT CASE SUB-ASSEMBLY INFO

5. INSTALL COOLER EXPANSION VALVE INFO

6. INSTALL HEATER CONTROL CABLE SUB-ASSEMBLY INFO

7. INSTALL AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY INFO

8. INSTALL AIR CONDITIONING UNIT ASSEMBLY

INFO**9. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

Torque: 6.0 N·m (61 kgf·cm, 53in·lbf)

10. ADD ENGINE COOLANT**INFO****11. CHARGE WITH REFRIGERANT****INFO****12. INSPECT FOR COOLANT LEAK****INFO****13. WARM UP ENGINE****INFO****14. INSPECT FOR REFRIGERANT LEAK****INFO****15. INSPECT SRS WARNING LIGHT****INFO**

Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001HLW0W8X
Title: HEATING / AIR CONDITIONING: FRONT EVAPORATOR TEMPERATURE SENSOR: REMOVAL (2013 FR-S)		

REMOVAL

1. PRECAUTION

CAUTION:

Be sure to read Precaution thoroughly before servicing.

INFO

NOTICE:

After turning the ignition switch off, waiting time may be required before disconnecting the cable from the negative (-) battery terminal. Therefore, make sure to read the disconnecting the cable from the negative (-) battery terminal notices before proceeding with work.

INFO

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

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

NOTICE:

- The power window system utilizes a mechanism that the door glass moves down slightly when the door is opened, and that the glass moves up when closing the door in order to prevent the door molding from being damaged. When the battery negative (-) terminal needs to be disconnected for servicing, fully open the driver and passenger door glasses in advance.

3. REMOVE AIR CONDITIONING UNIT ASSEMBLY

INFO

4. REMOVE AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY

INFO

5. REMOVE HEATER CONTROL CABLE SUB-ASSEMBLY

INFO

6. REMOVE COOLER EXPANSION VALVE

INFO

7. REMOVE COOLING UNIT CASE SUB-ASSEMBLY

INFO

8. REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY

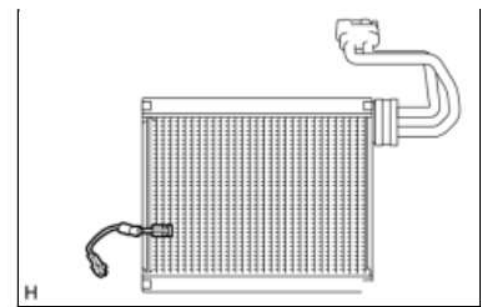
INFO

9. REMOVE AIR CONDITIONER TUBE ASSEMBLY

INFO

10. REMOVE NO. 1 COOLER THERMISTOR

- (a) Remove the No. 1 cooler thermistor from the No. 1 cooler evaporator sub-assembly.

