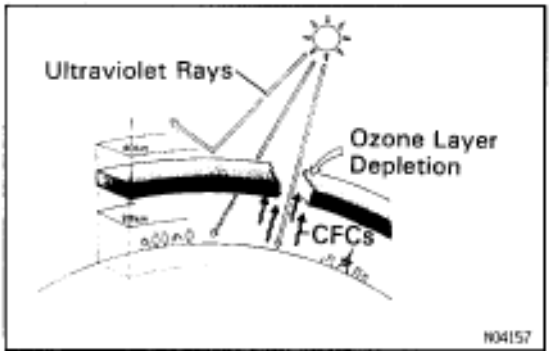
AIR CONDITIONING SYSTEM

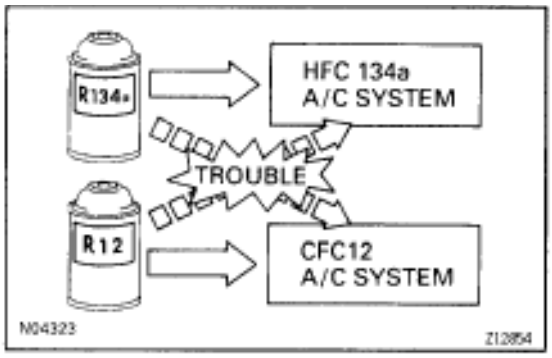


GENERAL DESCRIPTION

NEW AIR CONDITIONING SYSTEM WITH HFC134a

Refrigerant CFC 12 (R 12), previously used in automobiles' air conditioning systems is believed to contribute towards the depletion the earth's ozone layer. The ozone layer help to protect us against the harmful ultraviolet rays of the sun.

A newly developed refrigerant, HFC 134a (R 134 a), does not the destroy the ozone layer.



PRECAUTIONS FOR SERVICING HFC134a AIR CONDITIONINGS

1. USE OF NEW REFRIGERANT HFC134a

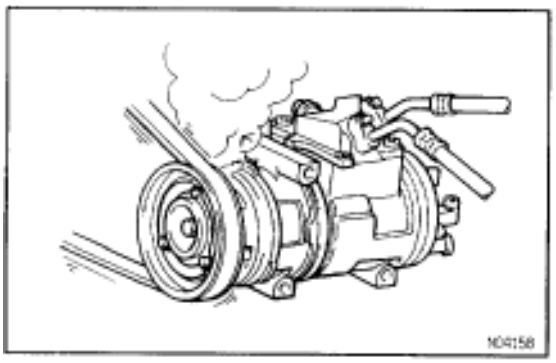
The very different characteristics of refrigerants HFC134a and CFC12 have determined the design of their respective air conditioning systems. Under no circumstances allow CFC12 to enter an HFC134a system, or vice versa, because serious damage could occur.

2. USE OF PROPER COMPRESSOR OIL

Compressor oil used in conventional CFC12 air conditioning systems cannot be used in HFC134a air conditioning systems.

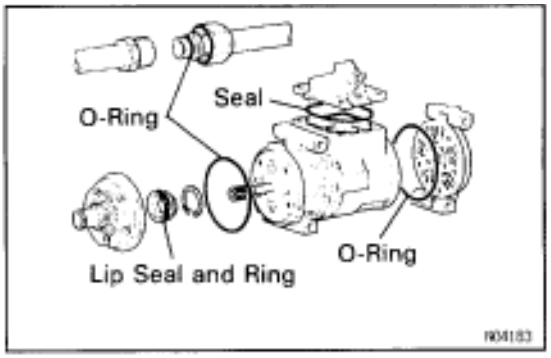
Always use genuine Toyota R134a air conditioning oil ND–OIL 8, made expressly for use with HFC134a.

NOTICE: Compressor oil (ND–OIL 8) for HFC134a use adversely affects acrylic resin, so take care not to spill or spray any compressor oil.



If even a small amount of the wrong oil is changed, it will result in clouding of the refrigerant.

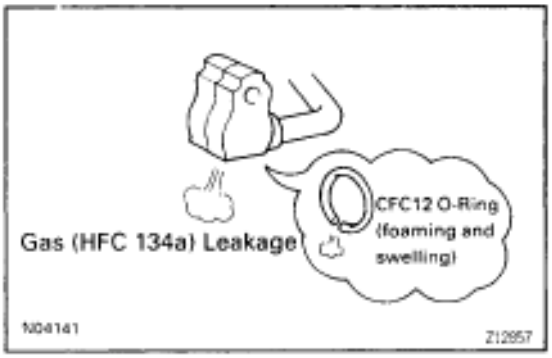
A large amount will cause the compressor to seize up.



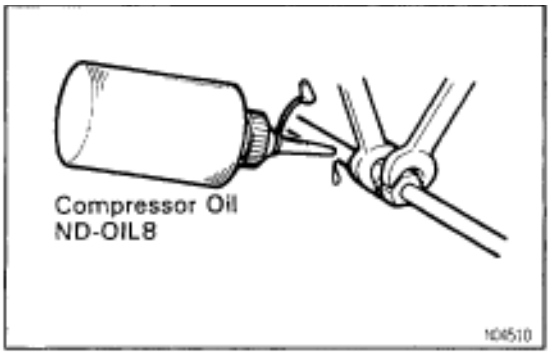
3. USE OF PROPER O–RINGS AND SEALS

O–rings and seals used for conventional CFC12 air conditioning systems cannot be used for HFC134a air conditioning systems.

Always use genuine Toyota HFC134a system O–rings and seals for HFC134a air conditioning systems.



If O–rings and/or seals for CFC12 air conditioning systems are used by mistake in the connections of an HFC134a air conditioning system, the O–ring and seals will foam and swell resulting in leakage of refrigerant.



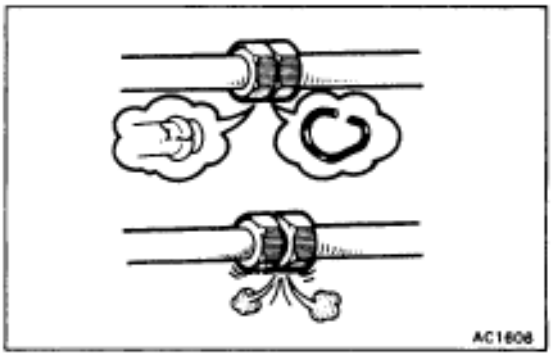
4. TIGHTEN CONNECTING PARTS SECURELY

Securely tighten the connecting parts to prevent leaking of refrigerant gas.

- Apply a few drops of compressor oil to O–ring fittings for easy tightening and to prevent leaking of refrigerant gas.

CAUTION: Apply only ND–OIL 8 compressor oil.

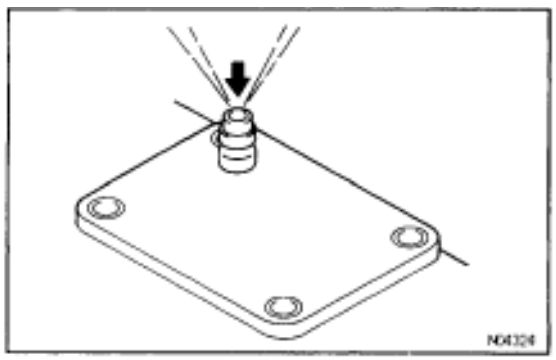
- Tighten the nuts using 2 wrenches to avoid twisting the tube.
- Tighten the O–ring fittings or the bolted type fittings to the specified torque.



5. INSERT PLUG IMMEDIATELY IN DISCONNECTED PARTS

Insert a plug immediately in the disconnected parts to prevent the ingress of moisture and dust.

6. DO NOT REMOVE PLUG FROM NEW PARTS UNTIL IMMEDIATELY BEFORE INSTALLATION

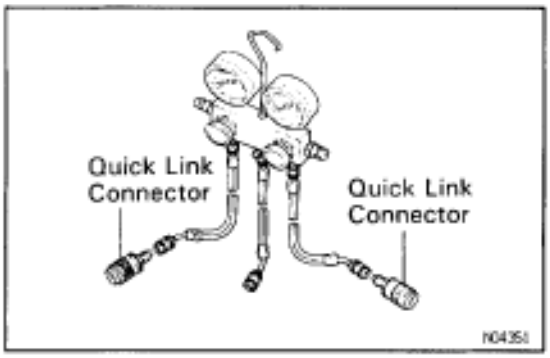


7. DISCHARGE GAS IN NEW COMPRESSOR FROM CHARGING VALVE BEFORE INSTALLING IT

If the gas in the new compressor is not discharged first, compressor oil will spray out with gas when the plug is removed.

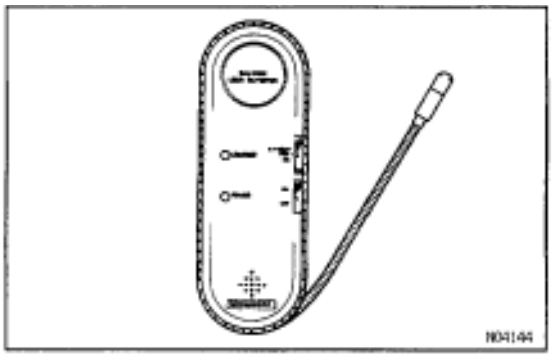
SERVICE TOOLS FOR HFC134a AIR CONDITIONING

When servicing HFC134a air conditioning systems always use the HFC134a dedicated manifold gauges, gas leak detector and vacuum pump adaptor.



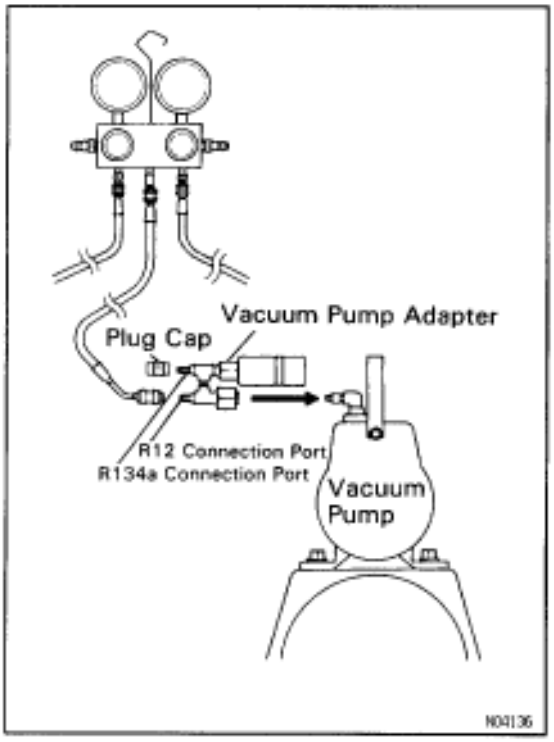
1. USE MANIFOLD GAUGES FOR HFC134a AIR CONDITIONING

Always use HFC134a dedicated manifold gauges to prevent CFC 12 and CFC 12 compressor oil contaminating the HFC134a system.



2. USE HFC134a GAS LEAK DETECTOR

Similarly, always use an HFC134a dedicated leak detector. The CFC12 leak detector is not sufficiently sensitive.



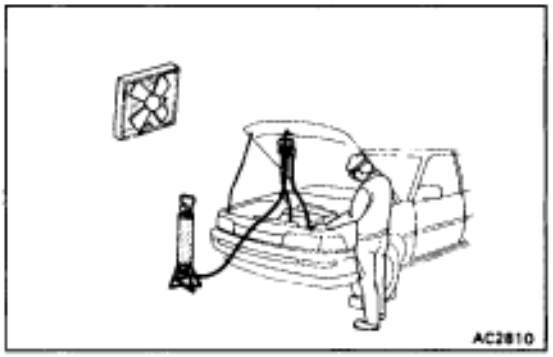
3. USE VACUUM PUMP ADAPTER

By connecting a vacuum pump adapter, the vacuum pump can be used for both HFC134a and CFC12 air conditioning systems.

The vacuum pump adaptor has an internal magnetic valve. When evacuation is completed and the vacuum pump switch is turned off, the magnetic valve opens allowing the introduction atmospheric air into the manifold gauges to prevent the back flow of oil from the vacuum pump into the gauge hose.

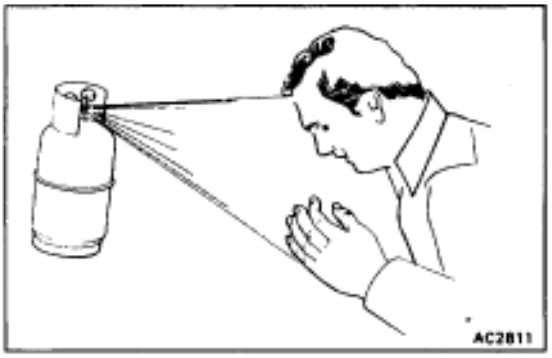
CAUTION:

Be sure to turn off the manifold gauge valve immediately after evacuating the system. Then you may switch off the vacuum pump. If this order is reversed, the line will be temporarily open to atmosphere.



HANDLING PRECAUTIONS FOR REFRIGERANT

1. **DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA OR NEAR AN OPEN FLAME**
2. **ALWAYS WEAR EYE PROTECTION**



3. **BE CAREFUL THAT LIQUID REFRIGERANT DOES NOT GET 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 cool water.

CAUTION: Do not rub your eyes or skin.

(b) Apply clean petroleum jelly to the skin.

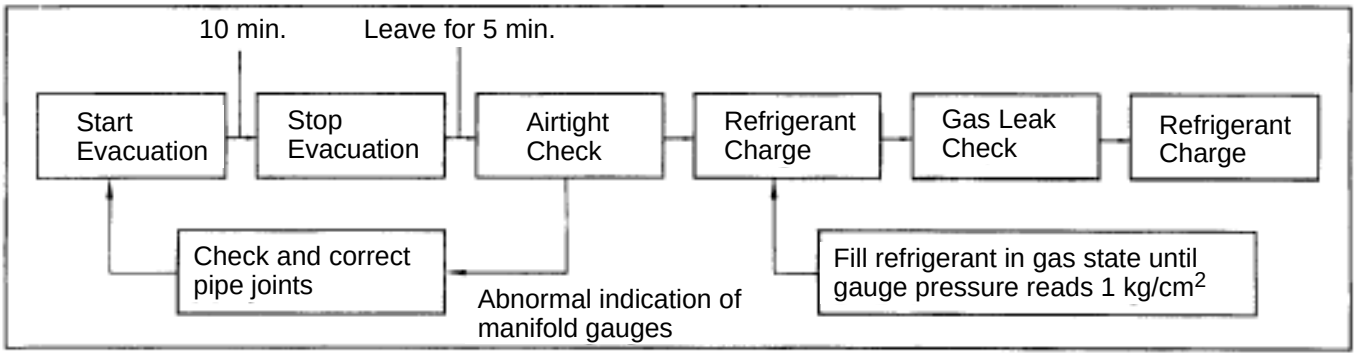
(c) Go immediately to a physician or hospital for professional treatment.

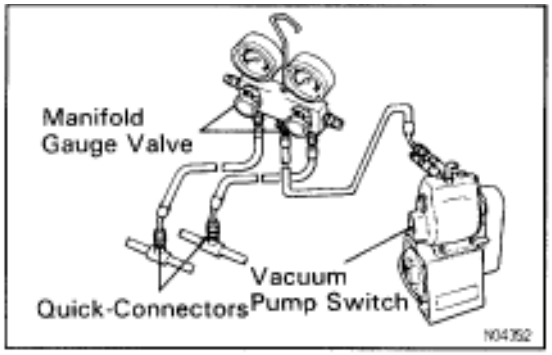
HANDLING PRECAUTIONS FOR REFRIGERANT CONTAINER

1. **NEVER HEAT CONTAINER OR EXPOSE IT TO NAKED FLAME**
2. **BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT**

CHARGING AND LEAK–CHECK METHODS

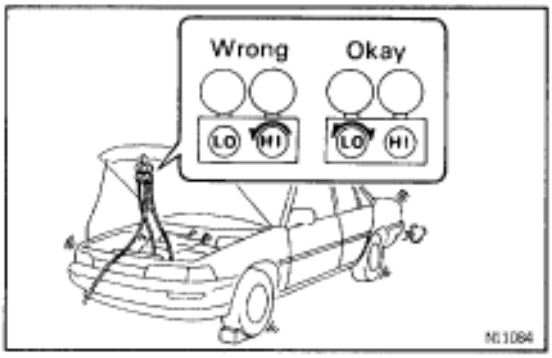
Evacuate the refrigeration system according to the following procedures.





CAUTION:

- **Be sure to connect both the high and low pressure quick–connectors onto the A/C system when evacuating. If only one side is connected, the system would be open to atmosphere through the other connector, making it impossible to maintain vacuum.**
- **Be sure to turn off the manifold gauge valve immediately after evacuating the system. Then you may switch off the vacuum pump.**



PRECAUTIONS WHEN CHARGING REFRIGERANT

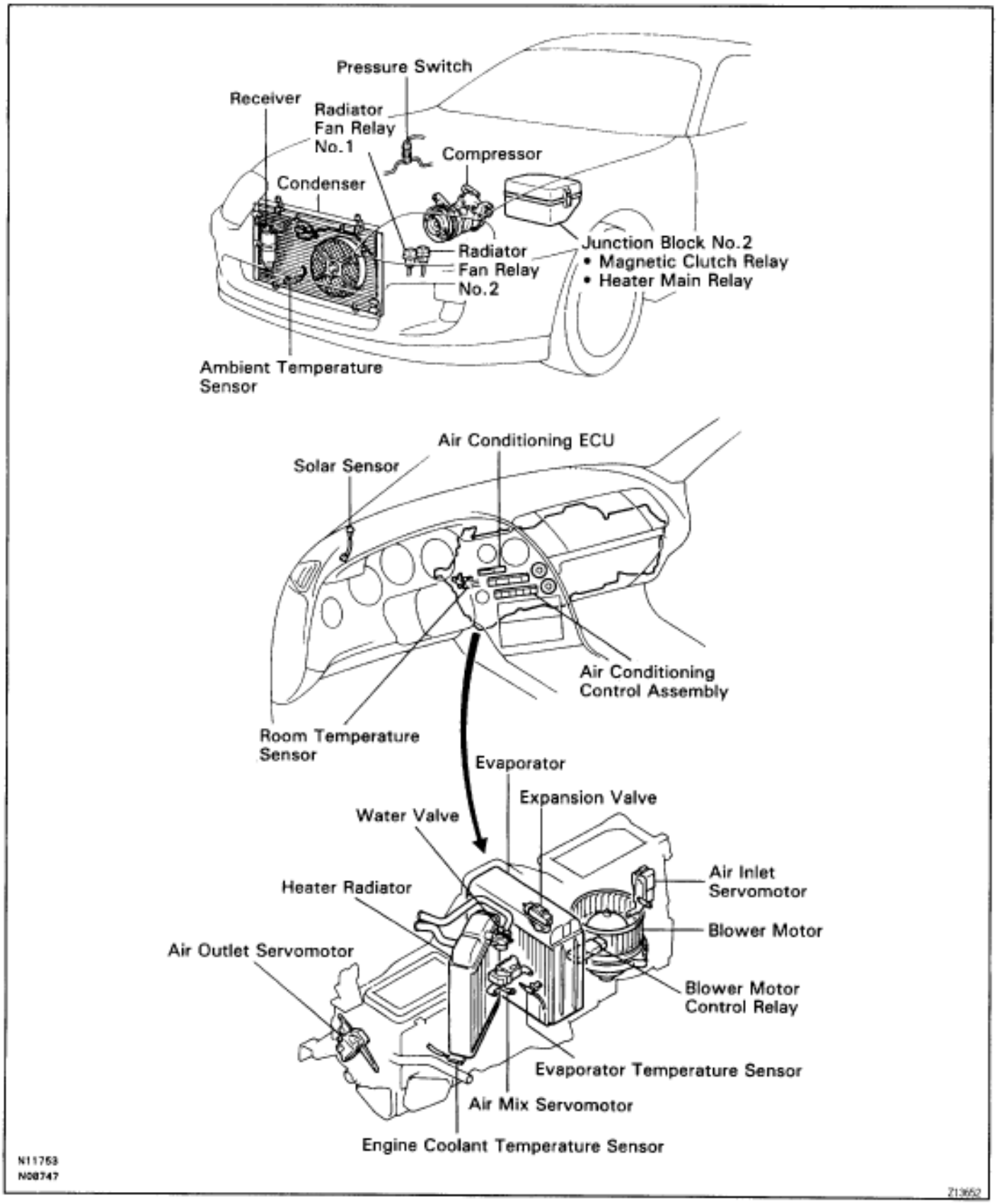
1. **DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT SYSTEM**
   If there is not enough refrigerant in the refrigerant system, oil lubrication will be insufficient and compressor burnout may occur, so take care to avoid this.
2. **DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILST COMPRESSOR IS OPERATING**
   If the high pressure valve is opened, refrigerant flows in the reverse direction and could cause the charging cylinder to rupture, so open and close the low pressure valve only.
3. **BE CAREFUL NOT TO OVERCHARGE SYSTEM WITH REFRIGERANT**
   If refrigerant is overcharged, it causes problems such as insufficient cooling, poor fuel economy, engine overheating etc.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

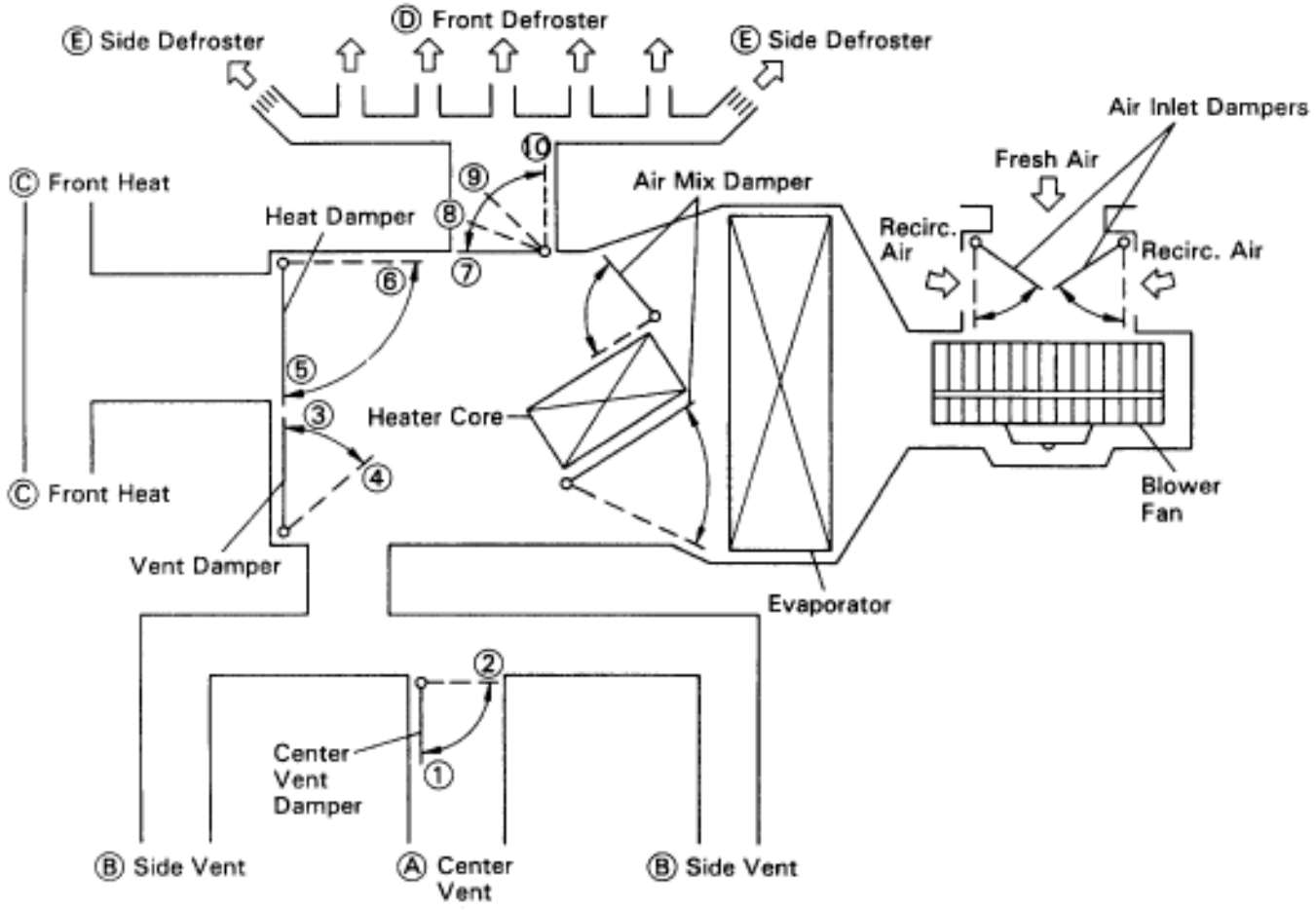
Failure to carry out service operations in the correct sequence could cause the supplemental restraint system to deploy, possibly leading to a serious accident.
During removal or installation of the parts and the yellow wire harness and connector for the airbag is necessary, refer to the precautionary notices in the RS section before carrying out operation.

DESCRIPTION

PARTS LOCATION



DAMPERS OPERATION



Mode		Mode Control Damper Position	Vent		Heat	Def.	
			Ⓐ Center	Ⓑ Side	Ⓒ Front	Ⓓ Front	Ⓔ Side
Face		① ③ ⑤ ⑦	◯	◯			
Bi–Level		① ③ ⑥ ⑦	○	○	○		
Foot* I		② ④ ⑥ ⑧		○	◯	○	○
Foot* II		② ④ ⑥ ⑦		○	◯		
Foot/Def.		② ④ ⑥ ⑨		○	○	○	○
Def.		② ④ ⑤ ⑩		○		◯	○

The size of the circle ○ indicates the proportion of air flow volume.

* Foot I indicates the status during automatic control and Foot II indicates the status during manual control.

NO8639
NO8640

209420

PREPARATION

SST (SPECIAL SERVICE TOOLS)

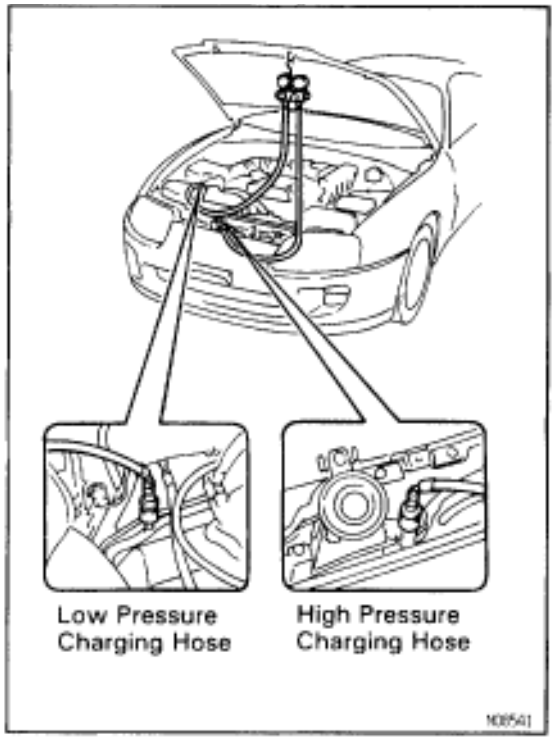
	07110–58060 Air Conditioner Service Tool Set	
	(07117–58060) Refrigerant Drain Service Valve	
	(07117–58070) T–Joint	
	(07117–58080) Quick Coupler	Discharge (diam. 16 mm)
	(07117–58090) Quick Coupler	Suction (diam. 16 mm)
	(07117–78050) Refrigerant Charging Gauge	
	(07117–88060) Refrigerant Charging Hose	Discharge (Red)
	(07117–88070) Refrigerant Charging Hose	Suction (Blue)
	(07117–88080) Refrigerant Charging Hose	Utility (Green)
	07112–66040 Magnetic Clutch Remover	
	07112–76060 Magnetic Clutch Stopper	
	07114–84020 Snap Ring Pliers	
	07116–38360 Gas Leak Detector Assembly	

RECOMMENDED TOOLS

	09082–00050 TOYOTA Electrical Tester Set ◆	

LUBRICANT

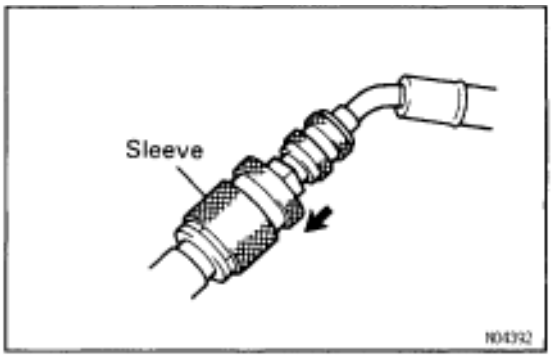
Item	Capacity	Classification
Compressor oil	–	ND–OIL 8 or equivalent
When replacing receiver	10 cc (0.34 fl.oz.)	
When replacing condenser	40 cc (1.4 fl.oz.)	
When replacing evaporator	40 cc (1.4 fl.oz.)	
When replacing compressor	140 cc (4.8 fl.oz.)	



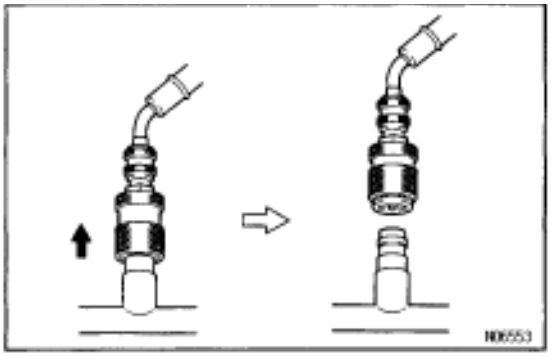
USE OF MANIFOLD GAUGE SET

MANIFOLD GAUGE SET INSTALLATION

1. **CONNECT CHARGING HOSES TO MANIFOLD GAUGE SET**
   Tighten the nuts by hand.
   CAUTION: Do not connect the wrong hoses.
2. **CONNECT QUICK CONNECTORS TO CHARGING HOSES**
   Tighten the nuts by hand.
3. **CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET**
4. **REMOVE CAPS FROM SERVICE VALVES ON REFRIGERANT LINE**



5. **CONNECT QUICK CONNECTORS TO SERVICE VALVES**
   HINT: Push the quick connector onto the service valve, then slide the sleeve of the quick connector downward to lock it.



MANIFOLD GAUGE SET REMOVAL

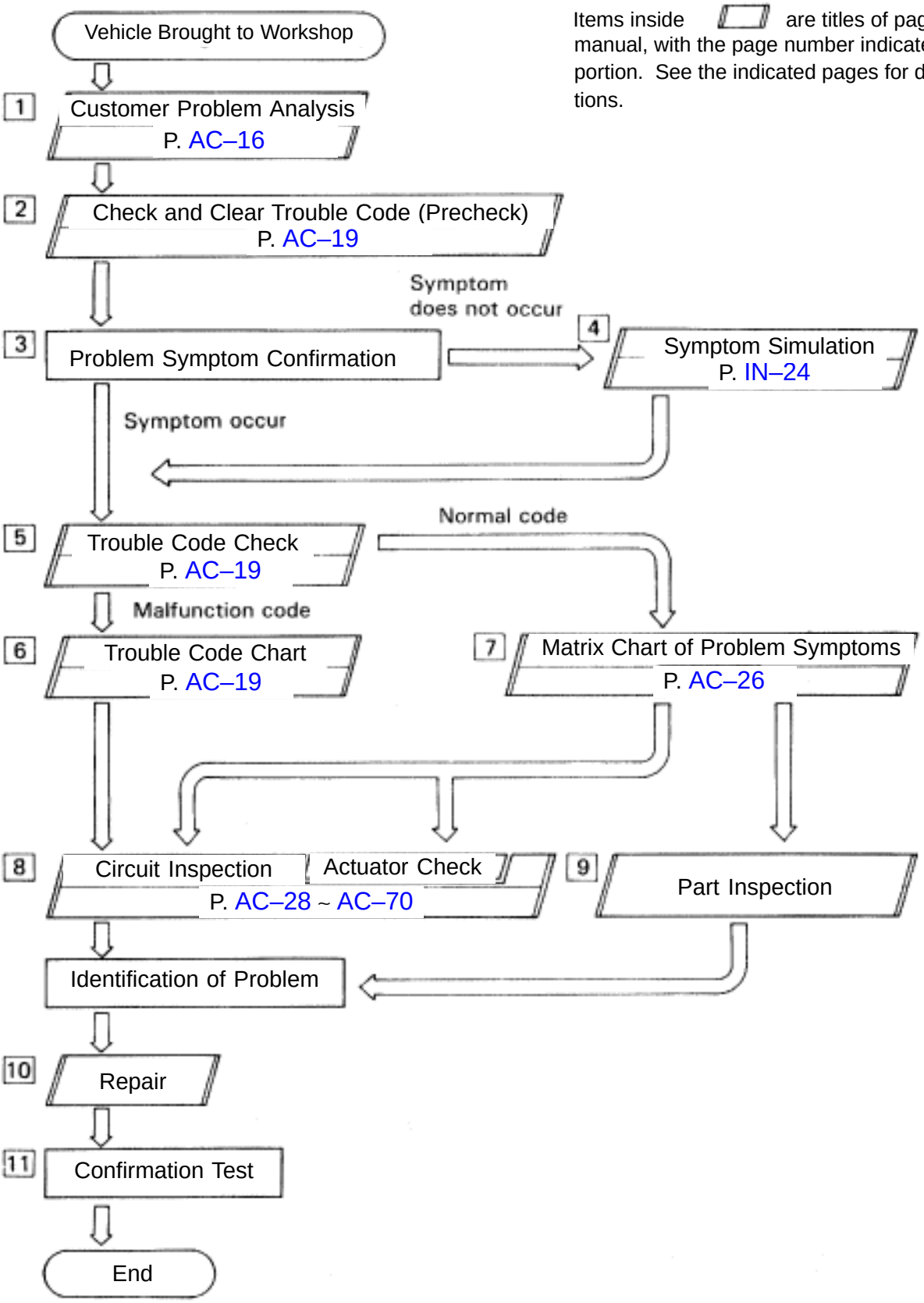
1. **CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET**
2. **DISCONNECT QUICK CONNECTORS FROM SERVICE VALVES ON REFRIGERANT LINE**
   HINT: Slide the sleeve of the quick connector upward to unlock the connector and remove it from the service valve.
3. **INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE**

–MEMO–

TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



Items inside ▭ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

CUSTOMER PROBLEM ANALYSIS CHECK SHEET

AIR CONDITIONING SYSTEM Check Sheet

Inspector's Name :

Customer's Name		Registration No.	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	Odometer Reading	Km Miles

Date of Problem First Occurred	/ /
How Often does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)
Weather	☐ Fine ☐ Cloudy ☐ Snowy ☐ Various/Other
Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F °C)

Symptoms	Air Flow Control is Faulty	☐ Blower motor does not operate ☐ Blower motor speed does not change (Always Hi, Always Med, Always Lo)
	Temperature Control is Faulty	☐ Cabin temperature does not go down ☐ Cabin temperature does not rise ☐ Response is slow
	Air Inlet Control is Faulty	☐ Cannot change between FRS and REC (Always Fresh or always Recirculating)
	Vent Control is Faulty	☐ Mode will not change ☐ Will not enter the desired mode

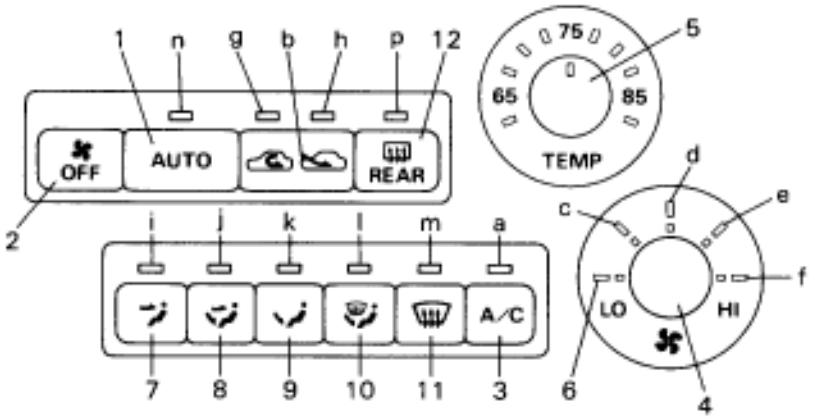
Trouble Code Check	1st Time	☐ Normal Code	☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code	☐ Malfunction Code (Code)

PANEL DIAGNOSIS SYSTEM

If a trouble occurs in A/C system, the specified lamp on the control panel starts blinking during the diagnostic sensor check.

