

## PRE-CHECK

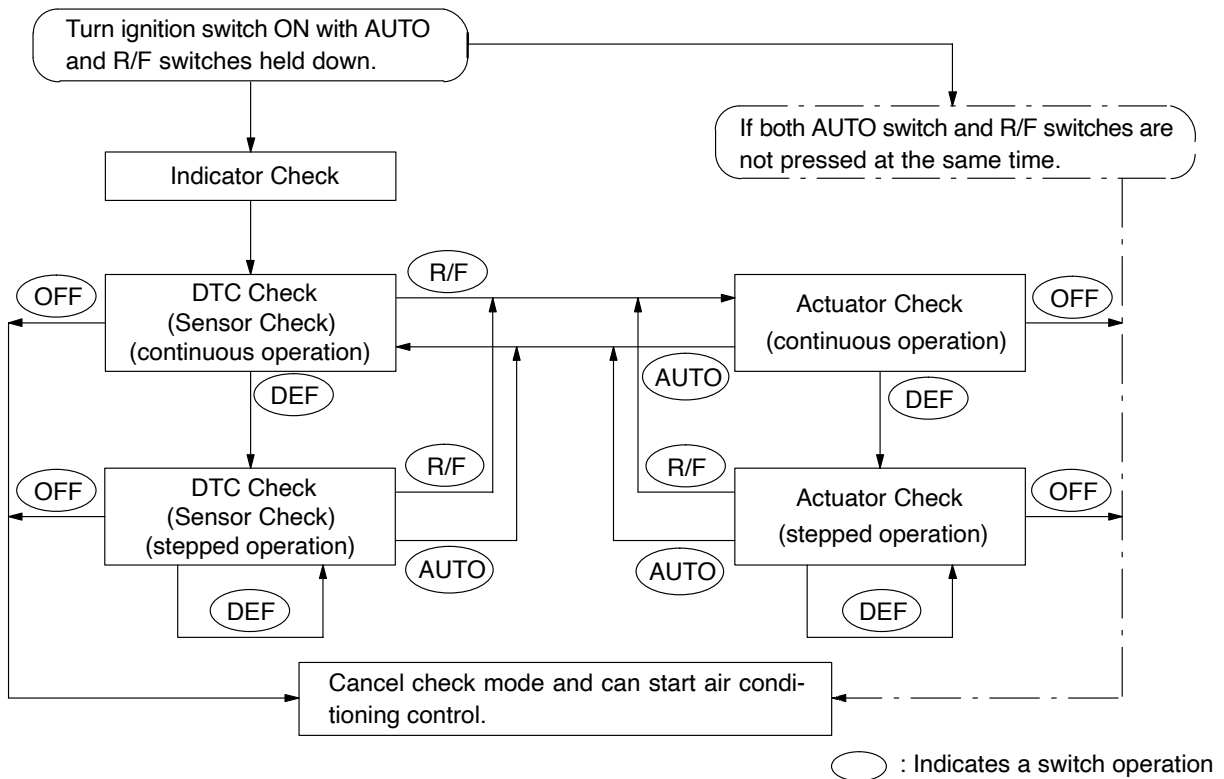
### 1. WARNING FOR A/C COMPRESSOR LOCK

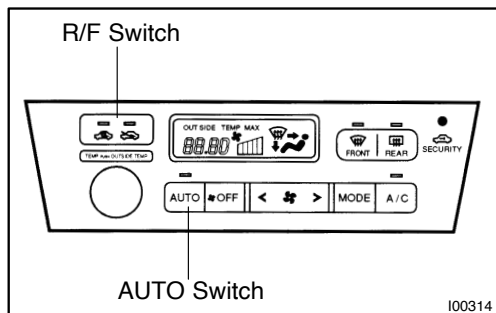
If compressor lock occurs during air conditioning operation, the A/C switch indicator on the air conditioning control assembly starts blinking to warn the driver.

When this occurs, check for compressor lock (DTC 22) using DTC check then proceed to inspect the circuit or the component (See page [DI-552](#)).