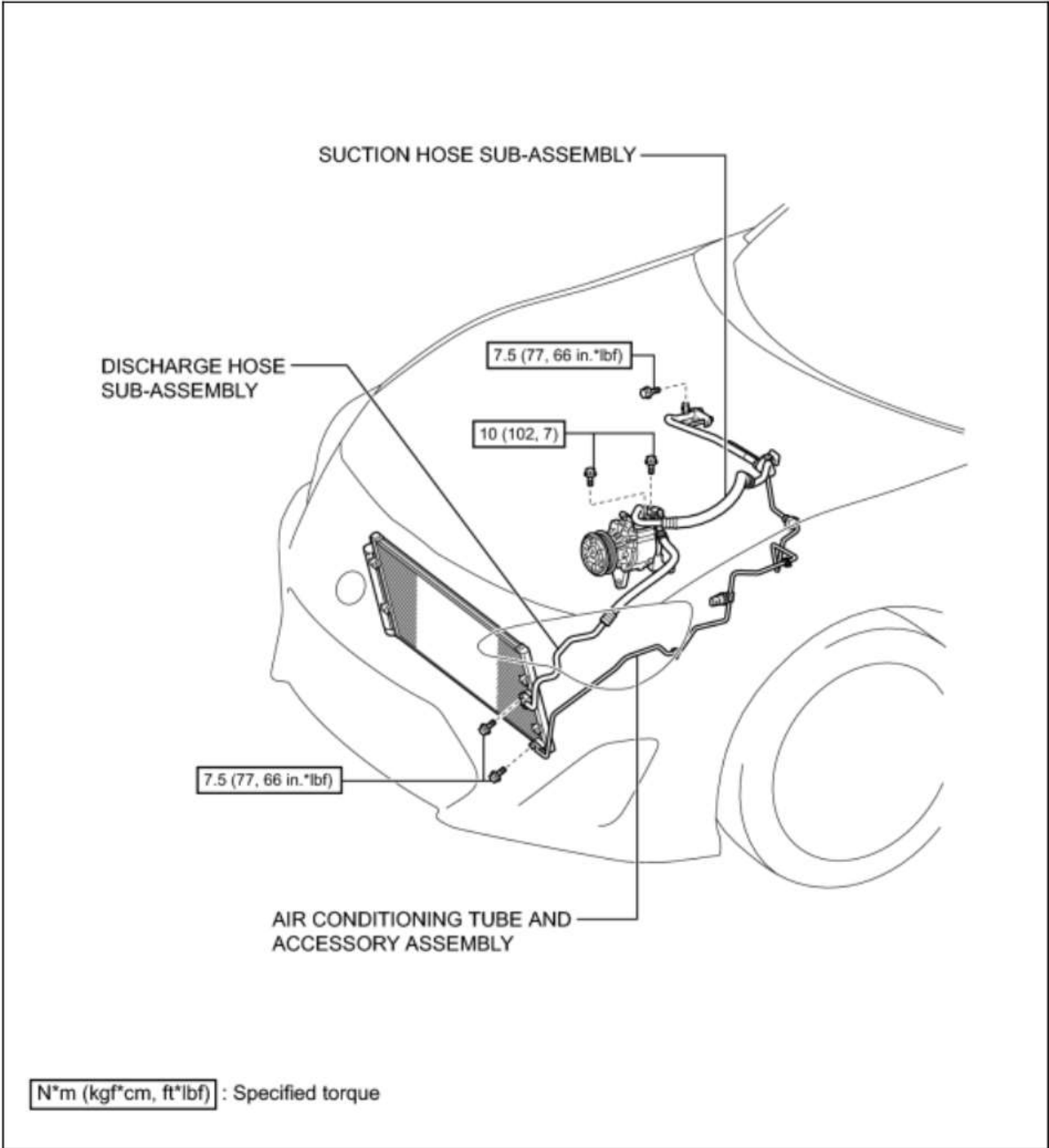


cardiagn.com

Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003FXC004X
Title: HEATING / AIR CONDITIONING: REFRIGERANT LINE: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001R8Z030X
Title: HEATING / AIR CONDITIONING: REFRIGERANT: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

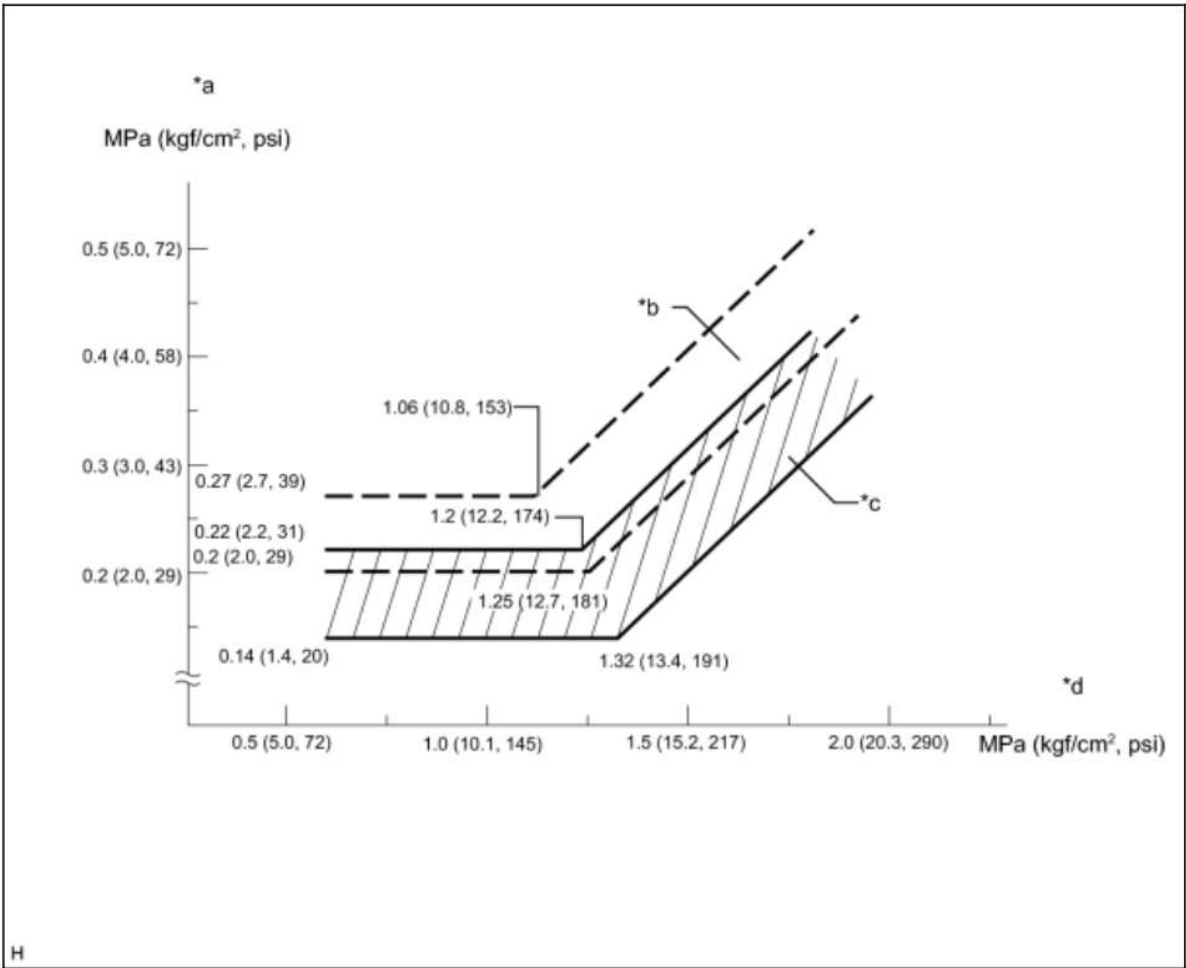
1. INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