During system diagnosis, a trouble is indicated on the panel by the blinking of a specified light instead of a code display. (See TROUBLE CODE CHART)

For example, when a trouble occurs in solar sensor circuit, the LED for DEF mode switch will be blinking during the diagnostic sensor check.



SWITCH

NO	SWITCH NAME	CODE
1	AUTO switch	AUTO
2	OFF switch	OFF
3	A/C switch	A/C
4	Fan speed dial	FAND

NO	SWITCH NAME	CODE
5	Temp. set dial	TSET
6	Recirc/Fresh switch	R/F
7	FACE mode switch	FACE
8	Bi-Level mode switch	B/L

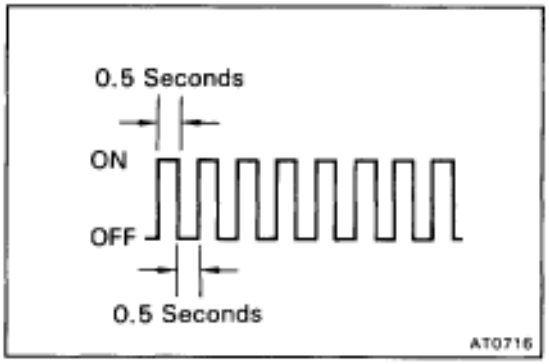
NO	SWITCH NAME	CODE
9	FOOT mode switch	FOOT
10	FOOT/DEF mode switch	F/D
11	DEF mode switch	DEF
12	Rear Defogger switch	RDEF

LED

NO	INDICATOR NAME	CODE
a	A/C	L-A/C
b	Fan speed: LO	L-LO
c	Fan speed: Medium 1	L-M1
d	Fan speed: Medium 2	L-M2
e	Fan speed: Medium 3	L-M3

NO	INDICATOR NAME	CODE
f	Fan speed: HI	L-HI
g	RECIRCLE	L-REC
h	FRESH	L-FRS
i	FACE	L-FACE
j	BI-LEVEL	L-B/L

NO	INDICATOR NAME	CODE
k	FOOT	L-FOOT
l	FOOT/DEF	L-F/D
m	DEF	L-DEF
n	Mode AUTO/AUTO	L-AUTO
p	Rear Defogger	L-RDEF

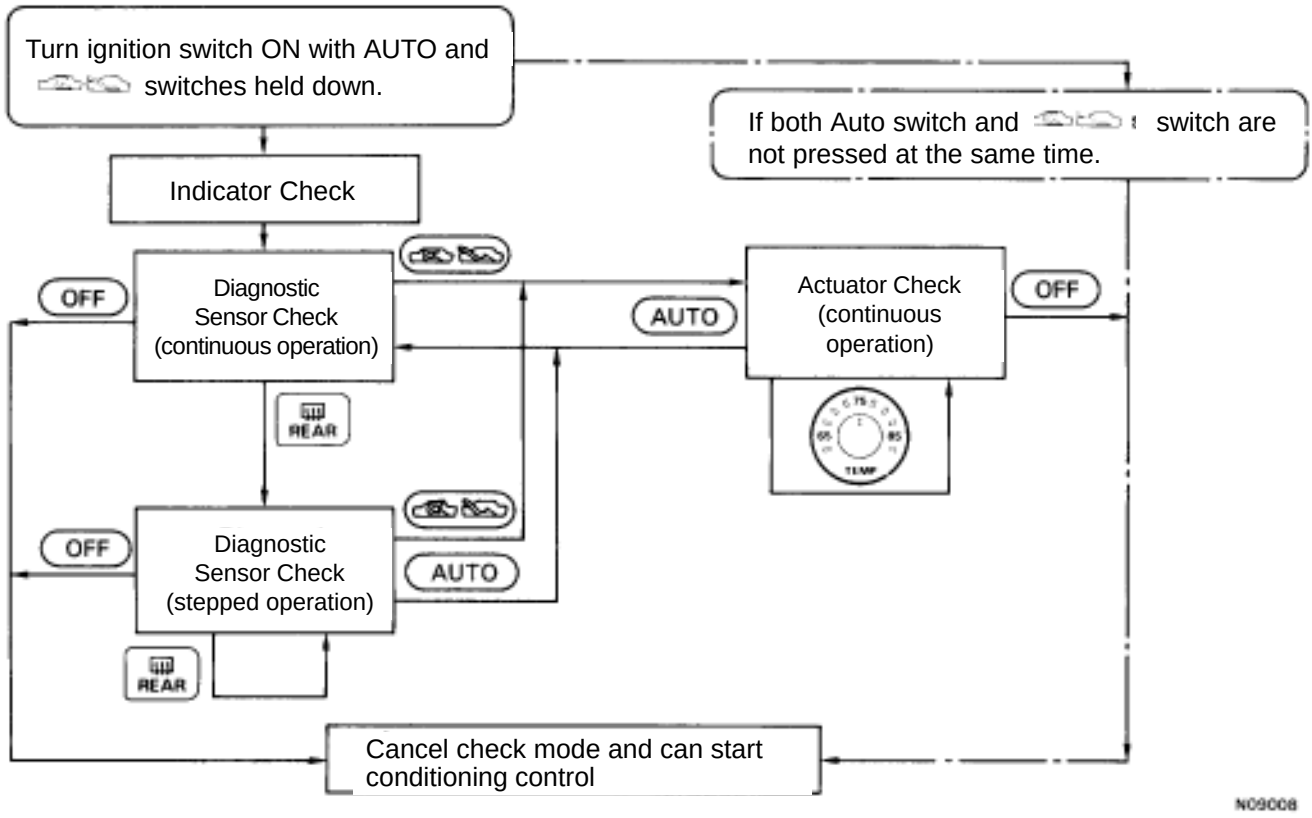


Warning for A/C compressor lock

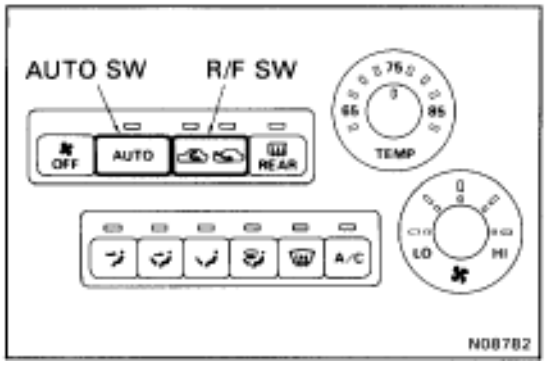
If compressor lock occurs during air conditioning operation, the [A/C] switch indicator on the air conditioning control assembly starts blinking.
When this occurs, check for compressor lock using panel diagnosis check then proceed to inspect the circuit or the component.
Compressor lock sensor circuit → page AC–38

LIST OF OPERATION METHODS

By operating each of the air conditioning control switches as shown in the diagram below, it is possible to enter the diagnosis check mode.

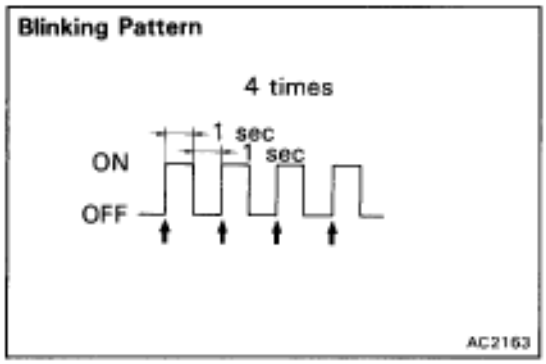


: Indicates a switch operation

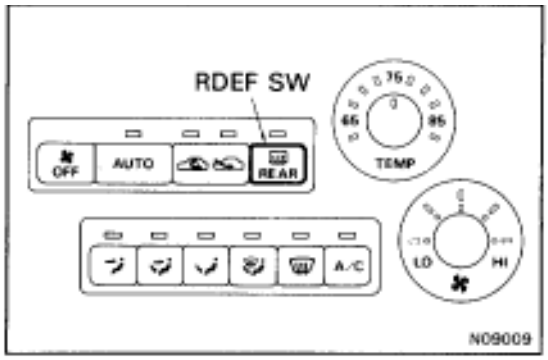


INDICATOR CHECK

1. Turn the ignition switch on while pressing the air conditioning control AUTO switch and R/F SW simultaneously.

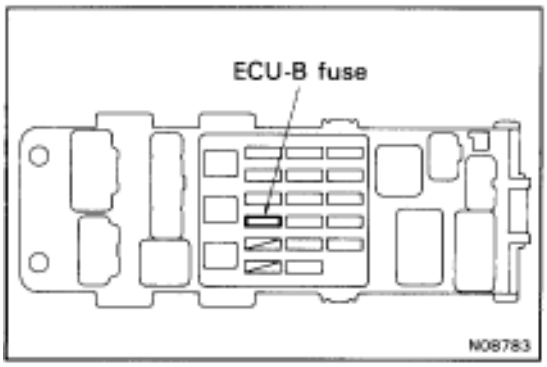


2. **Check that all the indicators light up and go off at 1 second intervals 4 times in succession.**
   HINT:
   - After the indicator check is ended, the diagnostic sensor check begins automatically.
   - Press the OFF switch when cancelling the check mode.



DIAGNOSTIC SENSOR CHECK

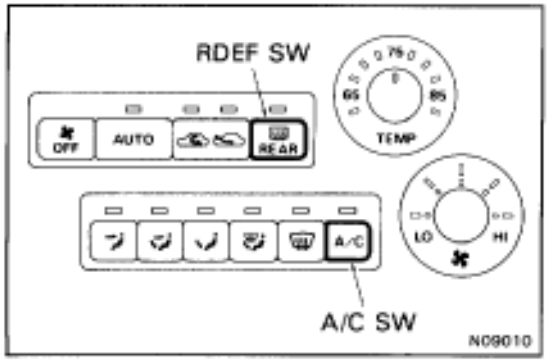
1. Perform an indicator check. After the indicator check is completed, the system enters the diagnostic sensor check mode automatically.
2. Check the LED blinking on the panel. Refer to the list of codes on page AC–20 when translating the trouble code from the LED blinking.
   If the slower display is desired, press the RDEF switch and change it to step operation. Each time the RDEF switch is pressed, the blinking LED changes by 1 step.



CLEARING TROUBLE CODES' MEMORY

Method 1:

1. Pull out the ECU–B fuse in Junction Block No. 1 for 10 sec. or longer to clear the trouble codes' memory.
2. After reinserting the fuse, check that the normal code is output.



Method 2:

Press the RDEF switch while pushing the A/C switch during the sensor check mode.

–MEMO–

SENSOR CHECK TROUBLE CODE CHART

If a LED is blinking during the diagnostic sensor check, check the circuit listed for the code in the table below (Proceed to the page given for that circuit.)

No.	Blinking LED	Detecting Condition
0	L–AUTO	• Normal
1	L–FACE*1	• Open or short in room temperature sensor circuit.
2	L–B/L	• Open or short in ambient temperature sensor circuit.
3	L–FOOT	• Open or short in evaporator temperature sensor circuit.
4	L–F/D*2	• Open or short in engine coolant temperature sensor circuit.
5	L–DEF*3	• Open in solar sensor circuit. • Short in solar sensor circuit.
6	L–A/C*4	• All conditions below are detected for 3 secs. or more. (a) Engine speed 450 rpm or more. (b) Ratio between engine and compressor rpm deviates 20% or more in comparison to normal operation.
7	L–FRS	• Open in pressure sensor circuit. • Abnormal refrigerant pressure [below 196 kPa (2.0 kgf/cm^2, 28 psi) over 3,140 kPa (32.0 kgf/cm^2, 455 psi)]
8	L–REC	• Short to ground or power source circuit in air mix damper position sensor circuit.
9	L–LO	• Short to ground or power source circuit in air outlet damper position sensor circuit.
10	L–M2	• Air mix damper position sensor value does not change even if A/C amplifier signals the air mix damper control servo motor to operate.
11	L–HI	• Air outlet damper position sensor value does not change even if A/C amplifier signals the air outlet damper control servo motor to operate.

HINT: *1 If the room temp. is approx. –20˚C (–4˚F) or lower, FACE light may blink even though the system is normal.

*2 If the ambient temperature is approx. –50˚C (–58˚F) or lower, the B/L light may blink even though the system is normal.

*3 If the check is being performed in a dark place, the LED for DEF (solar sensor circuit abnormal) could be blinking.

In this case, perform diagnostic sensor check again while shining a light, such as an inspection light, on the solar sensor.

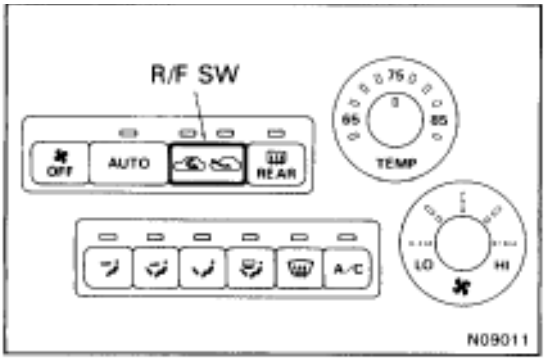
If the light is still blinking, there could be trouble in the solar sensor circuit.

Trouble Area	Memory*5	See page
—	—	
• Room temp. sensor • Harness or connector between room temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)	AC–28
• Ambient temp. sensor • Harness or connector between ambient temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)	AC–30
• Evaporator temp. sensor • Harness or connector between evaporator temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)	AC–32
• Engine coolant temp. sensor • Harness or connector between coolant temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)	AC–34
• Solar sensor • Harness or connector between sensor and A/C amplifier • A/C amplifier	— ○ (8.5 min. or more)	AC–36
• Compressor drive belt • Compressor lock sensor • Compressor • Harness and connector between A/C amplifier and compressor, compressor lock sensor • A/C amplifier	—	AC–38
• Pressure switch • Harness or connector between pressure switch and A/C amplifier • Refrigerant pipe line • A/C amplifier	—	AC–40
• Air mix damper position sensor • A/C amplifier • Harness or connector between air mix damper position sensor and A/C amplifier	○ (1 min. or more)	AC–42
• Air outlet damper position sensor • A/C amplifier • Harness or connector between max cool damper position sensor and A/C amplifi-	○ (1 min. or more)	AC–48
• Air mix damper control servo motor • Air mix damper position sensor • Harness and connector between A/C amplifier and air mix position sensor • Harness and connector between A/C amplifier and air mix damper control servo motor • A/C amplifier	○ (15 secs. or more)	AC–42 AC–44
• Air outlet damper control servo motor • Air outlet damper position sensor • Harness and connector between A/C amplifier and air outlet position sensor • Harness and connector between A/C amplifier and air outlet damper motor • A/C amplifier	○ (15 secs. or more)	AC–48 AC–50

HINT: *4 Compressor lock (A/C light blink) is indicated only for a current malfunction. (See page AC–38)

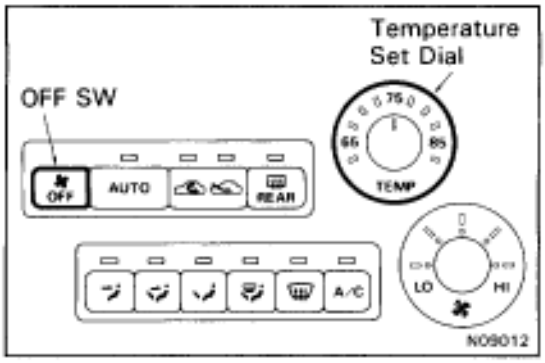
To confirm the trouble indication, perform the following steps.
(1) With the engine ON, enter the trouble code check mode.
(2) Press the R/F switch to enter actuator check mode, and set the operation to Step No. 3.
(3) Press the AUTO switch to return to diagnostic sensor check mode.
(4) The A/C light starts to blink after approx. 3 secs.

*5 The A/C amplifier memorizes the trouble code of the respective malfunction when it occurs for period of time indicated in the brackets.



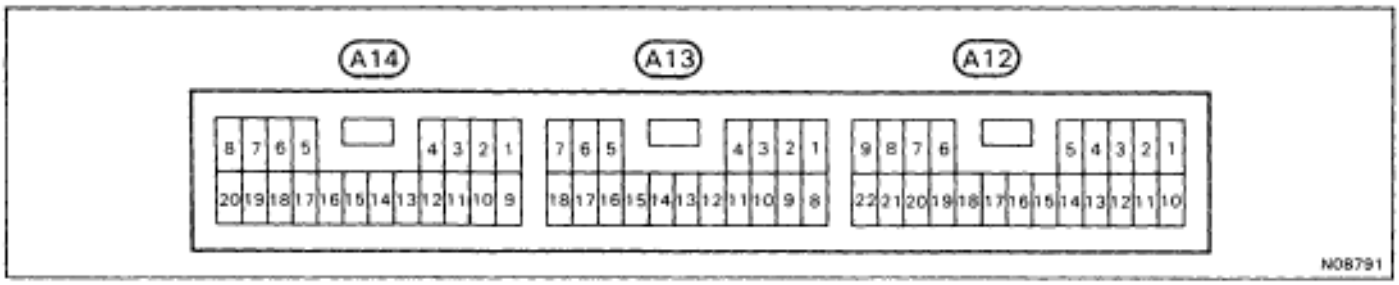
ACTUATOR CHECK

1. After entering the sensor check mode, press the R/F switch.
2. Turn the temperature set dial and change it to step operation. Each time the dial is turned, the actuator operation changes by 1 step.
   HINT:
   - Check the change of actuator operation visually and by hand.
   - To cancel the check mode, press the OFF switch.



Step No.	Set Temperature ˚C (˚F)	Conditions				
		Blower Motor	Air Flow vent	Air Inlet damper	Magnetic clutch	Air mix damper
1	Below 20 (68)	OFF	(FACE)	(RECIRC)	OFF	Cool side (0% open)
2	20 ~ 23 (68 ~ 73)	LO	(BI-LEVEL)	(R/F)	ON	Cool/Hot (50% open)
3	23 ~ 27 (74 ~ 80)	M2	(FOOT)	(FRESH)	↑	Hot side (100% open)
4	27 ~ 30 (81 ~ 86)	↑	(FOOT/DEF)	↑	↑	↑
5	Over 30 (87)	HI	(DEF)	↑	↑	↑

A C AMPLIFIER TERMINAL STANDARD VALUE



Terminal No.	Symbol	Tester Connection	Wiring Color	Condition	Standard Value
A12-1	L-B/L	A12-1↔A14-9	BR-W↔W-B	IG ON. B/L mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-2	L-FACE	A12-2↔A14-9	G↔W-B	IG ON. FACE mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-3	L-M1	A12-3↔A14-9	P-B↔W-B	IG ON. Fan speed dial: LO→M1	10 – 14 V → Below 1.0 V
A12-4	L-DEF	A12-4↔A14-9	R-Y↔W-B	IG ON. DEF mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-6	L-AUTO	A12-6↔A14-9	R-B↔W-B	IG ON. AUTO switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-7	A/C-IN	A12-7↔A14-9	L↔W-B	IG ON. A/C compressor: ON→OFF	10 – 14 V → Below 1.0 V
A12-8	MDEF	A12-8↔A14-9	Y-L↔W-B	IG ON. Mode control switch: FACE→DEF	Below 1.0 V → 10 – 14 V
A12-9	MFAC	A12-9↔A14-9	W↔W-B	IG ON. Mode control switch: DEF→FACE	Below 1.0 V → 10 – 14 V
A12-10	L-F/D	A12-10↔A14-9	BR↔W-B	IG ON. F/D mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-11	L-FOOT	A12-11↔A14-9	Y↔W-B	IG ON. FOOT mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-12	L-HI	A12-12↔A14-9	LG↔W-B	IG ON. Fan speed dial: LO→HI	10 – 14 V → Below 1.0 V
A12-13	L-LO	A12-13↔A14-9	R↔W-B	IG ON. Fan speed dial: HI→LO	10 – 14 V → Below 1.0 V
A12-14	L-M2	A12-14↔A14-9	B-W↔W-B	IG ON. Fan speed dial: LO→M2	10 – 14 V → Below 1.0 V
A12-15	L-M3	A12-15↔A14-9	P↔W-B	IG ON. Fan speed dial: LO→M3	10 – 14 V → Below 1.0 V
A12-16	L-RDEF	A12-16↔A14-9	V↔W-B	IG ON. Rear DEF switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-17	L-REC	A12-17↔A14-9	LG-B↔W-B	IG ON. REC mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-18	L-FRS	A12-18↔A14-9	GR↔W-B	IG ON. FRS mode switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-19	L-A/C	A12-19↔A14-9	B↔W-B	IG ON. A/C switch: OFF→ON	10 – 14 V → Below 1.0 V
A12-20	ACC	A12-20↔A14-9	L-R↔W-B	Turn ignition switch ACC	10 – 14 V
A12-21	IGN	A12-21↔A14-9	B-W↔W-B	Start the engine	Pulse signal
A12-22	LOCK-IN	A12-22↔A13-9	G-Y↔V-W	IG ON. A/C compressor: ON	Pulse signal
A13-1	MC	A13-1↔A14-9	R-Y↔W-B	Temperature set: MAX. HOT→MAX. COOL	Below 1.0 V → 10 – 14 V
A13-2	S5	A13-2↔A14-9	BR-W↔W-B	Always	4.5 – 5.5 V

Terminal No.	Symbol	Tester Connection	Wiring Color	Condition	Standard Value
A13-3	MH	A13-3↔A14-9	V↔W-B	Temperature set: MAX. COOL→MAX. HOT	Below 1.0 V → 10 – 14 V
A13-5	TR	A13-5↔A13-9	Y-L↔V-W	Cabin temp.: 25°C (77°F)/40°C (104°F)	1.8 – 2.2 V/ 1.2 – 1.6 V
A13-6	TAM	A13-6↔A13-9	P-B↔V-W	Cabin temp.: 25°C (77°F)/40°C (104°F)	1.3 – 1.8 V/ 0.8 – 1.3 V
A13-7	TE	A13-7↔A13-9	L-Y↔V-W	Evapo. Ambient Temp.: 0°C (32°F)/15°C (59°F)	2.0 – 2.4V/1.4 – 1.8V
A13-9	SG	A13-9↔Body GND	V-W↔Body GND	Always	Below 1 Ω
A13-11	SPD	A13-11↔A14-9	P↔W-B	Turn the propeller shaft slowly.	10 – 14 V→ Below 1.0 V
A13-14	PSW	A13-14↔A14-9	L-Y↔W-B	Normal A/C pressure	Below 1.0 V
A13-16	TW	A13-16↔A13-9	LG-R↔V-W	Engine coolant temp.: 0°C (32°F)/40°C (104°F)	2.8 – 3.2 V/ 1.8 – 2.2 V
				Engine coolant temp.: 70°C (158°F)	0.9 – 1.3 V
A13-17	TS	A13-17↔A13-9	Y-G↔V-W	Sensor subjected to electric light	0.8↔4.3 V
				Sensor covered by a cloth	Below 0.8 V
A13-18	TP	A13-18↔A13-9	G-W↔V-W	Temperature set: MAX. COOL→MAX. HOT	3.7 – 4.3 V→ 0.8 – 1.2 V
A14-6	MGC	A14-6↔A14-9	L-R↔W-B	A/C compressor: ON → OFF	Below 1.0 V → 10 – 14 V
A14-7	+B	A14-7↔A14-9	W-R↔W-B	Always	10 – 14 V
A14-8	IG	A14-8↔A14-9	R-L↔W-B	Turn ignition switch IG	10 – 14 V
A14-9	GND	A14-9↔Body GND	W-B↔Body GND	Always	Below 1Ω
A14-10	TPM	A14-10↔A13-9	LG↔V-W	IG ON. Mode control switch: FACE→DEF	3.7 V – 4.3 V → 0.8 – 1.2 V
A14-11	TSET	A14-11↔A13-9	L-B↔V-W	IG ON. Temperature set: MAX.HOT→MAX.COOL	Below 0.3 V→ Over 4.7 V
A14-15	BLW	A14-15↔A14-9	L↔W-B	IG ON. Fan speed: LO→HI	Approx. 1 V→ Approx. 2 V
A14-16	HR	A14-16↔A14-9	L-W↔W-B	IG ON. OFF switch: ON mode→ OFF mode Mode control switch: DEF	Below 1.0 V→ 10 – 14 V
A14-17	MR/F	A14-17↔A14-9	GR↔W-B	During cool-down on AUTO after hot soak	Below 1.0 V
A14-18	RDEF	A14-18↔A14-9	B↔W-B	IG ON. Rear DEF switch: OFF→ON	10 – 14 V→ Below 1.0 V*
A14-19	MREC	A14-19↔A14-9	G-R↔W-B	IG ON. Air inlet control switch: FRS→REC	10 – 14 V→ Below 1.0 V
A14-20	MFRS	A14-20↔A14-9	G↔W-B	IG ON. Air inlet control switch: REC→FRS	10 – 14 V→ Below 1.0 V

* After 15 minutes, ON mode will change to OFF mode automatically.

–MEMO–

MATRIX CHART OF PROBLEM SYMPTOMS

If a normal code is displayed during the diagnostic sensor check but the trouble still occurs, perform troubleshooting for each problem symptom, checking the circuits for each symptom in the order given in the table below (Proceed to the page given for each circuit).

See page / Suspect Area / Symptom		AC–28	AC–30	AC–32	AC–34	AC–36	AC–38	AC–40	AC–42	AC–44	AC–46	AC–48	AC–50
		Room temp. sensor circuit	Ambient temp. sensor circuit	Evaporator temp. sensor circuit	Engine coolant temp. sensor circuit	Solar sensor circuit	Compressor lock sensor circuit	Pressure switch circuit	Air mix damper position sensor circuit	Air mix damper control servo motor circuit	Air inlet damper control servo motor circuit	Air outlet damper position sensor circuit	Air outlet damper control servo motor circuit
Whole functions of the A/C system does not operate.													
Air Flow Control	No blower operation				3								
	No blower control												
	Insufficient air flow												
Temperature Control	No cool air comes out	9	10	11	12		6	5	7	8			
	No warm air comes out	4	5	6					2	3			
	Output air is warmer or colder than the set temperature or response is slow	7	8	9	10	6			11	12	13		
	No temperature control (only Max. cool or Max. warm)	2	3						4	5			
No air inlet control											1		
No air outlet control												1	2
Engine idle up does not occur, or is continuous													
Blinking of A/C indicator							2						
Trouble code not recorded. Set mode is cleared when IG switch is turned off.													

HINT:

- If the instruction ”Proceed to next circuit inspection shown on matrix chart is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check or replace the A/C amplifier.

Backup power source circuit (AC–52)	IG power source circuit (AC–54)	ACC power source circuit (AC–56)	Heater relay circuit (AC–58)	Blower motor circuit (AC–60)	Compressor circuit (AC–62)	A/C control assembly circuit (AC–66)	Temperature set dial circuit (AC–69)	A/C amplifier (IN–35)	Refrigeration system inspection with manifold gauge set (AC–71)	Refrigerant volume (AC–76)	Drive belt tension (AC–77)	Electric cooling fan (AC–107)	Condenser (AC–92)	Receiver (AC–91)	Evaporator (AC–95)	Heater radiator (AC–96)	Expansion valve (AC–98)	Water valve (AC–97)
	1	2						3										
			1	2				4										
				2		1		3										
				1		2		3										
					4	14	13	15	3	1	2							
						8	7	9										1
						20	19	21	3	1	2	4	14	15	16	17	18	5
						6	1	7										
						2		3										
						3		4										
					1			2										
					1			3										
1								2										

CIRCUIT INSPECTION

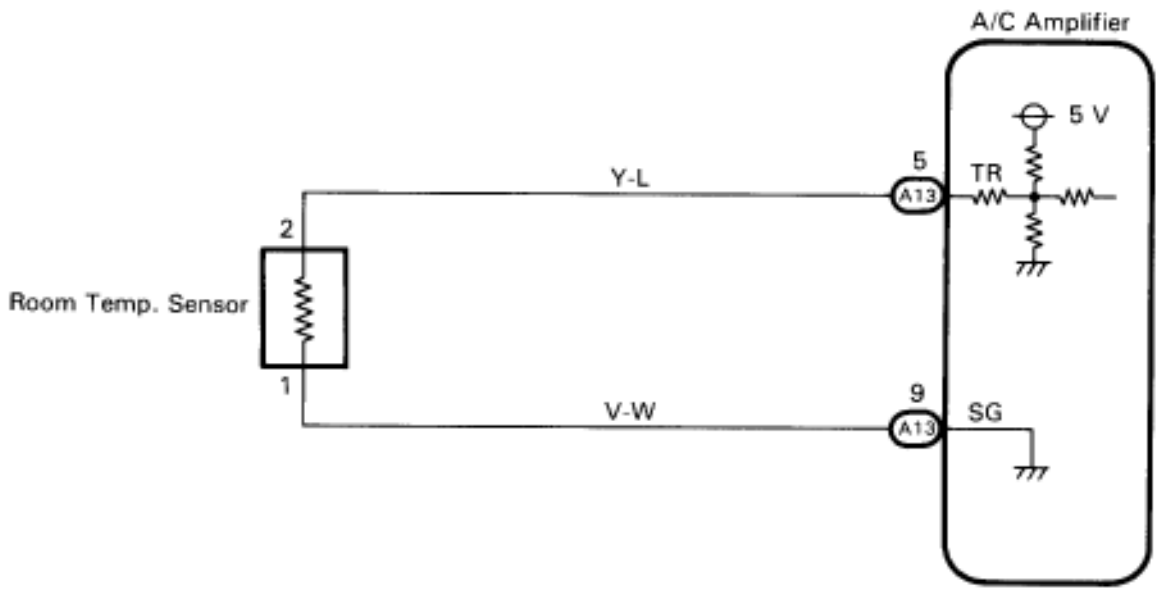
Blinking Light FACE Room Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cabin and sends the appropriate signals to the A/C amplifier.

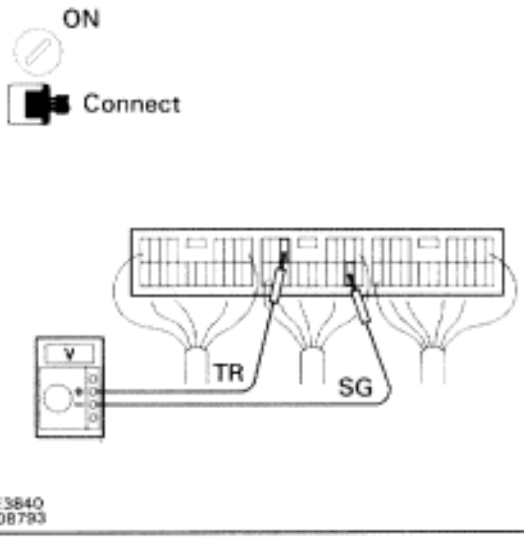
Diagnostic Sensor Check Detecting Condition	Trouble Area
Open or short in room temperature sensor circuit.	• Room temperature sensor • Harness or connector between room temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TR and SG of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal TR of SG of A/C amplifier connector at each temperature.

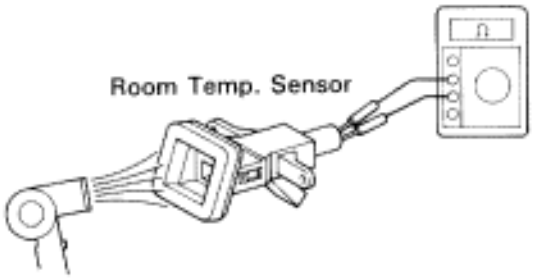
OK **Voltage:**
at 25˚C (77˚F): 1.8 ~ 2.2 V
at 40˚C (104˚F): 1.2 ~ 1.6 V

HINT: As the temperature increases, the voltage decreases gradually.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check room temperature sensor.



P
1. Remove instrument panel.
2. Disconnect room temperature sensor connector.

C Check resistance between terminals 1 and 2 of room temperature sensor connector.