### 2. LIST OF OPERATION METHODS

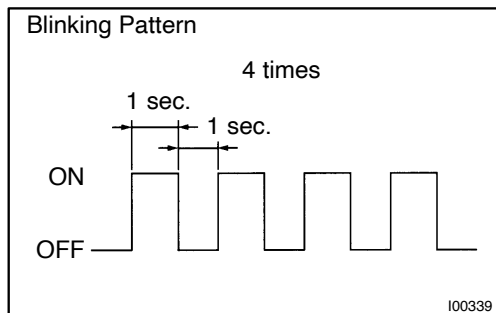
By operating each of the air conditioning control switches as shown the diagram below, it is possible to enter the diagnosis check mode.





### 3. INDICATOR CHECK

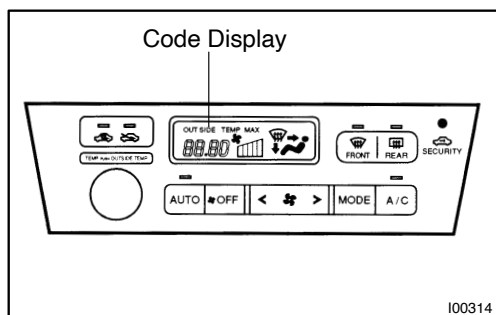
- (a) Turn the ignition switch on while pressing the air conditioning control AUTO switch and R/F switch simultaneously.



- (b) Check that the indicators light up and go off at second intervals 4 times in succession.

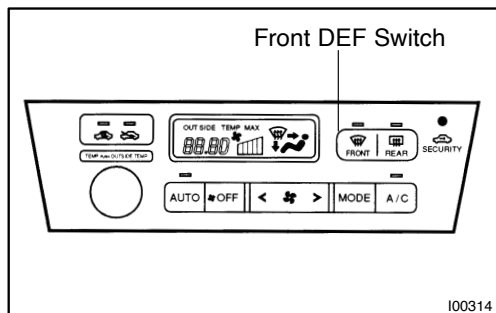
#### HINT:

- After the indicator check is completed, the system enters the DTC begins automatically.
- Press the OFF switch when desiring to cancel the check mode.

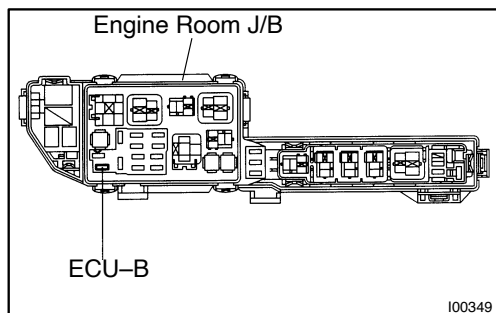


### 4. DTC CHECK (SENSOR CHECK)

- (a) Perform an indicator check. After the indicator check is completed, the system enters the DTC check mode automatically.
- (b) Read the code displayed on the panel. Refer to the list of codes on page [DI-531](#) when reading the codes. (Trouble code are output at the temperature display.)

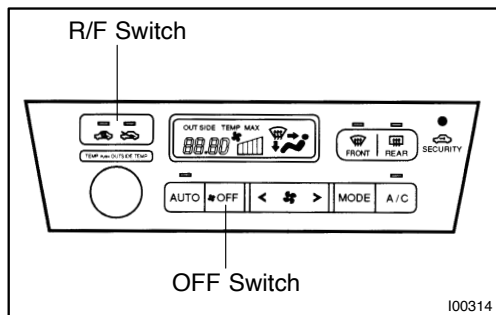


- (c) If the slower display is desired, press the front DEF switch and change it to stepped operation. Each time the front DEF switch is pressed, the display changes by 1 step.



### 5. CLEARING DTC

- (a) Pull out the ECU-B fuse in engine room J/B for 10 sec. or longer to clear the DTC memory.
- (b) After reinserting the fuse, check that the normal code is output.



**6. ACTUATOR CHECK**

- (a) After entering the DTC check mode (Sensor Check Mode) press the R/F switch.
- (b) Since each damper, motor and relay automatically operates at 1 second intervals beginning in order from 10 in the temperature display, check the temperature and air flow visually and by hand.  
If the slower display is desired, press the DEF switch and change it to step operation. Each time the DEF switch is pressed, the display changes by 1 step.

**HINT:**

- Code are displayed in order from the smaller to the larger numbers.
- To cancel the check mode, press the OFF switch.