(a) This method uses a manifold gauge set to locate problem areas. Read the manifold gauge pressure when the test conditions are established.

Test conditions:

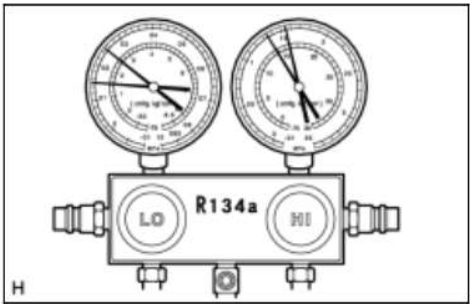
- Temperature at the air inlet with the air recirculation switch set at RECIRC is 30 to 35°C (86 to 95°F).
- Engine is running at 1500 rpm.
- All doors are fully open.
- Blower speed control switch is set to HI.
- A/C switch is on.

Gauge readings (Reference):



Text in Illustration

*a	Pressure on low-pressure side	*b	Blower HI Zone
*c	Blower LO Zone	*d	Pressure on high-pressure side

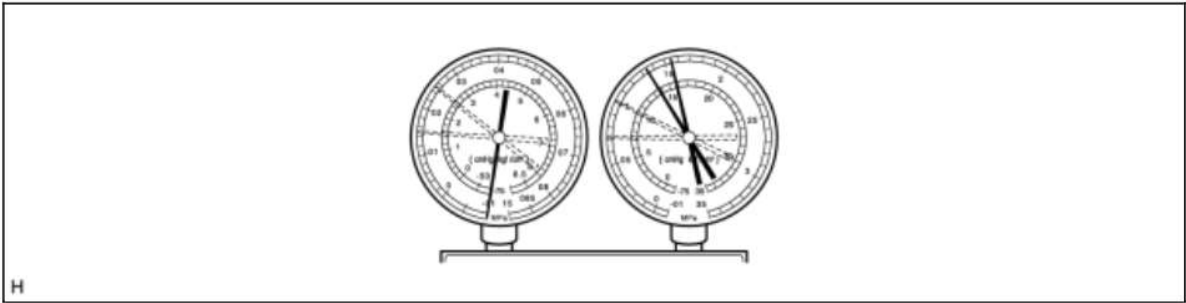


(1) Normally functioning refrigeration system.

Gauge Reading:

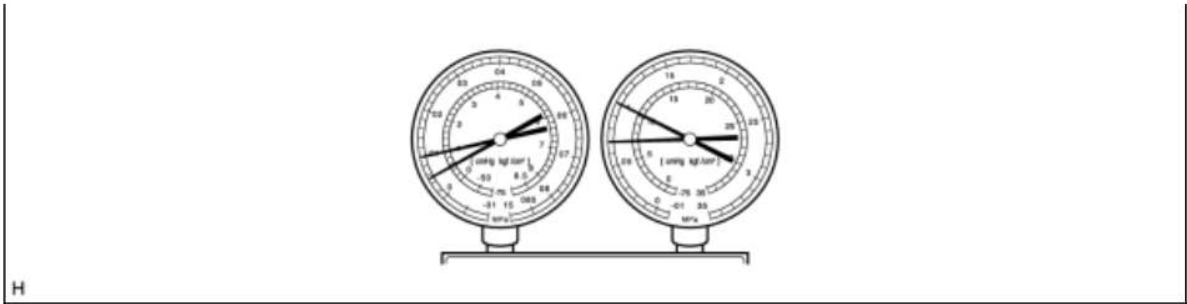
PRESSURE SIDE	REFRIGERANT VOLUME
Low	0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm ²)
High	1.37 to 1.57 MPa (14 to 16 kgf/cm ²)

(2) The A/C system periodically changes between normal and improper function due to moisture in the refrigerant system.