OK **Resistance:**
at 25˚C (77˚F): 1.6 ~ 1.8 k

OK

NG → **Replace room temperature sensor.**

3 Check harness and connector between A/C amplifier and room temperature sensor (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

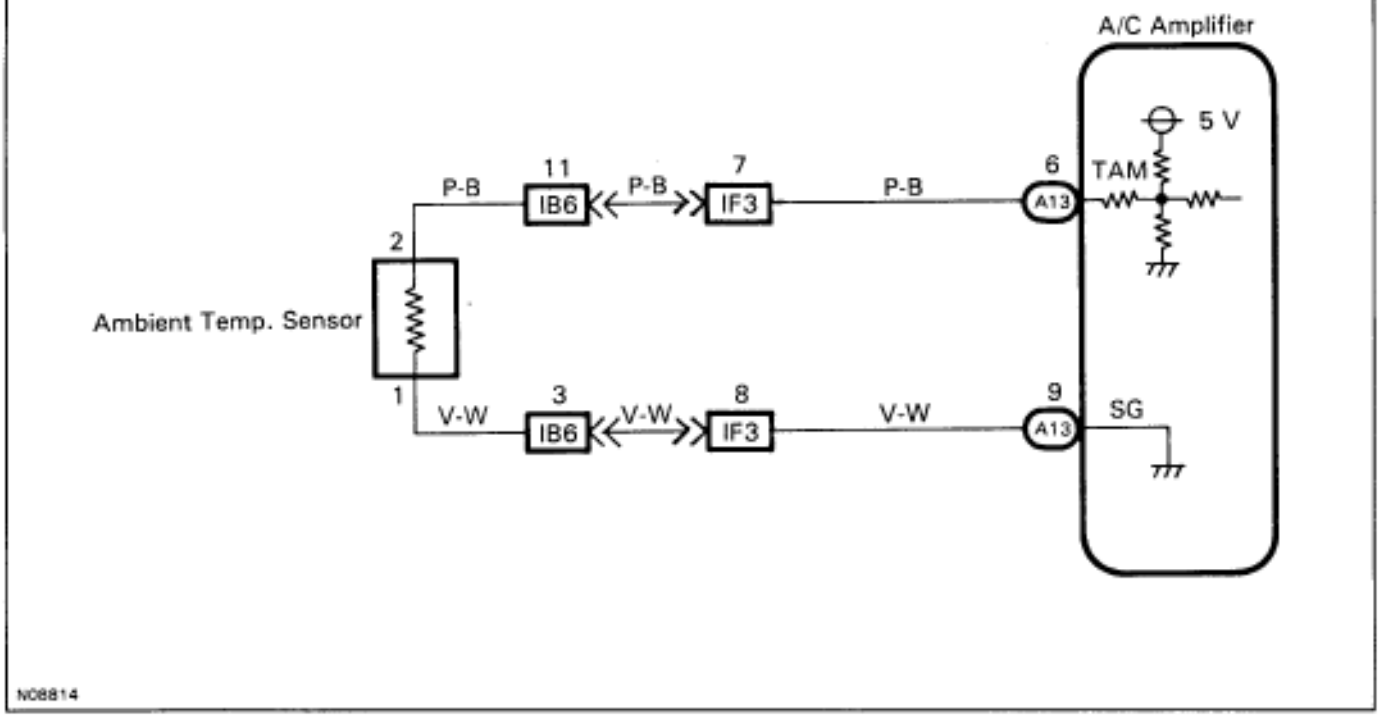
Blinking Light B L Ambient Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the ambient temperature and sends the appropriate signals to the A/C amplifier.

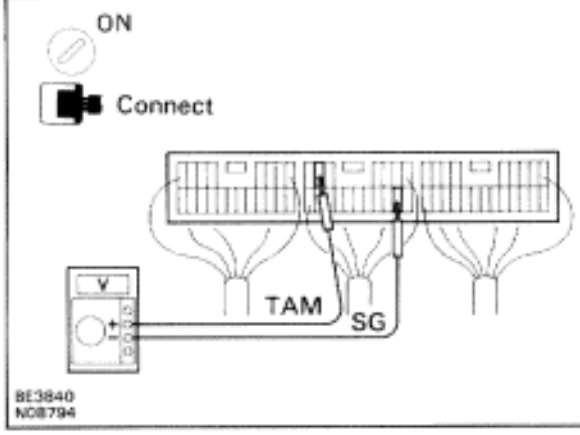
Diagnostic Sensor Check Detecting Condition	Trouble Area
Open or short in ambient temperature sensor circuit.	• Ambient temperature sensor • Harness or connector between ambient tempera–ture sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TAM and SG of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal TAM of SG of A/C amplifier connector at each temperature.

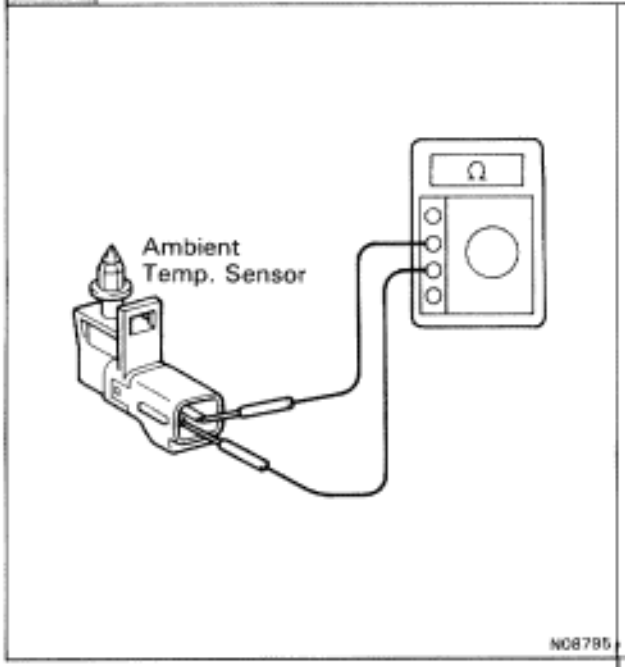
OK **Voltage:**
at 25˚C (77˚F): 1.35 ~ 1.75 V
at 40˚C (104˚F): 0.85 ~ 1.25 V

HINT: As the temperature increases, the voltage decreases gradually.

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check ambient temperature sensor.



P
1. Remove the clip and the sensor from the right side inside the bumper reinforcement.
2. Disconnect ambient temperature sensor connector.

C Check resistance between terminals 1 and 2 of ambient temperature sensor connector at each temperature.

OK **Resistance:**
at 25˚C (77˚F): 1.6 ~ 1.8 k
at 50˚C (122˚F): 0.5 ~ 0.7 k

HINT: As the temperature increases, the resistance decreases gradually.

NOTICE:
When installing the ambient temperature sensor, be sure to connect the sensor connector before connecting the battery.

OK

NG **Replace ambient temperature sensor.**

3 Check harness and connector between A/C amplifier and ambient temperature sensor (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Check and replace A/C amplifier.

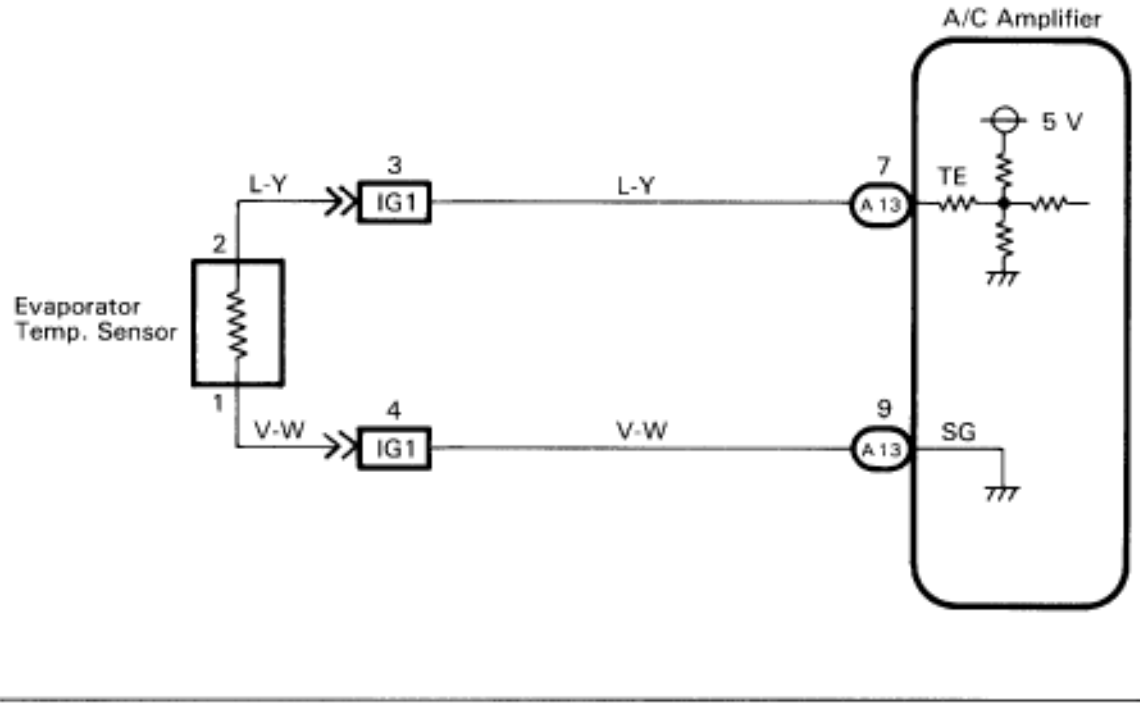
Blinking Light FOOT Evaporator Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cooling unit and sends the appropriate signals to the A/C amplifier.

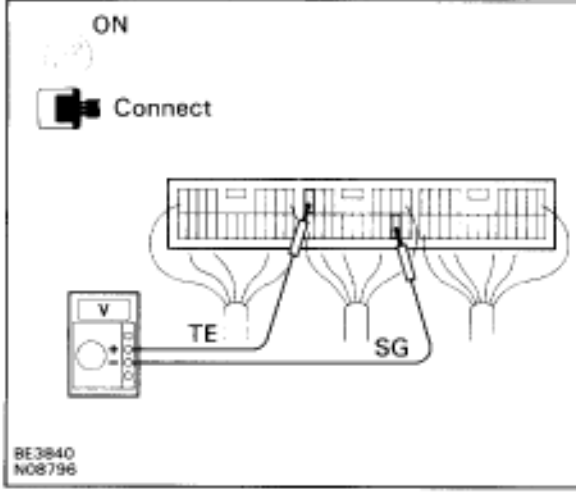
Diagnostic Sensor Check Detecting Condition	Trouble Area
Open or short in evaporator temperature sensor circuit.	• Evaporator temperature sensor • Harness or connector between evaporator temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TE and SG of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal TE of SG of A/C amplifier connector at each temperature.

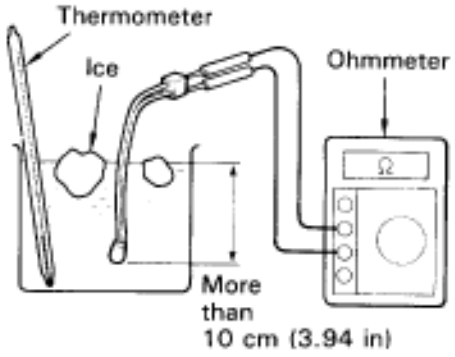
OK **Voltage:**
at 0˚C (32˚F): 2.0 ~ 2.4 V
at 15˚C (59˚F): 1.4 ~ 1.8 V

HINT: As the temperature increases, the voltage decreases gradually.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check evaporator temperature sensor.



P Remove evaporator temperature sensor (See page AC–106)

C Check resistance between terminals 1 and 2 of evaporator temperature sensor connector at each temperature.

OK **Resistance:**
at 0˚C (32˚F): 4.5 ~ 5.2 k
at 15˚C (59˚F): 2.0 ~ 2.7 k

HINT: As the temperature increases, the resistance decreases gradually.

OK

NG → **Replace evaporator temperature sensor.**

3 Check harness and connector between A/C amplifier and evaporator temperature sensor (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

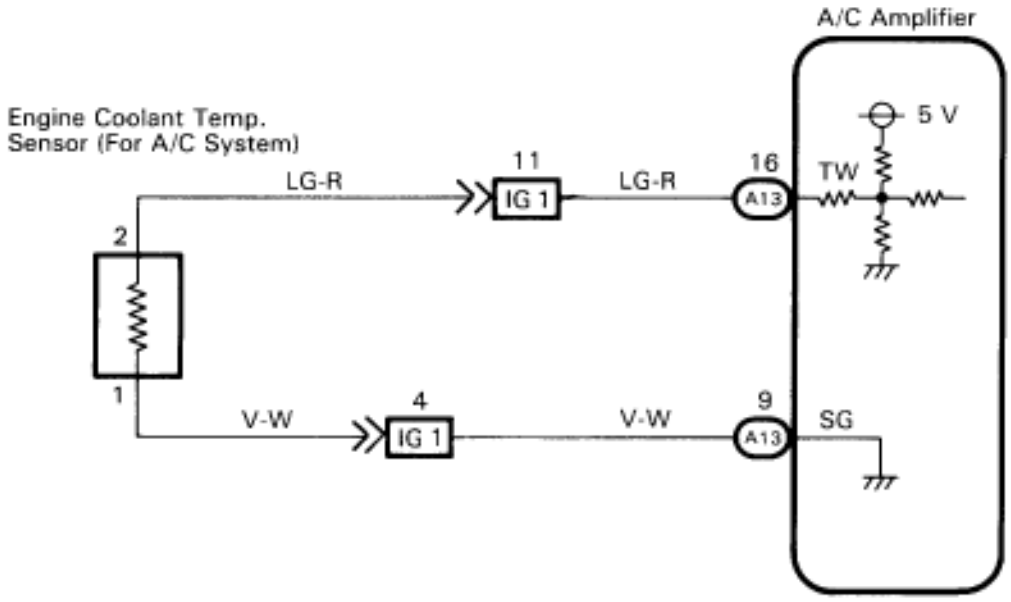
Blinking Light F D Engine Coolant Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the coolant temperature and sends the appropriate signals to the A/C amplifier. These signals are used for warm up control when the engine is cold.

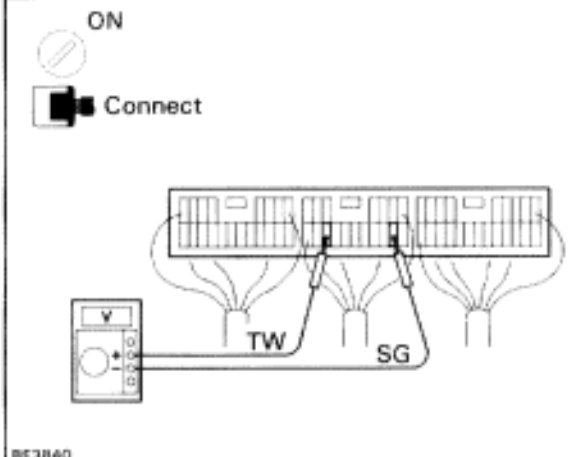
Diagnostic Sensor Check Detecting Condition	Trouble Area
Open or short in engine coolant temperature sensor circuit.	• Engine coolant temperature sensor • Harness or connector between engine coolant temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TW and SG of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal TW of SG of A/C amplifier connector at each temperature.

OK **Voltage:**

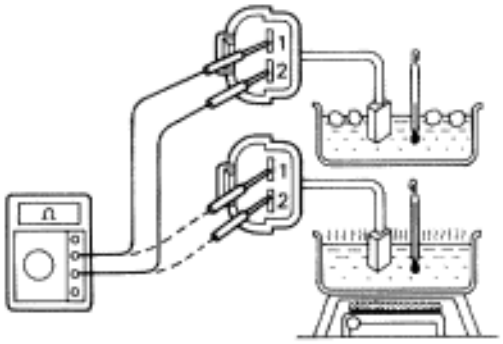
at 0°C (32°F):	**2.8 ~ 3.2 V**
at 40°C (104°F):	**1.8 ~ 2.2 V**
at 70°C (158°F):	**1.3 ~ 1.5 V**

HINT: As the temperature increases, the voltage decreases gradually.

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check engine coolant temperature sensor.



P
1. Remove A/C unit (See page AC–80).
2. Remove engine coolant temperature sensor.

C Measure resistance between terminals 1 and 2 of engine coolant temperature sensor connector at each temperature.

OK **Resistance:**

at 0°C (32°F):	**Below 50 k**
at 40°C (104°F):	**2.4 ~ 2.8 k**
at 100°C (212°F):	**Over 0.2 k**

HINT: As the temperature increases, the resistance decreases gradually.

OK

NG **Replace engine coolant temperature sensor.**

3 Check harness and connector between A/C amplifier and engine coolant temperature sensor (See page IN–30).

OK

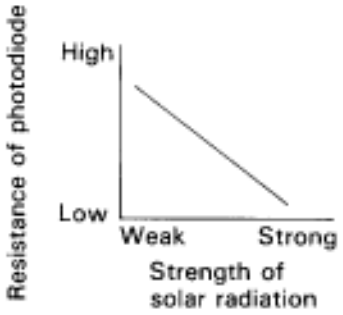
NG **Repair or replace harness or connector.**

Check and replace A/C amplifier.

Blinking Light DEF Solar Sensor Circuit

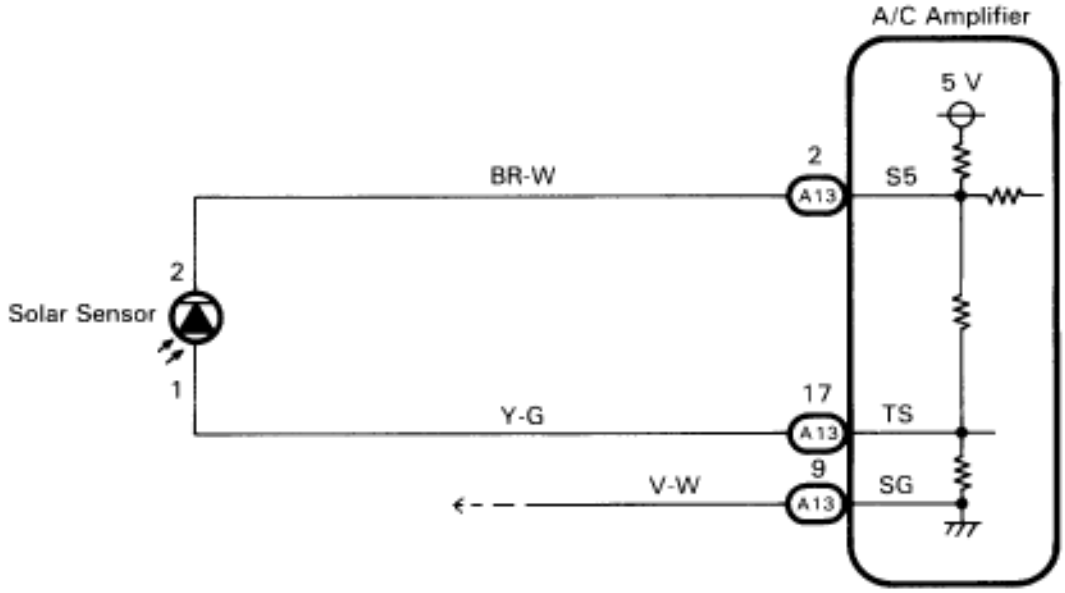
CIRCUIT DESCRIPTION

A photo diode in the solar sensor detects solar radi–ation and sends signals to the A/C amplifier.



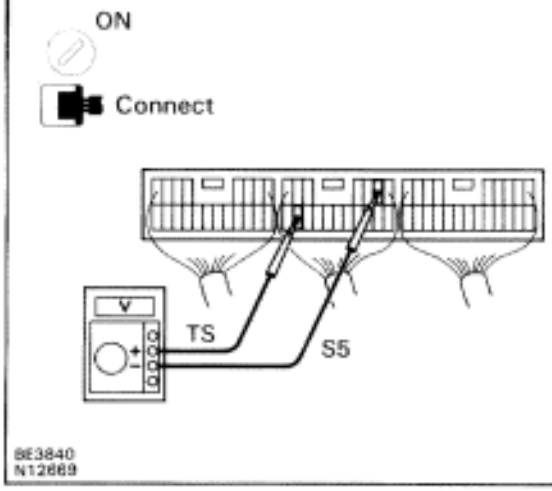
Diagnostic Sensor Check Detecting Condition	Trouble Area
Open or short in solar sensor circuit. (Please not that blinking of the LED for DEF is not abnormal when the sensor is not receiving solar radiation.)	• Solar sensor • Harness or connector between solar sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals S5 and TS of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal S5 of TS of A/C amplifier connector when the solar sensor is subjected to an electric light, and when the sen–sor is covered by a cloth.

OK

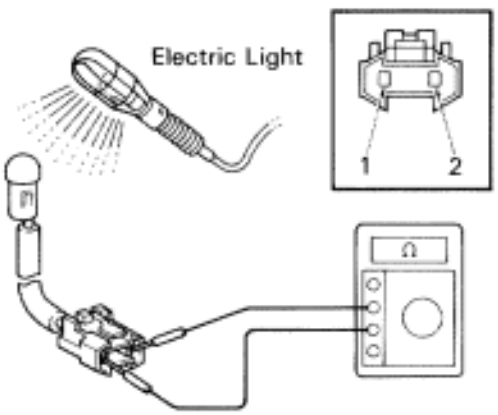
Condition	Voltage
Sensor covered by a cloth	0.8 ~ 4.3 V
Sensor subjected to electric light	Below 0.8 V

HINT: As the inspection light is gradually moved away from the sensor, the voltage increases.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check solar sensor.



P
1. Remove glove compartment assembly.
2. Remove solar sensor.

C
1. Cover the sensor by a cloth.
2. Measure resistance between terminals 1 and 2 of solar sensor connector.

Hint Connect positive (+) lead of ohmmeter to terminal 2 and negative (–) lead to terminal 1 of the solar sen–sor.

OK **Resistance: ∞ ((no continuity)**

P
1. Remove the cloth from the solar sensor and sub–ject the sensor to electric light.
2. Measure resistance.

OK **Resistance: Approx. 4k((continuity)**

HINT: As the electric light is moved gradually away from the sensor, the resistance increases.

OK

NG → **Replace solar sensor.**

3 Check harness and connector between A/C amplifier and solar sensor (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

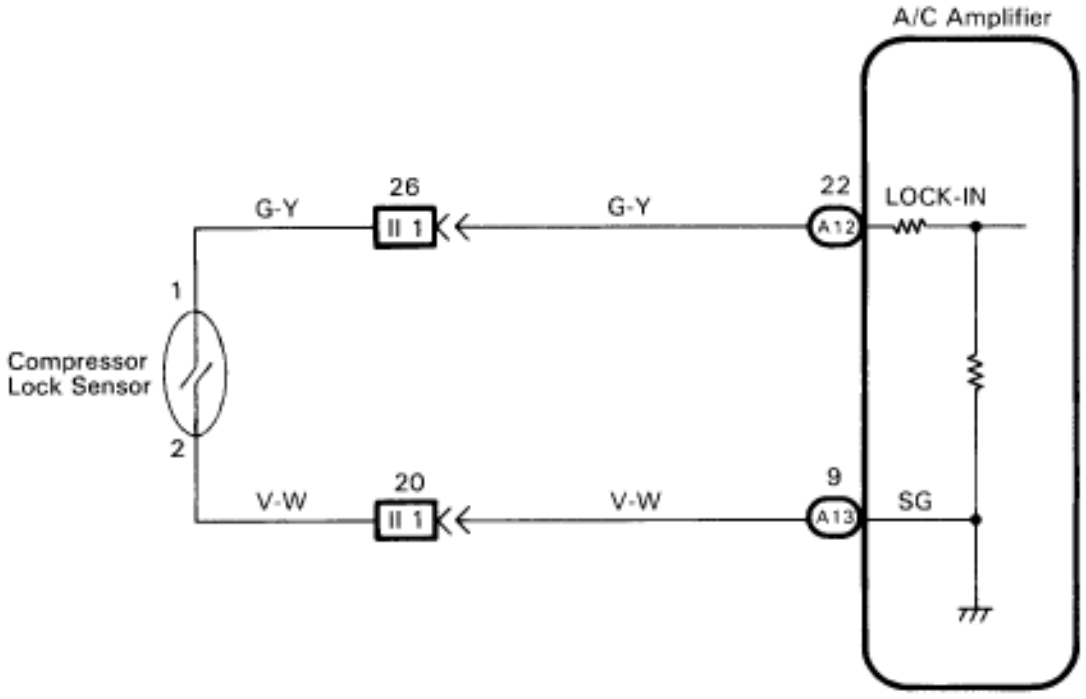
Blinking Light A C Compressor Lock Sensor Circuit

CIRCUIT DESCRIPTION

This sensor sends 1 pulse per engine revolution to the A/C amplifier. If the number ratio of the compressor speed divided by the engine speed is smaller than a predetermined value, the A/C amplifier turns the compressor off. And, the indicator flashes at about 1 second intervals.

Diagnostic Sensor Check Detecting Condition	Trouble Area
All conditions below are detected for 3 secs. or more (a) Engine speed: 450 rpm or more (b) Ratio between engine and compressor speed deviates 20% or more in comparison to normal operation.	• Compressor • Compressor drive belt • Compressor lock sensor • Harness and connector between compressor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check compressor.

P (1) Check compressor drive belt tension.
(2) Check the compressor does not lock during operation with engine started and blower switch
and A/C switch ON.

OK

NG → **Adjust drive belt tension or repair compressor.**

2 Check compressor lock sensor.

NC9020

P Disconnect compressor lock sensor connector

C Measure resistance between terminals 1 and 2 of compressor lock sensor connector.

OK **Resistance: at 20°C (68°F): 160 ~ 210**

OK

NG → **Replace compressor lock sensor.**

3 Check for open and short harness and connector between A/C amplifier and room temperature sensor (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.

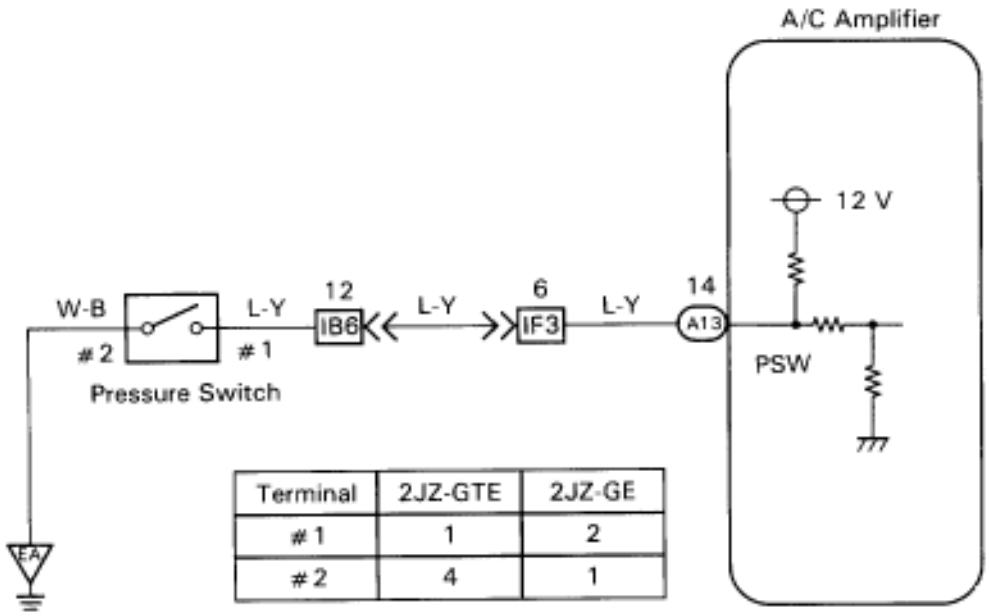
Blinking Light FRS Pressure Switch Circuit

CIRCUIT DESCRIPTION

The pressure switch sends the appropriate signals to the A/C amplifier when the air conditioning refrigerant pressure drops too low or rises too high. When the A/C amplifier receives these signals, it outputs signals via the ECM to switch OFF the compressor relay and turns the magnetic clutch OFF.

Diagnostic Sensor Check Detecting Condition	Trouble Area
Open in pressure sensor circuit Abnormal refrigerant pressure { below 196 kPa (2.0 kgf/cm^2, 28 psi) { over 3,140 kPa (32.0 kgf/cm^2, 455 psi)	• Pressure switch • Harness or connector between pressure switch and A/C amplifier • Refrigerant pipe line • A/C amplifier

WIRING DIAGRAM

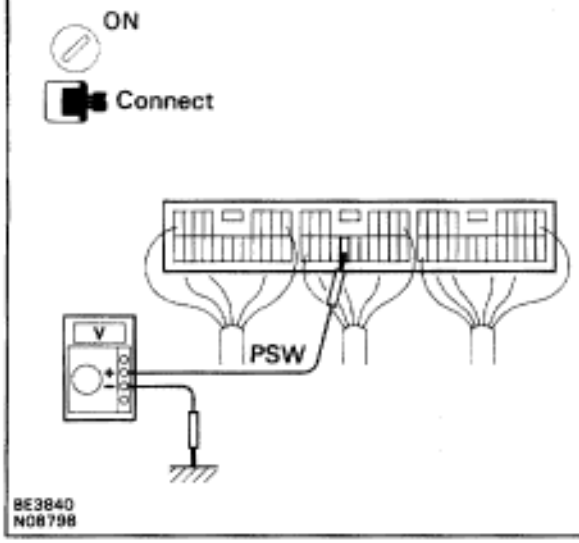


Terminal	2JZ-GTE	2JZ-GE
#1	1	2
#2	4	1

AC2924

INSPECTION PROCEDURE

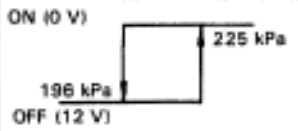
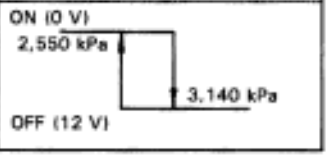
1 Check voltage between terminal PSW of A/C amplifier and body ground.



P Install the manifold gauge set.

C
1. Turn ignition switch ON.
2. Check voltage between terminal PSW of A/C amplifier connector and body ground when air conditioning gas pressure is changed.

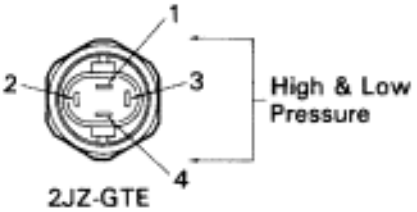
OK **The voltage changes with gas pressure, as shown in the diagram below.**

Low Pressure Cut Side	Reference: High Pressure Cut Side
	

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check pressure switch.

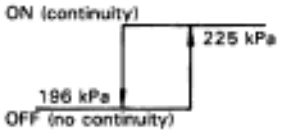
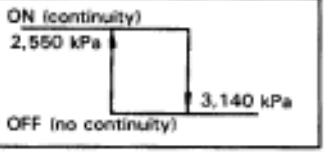


N08806

P Disconnect pressure switch connector.

C
1. Turn ignition switch ON.
2. Check continuity between terminals 1 and 4 (2 and 1) of pressure switch when air conditioning gas pressure is changed.

OK **The continuity changes with gas pressure as shown below**

Low Pressure Cut Side	Reference: High Pressure Cut Side
	

OK

NG → **Repair or replace harness or connector.**

3 Check harness and connector between A/C amplifier and room temperature sensor (See page IN–30).

OK

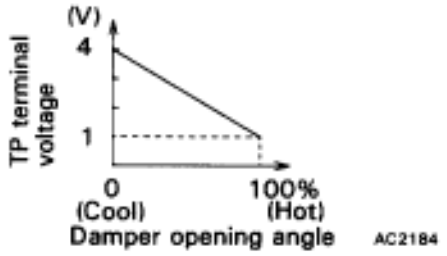
NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

Blinking Light REC M2 Air Mix Damper Position Sensor Circuit

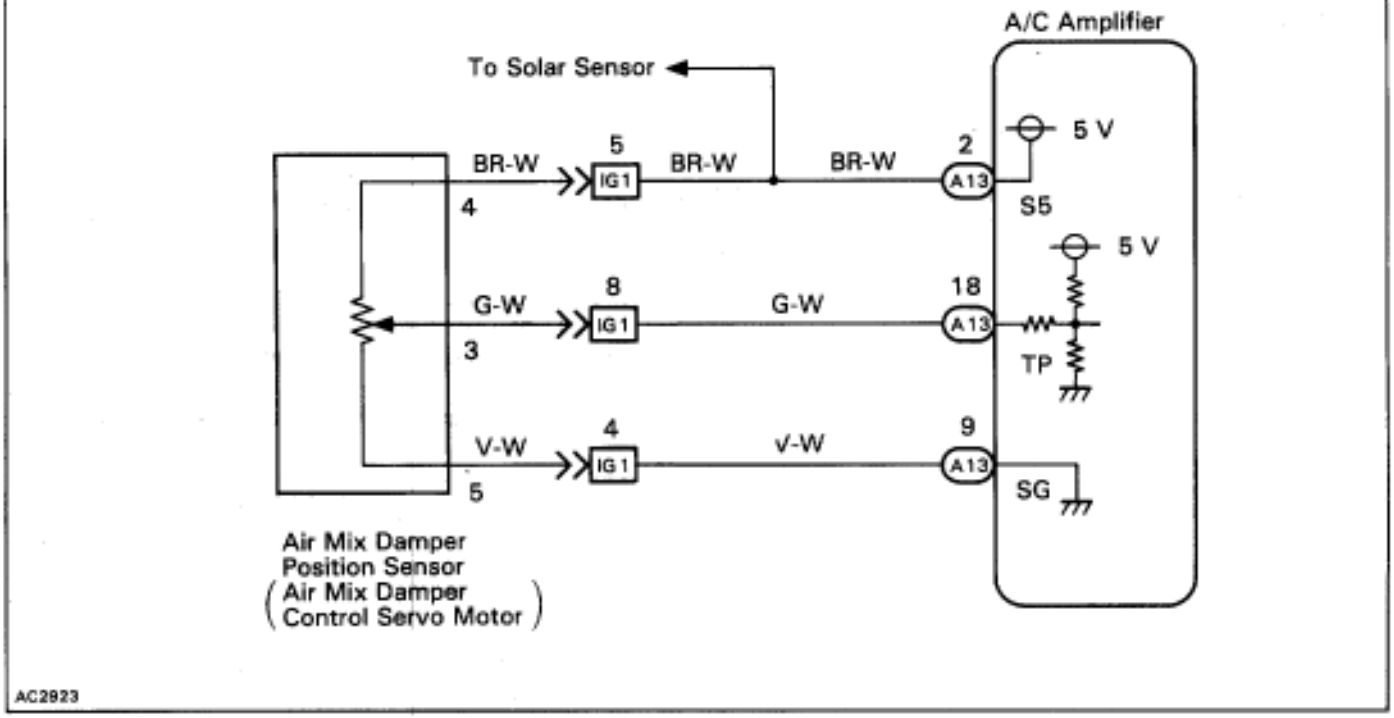
CIRCUIT DESCRIPTION

This sensor detects the position of the air mix damper and sends the appropriate signals to the A/C amplifier.
The position sensor is built into the air mix damper control servo motor assembly.



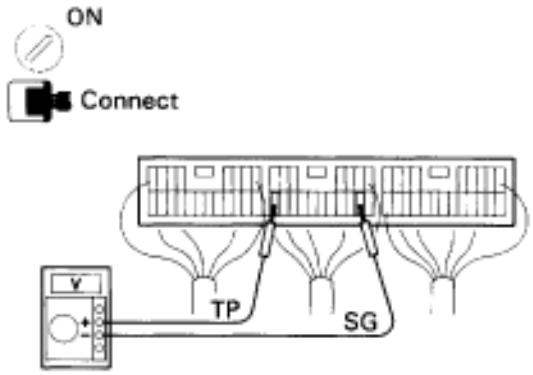
Light	Diagnostic Sensor Check Detecting Condition	Trouble Area
REC	Short to ground or power source circuit in air mix damper position sensor circuit.	• Air mix damper position sensor • Harness or connector between air mix damper control servo motor assembly and A/C amplifier • A/C amplifier
M2	Air mix damper position sensor value does not change even if A/C amplifier signals the air mix damper control servo motor to operate.	