Step No.	Display Code	Conditions				
		Blower Motor	Air Flow Vent	Air Inlet Damper	Magnetic Clutch	Air Mix Damper
1	0	OFF	FACE	FRESH	OFF	Cool side (0 % open)
2	1	1	FACE	FRESH	OFF	Cool side (0 % open)
3	2	3	FACE	FRESH	ON	Cool side (0 % open)
4	3	3	FACE	FRS/REC	ON	Cool side (0 % open)
5	4	3	FACE	RECIRC	ON	Cool/Hot (50 % open)
6	5	3	BI-LEVEL	RECIRC	ON	Cool/Hot (50 % open)
7	6	3	FOOT	RECIRC	ON	Hot side (100 % open)
8	7	3	FOOT	RECIRC	ON	Hot side (100 % open)
9	8	3	FOOT/DEF	RECIRC	ON	Hot side (100 % open)
10	9	5	DEF	RECIRC	ON	Hot side (100 % open)

## DIAGNOSTIC TROUBLE CODE CHART

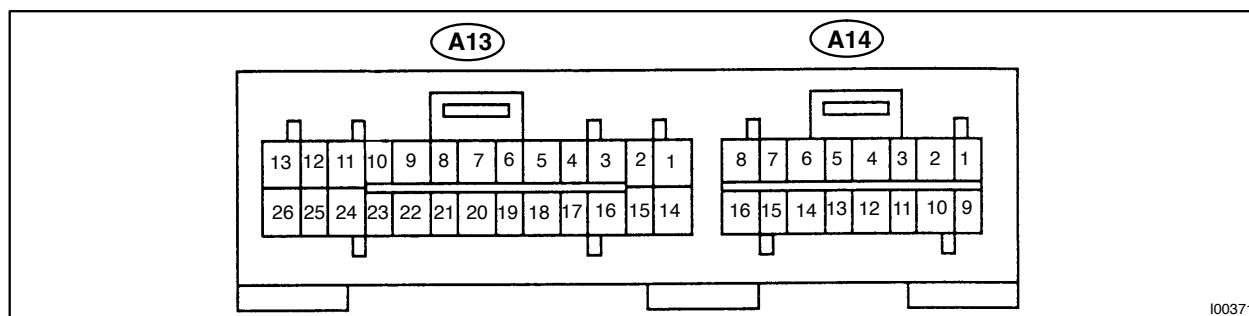
If malfunction code is displayed during the DTC check (sensor check), check the circuit listed for that code in the table below (Proceed to the page given for that circuit).

DTC No. (See Page)	Detection Item	Trouble Area	Memory
00	Normal	–	–
11*1 (DI-537)	Room temperature sensor circuit	<ul style="list-style-type: none"> <li>●Room temp. Sensor</li> <li>●ECU</li> <li>●Harness or connector between room temp. sensor and A/C control assembly</li> </ul>	<input type="checkbox"/> (8.5 min. or more)
12*2 (DI-540)	Ambient temperature sensor circuit	<ul style="list-style-type: none"> <li>●Ambient temp. Sensor</li> <li>●Harness or connector between ambient temp. sensor and ECU</li> <li>●ECU</li> </ul>	<input type="checkbox"/> (8.5 min. or more)
13 (DI-543)	Evaporator temperature sensor circuit	<ul style="list-style-type: none"> <li>●Evaporator temp. Sensor</li> <li>●Harness or connector between evaporator temp. sensor and ECU</li> <li>●ECU</li> </ul>	<input type="checkbox"/> (8.5 min. or more)
14 (DI-546)	Engine coolant temperature sensor circuit	<ul style="list-style-type: none"> <li>●Engine coolant temp. sensor</li> <li>●Harness or connector between engine coolant temp. sensor and ECU</li> <li>●Harness or connector between ECM and A/C ECU</li> <li>●ECU</li> </ul>	–
21*3 (DI-549)	Solar sensor circuit (short)	<ul style="list-style-type: none"> <li>●Solar sensor</li> <li>●Harness or connector between solar sensor and ECU</li> </ul>	<input type="checkbox"/> (8.5 min. or more)
	Solar sensor circuit (open)	<ul style="list-style-type: none"> <li>●ECU</li> </ul>	–
22*4 (DI-552)	Compressor lock sensor circuit	<ul style="list-style-type: none"> <li>●Compressor Drive Belt</li> <li>●Compressor lock sensor</li> <li>●Compressor</li> <li>●Harness or connector between compressor and ECU, compressor lock sensor</li> <li>●ECU</li> </ul>	–
23 (DI-554)	Pressure sensor circuit	<ul style="list-style-type: none"> <li>●Pressure switch</li> <li>●Harness or connector between pressure switch and ECU</li> <li>●Refrigerant pipe line</li> <li>●ECU</li> </ul>	–
31 (DI-557)	Air mix damper position sensor circuit	<ul style="list-style-type: none"> <li>●Air mix damper position sensor</li> <li>●ECU</li> <li>●Harness or connector between air mix damper position sensor and ECU</li> </ul>	<input type="checkbox"/> (1 min. or more)
32 (DI-560)	Air inlet damper position sensor circuit	<ul style="list-style-type: none"> <li>●Air inlet damper position sensor</li> <li>●ECU</li> <li>●Harness or connector between air inlet damper position sensor and ECU</li> </ul>	<input type="checkbox"/> (1 min. or more)
41 (DI-557 DI-563)	Air mix control servomotor	<ul style="list-style-type: none"> <li>●Air mix control servomotor</li> <li>●Air mix damper position sensor</li> <li>●Harness or connector between air mix damper servomotor and ECU</li> <li>●ECU</li> </ul>	<input type="checkbox"/> (15 sec.)
42 (DI-560 DI-566)	Air inlet control servomotor	<ul style="list-style-type: none"> <li>●Air inlet control servomotor</li> <li>●Air inlet damper position sensor</li> <li>●Harness or connector between air inlet damper, servomotor and ECU</li> <li>●ECU</li> </ul>	<input type="checkbox"/> (15 sec.)