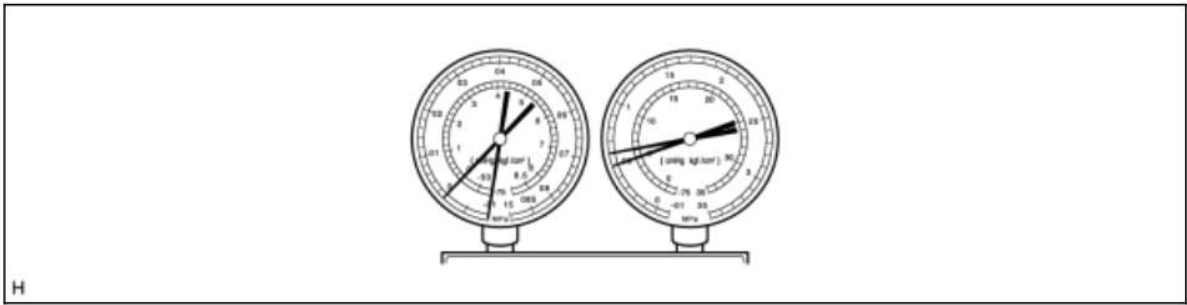
SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
During operation, pressure on low pressure side cycles between normal and vacuum	Moisture in refrigeration system freezes at expansion valve orifice, causing temporary stop of cycle. However, when melted, normal state is restored.	• Dryer is overly saturated • Moisture in refrigeration system freezes at expansion valve orifice and blocks refrigerant circulation	1. Replace cooler dryer 2. Remove moisture from cycle by repeatedly evacuating air 3. Supply appropriate volume of new refrigerant

(3) The A/C system does not function effectively due to insufficient refrigerant.



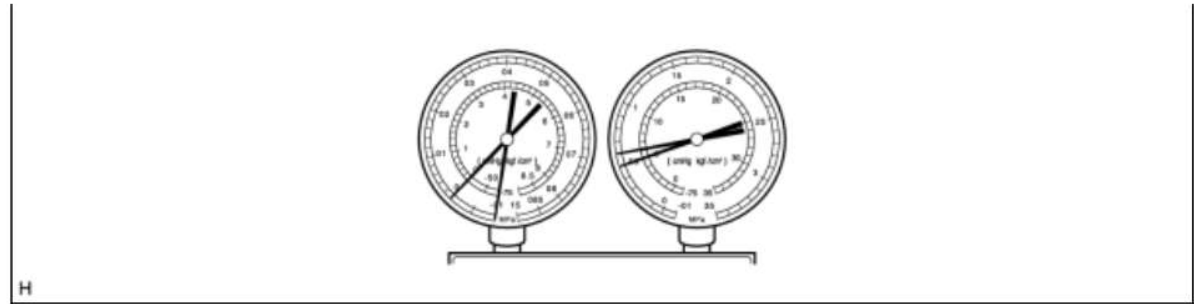
SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
• Pressure low on both low and high pressure sides • Cooling performance insufficient	Gas leakage from refrigeration system	• Insufficient refrigerant • Refrigerant leakage	1. Check for gas leakage and repair if necessary 2. Supply appropriate volume of new refrigerant 3. If indicated pressure value close to 0 with gauge connected, create vacuum after inspecting and repairing location of leakage

(4) The A/C system does not function effectively due to poor circulation of the refrigerant.



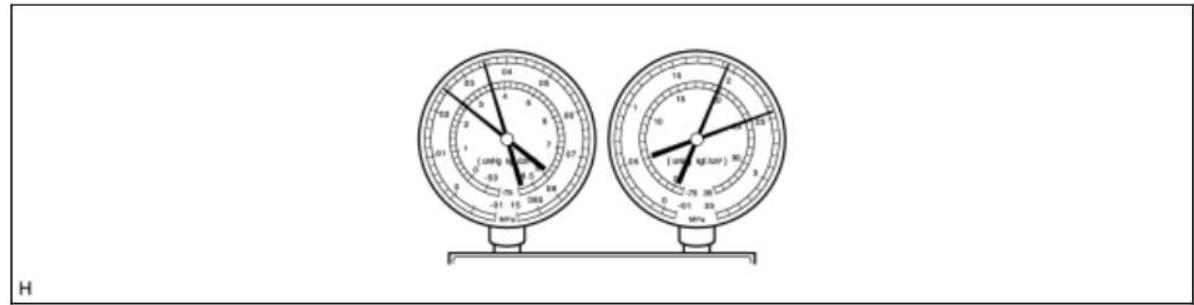
SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
• Pressure low on both low and high pressure sides • Frost exists on piping from condenser to A/C unit	Refrigerant flow obstructed by dirt in condenser	Condenser clogged	Replace condenser