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TP and SG of A/C amplifier connector.



P Remove A/C amplifier with connectors still connected.

C
1. Turn ignition switch ON.
2. Change the set temperature to activate the air mix damper control servo motor, and measure the voltage between terminals TP and SG of A/C amplifier connector each time when the set temperature is changed.

OK

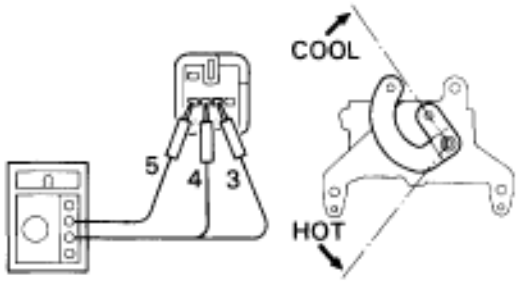
Set Temperature	Voltage
Max. cool	3.5 – 4.5 V
Max. hot	0.5 – 1.5 V

HINT: As the set temperature increases, the voltage decreases.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check air mix damper position sensor.



P
1. Remove instrument panel.
2. Disconnect air mix damper control servo motor assembly connector.

C Measure resistance between terminals 4 and 5 of air mix damper control servo motor assembly connector.

OK **Resistance: 4.8 ~ 7.2 k**

C While operating air mix damper control servo motor, following the procedure on page AC–44, measure resistance between terminals 5 and 3 of air mix damper control servo motor assembly connector.

OK

Position	Resistance
Max. cool	3.84 ~ 5.76 kΩ
Max. hot	0.96 ~ 1.44 kΩ

HINT: As the air mix damper control servo motor moves from cool side to hot side, the resistance decreases.

OK

NG → **Replace air mix damper control servo motor assembly.**

3 Check harness and connector between A/C amplifier and air mix damper control servo motor assembly (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

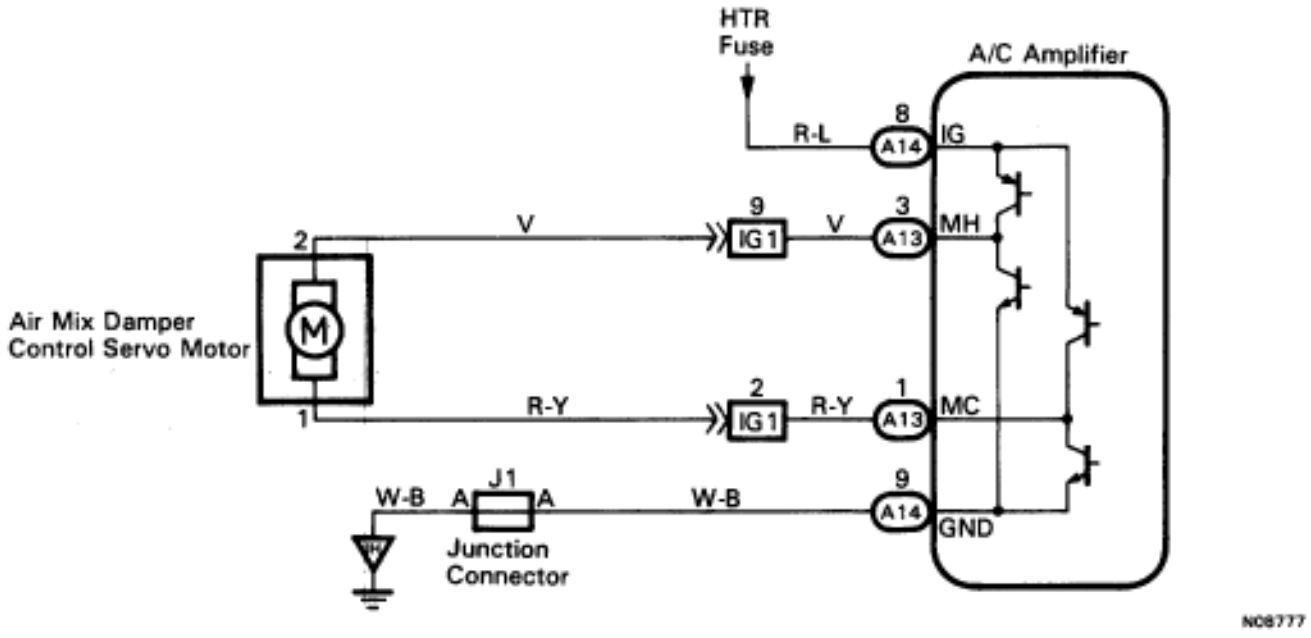
Blinking Light M2 Air Mix Damper Control Servo Motor Circuit

CIRCUIT DESCRIPTION

The air mix damper control servo motor is controlled by the A/C amplifier and signals the air mix damper to move to the desired position.

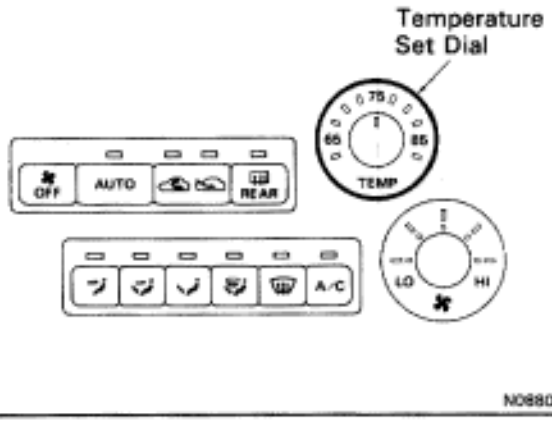
Diagnostic Sensor Check Detecting Condition	Trouble Area
Air mix damper position sensor value does not change even if A/C amplifier signals the air mix damper control servo motor to operate.	• Air mix damper control servo motor • Air mix damper position sensor • Harness or connector between A/C amplifier and A/M damper control servo motor, A/M damper position sensor • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Actuator check.



P
1. Warm up the engine.
2. Set to the actuator check mode (See page AC–22)
3. Turn the TSET dial and change it to step operation.

operation.

C Turn the TSET dial and check the operation of the air mix damper and the condition of the blower.

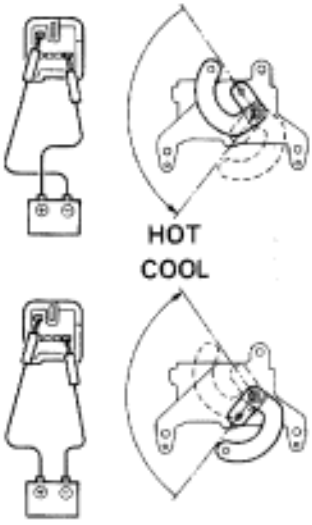
OK

Set Temp.	Air Mix Damper	Condition
Below 20	0% (Fully closed)	Cool air comes out
20 ~ 23	50%	
Over 23	100% (Fully opened)	Warm air comes out

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check air mix damper control servo motor.



P Remove air mix damper control servo motor assembly

C Connect positive (+) lead to terminal 2 and negative (–) lead to terminal 1.

OK The lever turns smoothly to Hot side.

C Connect negative (–) lead to terminal 2 and positive (+) lead to terminal 1.

OK The lever turns smoothly to Cool side.

OK

NG → **Replace air mix damper control servo motor assembly.**

3 Check harness and connector between A/C amplifier and air mix damper control servo motor assembly (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

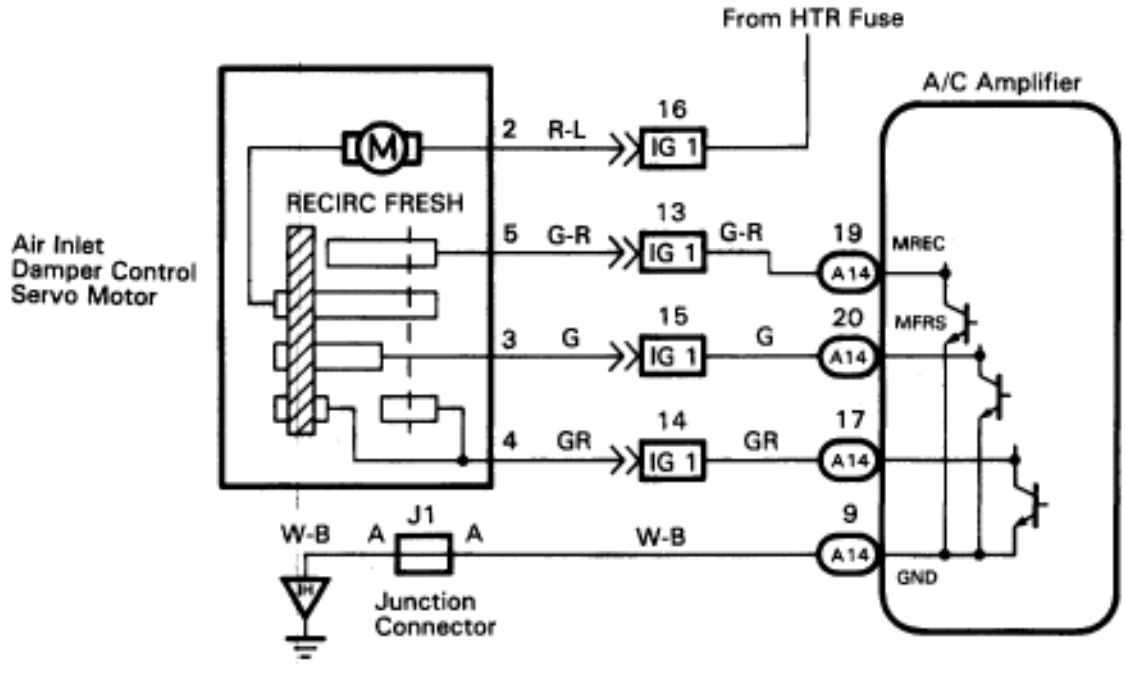
Air Inlet Damper Control Servo Motor Circuit

CIRCUIT DESCRIPTION

The air inlet damper control servo motor is controlled by the A/C amplifier and signals the air inlet damper to move to the desired position.

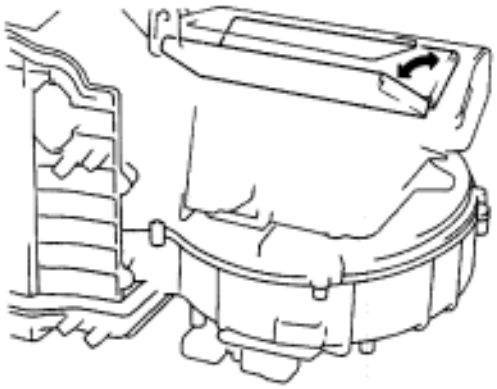
Condition	Trouble Area
Air mix damper position sensor value does not change even if A/C amplifier signals the air mix damper control servo motor to operate.	• Air inlet damper position sensor • Harness or connector between air inlet damper control servo motor assembly and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Actuator check.



P
1. Remove glove box to see and check the air inlet damper operation.
2. Set to the actuator mode (See page AC–22)
3. Turn the TSET dial and change it to the step operation

C Turn the TSET dial and check the operation of the air inlet damper.

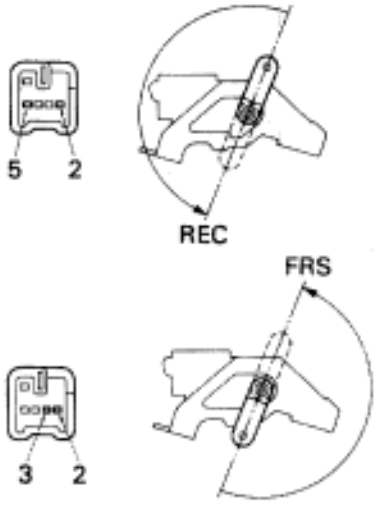
OK

Set Temp.	Air Inlet Damper
Below 20	REC
20 ~ 23	F/R
Over 23	FRS

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check air inlet damper control servo motor.



P
1. Remove instrument panel.
2. Remove the air inlet damper control servo motor assembly

C Connect positive (+) lead to terminal 2 and negative (–) lead to terminal 5.

OK The lever moves smoothly to REC position.

C Connect positive (+) lead to terminal 2 and negative (–) lead to terminal 3.

OK The lever moves smoothly to FRS position.

OK

NG → **Replace air inlet damper control servo motor assembly.**

3 Check harness and connector between A/C amplifier and air inlet damper control servo motor assembly (See page IN–30).

OK

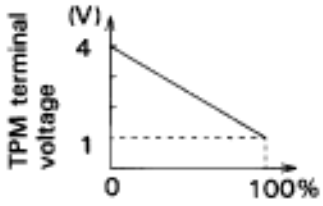
NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

Blinking Light LO HI Air Outlet Damper Position Sensor Circuit

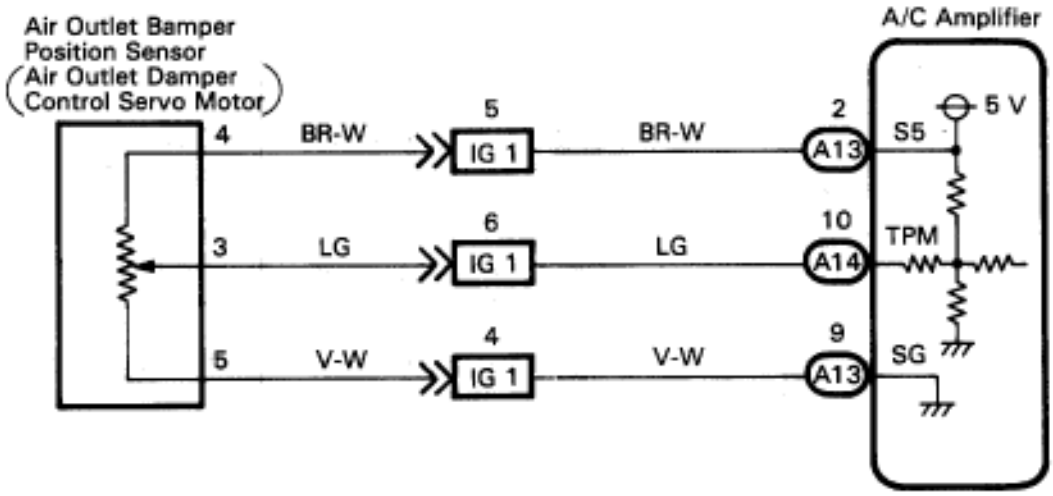
CIRCUIT DESCRIPTION

This sensor detects the position of the air mix damper and sends the appropriate signals to the A/C amplifier.
The position sensor is built into the air outlet damper control servo motor assembly.



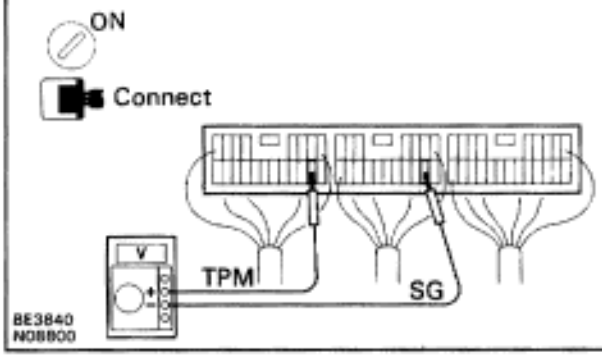
Light	Diagnostic Sensor Check Detecting Condition	Trouble Area
LO	Short to ground or power source circuit in air outlet damper position sensor circuit.	• Air outlet damper position sensor • Harness or connector between air outlet damper control servo motor assembly and A/C amplifier • A/C amplifier
HI	Air outlet damper position sensor value does not change even if A/C amplifier signals the air outlet damper control servo motor to move.	

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals TPM and SG of A/C amplifier connector.



P
1. Remove A/C amplifier with connectors still connected.
2. Turn ignition switch ON

OK

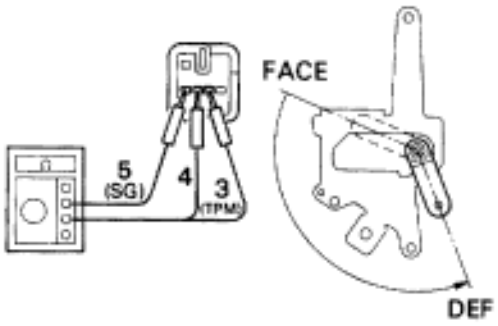
Mode Switch	Voltage
FACE	3.5 ~ 4.5 V
DEF	0.5 ~ 1.5 V

HINT: As the air outlet damper control servo motor is moved from VENT side to DEF side, the voltage decreases gradually without interruption.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26). However, if the light is still blinking, check and replace A/C amplifier.**

2 Check air outlet damper position sensor.



P
1. Remove instrument panel.
2. Disconnect air outlet damper control servo motor assembly connector.

C Measure resistance between terminals 4 and 5 of air outlet damper control servo motor assembly connector.

OK **Resistance: 4.7 ~ 7.2 k**

C While operating air outlet damper control servo motor, as in the procedure on page AC–50, measure resistance between terminals TPM and SG of air outlet servo motor assembly connector.

OK **Resistance**

Damper Position	Resistance
FACE	3.84 ~ 5.76 kΩ
DEF	0.96 ~ 1.44 kΩ

HINT: As the air outlet servo motor moves from FACE side to DEF side, the resistance decreases gradually without interruption.

OK

NG → **Replace max. cool damper control servo motor assembly.**

3 Check harness and connector between A/C amplifier and max. cool damper control servo motor assembly (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace A/C amplifier.

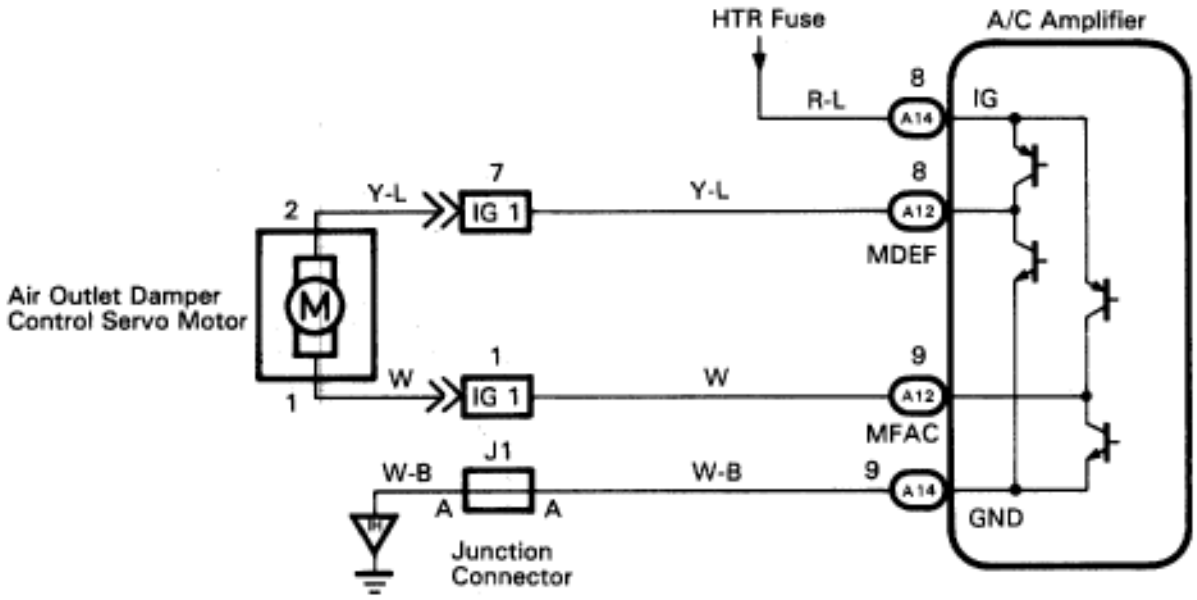
Blinking Light HI Air Outlet Damper Control Servo Motor Circuit

CIRCUIT DESCRIPTION

This circuit turns the servo motor and changes each mode damper position by the signals from the A/C amplifier. When the AUTO switch is on, the A/C amplifier changes the mode automatically between (FACE) (BI–LEVEL) and (FOOT) according to the temperature setting.

Diagnostic Sensor Check Detecting Condition	Trouble Area
Air outlet damper position sensor value does not change even if A/C amplifier signals the air outlet damper control servo motor.	• Air outlet damper control servo motor • Air outlet damper position sensor • Harness or connector between A/C amplifier and air outlet damper control servo motor, air outlet damper position sensor • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Actuator check.

	Air Flow
Below 20	FACE
20 ~ 23	BI-LEVEL
23 ~ 27	FOOT
27 ~ 30	FOOT DEF
Over 30	DEF

P
1. Set to the actuator check mode (see page AC–22).
2. Turn the temp. dial and change to step operation .

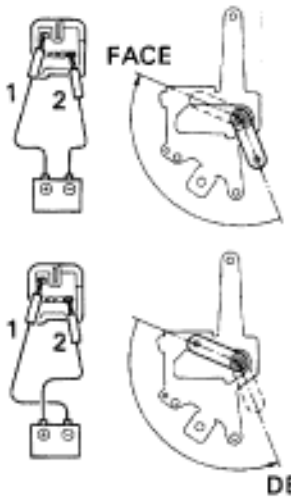
C Turn the temp. dial and check the condition of air flow.

OK The mode changes with the change in the temperature display as shown in the table.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check air outlet damper control servo motor.



P
1. Remove instrument panel.
2. Remove the air outlet damper control servo motor assembly.

C Connect positive (+) lead to terminal 1 and negative (–) lead to terminal 2.

OK The lever moves smoothly to FACE position.

C Connect negative (–) lead to terminal 1 and positive (1) lead to terminal 2.

OK The lever moves smoothly to DEF position.

OK

NG → **Replace air outlet servo motor.**

3 Check for open and short in harness and connector between A/C amplifier and air outlet damper control servo motor, air outlet damper control servo motor and battery, air outlet damper control servo motor and body ground (See page IN–26).

OK

NG → **Repair or replace harness or connector.**

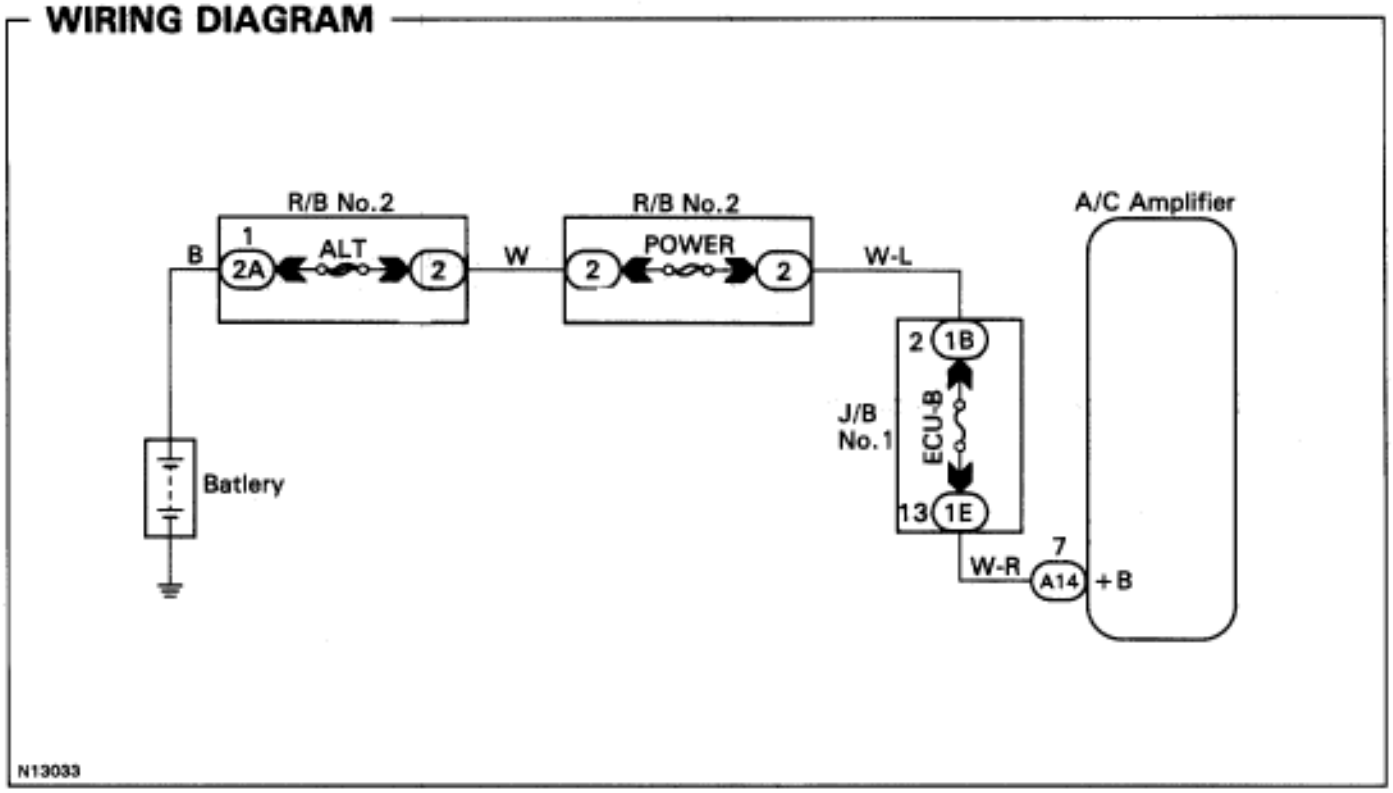
Check and replace A/C amplifier.

Back Up Power Source Circuit

CIRCUIT DESCRIPTION

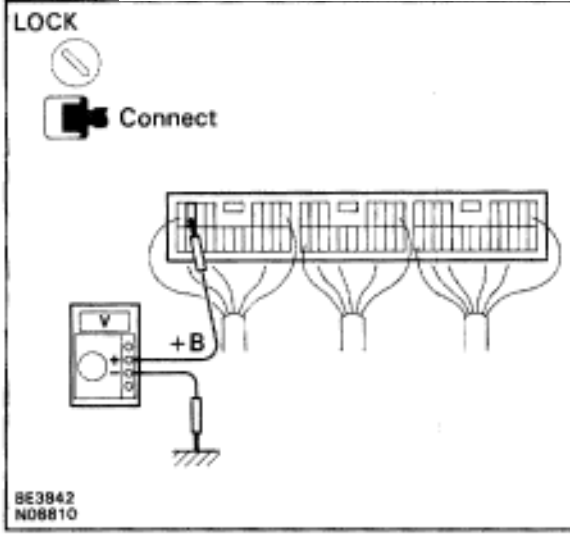
This is the back up power source for the A/C amplifier. Power is supplied even when the ignition switch is off and is used for diagnostic sensor check memory, etc.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal +B of A/C amplifier connector and body ground.



P Remove the A/C amplifier with connector still connected.

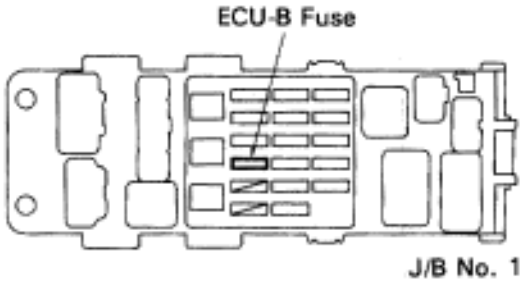
C Measure voltage between terminal + B of air conditioner control assembly connector and body ground.

OK **Voltage: Battery positive voltage**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check ECU–B fuse.



P Remove ECU–B fuse from J/B No. 1.

C Check continuity of ECU–B fuse.

OK **Continuity**

OK

NG → **Check for short in all the harness and components to the ECU–B fuse (See attached wiring diagram).**

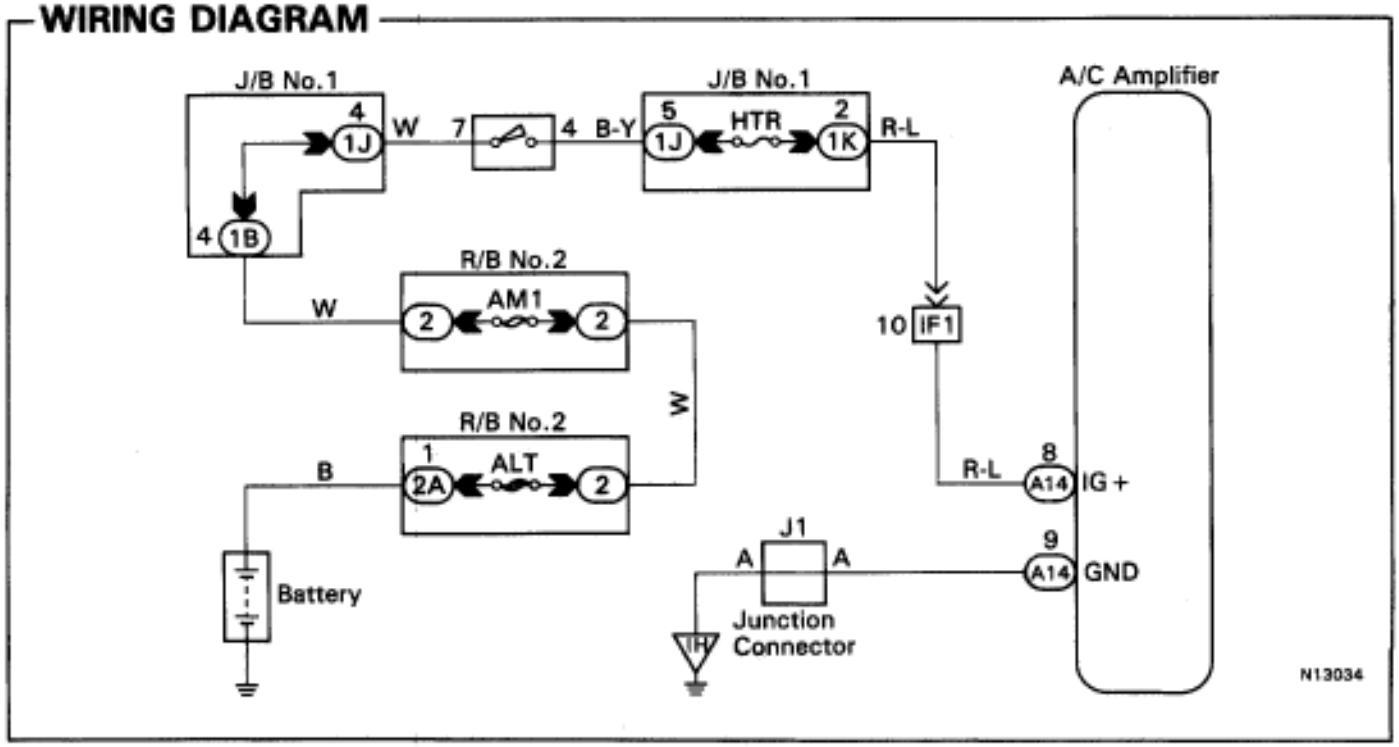
Check and repair harness and connector between A/C amplifier and battery.

IG Power Source Circuit

CIRCUIT DESCRIPTION

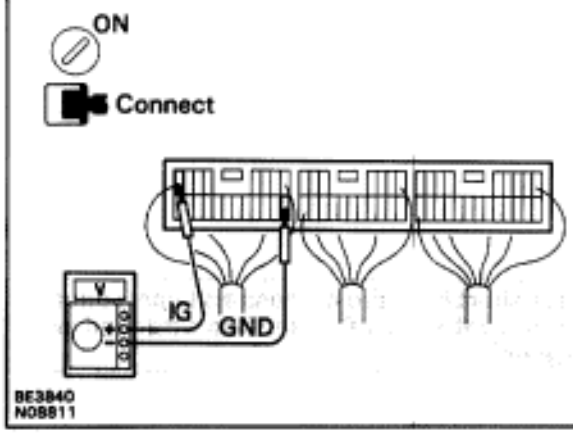
This is the power source for the A/C amplifier and servo motors, etc.

WIRING DIAGRAM



INSPECTION PROCEDURE

Check voltage between terminals IG and GND of A/C amplifier connector.



P Remove the A/C amplifier with connector still connected

C
1. Turn ignition switch ON.
2. Measure voltage between terminals IG and GND of A/C amplifier.

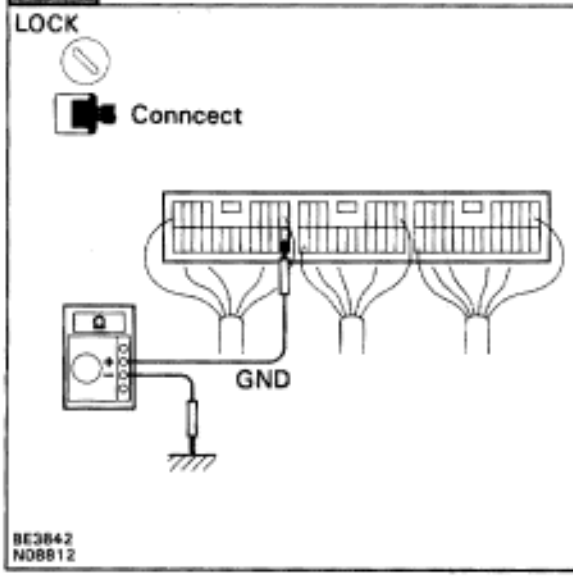
OK **Voltage: Battery positive voltage**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

Go to step 2.

2 Check continuity between terminal GND of A/C amplifier and body ground.



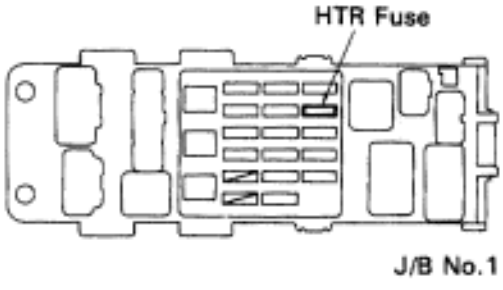
C Measure resistance between terminal GND of A/C amplifier and body ground.

OK **Resistance: O (continuity)**

OK

NG **Repair or replace harness or connector.**

3 Check HTR fuse.



P Remove HTR fuse from J/B No. 1.