## HINT:

- \*1: If the room temp. is approx.  $-18.6^{\circ}\text{C}$  ( $-3.7^{\circ}\text{F}$ ) or lower, trouble code 11 may be output even though the system is normal.
- \*2: If the ambient temp. is approx.  $-52.9^{\circ}\text{C}$  ( $-61.4^{\circ}\text{F}$ ) or lower, a malfunction code may be output even though the system is normal.
- \*3: If the check is being performed in a dark place, DTC 21 (solar sensor circuit abnormal) could be displayed.
- \*4: Compressor lock (DTC22) is indicated only for a current occurring malfunction (See page [DI-552](#)). To confirm DTC 22, perform the following steps.
  - (1) With the engine ON, enter the DTC check mode.
  - (2) Press the F/R switch to enter actuator check mode, and set the operation to Step No.3.
  - (3) Press the AUTO switch to return to DTC check mode.
  - (4) The DTC is displayed after approx. 3 secs..
- \*5: The ECU memorizes the DTC of the respective malfunction it has occurred for the period of the time indicated in the brackets.

## TERMINALS OF ECM



I00371

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
MGCR ↔ GND (A14-2 ↔ A13-14)	L-Y ↔ W-B	Start the engine and push AUTO switch. A/C switch ON	Below 1 V
		Start the engine and push AUTO switch. A/C switch OFF	10 – 14 V
TAM ↔ SG (A14-3 ↔ A13-1)	Y ↔ W-R	IG ON. Ambient Temp.: 25 °C (77 °F)	1.35 – 1.75 V
		IG ON. Ambient Temp.: 40 °C (104 °F)	0.85 – 1.25 V
TR ↔ SG (A14-4 ↔ A13-1)	G-Y ↔ W-R	IG ON. Room Temp.: 25 °C (77 °F)	1.8 – 2.2 V
		IG ON. Room Temp.: 40 °C (104 °F)	1.2 – 1.6 V
TS ↔ SG (A14-5 ↔ A13-1)	W ↔ W-R	IG ON. Sensor subjected to electrical light.	1 V or more
		IG ON. Sensor covered by cloth	Below 1 V
TE ↔ SG (A14-6 ↔ A13-1)	L-W ↔ W-R	IG ON. Evaporator Temp.: 0 °C (32 °F)	2.0 – 2.4 V
		IG ON. Evaporator Temp.: 15 °C (59 °F)	1.4 – 1.8 V
TPI ↔ SG (A14-7 ↔ A13-1)	P-L ↔ W-R	Push Recircu Switch	3.5 – 4.5 V
		Push Fresh Switch	0.5 – 1.8 V
TP ↔ SG (A14-8 ↔ A13-1)	B-Y ↔ W-R	Set Temp.: Max. Cool	3.5 – 4.5 V
		Set Temp.: Max. Hot	0.5 – 1.8 V
PSW ↔ GND (A14-9 ↔ A13-14)	L-B ↔ W-B	IG ON.	Below 1 V
ACT ↔ GND (A14-10 ↔ A13-14)	LG-R ↔ W-B	Start the Engine (Idling). Operate the Compressor	10 – 14 V
		Start the Engine (Idling). Do not operate Compressor	Below 1.5 V