(5) The A/C system does not function or functions intermittently because the refrigerant does not circulate.



SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
• Vacuum indicated on low pressure side, and extremely low pressure indicated on high pressure side • Frost or condensation seen on piping on both sides of condenser or expansion valve	• Refrigerant flow obstructed by moisture or dirt in refrigeration system • Refrigerant flow obstructed by gas leakage from expansion valve	Refrigerant does not circulate	1. Check expansion valve refrigerant 2. Clean expansion valve using compressed air 3. Replace condenser 4. Evacuate air and charge system with appropriate volume of new refrigerant 5. For gas leakage from expansion valve, replace expansion valve

(6) The A/C system does not function effectively due to the system being overcharged with refrigerant or insufficient cooling of the condenser.



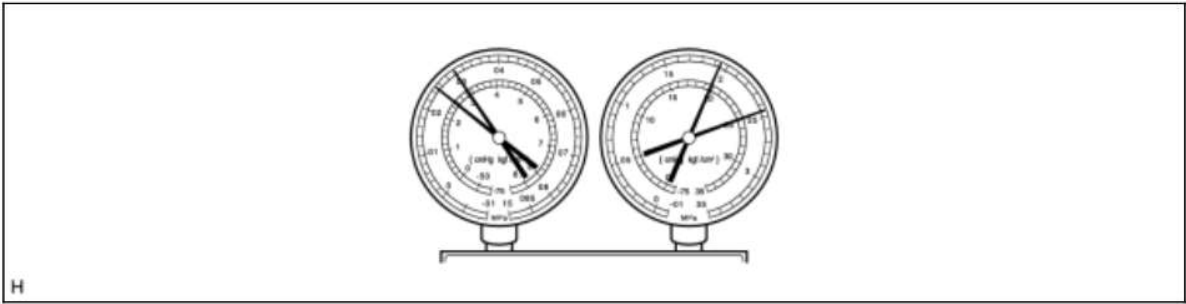
SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
			1. Clean condenser

Pressure extremely high on both low and high-pressure sides	- Excessive refrigerant - Cooling performance of condenser insufficient	- Condenser is dirty - Condenser fan motor is malfunctioning - Excessive refrigerant	- Check condenser fan motor operation - If actions taken in 1 and 2 do not solve problem, check amount of refrigerant and adjust amount of refrigerant to appropriate amount
---	---	--	--

(7) The A/C system does not function due to air in the refrigeration system.

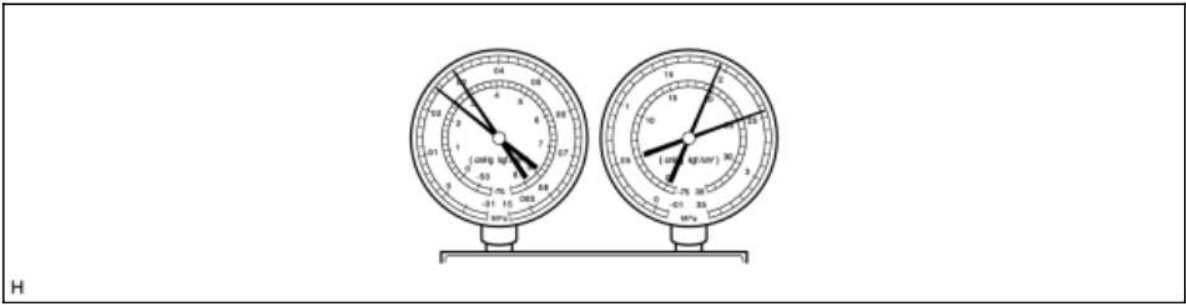
CAUTION:
The low-pressure piping may be very hot and cause serious burns.

NOTICE:
These gauge indications occur when the refrigeration system opens and the system is charged with refrigerant without vacuum purging.