C Check continuity of HTR fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components to the HTR fuse (See attached wiring diagram).**

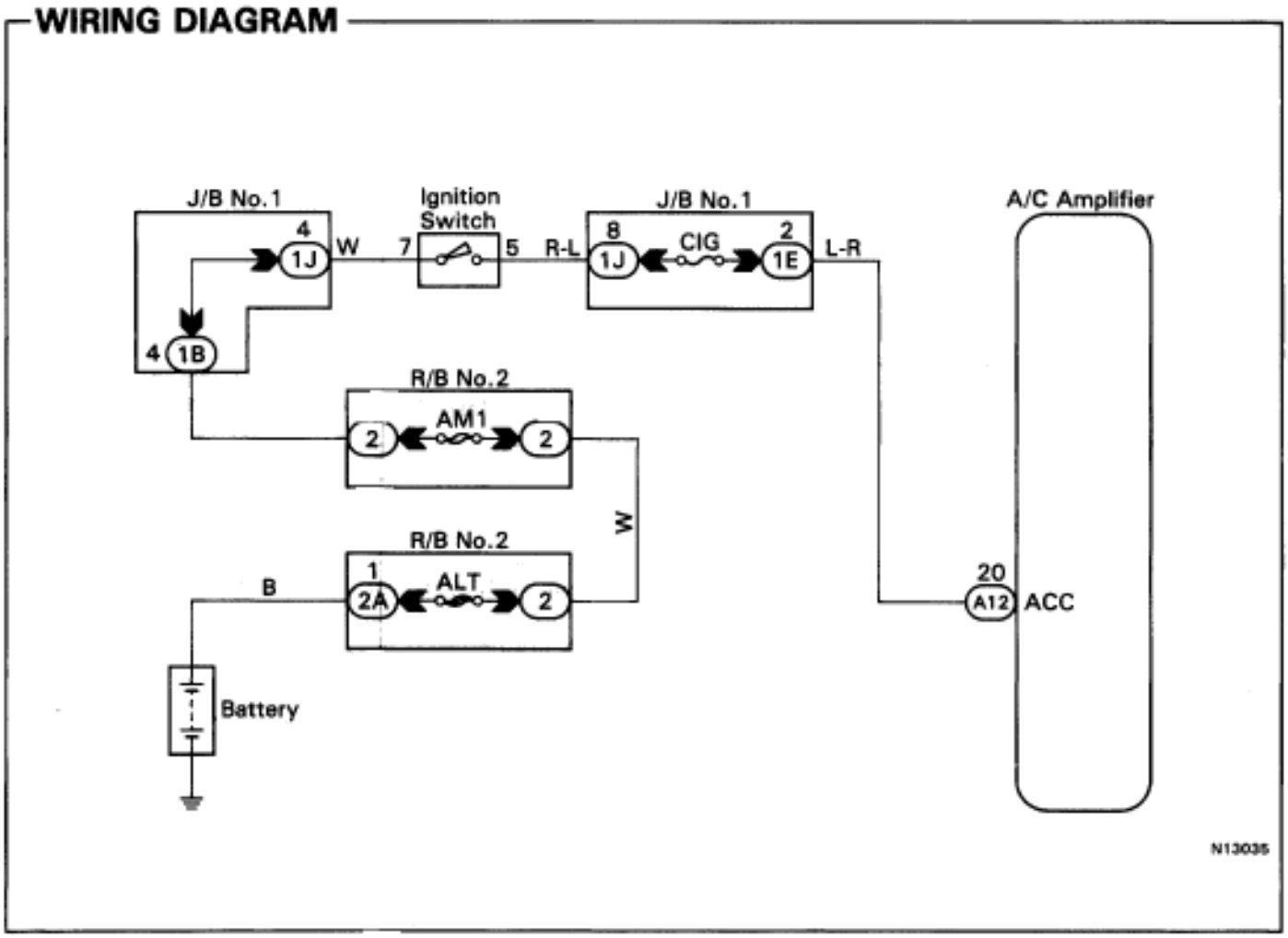
Check and repair harness and connector between A/C amplifier and battery.

ACC Power Source Circuit

CIRCUIT DESCRIPTION

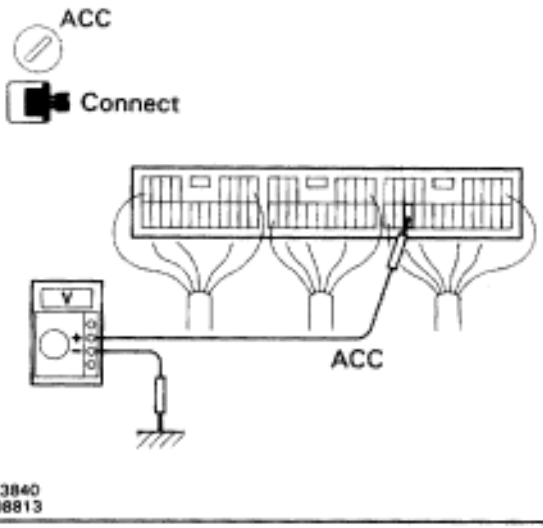
This circuit supplies power to the A/C amplifier.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal ACC of A/C amplifier connector and body ground.



P Remove the A/C amplifier with connector still connected

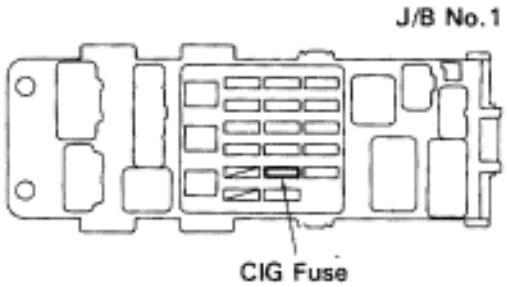
C
1. Turn ignition switch To ACC.
2. Measure voltage between terminals ACC of A/C amplifier connector and body ground.

OK **Voltage: Battery positive voltage**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check CIG fuse.



P Remove CIG fuse from J/B No. 1.

C Check continuity of CIG fuse.

OK **Continuity**

OK

NG → **Check for short in all the harness and components to the CIG fuse (See attached wiring diagram).**

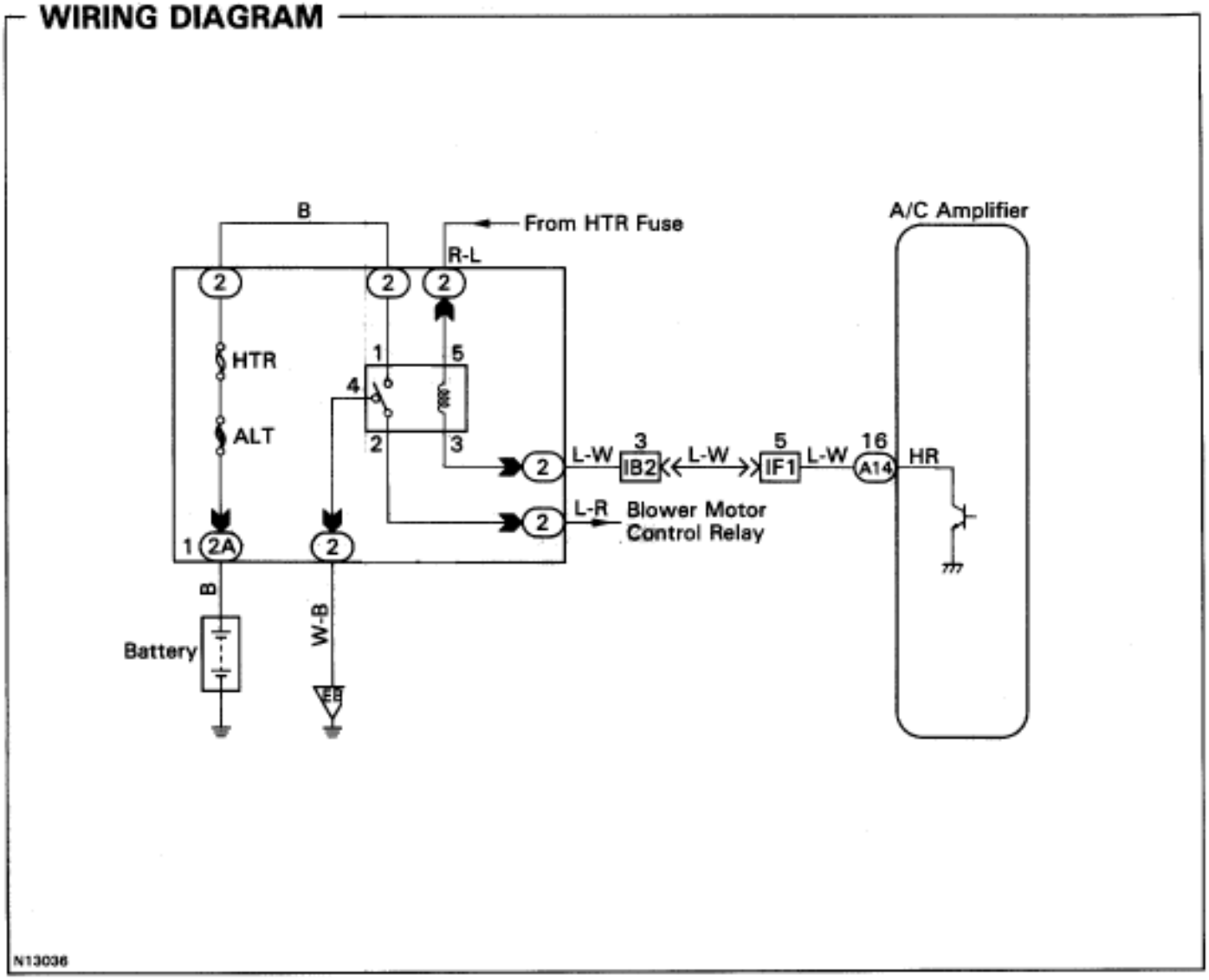
Check and repair harness and connector between A/C amplifier and battery.

Heater Relay Circuit

CIRCUIT DESCRIPTION

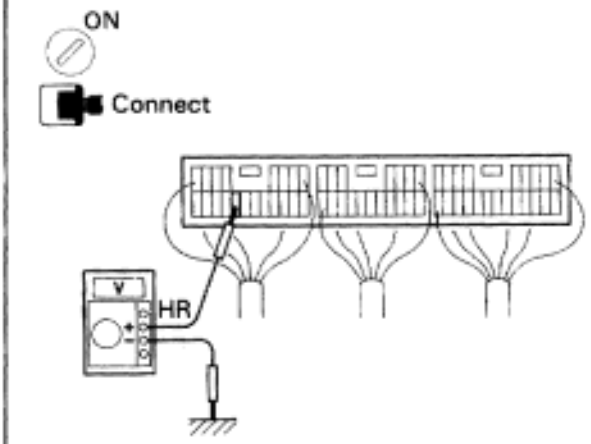
The heater relay is switched on by signals from the A/C amplifier and switches power to the blower motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal HR of A/C amplifier connector and body ground.



P Remove the A/C amplifier with connectors still connected

C Measure voltage between terminals HR of A/C amplifier connector and body ground when ignition switch is ON and OFF.

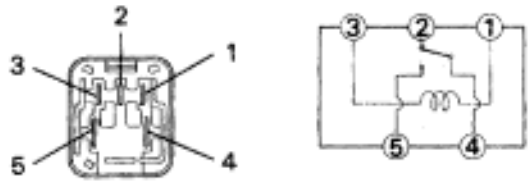
OK

Ignition Switch	Voltage	
OFF	OV	
ON	Blower ON	Below 1.O V
	Blower OFF	Battery positive voltage

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check heater relay.



C Check continuity between each pair of terminals of heater relay shown below.

OK

Terminals 4 and 5	No continuity
Terminals 1 and 3 Terminals 2 and 4	Continuity

P
1. Apply battery positive voltage between terminals 1 and 3.
2. Check continuity between each pair of terminal shown below.

OK

Terminals 2 and 4	No continuity
Terminals 4 and 5	Continuity

OK

NG → **Replace heater relay.**

3 Check HTR fuse.

OK

NG → **Check for short in all the harness and components to the HTR fuse (See attached wiring diagram).**

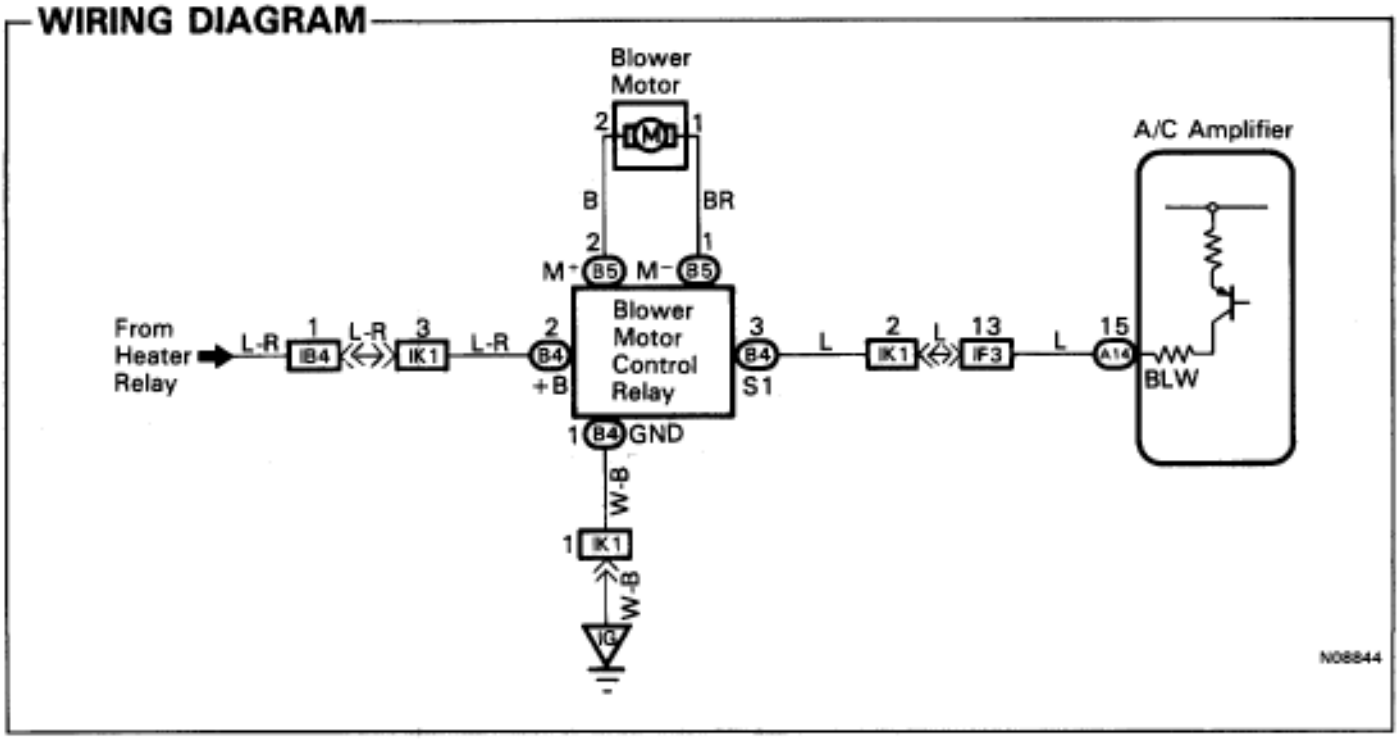
Check and repair harness and connector between A/C amplifier and battery.

Blower Motor Circuit

CIRCUIT DESCRIPTION

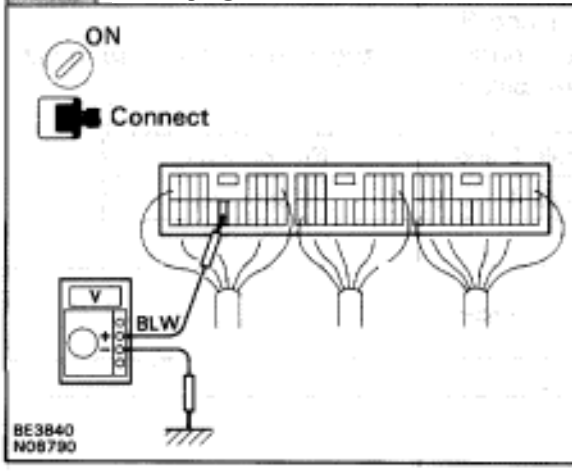
This is the power source for the blower motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal BLW of A/C amplifier connector and body ground.



P Remove the A/C amplifier with connector still connected

C
1. Turn ignition switch To ON.
2. Operate blower motor.
3. Measure voltage between terminals BLW of A/C amplifier connector and body ground.

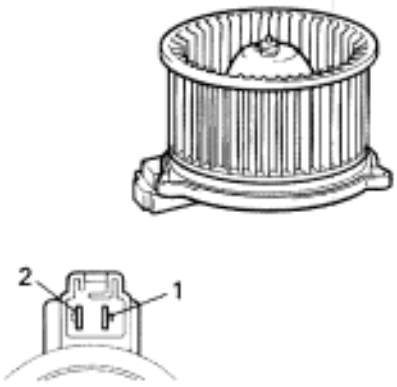
OK **Voltage: 1 – 3 V**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

Go to step 2.

2 Check blower motor.



P Remove blower motor control (see page AC–99).

C Connect positive (+) lead to terminal 2 of blower motor connector, negative (–) lead to terminal 1.

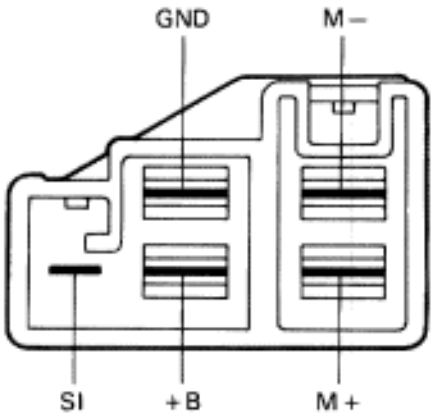
OK **Blower motor operates smoothly.**

OK

NG **Replace blower motor.**

Go to step 3.

3 Check blower motor control relay.



P Remove blower motor control relay with connectors still connected

C
1. Turn ignition switch To ON.
2. Operate blower motor.

OK

Terminals	Standard Value
GND ↔ Body Ground	Continuity
+B ↔ Body Ground	Battery Positive Voltage
M+ ↔ Body Ground	Battery Positive Voltage
M+ ↔ M–	Battery Positive Voltage
SI ↔ Body Ground	1 ~ 3 V

OK

NG **Replace blower motor control relay.**

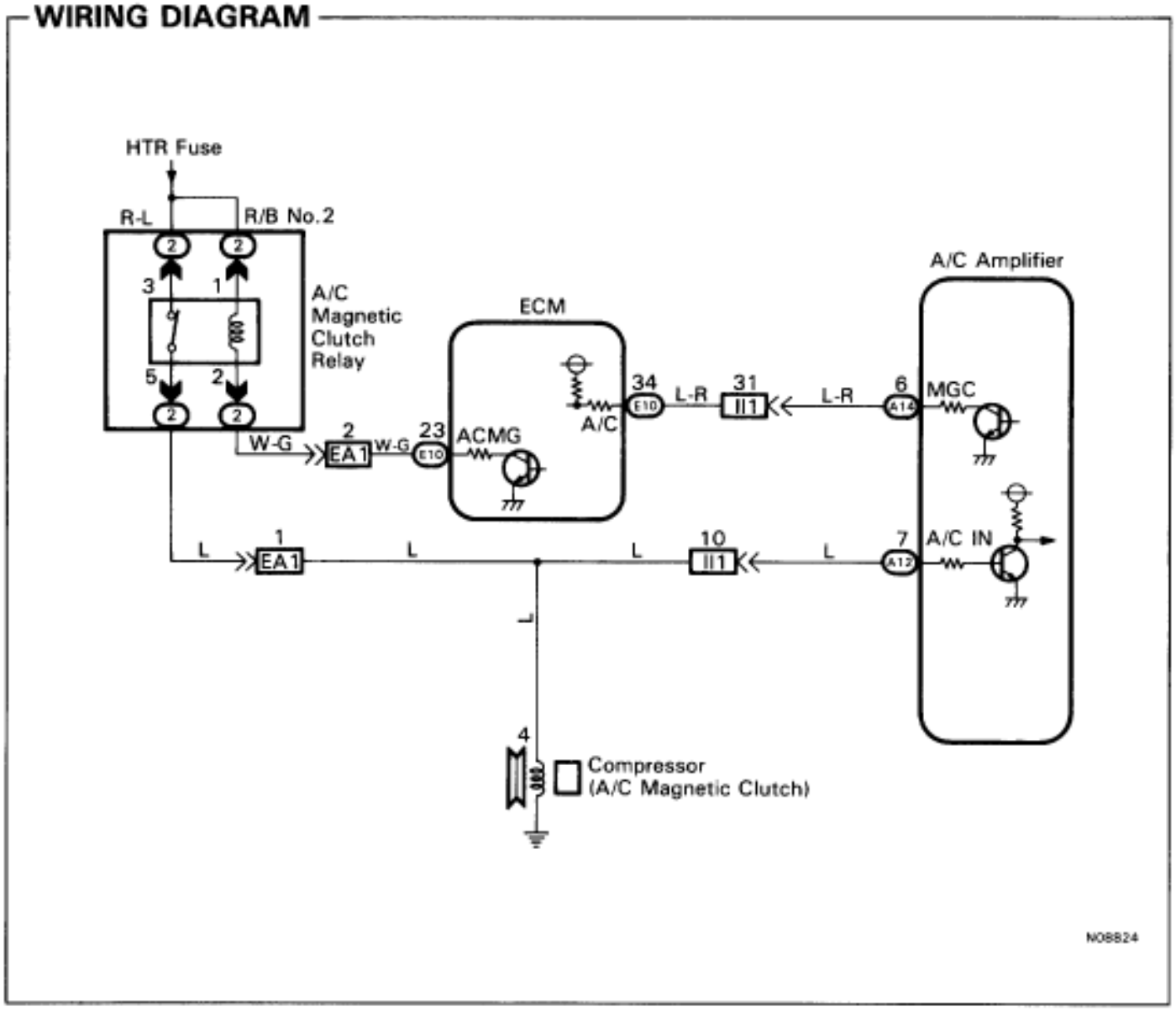
Repair or replace harness or connector

Compressor Circuit

CIRCUIT DESCRIPTION

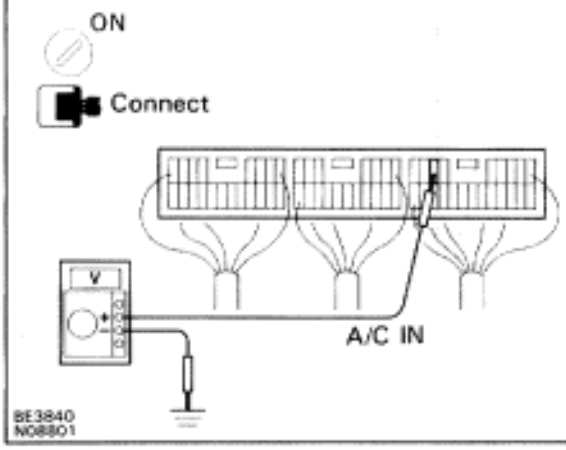
The A/C amplifier outputs the magnetic clutch ON signal from terminal MGC to the ECM. When the ECM receives this signal, it sends a signal from terminal ACMG and switches the air conditioning magnetic clutch relay ON, thus turning the air conditioning compressor magnetic clutch ON.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal A/C IN of A/C amplifier connector and body ground.



P
1. Remove A/C amplifier with connectors still connected.
2. Start the engine.

C Check voltage between terminal A/C IN of A/C amplifier connector and body ground when magnetic clutch is on and off by A/C switch.

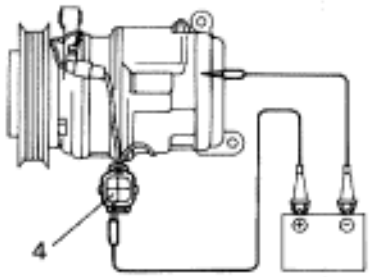
OK

Magnetic Clutch	Voltage
ON	10 – 14 V
OFF	Below 1 V

OK

NG Go to step 4.

2 Check air conditioning compressor magnetic clutch.



P Disconnect magnetic clutch connector.

C Connect positive (+) lead connected to battery to magnetic clutch connector terminal 4.

OK **Magnetic clutch is energized.**

OK

NG **Repair air conditioning compressor magnetic clutch.**

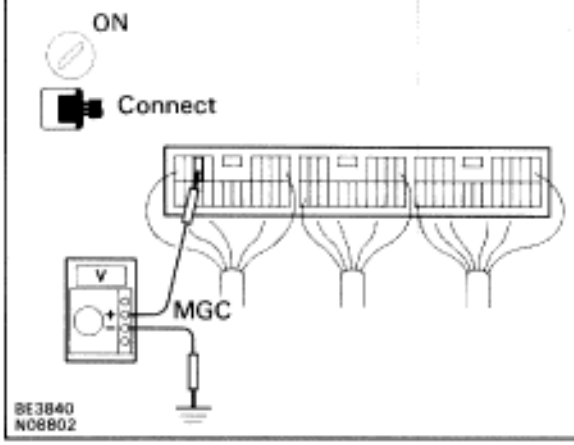
3 Check for open and short in harness and connector between air conditioner compressor and magnetic clutch relay (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Go to step 4.

4 Check voltage between terminal MGC of A/C amplifier connector and body ground.



P
1. Remove A/C amplifier with connectors still connected.
2. Start the engine.

C Check voltage between terminal A/C IN of A/C amplifier connector and body ground when magnetic clutch is on and off by A/C switch.

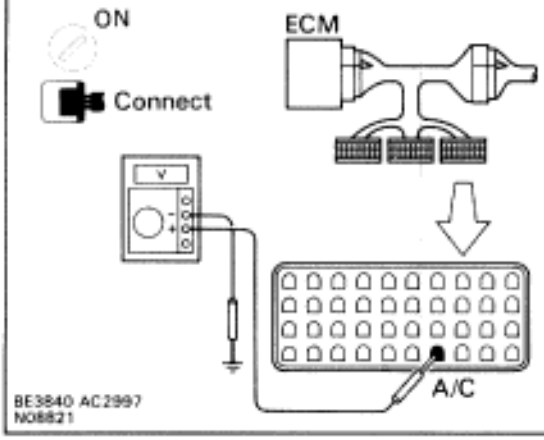
OK

Magnetic Clutch	Voltage
ON	Below 1 V
OFF	4 – 6 V

NG

OK Go to step 7.

5 Check voltage between terminal A/C of ECM and body ground.



P
1. Remove the ECM with connectors still connected.
2. Turn ignition switch on.

C
1. Push the A/C switch on.
2. Measure voltage between terminal A/C of the ECM connector and body ground.

OK

Magnetic Clutch	Voltage
ON	Below 1 V
OFF	10 – 14 V

OK

NG Check and replace ECM.

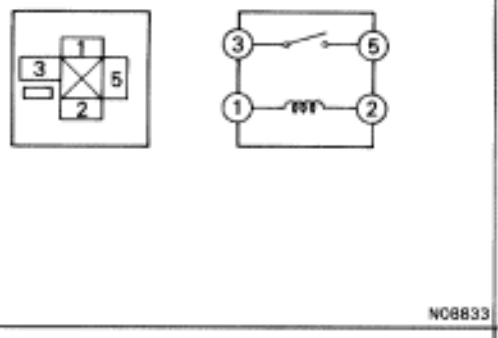
6 Check for open and short in harness and connector between A/C amplifier and ECM (See page IN–30).

OK

NG Repair or replace harness or connector.

Check and replace A/C amplifier.

7 Check magnetic clutch relay.



P Remove magnetic clutch relay from R/B No. 2.

C Check continuity between each pair of terminals shown below of magnetic clutch relay.

OK

Terminals 1 and 2	Approx. 75 Ω
Terminals 3 and 5	No continuity

P
1. Apply battery positive voltage between terminals 1 and 2.
2. Check continuity between terminals 3 and 5.

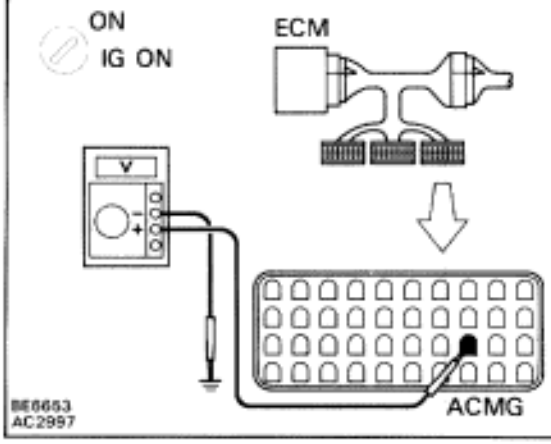
OK

Terminals 3 and 5	Continuity

NG → **Replace magnetic relay.**

OK

8 Check voltage between terminal ACMG of ECM and body ground.



P
1. Remove the ECM with connectors still connected.
2. Turn ignition switch on.

C
1. Turn fan speed control dial (Lo, Med or Hi).
2. Measure voltage between terminal ACMG of the ECM connector and body ground.

OK

A/C Switch	Voltage
ON	Approx. 1.3. V
OFF	Battery positive voltage ~ 1.3 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

9 Check for open and short in harness and connector between the ECM and battery (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

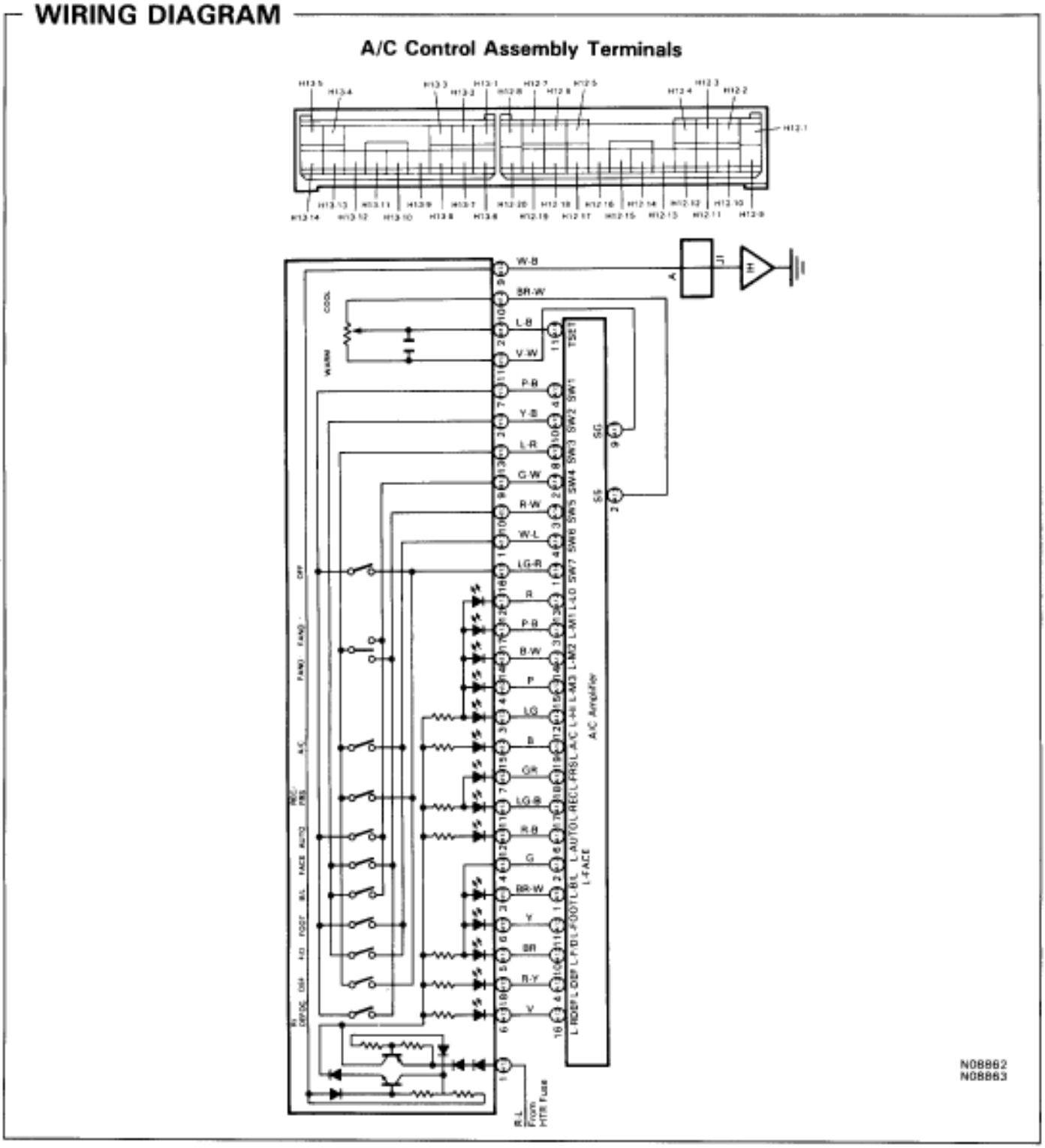
Check and replace the ECM.

A C Control Assembly Circuit

CIRCUIT DESCRIPTION

This circuit includes the control switch circuit and the LED circuit in the A/C control Assembly.
The A/C amplifier always searches which switch is operated and drives the LED according to A/C control operation or diagnostic sensor check operation.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check the each LED lights up when the applicable switch is operated.**

C

1. Push each switch or turn fan sped dial on the A/C control assembly.
2. Check LED lighting according to switch operation.

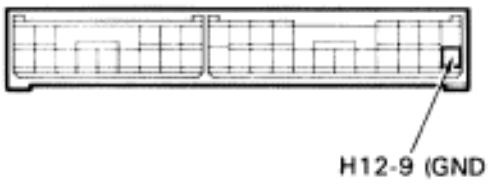
NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

All LED OFF → YES → **Check IG switch circuit.**

NO

2 **Check voltage between terminal for LED (OFF) and terminal H12–9 of A/C control assembly.**



N08864

C

1. Push the switch on or OFF.
2. Check voltage between terminal for the LED (OFF) and terminal H12–9 of A/C control as sembly.

OK

Switch	Voltage
ON	Below 1.0 V
OFF	10 ~ 14 V

NG

OK → **Repair or replace A/C control assembly.**

3 **Check continuity of harness between A/C amplifier and A/C control assembly.**

OK

NG → **Repair or replace harness or connector.**

Go to step 4.

4 Check continuity of switch circuit in A/C control assembly.

P Remove A/C control assembly and disconnect connectors.

C
1. Push the control switch on or Off.
2. Check continuity between terminals as follows.

Switch	SW1	SW2	SW3	SW4	SW5	SW6	SW7
	H13-7	H13-2	H12-13	B13-9	H13-10	B13-1	H12-16
OFF	○						○
R/F		○					○
DEF			○				○
FOOT	○					○	
F/D		○				○	
A/C			○			○	
RDEF	○				○		
FACE		○			○		
FAND⁻			○		○		
AUTO	○			○			
B/L		○		○			
FAND⁺			○	○			

FAND – : Turn fan speed dial counterclockwise.
FAND + : Turn fan speed dial clockwise.