AC1 ↔ GND (A14-13 ↔ A13-14)	B-Y ↔ W-B	Start the engine. A/C Switch ON.	Below 1 V
		Start the engine. A/C Switch OFF.	More than 1 V
TW2 ↔ SG (A14-14 ↔ A13-1)	V ↔ W-R	Engine Coolant Temp.: 0 °C (32 °F)	2.8 – 3.8 V
		Engine Coolant Temp.: 40 °C (104 °F)	1.8 – 2.2 V
		Engine Coolant Temp.: 70 °C (158 °F)	0.9 – 1.3 V
BLW ↔ GND (A14-16 ↔ A13-14)	B-W ↔ W-B	IG ON. Operate the Blower Motor	Below 1.5 V
SG ↔ Body (A13-1 ↔ Body Ground)	W-R ↔ Body Ground	Always	1 Ω or less
ILL ↔ GND (A13-2 ↔ A13-14)	G ↔ W-B	Turn the Light Control Switch to TAIL position.	10 – 14 V
LOCK ↔ GND (A13-3 ↔ A13-14)	W-L ↔ W-B	IG OFF. at 20 °C (68 °F)	65 – 125 Ω
FACE ↔ GND (A13-4 ↔ A13-14)	L-W ↔ W-B	IG ON. Air Flow: FACE	Below 1 V
SECU ↔ GND (A13-5 ↔ A13-14)	↔ W-B	IG ON.	Below 1 V

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
AIF ↔ AIR (A13-6 ↔ A13-7)	L-Y ↔ R	IG ON.	13 – 19 Ω
AMC ↔ AMH (A13-8 ↔ A13-9)	P ↔ G-R	IG ON.	13 – 19 Ω
HR ↔ GND (A13-10 ↔ A13-14)	L-W ↔ W-B	IG ON. Operate the Blower Motor	Below 1 V
		IG ON. Do not operate the Blower Motor	10 – 14 V
S5 ↔ SG (A13-11 ↔ A13-1)	L ↔ W-R	IG ON.	4 – 6 V
S5 ↔ TS (A13-11 ↔ A14-5)	L ↔ W	IG ON. Sensor Subjected to Electrical Light.	Below 4 V
		IG ON. Sensor Covered by a Cloth.	4 – 4.5 V
ILL+ ↔ GND (A13-12 ↔ A13-14)	G ↔ W-B	Turn the Light Control Switch to TAIL position.	10 – 14 V
B+ ↔ GND (A13-13 ↔ A13-14)	W-R ↔ W-B	IG OFF.	10 – 14 V
GND ↔ Body Ground (A13-14 ↔ Body Ground)	W-B ↔ Body Ground	Always	1 Ω or less
IGN ↔ GND (A13-16 ↔ A13-14)	B-O ↔ W-B	Start the Engine	10 – 14 V
B/L ↔ GND (A13-17 ↔ A13-14)	L ↔ W-B	IG ON. Air Flow: BI-LEVEL.	Below 1 V
FOOT ↔ GND (A13-18 ↔ A13-14)	L-R ↔ W-B	IG ON. Air Flow: FOOT.	Below 1 V
F/D ↔ GND (A13-19 ↔ A13-14)	B-L ↔ W-B	IG ON. Air Flow: FOOT/DEF	Below 1 V
DEF ↔ GND (A13-20 ↔ A13-14)	L-O ↔ W-B	IG ON. Air Flow: DEF	Below 1 V
RDFG ↔ GND (A13-23 ↔ A13-14)	L-G ↔ W-B	Rear Defogger Switch ON.	Below 1 V
		Rear Defogger Switch OFF	10 – 14 V
TELI ↔ GND (A13-24 ↔ A13-14)	L-R ↔ W-B	IG ON. Hand Free Telephone ON.	Below 1 V
TC ↔ GND (A13-25 ↔ A13-14)	B-R ↔ W-B	Light Control Switch Position: TAIL. Rheostat Volume: Most Upward	10 – 14 V
		Light Control Switch Position: TAIL. Rheostat Volume: Most Downward	Below 1 V
IG+ ↔ GND (A13-16 ↔ A13-14)	L-B ↔ W-B	IG ON.	10 – 14 V

## PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Whole functions of the A/C system does not operate.	1. IG power source circuit 2. ECU (A/C control assembly)	DI-576 IN-27
Air Flow Control: No blower operation	1. Heater main relay circuit 2. Blower motor circuit 3. Engine coolant temperature sensor circuit 4. IG power source circuit 5. ECU (A/C control assembly)	DI-580 DI-583 DI-546 DI-576 IN-27
Air Flow Control: No blower control	1. Blower motor circuit 2. IG power source circuit 3. Heater main relay circuit	DI-583 DI-576 DI-580
Air Flow Control: Insufficient air out	Blower motor circuit	DI-583
Temperature Control: No cool air comes out	1. Volume of refrigerant 2. Drive Belt Tension 3. Inspect refrigeration system with manifold gauge set 4. Compressor lock sensor circuit 5. Compressor circuit 6. Pressure switch circuit 7. Igniter circuit 8. Air mix control servomotor circuit  9. Air mix damper position sensor circuit 10. Room temp. sensor circuit 11. Ambient temp. sensor circuit 12. A/C control assembly	AC-3 AC-14 AC-3 DI-552 DI-569 DI-554 DI-585 DI-557 DI-563 DI-560 DI-537 DI-540 IN-27
Temperature Control: No warm air comes out	1. Air mix control servomotor circuit  2. Air mix damper position sensor circuit 3. Ambient temp. sensor circuit 4. Room temp. sensor circuit 5. Evaporator temp. sensor circuit 6. A/C control assembly 7. Heater radiator (in heater unit)	DI-557 DI-563 DI-560 DI-540 DI-537 DI-543 IN-27 AC-23
Temperature Control: Output air is warmer or cooler than the set temperature or response is slow.	1. Volume of refrigerant 2. Drive Belt Tension 3. Inspect refrigeration system with manifold gauge set 4. Cooling fan system 5. Ambient temp. sensor circuit 6. Evaporator temp. sensor circuit 7. Solar sensor circuit 8. Air mix damper position sensor circuit 9. Engine coolant temp. sensor 10. Air mix control servomotor circuit  11. Compressor 12. Condenser 13. Receiver 14. Evaporator 15. Heater radiator (in heater unit) 16. Expansion valve 17. A/C control assembly	AC-3 AC-14 AC-3 AC-104 DI-540 DI-543 DI-549 DI-560 DI-546 DI-557 DI-563 AC-35 AC-45 AC-42 AC-48 AC-23 AC-55 IN-27
Temperature Control: No temperature control (only Max. cool or Max. warm)	1. Air mix control servomotor circuit  2. Air mix damper position sensor circuit 3. A/C control assembly	DI-557 DI-563 DI-560 IN-27



No air inlet control	1. Air inlet damper position sensor circuit 2. Air inlet control servomotor circuit  3. A/C control assembly	DI-560 DI-560 DI-566 IN-27
No air outlet control	1. Air outlet control servomotor circuit 2. A/C control assembly	DI-574 IN-27
Engine idle up does not occur, or is continuous	1. Compressor circuit 2. Igniter circuit 3. A/C control assembly	DI-569 DI-585 IN-27
Blinking of A/C switch indicator.	1. Compressor lock sensor circuit 2. A/C control assembly	DI-552 IN-27
Set temperature value displayed does not much up with operation of temperature control switch.	A/C control assembly	IN-27
Brightness does not changes when rheostat volume or light control switch it turned.	1. Illumination light system 2. A/C control assembly	BE-2 IN-27
Unable to access the diagnosis mode.	A/C control assembly	IN-27
DTC not recorded. Set mode is cleared when IG switch is turned off.	1. Back-up power source circuit 2. A/C control assembly	DI-578 IN-27