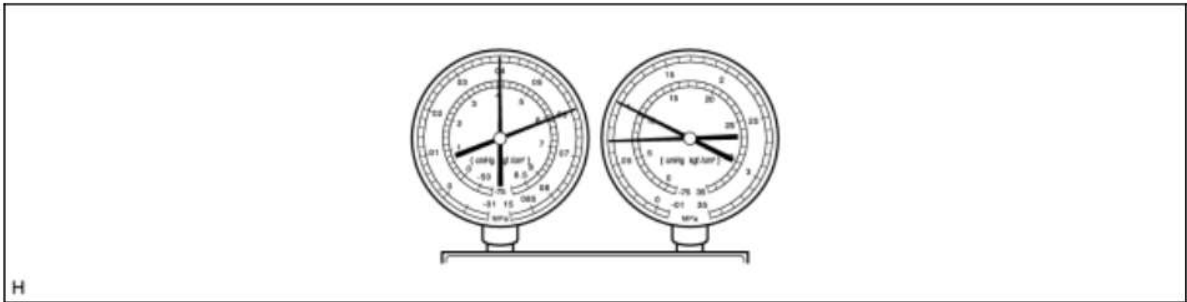
SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
- Pressure extremely high on both low and high-pressure sides - Low-pressure piping is too hot to touch	Air in refrigeration system	- Air in refrigeration system - Vacuum purging insufficient	- Check if compressor oil is dirty or insufficient - Evacuate air and charge system with new refrigerant

(8) The A/C system does not function effectively due to an expansion valve malfunction.



SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
• Pressure extremely high on both low and high-pressure sides • Frost or condensation on piping on low-pressure side	Problem with expansion valve	• Excessive refrigerant in low pressure piping • Expansion valve open too widely	Replace expansion valve

(9) The A/C system does not function due to a defective compressor.



SYMPTOM	PROBABLE CAUSE	DIAGNOSIS	CORRECTIVE ACTION
• Pressure extremely high on both low and high-pressure sides • Pressure extremely low on high pressure side	Internal leakage in compressor	• Compression failure • Leakage from damaged valve or broken sliding parts	Repair or replace compressor



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001R8Y033X
Title: HEATING / AIR CONDITIONING: REFRIGERANT: REPLACEMENT (2013 FR-S)		

REPLACEMENT

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

- (a) Start the engine.
- (b) Operate the cooler compressor under the conditions shown below:

ITEM	CONDITION
Engine Speed	Idling
Operating Time	3 minutes or more
A/C Switch Status	On
Blower Switch Status	HI
Set Temperature	MAX COOL

This causes most of the compressor oil from the various components of the A/C system to collect in the A/C compressor.

NOTICE:

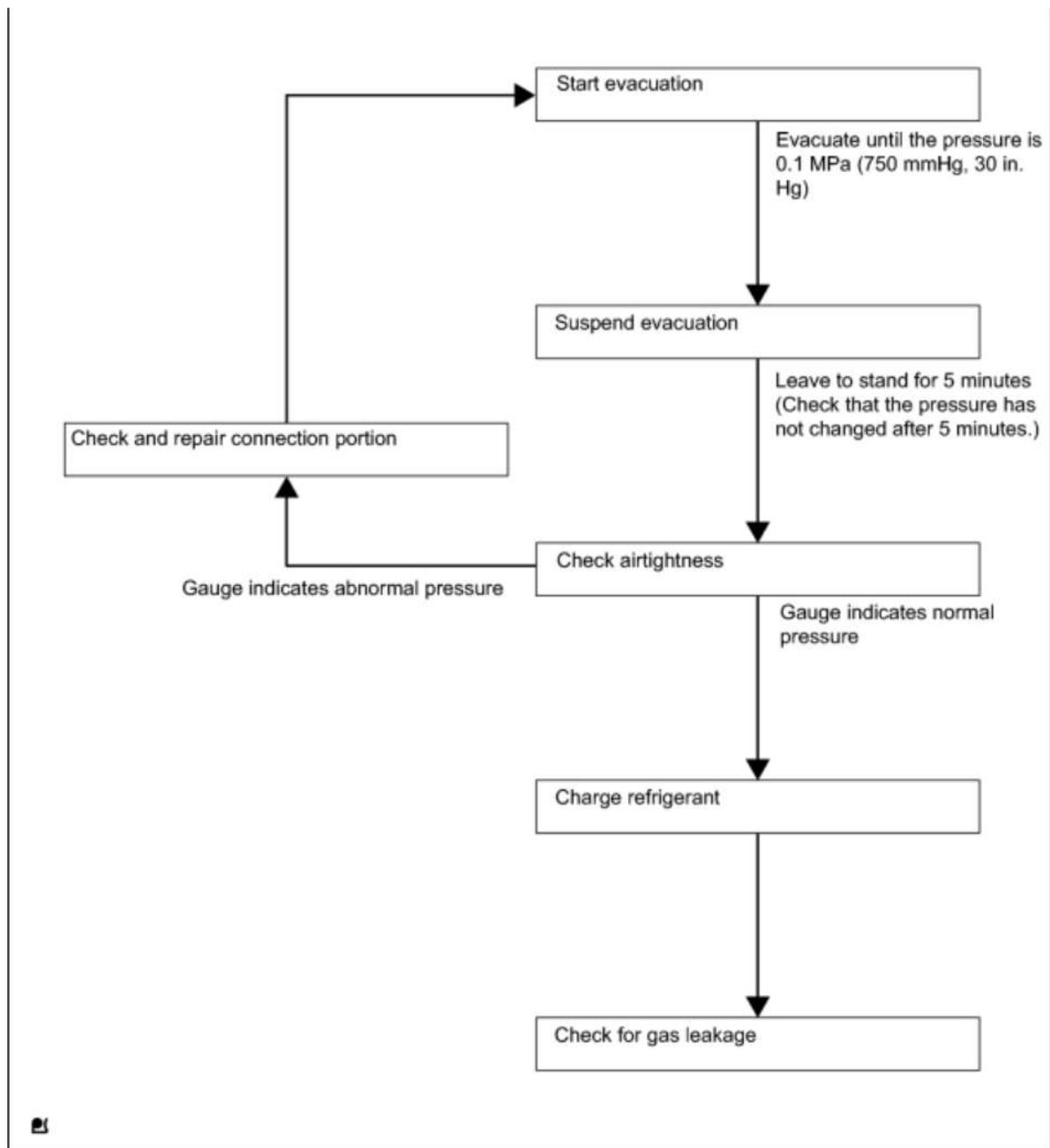
It is not necessary to operate the cooler compressor if the A/C does not operate because of compressor lock, etc.