OK

Switch	Check result
ON	Continuity
OFF	No continuity

NG → **Repair or replace A/C control assembly.**

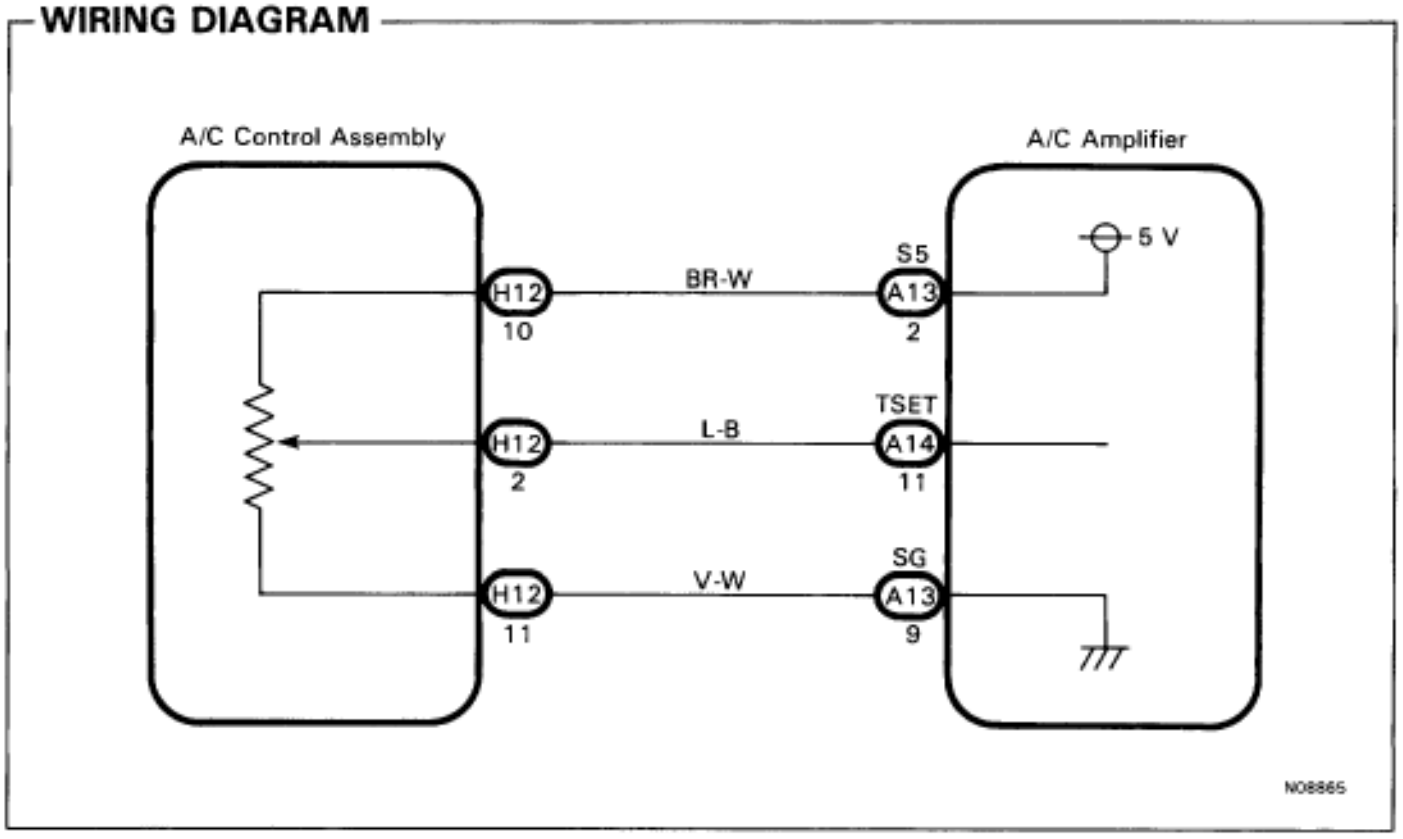
OK → **Check and replace A/C amplifier.**

Temperature Set Dial Circuit

CIRCUIT DESCRIPTION

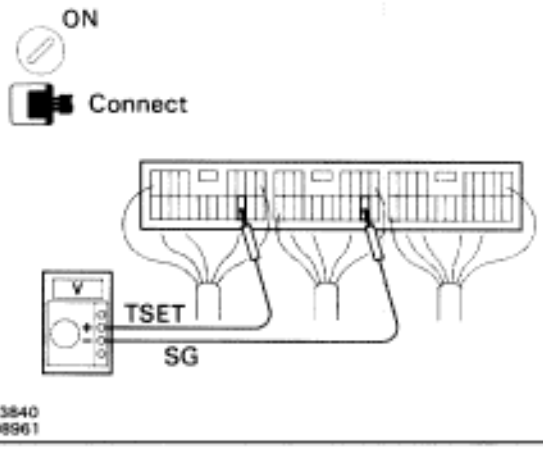
When temperature set dial is turned, the voltage of TSET terminal will change. A/C amplifier searches for this change and controls the room temperature according to the temperature set.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage of TSET terminal on A/C amplifier.



P Remove A/C amplifier with connectors still connected.

C
1. Turn temperature set dial.
2. Check voltage between terminals TSET and SG of A/C amplifier.

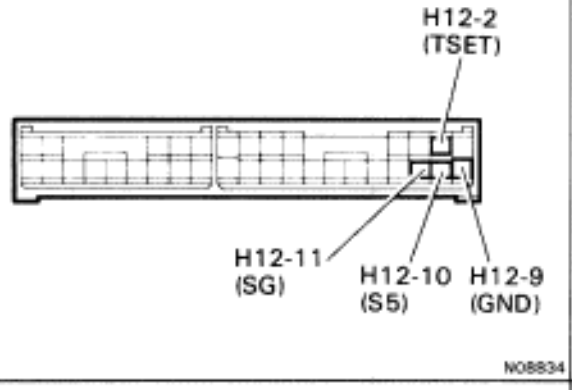
OK

Set Temperature	Voltage
20°C (68°F)	3.88 V
25°C (77°F)	2.50 V
30°C (86°F)	1.12 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page AC–26).**

2 Check voltage of terminal on A/C control assembly.



P Remove A/C control assembly with connectors still connected.

C Check voltage between following terminal and H12–9 (GND) of A/C control assembly connectors.

OK

Check Terminals	Voltage
H12-10 ⊕ – ⊖ H12-9	4.5 – 5.5 V
H12-11 ⊕ – ⊖ H12-9	Below 1.0 V
H12-2 ⊕ – ⊖ H12-9	See procedure 1 .

NG

OK → **Repair or replace harness or connectors between A/C amplifier and A/C control assembly.**

3 Check harness and connectors for S5 and SG signal.

OK

NG → **Repair or replace harness or connectors between A/C amplifier and A/C control assembly.**

Replace A/C control assembly.

REFRIGERANT SYSTEM INSPECTION WITH MANIFOLD GAUGE SET

This is a method in which the trouble is located by using a manifold gauge set.
(See “USE OF MANIFOLD GAUGE SET” on page AC–11)
Read the manifold gauge pressure when the following conditions are established:

(a) Temperature at the air inlet with the switch set at RECIRC is 30–35 ˚C (86–95 ˚F)
(b) Engine running at 1,500 rpm
(c) Blower speed control switch set at high
(d) Temperature control set at max. cool

HINT: It should be noted that the gauge indications may vary slightly due to ambient temperature conditions.

1. NORMALLY FUNCTIONING REFRIGERATION SYSTEM

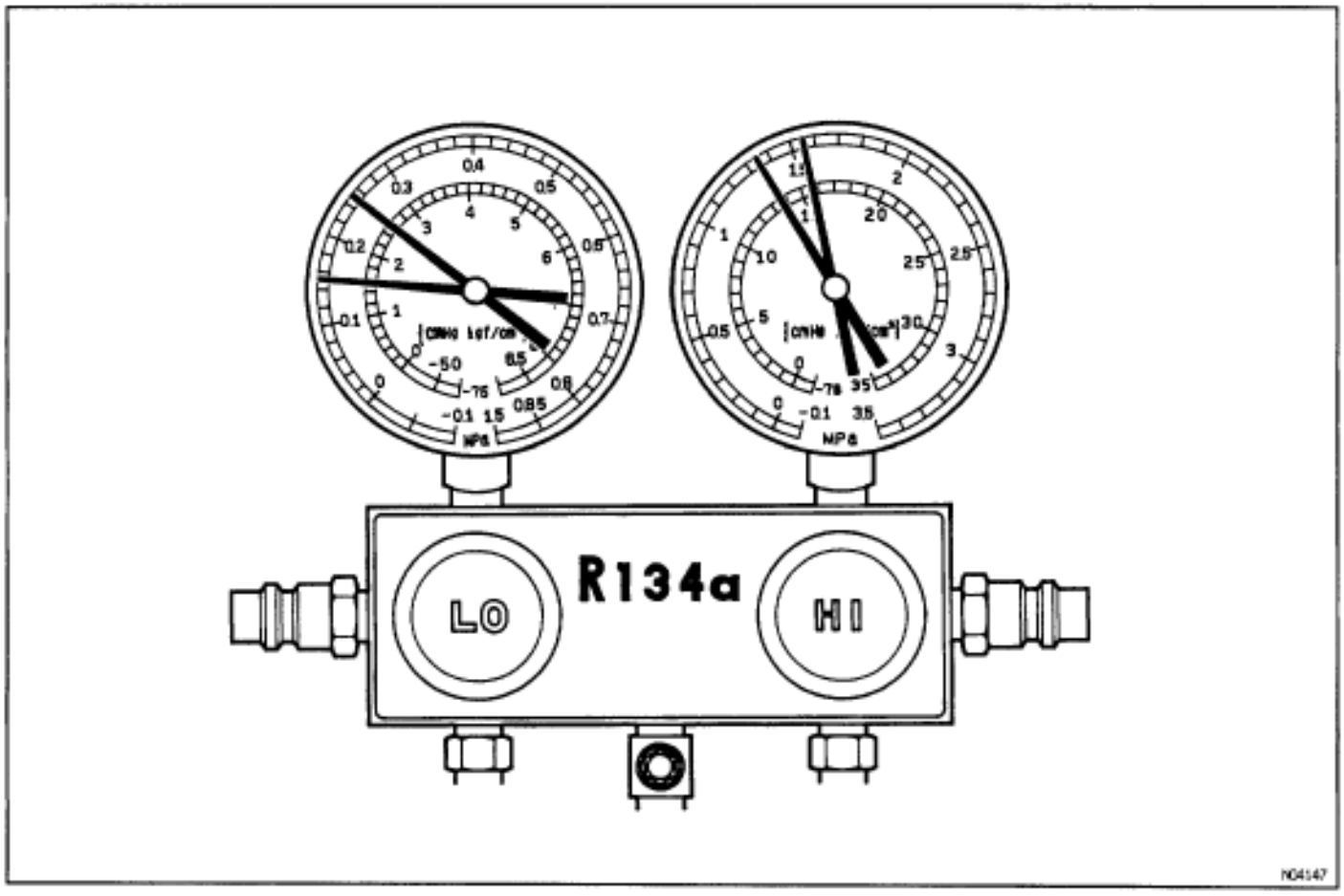
Gauge reading:

Low pressure side:

0.15–0.25 MPa (1.5–2.5 kgf/cm^2)

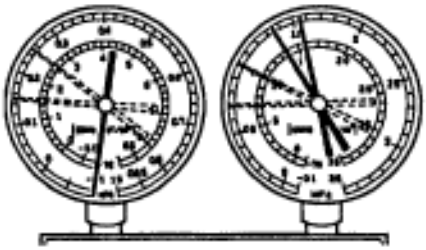
High pressure side:

1.37–1.57 MPa (14–16 kgf/cm^2)



2. MOISTURE PRESENT IN REFRIGERATION SYSTEM

Condition: Periodically cools and then fails to cool

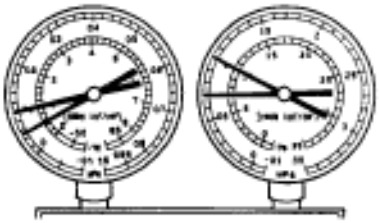


N04145

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• During operation, pressure on low pressure side sometimes becomes a vacuum and sometimes normal	• Moisture entered in refrigeration system freezes at expansion valve orifice and temporarily stops cycle, but normal state is restored after a time when the ice melts	• Drier in oversaturated state ↓ • Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant	(1) Replace receiver/drier (2) Remove moisture in cycle through repeatedly evacuating air (3) Charge new refrigerant to proper amount

3. INSUFFICIENT REFRIGERANT

Condition: insufficient cooling

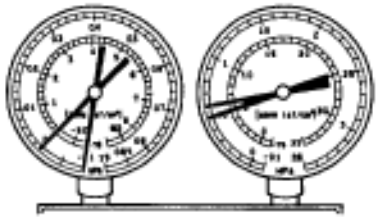


N04149

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure low on both low and high pressure sides • Bubbles seen in sight glass continuously • insufficient cooling performance	• Gas leakage at some place in refrigeration system	• Insufficient refrigerant in system • Refrigerant leaking	(1) Check for gas leakage with leak detector and repair if necessary (2) Charge refrigerant to proper amount (3) If pressure indicated value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak

4. POOR CIRCULATION OF REFRIGERANT

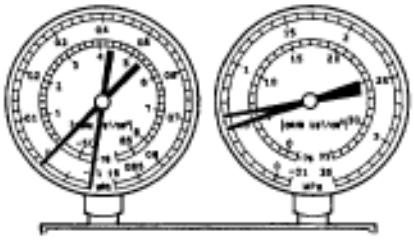
Condition: insufficient cooling



Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure low on both low and high pressure sides • Frost on tubes from receiver to unit	• Refrigerant flow obstructed by dirt in receiver	• Receiver clogged	• Replace receiver

5. REFRIGERANT DOES NOT CIRCULATE

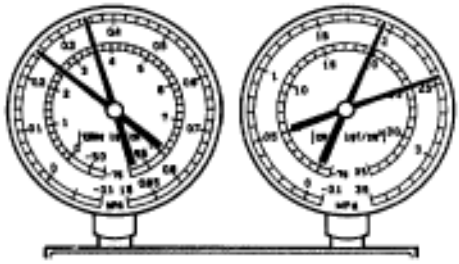
Condition: Does not cool (Cools from time to time in some cases)



Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Vacuum indicated on low pressure side, very low pressure indicted on high pressure side • Frost or dew seen on piping before and after receiver/drier or expan–sion valve	• Refrigerant flow obstructed by moisture or dirt in refrigeration system • Refrigerant flow ob–structed by gas leakage from expansion valve heat sensing tube	• Refrigerant does not circulate	(1) Check heat sensing tube, expansion valve and ERP (2) Clean out dirt inexpan–sion valve by blowing with air If not able to remove dirt, replace expansion valve (3) Replace receiver (4) Evacuate air and charge new refrigerant to proper amount. for gas leakage from heat sensing tube, re place expansion valve.

6. REFRIGERANT OVERCHARGE OR INSUFFICIENT COOLING OF CONDENSER

Condition: Insufficient Cooling

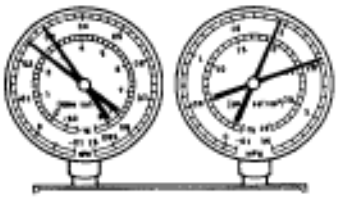


N04151

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure too high on both low and high pressure sides • No air bubbles seen through the sight of glass even when the engine rpm is lowered.	• Unable to develop sufficient performance due to excessive refrigerant in system • Insufficient cooling of condenser	• Excessive refrigerant in in cycle → refrigerant overcharged • Condenser cooling insufficient → condenser fins clogged or fan motor faulty	(1) Clean condenser (2) Check fan motor operation (3) If (1) and (2) are in normal state, check amount of refrigerant Charge proper amount of refrigerant

7. AIR PRESENT IN REFRIGERATION SYSTEM

Condition: insufficient cooling



NOTE: These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without vacuum purging.

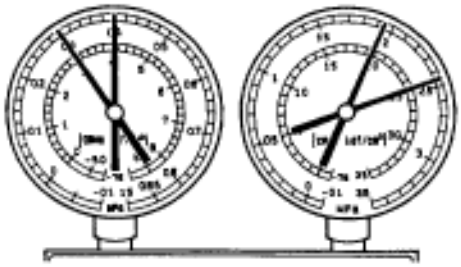
N04153

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure too high on both low and high pressure sides • The low pressure piping is hot to the touch • Bubbles seen in sight glass	• Air entered in refrigeration system	• Air present in refrigeration system ↓ • Insufficient vacuum purging	(1) Check compressor oil to see if dirty or insufficient (2) Evacuate air and charge new refrigerant

V01033

8. EXPANSION VALVE IMPROPERLY MOUNTED/HEAT SENSING TUBE DEFECTIVE (OPENS TOO WIDE)

Condition: Insufficient cooling

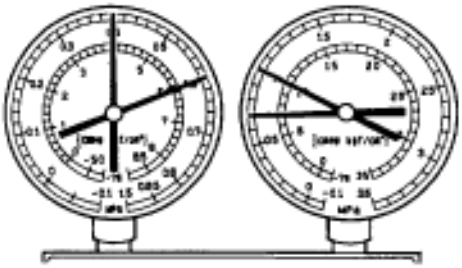


N04152

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure too high on both low and high pressure sides • Frost or large amount of dew on piping on low pressure side	• Trouble in expansion valve or heat sensing tube not installed correctly	• Excessive refrigerant in low pressure piping ↓ • Expansion valve opened too wide	(1) Check heat sensing tube installed condition (2) if (1) is normal, check expansion valve Replace if defective

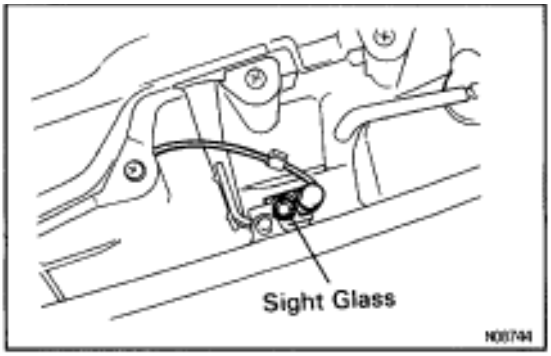
9. DEFECTIVE COMPRESSION COMPRESSOR

Condition: Does not cool



N04146

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure too high on low pressure sides • Pressure too low on high pressure side	• Internal leak in compressor	• Compression defective ↓ • Valve leaking or broken, sliding parts	• Repair or replace compressor



REFRIGERANT VOLUME

REFRIGERANT VOLUME INSPECTION

1. **RUN ENGINE AT APPROX. 1,500 RPM**
2. **SET TEMPERATURE CONTROL AT MAX. COOL**
3. **SET BLOWER SWITCH AT "HI"**
4. **SET AIR INLET CONTROL AT "RECIRC"**
5. **TURN A/C SWITCH ON**
6. **FULLY OPEN DOORS**
7. **INSPECT AMOUNT OF REFRIGERANT**
   Observe the sight glass on the liquid tube.

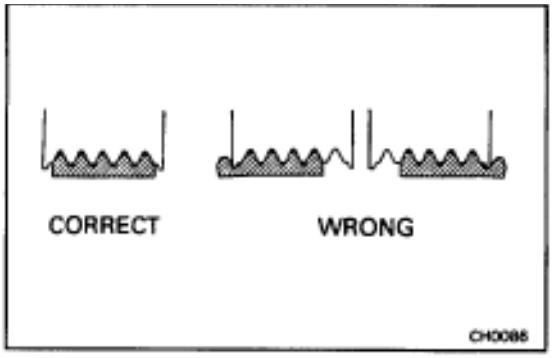
Item	Symptom	Amount of refrigerant	Remedy
1	Bubbles present in sight glass	Insufficient*	(1) Check for gas leakage with gas leak tester and repair if necessary (2) Add refrigerant until bubbles dis–appear
2	No bubbles present in sight glass	None, sufficient or too much	Refer to items 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	(1) Check for gas leakage with gas leak tester and repair if necessary (2) Add refrigerant until bubbles disap-pear
4	Temperature between compressor inlet and outlet is noticeably different	Correct or too much	Refer to items 5 and 6
5	Immediately after air conditioning is turned off, refrigerant in sight glass stays clear	Too much	(1) Discharge refrigerant (2) Evacuate air and charge proper amount of purified refrigerant
6	When air conditioning is turned off, refrigerant foams and then stays clear	Correct	—

* Bubbles in the sight glass with ambient temperatures higher than usual can be considered normal if cooling is sufficient.

REFRIGERANT CHARGE VOLUME

Specified amount:

700 ± 50 g (24.96 ± 1.76 oz.)

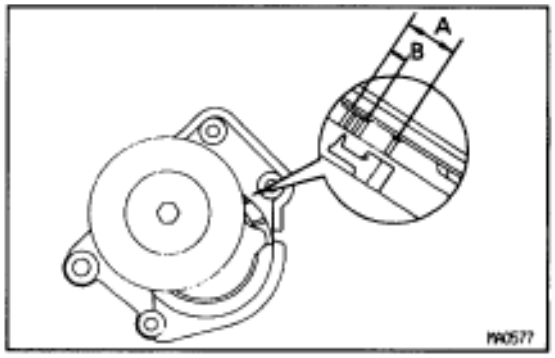


DRIVE BELT TENSION

DRIVE BELT TENSION INSPECTION

1. INSPECT DRIVE BELT'S INSTALLATION CONDITION

Check that drive belt fits properly in the ribbed grooves.



2. INSPECT DRIVE BELT TENSION

Check that the tension is within A range on the auto tensioner scale.

If the tension is not within the A range on the scale, replace the belt with a new one.

HINT: When replacing the drive belt with a new one, the belt's tension should be within the B range on the belt tensioner scale.

IDLE–UP SPEED

IDLE UP SPEED INSPECTION

1. WARM UP ENGINE

2. INSPECT IDLE SPEED

Put gear shift in neutral.

2JZ–GE (M/T)

Magnetic clutch condition	Standard idle speed (RPM)
Not engaged	Approx. 700
Engaged	Approx. 900

2JZ–GE (A/T)

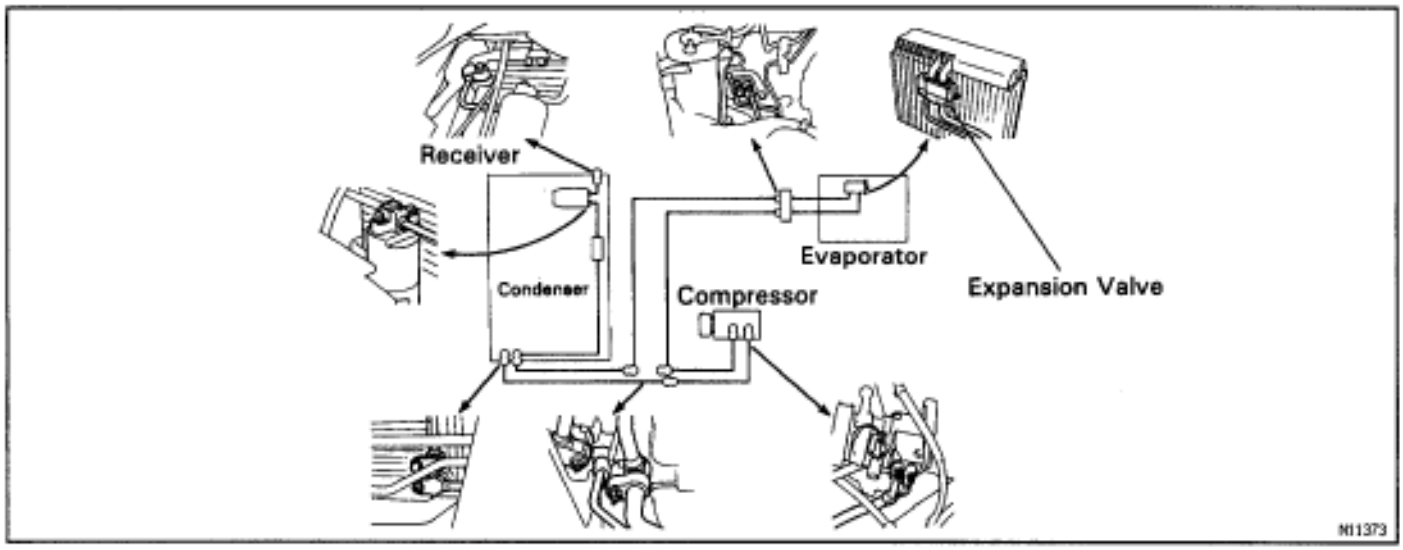
Magnetic clutch condition	Standard idle speed (RPM)
Not engaged	Approx. 700
Engaged	Approx. 800

2JZ–GTE

Magnetic clutch condition	Standard idle speed (RPM)
Not engaged	Approx. 650
Engaged	Approx. 800

REFRIGERANT LINES

TIGHTENING TORQUE OF REFRIGERATION LINES



ON–VEHICLE INSPECTION

1. **INSPECT HOSES AND TUBES FOR LEAKAGE**
   Using a gas leak tester, check for leakage of refrigerant.
2. **INSPECT HOSE AND TUBE CONNECTIONS FOR LOOSENESS**

REFRIGERANT LINES REPLACEMENT

1. **DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM**
2. **REPLACE FAULTY TUBE OR HOSE**
   NOTICE: To prevent the intrusion of moisture or dirt, caps should be placed on hose or tube ends immediately.
3. **TORQUE CONNECTIONS TO SPECIFIED TORQUE**
   NOTICE: Connections should not be torqued tighter than the specified torque.
   Compressor X Suction tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Compressor X Discharge tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Condenser X Discharge tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Condenser X Liquid tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Receiver X Liquid tube
   Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)
   A/C unit X Liquid tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   A/C unit X Suction tube
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Evaporator X Expansion valve
   Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)
   Discharge lines
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Liquid lines
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
   Suction lines
   Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
4. **EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT**
   Specified amount:
   700 ± 50 g (24.96 ± 1.76 oz.)
5. **INSPECT FOR LEAKAGE OF REFRIGERANT**
   Using a gas leak tester, check for leakage of refrigerant.
6. **INSPECT AIR CONDITIONING OPERATION**

AIR CONDITIONING UNIT

AIR CONDITIONING UNIT REMOVAL

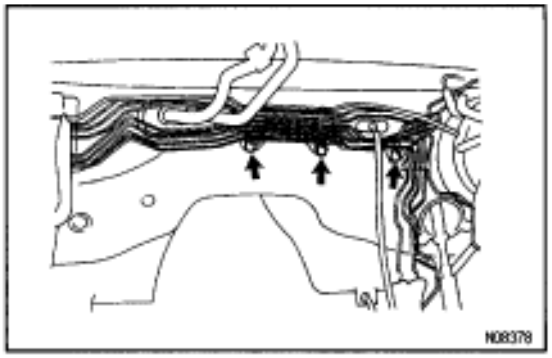
1. DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with the refrigerant and inspect for leakage of refrigerant.

Specified amount:

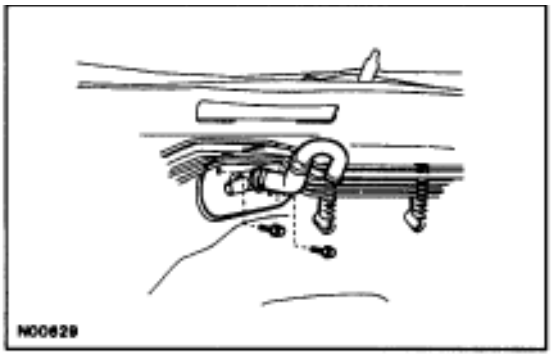
700 ± 50 g (24.96 ± 1.76 oz.)



2. DRAIN ENGINE COOLANT FROM RADIATOR AND ENGINE COOLANT DRAIN COCK

3. REMOVE ENGINE WIRE HARNESS BRACKET MOUNTING BOLT

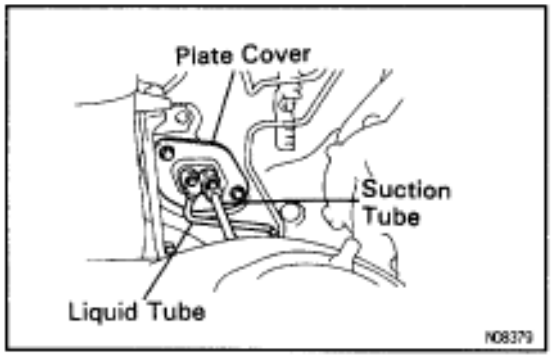
4. REMOVE BRAKE TUBE BRACKET MOUNTING BOLTS FROM DASH PANEL



5. REMOVE WATER HOSE FROM HEATER RADIATOR

6. REMOVE INSULATOR RETAINER

Remove the 2 bolts and the insulator retainer.



7. REMOVE LIQUID TUBE AND SUCTION TUBE

(a) w/ ABS:

Remove the ABS actuator.

(See page BR–44)

(b) Remove the liquid tube and suction tube.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

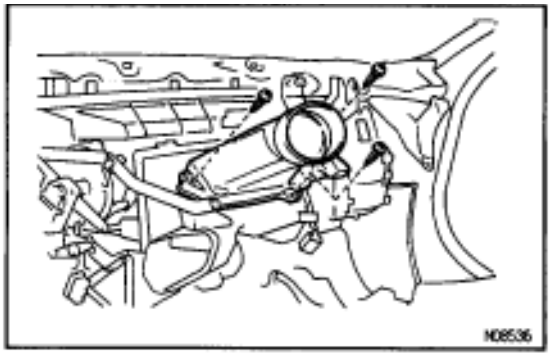
INSTALLATION HINT: Lubricate the new O–rings with compressor oil and install tubes.

8. REMOVE PLATE COVER

Remove the 2 bolts and the plate cover.

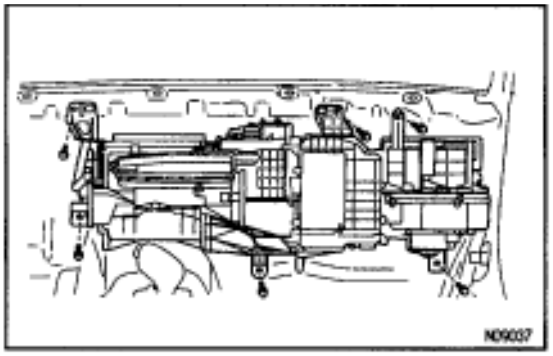
9. REMOVE INSTRUMENT PANEL AND REINFORCEMENT

(See page BO–45)



10. REMOVE HEATER TO REGISTER NO. 3 DUCT

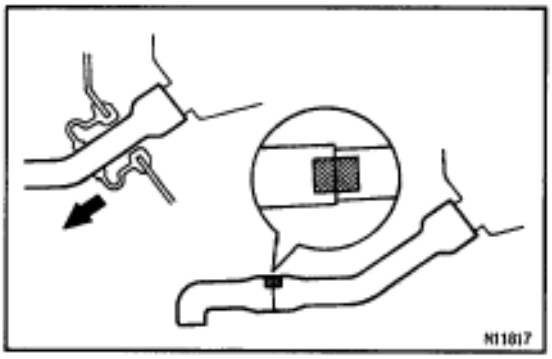
Remove the 3 screws and the heater to register No. 3 duct.



11. REMOVE A/C UNIT

(a) Disconnect connectors from the unit.

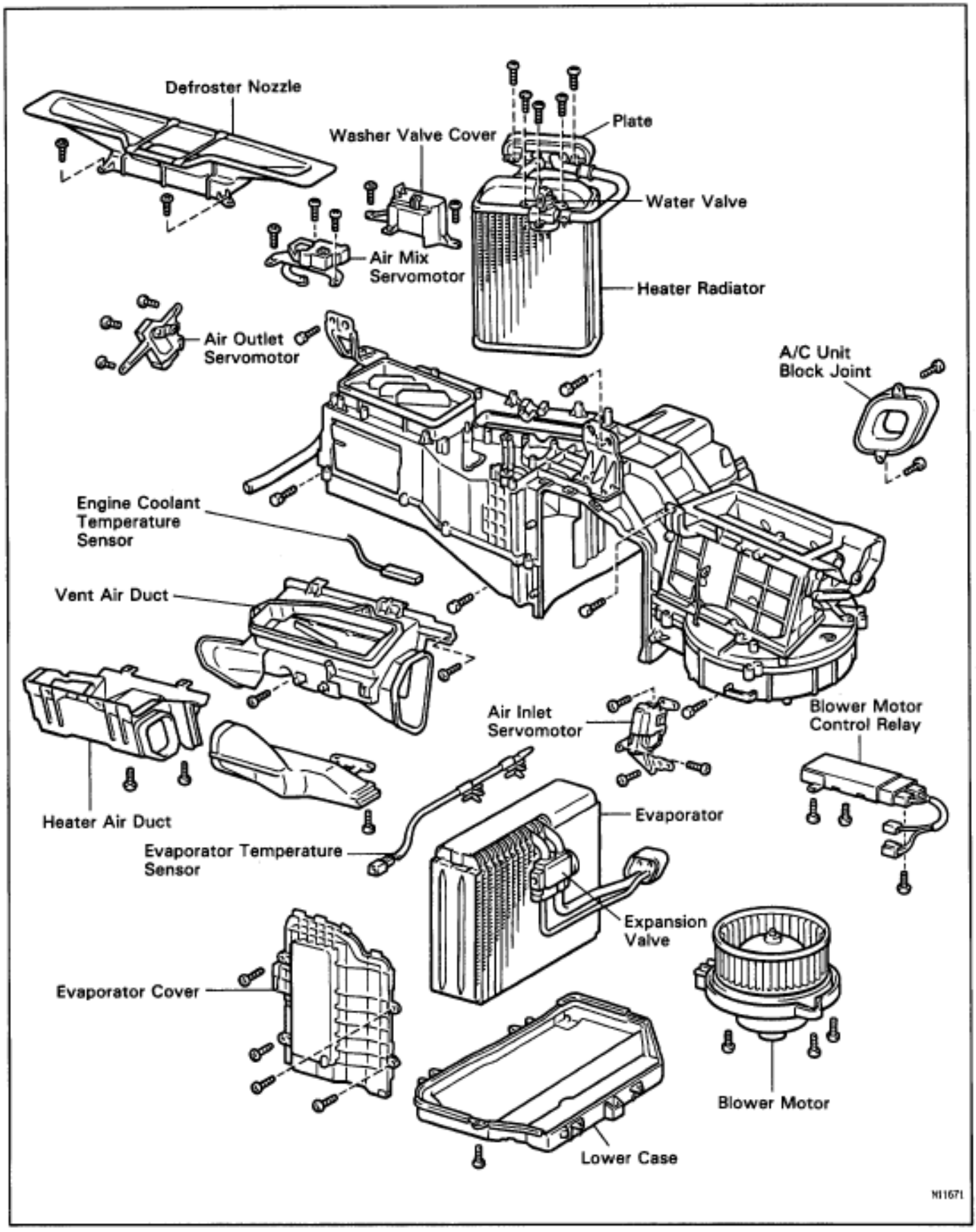
(b) Remove the 6 bolts and the A/C unit.