- (c) Stop the engine.
- (d) Recover the refrigerant from the A/C system using a refrigerant recovery unit.

HINT:

Use the refrigerant recovery unit in accordance with the manufacturer's instruction manual.

2. CHARGE REFRIGERANT

**HINT:**

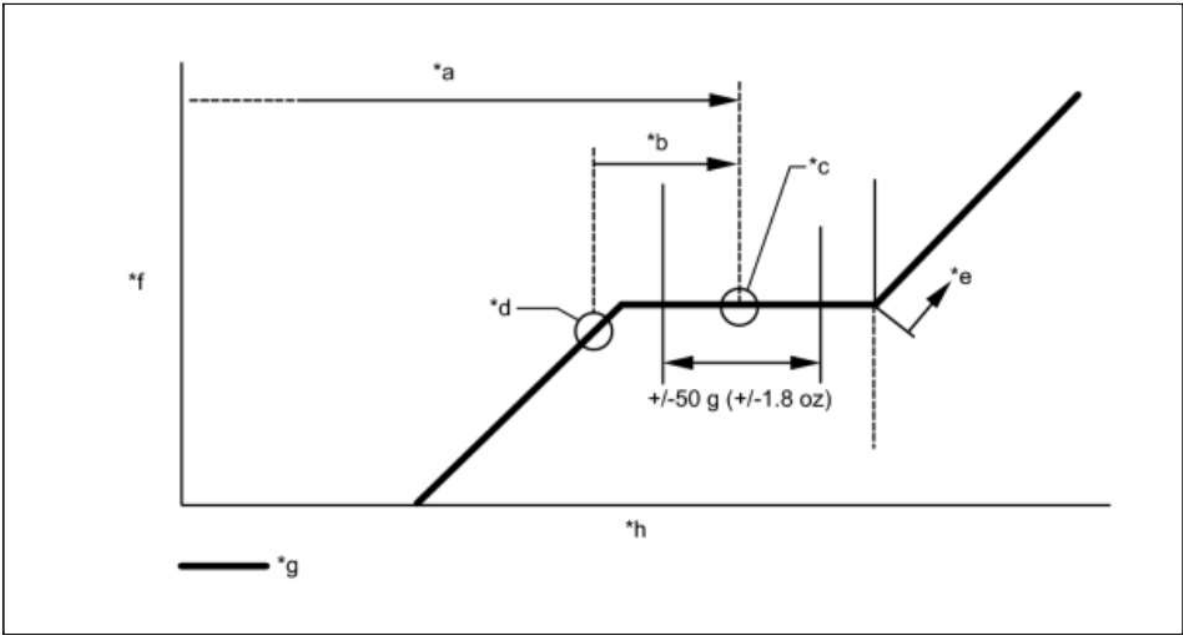
Charge refrigerant in accordance with the equipment manual.

- (a) Perform vacuum purging using a vacuum pump.
- (b) Charge refrigerant HFC-134a (R134a).

SST: 09985-20010

09985-02130
 09985-02150
 09985-02090
 09985-02110
 09985-02010
 09985-02050
 09985-02060
 09985-02070

Standard:
390 +/-50 g (13.8 +/-1.8 oz)



Text in Illustration

*a	Amount to be charged	*b	Charge 100 g (3.53 oz)
*c	Mean value in proper range	*d	Point where bubbles disappear
*e	Overcharged	*f	Pressure
*g	Sub-cool system	*h	Refrigerant amount

NOTICE:

- Do not operate the cooler compressor before charging refrigerant as the cooler compressor will not work properly without any refrigerant, and will overheat.
- The system may need to be charged with approximately 100 g (3.53 oz) of refrigerant after bubbles disappear. The refrigerant amount should be checked by measuring its quantity, and not with the sight glass.

3. WARM UP ENGINE

- (a) Warm up the engine at less than 1640 rpm for 2 minutes or more after charging the refrigerant.

NOTICE:

Be sure to warm up the compressor by turning the A/C switch on after removing and installing the cooler refrigerant lines (including the compressor) to prevent damage to the compressor.

4. CHECK FOR REFRIGERANT GAS LEAK

- (a) After recharging the refrigerant, check for refrigerant gas leakage using a halogen leak detector.

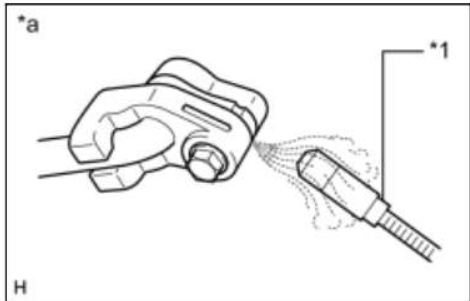
- (1) Perform the operation observing the following instructions:

- Stop the engine.
- Secure good ventilation (the halogen leak detector may react to volatile gases other than refrigerant, such as evaporated gasoline or exhaust gas).
- Repeat the test 2 or 3 times.

- Make sure that some refrigerant remains in the refrigeration system.

HINT:

When the compressor is off: approximately 392 to 588 kPa (4.0 to 6.0 kgf/cm ² , 57 to 85 psi).



(2) Using a halogen leak detector, check the refrigerant line for leakage.

- (3) If a gas leak is not detected from the drain hose, remove the blower motor control (blower resistor) from the cooling unit. Insert the halogen leak detector sensor into the unit and check for gas leakage.
- (4) Disconnect the pressure switch connector and wait for approximately 20 minutes. Bring the halogen leak detector close to the pressure switch and check for gas leakage.

Text in Illustration

*1	Halogen Leak Detector
*a	Check for Leakage



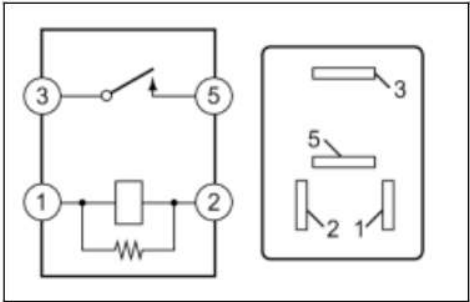
Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003WXB00GX
Title: HEATING / AIR CONDITIONING: RELAY: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT HEATER RELAY

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

Standard Resistance:



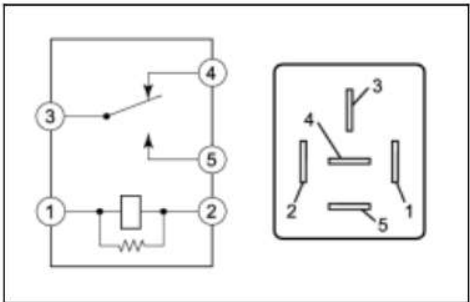
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 5	Battery voltage not applied	10 kΩ or higher
3 - 5	Battery voltage applied to terminals 1 and 2	Below 1 Ω

If the result is not as specified, replace the heater relay.

2. INSPECT HEATER BLOWER MOTOR RELAY ASSEMBLY

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 4	Battery voltage not applied	Below 1 Ω
3 - 4	Battery voltage applied to terminals 1 and 2	10 kΩ or higher
3 - 5	Battery voltage not applied	10 kΩ or higher
3 - 5	Battery voltage applied to terminals 1 and 2	Below 1 Ω

If the result is not as specified, replace the heater relay.