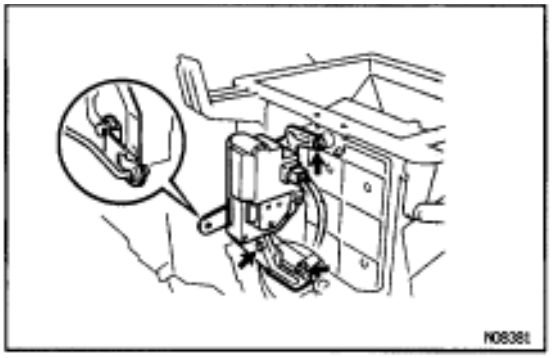


INSTALLATION HINT: Pull the drain hose of the A/C unit forward until the yellow paint on the hose is visible in the engine compartment.

Insert the drain hose into the engine compartment hose until the matchmarks are aligned.

AIR CONDITIONING UNIT DISASSEMBLY





1. REMOVE AIR INLET SERVOMOTOR

(a) Disconnect the connector.
(b) Disconnect the control link.
(c) Remove the 3 screws and the air inlet servomotor.

2. REMOVE BLOWER MOTOR CONTROL RELAY

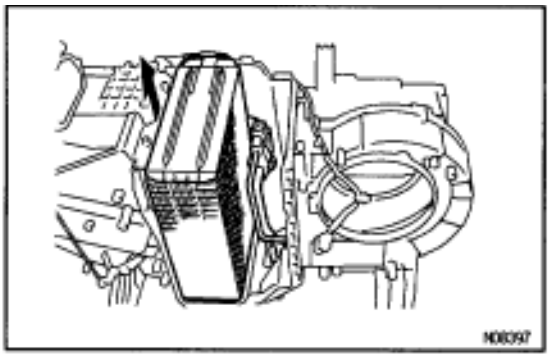
(a) Disconnect the connector.
(b) Remove the 3 screws and the blower motor control relay.

3. REMOVE BLOWER MOTOR

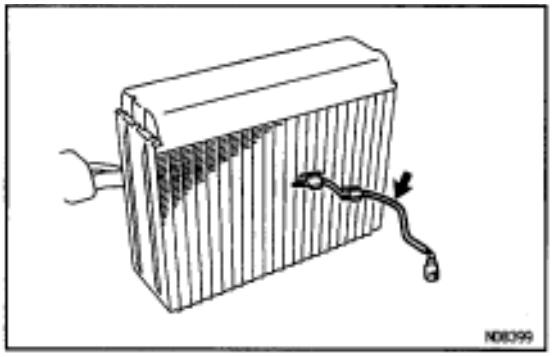
(a) Disconnect the connector.
(b) Using a torx driver, remove the blower motor.

4. REMOVE EVAPORATOR

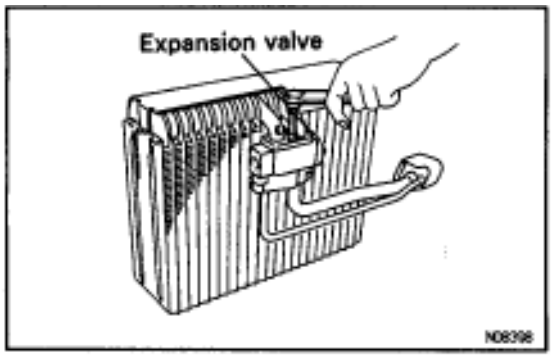
(a) Remove the A/C unit wire harness.
(b) Remove the foot air duct.
(c) Remove the A/C unit block joint.
(d) Remove the 6 screws and down and the lower cover.
(e) Remove the 4 screws and the evaporator cover.



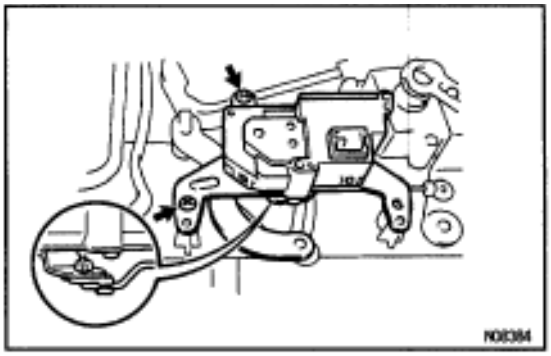
(f) Pull out the evaporator.



(g) Pull out the evaporator sensor from the evaporator.

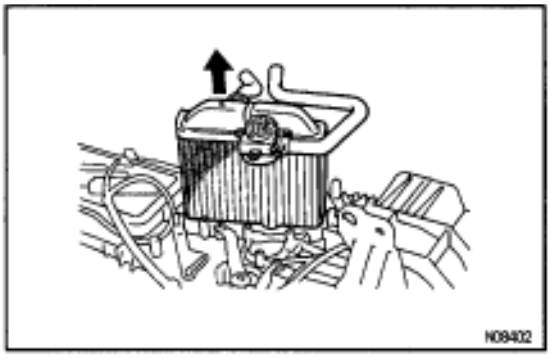


(h) Using a hexagon wrench, remove the 2 bolts and separate the evaporator and expansion valve.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)
INSTALLATION HINT: If the evaporator was replaced, add compressor oil to the compressor.
Add 40 cc (1.4 fl.oz)
Compressor oil
ND–OIL 8 or equivalent



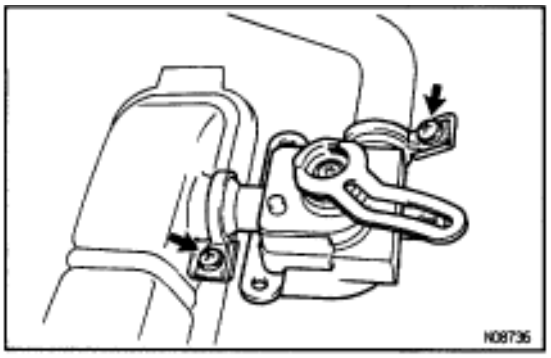
5. REMOVE AIR MIX SERVOMOTO

(a) Remove the defroster duct.
(b) Remove the 3 screws and the water valve cover.
(c) Disconnect the connector.
(d) Disconnect the control link.
(e) Remove the 2 screws and the air mix servomotor.

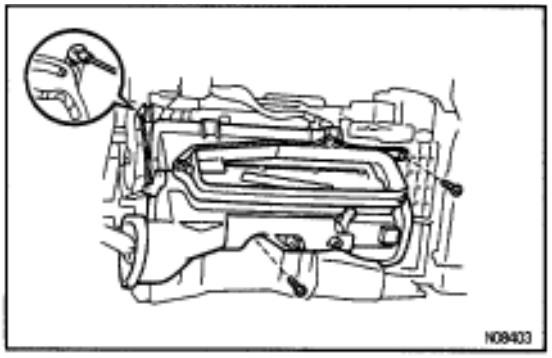


6. REMOVE HEATER RADIATOR AND WATER VALVE

(a) Remove the 2 screws and the plate.
(b) Remove the 2 screws and the clamp.
(c) Remove the 3 screws.
(d) Pull out the heater radiator with the water valve.



(e) Remove the 2 screws and water valve from the heater radiator.

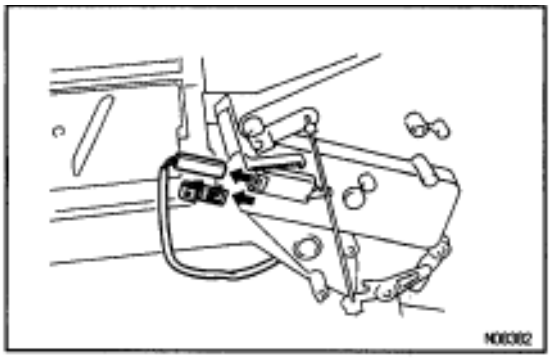


7. REMOVE HEATER AIR DUCT

Remove the 2 screws and the defroster air duct.

8. REMOVE VENT AIR DUCT

(a) Disconnect the control link.
(b) Remove the 2 screws and the vent air duct.



9. REMOVE ENGINE COOLANT TEMPERATURE SENSOR

(a) Disconnect the connector.
(b) After pulling off the clamp, pull out the sensor.

10. REMOVE AIR OUTLET SERVOMOTOR

(a) Disconnect the connector.
(b) Remove the 3 screws and the air outlet servomotor.

AIR CONDITIONING UNIT ASSEMBLY

Assembly is in the reverse order of disassembly.

AIR CONDITIONING UNIT INSTALLATION

Installation is in the reverse order of removal.

COMPRESSOR

ON–VEHICLE INSPECTION

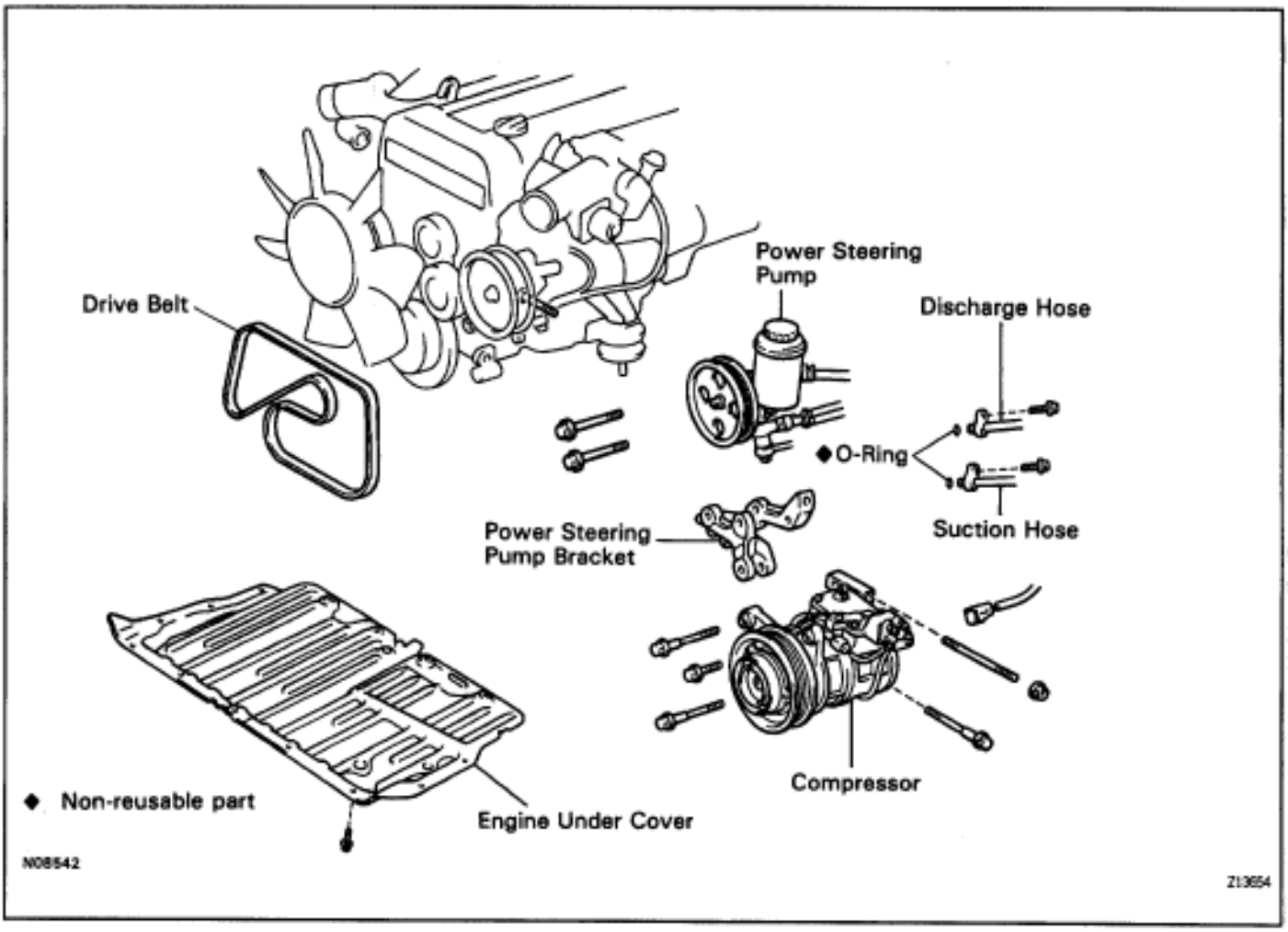
Magnetic Clutch:

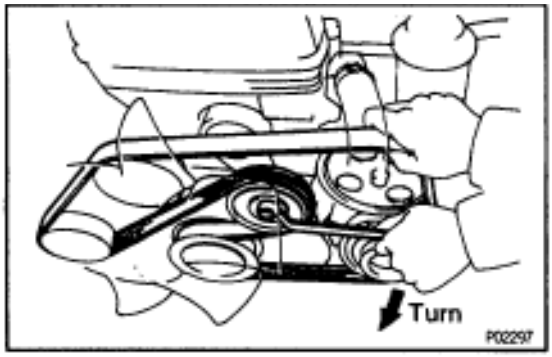
(See page AC–62)

Compressor:

1. **INSTALL MANIFOLD GAUGE SET**
   (See page AC–11)
2. **START ENGINE**
3. **INSPECT COMPRESSOR FOR METALLIC SOUND**
   Check that there is metallic sound from the compressor when the A/C switch is turned ON.
   If a metallic sound is heard, replace the compressor assembly.
4. **INSPECT PRESSURE OF REFRIGERATION SYSTEM**
   See ”Refrigeration System Inspection with Manifold Gauge Set” on page AC–71.
5. **STOP ENGINE**
6. **INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT FROM SAFETY SEAL**
   If there is any leakage, replace the compressor assembly.

COMPRESSOR REMOVAL

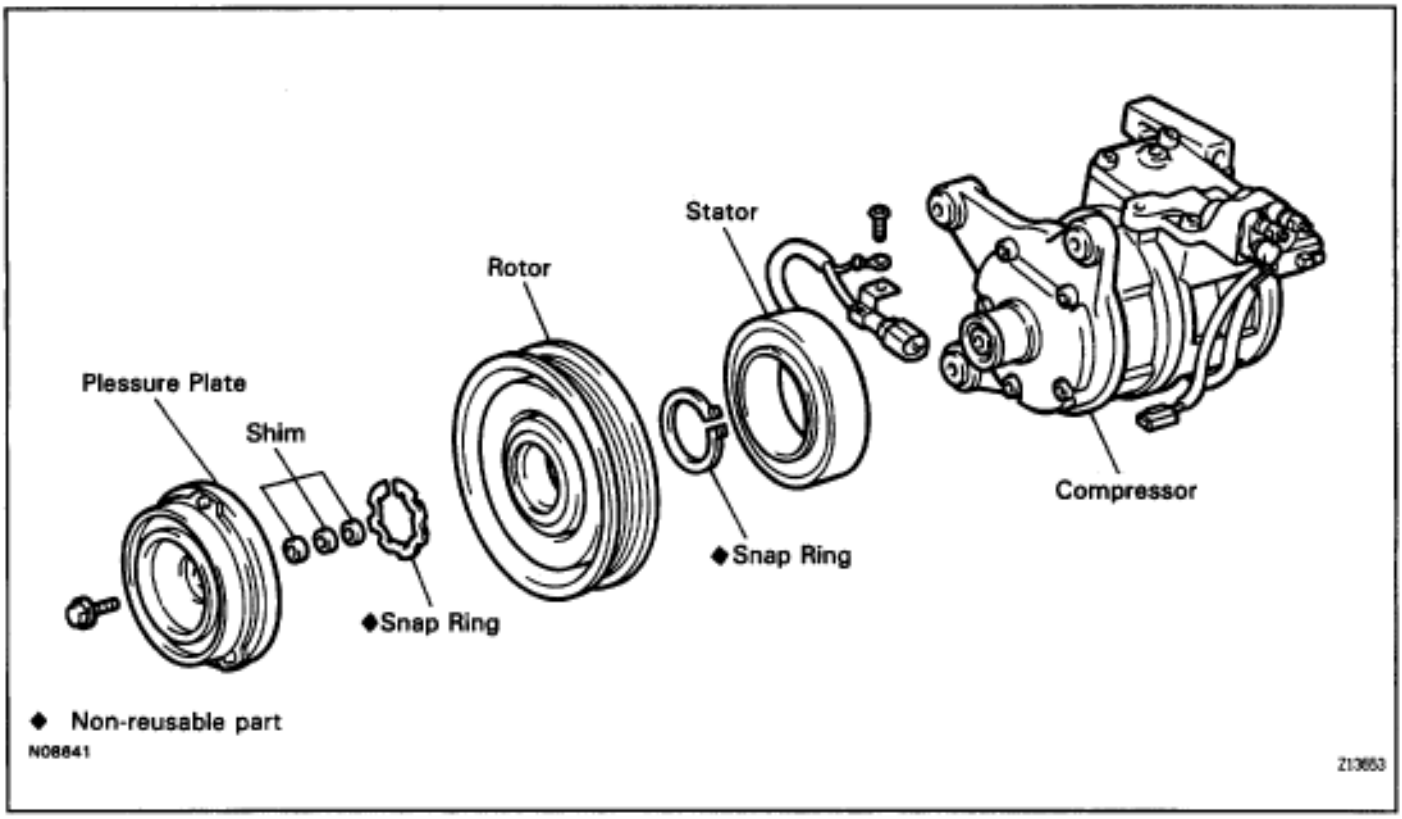


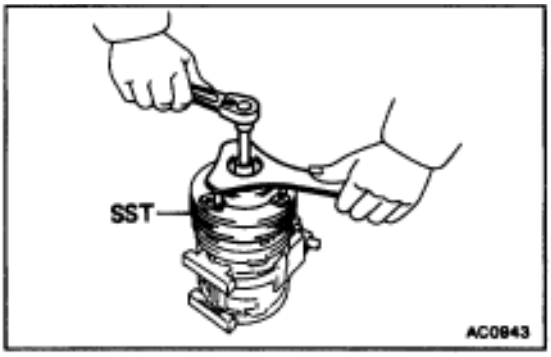


1. **RUN ENGINE AT IDLE SPEED WITH A/C ON FOR APPROX. 10 MINUTES**
2. **STOP ENGINE**
3. **REMOVE BATTERY**
4. **DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM**
5. **REMOVE DRIVE BELT**
   Loosen the drive belt tension by turning the drive belt tensioner clockwise, and remove the drive belt.
6. **REMOVE POWER STEERING PUMP**
7. **DISCONNECT DISCHARGE HOSE AND SUCTION HOSE FROM COMPRESSOR**
   NOTICE: Cap the open fittings immediately to keep moisture out of the system.
8. **REMOVE COMPRESSOR**

(a) Disconnect connector from compressor.
(b) Remove engine under cover.
(d) Remove the 4 bolts, nut and stud bolt.
(d) Remove the compressor.

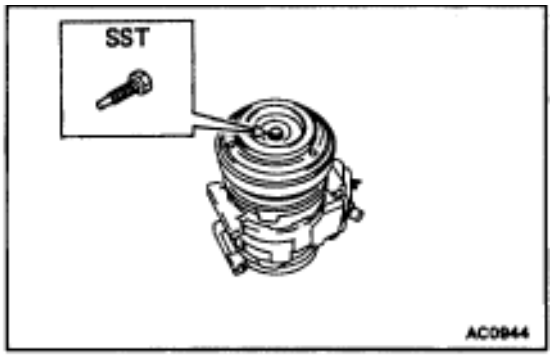
MAGNETIC CLUTCH DISASSEMBLY



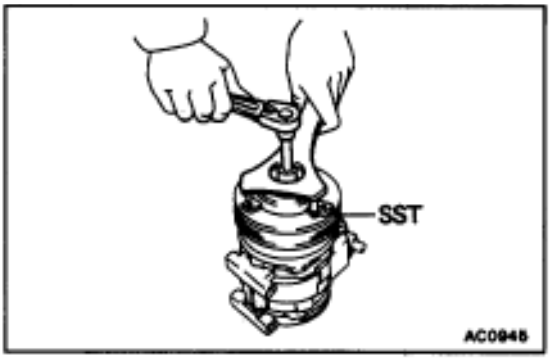


1. REMOVE PRESSURE PLATE

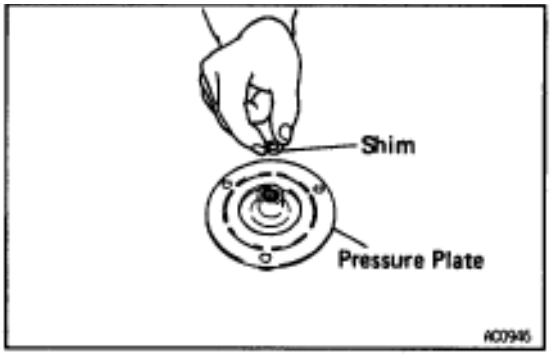
(a) Using SST and socket wrench, remove the shaft bolt.
SST 07112–76060
Torque: 14 N·m (140 kgf·cm, 10ft·lbf)



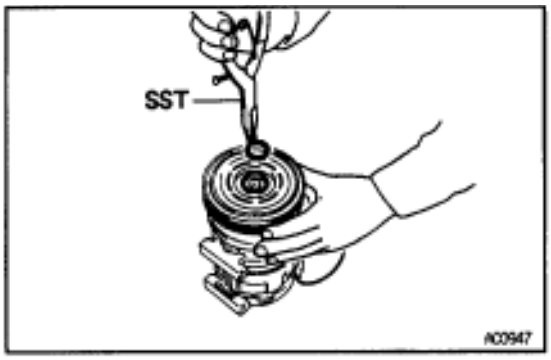
(b) Install SST on the pressure plate.
SST 07112–66040



(c) Using SST and socket wrench, remove the pressure plate.
SST 07112–76060

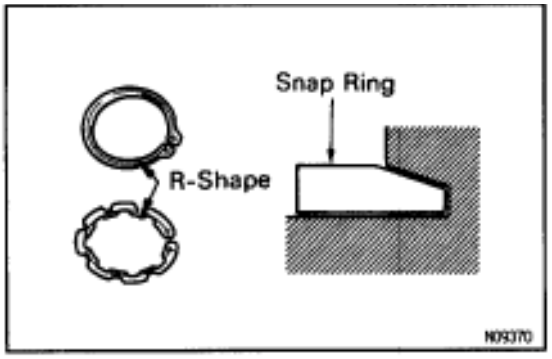


(d) Remove the shims from the pressure plate.

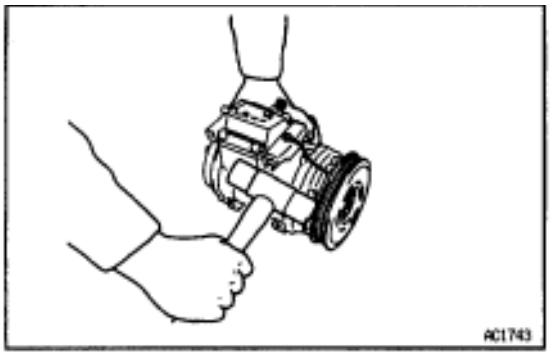


2. REMOVE ROTOR

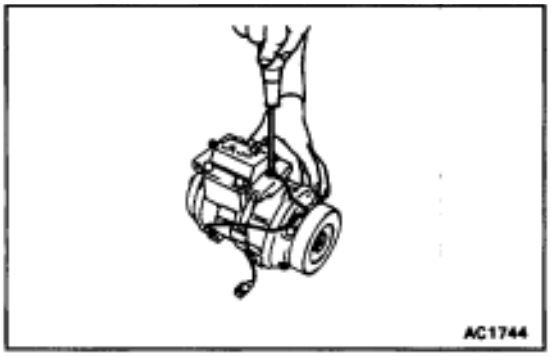
(a) Using SST, remove the snap ring.
SST 07114–84020
ASSEMBLY CAUTION: Do not spread the point of SST too wide.
Max width:
23.1 mm



ASSEMBLY NOTICE: The snap ring should be installed so that its beveled side faces up.

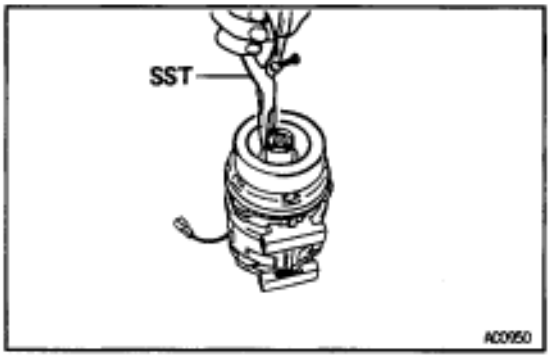


(b) Using a plastic hammer, tap the rotor off the shaft.
DISASSEMBLY NOTICE: Be careful not to damage pulley when tapping on the rotor.

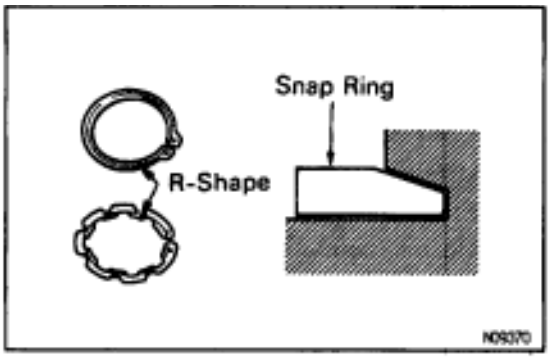


3. REMOVE STATOR

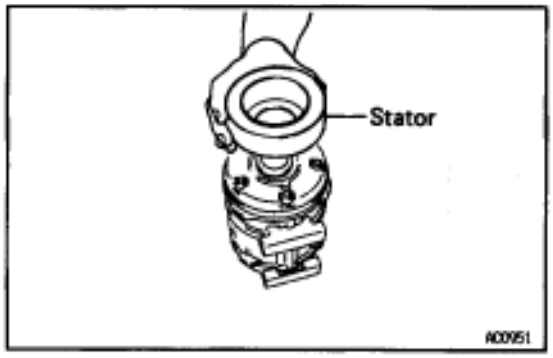
(a) Disconnect the stator lead wire from the compressor housing.



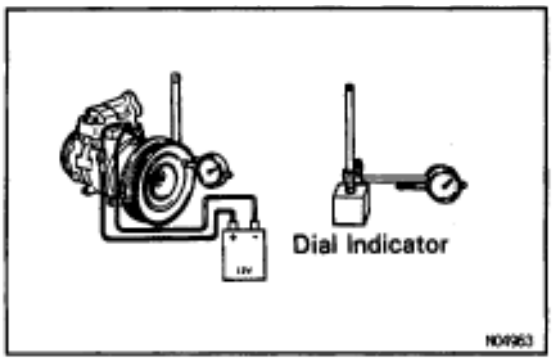
(b) Using SST, remove the snap ring.
SST 07114–84020



ASSEMBLY NOTICE: The snap ring should be installed so that its beveled side faces up.



(c) Remove the stator.



MAGNETIC CLUTCH ASSEMBLY

Assembly is in the reverse order of disassembly.

CHECK CLEARANCE OF MAGNETIC CLUTCH

(a) Set the dial–gauge to the pressure plate of the magnetic clutch.

(b) Connect the magnetic clutch lead wire to the positive (+) terminal of the battery.

(c) Check the clearance between the pressure plate and rotor, then connect the negative (–) terminal of the battery.

Standard clearance:

0.5 ± 0.15 mm (0.020 ± 0.0059 in.)

If the clearance is not within specification, adjust the clearance using shims to obtain the standard clearance.

Shim Thickness:

0.1 mm (0.004 in.)
0.3 mm (0.012 in.)
0.5 mm (0.020 in.)

COMPRESSOR INSTALLATION

1. INSTALL COMPRESSOR

(a) Install the stud bolt.
Torque: 26 N·m (265 kgf·cm, 19 ft·lbf)

(b) Install the compressor with 4 bolts and nut.
Torque: 52 N·m (530 kgf·cm, 38 ft·lbf)

(c) Connect the magnetic clutch connector.

(d) Install the engine under cover.

2. CONNECT DISCHARGE HOSE AND SUCTION HOSE TO COMPRESSOR

NOTICE: Hoses should be connected immediately after the caps have been removed.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

3. INSTALL POWER STEERING PUMP

Install the power steering pump with 2 bolts.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)

4. INSTALL DRIVE BELT

5. INSTALL BATTERY

6. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITREFRIGERANT

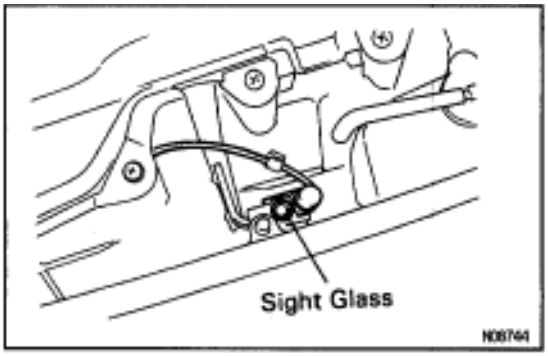
Specified amount:

700 ± 50 g (24.96 ± 1.76 oz.)

7. INSPECT FOR LEAKAGE OF REFRIGERANT

Using a gas leak tester, check for leakage of refrigerant.
If there is leakage, check the tightening torque at the joints.

8. INSPECT A/C OPERATION



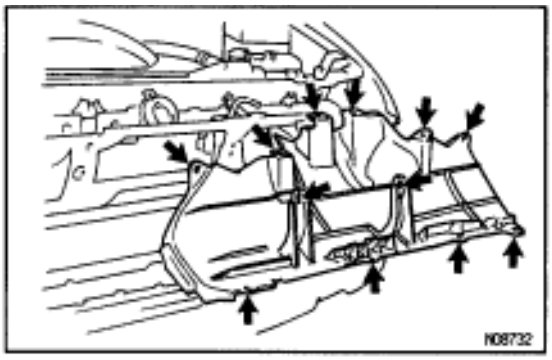
RECEIVER

ON–VEHICLE INSPECTION

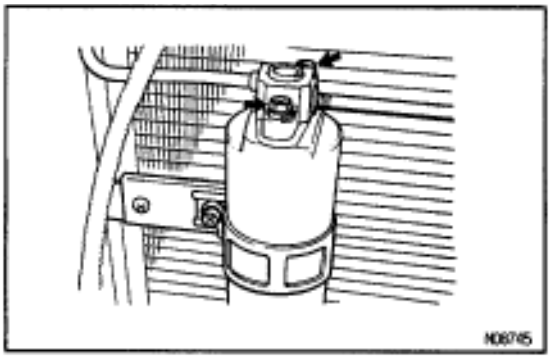
1. **OPEN THE HOOD**
2. **INSPECT SIGHT GLASS AND FITTING FOR LEAKAGE**
   Using a gas leak tester, check for leakage, check for leakage. If there is leakage, check the tightening torque at the joints.

RECEIVER REMOVAL

1. **OPEN THE HOOD**
2. **DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM**
   INSTALLATION HINT: Evacuate air from refrigeration system.
   Charge system with refrigerant and inspect for leakage of refrigerant.
   Specified amount:
   700 ±50 g (24.96 ±1.76 oz.)



3. **REMOVE FRONT BUMPER**
   (See page BO–8)
4. **REMOVE RADIATOR SUPPORT UPPER SEAL**
   Remove the 12 clips and radiator support upper seal.
5. **REMOVE LIQUID TUBES FROM RECEIVER**
   Remove the 2 bolts and both tubes from the receiver.
   Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf
   INSTALLATION HINT: Lubricate the new O–rings with compressor oil and install the tubes.



6. **REMOVE RECEIVER**
   Remove the holder bolt and pull the receiver upward from the receiver holder.
   REMOVAL NOTICE: Cap the open fitting immediately to keep moisture out of system.
   INSTALLATION HINT: If receiver was replaced, add compressor oil to the compressor.
   Add 10 cc (2.9 fl.oz.)
   Compressor oil:
   ND–OIL 8 or equivalent

RECEIVER INSTALLATION

Installation is in the reverse order of removal.

CONDENSER

ON–VEHICLE INSPECTION

1. INSPECT CONDENSER FINS FOR BLOCKAGE OR DAMAGE

If fins are clogged, wash them with water and dry with compressed air.

NOTICE: Be careful not to damage the fins.

If fins are bent, straighten them with a screwdriver or pliers.

2. INSPECT CONDENSER AND FITTING FOR LEAKAGE

Using a gas leak tester, check for leakage.

If there is leakage, check the tightening torque at the joints.

CONDENSER REMOVAL

1. DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

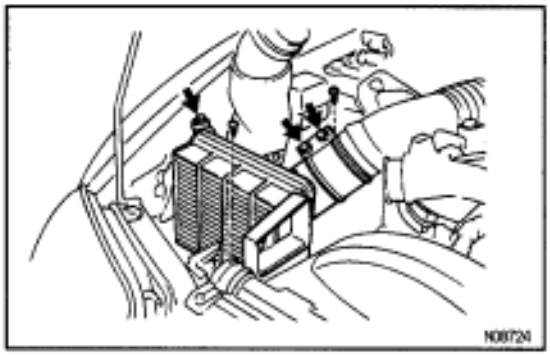
Specified amount:

700 ±50g (24.96 ±1.76 oz.)

2. REMOVE BATTERY

3. REMOVE AIR CLEANER DUCT

Remove the bolt and the air cleaner duct.



4. REMOVE AIR CLEANER

(a) Remove the air cleaner cover.

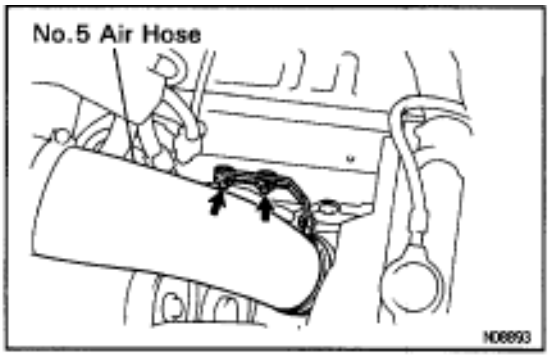
(b) Remove the air cleaner hose.

(c) 2JZ–GTE:

Remove the No. 1 air hose.

(d) Remove the 3 bolts and 2 screws.

(e) Remove the air cleaner.



5. REMOVE NO.5 AIR HOSE CLAMP (2JZ–GTE)

(a) Remove the 2 bolts and clamp.

(b) Push the hose to engine side.

6. REMOVE FRONT BUMPER

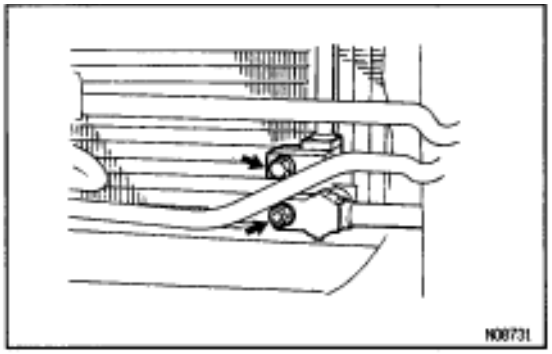
(See page BO–88)

7. REMOVE RADIATOR SUPPORT UPPER SEAL

(See page AC–91)

8. REMOVE RECEIVER

(See page AC–91)

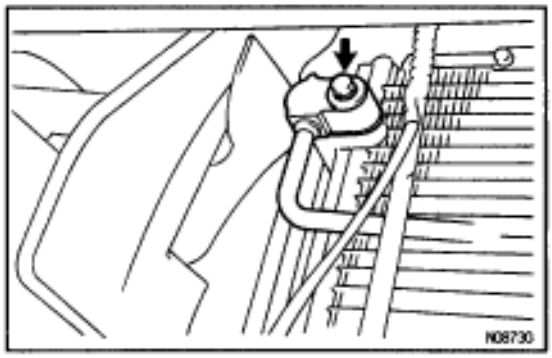


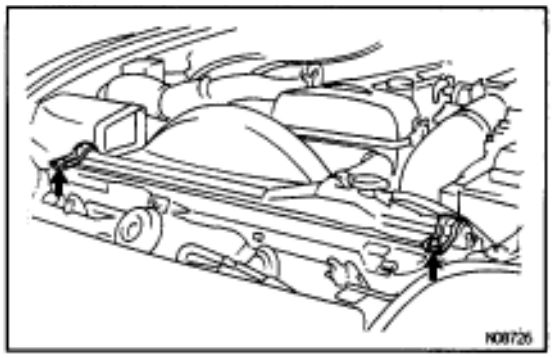
9. REMOVE LIQUID TUBE AND DISCHARGE TUBE

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture out of the system.

INSTALLATION HINT: Lubricate the new O–rings with compressor oil and install the tubes.

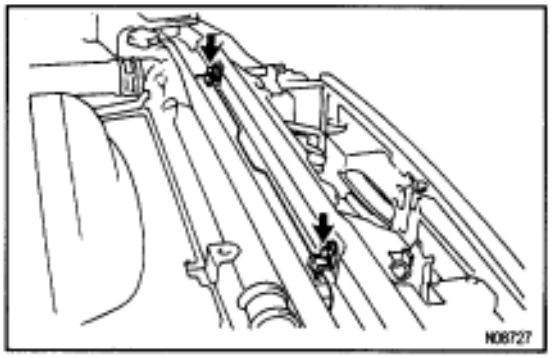




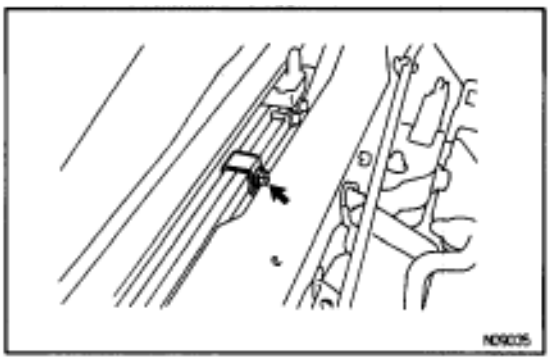
10. REMOVE CONDENSER

(a) Remove the radiator upper mounting.

(b) Push the radiator to engine side.

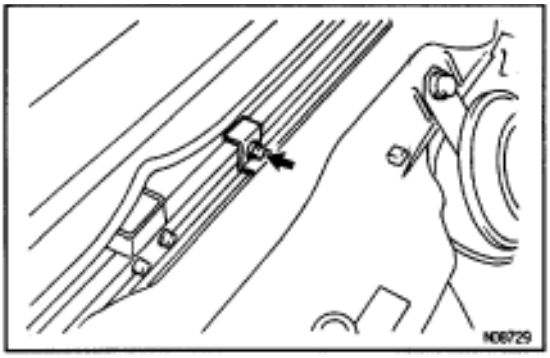


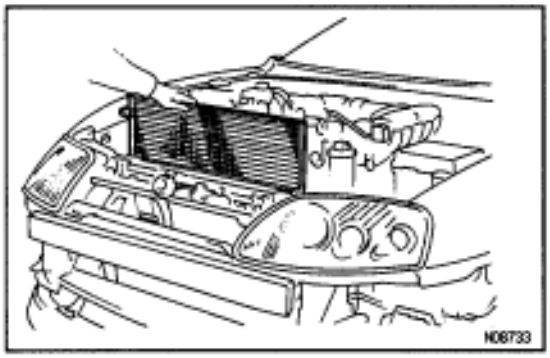
(c) Remove the condenser upper mounting.



(d) Push the condenser to engine side and remove the liquid tube piping clamp.

Torque: 4.1 N·m (42 kgf·cm, 36 in.·lbf)





(e) Push the condenser to engine side and pull it upward.
INSTALLATION HINT: If condenser was replaced, add compressor oil to the compressor.
Add 40 cc (1.4 fl.oz.)
Compressor oil:
ND–OIL 8 or equivalent

CONDENSER INSTALLATION

Installation is in the reverse order of removal.

EVAPORATOR

EVAPORATOR REMOVAL

1. DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

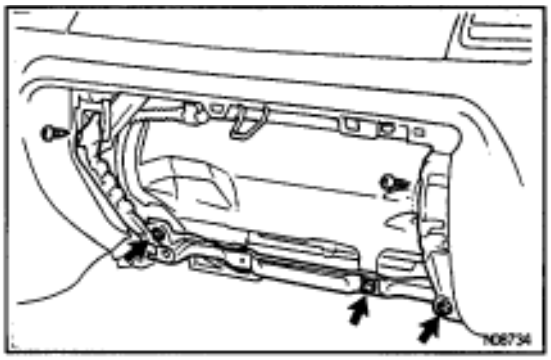
2. REMOVE ABS ACTUATOR (w/ABS)

(See page BR–44)

3. REMOVE LIQUID TUBE AND SUCTION TUBE FROM A/C UNIT

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

INSTALLATION HINT: Lubricate the new O–rings with compressor oil and install the tubes.



4. REMOVE GROVE BOX AND SIDE AIR DUCT

(a) Remove the glove box.

(See page BO–45)

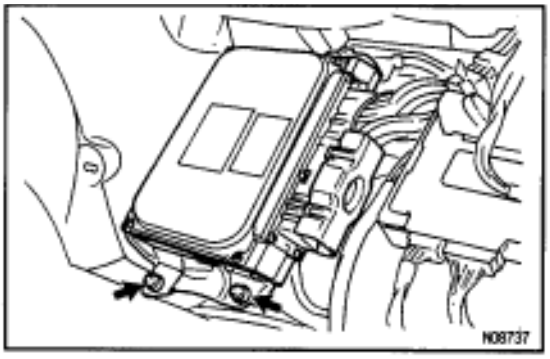
(b) Remove the 5 screws and the brace.

(c) Remove the side air duct.

5. REMOVE SCUFF PLATE

(See page BO–44)

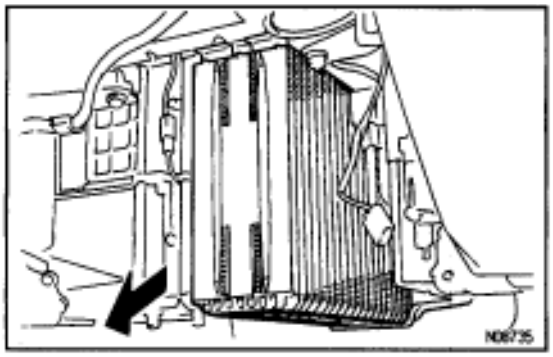
6. REMOVE FLOOR CARPET



7. REMOVE ECM

(a) Remove the 2 nuts and the ECM cover.

(b) Remove the 2 nuts and the ECM.



8. REMOVE EVAPORATOR

(a) Remove the 6 screws and the lower cover.

(b) Remove the 4 screws and the evaporator cover.

(c) Remove the evaporator.

INSTALLATION HINT: If evaporator was replaced, add compressor oil to the compressor.

Add 40 cc (1.4 fl.oz.)

Compressor oil

ND–OIL 8 or equivalent

EVAPORATOR INSPECTION

1. **INSPECT FINS FOR BLOCKAGE**
   If the fins are clogged, clean them with compressed air.
   NOTICE: Never use water to clean the evaporator.
2. **INSPECT FITTING FOR CRACKS OR SCRATCHES**
   Repair as necessary.

EVAPORATOR INSTALLATION

Installation is in the reverse order of removal.

HEATER RADIATOR

HEATER RADIATOR REMOVAL AND INSTALLATION

(See page AC–82)

HEATER RADIATOR INSPECTION

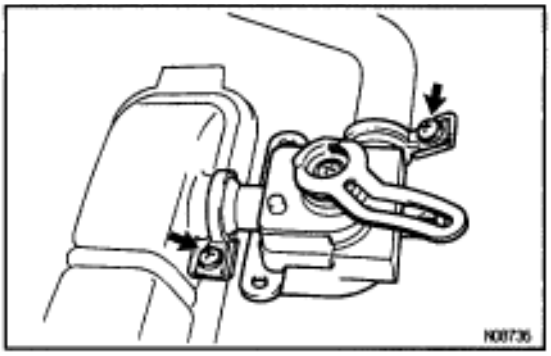
INSPECT FINS FOR BLOCKAGE
If the fins are clogged, clean them with compressed air.

WATER VALVE

WATER VALVE REMOVAL

1. REMOVE HEATER RADIATOR

(See page AC–82)



2. REMOVE WATER VALVE

(a) Remove the 2 screws.

(b) Remove the water valve from heater radiator.

WATER VALVE INSTALLATION

1. INSTALL WATER VALVE

(a) Install the water valve to heater radiator.

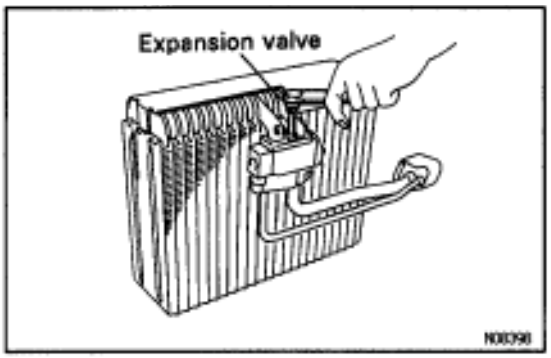
(b) Install the 2 screws.

2. INSTALL HEATER RADIATOR

EXPANSION VALVE

ON–VEHICLE INSPECTION

1. **CHECK QUANTITY OF GAS DURING REFRIGERATION CYCLE**
2. **INSTALL MANIFOLD GAUGE SET**
3. **RUN ENGINE**
   Run the engine at 1,500 rpm for at least 5 minutes. Then check that the high pressure reading is 1.371.57 MPa (14–16 kgf/cm^2, 199–228 psi).
4. **CHECK EXPANSION VALVE**
   If the expansion valve is faulty, the low pressure reading will drop to 0 kPa (0 kgf/cm^2, 0 psi).
   HINT: When the low pressure drops to 0 kPa (0 kgf/cm^2, 0 psi), feel the receiver's IN and OUT sides for zero temperature difference.

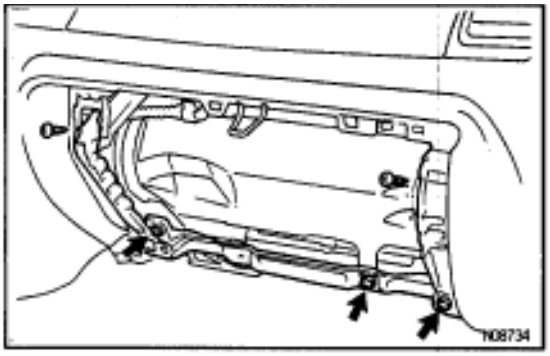


EXPANSION VALVE REMOVAL

1. **REMOVE EVAPORATOR**
   (See page AC–82)
2. **REMOVE EXPANSION VALVE**
   Using a hexagon wrench, remove the 2 bolts and separate the evaporator and expansion valve.
   Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)
   INSTALLATION HINT: Lubricate the new O–ring with compressor oil and install the tubes.

EXPANSION VALVE INSTALLATION

Installation is in the reverse order of removal.



BLOWER MOTOR

BLOWER MOTOR REMOVAL

1. REMOVE GLOVE BOX AND SIDE AIR DUCT

(a) Remove the glove box.
(See page **BO–45**)

(b) Remove the 5 bolts and the brace.

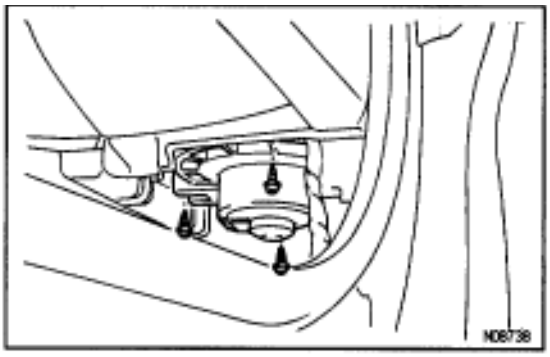
(c) Remove the side air duct.

2. REMOVE SCUFF PLATE
(See page BO–44)

3. REMOVE FLOOR CARPET

4. REMOVE ECM COVER

Remove the 2 nuts and the ECM cover.



5. REMOVE BLOWER MOTOR

(a) Disconnect the connector.

(b) Remove the 3 screws and the blower motor.

BLOWER MOTOR INSPECTION

(See page AC–61)

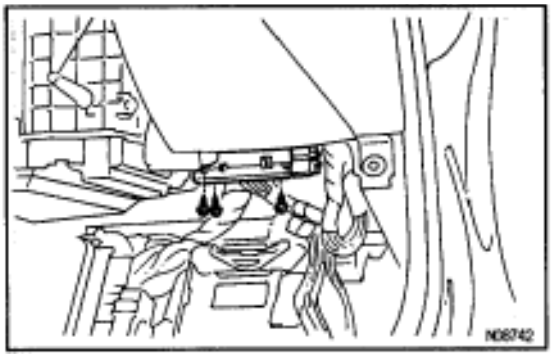
BLOWER MOTOR INSTALLATION

Installation is in the reverse order of removal.

BLOWER MOTOR CONTROL RELAY

BLOWER MOTOR CONTROL RELAY REMOVAL

1. **REMOVE BLOWER MOTOR**
   (See page AC–82)



2. **REMOVE BLOWER MOTOR CONTROL RELAY**

(a) Disconnect the connector.

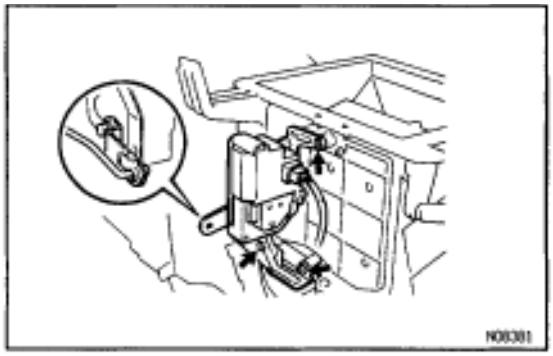
(b) Remove the 3 screws and the blower motor control relay.

BLOWER MOTOR CONTROL RELAY INSPECTION

(See page AC–61)

BLOWER MOTOR CONTROL RELAY INSTALLATION

Installation is in the reverse order of removal.



SERVOMOTOR

AIR INLET SERVOMOTOR REMOVAL

1. **REMOVE INSTRUMENT PANEL**
   (See page BO–45)
2. **REMOVE AIR INLET SERVOMOTOR**

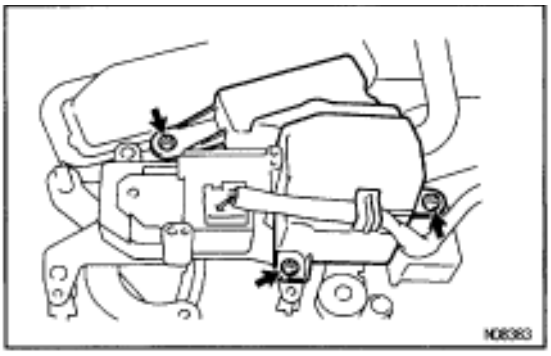
(a) Disconnect the connector.
(b) Disconnect the control link.
(c) Remove the 3 screws and the air inlet servomotor.

AIR INLET SERVOMOTOR INSPECTION

(See page AC–47)

AIR INLET SERVOMOTOR INSTALLATION

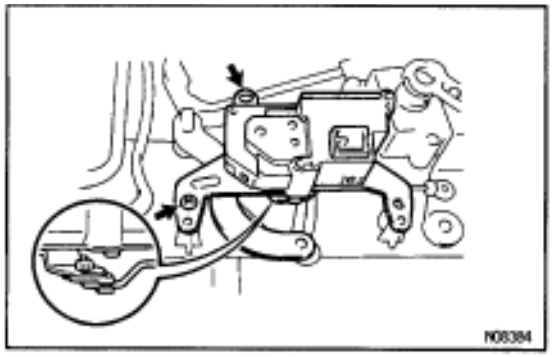
Installation is in the reverse order of removal.



AIR MIX SERVOMOTOR REMOVAL

1. **REMOVE INSTRUMENT PANEL**
   (See page BO–45)
2. **REMOVE AIR MIX SERVOMOTOR**

(a) Remove the defroster duct.
(b) Remove the 3 screws and the water valve cover.
(c) Disconnect the connector.



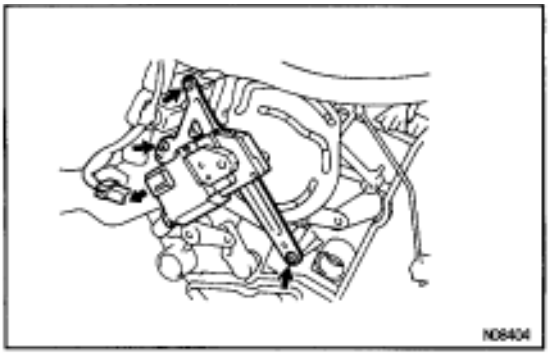
(d) Disconnect the control link.
(e) Remove the 2 screws and the air mix servomotor.

AIR MIX SERVOMOTOR INSPECTION

(See page AC–47)

AIR MIX SERVOMOTOR INSTALLATION

Installation is in the reverse order of removal.



AIR OUTLET SERVOMOTOR REMOVAL

1. REMOVE INSTRUMENT PANEL

(See page BO–45)

2. REMOVE AIR OUTLET SERVOMOTOR

(a) Disconnect the connector.

(b) Remove the 3 screws and the air outlet servomotor.

AIR OUTLET SERVOMOTOR INSPECTION

(See page AC–51)

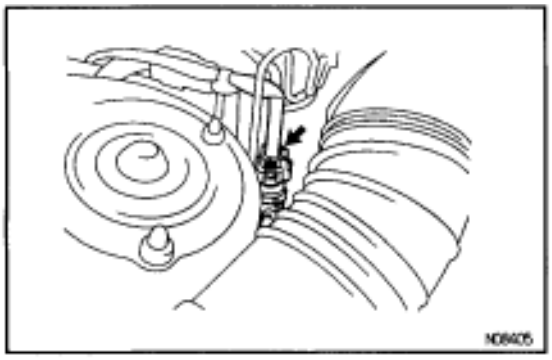
AIR OUTLET SERVOMOTOR INSTALLATION

Installation is in the reverse order of removal.

PRESSURE SWITCH

PRESSURE SWITCH REMOVAL

1. DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM



2. REMOVE PRESSURE SWITCH

(a) Disconnect the connector.

(b) Remove the pressure switch from the liquid tube.

HINT: Lock the pressure switch mount on the tube with an open end wrench, being careful not to deform the tube, and remove the switch.

PRESSURE SWITCH INSPECTION

(See page AC–41)

PRESSURE SWITCH INSTALLATION

1. INSTALL PRESSURE SWITCH

(a) Install the pressure switch to the liquid tube.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

HINT: Lock the switch mount on the tube with an open end wrench, being careful not to deform the tube, and install the switch.

(b) Connect the connector.

2. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT

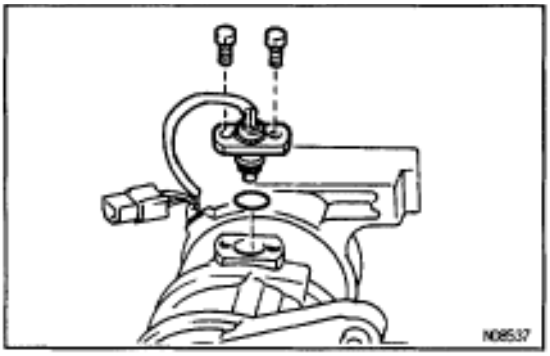
Specified amount:

700 ± 50 g (24.96 ± 1.76 oz.)

3. INSPECTION FOR LEAKAGE OF REFRIGERANT

Using a gas leak tester, check for leakage of refrigerant from the pressure switch.

4. INSPECT A/C OPERATION



SENSOR

REVOLUTION DETECTING SENSOR REMOVAL

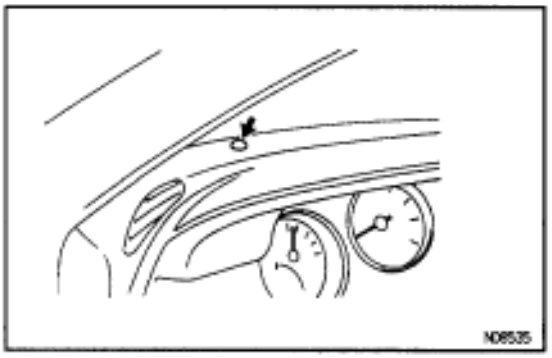
1. **REMOVE COMPRESSOR**
   (See page AC–86)
2. **REMOVE REVOLUTION DETECTING SENSOR**
   Remove the 2 bolts and the revolution detecting sensor.
   Torque: 6.0 N·m (60 kgf·cm, 52 in.·lbf)

REVOLUTION DETECTING SENSOR INSPECTION

(See page AC–39)

REVOLUTION DETECTING SENSOR INSTALLATION

Installation is in the reverse order of removal.



SOLAR SENSOR REMOVAL

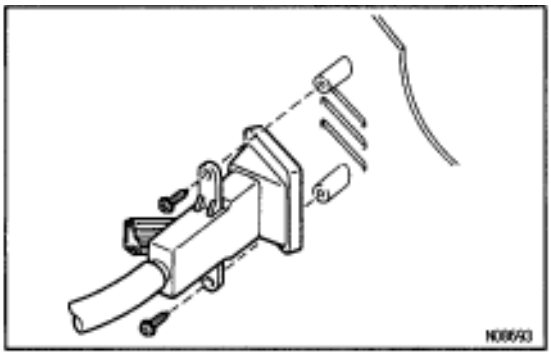
1. **REMOVE INSTRUMENT PANEL**
   (See page BO–45)
2. **REMOVE SOLAR SENSOR**
   Disconnect the harness and pull the solar sensor upward from instrument panel.

SOLAR SENSOR INSPECTION

(See page AC–36)

SOLAR SENSOR INSTALLATION

Installation is in the reverse order of removal.



ROOM TEMPERATURE SENSOR REMOVAL

1. **REMOVE CENTER CLUSTER PANEL**
   (See page BO–45)
2. **REMOVE ROOM TEMPERATURE SENSOR**

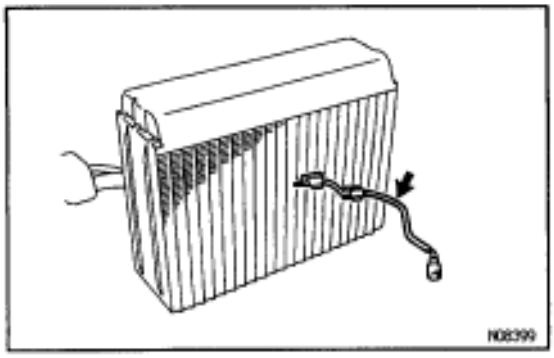
(a) Disconnect the connector.
(b) Remove the aspirator hose.
(c) Remove the 2 screws and the room temperature sensor.

ROOM TEMPERATURE SENSOR INSPECTION

(See page AC–28)

ROOM TEMPERATURE SENSOR INSTALLATION

Installation is in the reverse of removal.



EVAPORATOR TEMPERATURE SENSOR REMOVAL

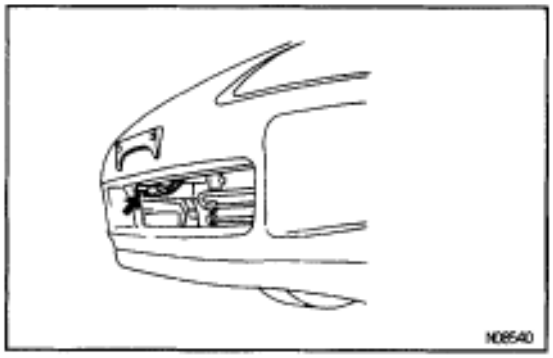
1. **REMOVE EVAPORATOR**
   (See page AC–82)
2. **REMOVE EVAPORATOR TEMPERATURE SENSOR**
   Pull out the evaporator temperature sensor from the evaporator.

EVAPORATOR TEMPERATURE SENSOR INSPECTION

(See page AC–32)

EVAPORATOR TEMPERATURE SENSOR INSTALLATION

Installation is in the reverse order of removal.



AMBIENT TEMPERATURE SENSOR REMOVAL

REMOVE AMBIENT TEMPERATURE SENSOR

(a) Remove the ambient temperature sensor from the bumper reinforcement.
(b) Disconnect the connector.

AMBIENT TEMPERATURE SENSOR INSPECTION

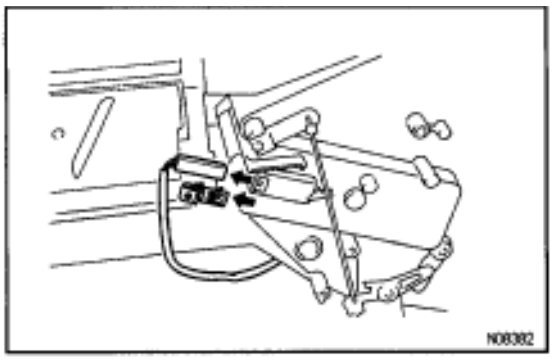
(See page AC–30)

AMBIENT TEMPERATURE SENSOR INSTALLATION

Installation is in the reverse order of removal.

ENGINE COOLANT TEMPERATURE SENSOR REMOVAL

1. REMOVE AIR CONDITIONING UNIT
(See page AC–80)



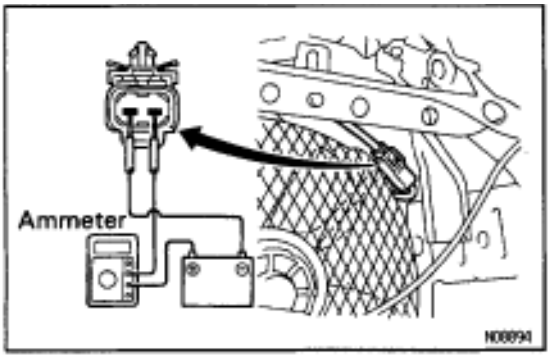
2. REMOVE ENGINE COOLANT TEMPERATURE SENSOR
(a) Disconnect the connector.
(b) After pulling off the clamp, pull out the sensor.

ENGINE COOLANT TEMPERATURE SENSOR INSPECTION

(See page AC–34)

ENGINE COOLANT TEMPERATURE SENSOR INSTALLATION

Installation is in the reverse order of removal.



ELECTRIC COOLING FAN

ON–VEHICLE INSPECTION

Condenser Fan:

1. INSPECT CONDENCER

(a) Disconnect the fan connector.

(b) Connect battery and ammeter to the cooling fan connector.

(c) Check that the condenser fan rotates smoothly, and check the reading on the ammeter.

Standard amperage:

6.0–7.4 A

(d) Reconect the fan connector.

2. CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY

Radiator Fan:

(See page EG–353)

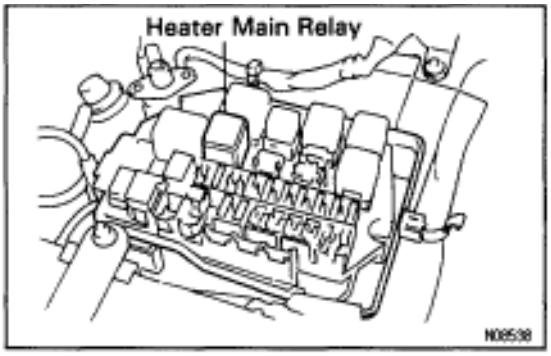
COOLING FAN RELAYS INSPECTION

(See page EG–356)

ECT SWITCH

(in ENGINE RADIATOR)

(See page EG–356)



RELAY

HEATER MAIN RELAY

HEATER MAIN RELAY REMOVAL

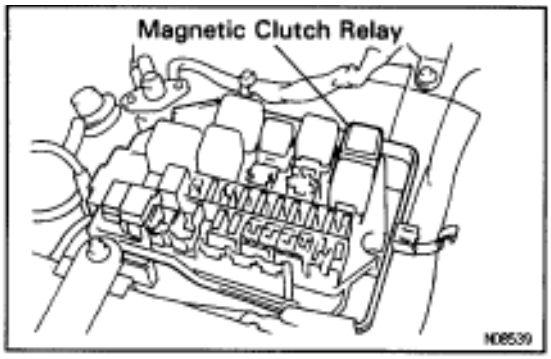
1. **REMOVE JUNCTION BLOCK NO. 2 COVER**
   Remove the 2 clips and the junction block No. 2 cover.
2. **REMOVE HEATER MAIN RELAY**

HEATER MAIN RELAY INSPECTION

(See page AC–59)

HEATER MAIN RELAY INSTALLATION

Installation is in the reverse order of removal.



MAGNETIC CLUTCH RELAY

MAGNETIC CLUTCH RELAY REMOVAL

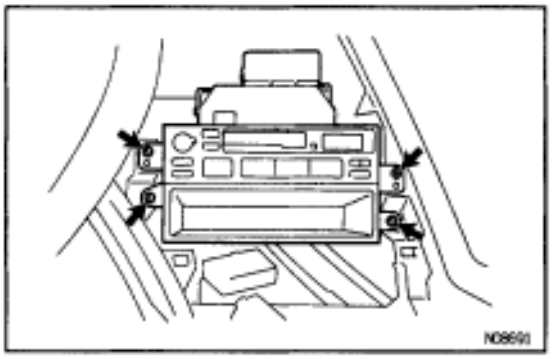
1. **REMOVE JUNCTION BLOCK NO. 2 COVER**
   Remove the 2 clips and the junction block No. 2 cover.
2. **REMOVE MAGNETIC CLUTCH RELAY**

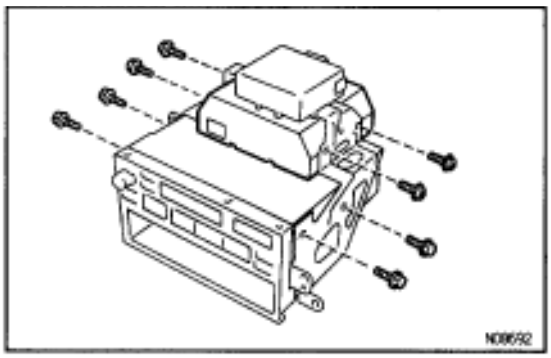
MAGNETIC CLUTCH RELAY INSPECTION

(See page AC–65)

MAGNETIC CLUTCH RELAY INSTALLATION

Installation is in the reverse order of removal.





AIR CONDITIONING AMPLIFIER

AIR CONDITIONING AMPLIFIER REMOVAL

1. REMOVE CENTER CLUSTER PANEL
(See page BO–45)

2. REMOVE RADIO WITH AIR CONDITIONING AMPLIFIER

(a) Remove the 4 screws and radio with the air conditioning amplifier.

(b) Disconnect the connectors.

3. REMOVE AIR CONDITIONING AMPLIFIER FROM RADIO

(a) Remove the 4 screws and the 4 bolts.

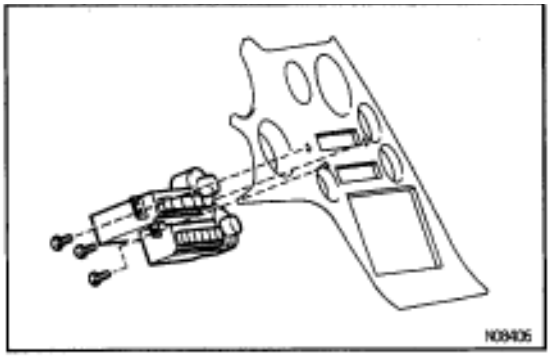
(b) Remove the air conditioning amplifier from radio.

AIR CONDITIONING AMPLIFIER INSPECTION

(See page AC–23)

AIR CONDITIONING AMPLIFIER INSTALLATION

Installation is in the reverse order of removal.



AIR CONDITIONING CONTROL ASSEMBLY

AIR CONDITIONING CONTROL ASSEMBLY REMOVAL

1. **REMOVE CENTER CLUSTER PANEL**
   (See page BO–45)
2. **REMOVE AIR CONDITIONING CONTROL ASSEMBLY**

(a) Disconnect the connector.

(b) Remove the 3 screws and the air conditioning control assembly.

AIR CONDITIONING CONTROL ASSEMBLY INSPECTION

(See page AC–66)

AIR CONDITIONING CONTROL ASSEMBLY INSTALLATION

Installation is in the reverse order of removal.

SERVICE SPECIFICATIONS

SERVICE DATA

Refrigerant charge volume	700 ± 50g. 24.96 ± 1.76 oz.
Idle speed	
2JZ–GE (M/T)	
Magnetic clutch not engaged	Approx. 700 rpm
Magnetic clutch engaged	Approx. 900 rpm
2JZ–GE (A/T)	
Magnetic clutch not engaged	Approx. 700 rpm
Magnetic clutch engaged	Approx. 800 rpm
2JZ–GTE	
Magnetic clutch not engaged	Approx. 650 rpm
Magnetic clutch engaged	Approx. 800 rpm

TORQUE SPECIFICATIONS

Part tightened		N·m	kgf·cm	ft·lbf
Suction hose x Compressor		10	100	7
Discharge hose x Compressor		10	100	7
Compressor x Engine	Stud bolt	26	265	19.2
	Other bolts and nut	52	530	38.3
Liquid tube x Receiver		5.4	55	48 in.·lbf
Liquid tube x Condenser		10	100	7
Discharge tube x Condenser		10	100	7
Expansion valve x Evaporator		5.4	55	48 in.·lbf
Suction tube x A/C unit		10	100	7
Liquid tube x A/C unit		10	100	7
Pressure switch x Liquired tube		10	100	7
Revolution detecting sensor x Compressor		6.0	60	52 in.·lbf
Condenser upper mounting x Body		4.1	42	36 in.·lbf
Liquid lines		10	100	7
Discharge lines		10	100	7
Suction lines		10	100	7